

RESOLUTION OF THE
RESOURCES AND DEVELOPMENT COMMITTEE
23rd Navajo Nation Council --- Fourth Year, 2018

AN ACTION

RELATING TO RESOURCES AND DEVELOPMENT COMMITTEE; APPROVING
AMENDMENTS TO THE NAVAJO NATION PRIMARY DRINKING WATER
REGULATIONS

BE IT ENACTED:

SECTION ONE. AUTHORITY

- A. The Resources and Development Committee of the Navajo Nation Council, pursuant to 2 N.N.C. § 500(C), exercises oversight authority over water.
- B. The Resources and Development Committee of the Navajo Nation Council is the oversight authority over the Navajo Nation Environmental Protection Agency. 2 N.N.C. § 501 (C) (1).

SECTION TWO. FINDINGS

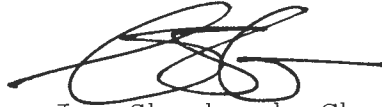
- A. The Navajo Nation Environmental Protection Agency is proposing amendments to the Navajo Nation Environmental Protection Agency Navajo Nation Primary Drinking Water Regulations, attached as **Exhibit A**.
- B. The Section 164 Review Form and Navajo Nation Department of Justice Document Review Request Form are attached as **Exhibit B**.

SECTION THREE. APPROVAL

The Resources and Development Committee of the Navajo Nation Council hereby approves the amendments to the Navajo Nation Primary Drinking Water Regulations, **Exhibit A**.

CERTIFICATION

I, hereby, certify that the following resolution was duly considered by the Resources and Development Committee of the 23rd Navajo Nation Council at a duly called meeting at the NTUA Skyroom, Fort Defiance, Navajo Nation (Arizona), at which a quorum was present and that same was passed by a vote of 3 in favor, and 0 opposed, on this 22nd day of October 2018.



Alton Joe Shepherd, Chairperson
Resources and Development Committee
of the 23rd Navajo Nation Council

Motion: Honorable Davis Filfred
Second: Honorable Leonard Pete

Chairperson Alton Joe Shepherd not voting.



AMENDMENTS

Navajo Nation

Primary Drinking Water

Regulations

Public Water Systems Supervision Program
Navajo Nation Environmental Protection Agency
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Window Rock, AZ 86515

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NAVAJO NATION
PRIMARY DRINKING WATER REGULATIONS
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PART I GENERAL PROVISIONS

§ 101 TITLE

These regulations may be cited as the Navajo Nation Primary Drinking Water Regulations (NNPDWR).

§ 102 AUTHORITY

These regulations are adopted pursuant to the Navajo Nation Safe Drinking Water Act (NNSDWA), 22 N.N.C. § 2501 et seq.; they establish primary drinking water regulations and related regulations applicable to as amended public water systems pursuant to §§ 1401, 1412-13, 1417, 1445 and 1451 of the Public Health Service Act, as amended by the Safe Drinking Water Act, 42 U.S.C. §§ 300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, 300j-9, and 300j-11.

§ 103 PURPOSE

The purpose of these regulations is to promote the protection of the health and welfare of the Navajo people and the environment by establishing appropriate water quality standards to ensure that drinking water is safe for consumption. No person shall control, manage or operate a public water system unless the system is maintained in compliance with the NNSDWA and these regulations. All public water system owners/operators must demonstrate technical, managerial and financial capability by complying with the NNSDWA and these regulations.

These regulations may be used as cleanup standard criteria for all groundwater remediation activities. Maximum Contaminant Levels defined in Part II of these regulations may be used as the aquifer water quality standards for aquifers within the Navajo Nation. Compliance with the MCL shall be from the analysis of a total (non-filtered) water sample (unless otherwise indicated in this document).

§ 104 DEFINITIONS

ACTION LEVEL - the concentration, specified in § 702(A), of lead or copper in water which determines, in some cases, the treatment requirements that a water system is required to complete as specified in Part VII (Lead and Copper Requirements) of these regulations.

ADMINISTRATOR - the Administrator of the United States Environmental Protection Agency.

AIR-GAP SEPARATION - a physical separation between the free flowing discharge end of a potable water supply pipeline and an open or non-pressurized receiving vessel.

AIR RELEASE VALVE - a valve that is placed at a high point of a pipeline for the automatic release of air to prevent air binding and the buildup of pressure.

AQUIFER - a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

ALLUVIAL DEPOSITS - strata which were laid down by water, commonly consisting of gravels, sands, and silts, which usually have a high capacity for conducting groundwater.

ANSI - American National Standards Institute.

API - American Petroleum Institute.

ASTM - American Society for Testing and Materials or ASTM International.

AUXILIARY WATER SUPPLY - any source of water other than the designated source of public water system that is either used, or equipped to be used, as a water supply and located on, or piped to, the premises of a water user. (The term "equipped" in this definition means that appurtenances such as inactive wells, pumps, power supply, intakes, suction lines, pipelines, connecting fittings, or storage tanks are in place and readily available for use.)

AVAILABLE - The system's certified operator must be on site or able to be contacted as needed to initiate the appropriate action in a timely manner.

WWA - American Water Works Association.

BACKFLOW - a reverse flow condition that causes water or mixtures of water and other liquids, gases, or substances to flow back into the distribution pipes or storage tanks of the drinking water supply from any source other than the intended source. It can be created by a difference in water pressure (backpressure) caused by a vacuum or partial vacuum (backsiphonage), or a combination of both.

BACKFLOW-PREVENTION ASSEMBLY - any assembly used to prevent backflow from entering a drinking water system.

BAG FILTER - a pressure-driven separation device that removes particulate matter larger than 1 micrometer using an engineered porous filtration media. It is typically constructed of a non-rigid, fabric filtration media housed in a pressure vessel in which the direction of flow is from the inside of the bag to the outside.

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

BEST AVAILABLE TECHNOLOGY or BAT - the best technology, treatment techniques, or other means which the Administrator finds, after examination for efficacy under field conditions and not solely under laboratory conditions, are available (taking cost into consideration). For the purposes of setting MCLs for synthetic organic chemicals, any BAT must be at least as effective as granular activated carbon.

BOARD - a group of individuals who are nominated by the Director to serve a term of three years. The Board will make recommendations and provide technical advice as needed.

BOOSTER PUMP - any pump installed within a water distribution system for the purpose of increasing the water pressure in the water distribution system, including distribution storage facilities downstream from the pump.

BOTTLED WATER SYSTEM - water system which manufactures bottled drinking water in the Navajo Nation.

BUSINESS PLAN - for the purpose of these regulations, a document consisting of three sub-plans, a "Facilities Plan", a "Management Plan", and a "Financing Plan" which is intended to show how a water system will be self-sustaining and have the commitment and the financial, managerial and technical capability to consistently comply with the Navajo Nation Safe Drinking Water Act and these Regulations.

CARTRIDGE FILTER - a pressure-driven separation device that removes particulate matter larger than 1 micrometer using an engineered porous filtration media. It is typically constructed as a rigid or semi-rigid, self-supporting filter element housed in a pressure vessel in which flow is from the outside of the cartridge to the inside.

CERTIFIED OPERATOR - a person who is certified by the Director as being qualified to operate a public water system.

CLEAN COMPLIANCE HISTORY – for the purposes of Part XXVII, a record of no MCL violations under § 205; no monitoring violations under § 404 or Part XXVII; and no coliform treatment technique trigger exceedances or treatment technique violations under Part XXVII.

COAGULATION - a process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs.

COMBINED DISTRIBUTION SYSTEM - the interconnected distribution system consisting of the distribution systems of wholesale systems and of the consecutive systems that receive finished water.

COMPREHENSIVE PERFORMANCE EVALUATION (CPE) - 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. For purposes of compliance with Part 1100 and 2100, the comprehensive performance evaluation must consist of at least the following components: assessment of plant performance; evaluation of major unit processes; identification and prioritization of performance limiting factors; assessment of the applicability of comprehensive technical assistance; and preparation of CPE report.

COMMUNITY WATER SYSTEM - a public water system which serves at least 15 service connections used by

year-round residents or regularly serves at least 25 year-round residents.

COMPLIANCE CYCLE - the nine calendar year cycle during which public water system must monitor. Each compliance cycle consists of three three-year compliance periods. The first cycle begins January 1, 1993 and ends December 31, 2001; the second begins January 1, 2002 and ends December 31, 2010; the third begins January 1, 2011 and ends December 31, 2019, and so on.

COMPLIANCE PERIOD - a three calendar year period within a compliance cycle. Each compliance cycle has three three-year compliance periods. Within the first compliance cycle, the first calendar period runs from January 1, 1993 to December 31, 1995; the second from January 1, 1996 to December 31, 1998; the third from January 1, 1999 to December 31, 2001, and so on.

CONFINED AQUIFER - an aquifer in which ground water is confined under pressure which is significantly greater than atmospheric pressure; and its upper limit is the bottom of a bed of distinctly lower hydraulic conductivity than that of the material in which the confined water occurs.

CONFLUENT GROWTH - a continuous bacterial growth covering the entire filtration area of a membrane filter, or a portion thereof, in which bacterial colonies are not discrete.

CONSECUTIVE SYSTEM - 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.

CONTAMINANT - any physical, chemical, biological or radiological substance or matter in drinking water.

CONVENTIONAL FILTRATION TREATMENT - a series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal.

CORROSION INHIBITOR - a substance capable of reducing the corrosivity of water toward metal plumbing materials, especially lead and copper, by forming a protective film on the interior surface of those materials.

CT or CTcalc - the product of "residual disinfectant concentration" (C) in mg/l determined before or at the first customer, and the corresponding "disinfectant contact time" (T) in minutes, i.e., "C" x "T". If a public water system applies disinfectants at more than one point prior to the first customer, it must determine the CT of each disinfectant sequence before or at the first customer to determine the total percent inactivation or "total inactivation ratio." In determining the total inactivation ratio, the public water system must determine the residual disinfectant concentration of each disinfection sequence and corresponding contact time before any subsequent disinfection application point(s). "CT_{99.9}" is the CT value required for 99.9% (3-log) inactivation of *Giardia lamblia* cysts. CT_{99.9} for a variety of disinfectants and conditions appear in Tables 800 -D-4 to 800 -D-11 in Appendix D.

$$\frac{CT_{calc}}{CT_{99.9}}$$

is the inactivation ratio. The sum of the inactivation ratios, or total inactivation ratio shown as:

$$\sum \frac{(CT_{calc})}{(CT_{99.9})}$$

is calculated by adding together the inactivation ratio for each disinfection sequence. A total inactivation ratio equal to or greater than 1.0 is assumed to provide a 3-log inactivation of *Giardia lamblia* cysts.

CROSS-CONNECTION - any unprotected actual or potential connection or structural arrangement between a public water system and any other source or distribution system containing liquid, gas or other substances not from an approved water supply.

DESIGN POPULATION - the estimated population to be served by the proposed facilities considering the population growth in the locality over the design life of the facilities.

DIATOMACEOUS EARTH FILTRATION - a process resulting in substantial particulate removal in which (1) a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum), and

(2) while the water is filtered by passing through the cake on the septum, an additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake.

DIRECT FILTRATION - a series of processes including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal.

DIRECTOR - The Executive Director of the Navajo Nation Environmental Protection Agency (NNEPA) or his or her designee.

DISINFECTANT - any oxidant, including but not limited to chlorine, chlorine dioxide, chloramines, iodine and ozone, added to water in any part of the treatment or distribution process that is intended to kill or inactivate pathogenic microorganisms.

DISINFECTANT CONTACT TIME ("T" in CT calculations) - the time in minutes that it takes for water to move from the point of disinfectant application or the previous point of disinfectant residual measurement to a point before or at the point where residual disinfectant concentration ("C") is measured. Where only one "C" is measured, "T" is the time in minutes that it takes for water to move from the point of disinfectant application to a point before or at where "C" is measured. Where more than one "C" is measured, "T" is (a) for the first measurement of "C", the time in minutes that it takes for water to move from the first or only point of disinfectant application to a point before or at the point where the first "C" is measured and (b) for subsequent measurements of "C", the time in minutes that it takes for water to move from the previous "C" measurement point to the "C" measurement point for which the particular "T" is being calculated. Disinfectant contact time in pipelines must be calculated based on "plug flow" by dividing the internal volume of the pipe by the maximum hourly flow rate through that pipe. Disinfectant contact time within mixing basins and storage reservoirs must be determined by tracer studies or an equivalent demonstration. See also Appendix D, Baffling Classifications, Table 800-D-14.

DISINFECTION - a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents.

DISINFECTION PROFILE - a summary of daily Giardia lamblia inactivation through the treatment plant. The procedure for developing a disinfection profile is contained in §1304 (Disinfection profiling and benchmarking) and in Part 1100 and §§2104 (A) to (G) of Part 2100.

DISINFECTION/DISINFECTANT BYPRODUCTS SYSTEMS - public water systems using surface water or ground water under the direct influence of surface water as a source that are subject to the requirements of §1100.

DISTRIBUTION SYSTEM - any combination of pipes, tanks, pumps, etc. that delivers water from the source(s) and/or treatment facility(ies) to the consumer.

DISTRIBUTION SYSTEM COMPLEXITY - conditions or characteristics that exist in a distribution system, such as pressure zones, booster stations, storage tanks, fire protection, chlorination, non-residential consumers, cross connection potential, demand variations, size of pipes, total distance of pipes and/or total geographic area, that must be considered when classifying the distribution system.

DOMESTIC OR OTHER NONDISTRIBUTION SYSTEM PLUMBING PROBLEM - a coliform contamination problem in a public water system with more than one service connection that is limited to the specific service connection from which the coliform-positive sample was taken.

DOSE EQUIVALENT - the product of the absorbed dose from ionizing radiation and such factors as account for differences in biological effectiveness due to the type of radiation and its distribution in the body as specified by the International Commission on Radiological Units and Measurements (ICRU).

DOUBLE CHECK VALVE ASSEMBLY - two independently-acting, internally-loaded, check valves with shut-off valves located upstream and downstream of the two check valves, and test cocks to enable field testing.

DUAL SAMPLE SET - 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 Part XXII and determining compliance with the TTHM and HAA5 MCLs under Part XXIII.

EFFECTIVE CORROSION INHIBITOR RESIDUAL - for the purpose of Part VII (Lead and Copper Requirements) only, a concentration sufficient to form a passivating film on the interior walls of a pipe.

ENGINEER - the project engineer, who has obtained a "professional engineer" registration in the state of Arizona, New Mexico or Utah.

ENHANCED COAGULATION - the addition of sufficient coagulant for improved removal of disinfection byproduct precursors by conventional filtration treatment.

ENHANCED SOFTENING - the improved removal of disinfection byproduct precursors by precipitative softening.

EXEMPTION - a waiver granted from certain provisions of these regulations by the Director to a public water system pursuant to the NNSDWA and § 105 of these regulations.

EXISTING PUBLIC WATER SYSTEM - a public water system in operation on the effective date of these NNPDR or, for purposes of compliance with a revised NNPDR, on the effective date of the revision.

FILTER PROFILE - is a graphical representation of individual filter performance, based on continuous turbidity measurements or total particle counts versus time for an entire filter run, from startup to backwash inclusively, that includes an assessment of filter performance while another filter is being backwashed.

FILTRATION - a process for removing particulate matter from water by passage through porous media.

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

FIRST DRAW SAMPLE - a one-liter sample of tap water, collected in accordance with § 708 (B)(2), that has been standing in plumbing pipes at least 6 hours and is collected without flushing the tap.

FLOWING STREAM - a course of running water flowing in a definite channel.

FLOCCULATION - a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable particles through gentle stirring by hydraulic or mechanical means.

GAC10 - granular activated carbon filter beds with an empty-bed contact time of 10 minutes based on average daily flow and a carbon reactivation frequency of every 180 days, except that the reactivation frequency for GAC10 used as a best available technology for compliance with Part XXIII MCLs under §207 (B)(2) shall be 120 days.

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

GRANDPARENTING - the exemption for an existing operator in responsible charge from meeting the initial education and/or examination requirements for certification to operate a particular water system.

GRAY WATER - Untreated household waste water that has not come into contact with toilet waste. It includes used water from bathtubs, showers, bathroom wash basins, and water from clothes-washing machines and laundry tubs. It does not include waste water from kitchen sinks or dishwashers.

GROSS ALPHA PARTICLE ACTIVITY - the total radioactivity due to alpha particle emission as inferred from measurements on a dry sample.

GROSS BETA PARTICLE ACTIVITY - the total radioactivity due to beta particle emission as inferred from measurements on a dry sample.

GROUNDWATER - subsurface water found in void spaces in geologic materials within the zone of saturation.

GROUNDWATER SOURCE - a source of water captured underground. This term includes wells and springs.

GROUNDWATER SYSTEM - any public water system that use ground water except that it does not apply to public water systems that combine all of their ground water with surface water or with ground water under the direct influence of surface water prior to treatment under Part 700, including consecutive systems receiving finished ground water.

GROUNDWATER UNDER THE DIRECT INFLUENCE OF SURFACE WATER (GWUDI) - any water beneath the surface of the

ground with significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as *Giardia lamblia*, *Cryptosporidium* significant and/or relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions. Direct influence must be determined for individual sources in accordance with criteria established by the NNEPA. The NNEPA determination of direct influence may be based on site-specific measurements of water quality and/or documentation of well construction characteristics and geology with field evaluation.

GROUT - a fluid mixture of cement and water (neat cement) of a consistency that can be forced through a pipe and placed as required. Various additives, such as sand, bentonite, and hydrated lime, may be included in the mixture to meet certain requirements. For example, sand is added when a considerable volume of grout is needed.

HALOACETIC ACIDS (five) (HAA5) - the sum of the concentrations in milligrams per liter of the haloacetic acid compounds (monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid), rounded to two significant figures after addition.

HALOGEN - one of the chemical elements chlorine, bromine or iodine.

HETEROTROPHIC PLATE COUNT (HPC) or STANDARD PLATE COUNT - a procedure for estimating the number of live heterotrophic bacteria in water and measuring changes during water treatment and distribution.

HYDROPNEUMATIC TANK - a system comprised of an airtight tank, in which air is compressed over water, is used to impart pressure to the water in the tank and to attached pipelines for the distribution of the water.

INDIAN COUNTRY - Land as defined at 18 U.S.C. § 1151: "(a) all land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and including rights-of-way running through the reservation, (b) all dependent Indian communities within the borders of the United States, whether within the original or subsequently acquired territory thereof, and whether within or without the limits of a state, and (c) all Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same."

INDIAN TRIBE - any Indian Tribe having a Federally recognized governing body carrying out substantial governmental duties and powers over any area.

INITIAL COMPLIANCE PERIOD - the first full three-year compliance period which begins at least 18 months after promulgation of the federal regulations, except that for contaminants listed at § 204 (A)(1) Table 200.3 (19)-(21), § 205 (A)(2) Table 200.4 (19) - (33), and § 203 (A) Table 200.1 (1), (6), (10) and (18), initial compliance period means the first full three-year compliance period after promulgation for systems with 150 or more service connections (January 1993-December 1995), and first full three-year compliance period after the effective date of the federal regulations (January 1996-December 1998) for systems having fewer than 150 service connections.

INJECTION WELL - a well used to dispose of fluids underground. Fluids enter either by gravity flow or by injection under pressure.

ISOLATION VALVE - a valve, including a ball valve, butterfly valve, gate valve, or other type of valve, installed in a pipeline to shut off the flow of the water in a portion of the pipeline for the purpose of inspection or repair.

LAKE/RESERVOIR - a natural or man-made basin or hollow on the Earth's surface in which water collects or is stored and that may or may not have a current or single direction of flow.

LARGE WATER SYSTEM - for the purposes of Part VII (Lead and Copper Requirements), a water system that serves more than 50,000 persons.

LEAD FREE - for purposes of these regulations the term "lead free" 1) when used with respect to solders and flux, refers to those containing not more than 0.2 %; 2) when used with respect to pipes and pipe fittings, refers to those containing not more than 8.0 % lead; and 3) when used with respect to plumbing, fittings and fixtures intended by the manufacturer to dispense water for human ingestion, refers to those which comply with standards established in accordance with 42 U.S.C. 300g-6(e).

LEAD SERVICE LINE - a service line made of lead which connects the water main to the building inlet and any lead pigtail, gooseneck or other fitting which is connected to such lead line.

LEGIONELLA - a genus of bacteria, some species of which have caused a type of pneumonia called Legionnaires Disease.

LEVEL 1 ASSESSMENT – 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. It may be conducted by the system operator or owner. Minimum elements include review and identification of atypical events that could affect distributed water quality or indicate that distributed water quality was impaired; changes in distribution system maintenance and operation that could affect distributed water quality (including water storage); source and treatment considerations that bear on distributed water quality, where appropriate (e.g., whether a ground water system is disinfected); existing water quality monitoring data; and inadequacies in sample sites, sampling protocol, and sample processing. The assessment must be conducted consistent with any PWSSP directives.

LEVEL 2 ASSESSMENT – 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 provides a more detailed examination of the system (including the system's monitoring and operational practices) than does a Level 1 assessment through the use of more comprehensive investigation and review of available information, additional internal and external resources, and other relevant practices. It is conducted by an individual approved by the Director, which may include the system operator. Minimum elements include review and identification of atypical events that could affect distributed water quality or indicate that distributed water quality was impaired; changes in distribution system maintenance and operation that could affect distributed water quality (including water storage); source and treatment considerations that bear on distributed water quality, where appropriate (e.g., whether a ground water system is disinfected); existing water quality monitoring data; and inadequacies in sample sites, sampling protocol, and sample processing. The system must conduct the assessment consistent with any PWSSP directives. The system must comply with any expedited actions or additional actions required by the Director in the case of an *E. coli* MCL violation.

LOCATIONAL RUNNING ANNUAL AVERAGE (LRAA) - the average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters.

LOG - in terms of removal or inactivation of *Giardia lamblia* cysts or viruses, "One-log" is 90 %; "Two-log" is 99 %; "Three-log" is 99.9 %; and "Four-log" is 99.99 %.

MAN-MADE BETA PARTICLE AND PHOTON EMITTERS - all radionuclides emitting beta particles or photons listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure", NBS Handbook 69, except the daughter products of thorium-232, uranium-235, and uranium-238.

MAXIMUM CONTAMINANT LEVEL (MCL) - the maximum permissible level of a contaminant in water which is delivered to any user of a public water system.

MAXIMUM CONTAMINANT LEVEL GOAL or MCLG - the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health or persons would occur, and which allows an adequate margin of safety. Maximum contaminant level goals are nonenforceable health goals.

MAXIMUM RESIDUAL DISINFECTANT LEVEL (MRDL) - a level of a disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects. For chlorine and chloramines, a PWS is in compliance with the MRDL when the running annual average of monthly averages of samples taken in the distribution system, computed quarterly, is less than or equal to the MRDL. For chlorine dioxide, a PWS is in compliance with the MRDL when daily samples are taken at the entrance to the distribution system and no two consecutive daily samples exceed the MRDL. MRDLs are enforceable in the same manner as maximum contaminant levels. There is convincing evidence that addition of a disinfectant is necessary for control of waterborne microbial contaminants. Notwithstanding the MRDLs listed in §208, operators may increase residual disinfectant levels of chlorine or chloramines (but not chlorine dioxide) in the distribution system to a level and for a time necessary to protect public health to address specific microbiological contamination

problems caused by circumstances such as distribution line breaks, storm runoff events, source water contamination, or cross-connections.

MAXIMUM RESIDUAL DISINFECTANT LEVEL GOAL (MRDLG) - the maximum level of a disinfectant added for water treatment at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. MRDLGs are nonenforceable health goals and do not reflect the benefit of the addition of the chemical for control of waterborne microbial contaminants.

MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL (MTP) - the maximum concentration of total trihalomethanes produced in a given water containing a disinfectant residual after seven days at a temperature of 25°C or above.

MEDIUM SIZE WATER SYSTEM - for the purpose of Part VII (Lead and Copper Requirements), a water system that serves greater than 3,300 and fewer than or equal to 50,000 persons.

MEMBRANE FILTRATION - 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 that 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.

NAVAJO NATION - means:

a. all land within the exterior boundaries of the Navajo Indian Reservation or of the Eastern Navajo Agency or of Navajo dependent Indian communities, including all lands within the boundaries of Navajo chapter governments;

b. all land held in trust by the United States for or restricted by the United States or otherwise set aside or apart under the superintendence of the United States for the use or benefit of the Navajo Nation, the Navajo Tribe, any Band of Navajo Indians, or any individual Navajo Indians as such; and

c. all other land over which the Navajo Nation may exercise governmental jurisdiction in accordance with federal or international law.

NAVAJO NATION PRIMARY DRINKING WATER REGULATIONS (NNPDWR) - Requirements promulgated pursuant to the NNSDWA that 1) apply to public water systems, 2) specify contaminants which, in the judgment of the Director, may have an adverse effect on the health of persons, 3) specify for each contaminant either (a) a maximum contaminant level if, in the judgment of the Director, it is economically and technologically feasible to ascertain the level of contaminant in public water systems, or b) if, in the judgment of the Director, it is not economically or technologically feasible to so ascertain the level of contaminant, specify each treatment technique known to the Director which leads to a reduction in the level of contaminant sufficient to satisfy the requirements of § 1412 of the U.S. SDWA and subchapter 3 of the Navajo Nation Safe Drinking Water Act; and 4) contain criteria and procedures to assure a supply of drinking water which dependably complies with maximum contaminant levels, including quality control and testing procedures to ensure compliance with such levels and to ensure proper operation and maintenance of the public water system, and requirements as to the minimum quality of water which may be taken into the system and siting for new facilities for public water systems.

NAVAJO NATION SAFE DRINKING WATER ACT (NNSDWA) - the act which is codified at 22 Navajo Nation Code (NNC) §§ 2501-2586, as amended, that establishes the Navajo Nation's environmental law with regard to public water systems and their responsibility to provide safe drinking water to the residents of the Navajo Nation.

NAVAJO NATION SECONDARY DRINKING WATER STANDARDS (NNSDWS) - Standards promulgated pursuant to the NNSDWA that apply to public water systems and specify the maximum contaminant levels which, in the judgment of the Director, are requisite to protect the public welfare primarily with regard to aesthetic qualities. Such standards may apply to any contaminant in drinking water (a) which may adversely affect the odor or appearance of water and, consequently, may cause a substantial number of persons served by the public water system to discontinue its use, or (b) which may otherwise adversely affect the public welfare. Such standards may vary according to geographic and other circumstances.

NEAR THE FIRST SERVICE CONNECTION - means at one of the 20 % of all service connections in the entire system that are nearest the water supply treatment facility, as measured by water transport time within the distribution system.

NEW PUBLIC WATER SYSTEM - a public water system that begins operating after the effective date of these regulations.

NNEPA - means the Navajo Nation Environmental Protection Agency.

NON-COMMUNITY WATER SYSTEM - a public water system that is neither a "community water system" nor a "non-transient non-community water system", including but not limited to: seasonal facilities such as children's camps or recreational camping areas; and year-round facilities that serve more than 25 persons who are not residents thereof, such as gasoline service stations, marinas, rest areas and restaurants that are not served by a community water system.

NON-TRANSIENT NON-COMMUNITY WATER SYSTEM - a public water system that is not a "community water system" and that regularly serves at least 25 of the same persons for more than 6 months per year, including but not limited to schools, factories and public buildings.

NSF - NSF International, P.O. Box 130140, 789 N. Dixboro Road, Ann Arbor, MI 48113-0140, USA. Web: <http://www.nsf.org>

NTU - Nephelometric Turbidity Unit used to measure turbidity.

OPTIMAL CORROSION CONTROL TREATMENT - for the purpose of Part VII (Lead and Copper Requirements), the corrosion control treatment that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate any national primary drinking water regulations.

PERSON - an individual, corporation, company, association, partnership, municipality, local, state or federal government or agency or Indian tribe, tribal division, tribal department, tribal enterprise or tribal entity.

PICOCURIE (pCi) - that quantity of radioactive material producing 2.22 nuclear transformations per minute.

PLANT INTAKE - 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.

POINT OF DISINFECTANT APPLICATION - the point where the disinfectant is applied and water downstream of that point is not subject to recontamination by surface water runoff.

POINT OF ENTRY - the point where all systems (both unfiltered and filtered) would record the lowest disinfectant residue concentration entering the system each day.

POINT-OF-ENTRY TREATMENT DEVICE (POE) - a treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in the drinking water distributed throughout the house or building.

POINT-OF-USE TREATMENT DEVICE (POU) - a treatment device applied to a single tap used for the purpose of reducing contaminants in drinking water at that one tap.

PREMISES - the property under the ownership or control of the water user and served, or capable of being served, with water via a service connection with the public water system.

PRESEDIMENTATION - a preliminary treatment process used to remove gravel, sand, and other particulate material from source water through settling before the water enters the primary clarification and filtration processes in a treatment plant.

PRESSURE REDUCING VALVE - a valve that opens automatically when the water pressure reaches a preset limit to relieve the stress on the pipeline.

PRESSURE VACUUM BREAKER ASSEMBLY - the combination of an independently-acting, internally-loaded check valve and an independently-acting loaded air inlet valve located on its discharge side, with test cocks and shutoff valves attached at each end of the combination.

PRIVATE WATER SYSTEM - a system for the provision of piped water for human consumption or domestic purposes having fewer than 15 service connections or serving an average of 25 individuals or fewer at least 60 days during the year.

PROJECT ENGINEER - same as ENGINEER.

PUBLIC WATER SYSTEM -

a. The term "public water system" means a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen (15) service connections or regularly serves an average of at least twenty-five (25) individuals daily at least 60 days out of the year. Such term includes:

i. any collection, treatment, storage and distribution facilities under control of the operator of such system and which are used primarily in connection with such system; and

ii. any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. A public water system is either a "community water system" or a "noncommunity water system."

b. For purposes of paragraph A, a connection to a system that delivers water by a constructed conveyance other than a pipe shall not be considered a connection, if

i. The water is used exclusively for purposes other than residential uses (consisting of drinking, bathing, and cooking, or other similar uses);

ii. The Director determines that alternative water to achieve the equivalent level of public health protection provided by the applicable NNPDWR is provided for residential or similar uses for drinking and cooking; or

iii. The Director determines that the water provided for residential or similar uses for drinking, cooking, and bathing is centrally treated or treated at the point of entry by the provider, a pass-through entity, or the user to achieve the equivalent level of protection provided by the applicable NNPDWR.

PUBLIC WATER SYSTEM OWNER OR OPERATOR - any person who owns or operates a public water system within the jurisdiction of the Navajo Nation.

PWSSP - the Navajo Public Water Systems Supervision Program within the Navajo Nation Environmental Protection Agency.

REDUCED PRESSURE PRINCIPLE ASSEMBLY - two independently-acting, internally-loaded check valves with an automatic differential pressure relief valve located in between, shut-off valves located upstream and downstream of the two check valves, and test cocks to enable field testing.

REGION - one of the 10 geographical areas or regions of the country into which the U.S. Environmental Protection Agency (EPA) is divided, or the EPA Headquarters in Washington, DC (see <http://www.epa.gov/epahome/locate2.htm>).

REM - the unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system. A millirem (mrem) is 1/1000 of a rem.

REPEAT COMPLIANCE PERIOD - any subsequent compliance period after the initial compliance period.

RESOURCES AND DEVELOPMENT COMMITTEE - means Resources and Development Committee of the Navajo Nation Council.

RESIDUAL DISINFECTANT CONCENTRATION ("C" in CT calculations) - the concentration of disinfectant measured in mg/L in a representative sample of water.

RESPONSIBLE CHARGE - The Operator(s) in Responsible Charge is defined as the person(s) designated by the owner to be the certified operator(s) who makes decisions regarding the daily operational activities of a public water system, water treatment facility, and/or distribution system that will directly impact the quality and/or quantity of drinking water.

SDWA - The Public Health Service Act, as amended by the Safe Drinking Water Act, Public Law 93-523, 42 U.S.C. § 300f et seq.

SAMPLING REQUIREMENT - the sampling analysis and other appropriate measurements required of water systems by the Director.

SANITARY DEFECT – 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.

SANITARY SEAL - a cap on the top of the well casing usually fitted with a rubber expansion gasket, which seals off surface drainage, thereby protecting the well from contamination directly down the casing.

SANITARY SURVEY - an on-site review of the water source, facilities, equipment, operation and maintenance of a public water system for the purpose of evaluating the adequacy of such source, facilities, equipment, operation and maintenance for producing and distributing safe drinking water.

SEASONAL SYSTEM – a non-community water system 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.

SECONDARY MAXIMUM CONTAMINANT LEVEL - the maximum level of a contaminant in a public water system which, in the judgment of the Director, is requisite to protect the public welfare. The SMCL means the maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of the public water system. Contaminants added to the water under circumstances controlled by the user, except those resulting from corrosion of piping and plumbing caused by water quality, are excluded from this definition.

SEDIMENTATION - a process for removal of solids before filtration by gravity or separation.

SERVICE CONNECTION - a single physical connection from a water service main which provides water to one or more buildings.

SERVICE LINE SAMPLE - a one-liter sample of water collected in accordance with § 708(B)(3), that has been standing for at least 6 hours in a service line.

SLOW SAND FILTRATION - a process involving the passage of raw water through a bed of sand at low velocity (generally less than 0.4m/h) resulting in substantial particulate removal by physical and biological mechanisms.

SINGLE FAMILY STRUCTURE - for the purposes of Part VII (Lead and Copper Requirements), a building constructed as a single-family residence that is currently used as either a residence or a place of business.

SMALL WATER SYSTEM - for the purposes of Part VII (Lead and Copper Requirements), a water system that serves 3,300 persons or fewer.

STANDARD SAMPLE - the portion of finished drinking water that is examined for the presence of coliform bacteria.

STATIC WATER LEVEL - the vertical distance from the ground surface to the water level in a well when the water level is not affected by drawdown due to pumping.

SUBSTANTIAL MODIFICATION - a modification to a public water system that changes capacity, hydraulic condition, operation of treatment units, water treatment process, or the quality of water delivered to the consumer. A modification that costs at least \$10,000 or involves the replacement or addition of at least 3 miles of service line.

SURFACE WATER - all water which is open to the atmosphere and is subject to surface runoff.

SURFACE WATER TREATMENT SYSTEMS - water systems using surface water or ground water under the direct influence of surface water as a source that are subject to the requirements of Part VIII of the NNPDR.

SUVA - Specific Ultraviolet Absorption at 254 nanometers (nm), an indicator of the humic content of water. It is a calculated parameter obtained by dividing a sample's ultraviolet absorption at a wavelength of 254 nm (UV_{254}) (in m^{-1}) by its concentration of dissolved organic carbon (DOC) (in mg/L).

SYSTEM WITH A SINGLE SERVICE CONNECTION - a system which supplies drinking water to consumers via a single service line.

TIME OF TRAVEL (TOT) - the time period used to define the area through which ground water will move and recharge a pumping well.

TOTAL ORGANIC CARBON (TOC) - total organic carbon in mg/L measured using heat, oxygen, ultraviolet irradiation, chemical oxidants, or combinations of these oxidants that convert organic carbon to carbon dioxide, rounded to two significant figures.

TOO NUMEROUS TO COUNT (TNTC) - the total number of bacterial colonies exceeds 200 on a 47-mm diameter membrane filter used for coliform detection.

TRANSIENT NON-COMMUNITY WATER SYSTEM - a public water system that is not a community water system and that does not regularly serve at least 25 of the same persons for more than six months per year.

TREATMENT - a physical, chemical, or biological process intended to change or improve the quality of water.

TREATMENT FACILITY - any place(s) where a community water system or nontransient noncommunity water system alters the physical or chemical characteristics of the drinking water.

TOTAL TRIHALOMETHANES (TTHM) - the sum of the concentration in milligrams per liter (mg/L) of the trihalomethane compounds (trichloromethane, [chloroform], dibromochloromethane, bromodichloromethane, and tribromomethane [bromoform]), rounded to two significant figures.

TRIGGER LEVEL - the concentration of a contaminant that can initiate either an increase or decrease in monitoring for that contaminant.

TRihalomethane (THM) - one of the family of organic compounds, named as derivatives of methane, wherein three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure.

TURBIDITY UNIT - Turbidity in water is caused by suspended matter such as clay, silt, finely divided organic and inorganic matter, soluble colored organic compounds, and plankton and other microscopic organisms. Turbidity is an expression of the optical property that causes light to be scattered and absorbed rather than transmitted in straight lines through the sample, and is used as an indicator of treatment effectiveness, specifically for clarification and filtration processes. Turbidity is measured in Nephelometric Turbidity Units (NTU).

TWO-STAGE LIME SOFTENING - a process in which chemical addition and hardness precipitation occur in each of two distinct unit clarification processes in series prior to filtration.

UNCOVERED FINISHED WATER STORAGE FACILITY - a tank, reservoir, or other facility used to store water that will undergo no further treatment to reduce microbial pathogens except residual disinfection and that is directly open to the atmosphere.

UNIFORM RULES - The Navajo Nation Environmental Protection Agency Uniform Regulations for Permit Review, Administrative Enforcement Orders, Hearings, and Rulemaking under Navajo Nation Environmental Acts.

UNREGULATED CONTAMINANT - a known or suspected disease-causing contaminant for which no maximum contaminant level has been established.

VALIDATED EXAM - an exam that is independently reviewed by subject matter experts to ensure it is based on a job analysis and related to the classification of the system or facility.

VARIANCE - a waiver from certain provisions of these regulations granted, by the Director, to a public water system pursuant to the NNSDWA and §105 of these regulations.

VIAble WATER SYSTEM - a water system which is self-sustaining and has the commitment and the financial, managerial and technical capability to consistently comply with the NNSDWA and the NNPdWR.

VIRUS - a virus of fecal origin that is infectious to humans by waterborne transmission.

WATERBORNE DISEASE OUTBREAK - the significant occurrence of acute infectious illness, epidemiologically associated with the ingestion of water from a public water system which is deficient in treatment, as determined by the Director or PWSSP.

WATER SUPPLY SOURCE - a well, spring, infiltration gallery, intake structure, or other source of piped water for human consumption.

WATER TABLE (UNCONFINED) AQUIFER - an aquifer in which ground water is under atmospheric pressure.

WATER USER - any person that is authorized to receive water from the public water system.

WELL - a bored, drilled or driven shaft, or a dug hole whose depth is greater than the largest surface dimension, from which water is extracted or injected.

WELLFIELD - an area containing two or more wells with overlapping zones of contribution that supply a public water system.

WELLHEAD - the physical structure, facility, or device at the ground surface from or through which groundwater flows or is pumped from water-bearing formations.

WELL CASING - tubular retaining structure, generally metal, which is installed in the excavated hole to maintain the well opening.

WELLHEAD PROTECTION - a program that reduces the threat to the quality of ground water used for drinking water by identifying and managing recharge areas to specific wells or well fields. As defined by P.L. 99-339, a wellhead protection area is a surface or subsurface area that surrounds an individual water well or wellfield that is used by a public water system. It is designed to incorporate the groundwater or surface water supplies that are likely to be drawn to the well system. The pumping of a well causes a conical "V" shaped depression in the underlying water table that varies as a result of differing geographic and hydrologic conditions. The water within this zone of depression would be likely to reach the well at some time, and so would any groundwater contaminants within that zone. By restricting surface activities over these zones, protection of the resource is enhanced.

WELLHEAD PROTECTION AREA- see WELLHEAD PROTECTION

WHOLESALE SYSTEM - 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.

§ 105 VARIANCES AND EXEMPTIONS

- A. Variances ~~and~~ or exemptions from certain provisions of these regulations may be granted by the Director pursuant to subchapter 6 of the Navajo Nation Safe Drinking Water Act and § 2205 of these regulations (for very small system variances), except that variances ~~and~~ or exemptions from the MCL for ~~total coliforms~~ E. coli and variances from any of the treatment technique requirements of Part VIII, General Requirements for Surface Water Treatment, may not be granted. As provided in § 2562(F)(2) of the Navajo Nation Safe Drinking Water Act, small system variances are not available for rules addressing microbial contaminants, which would include Parts VIII, XIII, XXI, XXIV, XXV, and XXVII.

§ 106 SITING REQUIREMENTS

Before a person may enter into a financial commitment for or initiate construction of a new public water system or increase the capacity of an existing public water system, he shall notify the Director, comply with the requirements of § 2524 of the NNSDWA and §1500-Minimum Design Regulations of these regulations and to the extent practicable, avoid locating part or all of the new or expanded facility at a site which:

- A. Is subject to a significant risk from earthquakes, floods, fires or other disasters which could cause a breakdown of the public water system or any portion thereof; or
- B. Except for intake structures, is within the floodplain of a 100-year flood, or is lower than any recorded high tide where appropriate records exist.

Permits to construct and permits to operate a public water system may be obtained from the Public Water Systems Supervision Program. Permits to drill wells may be obtained from the Navajo Nation Department of Water Resource Management, Water Code Section, (928) 729-4004.

§ 107 APPLICABILITY

- A. Except as provided in section 107 (B), these regulations apply to all public water systems within the Navajo Nation as described in the Navajo Nation Safe Drinking Water Act.

- B. These regulations do not apply to any public water system that meets all of the following conditions:
1. it consists only of distribution and storage facilities (and does not have any collection and treatment facilities);
 2. it obtains all of its water from, but is not owned or operated by, a public water system to which these regulations apply;
 3. it does not sell water to any person;
 4. it is not a carrier that conveys passengers in interstate commerce; and
 5. it does not provide water to any school, tribal, state or federal governmental employees or private entity serving an average of twenty-five (25) or more employees or individuals daily at least 60 days out of the year.
- C. These regulations are effective immediately upon promulgation, which occurs upon approval by the Resources Committee, unless specific regulations herein provide for a different effective date.

§ 108 SEVERABILITY

If any provision of these regulations or the application thereof to any person or circumstance is held invalid, the remainder of these regulations and the application of such provision to other persons or circumstances shall remain unaffected, and to this end the provisions of these regulations are declared to be severable.

§ 109 OPERATING PERMITS

- A. Public water systems and bottled water systems shall obtain and maintain an operating permit from the Director.
- B. For existing public water systems and bottled water systems, for the first time, the owner or the entity responsible for operation and maintenance shall complete and submit an application form for an operating permit within ninety (90) days of the effective date of these regulations, as provided in § 202 of the Uniform Rules. A copy of the application form may be obtained from the Public Water Systems Supervision Program. If an existing system has submitted a timely and complete application for an operating permit (including a renewal operating permit), but the Director has not taken final action on the application, the existing system's failure to have a permit shall not be a violation of the NNSDWA or these regulations, unless the delay in final action was due to the failure of the applicant to timely submit information required or requested to process the application.
- C. For new public water systems and bottled water systems, the owner or the entity responsible for operation and maintenance shall submit an operating permit application after obtaining the approval of construction from the Director.
- D. The owner or the entity responsible for operation and maintenance shall submit an application fee together with the operating permit application, as determined by the Director, and as provided in § 202(a) of the Uniform Rules.
- E. The Director will review the application for completeness and will issue the Operating Permit pursuant to the permitting provisions in subpart 2 of the Uniform Rules.
- F. For new public water systems, a certified operator of appropriate level as determined according to §1405 must be assigned to the system before the operating permit can be issued. Existing systems that do not have an operator certified to the appropriate level shall obtain certification within the time specified in the operating permit.
- G. The operating permit shall be good for three (3) years. Application for renewal must be submitted at least 30 days before the expiration of the permit. The renewal fee will be the same as the first time application fee as given in §109(D).
- H. The Director may revoke an operating permit according to the procedures in § 204 of the Uniform Rules, for any water system that is unable to demonstrate its ability to remain a viable water system, as defined in § 104 of NNPDWR.

- I. The Director may modify an operating permit at any time to include any new promulgated requirements of the NNSDWA or NNPDWR to include any approved or permitted construction modifications to the system, or to modify a compliance schedule. The Director will modify a permit according to the procedures set forth in the Uniform Rules.
- J. The permittee may request a modification of the operating permit at anytime with adequate justification. The permittee shall complete and submit to the Director an operating permit application form along with a detailed justification for the modification(s) requested. Permit modifications will be issued by the Director on a case by case basis, pursuant to § 204 of the Uniform Rules.
- K. An operating permit is non-transferable, except with prior approval of the Director. The permittee shall submit written notification to the Director at least 30 days in advance of the proposed transfer. This notification shall include an operating permit application form which has been completed by the proposed new owner of the system. The Director may request on a case by case basis that the proposed new owner of the system submit a business plan which shows how the system will be managed to ensure its long term viability. If the Director approves the transfer, a new operating permit will be issued to the new owner of the system.
- L. If an existing public water system or a bottled water system is out of compliance with any of the requirements of the NNSDWA or NNPDWR, the Director may include in the operating permit a schedule for achieving compliance with such requirements.
- M. If an existing public water system is divided into two or more smaller water systems, each of the smaller water systems shall comply with the water quality monitoring requirements of the water system prior to it being divided.
- N. An operating permit does not convey any property right of any sort, or any exclusive privilege.
- O. The permittee shall allow the Director or an authorized representative, upon the presentation of credentials and/or other documentation as may be required by law, to:
1. Gain entry into the permittee's premises where a regulated facility or activity is located or conducted, or where records are kept;
 2. Have access to and copy any records that must be kept under the conditions of this permit;
 3. Inspect at reasonable times any facility, equipment, practice or operation regulated or required under this permit; and
 4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the NNSDWA, any substance or parameter at any location.
- P. The permittee shall report any noncompliance which may endanger public water systems or public health. An oral report, by telephone or in person, must be provided to the Public Water Systems Supervision Program within 24 hours from the time the permittee becomes aware of the circumstances. A written report shall follow within 5 working days of the time the permittee becomes aware of the circumstances. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times and, if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
- Q. All public water systems should develop an "Operation and Maintenance Manual" and a copy of the manual should be readily accessible to the inspectors from the Navajo Nation Environmental Protection Agency when requested. The manual should contain the following information:
1. Schematics of the system showing sources, treatment processes, storage, distribution mains, service lines, pumps, valves, pressure tanks, hydrants, and control systems;
 2. Details about manual, automatic, and semi-automatic controls and trouble-shooting for all the pumps, valves, tanks and treatment units;
 3. Safety procedures for chemical handling, explosion and fire hazards;

4. Water sampling requirements and schedules including a sampling site plan; and
5. Emergency water supply plan.

§ 110 NO WAIVER OF SOVEREIGN IMMUNITY

These regulations shall not constitute a waiver of sovereign immunity. NNEPA assumes no liability for public water system malfunction or under-performance. NNEPA only prescribes minimum design requirements, which shall not diminish the duty of owners and operators to comply with applicable statutes and regulations and industry standards and to provide adequate system design, construction, operation, maintenance and performance.

**PART II
MAXIMUM CONTAMINANT LEVELS**

§ 201 PURPOSE

The purpose of this part is to define the Maximum Contaminant Levels, or MCL, for each contaminant.

§ 202 SPECIAL MAXIMUM CONTAMINANT LEVELS for ARSENIC and NITRATE

A. The MCL for arsenic of 0.010 mg/L or 10 parts per billion (10ppb) applies to community water systems and non-transient, non-community water systems and shall become effective January 23, 2006.

1. Compliance with the MCL for arsenic is calculated pursuant to § 405.
2. The owner/operator shall report the most recent arsenic levels in their water systems. These levels and health effects shall be reported in the Consumer Confidence Reports required by Part XII of these regulations.

B. The MCL for nitrate is 10mg/L or 10 parts per million (10ppm).

C. At the discretion of the Director, nitrate levels not exceeding 20 mg/L may be allowed in a non-community water system if the public water system owner or operator demonstrates to the satisfaction of the Director that:

1. Such water will not be available to children under six months of age;
2. There will be continuous public notification stating that nitrate levels exceed 10 mg/L and lists the potential health effects due to exposure;
3. PWSSP shall be notified annually of nitrate levels that exceed 10 mg/L; and
4. No adverse health effects shall result.

§ 203 MAXIMUM CONTAMINANT LEVELS and MAXIMUM CONTAMINANT LEVEL GOALS FOR INORGANIC CONTAMINANTS

A. Applicability

1. The MCLs for inorganic contaminants (1)-(10), (12)-(13), and (17)-(18) of Table 200.1 applies to community water systems (CWS) and non-transient, non-community water systems (NTNCWS).
2. The MCL specified in (11) of Table 200.1 only applies to CWSs.
3. The MCLs specified in (14)-(16) of Table 200.1 apply to CWSs; NTNCWSs; and transient non-community water systems (TNCWS).
4. The MCLs specified in (14), (15) and (16) of Table 200.1 apply to consecutive public water systems. Other MCL sampling requirements will be determined, by the Director, after a sanitary survey of the system, a wellhead protection delineation or a vulnerability assessment survey indicates that further sampling requirements are needed. MCL sampling for asbestos (4) is required for those systems with asbestos-cement pipe in the distribution system.
5. BAT(s) are the best available technology, treatment technique, or other means available for achieving compliance with the MCLs for inorganic contaminants and are identified in Table 200.1.

TABLE 200.1 MAXIMUM CONTAMINANT LEVELS, MAXIMUM CONTAMINANT LEVEL GOALS with EFFECTIVE DATES for INORGANIC CONTAMINANTS

#	EFFECTIVE DATE	CONTAMINANT	MCL mg/L	MCLG mg/L	BATs
1	3/21/1996	Antimony	0.006	0.006	2,7

2	3/21/1996	Arsenic ⁴	0.05	Zero	1,2,5,6,7,9,12 ⁵
3	1/23/2006	Arsenic ⁴	0.010 ⁶	Zero	1,2,5,6,7,9,12 ⁵
4	3/21/1996	Asbestos	7 million fibers/liter (longer than 10µm)	7 million fibers/liter (longer than 10µm)	2,3,8
5	3/21/1996	Barium	2	2	5,6,7,9
6	3/21/1996	Beryllium	0.004	0.004	1,2,5,6,7
7	3/21/1996	Cadmium	0.005	0.005	2,5,6,7
8	3/21/1996	Chromium	0.1	0.1	2,5,6 ² , 7
9	3/21/1996	Copper		1.3	
10	3/21/1996	Cyanide (as free cyanide)	0.2	0.2	5,7,10
11	3/21/1996	Fluoride	4.0	4.0	
12	3/21/1996	Lead	0.015	Zero	
13	3/21/1996	Mercury	0.002	0.002	2 ¹ ,4,6 ¹ ,7 ¹
14	3/21/1996	Nitrate	10 (as Nitrogen)	10 (as Nitrogen)	5,7,9
15	3/21/1996	Nitrite	1 (as Nitrogen)	1 (as Nitrogen)	5,7
16	3/21/1996	Total Nitrate and Nitrite	10 (as Nitrogen)	10 (as Nitrogen)	
17	3/21/1996	Selenium	0.05	0.05	1,2 ³ ,6,7,9
18	3/21/1996	Thallium	0.002	0.0005	1,5

¹ BAT only if influent Hg concentrations #10 micrograms/liter.

² BAT for Chromium III only.

³ BAT for Selenium IV only.

⁴ BATs for Arsenic V. Pre-oxidation may be required to convert Arsenic III to Arsenic V.

⁵ To obtain high removals, iron to arsenic ratio must be at least 20:1.

⁶ This MCL will replace the 0.05 mg/L MCL and will apply to CWS and NTNCWS, effective January 23, 2006.

Key to BAT(s) in Table 200.1

1 = Activated Alumina 2 = Coagulation/Filtration (Not BAT for systems <500 service connections) 3 = Direct & Diatomite Filtration	4 = Granular Activated Carbon 5 = Ion Exchange 6 = Lime Softening (Not BAT for systems <500 service connections)	7 = Reverse Osmosis 8 = Corrosion Control 9 = Electrodialysis 10= Chlorine 11= Ultraviolet 12= Oxidation / Filtration
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6. The Administrator, pursuant to section 1412 of the Safe Drinking Water Act (SDWA), hereby identifies in the following table the affordable technology, treatment technique or other

means available to systems serving 10,000 persons or fewer for achieving compliance with the maximum contaminant level for arsenic:

TABLE 200.2 SMALL SYSTEM COMPLIANCE TECHNOLOGIES (SSCT)¹ FOR ARSENIC²

Small system compliance technology	Affordable for listed small system categories ³
Activated Alumina (centralized)	All size categories.
Activated Alumina (Point-of-Use) ⁴	All size categories.
Coagulation/Filtration ⁵	501-3,300 and 3,301-10,000.
Coagulation-assisted Micro-filtration	501-3,300 and 3,301-10,000.
Electrodialysis reversal ⁶	501-3,300 and 3,301-10,000.
Enhanced coagulation/Filtration	All size categories.
Enhanced lime softening (pH>10.5)	All size categories.
Ion Exchange	All size categories.
Lime Softening	501-3,300 and 3,301-10,000.
Oxidation/Filtration ⁷	All size categories.
Reverse Osmosis (centralized) ⁶	501-3,300 and 3,301-10,000.
Reverse Osmosis (Point-of-Use) ⁴	All size categories.

¹Section 1412 (b) (4) (E) (ii) of the SDWA specifies that SSCTs must be affordable and technically feasible for small systems.

²SSCTs for Arsenic V. Pre-oxidation may be required to convert Arsenic III to Arsenic V.

³The Act (ibid.) Specifies three categories of small systems; (i) those serving 25 or more, but fewer than 501, (ii) those serving more than 500, but fewer than 3,301, and (iii) those serving more than 3,300 but fewer than 10,001.

⁴When POU or POE devices are used for compliance, programs to ensure proper long-term operation, maintenance, and monitoring must be provided by the water system to ensure adequate performance.

⁵Unlikely to be installed solely for arsenic removal. May require pH adjustment to optimal range if high removals are needed.

⁶Technologies reject a large volume of water, may not be appropriate for areas where water quantity may be an issue.

⁷To obtain high removals, iron to arsenic ratio must be at least 20:1.

§ 204 MAXIMUM CONTAMINANT LEVELS and MAXIMUM CONTAMINANT LEVEL GOALS FOR ORGANIC CONTAMINANTS

A. Applicability

1. The following MCLs for organic contaminants apply to CWSs and NTNCWSs.

TABLE 200.3 MAXIMUM CONTAMINANT LEVELS and MAXIMUM CONTAMINANT LEVEL GOALS for VOLATILE ORGANIC CHEMICALS with EFFECTIVE DATES

#	CAS ¹ No.	EFFECTIVE DATES	CONTAMINANT	MCL mg/L	MCLG mg/L
1	75-01-4	3/21/1996	Vinyl chloride	0.002	0.00
2	71-43-2	3/21/1996	Benzene	0.005	0.00
3	56-23-5	3/21/1996	Carbon tetrachloride	0.005	0.00
4	107-06-2	3/21/1996	1,2-Dichloroethane	0.005	0.00
5	79-01-6	3/21/1996	Trichloroethylene	0.005	0.00

6	106-46-7	3/21/1996	para-Dichlorobenzene	0.075	0.075
7	75-35-4	3/21/1996	1,1-Dichloroethylene	0.007	0.007
8	71-55-6	3/21/1996	1,1,1-Trichloroethane	0.2	0.20
9	156-59-2	3/21/1996	cis-1,2-Dichloroethylene	0.07	0.07
10	78-87-5	3/21/1996	1,2-Dichloropropane	0.005	0.00
11	100-41-4	3/21/1996	Ethylbenzene	0.7	0.7
12	108-90-7	3/21/1996	Monochlorobenzene	0.1	0.1
13	95-50-1	3/21/1996	o-Dichlorobenzene	0.6	0.6
14	100-42-5	3/21/1996	Styrene	0.1	0.1
15	127-18-4	3/21/1996	Tetrachloroethylene	0.005	0.00
16	108-88-3	3/21/1996	Toluene	1	1
17	156-60-5	3/21/1996	trans-1,2-Dichloroethylene	0.1	0.1
18	1330-20-7	3/21/1996	Xylenes (total)	10	10
19	75-09-2	3/21/1996	Dichloromethane	0.005	0.00
20	120-82-1	3/21/1996	1,2,4-Trichlorobenzene	0.07	0.07
21	79-00-5	3/21/1996	1,1,2-Trichloroethane	0.005	0.003

¹Chemical Abstract Service Number

2. The following MCLs and MCLGs for synthetic organic contaminants apply to CWSs and NTNCWS.

TABLE 200.4 MAXIMUM CONTAMINANT LEVELS, MAXIMUM CONTAMINANT LEVEL GOALS with EFFECTIVE DATES for SYNTHETIC ORGANIC CHEMICALS

#	CAS No.	EFFECTIVE DATES	CONTAMINANT	MCL mg/L	MCLG mg/L
1	15972-60-8	3/21/1996	Alachlor	0.002	0.00
2	116-06-3	3/21/1996	Aldicarb	0.003	0.001
3	1646-87-3	3/21/1996	Aldicarb sulfoxide	0.004	0.001
4	1646-87-4	3/21/1996	Aldicarb sulfone	0.002	0.001
5	1912-24-9	3/21/1996	Atrazine	0.003	0.003
6	1563-66-2	3/21/1996	Carbofuran	0.04	0.04
7	57-74-9	3/21/1996	Chlordane	0.002	0.00
8	96-12-8	3/21/1996	Dibromochloropropane	0.0002	0.00
9	94-75-7	3/21/1996	2,4-D	0.07	0.07
10	106-93-4	3/21/1996	Ethylene dibromide	0.00005	0.00

11	76-44-8	3/21/1996	Heptachlor	0.0004	0.00
12	1024-57-3	3/21/1996	Heptachlor epoxide	0.0002	0.00
13	58-89-9	3/21/1996	Lindane	0.0002	0.0002
14	72-43-5	3/21/1996	Methoxychlor	0.04	0.04
15	1336-36-3	3/21/1996	Polychlorinated biphenyls	0.0005	0.00
16	87-86-5	3/21/1996	Pentachlorophenol	0.001	0.00
17	8001-35-2	3/21/1996	Toxaphene	0.003	0.00
18	93-72-1	3/21/1996	2,4,5-TP	0.05	0.05
19	50-32-8	3/21/1996	Benzo[a]pyrene	0.0002	0.00
20	75-99-0	3/21/1996	Dalapon	0.2	0.2
21	103-23-1	3/21/1996	Di(2-ethylhexyl) adipate	0.4	0.4
22	117-81-7	3/21/1996	Di(2-ethylhexyl) phthalate	0.006	0.00
23	88-85-7	3/21/1996	Dinoseb	0.007	0.007
24	85-00-7	3/21/1996	Diquat	0.02	0.02
25	145-73-3	3/21/1996	Endothall	0.1	0.1
26	72-20-8	3/21/1996	Endrin	0.002	0.002
27	1071-83-6	3/21/1996	Glyphosate	0.7	0.7
28	118-74-1	3/21/1996	Hexachlorobenzene	0.001	0.00
29	77-47-4	3/21/1996	Hexachlorocyclopentadiene	0.05	0.05
30	23135-22-0	3/21/1996	Oxamyl (Vydate)	0.2	0.2
31	1918-02-1	3/21/1996	Picloram	0.5	0.5
32	122-34-9	3/21/1996	Simazine	0.004	0.004
33	1746-01-6	3/21/1996	2,3,7,8-TCDD (Dioxin)	3x10 ⁻⁸	0.00

B. The Administrator pursuant to §1412 of the SDWA has identified as indicated in Table 200.5 the granular activated carbon (GAC), packed tower aeration (PTA), or oxidation (OX) techniques as the best technology treatment technique or other means available for achieving compliance with the MCL for organic contaminants identified in subsections (A)(1) and (A)(2) of this section:

TABLE 200.5 BAT FOR ORGANIC CONTAMINANTS (SYNTHETIC AND VOLATILE)

#	CAS No.	CONTAMINANT	GAC	PTA	OX
1	15972-60-8	Alachlor	X		
2	116-06-3	Aldicarb	X		
3	1646-88-4	Aldicarb sulfone	X		
4	1646-87-3	Aldicarb sulfoxide	X		
5	1912-24-9	Atrazine	X		
6	71-43-2	Benzene	X	X	
7	50-32-8	Benzo[a]pyrene	X		
8	1563-66-2	Carbofuran	X		
9	56-23-5	Carbon tetrachloride	X	X	
10	57-74-9	Chlordane	X		
11	75-99-0	Dalapon	X		
12	94-75-7	2,4-D	X		
13	103-23-1	Di(2-ethylhexyl)adipate	X	X	
14	117-81-7	Di(2-ethylhexyl)phthalate	X		
15	96-12-8	Dibromochloropropane (DBCP)	X	X	
16	95-50-1	o-Dichlorobenzene	X	X	
17	106-46-7	para-Dichlorobenzene	X	X	
18	107-06-2	1,2-Dichloroethane	X	X	
19	75-35-4	1,1-Dichloroethylene	X	X	
20	156-59-2	cis-1,2-Dichloroethylene	X	X	
21	156-60-5	trans-1,2-Dichloroethylene	X	X	
22	75-09-2	Dichloromethane		X	
23	78-87-5	1,2-Dichloropropane	X	X	
24	88-85-7	Dinoseb	X		
25	85-00-7	Diquat	X		
26	145-73-3	Endothall	X		

27	72-20-8	Endrin	X		
28	100-41-4	Ethylbenzene	X	X	
29	106-93-4	Ethylene Dibromide (EDB)	X	X	
30	1071-83-6	Glyphosate			X
31	76-44-8	Heptachlor	X		
32	1024-57-3	Heptachlor epoxide	X		
33	118-74-1	Hexachlorobenzene	X		
34	77-47-3	Hexachlorocyclopentadiene	X	X	
35	58-89-9	Lindane	X		
36	72-43-5	Methoxychlor	X		
37	108-90-7	Monochlorobenzene	X	X	
38	23135-22-0	Oxamyl (Vydate)	X		
39	87-86-5	Pentachlorophenol	X		
40	1918-02-1	Picloram	X		
41	1336-36-3	Polychlorinated biphenyls (PCB)	X		
42	122-34-9	Simazine	X		
43	100-42-5	Styrene	X	X	
44	1746-01-6	2,3,7,8-TCDD (Dioxin)	X		
45	127-18-4	Tetrachloroethylene	X	X	
46	108-88-3	Toluene	X	X	
47	8001-35-2	Toxaphene	X		
48	93-72-1	2,4,5-TP (Silvex)	X		
49	120-82-1	1,2,4-Trichlorobenzene	X	X	
50	71-55-6	1,1,1-Trichloroethane	X	X	
51	79-00-5	1,1,2-Trichloroethane	X	X	
52	79-01-6	Trichloroethylene	X	X	
53	75-01-4	Vinyl chloride		X	

54	1330-20-7	Xylene	X	X	
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§ 205 MAXIMUM CONTAMINANT LEVELS and MAXIMUM CONTAMINANT LEVEL GOALS FOR MICROBIOLOGICAL CONTAMINANTS

A. A public water system must determine compliance with the MCL for ~~total coliforms~~ E. coli in subsections (B) and (C) of this section for each month in which it is required to monitor for total coliforms.

B. Applicability

1. The provisions of this section apply to all public water systems.

TABLE 200.6 MAXIMUM CONTAMINANT LEVELS and MAXIMUM CONTAMINANT LEVEL GOALS FOR MICROBIOLOGICAL CONTAMINANTS

#	CONTAMINANT	MCL	MCLG
1	<i>Giardia lamblia</i>	zero	zero
2	Viruses	zero	zero
3	<i>Legionella</i>	zero	zero
4	Total coliforms (including fecal coliforms and Escherichia coli)	zero	zero
<u>4</u> <u>5</u>	Cryptosporidium	zero	zero
<u>5</u>	<u><i>Escherichia coli</i> (E. coli)</u>	<u>See § 205(C)</u>	<u>zero</u>

C. Compliance

1. ~~1. For a system that collects 40 or more samples per month, the system is in compliance with the MCL for total coliforms if no more than 5.0% of the samples collected during the month are total coliform-positive.~~

~~2. For a system that collects less than 40 samples per month, the system is in compliance with the MCL for total coliforms if no more than one sample collected during the month is total coliform-positive.~~

~~3. Any fecal coliform-positive repeat sample or E.coli-positive repeat sample, or any total coliform-positive repeat sample following a fecal coliform-positive or E.coli-positive routine sample constitutes a violation of the MCL for total coliforms. For purposes of the public notification requirements in Part VI, this is a violation that may pose an acute risk to health.~~

A system is in compliance with the MCL for E. coli for samples taken under the provisions of Part XXVII of these regulations unless any of the conditions identified in subsections (C)(1)(a) through (C)(1)(d) of this section occur. For purposes of the public notification requirements in Part VI of these regulations, violation of the MCL may pose an acute risk to health.

a. The system has an E. coli-positive repeat sample following a total coliform-positive routine sample.

- b. The system has a total coliform-positive repeat sample following an *E. coli*-positive routine sample.
- c. The system fails to take all required repeat samples following an *E. coli*-positive routine sample.
- d. The system fails to test for *E. coli* when any repeat sample tests positive for total coliform.

D. The following are identified as the best available technology, treatment techniques, or other means to achieve compliance with the MCL for ~~total coliforms~~ *E. coli* in subsections (B) and (C) of this section:

- 1. Protection of wells from ~~total coliform~~ fecal contamination by appropriate construction and location;
- 2. Maintain a disinfectant residual throughout the distribution system;
- 3. Proper maintenance of the distribution system including appropriate pipe replacement and repair procedures, adequate flushing programs, proper operation and maintenance of storage tanks and reservoirs, and continual maintenance of positive water pressure in all parts of the distribution system;
- 4. Filtration and/or disinfection of surface water, as described in Parts ~~VIII and XIII~~ VIII, XIII, XXI and XXIV of these regulations (General Requirements for Surface Water Treatment and Enhanced Surface Water Treatment), or disinfection of groundwater, as described in Part XXV of these regulations, using strong oxidants such as chlorine, chlorine dioxide, or ozone;
- 5. For systems using groundwater, compliance with the requirements of an NNEPA-approved Wellhead Protection Program that is developed and implemented pursuant to § 2538 of the NNSDWA and Part XVII of these regulations-Wellhead Protection Regulations; and
- 6. Proper placement, maintenance and testing of backflow prevention and cross connection devices, as described in Part XX of these regulations.

E. The technology, treatment techniques, or other means available identified in subsection (D) of this section are hereby identified as affordable technology, treatment techniques, or other means available to systems serving 10,000 or fewer people for achieving compliance with the maximum contaminant level for *E. coli* in subsections (B) and (C) of this section.

§ 206 MAXIMUM CONTAMINANT LEVELS FOR TURBIDITY

The MCL for turbidity are applicable to both community and non-community water systems using surface water sources in whole or in part. The MCL for turbidity in drinking water, measured at a representative entry point(s) to the distribution system are:

- A. One turbidity unit (TU), as determined by a monthly average pursuant to § 414, except that five or fewer turbidity units may be allowed if the public water system owner or operator can demonstrate to the Director that the higher turbidity level does not:
 - 1. Interfere with disinfection;
 - 2. Prevent maintenance of an effective disinfectant agent throughout the distribution system; or
 - 3. Interfere with microbiological determinations.
- B. Five turbidity units based on an average for two consecutive days pursuant to § 414.

§ 207 MAXIMUM CONTAMINANT LEVELS and MAXIMUM CONTAMINANT LEVEL GOALS for DISINFECTION BYPRODUCTS

A. Applicability

1. The MCLs and MCLGs for Disinfection Byproducts are as follows:

TABLE 200.7 MCLs FOR DISINFECTION BYPRODUCTS

Disinfection Byproduct	MCL (mg/L)	MCLG (mg/L)
Total Trihalomethanes (TTHM)	0.080	
Haloacetic acids (five) (HAA5)	0.060	
Bromate	0.010	Zero
Chlorite	1.0	0.8
Bromodichloromethane		Zero
Bromoform Chloroform		Zero
Dichloroacetic Acid		0.07
Trichloroacetic Acid		Zero
Dibromochloromethane		0.02
Monochloroacetic Acid		0.06
		0.07

B. Compliance Dates

1. All CWSs and NTNCWSs:
 - a. Part VIII - General Requirements for Surface Water Systems serving 10,000 or more persons must comply with this section upon promulgation of these regulations;
 - b. Part VIII - General Requirements for Surface Water Systems serving fewer than 10,000 persons must comply with this section beginning January 1, 2004;
 - c. Public water systems using only ground water not under the direct influence of surface water must comply with this section beginning January 1, 2004.
 - d. All systems must comply with the MCLs listed in this section until the date specified for Part XXIII compliance in §2300(C).
 - i. Part XXIII MCLs for TTHM and HAA5 must be complied with as a locational running annual average at each monitoring location beginning with the date specified for Part XXIII compliance in §2301(C).
2. A system that is installing GAC or membrane technology to comply with this section may apply to the Director for an extension of up to 24 months past the date of promulgation of these regulations, but not beyond December 31, 2003. In granting the extension, the Director must set a schedule for compliance and may specify any interim measures that the system must take. Failure to meet the schedule or interim treatment requirements constitutes a violation of the NNPdWR.

- C. The Administrator, pursuant to § 1412 of the SDWA, has identified the following as the best available technology, treatment techniques, or other means available to achieve compliance with the MCLs for disinfection byproducts identified in subsection (A) of this section:

TABLE 200.8 BATs FOR DISINFECTION BYPRODUCTS

Disinfection Byproduct	Best Available Technology
TTHM	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant.
HAA5	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant.
Bromate	Control of ozone treatment processes to reduce production of bromate.
Chlorite	Control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels.
§200 MCLs-NNPDWR	

D. The Administrator, pursuant to section 1412 of the SDWA, hereby identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for TTHM and HAA5 identified in this subsection (D) for all systems that disinfect their source water:

Disinfection byproduct	Best available technology
Total trihalomethanes (TTHM) and Haloacetic acids (five) (HAA5).	Enhanced coagulation or enhanced softening, plus GAC10; or nanofiltration with a molecular weight cutoff ≤ 1000 Daltons; or GAC20.

E. The Administrator, pursuant to section 1412 of the SDWA, hereby identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for TTHM and HAA5 identified in this subsection (E) for consecutive systems that buy or otherwise receive finished water:

Disinfection byproduct	Best available technology
Total trihalomethanes (TTHM) and Haloacetic acids (five) (HAA5).	Systems serving $\geq 10,000$: Improved distribution system and storage tank management to reduce residence time, plus the use of chloramines for disinfectant residual maintenance Systems serving $\leq 10,000$: Improved distribution system and storage tank management to reduce residence time

§ 208 MAXIMUM RESIDUAL DISINFECTANT LEVELS and MAXIMUM RESIDUAL DISINFECTANT LEVEL GOALS

A. Applicability

1. The Maximum Residual Disinfectant Levels and Maximum Residual Disinfectant Level Goals are as follows:

TABLE 200.9 MAXIMUM RESIDUAL DISINFECTANT LEVELS (MRDLs) and MAXIMUM RESIDUAL DISINFECTANT LEVEL GOALS (MRDLGs)

Disinfectant residual	MRDL (mg/L)		MRDLG (mg/L)
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Chlorine	4.0 (as Cl ₂)	4.0 (as Cl ₂)
Chloramines	4.0 (as Cl ₂)	4.0 (as Cl ₂)
Chlorine dioxide	0.8 (as ClO ₂)	0.8 (as ClO ₂)

B. Compliance Dates

1. All CWSs and NTNCWSs:

- a. Part VIII - General Requirements for Surface Water Systems serving 10,000 or more persons must comply with this section upon promulgation of these regulations;
- b. Part VIII - General Requirements for Surface Water Systems serving fewer than 10,000 persons must comply with this section beginning January 1, 2004;
- c. Public water systems using only ground water, not under the direct influence of surface water, must comply with this section beginning January 1, 2004.

2. All TNCWSs:

- a. Part VIII - General Requirements for Surface Water Systems serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL upon promulgation of these regulations;
- b. Part VIII - General Requirements for Surface Water Systems serving fewer than 10,000 persons and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004;
- c. Public water systems using only ground water, not under the direct influence of surface water, and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004.

C. The Administrator, pursuant to §1412 of the SDWA, has identified the following as the best available technology, treatment techniques, or other means available to achieve compliance with the maximum residual disinfectant levels identified in subsection (A) of this section: control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels.

§ 209 MAXIMUM CONTAMINANT LEVELS AND MAXIMUM CONTAMINANT LEVEL GOALS FOR RADIONUCLIDES

A. Applicability

1. The following MCLs and MCLGs for radionuclides apply to CWSs.

Table 200.10 MAXIMUM CONTAMINANT LEVELS and MAXIMUM CONTAMINANT LEVEL GOALS FOR RADIONUCLIDES

#	Contaminant	MCL	MCLG
1	Gross alpha particle activity	15 pCi/L (including radium-226 but excluding radon and uranium)	Zero
2	Combined radium-226 and radium-228	5 pCi/L (see note 1 below)	Zero
3	Beta particle and photon radioactivity	4 millirem/year (see notes 2 and 3 below)	Zero
4	Uranium	30 micrograms per liter (µg/L)	Zero

Notes:

1. The combined radium-226 and radium-228 value is determined by adding the results of the analysis for radium-226 and the analysis for radium-228.
2. The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in drinking water must not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem/year (mrem/year).
3. Except for the radionuclides listed in Table 200.11, the concentration of man-made radionuclides causing 4 mrem total body or organ dose equivalents must be calculated on the basis of 2 liters per day drinking water intake using the 168 hour data list in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," NBS (National Bureau of Standards) Handbook 69 as amended August 1963, U.S. Department of Commerce¹. If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ shall not exceed 4 mrem/year.

¹ This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of this document are available from the National Technical Information Service, NTIS ADA 280 282, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. The toll-free number is 800-553-6847. Copies may be inspected at EPA's Drinking Water Docket, 401 M Street, SW., Washington, DC 20460; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.

TABLE 200.11 AVERAGE ANNUAL CONCENTRATIONS ASSUMED TO PRODUCE A TOTAL BODY OR ORGAN DOSE OF 4 mrem/yr

#	Radionuclide	Critical organ	pCi per liter
1	Tritium	Total body	20,000
2	Strontium-90	Bone marrow	8

B. Compliance dates for combined radium-226 and radium-228, gross alpha particle activity, gross beta particle, photon radioactivity, and uranium:

- CWSs must comply with the MCLs listed in Table 200.10 beginning December 8, 2003 and compliance shall be determined in accordance with the requirements of § 411. Compliance with the reporting requirements for radionuclides is listed in Part XII (Consumer Confidence Report) Appendix F and Part VI (Public Notification) Appendices B and is required beginning December 8, 2003.

C. BATs for radionuclides

- The Administrator pursuant to § 1412 of the SDWA has identified as indicated in the following table, the best available technology to achieve compliance with the MCLs for combined radium-226 and radium-228, uranium, gross alpha particle activity, beta particle and photon radioactivity.

TABLE 200.12 BATs FOR COMBINED RADIUM-226 AND RADIUM-228, URANIUM, GROSS ALPHA PARTICLE ACTIVITY, BETA PARTICLE AND PHOTON RADIOACTIVITY

#	Contaminant	BATs
1	Combined radium-226 and radium-228	Ion exchange, reverse osmosis, lime softening
2	Uranium	Ion exchange, reverse osmosis, lime softening, coagulation/filtration
3	Gross alpha particle activity (excluding radon and uranium)	Reverse osmosis
4	Beta particle and photon radioactivity	Ion exchange, reverse osmosis

D. Compliance technologies for radionuclides for small water systems

TABLE 200.13 COMPLIANCE TECHNOLOGIES FOR RADIONUCLIDES FOR SMALL WATER SYSTEMS AND LIMITATIONS OF USE

#	Unit Technologies	Limitations (see footnotes)	Operator skill level ¹	Raw water quality range and considerations ¹
1.	Ion exchange (IE)	a	Intermediate	All ground waters
2.	Point of use (POU ²)	b	Basic	All ground waters
3.	Reverse osmosis (RO)	c	Advanced	Surface waters usually require pre-filtration
4.	POU ² RO	b	Basic	Surface waters usually require pre-filtration
5.	Lime softening	d	Advanced	All waters

6.	Green sand filtration	e	Basic	
7.	Co-precipitation with barium sulfate	f	Intermediate to Advanced	Ground waters with suitable water quality
8.	Electrodialysis/ electrodialysis reversal		Basic to Intermediate	All ground waters
9.	Pre-formed hydrous manganese oxide filtration	g	Intermediate	All ground waters
10.	Activated alumina	a, h	Advanced	All ground waters; competing anion concentrations may affect regeneration frequency
11.	Enhanced coagulation/ filtration	i	Advanced	Can treat a wide range of water qualities

¹ National Research Council (NRC). Safe Water from Every Tap: Improving Water Service to Small Communities. National Academy Press. Washington, D.C. 1997. Basic means Level 1, Intermediate means Level 2 or 3 and Advanced means Level 4 as defined in §1400.

² A POU, or "point-of-use" technology is a treatment device installed at a single tap used for the purpose of reducing contaminants in drinking water at that one tap. POU devices are typically installed at the kitchen tap. See the April 21, 2000 NODA for more details.

Limitations Footnotes: Technologies for Radionuclides:

- a The regeneration solution contains high concentrations of the contaminant ions. Disposal options should be carefully considered before choosing this technology.
- b When POU devices are used for compliance, programs for long-term operation, maintenance, and monitoring must be provided by water utility to ensure proper performance.
- c Reject water disposal options should be carefully considered before choosing this technology. See other RO limitations described in the SWTR Compliance Technologies Table.
- d The combination of variable source water quality and the complexity of the water chemistry involved may make this technology too complex for small surface water systems.
- e Removal efficiencies can vary depending on water quality.
- f This technology may be very limited in application to small systems. Since the process requires static mixing, detention basins, and filtration, it is most applicable to systems with sufficiently high sulfate levels that already have a suitable filtration treatment train in place.
- h This technology is most applicable to small systems that already have filtration in place. Handling of chemicals required during regeneration and pH adjustment may be too difficult for small systems without an adequately trained operator.
- i Assumes modification to a coagulation/filtration process already in place.

Table 200.14 COMPLIANCE TECHNOLOGIES BY SYSTEM SIZE CATEGORY FOR RADIONUCLIDES

#	Contaminant	Compliance Technologies ¹ for systems size categories (population served)		
		25-500	501-3,300	3,300-10,000
1	Combined radium-226 and radium-228	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9
2	Gross alpha particle activity	3, 4	3, 4	3, 4
3	Beta particle activity and photon activity	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4
4	Uranium	1, 2, 4, 10, 11	1, 2, 3, 4, 5, 10, 11	1, 2, 3, 4, 5, 10, 11

NOTE: ¹Numbers correspond to those technologies found listed in the Table 200.13 of this section.

§ 210 Reserved

Part III
SANITARY SURVEYS

§301 PURPOSE

Sanitary surveys, or on-site inspections, are conducted to evaluate public water systems for delivery of safe drinking water by assessing operation and maintenance practices, providing technical assistance, and determining compliance with the NNSDWA and the NNPDR.

§302 AUTHORITY

Pursuant to the NNSDWA § 107(A), 22 N.N.C. § 2507(A), the Director has the authority to require PWSs to respond to significant deficiencies found in a sanitary survey, to conduct a Composite Correction Program (CCP), and to assure that PWSs implement any follow-up recommendations that result from the CCP.

§303 GUIDELINES FOR SANITARY SURVEYS

Sanitary surveys, or on-site inspections, will be performed by the PWSSP, in accordance with the United States Environmental Protection Agency, Region 9's *Conducting Sanitary Surveys of Public Water Systems Guidance*.

§304 SANITARY SURVEYS

- A. Groundwater systems must provide the Director, at his/her request, any existing information that will enable the Director to conduct a sanitary survey.
- B. For the purposes of this part, a "sanitary survey" as conducted by the Director, includes but is not limited to, an onsite review of the water source(s) (identifying sources of contamination by using results of source water assessments or other relevant information, where available), facilities, equipment, operation, maintenance, and monitoring compliance of a public water system to evaluate the adequacy of the system, its sources, and operations and the distribution of safe drinking water.
- C. The sanitary survey must include an evaluation of the applicable components listed in paragraphs (C)(1) through (8) of this section:
 - 1. Source,
 - 2. Treatment,
 - 3. Distribution system,
 - 4. Finished water storage,
 - 5. Pumps, pump facilities, and controls,
 - 6. Monitoring, reporting, and data verification,
 - 7. System management and operation, and
 - 8. Operator compliance with PWSSP requirements.

§ 305 SCHEDULING OF SANITARY SURVEYS

- A. The PWSSP will schedule surveys of all public water systems, as follows:
 - 1. Each public water system that utilizes a groundwater source(s) will be surveyed, or inspected, on a two to five year frequency based on the compliance status.
 - 2. Every surface water treatment plant will be inspected on an annual basis. The distribution system extending from the treatment plant will be inspected on a two to five year frequency.
 - 3. Every public water system that utilizes unfiltered Groundwater Under the Direct Influence of Surface Water will be inspected annually.
 - a. The public water system must be subject to an annual on-site inspection to assess the watershed control program and disinfection treatment process. Either the Director or a person approved by the Director must conduct the on-site inspection. The inspection must be conducted by competent individuals such as sanitary and civil engineers, sanitarians, or technicians who have experience and knowledge about the operation and maintenance of a public water system, and who have a sound understanding of public health principles and waterborne diseases. A report of the on-site inspection summarizing all findings must be prepared every year and forwarded to the Director. The on-site inspection must indicate to the Director's satisfaction that the watershed control program and disinfection treatment process are adequately designed and maintained. The on-site inspection must include:

- i. A review of the effectiveness of the watershed control program;
 - ii. A review of the physical condition of the source intake and how well it is protected;
 - iii. A review of the public water systems equipment maintenance program to ensure there is low probability for failure of the disinfection process;
 - iv. An inspection of the disinfection equipment for physical deterioration;
 - v. A review of operating procedures;
 - vi. A review of data records to ensure that all required tests are being conducted and recorded and disinfection is effectively practiced; and
 - vii. Identification of any improvements which are needed in the equipment, public water system maintenance and operation, or data collection.
4. Consecutive water systems will be inspected on a two to five year basis.
- ~~5. TNCWSSs using only protected and disinfected ground water, as defined by the Director, must undergo subsequent sanitary surveys at least every ten years after the initial sanitary survey. The Director must review the results of each sanitary survey to determine whether the existing monitoring frequency is adequate and what additional measures, if any, the system needs to undertake to meet drinking water standards.~~
- ~~6. In conducting a sanitary survey of a system using groundwater, information on sources of contamination within the delineated wellhead protection area, pursuant to §1700 of these regulations, that was collected in the course of developing and implementing the program will be considered instead of collecting new information, if the information was collected since the last time the system was subject to a sanitary survey.~~

§ 306

REPORTING

- 1. A report of findings will be sent to the owner/operator within 30 days after the inspection has been completed. The report will outline the compliance status with the NNSDWA and the NNPDR and any other deficiencies pertaining to the infrastructure, operation, and maintenance that may affect the delivery of safe drinking water. A courtesy copy will be forwarded to persons who participated in the sanitary survey.
- 2. The owner/operator shall respond to the report of findings and submit a compliance schedule that addresses each deficiency within 45 days after the date of inspection.

§ 307

INSPECTIONS OF NONCOMPLYING PUBLIC WATER SYSTEMS

- A. Public water systems that have been determined by the PWSSP to be in noncompliance will be inspected annually, or more frequently as needed, to bring the system into compliance.
- B. The PWSSP will conduct follow-up inspections of systems in noncompliance. PWSSP will provide technical assistance to owners/operators in order to achieve compliance.

**PART IV
SAMPLING AND ANALYTICAL REQUIREMENTS**

§ 401 PURPOSE

The purpose of this part is to ensure that all sampling and analytical requirements are consistent with the NNSDWA and the NNPDWR. A monitoring schedule may be prepared by the Navajo PWSSP staff for use by the public water system owner/operator to ensure compliance with the monitoring requirements.

NOTE: Analytical methodologies for each contaminant group are listed in Appendix A.

§ 402 CERTIFIED LABORATORIES

- A. For the purpose of determining compliance with §§ 404 through 415, Appendix A, C, and D, samples may be considered only if they have been analyzed by a laboratory approved by the EPA, except that measurements for alkalinity, calcium, conductivity, disinfectant residual, orthophosphate, pH, silica, temperature and turbidity may be performed by any person acceptable to the EPA.
- B. Nothing in these regulations shall be construed to preclude the Director or authorized representative(s) from taking samples or from using the results from such samples to determine compliance by a public water system owner or operator with applicable requirements of these regulations.

§ 403 [RESERVED] ~~SITE SAMPLING PLAN REQUIREMENTS~~

~~All public water systems must collect total coliform samples at sites which are representative of water throughout the distribution system according to a written site sampling plan. These site sampling plans are subject to NNEPA review and approval. Public water systems must update their existing site sampling plans upon promulgation of these regulations and every two years thereafter.~~

§ 404 MICROBIOLOGICAL SAMPLING AND ANALYTICAL REQUIREMENTS

Coliform bacteria sampling and analysis for all types of public water systems must be performed according to the provisions of Part XXVII of these regulations.

~~This section describes the total coliform sampling and analytical requirements for all types of public water systems.~~

~~A. ROUTINE SAMPLING~~

- ~~1. The monitoring frequency for total coliforms for public water systems is based on the population served by the system, see Table 400.1.~~

**~~TABLE 400.1 MINIMUM NUMBER OF TOTAL COLIFORM SAMPLES
BASED ON POPULATION~~**

POPULATION SERVED	MINIMUM NUMBER OF SAMPLES PER MONTH	POPULATION SERVED	MINIMUM NUMBER OF SAMPLES PER MONTH
25 to 1,000[†]	1	59,001 to 70,000	70
1,001 to 2,500	2	70,001 to 83,000	80
2,501 to 3,300	3	83,001 to 96,000	90
3,301 to 4,100	4	96,001 to 130,000	100
4,101 to 4,900	5	130,001 to 220,000	120
4,901 to 5,800	6	220,001 to 320,000	150
5,801 to 6,700	7	320,001 to 450,000	180
6,701 to 7,600	8	450,001 to 600,000	210

7,601 to 8,500	9	600,001 to 780,000	240
8,501 to 12,900	10	780,001 to 970,000	270
12,901 to 17,200	15	970,001 to 1,230,000	300
17,201 to 21,500	20	1,230,001 to 1,520,000	330
21,501 to 25,000	25	1,520,001 to 1,850,000	360
25,001 to 33,000	30	1,850,001 to 2,270,000	390
33,001 to 41,000	40	2,270,001 to 3,020,000	420
41,001 to 50,000	50	3,020,001 to 3,960,000	450
50,001 to 59,000	60	3,960,001 or more	480

~~1. Includes public water systems which have at least 15 service connections, but serve fewer than 25 persons.~~

~~2. All public water systems must collect samples at regular time intervals throughout the month.~~

~~a. Systems that use only groundwater and serve 4,900 persons or fewer may collect all required samples on a single day only if they are taken from different sites.~~

~~b. Systems serving 4,901 persons or more shall not collect all required samples on a single day.~~

~~c. Systems that use Groundwater Under the Direct Influence of Surface Water shall not collect all required samples on a single day.~~

~~3. This subsection applies to a public water system that uses surface water or ground water under the direct influence of surface water and does not practice filtration in compliance with Part VIII - General Requirements for Surface Water Treatment.~~

~~a. Each day the turbidity level of the source water exceeds 1 NTU, as specified in Appendix D § 801 D(C) (2), the system must collect at least one sample to be analyzed for the presence of total coliforms.~~

~~i. The sample shall be collected near the first service connection.~~

~~ii. The system shall collect this coliform sample within 24 hours of the first turbidity level exceedance.~~

~~b. If the public water system, for logistical reasons outside the system's control, cannot have the sample analyzed within 30 hours of collection, the owner/operator shall contact the Director and request for a time extension.~~

~~c. Sample results from this coliform sampling shall be included in determining compliance with the MCL for total coliforms in § 205.~~

~~4. The monitoring frequency for total coliforms for non-community water systems is as follows:~~

~~a. A non-community water system using only ground water (except GWUDI) and serving 1,000 persons or fewer must monitor each calendar quarter that the system provides water to the public, except that the Director may reduce this monitoring frequency, in writing, if a sanitary survey shows that the system is free of sanitary defects.~~

~~The Director cannot reduce the monitoring frequency for a non-community water system using only ground water (except GWUDI) and serving 1,000 persons or fewer to less than once/year.~~

~~b. A non-community water system using only ground water (except GWUDI) and serving more than 1,000 persons during any month must monitor at the same frequency as a like-sized community water system, as specified in subsection (A) (1) of this section, except the Director may reduce this monitoring frequency, in writing, for any month the system serves 1,000 persons or fewer.~~

~~The Director cannot reduce the monitoring frequency to less than once/year. For systems using ground water under the direct influence of surface water, paragraph (A) (4) (d) of this section applies.~~

~~c. A non-community water system using surface water, in total or in part, must monitor at the same frequency as a like-sized CWS as specified in subsection (A) (1) of this section, regardless of the number of persons it serves.~~

~~d. A non-community water system using ground water under the direct influence of surface water, as defined in §104, must monitor at the same frequency as a like-sized CWS as specified in subsection (A) (1) of this section. The system must begin monitoring at this frequency beginning six months after the Director determines that the ground water is under the direct influence of surface water.~~

~~6. Special purpose samples, such as those taken to determine whether disinfection practices are sufficient following pipe placement, replacement, or repair, shall not be used to determine compliance with the MCL for total coliforms in § 205.~~

~~7. Repeat samples taken pursuant to subsection (B) of this section are not considered special purpose samples, and must be used to determine compliance with the MCL for total coliforms in § 205.~~

~~B. REPEAT SAMPLING~~

~~1. If a routine sample is total coliform positive, the public water system must collect a set of repeat samples within 24 hours of being notified of the positive result.~~

~~The Director may extend the 24-hour limit, on a case-by-case basis, if the system has a logistical problem in collecting the repeat samples within 24 hours that is beyond its control. In the case of an extension, the Director must specify how much time the system has to collect the repeat samples.~~

~~a. Public water systems which collect two or more routine samples per month must collect a minimum of three repeat samples for each total coliform positive sample found.~~

~~b. Public water systems which collect one routine sample per month or fewer must collect a minimum of four repeat samples for each total coliform positive found.~~

~~2. The system must collect at least one repeat sample from:~~

~~a. the sampling tap where the original total coliform positive sample was taken, and~~

~~b. at least one repeat sample at a tap within five service connections upstream of the original sampling site, and~~

~~c. at least one repeat sample at a sampling tap within five service connections downstream of the original sampling site.~~

~~If a total coliform positive sample is at the beginning or end of the distribution system, the owner/operator shall notify the Director. Upon notification, the Director will designate other sampling points to satisfy the number of repeat sample requirements.~~

~~3. Public water systems must collect all repeat samples on the same day.~~

~~a. Except with the Director's approval, public water systems with a single service connection may collect:~~

~~i. repeat samples each day for four consecutive days to meet the number of repeat sample requirements; or~~

~~ii. a larger volume repeat sample(s) in one or more sample containers of any size, as long as the total volume collected is at least to 400 ml (300 ml for systems which collect more than one routine sample per month).~~

4. ~~If one or more repeat samples in one set is total coliform positive, the public water system must collect an additional set of repeat samples in the manner specified in subsections (B) (1) through (3) of this section.~~
 - a. ~~The additional samples must be collected within 24 hours of being notified of the positive result, unless the Director extends the limit as provided in subsection (B) (1) of this section.~~
 - b. ~~The water system must repeat this process until:~~
 - i. ~~either total coliforms are not detected in one complete set of repeat samples, or~~
 - ii. ~~the system determines that the MCL for total coliforms in § 205 has been exceeded and notifies the Director.~~
5. ~~If a system collecting less than five routine samples per month has one or more total coliform positive samples and the Director does not invalidate the sample(s) under subsection (D) of this section, then the water system must collect at least five routine samples during the next month the system provides water to the public.~~

The Director may waive this requirement if (a) or (b) below are met:

 - a. ~~The Director may waive the requirement to collect five routine samples if the PWSSP performs a site visit before the end of the next month the system provides water to the public. Although a sanitary survey need not be performed, the site visit must be sufficiently detailed to allow the Director to determine whether additional monitoring and/or any corrective action is needed. The Director cannot approve an employee of the public water system to perform this site visit, even if the employee is an agent approved by the Director to perform sanitary surveys; or~~
 - b. ~~The Director may waive the requirement to collect five routine samples if the Director has determined why the sample was total coliform positive and establishes that the system has corrected the problem or will correct the problem before the end of the next month the system serves water to the public.~~
 - i. ~~The Director must document this decision to waive the following month's additional monitoring requirement in writing and make this document available to the EPA and the public.~~
 - ii. ~~The written documentation must describe the specific cause of the total coliform positive sample and what action the system has taken, and/or will take, to correct this problem.~~
 - iii. ~~The Director cannot waive the requirement to collect five routine samples the next month the system provides water to the public solely on the grounds that all repeat samples are total coliform negative.~~
 - iv. ~~Under this subsection, a system must still take at least one routine sample before the end of the next month it serves water to the public and use it to determine compliance with the MCL for total coliforms in § 205, unless the Director has determined that the system has corrected the contamination problem before the system took the set of repeat samples required in subsections (B) (1) through (4) of this section, and all repeat samples were total coliform negative.~~
 - c. ~~The Director cannot waive the requirement for a system to collect repeat samples in subsections (B) (1) through (4) of this section.~~
6. ~~After a system collects a routine sample and before it learns the results of the analysis of that sample, if it collects another routine sample(s) from within five adjacent service connections of the initial sample, and the initial sample, after analysis, is found to contain total coliforms, then the system may count the subsequent sample(s) as a repeat sample instead of as a routine sample.~~
7. ~~Results of all routine and repeat samples not invalidated by the Director must be included in determining compliance with the MCL for total coliforms in § 205.~~

~~C. REDUCED MONITORING~~

~~If a community water system serving 25 to 1,000 persons has no history of total coliform contamination in its current configuration and a sanitary survey conducted in the past five years shows that the system is supplied solely by a protected groundwater source and is free of sanitary defects, the Director may reduce the monitoring frequency specified § 404 (A) (1), except that in no case may the Director reduce the monitoring frequency to less than one sample per quarter. The Director must approve the reduced monitoring frequency in writing.~~

~~D. INVALIDATION OF TOTAL COLIFORM SAMPLES~~

~~A total coliform positive sample invalidated under this subsection (D) does not count towards meeting the minimum sampling requirements of this section.~~

~~1. The Director may invalidate a total coliform positive sample only if the following conditions are met:~~

~~a. The laboratory establishes that improper sample analysis caused the total coliform positive result; or~~

~~b. The Director, on the basis of the results of repeat samples collected as required by subsections (B) (1) through (4) of this section, determines that the total coliform positive sample resulted from a domestic or other non-distribution system plumbing problem. The Director cannot invalidate a sample on the basis of a repeat sample result unless all repeat sample(s) collected at the same tap as the original total coliform positive sample are also total coliform positive, and all repeat samples collected within five service connections of the original tap are total coliform negative (e.g., the Director cannot invalidate a total coliform positive sample on the basis of repeat samples if all the repeat samples are total coliform negative, or if the public water system has only one service connection); or~~

~~c. The Director has substantial grounds to believe that a total coliform positive result is due to a circumstance or condition which does not reflect water quality in the distribution system. In this case, the system must still collect all repeat samples required under subsections (B) (1) through (4) of this section, and use them to determine compliance with the MCL for total coliforms in § 205.~~

~~i. To invalidate a total coliform positive sample under this subsection, the decision with the rationale for the decision must be documented in writing, approved and signed by the Director.~~

~~ii. The Director shall make this document available to EPA and the public.~~

~~iii. The written documentation must state the specific cause of the total coliform positive sample, and what action the system has taken, or will take, to correct this problem.~~

~~iv. The Director may not invalidate a total coliform positive sample solely on the grounds that all repeat samples are total coliform negative.~~

~~2. A laboratory must invalidate a total coliform sample (unless total coliforms are detected) if the sample;~~

~~a. produces a turbid culture in the absence of gas production using an analytical method where gas formation is examined (e.g., the Multiple-Tube Fermentation Technique); or~~

~~b. produces a turbid culture in the absence of an acid reaction in the Presence-Absence (P-A) Coliform Test; or~~

~~c. exhibits confluent growth with an analytical method using a membrane filter (e.g., Membrane Filter Technique); or~~

~~d. produces colonies too numerous to count with an analytical method using a membrane filter (e.g., Membrane Filter Technique).~~

If a laboratory invalidates a sample due to (a) through (d) of the above, then the system must collect another sample from the original sample location within 24 hours of being notified of the interference problem, and have it analyzed for the presence of total coliforms. The system must continue to resample within 24 hours and have the samples analyzed until it obtains a valid result. The Director may waive the 24 hour time limit on a case-by-case basis.

~~E. FEACAL COLIFORMS/*ESCHERICHIA coli* (*E. coli*) TESTING~~

- ~~1. If any routine or repeat sample is total coliform positive, the system must analyze the same total coliform positive culture medium to determine if fecal coliforms are present, or the system may test for *E. coli* in lieu of fecal coliforms.~~

~~If fecal coliforms or *E. coli* are present, the system must notify the Director by the end of the business day when the system is notified of the test result, unless the system is notified of the result after the Director's office is closed, in which case the system must notify the Director before the end of the next business day.~~

- ~~2. The Director has the discretion to allow a public water system, on a case-by-case basis, to forgo fecal coliform or *E. coli* testing on a total coliform positive sample if that system assumes that the total coliform positive sample is fecal coliform positive or *E. coli* positive. Accordingly, the system must notify the Director as specified in subsection (E)(1) of this section and the provisions of § 205 shall apply.~~

~~F. RESPONSE TO VIOLATION~~

- ~~1. A public water system which has exceeded the MCL for total coliforms and other microbiological contaminants in § 205 must report the violation to the Director no later than the end of the next business day after learning of the violation, and must notify the public in accordance with § 604.~~
- ~~2. A public water system which has failed to comply with a coliform sampling requirement, including the sanitary survey requirement, must report the sampling violation to the Director within ten days after the system discovers the violation, and must notify the public in accordance with § 604.~~

§ 405 SAMPLING AND ANALYTICAL REQUIREMENTS FOR INORGANIC CHEMICALS

CWSs and NTNCWSs shall conduct sampling and analyses to determine compliance with the MCLs (antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium and thallium) specified in § 203 in accordance with this section.

Each public water system shall sample at the time designated by the Director during each three-year compliance period.

A. Sampling and analyses shall be conducted as follows:

1. Groundwater systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment and have the sample(s) analyzed. The system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.
2. Surface water systems shall take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point which is representative of each source after treatment and have the sample(s) analyzed. The system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

NOTE: For purposes of this subsection surface water systems include systems with a combination of surface and groundwater sources.

3. If a system draws water from more than one source and the sources are combined before entering the distribution system, the system must obtain a sample at an entry point to

the distribution system during periods of normal operation (i.e., all the sources are in use and ample time is allowed for water from the furthest source to reach the sampling point).

- B. The frequency of sampling and analyses conducted to determine compliance with the MCLs specified in § 203 for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium and thallium shall be as follows:
1. Groundwater systems shall take one sample at each sampling point once every three years. Surface water systems, combined surface/ground water systems or GWUDI shall take one sample annually at each sampling point.
 2. All new systems or systems that use a new source of water and that will begin operation after January 22, 2004 must demonstrate compliance with the arsenic MCL within a period of time specified by the Director. The system must also comply with the initial sampling frequencies specified by the Director to ensure a system can demonstrate compliance with the arsenic MCL. Routine and increased monitoring frequencies shall be conducted in accordance with the requirements in this section.

C. Composite Samples for Inorganic Chemicals:

Composite samples from a maximum of five samples is allowed, provided that the public water system notify the Director in writing and that the detection limit of the method used for analysis is less than one-fifth of the MCL. Detection limits for each analytical method and MCLs for each inorganic contaminant are listed in Appendix A, Table 400-A-2. Compositing of samples must be done in the laboratory.

1. If the concentration in the composite sample is greater than or equal to one-fifth of the MCL of any inorganic chemical, then a follow-up sample must be taken within 14 days at each sampling point included in the composite. These samples must be analyzed for the contaminants which exceeded one-fifth of the MCL in the composite sample.
2. If the population served by the system is greater than 3,300 persons, then compositing may only be allowed by the Director at sampling points within a single system.

In systems serving less than or equal to 3,300 persons, compositing may be allowed among different systems provided that the 5-sample limit is maintained.
3. If duplicates of the original sample taken from each sampling point used in the composite are available, then the system may use the duplicates instead of resampling. The duplicates must be analyzed and the results reported to the Director within 14 days after completing analysis of the composite sample, provided the holding time of the sample is not exceeded.

D. Confirmation Samples:

1. If analytical results indicate an exceedance of the MCL for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium or thallium:
 - a. The public water system must collect one sample as soon as possible after the initial sample was taken (but not to exceed two weeks) at the same sampling point.

E. Compliance with the MCLs listed in § 203 shall be determined based on analytical result(s) obtained at each sampling point.

1. For public water systems which collect more than one sample per year, compliance with the MCLs for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium or thallium is determined by a running annual average at any sampling point.
 - a. If the average at any sampling point is greater than the MCL, then the system is out of compliance.
 - b. If any one sample would cause the annual average to be exceeded, then the system is out of compliance immediately.

- c. Any sample below the method detection limit shall be calculated as zero for the purpose of determining the annual average.
 - d. If a system fails to collect the required number of samples, compliance (average concentration) will be based on the total number of samples collected.
2. For public water systems which are sampling annually, or less frequently, the system is out of compliance with the MCLs for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, or thallium if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required by the Director, the determination of compliance will be based on the average of the two samples. If a public water system fails to collect the required number of samples, compliance (average concentration) will be based on the total number of samples collected.
- a. Arsenic sampling results will be reported to the nearest 0.001 mg/L
3. If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the Director may allow the public water system to give public notice to only the area served by that portion of the distribution system which is out of compliance.

F. Response to Violations of the MCL for Inorganic Chemicals

- 1. Compliance with the MCLs listed in § 203 shall be determined based on analytical result(s) obtained at each sampling point as required in subsection (E) of this section.
- 2. The Director has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by his/her authorized representative(s).
- 3. If the result of an analysis indicates that the level of arsenic listed in § 203 exceeds the MCL, then;
 - a. the public water system owner or operator shall report to the Director within seven days, and
 - b. initiate three additional analyses at the same sampling point within one month.
- 4. When the average of four analyses made, pursuant to subsection (3) of this section, rounded to the same number of significant figures as the MCL for arsenic exceeds the MCL, the water system owner or operator shall:
 - a. notify the Director pursuant to § 502; and
 - b. give notice to the public pursuant to § 603.

Sampling after public notification shall be at a frequency designated by the Director and shall continue until the MCL has not been exceeded in two successive samples or until a sampling schedule as a condition to a variance, exemption or enforcement action shall become effective.

G. Waivers

- 1. The system may apply to the Director, in writing, for a waiver from the sampling frequencies specified in subsection (B)(1) of this section.
 - a. The Director may grant a public water system a waiver for sampling of Arsenic, cyanide, provided that the Director determines that the water system is not vulnerable due to lack of any industrial source of cyanide.
- 2. A condition of the waiver shall require that a public water system take a minimum of one sample while the waiver is effective. The term during which the waiver is effective shall not exceed one nine-year compliance cycle.
- 3. The Director may grant a waiver provided surface water systems have sampled annually

for at least three years and groundwater systems have conducted a minimum of three rounds of sampling. Both surface and groundwater systems shall demonstrate that all previous analytical results were below the MCL.

4. Systems that use a new water source are not eligible for a waiver until three rounds of sampling from the new source have been completed.
5. In determining the appropriate reduced sampling frequency, the Director shall consider:
 - a. Reported concentrations from all previous sampling;
 - b. The degree of variation in reported concentrations; and
 - c. Other factors which may affect contaminant concentrations such as changes in groundwater pumping rates, changes in the system's configuration, changes in the system's operating procedures, or changes in stream flows or characteristics.
6. A decision by the Director to grant a waiver shall be made in writing and shall set forth the basis for the determination. The public water system shall specify the basis for its request. The Director shall review and, where appropriate, revise its determination of the appropriate sampling frequency when the system submits new sampling data or when other data relevant to the system's appropriate sampling frequency become available.
7. Systems which exceed the MCLs as calculated in subsection (E)(1) of this section shall sample quarterly beginning in the next quarter after the violation occurred.
8. The Director may decrease the quarterly sampling requirement to the frequencies specified in subsections (B)(1) and (G)(1) of this section provided that the system is reliably and consistently below the MCL. In no case can the Director make this determination unless a groundwater system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly samples.

§ 406 SAMPLING AND ANALYTICAL REQUIREMENTS FOR ASBESTOS

A. Sampling and analyses shall be conducted as follows:

The frequency of sampling conducted to determine compliance with the MCL for asbestos specified in § 203 shall be conducted as follows:

1. Each CWS and NTNCWS is required to sample for asbestos during the first three-year compliance period of each nine-year compliance cycle.

B. Confirmation Sampling for Asbestos

1. If the initial sample exceeds the MCL for asbestos, then the public water system must collect a confirmation sample immediately after the initial asbestos sample was taken (but not to exceed two weeks) at the same sampling point.

C. Compliance with the MCL for Asbestos

1. For public water systems which collect more than one sample per year, compliance with the MCLs for asbestos is determined by a running annual average at any sampling point.
 - a. If the average at any sampling point is greater than the MCL, then the system is out of compliance.
 - b. If any one sample would cause the annual average to be exceeded, then the system is out of compliance immediately.
 - c. Any sample below the detection limit shall be calculated as zero for the purpose of determining the annual average.
 - d. If a system fails to collect the required number of samples, compliance (average concentration) will be based on the total number of samples collected.

2. For systems which are sampling annually, or less frequently, the system is out of compliance with the MCLs for asbestos if the level of the contaminant at any sampling point is greater than the MCL. If a confirmation sample is required by the Director, the determination of compliance will be based on the average of the two samples. If a public water system fails to collect the required number of samples, compliance (average concentration) will be based on the total number of samples collected.
3. If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the Director may allow the system to give public notice to only the area served by that portion of the system which is out of compliance.

D. Response to Violations of the MCL for Asbestos

1. A system which exceeds the MCLs as determined in subsection (C) of this section shall sample quarterly beginning in the next quarter after the violation occurred.
2. The Director may decrease the quarterly sampling requirement to the frequency specified in subsection (A) of this section provided the Director has determined that the system is reliably and consistently below the MCL. In no case can the Director make this determination unless a groundwater system takes a minimum of two quarterly samples and a surface (or combined surface/ground) water system takes a minimum of four quarterly samples.
3. The Director has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by his/her authorized representative(s).

E. Waivers

1. The public water system may apply to the Director to waive the asbestos requirement based on the following conditions;
 - a. the system is not vulnerable to asbestos contamination in its source water; and/or
 - b. contamination due to corrosion of asbestos-cement pipe(s).
2. If the Director grants the waiver, then the system is not required to sample during that specified nine-year compliance cycle. A waiver remains in effect until the completion of the nine-year compliance cycle.
 - a. Systems not receiving a waiver must sample and analyze in accordance with the provisions of subsection (A) of this section.
3. A system vulnerable to asbestos contamination due solely to corrosion of asbestos-cement pipe shall take one sample at a tap served by asbestos-cement pipe and where asbestos contamination is most likely to occur.
4. A system vulnerable to asbestos contamination due solely to source water shall sample in accordance with the provisions of subsection (A) of this section.
5. A system vulnerable to asbestos contamination due to both its source water supply and corrosion of asbestos-cement pipe shall take one sample at a tap served by asbestos-cement pipe and where asbestos contamination is most likely to occur.

§ 407 SAMPLING AND ANALYTICAL REQUIREMENTS FOR NITRATE

All public water systems shall collect a sample at each entry point to the distribution system after treatment to determine compliance with the MCL for nitrate in § 203.

A. Sampling and analyses shall be conducted as follows:

1. All public water systems served by groundwater systems shall sample annually. Surface water systems, combined surface and groundwater systems, or GWUDI shall take one sample quarterly.

2. For all public water systems, the repeat sampling frequency for groundwater systems shall be quarterly for at least one year following any one sample in which the concentration is greater than or equal to fifty percent (50%) of the MCL. The Director may allow a groundwater system to reduce the sampling frequency to annually after four consecutive quarterly samples are reliably and consistently below the MCL.
3. For CWSs and NTNCWSs, the Director may allow a surface water system, combined surface and groundwater systems, or GWUDI to reduce the sampling frequency to annually if all analytical results from four consecutive quarters are less than fifty percent (<50 %) of the MCL. A surface water system shall return to quarterly sampling if any one sample is 50 % of the MCL.
4. After the completed round of quarterly sampling, each CWS and NTNCWS which is sampling annually shall take subsequent samples during the quarter(s) which previously resulted in the highest analytical result.

B. Confirmation samples for Nitrate

1. If analytical results indicate an exceedance of the MCL for Nitrate:
 - a. The public water system shall collect a confirmation sample within 24 hours upon notification of the analytical result(s).
 - b. Systems unable to comply with the 24-hour sampling requirement must:
 - i. immediately notify persons served by the public water system in accordance with § 603 and 604 and meet other Tier 1 public notification requirements under Part VI of these regulations; and,
 - ii. collect and analyze a confirmation sample within two weeks of notification of the analytical results of the first sample.
2. If a Director-required confirmation sample is taken for Nitrate, then the results of the initial and confirmation sample shall be averaged. The resulting average shall be used to determine the system's compliance in accordance with subsection (C) of this section. The Director has the discretion to delete results of obvious sampling errors.

C. Compliance with the MCL for Nitrate

1. Compliance with the MCL for nitrate is determined based on one sample, if the levels are below the MCL. If the levels of nitrate exceed the MCL in the initial sample, a confirmation sample is required and compliance shall be determined based on the average of the initial and confirmation samples.
2. If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the Director may allow the system to give public notice to only the area served by that portion of the distribution system which is out of compliance.

D. Response to Violations of the MCL for Nitrate

1. The Director may require more frequent sampling or may require confirmation samples for results that exceed the MCL.
2. The Director has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by the Director's authorized representative(s).
3. If the result of an analysis indicates that the level of nitrate listed in § 203 exceeds the MCL, the public water system owner or operator shall:
 - a. report to the Director within seven days; and
 - b. initiate three additional analyses at the same sampling point within one month.

4. When the average of four analyses made pursuant to subsection (3) of this section, rounded to the same number of significant figures as the MCL for nitrate exceeds the MCL, the public water system owner or operator shall:
 - a. notify the Director pursuant to § 502; and
 - b. give notice to the public pursuant to § 603.

Sampling after public notification shall be at a frequency designated by the Director and shall continue until the MCL has not been exceeded in two successive samples or until a sampling schedule as a condition to a variance, exemption or enforcement action shall become effective.

5. The provisions of subsections (3) and (4) of this section notwithstanding, compliance with the MCL for nitrate shall be determined on the basis of the mean of two analyses. When a level exceeding the MCL for nitrate is found, a second analysis shall be initiated within twenty-four hours, and if the mean of the two analyses exceeds the MCL, the public water system owner or operator shall report the findings to the Director pursuant to § 502 and shall notify the public pursuant to § 603.

E. Waivers

There are no waivers of the nitrate sampling requirements.

§ 408 SAMPLING AND ANALYTICAL REQUIREMENTS FOR NITRITE

All public water systems shall sample to determine compliance with the MCL for nitrite in § 203.

A. Sampling and analyses shall be conducted as follows:

1. All public water systems served by groundwater shall sample at a frequency specified by the Director. Surface water systems, combined surface and groundwater systems, or GWUDI shall take one sample annually.
2. All public water systems shall take one sample at each entry point to the distribution system after treatment.

B. Confirmation samples for Nitrite

1. If analytical results indicate an exceedance of the MCL for Nitrite:
 - a. The public water system must collect a confirmation sample within 24 hours upon receiving the analytical result(s).
 - b. Systems unable to comply with the 24-hour sampling requirement must:
 - i. immediately notify persons served by the public water system in accordance with § 605 and 606 and meet other Tier 1 public notification requirements under Part VI of these regulations; and,
 - ii. collect and analyze a confirmation sample within two weeks of notification of the analytical results.

C. Compliance with the MCL for Nitrite

1. Compliance with the MCL for nitrite is determined based on one sample, if the levels are below the MCL. If the levels of nitrite exceed the MCL in the initial sample, a confirmation sample is required and compliance shall be determined based on the average of the initial and confirmation samples.
2. All public water systems where an analytical result for nitrite is <50 % of the MCL shall sample at the frequency specified by the Director.
3. The repeat sampling frequency for any public water system whose concentration is ≥50 %

of the MCL, shall sample quarterly for at least one year. The Director may allow a system to reduce the sampling frequency to annually after determining the system is reliably and consistently below the MCL.

4. Public water systems which are sampling annually shall take each subsequent sample during the quarter(s) which previously resulted in the highest analytical result.
5. If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the Director may allow the system to give public notice to only the area served by that portion of the distribution system which is out of compliance.

D. Response to Violations of the MCL for Nitrite

1. The Director may require more frequent sampling or may require confirmation samples for results that exceed the MCL.
2. The Director has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by the Director=s authorized representative(s).

E. Waivers

There shall be no waivers of the nitrite sampling requirements.

§ 409 SAMPLING AND ANALYTICAL REQUIREMENTS FOR VOLATILE ORGANIC CHEMICALS

CWSs and NTNCWSs shall conduct sampling and analyses to determine compliance with the MCLs listed in § 204, Table 200.3 (1) through (21), in accordance with this section.

Each public water system shall sample at the time designated by the Director during each three-year compliance period.

A. Sampling and analyses shall be conducted as follows:

1. Groundwater systems shall take a minimum of one sample at every entry point to the distribution system after treatment and have the samples analyzed (hereafter called a sampling point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, or treatment plant within the distribution system.
2. Surface water systems, or water systems using a combination of surface/ground or GWUDI, shall take a minimum of one sample at each entry point to the distribution system after treatment and have the samples analyzed.

Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, or treatment plant within the distribution system.
3. If a system draws water from more than one source and the sources are combined before entering the distribution system, the system must obtain a sample at an entry point to the distribution system during periods of normal operation (i.e., all the sources are in use and ample time is allowed for water from the furthest source to reach the sampling point).
4. Each CWS and NTNCWS shall take four consecutive quarterly samples for each contaminant listed in § 204, Table 200.3 (2) through (21) during each three-year compliance period.
5. If the initial sampling for contaminants listed in § 204, Table 200.3 (1) through (21) have been conducted and the systems did not detect any contaminant listed in Table 200.3 (1) through (21), then each ground and surface water system shall take one sample annually beginning with the initial three-year compliance period.
6. After a minimum of three years of annual sampling, the Director may allow groundwater systems with no previous detection of any contaminant listed in § 204, Table 200.3 to take one sample during each three-year compliance period.

7. The Director may reduce the total number of samples a system must analyze by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed, provided that the detection limit of the method used for analysis is less than one-fifth of the MCL. Compositing of samples must be done in the laboratory and analyzed within 14 days of sample collection.
 - a. If the concentration in the composite sample is greater than or equal to 0.0005 mg/L for any contaminant listed in § 204, Table 200.3 (1) through (21) then a follow-up sample must be taken and analyzed within 14 days from each sampling point included in the composite, and be analyzed for that contaminant.
 - b. If duplicates of the original sample taken from each sampling point used in the composite are available, the system may use these instead of resampling. The duplicate must be analyzed and the results reported to the Director within 14 days after completing analysis of the composite sample, provided the holding time of the sample is not exceeded.
 - c. If the population served by the system is > 3,300 persons, then compositing may only be permitted by the Director at sampling points within a single system. In systems serving # 3,300 persons, the Director may permit compositing among different systems provided the 5-sample limit is maintained.

B. Confirmation samples for Volatile Organic Chemicals

1. The Director may require a confirmation sample for positive or negative results. If a confirmation sample is required by the Director, the result must be averaged with the first sampling result and the average is used for the compliance determination as specified in subsection (D) of this section. The Director will delete the results of obvious sampling errors from this calculation.

C. Detection Limits for Volatile Organic Chemicals

1. If a contaminant listed in Table 200.3 (2) through (21) is detected at a level exceeding 0.0005 mg/L in any sample, then:
 - a. The system must sample quarterly at each sampling point which resulted in a detection.
 - b. The Director may decrease the quarterly sampling requirement specified in subsection (C)(1)(a) of this section provided it has determined that the system is reliably and consistently below the MCL. In no case shall the Director make this determination unless a groundwater system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly samples.
 - c. If the Director determines that the system is reliably and consistently below the MCL, the Director may allow the system to sample annually. Systems which sample annually must sample during the quarter(s) which previously yielded the highest analytical result.
 - d. Systems which have three consecutive annual samples with no detection of a contaminant may apply to the Director for a waiver as specified in subsection (F)(2) of this section.
 - e. Groundwater systems which have detected one or more of the following two-carbon organic compounds:
 - i. trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene, shall sample quarterly for vinyl chloride.
 - ii. A vinyl chloride sample shall be taken at each sampling point at which one or more of the two-carbon organic compounds was detected. If the results of the first analysis do not detect vinyl chloride, the Director may reduce the quarterly sampling frequency of vinyl chloride sampling to one sample during each three-year compliance period.

- iii. Surface water systems are required to sample for vinyl chloride as specified by the Director.

D. Compliance with § 204, Table 200.3 (1) through (21) shall be determined based on the analytical results obtained at each sampling point. If one sampling point is in violation of an MCL, the system is in violation of the MCL.

1. For public water systems which collect more than one sample per year, compliance with the MCLs listed in § 204, Table 200.3 (1) through (21) is determined by a running annual average at each sampling point.
 - a. Systems monitoring annually or less frequently whose sample result exceeds the MCL must begin quarterly sampling. The system will not be considered in violation of the MCL until it has completed one year of quarterly sampling.
 - b. If any one sample would cause the annual average to exceed the MCL, then the system is out of compliance immediately.
 - c. If a system fails to collect the required number of samples, compliance will be based on the total number of samples collected.
 - d. Any sample below the detection limit shall be calculated at zero for the purpose of determining the annual average.
2. All new systems or systems that use a new source of water that begin operation after January 22, 2004 must demonstrate compliance with the MCL within a period of time specified by the Director. The system must also comply with the initial sampling frequencies specified by the Director to ensure a system can demonstrate compliance with the MCL. Routine and increased monitoring frequencies shall be conducted in accordance with the requirements in this section.

E. Response to Violations of the MCL for Volatile Organic Chemicals

1. Systems which violate the requirements of § 204, Table 200.3 (1) through (21), as determined by subsection (D) of this section, must sample quarterly. After a minimum of four consecutive quarterly samples which show the system is in compliance as specified in subsection (D) of this section and the system and the Director determines that the system is reliably and consistently below the MCL, the system may sample at the frequency and times specified in subsection (C)(1)(c) of this section.
2. The Director may increase required sampling where necessary to detect variations within the system.

F. Waivers

1. Each CWS and NTNCWS groundwater system which does not detect a contaminant listed in § 204, Table 200.3 (1) through (21) may apply to the Director for a waiver from the requirements of subsections (A)(5) and (6) of this section after completing the initial sampling of each nine-year compliance cycle. (For the purposes of this section detection is defined as \geq to 0.0005 mg/L.)
 - a. A waiver shall be effective for no more than six years (two three-year compliance periods).
 - b. The Director may also issue waivers to small systems for the initial round of sampling for 1,2,4-trichlorobenzene.
2. The Director may grant a waiver after evaluating a vulnerability assessment survey which includes the following factor(s):
 - a. Knowledge of previous use (including transport, storage, or disposal) of the contaminant(s) within the watershed or zone of influence of the system. If a determination by the Director reveals no previous use of the contaminant(s) within the watershed or zone of influence, a waiver may be granted.

- b. If previous use of the contaminant(s) is unknown or has been used previously, then the following factors shall be used to determine whether a waiver is granted.
 - i. Previous analytical results.
 - ii. The proximity of the system to a potential point or non-point source(s) of contamination. Point sources include, but are not limited to, spills and leaks of chemicals at or near a water treatment facility or at manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities.
 - iii. The environmental persistence and transport of the contaminants.
 - iv. The number of persons served by the water system and the proximity of a smaller system to a larger system.
 - v. How well the water source is protected against contamination whether it is a surface or groundwater system. Groundwater systems must consider factors such as depth of the well, the type of soil, and wellhead protection. Surface water systems must consider watershed protection.
3. As a condition of the waiver a groundwater system must:
 - a. Take one sample at each sampling point during the time the waiver is effective (i.e. one sample during two three-year compliance periods or six years); and
 - b. Update its vulnerability assessment survey every three years. If and when new potential sources of contamination have been identified to impact a drinking water source, then the vulnerability assessment survey must be updated and submitted to the Director.
 - c. Based on this vulnerability assessment the Director must reconfirm that the system is not vulnerable.
 - d. If the Director does not make this reconfirmation within three years of the initial determination, then:
 - i. The waiver is invalidated; and
 - ii. The system is required to sample annually as specified in subsection (A)(5) of this section.
4. Each CWS and NTNCWS surface water system which does not detect a contaminant listed in § 204, Table 200.3 (1) through (21) may apply to the Director for a waiver from the requirements of subsection (A)(5) of this section after completing the initial sampling of each nine-year compliance cycle.
 - a. Composite samples from a maximum of five sampling points are allowed, provided that the detection limit of the method used for analysis is less than one-fifth of the MCL.
 - b. Systems meeting this criterion must be determined by the Director to be non-vulnerable based on a vulnerability assessment survey during each three-year compliance period.
 - c. Each system receiving a waiver shall sample at the frequency specified by the Director (if any).
5. The Director may allow the use of monitoring data collected during the previous Anine-year@ compliance cycle for purposes of initial sampling compliance. If the data are generally consistent with the other requirements of this section, the Director may use these data (i.e., single sample rather than four quarterly samples) to satisfy the initial sampling requirement of subsection (A)(4) of this section. Systems which use grandfathered samples and did not detect any contaminant(s) listed in § 204, Table

200.3 (2) through (21) shall begin sampling annually in accordance with subsection (A)(5) of this section beginning with the initial three-year compliance period.

§ 410 SAMPLING AND ANALYTICAL REQUIREMENTS FOR SYNTHETIC ORGANIC CHEMICALS

CWSs and NTNCWSs shall conduct sampling and analyses to determine compliance with the MCLs listed in Table 200.4 (1) through (33) in § 204, in accordance with this section.

Each public water system shall conduct sampling and analyses at the time designated by the Director during each three-year compliance period.

For purposes of this section, surface water systems include systems with a combination of surface and groundwater sources.

A. Sampling and analyses shall be conducted as follows:

1. Groundwater systems shall take a minimum of one sample at every entry point to the distribution system after treatment and have the sample analyzed (hereafter called a sampling point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

2. Surface water systems, or water systems using a combination of surface/ground or GWUDI, shall take a minimum of one sample at each entry point to the distribution system after treatment and have the samples analyzed.

Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, or treatment plant within the distribution system.

3. If a public water system draws water from more than one source and the sources are combined before entering the distribution system, the public water system must obtain a sample at an entry point to the distribution system during periods of normal operation (i.e., all the sources are in use and ample time is allowed for water from the furthest source to reach the sampling point).

4. Sampling frequency:

a. Each CWS and NTNCWS shall take four consecutive quarterly samples for each contaminant listed in § 204 (A)(2), Table 200.4, during each three-year compliance period beginning with the nine-year compliance cycle.

b. Public water systems serving more than 3,300 persons which do not detect a contaminant in the initial three-year compliance period, of a nine-year compliance cycle, may reduce the sampling frequency to a minimum of two quarterly samples in one year during each of the three-year compliance periods.

c. Public water systems serving less than or equal to 3,300 persons which do not detect a contaminant in the initial three-year compliance period may reduce the sampling frequency to a minimum of one sample during each of the three-year compliance periods.

5. The Director may reduce the total number of samples a public water system must analyze by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed, provided that the detection limit of the method used for analysis is less than one-fifth of the MCL. Compositing of samples must be done in the laboratory and analyzed within 14 days of sample collection.

a. If the concentration in the composite sample detects one or more contaminants listed in § 204 (A)(2), then a follow-up sample must be taken and analyzed within 14 days from each sampling point included in the composite, and be analyzed for that contaminant.

b. If duplicates of the original sample taken from each sampling point used in the composite are available, the system may use these instead of resampling. The duplicate must be analyzed and the results reported to the Director within 14 days after completing analysis of the composite sample, provided the holding

time of the sample is not exceeded.

c. If the population served by the system is >3,300 persons, then compositing may only be permitted by the Director at sampling points within a single system. In systems serving #3,300 persons, the Director may permit compositing among different systems provided the 5-sample limit is maintained.

6. If sampling data are generally consistent with the requirements of subsection (A) of this section, then the Director may allow systems to use that data to satisfy the sampling requirement for the initial three-year compliance period.

7. The Director may increase the required sampling frequency, where necessary, to detect variations within the system (e.g. fluctuations in concentration due to seasonal use, changes in water source).

B. Confirmation samples for Synthetic Organic Chemicals

1. The Director may require a confirmation sample for positive or negative results. If a confirmation sample is required by the Director, the result must be averaged with the first sampling result and the average used for the compliance determination as specified by subsection (D)(1) of this section. The Director has the discretion to delete results of obvious sampling errors from this calculation.

C. Detection Limits for Synthetic Organic Chemicals

1. If an organic contaminant listed in § 204 (A) (2) is detected (as defined by subsection (C) (2) of this section) in any sample, then:

a. Each system must sample quarterly at each sampling point which resulted in a detection.

b. The Director may decrease the quarterly sampling requirement specified in subsection (C) (1) (a) of this section provided it has determined that the system is reliably and consistently below the MCL. In no case shall the Director make this determination unless a:

i. groundwater system takes a minimum of two quarterly samples; or

ii. surface water system takes a minimum of four quarterly samples.

c. After the Director determines the public water system is reliably and consistently below the MCL, the Director may allow the system to sample annually. Public water systems which sample annually must sample during the quarter that previously yielded the highest analytical result.

d. Public water systems which have 3 consecutive annual samples with no detection of a contaminant may apply to the Director for a waiver as specified in subsection (F) (2) of this section.

2. Detection, as used in this subsection, shall be defined as greater than or equal to the following concentrations for each contaminant.

TABLE 400.2 DETECTION LIMIT

CONTAMINANT	LIMIT (mg/l)
Alachlor	0.0002
Aldicarb	0.0005
Aldicarb sulfoxide	0.0005
Aldicarb sulfone	0.0008
Atrazine	0.0001

Benzo(a)pyrene	0.00002
Carbofuran	0.0009
Chlordane	0.0002
Dalapon	0.001
1,2-Dibromo-3-chloropropane (DBCP)	0.00002
Di(2-ethylhexyl) adipate	0.0006
Di(2-ethylhexyl) phthalate	0.0006
Dinoseb	0.0002
Diquat	0.0004
2,4-D	0.0001
Endothall	0.009
Endrin	0.00001
Ethylene dibromide (EDB)	0.00001
Glyphosate	0.006
Heptachlor	0.00004
Heptachlor epoxide	0.00002
Hexachlorobenzene	0.0001
Hexachlorocyclopentadiene	0.0001
Lindane	0.00002
Methoxychlor	0.0001
Oxamyl	0.002
Picloram	0.0001
Polychlorinated biphenyls (PCBs) (as decachlorobiphenyl)	0.0001
Pentachlorophenol	0.00004
Simazine	0.00007
Toxaphene	0.001
2,3,7,8-TCDD (Dioxin)	0.000000005
2,4,5-TP (Silvex)	0.0002

3. If PCBs (as one of seven Arochlors) are detected (as designated in this subsection) in any sample analyzed using Methods 505 or 508, the public water system shall re-analyze the sample using Method 508A to quantitate PCBs (as decachlorobiphenyl).

TABLE 400.3 DETECTION LIMIT OF PCB

AROCHLOR	DETECTION LIMIT (mg/l)
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1016	0.00008
1221	0.02
1232	0.0005
1242	0.0003
1248	0.0001
1254	0.0001
1260	0.0002

- a. Compliance with the PCB MCL shall be determined based upon the quantitative results of analyses using Method 508A.

D. Compliance with the MCL for Synthetic Organic Chemicals

- 1. Compliance with § 204 (A) (2) shall be determined based on the analytical results obtained at each sampling point. If one sampling point is in violation of an MCL, the system is in violation of the MCL.

- a. For public water systems which are conducting sampling at a frequency greater than annual, compliance with the MCL is determined by a running annual average at each sampling point.
 - i. Public water systems monitoring annually or less frequently whose sample result exceeds the regulatory detection level as defined by subsection (C) (2) of this section must begin quarterly sampling. The system will not be considered in violation of the MCL until it has completed one year of quarterly sampling.
 - ii. If any sample result will cause the running annual average to exceed the MCL at any sampling point, the public water system is out of compliance with the MCL immediately.
 - iii. If a public water system fails to collect the required number of samples, compliance will be based on the total number of samples collected.
 - iv. If a sample result is less than the detection limit, zero will be used to calculate the annual average.

- 2. All new public water systems or systems that use a new source of water that begin operation after January 22, 2004 must demonstrate compliance with the MCL within a period of time specified by the Director. The system must also comply with the initial sampling frequencies specified by the Director to ensure a system can demonstrate compliance with the MCL. Routine and increased monitoring frequencies shall be conducted in accordance with the requirements in this section.

E. Response to Violations of the MCL for Synthetic Organic Chemicals

- 1. Public water systems which violate the requirements of § 204 (A) (2) as determined by subsection (D) (1) of this section must sample quarterly. After a minimum of four quarterly samples show the system is in compliance and the Director determines the public water system is reliably and consistently below the MCL, as specified in subsection (D) (1) of this section, the public water system shall sample at the frequency specified in subsection (C) (1) (c) of this section.
- 2. The Director has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by his/her authorized representative(s).

F. Waivers

- 1. Each CWS and NTNCWS may apply to the Director for a waiver from the requirement of

subsection (A)(4) of this section. A public water system must reapply for a waiver for each three-year compliance period.

2. A Director may grant a waiver after evaluating the following factor(s):
 - a. Knowledge of previous use (including transport, storage, or disposal) of the contaminant within the watershed or zone of influence of the public water system. If a determination by the Director reveals no previous use of the contaminant within the watershed or zone of influence, a waiver may be granted.
 - b. If previous use of the contaminant is unknown or it has been used previously, then the following factors shall be used to determine whether a waiver is granted.
 - i. Previous analytical results.
 - ii. The proximity of the public water system to a potential point or non-point source of contamination. Point sources include spills and leaks of chemicals at or near a water treatment facility or at manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities. Non-point sources include the use of pesticides to control insect and weed pests on agricultural areas, forest lands, home and gardens, and other land application uses.
 - iii. The environmental persistence and transport of the pesticide or PCBs.
 - iv. How well the water source is protected against contamination due to such factors as depth of the well and the type of soil and the integrity of the well casing.
 - v. Elevated nitrate levels at the water supply source.
 - vi. Use of PCBs in equipment used in the production, storage, or distribution of water (i.e., PCBs used in pumps, transformers, etc.).

§ 411 SAMPLING FREQUENCY AND COMPLIANCE REQUIREMENTS FOR RADIONUCLIDES IN COMMUNITY WATER SYSTEMS

A. Sampling, analysis, and compliance requirements for radionuclides.

Sampling and analyses for the following contaminants shall be conducted to determine compliance with § 209 (radioactivity) in accordance with the methods found in Appendix A. With the written permission of the Director, concurred in by the Administrator of the EPA, or their equivalent determined by EPA an alternate analytical technique may be employed in accordance with Appendix A § 401-A.

1. Community water systems (CWSs) must conduct initial monitoring to determine compliance with § 209(A) by December 31, 2007. For the purposes of monitoring for gross alpha particle activity, radium-226, radium-228, uranium, and beta particle and photon radioactivity in drinking water, "detection limit" is defined as in Appendix A § 405-A (C).
 - a. Applicability and sampling location for existing CWSs or sources. All existing CWSs using ground water, surface water or systems using both ground and surface water must sample at every entry point to the distribution system that is representative of all sources being used under normal operating conditions. The public water system must take each sample at the same sampling point unless conditions make another sampling point more representative of each source or the Director has designated a distribution system location, in accordance with subsection (A)(2)(b)(iii) of this section.
 - b. Applicability and sampling location for new CWSs or sources.
 - i. All new CWSs or CWSs that use a new source of water must begin to conduct initial monitoring for the new source within the first quarter after initiating use of the source.

- ii. CWSs must conduct more frequent monitoring when ordered by the Director in the event of possible contamination or when changes in the distribution system or treatment processes occur which may increase the concentration of radioactivity in finished water.
2. Initial monitoring: Public water systems must conduct initial monitoring for gross alpha particle activity, radium-226, radium-228, and uranium as follows:
 - a. Public water systems without acceptable historical data, as defined below, must collect four consecutive quarterly samples at all sampling points before December 31, 2007.
 - b. Grandfathering of data: The Director may allow historical monitoring data collected at a sampling point to satisfy the initial monitoring requirements for that sampling point, for the following situations.
 - i. To satisfy initial monitoring requirements, a CWS having only one entry point to the distribution system may use the monitoring data from the last compliance monitoring period that began between June 2000 and December 8, 2003.
 - ii. To satisfy initial monitoring requirements, a CWS with multiple entry points and having appropriate historical monitoring data for each entry point to the distribution system may use the monitoring data from the last compliance monitoring period that began between June 2000 and December 8, 2003.
 - iii. To satisfy initial monitoring requirements, a CWS with appropriate historical data for a representative point in the distribution system may use the monitoring data from the last compliance monitoring period that began between June 2000 and December 8, 2003, provided that the Director finds that the historical data satisfactorily demonstrate that each entry point to the distribution system is expected to be in compliance based upon the historical data and reasonable assumptions about the variability of contaminant levels between entry points. The Director must make a written finding indicating how the data conforms to these requirements.
 - c. For gross alpha particle activity, uranium, radium-226, and radium-228 monitoring, the Director may waive the final two quarters of initial monitoring for a sampling point if the results of the samples from the previous two quarters are below the detection limit.
 - d. If the average of the initial monitoring results for a sampling point is above the MCL, the public water system must collect and analyze quarterly samples at that sampling point until the system has results from four consecutive quarters that are at or below the MCL, unless the public water system enters into another schedule as part of a formal compliance agreement with the Director.
3. Compositing: To fulfill quarterly monitoring requirements for gross alpha particle activity, radium-226, radium-228, or uranium, a public water system may composite up to four consecutive quarterly samples from a single entry point if analysis is done within a year of the first sample. The Director will treat analytical results from the composited as the average analytical result to determine compliance with the MCLs and the future monitoring frequency. If the analytical result from the composited sample is greater than 2 MCL, the Director may direct the system to take additional quarterly samples before allowing the system to sample under a reduced monitoring schedule.
4. A gross alpha particle activity measurement may be substituted for the required radium-226 measurement provided that the measured gross alpha particle activity does not exceed 5 pCi/l. A gross alpha particle activity measurement may be substituted for the required uranium measurement provided that the measured gross alpha particle activity does not exceed 15 pCi/l. The gross alpha measurement shall have a confidence interval of 95% (1.65σ , where σ is the standard deviation of the net counting rate of the sample) for radium-226 and uranium. When a public water system uses a gross alpha particle activity measurement in lieu of a radium-226 and/or uranium measurement, the gross alpha particle activity analytical result will be used to determine the future monitoring frequency for radium-226 and/or uranium. If the

gross alpha particle activity result is less than detection, the detection limit will be used to determine compliance and the future monitoring frequency.

B. Detection Limits for Radionuclides

For the purpose of sampling radioactivity concentrations in drinking water, the required sensitivity of the radioanalysis is defined in terms of a detection limit. The detection limit shall be that concentration which can be counted with a precision of $\pm 100\%$ at the 95% confidence level (1.96 sigma, where sigma is the standard deviation of the net counting rate of the sample).

- To determine compliance with Table 200.10, (#'s 1, 2 and 4) the detection limit shall not exceed the concentrations in Table 400.4.

Table 400.4 Detection Limits For Gross Alpha Particle Activity, Radium 226, Radium 228 and Uranium

Contaminant	Detection Limit
Gross alpha particle activity	3 pCi/L
Radium 226	1 pCi/L
Radium 228	1 pCi/L
Uranium	10g/L

- To determine compliance with § 209 (A) (1) (#3 - Beta particle and photon radioactivity), the detection limits shall not exceed the concentrations listed in Table 400.5.

TABLE 400.5 DETECTION LIMITS FOR MAN-MADE BETA PARTICLE AND PHOTON EMITTERS

RADIONUCLIDE	DETECTION LIMIT
Tritium	1,000 pCi/l
Strontium-89	10 pCi/l
Strontium-90	2 pCi/l
Iodine-131	1 pCi/l
Cesium-134	10 pCi/l
Gross Beta	4 pCi/l
Other Radionuclides	1/10 of the applicable limit

C. Compliance with the MCL for Radionuclides

- The Director may require more frequent monitoring than specified in subsection (A) of this section, or may require confirmation samples at the Director's discretion. The results of the initial and confirmation samples will be averaged for use in compliance determinations.
- Each public water system shall monitor at the time designated by the Director during each compliance period.
- Compliance with § 209 (A) will be determined based on the analytical result(s) obtained at each sampling point. If one sampling point is in violation of an MCL, the system is in violation of the MCL.

- a. For public water systems sampling more than once per year, compliance with the MCL is determined by a running annual average at each sampling point. If the average of any sampling point is greater than the MCL, then the system is out of compliance with the MCL.
 - b. For public water systems sampling more than once per year, if any sample result will cause the running average to exceed the MCL at any sample point, the system is out of compliance with the MCL immediately.
 - c. Public water systems must include all samples taken and analyzed under the provisions of this section in determining compliance, even if that number is greater than the minimum required.
 - d. If a public water system does not collect all required samples when compliance is based on a running annual average of quarterly samples, compliance will be based on the running average of the samples collected.
 - e. If a sample result is less than the detection limit, zero will be used to calculate the annual average, unless a gross alpha particle activity is being used in lieu of radium-226 and/or uranium. If the gross alpha particle activity result is less than detection, 1/2 the detection limit will be used to calculate the annual average.
4. The Director shall have the discretion to delete results of obvious sampling or analytic errors.
 5. If the MCL for radioactivity set forth in § 209 (A) is exceeded, the operator of a CWS must give notice to the Director pursuant to § 502 and to the public as required by § 603.
- D. Response to Violations of the MCL for Radionuclides
1. The Director has the authority to determine compliance or initiate enforcement action based upon analytical results or other information compiled by an authorized representative.
 2. To judge compliance with the MCLs listed in § 209, averages of data shall be used and shall be rounded to the same number of significant figures as the MCL for the substance in question.
- E. Reduced Monitoring
1. The Director may allow CWSs to reduce the future frequency of monitoring from once every three years to once every six or nine years at each sampling point, based on the following criteria.
 - a. If the average of the initial monitoring results for each contaminant (i.e., gross alpha particle activity, uranium, radium-226, or radium-228) is below the detection limit specified in Table 400.4, in § 411 (B)(1), the system must collect and analyze for that contaminant using at least one sample at that sampling point every nine years.
 - b. For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is at or above the detection limit but at or below 1/2 the MCL, the system must collect and analyze for that contaminant using at least one sample at that sampling point every six years.
 - c. For combined radium-226 and radium-228, the analytical results must be combined.
 - i. If the average of the combined initial monitoring results for radium-226 and radium-228 is at or above the detection limit but at or below 1/2 the MCL, the CWS must collect and analyze for that contaminant using at least one sample at that sampling point every six years.
 - d. For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is above 1/2 the MCL but at or below

the MCL, the public water system must collect and analyze at least one sample at that sampling point every three years.

- e. For combined radium-226 and radium-228, the analytical results must be combined.
 - i. If the average of the combined initial monitoring results for radium-226 and radium-228 is above 1/2 the MCL but at or below the MCL, the public water system must collect and analyze at least one sample at that sampling point every three years.
- f. Public water systems must use the samples collected during the reduced monitoring period to determine the monitoring frequency for subsequent monitoring periods (e.g., if a system's sampling point is on a nine year monitoring period, and the sample result is above 1/2 MCL, then the next monitoring period for that sampling point is three years).
- g. If a public water system has a monitoring result that exceeds the MCL while on reduced monitoring, the system must collect and analyze quarterly samples at that sampling point until the system has results from four consecutive quarters that are below the MCL, unless the system enters into another schedule as part of a formal compliance agreement with the Director.

§ 412 MONITORING AND COMPLIANCE REQUIREMENTS FOR BETA PARTICLE AND PHOTON RADIOACTIVITY

- A. To determine compliance with the maximum contaminant levels in § 209 for beta particle and photon radioactivity, a public water system must monitor at a frequency as follows:
 - 1. CWSs (both surface and ground water) designated by the Director as vulnerable must sample for beta particle and photon radioactivity. Public water systems must collect quarterly samples for beta emitters and annual samples for tritium and strontium-90 at each entry point to the distribution system, beginning within one quarter after being notified by the Director. Public water systems already designated by the Director must continue to sample until the Director reviews and either reaffirms or removes the designation.
 - a. If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity at a sampling point has a running annual average (computed quarterly) less than or equal to 50 pCi/L (screening level), the Director may reduce the frequency of monitoring at that sampling point to once every 3 years. Public water systems must collect all samples required in (A)(1) of this section during the reduced monitoring period.
 - b. For systems in the vicinity of a nuclear facility, the Director may allow the CWS to utilize environmental surveillance data collected by the nuclear facility in lieu of monitoring at the system's entry point(s), where the Director determines if such data is applicable to a particular public water system. In the event that there is a release from a nuclear facility, systems which are using surveillance data must begin monitoring at the CWS's entry point(s) in accordance with (A)(1) of this section.
 - 2. CWSs (both surface and ground water) designated by the Director as utilizing waters contaminated by effluents from nuclear facilities must sample for beta particle and photon radioactivity. Public water systems must collect quarterly samples for beta emitters and iodine-131 and annual samples for tritium and strontium-90 at each entry point to the distribution system, beginning within one quarter after being notified by the Director. Systems already designated by the Director as systems using waters contaminated by effluents from nuclear facilities must continue to sample until the Director reviews and either reaffirms or removes the designation.
 - a. Quarterly monitoring for gross beta particle activity shall be based on the analysis of monthly samples or the analysis of a composite of three monthly samples. The former is recommended.
 - b. For iodine-131, a composite of five consecutive daily samples shall be analyzed once each quarter. As ordered by the Director, more frequent monitoring shall be conducted when iodine-131 is identified in the finished water.

- c. Annual monitoring for strontium-90 and tritium shall be conducted by means of the analysis of a composite of four consecutive quarterly samples or analysis of four quarterly samples. The latter procedure is recommended.
 - d. If the gross beta particle activity beta minus the naturally occurring potassium-40 beta particle activity at a sampling point has a running annual average (computed quarterly) less than or equal to 15 pCi/L, the Director may reduce the frequency of monitoring at that sampling point to every 3 years. Public water systems must collect all samples required in (A) (2) of this section during the reduced monitoring period.
 - e. For systems in the vicinity of a nuclear facility, the Director may allow the CWS to utilize environmental surveillance data collected by the nuclear facility in lieu of monitoring at the system's entry point(s), where the Director determines if such data is applicable to a particular public water system. In the event that there is a release from a nuclear facility, systems which are using surveillance data must begin monitoring at the CWS's entry point(s) in accordance with (A) (2) of this section.
3. CWSs designated by the Director to monitor for beta particle and photon radioactivity can not apply to the Director for a waiver from the monitoring frequencies specified in (A) (1) or (A) (2) of this section.
 4. CWSs may analyze for naturally occurring potassium-40 beta particle activity from the same or equivalent sample used for the gross beta particle activity analysis. Systems are allowed to subtract the potassium-40 beta particle activity value from the total gross beta particle activity value to determine if the screening level is exceeded. The potassium-40 beta particle activity must be calculated by multiplying elemental potassium concentrations (in mg/L) by a factor of 0.82.
 5. If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity exceeds the screening level, an analysis of the sample must be performed to identify the major radioactive constituents present in the sample and the appropriate doses must be calculated and summed to determine compliance with § 209 (A) (1) (#3, Note 2), using the formula in § 209 (A) (1) (#3, Note 3). Doses must also be calculated and combined for measured levels of tritium and strontium to determine compliance.
 6. Public water systems must monitor monthly at the sampling point(s) which exceed the maximum contaminant level in § 209 (A) (1) beginning the month after the exceedance occurs. Public water systems must continue monthly monitoring until the system has established, by a rolling average of 3 monthly samples, that the MCL is being met. Public water systems who establish that the MCL is being met must return to quarterly monitoring until the systems meet the requirements set forth in (A) (1) (b) or (A) (2) (a) of this section.

§ 413 TURBIDITY SAMPLING AND ANALYTICAL REQUIREMENTS

The requirements in this section apply to unfiltered systems that the Director has determined, in writing pursuant to § 2535 of the NNSDWA, must install filtration, until June 29, 1993, or until filtration is installed, whichever is later.

- A. Samples shall be taken by public water system owners or operators for both community and non-CWSs at a representative entry point(s) to the water distribution system at least once per day, for the purpose of making turbidity measurements to determine compliance with § 206. If the Director determines that a reduced sampling frequency in a non-CWS will not pose a risk to public health, the Director can reduce the required sampling frequency. The option of reducing the turbidity frequency shall be permitted only in those public water systems that practice disinfection and which maintain an active residual disinfectant in the distribution system, and in cases where the Director has indicated in writing that no unreasonable risk to health existed under the circumstances of this option. Turbidity measurements shall be made as directed in Appendix D § 801-D (B).
- B. If the result of a turbidity analysis indicates that the maximum allowable limit has been exceeded, the sampling and measurement shall be confirmed by resampling as soon as practical and preferably within one hour. If the repeat sample confirms that the maximum allowable

limit has been exceeded, the public water system owner or operator shall report to the Director within forty-eight hours. The repeat sample shall be the sample used for the purpose of calculating the monthly average. If the monthly average of the daily samples exceeds the maximum allowable limit, or if the average of two samples taken on consecutive days exceeds 5 NTU, the public water system owner or operator shall report to the Director and notify the public as required by §§ 502 and 603.

- C. Sampling for non-CWSSs shall begin within two years after the effective date of this part.
- D. The requirements of this section shall apply only to public water systems which use water obtained in whole or in part from surface sources.
- E. The Director has the authority to determine compliance or initiate enforcement action based upon analytical results or other information compiled by his/her authorized representative(s).

§ 414 ALTERNATE ANALYTICAL TECHNIQUES

With the written permission of the Director, concurred in by the Administrator of the U.S. EPA, an alternate analytical technique may be employed. An alternate technique shall be accepted only if it is substantially equivalent to the prescribed test in both precision and accuracy as it relates to the determination of compliance with an MCL. The use of the alternate analytical technique shall not decrease the frequency of monitoring required by this part.

Part VI
PUBLIC NOTIFICATION OF DRINKING WATER VIOLATIONS

§ 601 PURPOSE

The purpose of these regulations is to define the requirements for publicly notifying persons served by a public water system of any noncompliance with the NNSDWA.

§ 602 GENERAL PUBLIC NOTIFICATION REQUIREMENTS

Public water systems must comply with the requirements in this section upon promulgation of these regulations.

- A. Each owner or operator of a public water system (CWS, NTNCWS, TNCWS) must give notice for all violations of the NNPDR and for other situations, as listed in Table 600.1. The term "NNPDR violations" is used in this section to include violations of the maximum contaminant level (MCL), maximum residual disinfection level (MRDL), treatment technique (TT), monitoring requirements, and testing procedures in these regulations. Appendix B to these regulations identifies the tier assignment for each specific violation or situation requiring a public notice.

Table 600.1 Violation Categories and Other Situations Requiring a Public Notice

1.	NNPDR violations: <ul style="list-style-type: none">a. Failure to comply with an applicable MCL or MRDL.b. Failure to comply with a prescribed treatment technique (TT).c. Failure to perform water quality monitoring, as required by the drinking water regulations.d. Failure to comply with testing procedures as prescribed by a drinking water regulation.
2.	Variance and exemptions under §§ 2561, 2562, and 2563 of NNSDWA: <ul style="list-style-type: none">a. Operation under a variance or an exemption.b. Failure to comply with the requirements of any schedule that has been set under a variance or exemption.
3.	Special public notices: <ul style="list-style-type: none">a. Occurrence of a waterborne disease outbreak or other waterborne emergency.b. Exceedance of the nitrate MCL by non-community water systems, where granted permission by the Director under § 202(C) of these regulations.c. Exceedance of the secondary maximum contaminant level (SMCL) for fluoride.d. Other violations and situations determined by the Director to require a public notice under this section, not already listed in Appendix B.

- B. Types of public notice required for each violation or situation.
- a. Public notice requirements are divided into three tiers (Table 600.2) to take into account the seriousness of the violation or situation and of any potential adverse health effects that may be involved.
 - 1. The public notice requirements for each violation or situation listed in Table 600.1 of this section are determined by the tier to which it is assigned.
 - 2. Table 600.2 of this section provides the definition of each tier. Appendix B of these regulations identifies the tier assignment for each specific violation or situation.

Table 600.2 Definition of Public Notice Tiers

1.	Tier 1 Public Notice:
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Required for NNPDWR violations and situations with significant potential to have serious adverse effects on human health as a result of short-term exposure.

2. Tier 2 Public Notice:

Required for all other NNPDWR violations and situations with potential to have serious adverse effects on human health.

3. Tier 3 Public Notice:

Required for all other NNPDWR violations and situations not included in Tier 1 and Tier 2.

C. Notification

1. Each public water system must provide public notice to persons served by the water system, in accordance with this section. Public water systems that sell or otherwise provide drinking water to other water systems (i.e., to consecutive systems) are required to give public notice to the owner or operator of the consecutive system; the consecutive system is responsible for providing public notice to the persons it serves.
- b. If a public water system has a violation in a portion of the distribution system that is physically or hydraulically isolated from other parts of the distribution system, the Director may allow the system to limit distribution of the public notice to only persons served by that portion of the system which is out of compliance. Permission by the Director for limiting distribution of the notice must be granted in writing.
- c. A copy of the notice must also be sent to the Director, in accordance with the requirements under § 502(D).

§ 603 TIER 1 PUBLIC NOTICE: FORM, MANNER, AND FREQUENCY OF NOTICE

A. Violations or situations requiring a Tier 1 Public Notice.

1. Table 600.3 of this section lists the violation categories and other situations requiring a Tier 1 Public Notice.
2. Appendix B to these regulations identifies the tier assignment for each specific violation or situation.

Table 600.3 Violation Categories and Other Situations Requiring a Tier 1 Public Notice

1.	Violation of the MCL for total coliforms when fecal coliform or E. coli are present in the water distribution system (as specified in §205(C)(3)), or when the public water system fails to test for fecal coliforms or E. coli when any repeat sample tests positive for coliform (as specified in §404(E)); <u>Violation of the MCL for E. coli (as specified in § 205(B) and (C) and § 2710(A));</u>
2.	Violation of the MCL for nitrate, nitrite, or total nitrate and nitrite, as defined in §203, or when the public water system fails to take a confirmation sample within 24 hours of the system's receipt of the first sample showing an exceedance of the nitrate or nitrite MCL, as specified in §407(B) and 408(B);
3.	Exceedance of the nitrate MCL by NTCWS and TNCWS, where permitted to exceed the MCL by the Director under §202(C), as required under §610;
4.	Violation of the MRDL for chlorine dioxide, as defined in §208(A)(1), when one or more samples taken in the distribution system the day following an exceedance of the MRDL at the entrance of the distribution system exceeds the MRDL, or when the public water system does not take the required samples in the distribution system, as specified in §1104(C)(2)(a);

5.	Violation of the turbidity MCL under §206(B), where the Director determines after consultation that a Tier 1 notice is required or where consultation does not take place within 24 hours after the system learns of the violation;
6.	Violation of the Part VIII - General Requirements For Surface Water Treatment or Part XIII - Enhanced Surface Water Treatment technique, Part XXI-Long Term 1 Enhanced Surface Water Treatment (LT1ESWTR) requirement resulting from a single exceedance of the maximum allowable turbidity limit (as identified in Appendix B), where the Director determines after consultation that a Tier 1 notice is required or where consultation does not take place within 24 hours after the system learns of the violation;
7.	Occurrence of a waterborne disease outbreak, as defined in §104, or other waterborne emergency (such as a failure or significant interruption in key water treatment processes, a natural disaster that disrupts the water supply or distribution system, or a chemical spill or unexpected loading of possible pathogens into the source water that significantly increases the potential for drinking water contamination);
8.	Detection of E. coli, enterococci, or coliphage in source water samples as specified in §2503(a) and §2503(b).
9.	Other violations or situations with significant potential to have serious adverse effects on human health as a result of short-term exposure, as determined by the Director either in its regulations or on a case-by-case basis.

B. Additional Required Steps for Tier 1 Public Notice.

Public water systems must:

1. Provide a public notice as soon as practical but no later than 24 hours after the system learns of the violation;
2. Initiate consultation with the Director as soon as practical, but no later than 24 hours after the public water system learns of the violation or situation, to determine additional public notice requirements; and
3. Comply with any additional public notification requirements (including any repeat notices or direction on the duration of the posted notices) that are established as a result of the consultation with the Director. Such requirements may include the timing, form, manner, frequency, and content of repeat notices (if any) and other actions designed to reach all persons served.

C. Form and manner of the public notice.

Public water systems must provide the notice within 24 hours in a form and manner appropriate to reach all persons served, in English or Navajo. The form and manner used by the public water system are to fit the specific situation, but must be designed to reach residential, transient, and non-transient users of the water system. In order to reach all persons served, public water systems are to use, at a minimum, one or more of the following forms of delivery:

1. Appropriate broadcast media (such as radio and television);
2. Posting of the notice in conspicuous locations throughout the area served by the public water system;
3. Hand delivery of the notice to persons served by the public water system; or
4. Another delivery method approved in writing by the Director.

§ 604 TIER 2 PUBLIC NOTICE: FORM, MANNER, AND FREQUENCY OF NOTICE

A. Violations or situations requiring a Tier 2 Public Notice. Table 600.4 of this section lists the violation categories and other situations requiring a Tier 2 Public Notice. Appendix B to

this subpart identifies the tier assignment for each specific violation or situation.

**Table 600.4 Violation Categories and Other Situations Requiring
a Tier 2 Public Notice**

1.	All violations of the MCL, MRDL, and treatment technique requirements, except where a Tier 1 Public Notice is required under § 604(A) or where the Director determines that a Tier 1 Public Notice is required;
2.	Violations of the monitoring and testing procedure requirements, where the Director determines that a Tier 2 Public Notice rather than a Tier 3 Public Notice is required, taking into account potential health impacts and persistence of the violation; and
3.	Failure to comply with the terms and conditions of any variance or exemption in place.
4.	Failure to take corrective action or failure to maintain at least 4-log treatment of viruses (using inactivation, removal, or a Director-approved combination of 4-log virus inactivation and removal) before or at the first customer under §2504(a).

B. Tier 2 Public Notification.

1. Public water systems must provide the public notice as soon as practical, but no later than 30 days after the system learns of the violation.
 - a. If the public notice is posted, the notice must remain in place for as long as the violation or situation persists, but in no case for less than seven days, even if the violation or situation is resolved.
 - b. The Director, in appropriate circumstances, may allow additional time for the initial notice of up to three months from the date the system learns of the violation.
 - c. It is not appropriate for the Director to grant an extension to the 30-day deadline for any unresolved violation or to allow across-the-board extensions by rule or policy for other violations or situations requiring a Tier 2 public notice.
 - d. Extensions granted by the Director must be in writing.
2. The public water system must repeat the notice every three months as long as the violation or situation persists, unless the Director determines that appropriate circumstances warrant a different repeat notice frequency.
 - a. In no circumstance may the repeat notice be given less frequently than once per year.
 - b. It is not appropriate for the Director to allow less frequent repeat notice for an MCL or treatment technique violation under ~~the Total Coliform Regulations or~~ Part XXVII of these regulations or a treatment technique violation under Part VIII - General Requirements for Surface Water Treatment or Part XIII - Enhanced Surface Water Treatment.
 - c. It is also not appropriate for the Director to allow through its rules or policies across-the-board reductions in the repeat notice frequency for other ongoing violations requiring a Tier 2 repeat notice.
 - d. Director-determinations allowing repeat notices to be given less frequently than once every three months must be in writing.
3. For the turbidity violations specified in this paragraph, public water systems must consult with the Director as soon as practical but no later than 24 hours after the public water system learns of the violation, to determine whether a Tier 1 Public Notice under § 604(A) is required to protect public health. When consultation does not take

place within the 24-hour period, the public water system must distribute a Tier 1 notice of the violation within the next 24 hours (i.e., no later than 48 hours after the system learns of the violation), following the requirements under §604(B) and (C). Consultation with the Director is required for:

- a. Violation of the turbidity MCL under §206(B); or
- b. Violation of the SWTR, ESWTR or LT1ESWTR treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit.

C. Form and manner of the Tier 2 Public Notice.

Public water systems must provide the initial public notice and any repeat notices in a form and manner that are appropriate to reach persons served in the required time period. The form and manner of the public notice may vary based on the specific situation and type of water system, but it must at a minimum meet the following requirements:

1. Unless directed otherwise by the Director in writing, CWSs must provide notice by:
 - a. Mail or other direct delivery to each customer receiving a bill and to other service connections to which water is delivered by the public water system; and
 - b. Any other method appropriate to reach other persons regularly served by the system, if they would not normally be reached by the notice required in subsection (C)(1)(a) of this section.
 - i. Such persons may include those who do not pay water bills or do not have service connection addresses (e.g., house renters, apartment dwellers, university students, nursing home patients, prison inmates, etc.).
 - ii. Other methods may include: Publication in a local newspaper; delivery of multiple copies for distribution by customers that provide their drinking water to others (e.g., apartment building owners or large private employers); posting in public places served by the system or on the Internet; or delivery to community organizations or chapters.
2. Unless directed otherwise by the Director in writing, NTNCWSs and TNCWSs must provide notice by:
 - a. Posting the notice in conspicuous locations throughout the distribution system frequented by persons served by the system, or by mail or direct delivery to each customer and service connection (where known); and
 - b. Any other method appropriate to reach other persons served by the system if they would not normally be reached by the notice required in paragraph (C)(2)(a) of this section.
 - i. Such persons may include those served who may not see a posted notice because the posted notice is not in a location they routinely pass by.
 - ii. Other methods may include: Publication in a local newspaper or newsletter distributed to customers; use of e-mail to notify employees or students; or, delivery of multiple copies in central locations (e.g., community centers, chapters).

§ 605 TIER 3 PUBLIC NOTICE: FORM, MANNER AND FREQUENCY OF NOTICE

A. Violations or situations requiring a Tier 3 Public Notice.

Table 600.5 lists the violation categories and other situations requiring a Tier 3 Public Notice. Appendix B to these regulations identifies the tier assignment for each specific violation or situation.

Table 600.5 Violation Categories and Other Situations Requiring a Tier 3 Public Notice

1. Monitoring violations under the NNPDWR, except where a Tier 1 Public Notice is required
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	§ 604(A) or where the Director determines that a Tier 2 Public Notice is required;
2.	Failure to comply with a testing procedure established in these regulations, except where a Tier 1 Public Notice is required under § 604(A) or where the Director determines that a Tier 2 Public Notice is required;
3.	Operation under a variance granted under §§ 2561 or 2562 of the NNSDWA or an exemption granted under §§ 2563 of the NNSDWA;
4.	<u>Availability of unregulated contaminant monitoring results, as required under § 608.</u>
5.	Exceedance of the fluoride secondary maximum contaminant level (SMCL), as required under § 609 ; and
6.	<u>Reporting and Recordkeeping violations under Part XXVI of these regulations.</u>

B. Tier 3 Public Notification.

1. Public water systems must provide the public notice no later than one year after the public water system learns of the violation or situation or begins operating under a variance or exemption. Following the initial notice, the public water system must repeat the notice annually for as long as the violation, variance, exemption, or other situation persists. If the public notice is posted, the notice must remain in place for as long as the violation, variance, exemption, or other situation persists, but in no case less than seven days (even if the violation or situation is resolved).
2. Instead of individual Tier 3 Public Notices, a public water system may use an annual report detailing all violations and situations that occurred during the previous twelve months, as long as the timing requirements of subsection (B)(1) of this section are met.

C. Form and manner of the Tier 3 Public Notice.

Public water systems must provide the initial notice and any repeat notices in a form and manner that are appropriate to reach persons served in the required time period. The form and manner of the public notice may vary based on the specific situation and type of water system, but it must at a minimum meet the following requirements:

1. Unless directed otherwise by the Director in writing, CWSs must provide notice by:
 - a. Mail or other direct delivery to each customer receiving a bill and to other service connections to which water is delivered by the public water system; and
 - b. Any other method appropriate to reach other persons regularly served by the system, if they would not normally be reached by the notice required in subsection (C)(1)(a) of this section.
 - i. Such persons may include those who do not pay water bills or do not have service connection addresses (e.g., house renters, apartment dwellers, university students, nursing home patients, prison inmates, etc.).
 - ii. Other methods may include: Publication in a local newspaper; delivery of multiple copies for distribution by customers that provide their drinking water to others (e.g., apartment building owners or large private employers); posting in public places or on the Internet; or delivery to community organizations or chapters.
2. Unless directed otherwise by the Director in writing, NTNCWSs and TNCWSs must provide notice by:
 - a. Posting the notice in conspicuous locations throughout the distribution system frequented by persons served by the system, or by mail or direct delivery to each

customer and service connection (where known); and

- b. Any other method appropriate to reach other persons served by the system, if they would not normally be reached by the notice required in subsection (C)(2)(a) of this section.
 - i. Such persons may include those who may not see a posted notice because the notice is not in a location they routinely pass by.
 - ii. Other methods may include: Publication in a local newspaper or newsletter distributed to customers; use of e-mail to notify employees or students; or, delivery of multiple copies in central locations (e.g., community centers, chapters).

D. Use of the Consumer Confidence Report to meet the Tier 3 Public Notice Requirements.

For CWSs, the Consumer Confidence Report (CCR) required under § 1200 of these regulations may be used as a vehicle for the initial Tier 3 Public Notice and all required repeat notices, as long as:

- 1. The CCR is provided to persons served no later than 12 months after the system learns of the violation or situation as required under § 606(B);
- 2. The Tier 3 Public Notice contained in the CCR follows the content requirements under § 607; and
- 3. The CCR is distributed following the delivery requirements under § 606(C).

§ 606 CONTENT OF THE PUBLIC NOTICE

A. Elements to be included in the Public Notice for Violations of NNPDWR or Other Situations Requiring a Public Notice.

When a public water system violates a NNPDWR or has a situation requiring public notification, each public notice must include the following elements:

- 1. A description of the violation or situation, including the contaminant(s) of concern, and (as applicable) the contaminant level(s);
- 2. When the violation or situation occurred;
- 3. Any potential adverse health effects from the violation or situation, including the standard language under paragraphs (D)(1) or (D)(2) of this section, whichever is applicable;
- 4. The population at risk, including sub-populations particularly vulnerable if exposed to the contaminant in their drinking water;
- 5. Whether alternative water supplies should be used;
- 6. What actions consumers should take, including when they should seek medical help, if known;
- 7. What the system is doing to correct the violation or situation;
- 8. When the public water system expects to return to compliance or resolve the situation;
- 9. The name, business address, and phone number of the public water system owner, operator, or designee as a source of additional information concerning the notice; and
- 10. A statement to encourage the notice recipient to distribute the public notice to other persons served, using the standard language under subsection (D)(3) of this section, where applicable.

B. Elements to be included in the public notice for public water systems operating under a variance or exemption.

- 1. If a public water system has been granted a variance or an exemption, the public notice must contain:

PART VIII
GENERAL REQUIREMENTS FOR SURFACE WATER TREATMENT

§ 801 PURPOSE

These regulations establish criteria under which filtration is required as a treatment technique for public water systems supplied by a surface water source and public water systems supplied by a groundwater source under the direct influence of surface water. In addition, these regulations establish treatment technique requirements in lieu of MCLs for the following contaminants: *Giardia lamblia*, viruses, heterotrophic plate count bacteria, *Legionella*, and turbidity.

§ 802 GENERAL REQUIREMENTS

- A. Each public water system with a surface water source or a groundwater source under the direct influence of surface water must provide treatment of that source water that complies with these treatment technique requirements. The treatment technique requirements consist of installing and properly operating water treatment processes which reliably achieve:
1. At least 99.9 % (3-log) removal and/or inactivation of *Giardia lamblia* cysts between a point where the raw water is not subject to re-contamination by surface water runoff and a point downstream before or at the first customer; and
 2. At least 99.99 % (4-log) removal and/or inactivation of viruses between a point where the raw water is not subject to re-contamination by surface water runoff and a point downstream before or at the first customer.
- B. A public water system using a surface water source or a groundwater source under the direct influence of surface water is considered to be in compliance with the requirements of subsection (A) of this section if:
1. It meets the requirements for avoiding filtration specified in § 803 and the disinfection requirements in § 804(A) or
 2. It meets the filtration requirements in § 805 and the disinfection requirements in § 804(B).
- C. Each public water system using a surface source or a groundwater source under the direct influence of surface water must be operated by qualified personnel who meet the requirements specified Part XIV.
- D. Additional requirements for systems serving at least 10,000 people. In addition to complying with requirements in this section, systems serving at least 10,000 people must also comply with the requirements in Part XIII.
- E. Additional requirements for systems serving fewer than 10,000 people. In addition to complying with requirements in this ~~subpart~~ section, systems serving fewer than 10,000 people must also comply with the requirements in Part 2100 of ~~this part~~ these regulations.

§ 803 CRITERIA FOR AVOIDING FILTRATION

A public water system that uses a surface water source must meet all of the conditions of subsections (A) and (B) of this section, and is subject to subsection (C)(2) of this section, unless the Director has determined, in writing pursuant to § 2535 of the NNSDWA, that filtration is required. A public water system that uses a groundwater source under the direct influence of surface water must meet all of the conditions of subsections (A) and (B) of this section and is subject to subsection (C)(2) of this section, beginning 18 months after the Director determines that it is under the direct influence of surface water or beginning immediately, if the Administrator has already made that determination, unless the Director has determined, in writing pursuant to § 2535 of the NNSDWA, that filtration is required. Within 18 months of the failure of a public water system using surface water or a groundwater source under the direct influence of surface water to meet any one of the requirements of subsections (A) and (B) of this section, the public water system must have installed filtration and meet the criteria for filtered public water systems specified in § 804(B) and § 805.

- A. Source Water Quality Conditions.

1. The fecal coliform concentration must be equal to or less than 20/100 ml, or the total coliform concentration must be equal to or less than 100/100 ml (measured as specified in Appendix D § 801-D (A)(1) and (2) and (B)(1)), in representative samples of the source water immediately prior to the first or only point of disinfectant application in at least 90 % of the measurements made for the 6 previous months that the public water system served water to the public on an ongoing basis. If a public water system measures both fecal and total coliforms, the fecal coliform criterion, but not the total coliform criterion, in this subsection must be met.
2. The turbidity level cannot exceed 5 NTU (measured as specified in Appendix D § 801-D (A)(1) and (B)(2)) in representative samples of the source water immediately prior to the first or only point of disinfectant application unless:
 - a. The Director determines that any such event was caused by circumstances that were unusual and unpredictable; and
 - b. As a result of any such event, there have not been more than two events in the past 12 months that the public water system served water to the public, or more than five events in the past 120 months the public water system served water to the public, in which the turbidity level exceeded 5 NTU. An "event" is a series of consecutive days during which at least one turbidity measurement each day exceeds 5 NTU.

B. Site-Specific Conditions.

1.
 - a. The public water system must meet the requirements of § 804 (A)(1) at least 11 of the 12 previous months that the public water system served water to the public, on an ongoing basis, unless the public water system fails to meet the requirements during 2 of the 12 previous months that the public water system served water to the public, and the Director determines that at least one of these failures was caused by circumstances that were unusual and unpredictable.
 - b. The public water system must meet the requirements of § 804 (A)(2) at all times that the system serves water to the public.
 - c. The public water system must meet the requirements of § 804 (A)(3) at all times that the system serves water to the public unless the Director determines that any such failure was caused by circumstances that were unusual and unpredictable.
 - d. The public water system must meet the requirements of § 804 (A)(4) on an ongoing basis unless the Director determines that failure to meet these requirements was not caused by a deficiency in treatment of the source water.
2. The public water system must maintain a watershed control program which minimizes the potential for contamination by *Giardia lamblia* cysts and viruses in the source water. The Director must determine whether the watershed control program is adequate to meet this goal. The adequacy of a program to limit potential contamination by *Giardia lamblia* cysts and viruses must be based on: the comprehensiveness of the watershed review; the effectiveness of the public water system's program to monitor and control detrimental activities occurring in the watershed; and the extent to which the public water system has maximized land ownership and/or controlled land use within the watershed. At a minimum, the watershed control program must:
 - a. Characterize the watershed hydrology and land ownership;
 - b. Identify watershed characteristics and activities which may have an adverse effect on source water quality; and
 - c. Monitor the occurrence of activities which may have an adverse effect on source water quality.

The public water system must demonstrate through ownership and/or written agreements with landowners within the watershed that it can control all human activities which may have an adverse impact on the microbiological quality of the source water. The public water system must submit an annual report to the Director that identifies any special concerns about the watershed and how they are being handled; describes activities in the watershed that affect water quality; and projects what adverse activities are expected

to occur in the future and describes how the public water system expects to address them. For public water systems using a groundwater source under the direct influence of surface water, an approved wellhead protection program developed by the NNEPA may be used, if the Director deems it appropriate, to meet these requirements.

3. The public water system must be subject to an annual on-site inspection to assess the watershed control program and disinfection treatment process. Either the Director or a party approved by the Director must conduct the on-site inspection. The inspection must be conducted by competent individuals such as sanitary and civil engineers, sanitarians, or technicians who have experience and knowledge about the operation and maintenance of a public water system, and who have a sound understanding of public health principles and waterborne diseases. A report of the on-site inspection summarizing all findings must be prepared every year and forwarded to the Director. The on-site inspection must indicate to the Director's satisfaction that the watershed control program and disinfection treatment process are adequately designed and maintained. The on-site inspection must include:
 - a. A review of the effectiveness of the watershed control program;
 - b. A review of the physical condition of the source intake and how well it is protected;
 - c. A review of the system's equipment maintenance program to ensure there is low probability for failure of the disinfection process;
 - d. An inspection of the disinfection equipment for physical deterioration;
 - e. A review of operating procedures;
 - f. A review of data records to ensure that all required tests are being conducted and recorded and disinfection is effectively practiced; and
 - g. Identification of any improvements which are needed in the equipment, system maintenance and operation, or data collection.
4. The public water system must not have been identified as a source of a waterborne disease outbreak, or if it has been so identified, the system must have been modified sufficiently to prevent another such occurrence, as determined by the Director.
5. The public water system must comply with the MCL for ~~total coliforms~~ E.coli in § 205 (B) and (C) at least 11 months of the 12 previous months that the system served water to the public, on an ongoing basis, unless the Director determines that failure to meet this requirement was not caused by a deficiency in treatment of the source water.
6. The water system must comply with the requirements for total trihalomethanes, haloacetic acids (five), bromate, chlorite, chlorine, chloramines, and chlorine dioxide in Part XI of these regulations.

C. Treatment Technique Violations.

1. A public water system is in violation of a treatment technique requirement if the system:
 - a. fails to meet any one of the criteria in subsections (A) and (B) of this section and/or which the Director has determined that filtration is required, in writing, pursuant to § 2535 of the NNSDWA, and
 - b. fails to install filtration as required in the introductory paragraph of this section.
2. A public water system that has not installed filtration is in violation of a treatment technique requirement if:
 - a. The turbidity level (measured as specified in § Appendix D § 801-D (A)(1) and (B)(2)) in a representative sample of the source water immediately prior to the first or only point of disinfection application exceeds 5 NTU; or

- b. The system is identified as a source of a waterborne disease outbreak.

§ 804 DISINFECTION

A public water system that uses a surface water source and does not provide filtration treatment must provide the disinfection treatment specified in subsection (A) of this section unless the Director determines, in writing, that filtration is required pursuant to § 2535 of the NNSDWA. A public water system that uses a groundwater source under the direct influence of surface water and does not provide filtration treatment must provide disinfection treatment specified in subsection (A) of this section 18 months after the Director determines that the groundwater source is under the influence of surface water, or beginning immediately, if the administrator has already made that determination, unless the Director has determined in writing that filtration is required pursuant to §2535 of the NNSDWA. If the Director has determined that filtration is required, the public water system must comply with any interim disinfection requirements the Director deems necessary before filtration is installed. A public water system that uses a surface water source that provides filtration treatment must provide the disinfection treatment specified in subsection (B) of this section beginning when filtration is installed. A public water system that uses a groundwater source under the direct influence of surface water and provides filtration treatment must provide disinfection treatment as specified in subsection (B) of this section beginning when filtration is installed. Failure to meet any requirement specified in this introductory subsection is a treatment technique violation.

A. Disinfection requirements for public water systems that do not provide filtration. Each public water system that does not provide filtration treatment must provide disinfection treatment as follows:

1. The disinfection treatment must be sufficient to ensure at least 99.9 % (3-log) inactivation of *Giardia lamblia* cysts and 99.99 % (4-log) inactivation of viruses, every day that the system serves water to the public, except any one day each month. Each day a system serves water to the public, the public water system must calculate the CT value(s) from the system's treatment parameters, using the procedure specified in Appendix D § (801-D) (B) (3), and determine whether this value(s) is sufficient to achieve the specified inactivation rates for *Giardia lamblia* cysts and viruses. If a system uses a disinfectant other than chlorine, the system may demonstrate to the Director, through the use of a Director-approved protocol for on-site disinfection challenge studies or other information satisfactory to the Director, that $CT_{99.9}$ values other than those specified in Appendix D: Tables 800-D-10 and 800-D-11 or other operational parameters are adequate to demonstrate that the system is achieving minimum inactivation rates required by subsection (A) (1) of this section.
2. The disinfection system must have either:
 - a. redundant components, including an auxiliary power supply with automatic start-up and alarm to ensure that disinfectant application is maintained continuously while water is being delivered to the distribution system, or
 - b. automatic shut-off of water delivery to the distribution system whenever there is less than 0.2 mg/L of residual disinfectant concentration in the water. If the Director determines that automatic shut-off would cause unreasonable risk to health or interfere with fire protection, the public water system must comply with subsection (A) (2) (a) of this section.
3. The residual disinfectant concentration in the water entering the distribution system, measured as specified in Appendix D § 801-D (A) (2) and (B) (5), cannot be less than 0.2 mg/l for more than 4 hours.
4. a. The residual disinfectant concentration in the distribution system, measured as total chlorine, combined chlorine, or chlorine dioxide, as specified in Appendix D § 801-D (A) (2) and (B) (6), cannot be undetectable in more than 5 % of the samples each month, for any two consecutive months that the system serves water to the public. Water in the distribution system with a heterotrophic bacteria concentration less than or equal to 500/ml, measured as heterotrophic plate count (HPC) as specified in Appendix D § 801-D (A) (1), is deemed to have a detectable disinfectant residual for purposes of determining compliance with this requirement. Thus, the values "V" in the following formula cannot exceed 5% in one month, for any two consecutive months.

$$V = \frac{c+d+e}{a+b} \times 100$$

where:

- a =number of instances where the residual disinfectant concentration is measured;
- b =number of instances where the residual disinfectant concentration is not measured but heterotrophic bacteria plate count (HPC) is measured;
- c =number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured;
- d =number of instances where the residual disinfectant concentration is measured but not detected and where the HPC is >500/ml; and
- e =number of instances where the residual disinfectant concentration is not measured and HPC is >500/ml.

- b. If the Director determines, based on site-specific considerations, that a public water system has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions specified by Appendix D § 801-D (A) (1) and that the system is providing adequate disinfection in the distribution system, the requirements of subsection (A) (4) (a) of this section do not apply to that system.

B. Disinfection requirements for public water systems which provide filtration. Each public water system that provides filtration treatment must provide disinfection treatment as follows.

1. The disinfection treatment must be sufficient to ensure that the total treatment processes of that public water system achieve at least 99.9 % (3-log) inactivation and/or removal of *Giardia lamblia* cysts and at least 99.99 % (4-log) inactivation and/or removal of viruses, as determined by the Director.
2. The residual disinfectant concentration in the water entering the distribution system, measured as specified in Appendix D § 801-D (A) (2) and (C) (2), cannot be less than 0.2 mg/L for more than 4 hours.
3. a. The residual disinfectant concentration in the distribution system, measured as total chlorine, combined chlorine, or chlorine dioxide, as specified in Appendix D § 801-D (A) (2) and (C) (3), cannot be undetectable in more than 5% of the samples each month, for any two consecutive months that the system serves water to the public. Water in the distribution system with a heterotrophic bacteria concentration less than or equal to 500/ml, measured as HPC as specified in Appendix D § 801-D (A) (1), is deemed to have a detectable disinfectant residual for purposes of determining compliance with this requirement. Thus, the value "V" in the following formula cannot exceed 5 % in

$$V = \frac{c+d+e}{a+b} \times 100$$

one month, for any two consecutive months.

where:

- a =number of instances where the residual disinfectant concentration is measured;
- b =number of instances where the residual disinfectant concentration is not measured but heterotrophic bacteria plate count (HPC) is measured;
- c =number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured;
- d =number of instances where no residual disinfectant concentration is detected and where the HPC is >500/ml; and
- e =number of instances where the residual disinfectant concentration is not measured and HPC is >500/ml.

- b. If the Director determines, based on site-specific considerations, that a public water system has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions specified in Appendix D § 801-D (A) (1) and that the system is providing adequate disinfection in the distribution system, the requirements of subsection (B) (3) (a)

of this section do not apply.

§ 805 FILTRATION

A public water system that uses a surface water source or a groundwater source under the direct influence of surface water, and does not meet all of the criteria in § 803 (A) and (B) for avoiding filtration, must provide treatment consisting of both disinfection, as specified in § 804 (B), and filtration treatment which complies with the requirements of subsections (A), (B), (C), or (D) of this section within 18 months of the failure to meet any one of the criteria for avoiding filtration in § 803 (A) and (B). Failure to meet any requirement specified in this introductory subsection is a treatment technique violation.

A. Conventional filtration treatment or direct filtration.

1. For public water systems using conventional filtration or direct filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to 0.5 NTU in at least 95% of the measurements taken each month, measured as specified in Appendix D § 801-D (A) (1) and (C) (1), except that if the Director determines that the system is capable of achieving at least 99.9 % removal and/or inactivation of *Giardia lamblia* cysts at some turbidity level higher than 0.5 NTU in at least 95 % of the measurements taken each month, the Director may substitute this higher turbidity limit for that system. However, in no case may the Director approve a turbidity limit that allows more than 1 NTU in more than 5 % of the samples taken each month, measured as specified in Appendix D § 801-D (A) (1) and (C) (1).
2. The turbidity level of representative samples of a public water system's filtered water must at no time exceed 5 NTU measured as specified in Appendix D § 801-D (A) (1) and (C) (1).
3. Public water systems serving at least 10,000 people must meet the turbidity requirements in §1305 (A).
4. Beginning January 14, 2005, systems serving fewer than 10,000 people must meet the turbidity requirements in §§ 2106(A)-(D).

B. Slow sand filtration.

1. For public water systems using slow sand filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to 1 NTU in at least 95% of the measurements taken each month, measured as specified in Appendix D § 801-D (A) (1) and (C) (1), except that if the Director determines there is no significant interference with disinfection at a higher turbidity level, the Director may substitute this higher turbidity limit for that system.
2. The turbidity level of representative samples of a public water system's filtered water must at no time exceed 5 NTU, measured as specified in Appendix D § 801-D (A) (1) and (C) (1).

C. Diatomaceous earth filtration.

1. For public water systems using diatomaceous earth filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to 1 NTU in at least 95% of the measurements taken each month, measured as specified in Appendix D § 801-D (A) (1) and (C) (1).
2. The turbidity level of representative samples of a public water system's filtered water must at no time exceed 5 NTU, measured as specified in Appendix D § 801-D (A) (1) and (C) (1).

D. Other filtration technologies.

A public water system may use a filtration technology not listed in subsections (A)-(C) of this section if it demonstrates to the Director, using pilot plant studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of § 804 (B), consistently achieves 99.9 % removal and/or inactivation of *Giardia lamblia* cysts and 99.99 % removal and/or inactivation of viruses. For a system that makes this demonstration, the requirements of subsection (B) of this section apply. Public water

systems serving at least 10,000 people must meet the requirements for other filtration technologies in § 1305(B). Beginning January 14, 2005, systems serving fewer than 10,000 people must meet the requirements for other filtration technologies in §§2106(A)-(D).

§ 806 REPORTING AND RECORDKEEPING REQUIREMENTS

- A. A public water system that uses a surface water source and does not provide filtration treatment must report monthly to the Director the information specified in this subsection (A), unless the Director has determined in writing that filtration is required pursuant to § 2535 of the NNSDWA, in which case the Director may specify alternative reporting requirements, as appropriate, until filtration is in place. A public water system that uses a groundwater source under the direct influence of surface water and does not provide filtration treatment must report monthly to the Director the information specified in this subsection (A) 6 months after the Director determines that the groundwater source is under the direct influence of surface water, or beginning immediately, if the Administrator has already made that determination unless the Director has determined, in writing, that filtration is required pursuant to § 2535 of the NNSDWA, in which case the Director may specify alternative reporting requirements, as appropriate, until filtration is in place.
1. Source water quality information must be reported to the Director within 10 days after the end of each month that the system serves water to the public. Information that must be reported includes:
 - a. The cumulative number of months for which results are reported.
 - b. The number of ~~fecal and/or total coliform samples, whichever are analyzed during the month (if a system monitors for both, only fecal coliforms must be reported),~~ the dates of sample collection, and the dates when the turbidity level exceeded 1 NTU.
 - c. The number of samples during the month that ~~had equal to or less than 20/100ml fecal coliforms and/or equal to or less than 100/100ml,~~ tested positive for total coliforms or *E. coli* whichever are analyzed.
 - d. The cumulative number of ~~fecal or total coliform samples, whichever are analyzed,~~ during the previous six months that the system served water to the public.
 - e. The cumulative number of samples that ~~had equal to or less than 20/100ml fecal coliforms and/or equal to or less than 100/100ml, whichever are analyzed,~~ were total coliform positive or *E. coli* positive during the previous six months that the system served water to the public.
 - f. The percentage of samples that ~~had equal to or less than 20/100ml fecal coliforms and/or equal to or less than 100/100ml, whichever are analyzed,~~ were total coliform positive or *E. coli* positive during the previous six months that the system served water to the public.
 - g. The maximum turbidity level measured during the month, the date(s) of occurrence for any measurement(s) which exceeded 5 NTU, and the date(s) that the occurrence(s) was reported to the Director.
 - h. For the first 12 months of recordkeeping, the dates and cumulative number of events during which the turbidity exceeded 5 NTU, and after one year of recordkeeping for turbidity measurements, the dates and cumulative number of events during which the turbidity exceeded 5 NTU in the previous 12 months that the system served water to the public.
 - I. For the first 120 months of recordkeeping, the dates and cumulative number of events during which the turbidity exceeded 5 NTU, and after 10 years of recordkeeping for turbidity measurements, the dates and cumulative number of events during which the turbidity exceeded 5 NTU in the previous 120 months that the system served water to the public.
 2. Disinfection information specified in Appendix D § 801-D (B) must be reported to the Director within 10 days after the end of each month that the system serves water to the

public. Information that must be reported includes:

- a. For each day, the lowest measurement of residual disinfectant concentration (in mg/L) in water entering the distribution system.
- b. The date and duration of each period when the residual disinfectant concentration in water entering the distribution system fell below 0.2 mg/L and when the Director was notified of the occurrence.
- c. The daily residual disinfectant concentration(s) (in mg/L) and disinfectant contact time(s) (in minutes) used for calculating the CT value(s).
- d. If chlorine is used, the daily measurement(s) of pH of disinfected water following each point of chlorine disinfection.
- e. The daily measurement(s) of water temperature in °C following each point of disinfection.
- f. The daily CTcalc and CTcalc/CT99.9 values for each disinfectant measurement or sequence and the sum of all CTcalc/CT99.9 values ((CTcalc/CT99.9)) before or at the first customer.
- g. The daily determination of whether disinfection achieves adequate *G.lambli*a cysts and virus inactivation, i.e., whether (CTcalc/CT99.9) is at least 1.0 or, where disinfectants other than chlorine are used, other indicator conditions that the Director determines are appropriate, are met.
- h. The following information on the samples taken in the distribution system in conjunction with total coliform sampling pursuant to § 804:
 1. Number of instances where the residual disinfectant concentration is measured;
 2. Number of instances where the residual disinfectant concentration is not measured but heterotrophic bacteria plate count (HPC) is measured;
 3. Number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured;
 4. Number of instances where residual disinfectant concentration is detected and where HPC is >500/ml;
 5. Number of instances where the residual disinfectant concentration is not measured and HPC is >500/ml;
 6. For the current and previous month that the system served water to the public, the value of "V" in the following formula:

$$V = \frac{c+d+e}{a+b} \times 100$$

where

a = the value in subsection (A) (2) (h) (1) of this section,
b = the value in subsection (A) (2) (h) (2) of this section,
c = the value in subsection (A) (2) (h) (3) of this section,
d = the value in subsection (A) (2) (h) (4) of this section, and
e = the value in subsection (A) (2) (h) (5) of this section.

7. If the Director determines, based on site-specific considerations, that a system has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions specified by Appendix D § 801-D (A) (1) and that the system is providing adequate disinfection in the distribution system, the requirements of subsection (A) (2) (h) (1)-(6) of this section do not apply to that system.

- I. A system need not report the data listed in subsections (A)(2)(a)-(c-f) of this section if all data listed in subsections (A)(2)(a)-(h) of this section remain on file at the system, and the Director determines that:
 - a. The system has submitted to the Director all the information required by subsections (A)(2)(a)-(h) of this section for at least 12 months; and
 - b. The Director has determined that the system is not required to provide filtration treatment.
3. No later than ten days after the end of each federal fiscal year (September 30), each system must provide to the Director a report which summarizes its compliance with all watershed control program requirements specified in § 803(B)(2).
4. No later than ten days after the end of each federal fiscal year (September 30), each system must provide to the Director a report of the on-site inspection conducted during that year pursuant to § 803 (B)(3), unless the on-site inspection was conducted by the Director. If the inspection was conducted by the Director, the Director must provide a copy of his/her report to the public water system.
5.
 - a. Each system, upon discovering that a waterborne disease outbreak potentially attributable to that system has occurred, must report that occurrence to the Director as soon as possible, but no later than by the end of the next business day.
 - b. If at any time the turbidity exceeds 5 NTU, the system must consult with the NNEPA-PWSSP as soon as practical, but no later than 24 hours after the exceedance is known, in accordance with the public notification requirements under § 605 (B)(3).
 - c. If at any time the residual falls below 0.2 mg/L in the water entering the distribution system, the system must notify the Director as soon as possible, but no later than by the end of the next business day. The system also must notify the Director by the end of the next business day whether or not the residual was restored to at least 0.2 mg/L within 4 hours.
- B. A public water system that uses a surface water source or a groundwater source under the direct influence of surface water and provides filtration treatment must report monthly to the Director the information specified in this subsection (B) when filtration is installed,
 1. Turbidity measurements as required by Appendix D § 801-D (C)(1) must be reported within 10 days after the end of each month that the system serves water to the public. Information that must be reported includes:
 - a. The total number of filtered water turbidity measurements taken during the month.
 - b. The number and percentage of filtered water turbidity measurements taken during the month which are less than or equal to the turbidity limits specified in § 805 for the filtration technology being used.
 - c. The date and value of any turbidity measurements taken during the month which exceed 5 NTU.
 2. Disinfection information specified in Appendix D § 801-D & (C) must be reported to the Director within 10 days after the end of each month that the system serves water to the public. Information that must be reported includes:
 - a. For each day, the lowest measurement of residual disinfectant concentration in mg/l. in water entering the distribution system.
 - b. The date and duration of each period when the residual disinfectant concentration in water entering the distribution system fell below 0.2 mg/L and when the Director was notified of the occurrence.
 - c. The following information on the samples taken in the distribution system in

conjunction with total coliform sampling pursuant to § 804:

1. Number of instances where the residual disinfectant concentration is measured;
2. Number of instances where the residual disinfectant concentration is not measured but heterotrophic bacteria plate count (HPC) is measured;
3. Number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured;
4. Number of instances where no residual disinfectant concentration is detected and where HPC is > 500/ml;
5. Number of instances where the residual disinfectant concentration is not measured and HPC is >500/ml;
6. For the current and previous month that the system serves water to the public, the value of "V" in the following formula:

$$V = \frac{c+d+e}{a+b} \times 100$$

where

a = the value in subsection (B) (2) (c) (1) of this section,
b = the value in subsection (B) (2) (c) (2) of this section,
c = the value in subsection (B) (2) (c) (3) of this section,
d = the value in subsection (B) (2) (c) (4) of this section, and,
e = the value in subsection (B) (2) (c) (5) of this section.

7. If the Director determines, based on site-specific considerations, that a system has no means for having a sample transported and analyzed for HPC by a certified laboratory within the requisite time and temperature conditions specified by Appendix D § 801-D (A) (1) and that the system is providing adequate disinfection in the distribution system, the requirements of subsection (B) (2) (c) (1) - (6) of this section do not apply.
 - d. A system need not report the data listed in subsections (B) (2) (a) of this section if all data listed in subsections (B) (2) (a) - (c) of this section remain on file at the system and the Director determines that the system has submitted all the information required by subsections (B) (2) (a) - (c) of this section for at least 12 months.
3.
 - a. Each system, upon discovering that a waterborne disease outbreak potentially attributable to that system has occurred, must report that occurrence to the Director as soon as possible, but no later than by the end of the next business day.
 - b. If at any time the turbidity exceeds 5 NTU, the water system must consult with the NNEPA-PWSSP as soon as practical, but no later than 24 hours after the exceedance is known, in accordance with the public notification requirements under § 605(B) (3).
 - c. If at any time the residual falls below 0.2 mg/L in the water entering the distribution system, the system must notify the Director as soon as possible, but no later than by the end of the next business day. The system also must notify the Director by the end of the next business day whether or not the residual was restored to at least 0.2 mg/L within 4 hours.

§ 807 RECYCLE PROVISIONS

A. Applicability

All Part VIII systems that employ conventional filtration or direct filtration treatment and that recycle spent filter backwash water, thickener supernatant, or liquids from dewatering processes must meet the requirements in subsections (B) through (D) of this section.

B. Reporting

A public water system subject to this section as provided in subsection (A) must notify the Director in writing by December 8, 2003, if the system recycles spent filter backwash water, thickener supernatant, or liquids from dewatering processes. This notification must include, at a minimum, the information specified in subsections (B)(1) and (2) of this section.

1. A plant schematic showing the origin of all flows which are recycled (including, but not limited to, spent filter backwash water, thickener supernatant, and liquids from dewatering processes), the hydraulic conveyance used to transport them, and the location where they are re-introduced back into the treatment plant.
2. 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 Director-approved operating capacity for the plant where the Director has made such determinations.

C. Treatment technique requirement

By June 8, 2004, any system that recycles spent filter backwash water, thickener supernatant, or liquids from dewatering processes must return these flows through the processes of a system's existing conventional or direct filtration system as defined in § 104 or at an alternate location approved by the Director. If capital improvements are required to modify the recycle location to meet this requirement, all capital improvements must be completed no later than June 8, 2006.

D. Recordkeeping

The system must collect, and retain on file, recycle flow information specified in subsections (D)(1) through (6) of this section for review and evaluation by the Director, beginning June 8, 2004.

1. Copy of the recycle notification and information submitted to the Director under subsection (B) of this section.
2. List of all recycle flows and the frequency with which they are returned.
3. Average and maximum backwash flow rate through the filters and the average and maximum duration of the filter backwash process in minutes.
4. Typical filter run length and a written summary of how filter run length is determined.
5. The type of treatment provided for the recycle flow.
6. 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.

PART XI
DISINFECTANT RESIDUALS, DISINFECTION BYPRODUCTS
AND DISINFECTION BYPRODUCT PRECURSORS

§ 1101 **PURPOSE**

- A. The requirements of this part constitute NNPDWRs and outline the Disinfectant Residuals, Disinfection Byproducts and Disinfection Byproduct Precursors regulations.
1. The regulations in this part establish criteria under which CWSs and NTNCWSs that add a chemical disinfectant to the water in any part of the drinking water treatment process must modify their practices to meet MCLs and MRDLs in §§ 207 and 208, respectively, and must meet the treatment technique requirements for disinfection byproduct precursors in § 1106.
 2. The regulations in this part establish criteria under which TNCWSs that use chlorine dioxide as a disinfectant or oxidant must modify their practices to meet the MRDL for chlorine dioxide in § 208.
 3. EPA has established MCLs for TTHM and HAA5 and treatment technique requirements for disinfection byproduct precursors to limit the levels of known and unknown disinfection byproducts which may have adverse health effects. These disinfection byproducts may include chloroform; bromodichloromethane; dibromochloromethane; bromoform; dichloroacetic acid; and trichloroacetic acid.

§ 1102 **COMPLIANCE DATES**

Notwithstanding the provisions of § 107, this part applies only to CWSs and NTNCWSs.

- A. Compliance dates.
1. CWSs and NTNCWSs. Unless otherwise noted, systems must comply with the requirements of this part. CWSs and NTNCWSs that are subject to Part VIII and that serve 10,000 or more persons must comply with this part upon the effective date of these regulations. CWSs and NTNCWSs that are subject to Part VIII and that serve fewer than 10,000 persons and CWSs and NTNCWSs using only ground water not under the direct influence of surface water must comply with this part beginning January 01, 2004.
 2. TNCWSs that are subject to Part VIII, that serve 10,000 or more persons and that use chlorine dioxide as a disinfectant or oxidant must comply with any requirements for chlorine dioxide and chlorite in this part. TNCWSs that are subject to Part VIII, that serve fewer than 10,000 persons and that use chlorine dioxide as a disinfectant or oxidant and TNCWSs, using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with any requirements for chlorine dioxide and chlorite in this part beginning January 01, 2004.
- B. Each CWS and NTNCWS regulated under §1101 of this section must be operated by qualified personnel who meet the requirements specified in § 1400 of these regulations and are included in a NNEPA register of qualified operators.
- C. Control of disinfectant residuals. Notwithstanding the MRDLs in § 208, systems may increase residual disinfectant levels in the distribution system of chlorine or chloramines (but not chlorine dioxide) to a level and for a time necessary to protect public health, to address specific microbiological contamination problems caused by circumstances such as, but not limited to, distribution line breaks, storm run-off events, source water contamination events, or cross-connection events.

§ 1103 **MONITORING REQUIREMENTS**

- A. General requirements.
1. Systems must take all samples during normal operating conditions.
 2. Systems may consider multiple wells drawing water from a single aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required, with Director approval in accordance with criteria developed under 40 CFR § 142.16(h)(5).
 3. Failure to monitor in accordance with the monitoring plan required under subsection (F) of this section is a monitoring violation.
 4. Failure to monitor will be treated as a violation for the entire period covered by the

annual average where compliance is based on a running annual average of monthly or quarterly samples or averages and the system's failure to monitor makes it impossible to determine compliance with MCLs or MRDLs.

5. Systems may use only data collected under the provisions of this part to qualify for reduced monitoring.

B. Monitoring requirements for disinfection byproducts.

1. THMs and HAA5.

- a. Routine monitoring. Systems must monitor at the frequency indicated in the following table:

Table 1100.1 Routine Monitoring Frequency for THM and HAA5

Type of System	Minimum monitoring frequency	Sample location in the distribution system
Part VIII - Surface Water Treatment system serving at least 10,000 persons.	Four water samples per quarter per treatment plant.	At least 25 percent of all samples collected each quarter at locations representing maximum residence time. Remaining samples taken at locations representative of at least average residence time in the distribution system and representing the entire distribution system, taking into account number of persons served, different sources of water, and different treatment methods. ¹
Part VIII - Surface Water Treatment system serving from 500 to 9,999 persons.	One water sample per quarter per treatment plant.	Locations representing maximum residence time. ¹
Part VIII - Surface Water Treatment system serving fewer than 500 persons.	One sample per year per treatment plant during month of warmest water temperature.	Locations representing maximum residence time. ¹ If the sample (or average of annual samples, if more than one sample is taken) exceeds MCL, system must increase monitoring to one sample per treatment plant per quarter, taken at a point reflecting the maximum residence time in the distribution system, until system meets reduced monitoring criteria in subsection (B)(1)(d) of this section.
System using only ground water not under direct influence of surface water using chemical disinfectant and serving at least 10,000 persons.	One water sample per quarter per treatment plant ² .	Locations representing maximum residence time. ¹
System using only ground water not under direct influence of surface water using chemical disinfectant and serving fewer than 10,000 persons.	One sample per year per treatment plant ² during month of warmest water temperature.	Locations representing maximum residence time. ¹ If the sample (or average of annual samples, if more than one sample is taken) exceeds the MCL, system must increase monitoring to one sample per treatment plant per quarter, taken at a point reflecting the maximum residence time in the distribution system, until system meets criteria in subsection (B)(1)(d) of this section for reduced monitoring.

¹ If a system elects to sample more frequently than the minimum required, at least 25 percent of all samples collected each quarter (including those taken in excess of the required frequency) must be taken at locations that represent the maximum residence time of the water in the distribution system. The remaining samples must be taken at locations representative of at least average residence time in the distribution system.

² Multiple wells drawing water from a single aquifer may be considered one treatment plant for determining the minimum number of samples required, with Director approval in accordance with criteria developed under 40 CFR § 142.16(h)(5).

- b. Systems may reduce monitoring, except as otherwise provided, in accordance with the

following table:

Table 1100.2 Reduced Monitoring Frequency for TTHM and HAA5

Type of system	Minimum monitoring frequency	Sample location in the distribution system
Part VIII-General Requirements for Surface Water Treatment system serving at least 10,000 persons which has a source water annual average Total Organic Carbon, "TOC", level, before any treatment, ≤ 4.0 mg/L.	TTHM annual average ≤ 0.040 mg/L and HAA5 annual average ≤ 0.030 mg/L.	One sample per treatment plant per quarter at distribution system location reflecting maximum residence time.
Part VIII-General Requirements for Surface Water Treatment system serving from 500 to 9,999 persons which has a source water annual average TOC level, before any treatment, ≤ 4.0 mg/L.	TTHM annual average ≤ 0.040 mg/L and HAA5 annual average ≤ 0.030 mg/L.	One sample per treatment plant per year at distribution system location reflecting maximum residence time during month of warmest water temperature. NOTE: Any Part VIII-Surface Water Treatment system serving fewer than 500 persons may not reduce its monitoring to less than one sample per treatment plant per year.
System using only ground water not under direct influence of surface water using chemical disinfectant and serving at least 10,000 persons.	TTHM annual average ≤ 0.040 mg/L and HAA5 annual average ≤ 0.030 mg/L.	One sample per treatment plant per year at distribution system location reflecting maximum residence time during month of warmest water temperature
System using only ground water not under direct influence of surface water using chemical disinfectant and serving fewer than 10,000 persons.	TTHM annual average ≤ 0.040 mg/L and HAA5 annual average ≤ 0.030 mg/L for two consecutive years OR TTHM annual average ≤ 0.020 mg/L and HAA5 annual average ≤ 0.015 mg/L for one year.	One sample per treatment plant per three year monitoring cycle at distribution system location reflecting maximum residence time during month of warmest water temperature, with the three-year cycle beginning on January 1 following quarter in which system qualifies for reduced monitoring.

- c. Monitoring requirements for source water TOC. In order to qualify for reduced monitoring in TTHM and HAA5 under paragraph (B)(1)(b) of this section, Part VIII systems not monitoring under the provisions of subsection (D) of this section must take monthly TOC samples every 30 days at a location prior to any treatment, beginning April 1, 2008 or earlier, if specified by the Director. In addition to meeting other criteria for reduced monitoring in paragraph (B)(1)(b) of this section, the source water TOC running annual average must be ≤ 4.0 mg/L on a continuing basis at each treatment plant. To reduce or remain on reduced monitoring for TTHM and HAA5 under paragraph (B)(1)(b) of this section, a system may reduce source water TOC monitoring to quarterly TOC samples taken every 90 days at a location prior to any treatment.
- d. Systems on a reduced monitoring schedule may remain on that reduced schedule as long as the average of all samples taken in the year (for systems which must monitor quarterly) or the result of the sample (for systems which must monitor no more frequently than annually) is no more than 0.060mg/L and 0.045mg/L for TTHMs and HAA5, respectively. Systems that do not meet these levels must resume monitoring at the frequency identified in paragraph (B)(1)(a) of this section (minimum monitoring frequency column) in the quarter immediately following the monitoring period in which the system exceeds 0.060mg/L or 0.045mg/L for TTHMs and HAA5s, respectively. For systems using only ground water not under the direct influence of surface water and serving fewer than 10,000 persons, if either the TTHM annual average is >0.080 mg/L or the HAA5 annual average is >0.060 mg/L, the system must go to the increased monitoring identified in paragraph (B)(1)(a) of this section (sample location column) in the quarter immediately following the monitoring period in which the system exceeds 0.080mg/L or 0.060 mg/L for TTHMs or HAA5 respectively.
- e. Systems on increased monitoring may return to routine monitoring if, after at least one year of monitoring, their TTHM annual average is ≤ 0.060 mg/L and their HAA5 annual average is ≤ 0.045 mg/L.

- f. The Director may return a system to routine monitoring at the Director's discretion.
2. Chlorite. CWS and NTNCWS water systems using chlorine dioxide, for disinfection or oxidation, must conduct monitoring for chlorite.
- a. Routine monitoring.
 - I. Daily monitoring. Systems must take daily samples at the entrance to the distribution system. For any daily sample that exceeds the chlorite MCL, the system must take additional samples in the distribution system the following day at the locations required by subsection (B)(2)(b) of this section, in addition to the sample required at the entrance to the distribution system.
 - ii. Monthly monitoring. Systems must take a three-sample set each month in the distribution system. The system must take one sample at each of the following locations: near the first customer, at a location representative of average residence time, and at a location reflecting maximum residence time in the distribution system. Any additional routine sampling must be conducted in the same manner (as three-sample sets, at the specified locations). The system may use the results of additional monitoring conducted under subsection (B)(2)(b) of this section to meet the requirement for monitoring in this subsection.
 - b. Additional monitoring. On each day following a routine sample monitoring result that exceeds the chlorite MCL at the entrance to the distribution system, the system is required to take three chlorite distribution system samples at the following locations: as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible (reflecting maximum residence time in the distribution system).
 - c. Reduced monitoring.
 - I. Chlorite monitoring at the entrance to the distribution system required by subsection (B)(2)(a)(I) of this section may not be reduced.
 - ii. Chlorite monitoring in the distribution system required by subsection (B)(2)(a)(ii) of this section may be reduced to one three-sample set per quarter after one year of monitoring where no individual chlorite sample taken in the distribution system under subsection (B)(2)(a)(ii) of this section has exceeded the chlorite MCL and the system has not been required to conduct monitoring under subsection (B)(2)(b) of this section. The system may remain on the reduced monitoring schedule until either any of the three individual chlorite samples taken quarterly in the distribution system under subsection (B)(2)(a)(ii) of this section exceeds the chlorite MCL or the system is required to conduct monitoring under subsection (B)(2)(b) of this section, at which time the system must revert to routine monitoring.
3. Bromate.
- a. Routine monitoring. CWS and NTNCWS systems using ozone, for disinfection or oxidation, must take one sample per month for each treatment plant in the system using ozone. Systems must take samples monthly at the entrance to the distribution system while the ozonation system is operating under normal conditions.
 - b. Reduced monitoring.
 - I. Until March 31, 2009, systems required to analyze for bromate may reduce monitoring from monthly to once per quarter, if the system's average source water bromide concentration is less than 0.05 mg/L based upon representative monthly bromide measurements for one year. The system may remain on reduced bromate monitoring until the running annual average source water bromide concentration, computed quarterly, is equal to or greater than 0.05 mg/L based upon representative monthly measurements. If the running annual average source water bromide concentration is >0.05 mg/L, the system must resume routine monitoring required by subsection (B)(3)(a) of this section in the following month.
 - ii. Beginning April 1, 2009, systems may no longer use the provision of paragraph (B)(3)(b)(I) of this section to qualify for reduced monitoring. A system required to analyze for bromate may reduce monitoring from monthly to quarterly if the system's running annual average bromate concentration is

≤0.0025mg/L based on monthly bromate measurements under paragraph (B)(3)(a) of this section for the most recent four quarters, with samples analyzed using Method 317.0 Revision 2.0, 326.0, or 321.8. If a system has qualified for reduced bromate monitoring under paragraph (B)(3)(b)(I) of this section, that system may remain on reduced monitoring as long as the running annual average or quarterly bromate samples are ≤0.0025mg/L based on samples analyzed using Method 317.0 Revision 2.0, 326.0, or 321.8. If the running annual average bromate concentration is >0.0025mg/L, the system must resume routine monitoring required by paragraph (B)(3)(a) of this section.

C. Monitoring requirements for disinfectant residuals.

1. Chlorine and chloramines.

- a. Routine monitoring. Beginning on the effective date of Part XXVII, as established in § 2701(C), CWS and NTNCWS systems that use chlorine or chloramines must measure the residual disinfectant level in the distribution system at the same point in the distribution system and at the same time as total coliform samples are taken, as specified in §§ 2704 through 2708. Part VIII systems may use the results of residual disinfectant concentration sampling conducted under Appendix D § 801-D (B) for unfiltered systems or Appendix D § 801-D(C) for systems which filter, in lieu of taking separate samples.
- b. Reduced monitoring. Monitoring may not be reduced.

2. Chlorine dioxide.

- a. Routine monitoring. CWS, NTNCWS, and TNCWS systems that use chlorine dioxide for disinfection or oxidation must take daily samples at the entrance to the distribution system. For any daily sample that exceeds the MRDL, the system must take samples in the distribution system the following day at the locations required by subsection (C)(2)(b) of this section, in addition to the sample required at the entrance to the distribution system.
- b. Additional monitoring. On each day following a routine sample monitoring result that exceeds the MRDL, the system is required to take three (3) chlorine dioxide distribution system samples. If chlorine dioxide or chloramines are used to maintain a disinfectant residual in the distribution system, or if chlorine is used to maintain a disinfectant residual in the distribution system and there are no disinfection addition points after the entrance to the distribution system (i.e., no booster chlorination), the system must take three (3) samples as close to the first customer as possible, at intervals of at least six hours. If chlorine is used to maintain a disinfectant residual in the distribution system and there are one or more disinfection addition points after the entrance to the distribution system (i.e., booster chlorination), the system must take one sample at each of the following locations: as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible (reflecting maximum residence time in the distribution system).
- c. Reduced monitoring. Chlorine dioxide monitoring may not be reduced.

D. Monitoring requirements for disinfection byproduct precursors (DBPP).

1. Routine monitoring. Part VIII systems which use conventional filtration treatment (as defined in § 104) must monitor each treatment plant for Total Organic Carbon, "TOC", no later than the point of combined filter effluent turbidity monitoring and representative of the treated water. All systems required to monitor under this subsection (D)(1) must also monitor for TOC in the source water prior to any treatment at the same time as monitoring for TOC in the treated water. These samples (source water and treated water) are referred to as paired samples. At the same time as the source water sample is taken, all systems must monitor for alkalinity in the source water prior to any treatment. Systems must take one paired sample and one source water alkalinity sample per month per plant at a time representative of normal operating conditions and influent water quality.
2. Reduced monitoring. Part VIII systems with an average treated water TOC of less than 2.0 mg/L for two consecutive years, or less than 1.0 mg/L for one year, may reduce monitoring for both TOC and alkalinity to one paired sample and one source water alkalinity sample per plant per quarter. The system must revert to routine monitoring in the month following the quarter when the annual average treated water TOC ≥2.0 mg/L.

- E. Bromide. Systems required to analyze for bromate may reduce bromate monitoring from monthly to once per quarter, if the system demonstrates that the average source water bromide concentration is less than 0.05 mg/L based upon representative monthly measurements for one year. The system must continue bromide monitoring to remain on reduced bromate monitoring.
- F. Monitoring plans. Each system required to monitor under this part must develop and implement a monitoring plan. The system must maintain the plan and make it available for inspection by the Director and the general public no later than 30 days following the applicable compliance dates in §1102 (A). All Part VIII systems serving more than 3,300 people must submit a copy of the monitoring plan to the Director no later than the date of the first report required under §1105. The Director may also require the plan to be submitted by any other system. After review, the Director may require changes in any plan elements. The plan must include at least the following elements.
1. Specific locations and schedules for collecting samples for any parameters included in this part.
 2. How the system will calculate compliance with MCLs, MRDLs, and treatment techniques.
 3. If approved for monitoring as a consecutive system, or if providing water to a consecutive system, under the provisions Part XIX, the sampling plan must reflect the entire distribution system.

§ 1104 COMPLIANCE REQUIREMENTS

A. General requirements.

1. Where compliance is based on a running annual average of monthly or quarterly samples or averages and the system fails to monitor for THM, HAA5, or bromate, this failure to monitor will be treated as a monitoring violation for the entire period covered by the annual average. Where compliance is based on a running annual average of monthly or quarterly samples or averages and the system's failure to monitor makes it impossible to determine compliance with MRDLs for chlorine and chloramines, this failure to monitor will be treated as a monitoring violation for the entire period covered by the annual average.
2. All samples taken and analyzed under the provisions of this part must be included in determining compliance, even if that number is greater than the minimum required.
3. If, during the first year of monitoring under § 1103, any individual quarter's average will cause the running annual average of that system to exceed the MCL, the system is out of compliance at the end of that quarter.

B. Disinfection byproducts

1. THMs and HAA5
 - a. For systems monitoring quarterly, compliance with MCLs in § 207 must be based on a running annual arithmetic average, computed quarterly, of quarterly arithmetic averages of all samples collected by the system as prescribed by § 1103(B)(1).
 - b. For systems monitoring less frequently than quarterly, systems demonstrate MCL compliance if the average of samples taken that year under the provisions of § 1103(B)(1) does not exceed the MCLs in § 207. If the average of these samples exceeds the MCL, the system must increase monitoring to once per quarter per treatment plant and such a system is not in violation of the MCL until it has completed one year of quarterly monitoring, unless the results of fewer than four quarters of monitoring will cause the running annual average to exceed the MCL, in which case the system is in violation at the end of that quarter. Systems required to increase monitoring frequency to quarterly monitoring must calculate compliance by including the sample which triggered the increased monitoring plus the following three quarters of monitoring.
 - c. If the running annual arithmetic average of quarterly averages covering any consecutive four-quarter period exceeds the MCL, the system is in violation of the MCL and must notify the public pursuant to § 603, in addition to reporting to the Director pursuant to § 1105.
 - d. If a public water system fails to complete four consecutive quarters of monitoring, compliance with the MCL for the last four-quarter period must be based on an average of the available data.
2. Bromate. Compliance must be based on a running annual arithmetic average, computed quarterly, of monthly samples (or, for months in which the system takes more than one

sample, the average of all samples taken during the month) collected by the system as prescribed by § 1103(B)(3). If the average of samples covering any consecutive four-quarter period exceeds the MCL, the system is in violation of the MCL and must notify the public pursuant to § 603, in addition to reporting to the Director pursuant to § 1105. If a public water system fails to complete 12 consecutive months' monitoring, compliance with the MCL for the last four-quarter compliance period must be based on an average of the available data.

3. Chlorite. Compliance must be based on an arithmetic average of each three sample set taken in the distribution system as prescribed by § 1103(B)(2)(a)(ii) and § 1103(B)(2)(b). If the arithmetic average of any three sample set exceeds the MCL, the system is in violation of the MCL and must notify the public pursuant to § 603, in addition to reporting to the Director pursuant to § 1105.

C. Disinfectant residuals.

1. Chlorine and chloramines.

- a. Compliance must be based on a running annual arithmetic average, computed quarterly, of monthly averages of all samples collected by the system under § 1103(C)(1). If the average of quarterly averages covering any consecutive four-quarter period exceeds the MRDL, the system is in violation of the MRDL and must notify the public pursuant to § 603, in addition to reporting to the Director pursuant to § 1105.
- b. In cases where systems switch between the use of chlorine and chloramines for residual disinfection during the year, compliance must be determined by including together all monitoring results of both chlorine and chloramines in calculating compliance. Reports submitted pursuant to § 1105 must clearly indicate which residual disinfectant was analyzed for each sample.

2. Chlorine dioxide.

- a. Acute violations. Compliance must be based on consecutive daily samples collected by the system under § 1103(C)(2). If any daily sample taken at the entrance to the distribution system exceeds the MRDL, and on the following day one (or more) of the three samples taken in the distribution system exceed the MRDL, the system is in violation of the MRDL and must take immediate corrective action to lower the level of chlorine dioxide below the MRDL and must notify the public pursuant to the procedures for acute health risks in § 603 in addition to reporting to the Director pursuant to § 1105. Failure to take samples in the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system will also be considered an MRDL violation and the system must notify the public of the violation in accordance with the provisions for acute violations under § 603 in addition to reporting to the Director pursuant to § 1105.
- b. Nonacute violations. Compliance must be based on consecutive daily samples collected by the system under § 1103(C)(2). If any two consecutive daily samples taken at the entrance to the distribution system exceed the MRDL and all distribution system samples taken are below the MRDL, the system is in violation of the MRDL and must take corrective action to lower the level of chlorine dioxide below the MRDL at the point of sampling and will notify the public pursuant to the procedures for nonacute health risks in § 603 in addition to reporting to the Director pursuant to § 1105. Failure to monitor at the entrance to the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system is also an MRDL violation and the system must notify the public of the violation in accordance with the provisions for nonacute violations under § 603 in addition to reporting to the Director pursuant to § 1105.

- D. Disinfection byproduct precursors (DBPP). Compliance must be determined as specified by § 1106(c). Systems may begin monitoring to determine whether Step 1 TOC removals can be met 12 months prior to the compliance date for the system. This monitoring is not required and failure to monitor during this period is not a violation. However, any system that does not monitor during this period, and then determines in the first 12 months after the compliance date that it is not able to meet the Step 1 requirements in § 1106(B)(2) and must therefore apply for alternate minimum TOC removal (Step 2) requirements, is not eligible for retroactive approval of alternate minimum TOC removal (Step 2) requirements as allowed pursuant to § 1106(B)(3) and is in violation. Systems may apply for alternate minimum TOC removal (Step 2) requirements any time after the compliance date. For systems required to meet Step 1 TOC removals, if the value calculated under § 1106(C)(1)(d) is less than 1.00, the system is in violation of the treatment technique requirements and must notify the public pursuant to Part VI of these regulations, in addition to reporting to the Director pursuant to § 1105.

§ 1105 REPORTING AND RECORDKEEPING REQUIREMENTS

A. Systems required to sample quarterly or more frequently must report to the Director within 10 days after the end of each quarter in which samples were collected, notwithstanding the provisions of § 502. Systems required to sample less frequently than quarterly must report to the Director within 10 days after the end of each monitoring period in which samples were collected.

B. Disinfection byproducts. Systems must report the information specified in the following table:

Type of system	Report requirements ¹
System monitoring for TTHM and HAA5 under the requirements of § 1103(B) on a quarterly or more frequent basis.	<ol style="list-style-type: none"> The number of samples taken during the last quarter. The location, date, and result of each sample taken during the last monitoring period. The arithmetic average of all samples taken in the last quarter. The annual arithmetic average of the quarterly arithmetic averages of this section for the last four quarters. Whether, based on § 1104 (B) (1), the MCL was violated.
System monitoring for TTHMs and HAA5 under the requirements of § 1103(B) less frequently than quarterly (but at least annually).	<ol style="list-style-type: none"> The number of samples taken during the last year. The location, date, and result of each sample taken during the last monitoring period. The arithmetic average of all samples taken over the last year. Whether, based on § 1104 (B) (1), the MCL was violated.
System monitoring for TTHMs and HAA5 under the requirements of § 1103(B) less frequently than annually.	<ol style="list-style-type: none"> The location, date, and result of each sample taken. Whether, based on § 1104 (B) (1), the MCL was violated.
System monitoring for chlorite under the requirements of § 1103(B).	<ol style="list-style-type: none"> The number of entry point samples taken each month for the last 3 months. The location, date, and result of each sample (both entry point and distribution system) taken during the last quarter. For each month in the reporting period, the arithmetic average of all samples taken in each three samples set taken in the distribution system. Whether, based on § 1104 (B) (3), the MCL was violated, and in which month, and how many times it was violated each month.
System monitoring for bromate under the requirements of § 1103(B)	<ol style="list-style-type: none"> The number of samples taken during the last quarter. The location, date, and result of each sample taken during the last quarter. The arithmetic average of the monthly arithmetic averages of all samples taken in the last year. Whether, based on § 1104 (B) (2), the MCL was violated.

¹ The Director may choose to perform calculations and determine whether the MCL was exceeded, in lieu of having the system report that information.

C. Disinfectants. Systems must report the information specified in the following table:

Type of system	Report requirements ¹
System monitoring for chlorine or chloramines under the requirements of § 1103(C).	<ol style="list-style-type: none"> The number of samples taken during each month of the last quarter. The monthly arithmetic average of all samples

	<ol style="list-style-type: none"> 3. taken in each month for the last 12 months. The arithmetic average of the monthly averages for the last 12 months. 4. Whether, based on § 1104 (C) (1), the MRDL was violated.
System monitoring for chlorine dioxide under the requirements of § 1103(C).	<ol style="list-style-type: none"> 1. The dates, results, and locations of samples taken during the last quarter. 2. Whether, based on § 1104 (C) (2), the MRDL was violated. 3. Whether the MRDL was exceeded in any two consecutive daily samples and whether the resulting violation was acute or nonacute.

¹ The Director may choose to perform calculations and determine whether the MRDL was exceeded, in lieu of having the system report that information.

D. Disinfection byproduct precursors and enhanced coagulation or enhanced softening. Systems must report the information specified in the following table:

Type of system	Report requirements ¹
System monitoring monthly or quarterly for TOC under the requirements of § 1103(D) and required to meet the softening requirements in § 1106(B) (2) or (3).	<ol style="list-style-type: none"> 1. The number of paired (source water and treated water, prior to continuous enhanced coagulation or enhanced disinfection) samples taken during the last quarter. 2. The location, date, and result of each paired sample and associated alkalinity taken during the last quarter. 3. For each month in the reporting period that paired samples were taken, the arithmetic average of the percent reduction of TOC for each paired sample and the required TOC percent removal. 4. Calculations for determining compliance with the TOC percent removal requirements, as provided in § 1106(C) (1). 5. Whether the system is in compliance with the enhanced coagulation or enhanced softening percent removal requirements in § 1106(B) for the last four quarters.
System monitoring monthly or quarterly for TOC under the requirements of § 1103(D) and meeting one or more of the alternative compliance criteria in § 1106(A) (2) or (3).	<ol style="list-style-type: none"> 1. The alternative compliance criterion that the system is using. 2. The number of paired samples taken during the last quarter. 3. The location, date, and result of each paired sample and associated alkalinity taken during the last quarter. 4. The running annual arithmetic average based on monthly averages (or quarterly samples) of source water TOC for systems meeting a criterion in § 1106(A) (2) (a) or 8 or of treated- water TOC for systems meeting the criterion in § 1106(A) (2) (b). 5. The running annual arithmetic average based on monthly averages (or quarterly samples) of source water SUVA for systems meeting the criterion in § 1106(A) (2) (e) or of treated water SUVA for systems meeting the criterion in § 1106(A) (2) (f). 6. The running annual average of source water alkalinity for systems meeting the criterion in § 1106(A) (2) (c) and of treated water alkalinity for systems meeting the criterion in § 1106(A) (3) (a). 7. The running annual average for both TTHM and HAA5 for systems meeting the criterion in § 1106(A) (2) (c) or (d). 8. The running annual average of the amount of magnesium hardness removal (as CaCO₃, in mg/L) for systems meeting the criterion in §

	<p>1106(A)(3)(b). 9. Whether the system is in compliance with the particular alternative compliance criterion in § 1106(A)(2) or (3).</p>
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¹ The Director may choose to perform calculations and determine whether the treatment technique was met, in lieu of having the system report that information.

§ 1106 TREATMENT TECHNIQUE FOR CONTROL OF DISINFECTION BYPRODUCT (DBP) PRECURSORS

A. Applicability

1. Part VIII systems using conventional filtration treatment (as defined in § 104) must operate with enhanced coagulation or enhanced softening to achieve the TOC percent removal levels specified in subsection (B) of this section unless the system meets at least one of the alternative compliance criteria listed in subsection (A)(2) or (A)(3) of this section.
2. Alternative compliance criteria for enhanced coagulation and enhanced softening systems. Part VIII systems using conventional filtration treatment may use the alternative compliance criteria in subsections (A)(2)(a) through (f) of this section to comply with this section in lieu of complying with subsection (B) of this section. Systems must still comply with monitoring requirements in § 1103(D).
 - a. The system's source water TOC level, measured according to Appendix E § 1101-E (D)(3), is less than 2.0 mg/L, calculated quarterly as a running annual average.
 - b. The system's treated water TOC level, measured according to Appendix E § 1101-E (D)(3), is less than 2.0 mg/L, calculated quarterly as a running annual average.
 - c. The system's source water TOC level, measured as required by Appendix E § 1101-E (D)(3), is less than 4.0 mg/L, calculated quarterly as a running annual average; the source water alkalinity, measured according to Appendix E § 1101-E (D)(1), is greater than 60 mg/L (as CaCO₃), calculated quarterly as a running annual average; and either the TTHM and HAA5 running annual averages are no greater than 0.040 mg/L and 0.030 mg/L, respectively; or prior to the effective date for compliance in § 1101(B), the system has made a clear and irrevocable financial commitment not later than the effective date for compliance in § 1101(B) to use of technologies that will limit the levels of TTHMs and HAA5 to no more than 0.040 mg/L and 0.030 mg/L, respectively. Systems must submit evidence of a clear and irrevocable financial commitment, in addition to a schedule containing milestones and periodic progress reports for installation and operation of appropriate technologies, to the Director for approval not later than the effective date for compliance in § 1101(B). These technologies must be installed and operating not later than June 30, 2005. Failure to install and operate these technologies by the date in the approved schedule will constitute a violation NNPdWR.
 - d. The TTHM and HAA5 running annual averages are no greater than 0.040 mg/L and 0.030 mg/L, respectively, and the system uses only chlorine for primary disinfection and maintenance of a residual in the distribution system.
 - e. The system's source water SUVA, prior to any treatment and measured monthly according to Appendix E § 1101-E (D)(4), is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average.
 - f. The system's finished water SUVA, measured monthly according to Appendix E § 1101-E (D)(4), is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average.
3. Additional alternative compliance criteria for softening systems. Systems practicing enhanced softening that cannot achieve the TOC removals required by subsection (B)(2) of this section may use the alternative compliance criteria in subsections (A)(3)(a) and (b) of this section in lieu of complying with subsection (B) of this section. Systems must still comply with monitoring requirements in § 1103(D).
 - a. Softening that results in lowering the treated water alkalinity to less than 60 mg/L (as CaCO₃), measured monthly according to Appendix E § 1101-E(D)(1) and calculated quarterly as a running annual average.
 - b. Softening that results in removing at least 10 mg/L of magnesium hardness (as CaCO₃), measured monthly according to Appendix E-1103-E (D)(6) and calculated quarterly as an annual running average.

B. Enhanced coagulation and enhanced softening performance requirements.

1. Systems must achieve the percent reduction of TOC specified in subsection (B)(2) of this section between the source water and the combined filter effluent, unless the Director approves a system's request for alternate minimum TOC removal (Step 2) requirements under subsection (B)(3) of this section.
2. Required Step 1 TOC reductions, indicated in the following table, are based upon specified source water parameters measured in accordance with Appendix E § 1101-E (D). Systems practicing softening are required to meet the Step 1 TOC reductions in the far-right column (Source water alkalinity >120 mg/L) for the specified source water TOC:

Step 1 Required Removal of TOC by Enhanced Coagulation and Enhanced Softening for Part VIII General Requirements for Surface Water Treatment Systems Using Conventional Treatment ^{1,2}

Source-water TOC, mg/L	Source water alkalinity, mg/L as CaCO ₃		
	0-60 (%)	#60-120 (%)	>120 ³ (%)
>2.0-4.0	35.0	25.0	15.0
>4.0-8.0	45.0	35.0	25.0
>8.0	50.0	40.0	30.0

¹ Systems meeting at least one of the conditions in subsection (A)(2)(a)-(f) of this section are not required to operate with enhanced coagulation.

² Softening systems meeting one of the alternative compliance criteria in subsection (A)(3) of this section are not required to operate with enhanced softening.

³ Systems practicing softening must meet the TOC removal requirements in this column.

3. Part VIII conventional treatment systems that cannot achieve the Step 1 TOC removals required by subsection (B)(2) of this section due to water quality parameters or operational constraints must apply to the Director, within three months of failure to achieve the TOC removals required by subsection (B)(2) of this section, for approval of alternative minimum TOC (Step 2) removal requirements submitted by the system. If the Director approves the alternative minimum TOC removal (Step 2) requirements, the Director may make those requirements retroactive for the purposes of determining compliance. Until the Director approves the alternate minimum TOC removal (Step 2) requirements, the system must meet the Step 1 TOC removals contained in subsection (B)(2) of this section.
4. Alternate minimum TOC removal (Step 2) requirements. Applications made to the Director by enhanced coagulation systems for approval of alternative minimum TOC removal (Step 2) requirements under subsection (B)(3) of this section must include, as a minimum, results of bench- or pilot-scale testing conducted under subsection (B)(4)(a) of this section and used to determine the alternate enhanced coagulation level.
 - a. Alternate enhanced coagulation level is defined as coagulation at a coagulant dose and pH as determined by the method described in subsections (B)(4)(a) through (e) of this section such that an incremental addition of 10 mg/L of alum (as aluminum or equivalent amount of ferric salt) results in a TOC removal of <0.3 mg/L. The percent removal of TOC at this point on the "TOC removal versus coagulant dose" curve is then defined as the minimum TOC removal required for the system. Once approved by the Director, this minimum requirement supersedes the minimum TOC removal required by the table in subsection (B)(2) of this section. This requirement will be effective until such time as the Director approves a new value based on the results of a new bench- and pilot-scale test. Failure to achieve Director-set alternative minimum TOC removal levels is a violation of NNPDR.
 - b. Bench- or pilot-scale testing of enhanced coagulation must be conducted by using representative water samples and adding 10 mg/L increments of alum (as aluminum or equivalent amounts of ferric salt) until the pH is reduced to a level less than or equal to the enhanced coagulation Step 2 target pH shown in the following table:

Enhanced Coagulation Step 2 target pH

Alkalinity (mg/L as CaCO ₃)	Target pH
0-60	5.5
>60-120	6.3
>120-240	7.0
>240	7.5

- c. For waters with alkalinities of less than 60 mg/L for which addition of small amounts of alum or equivalent addition of iron coagulant drives the pH below 5.5 before significant TOC removal occurs, the system must add necessary chemicals to maintain the pH between 5.3 and 5.7 in samples until the TOC removal of 0.3 mg/L per 10 mg/L alum added (as aluminum or equivalent addition of iron coagulant) is reached.
- d. The system may operate at any coagulant dose or pH necessary (consistent with other NNPdWRs) to achieve the minimum TOC percent removal approved under subsection (B)(3) of this section.
- e. If the TOC removal is consistently less than 0.3 mg/L of TOC per 10 mg/L of incremental alum dose at all dosages of alum (or equivalent addition of iron coagulant), the water is deemed to contain TOC not amenable to enhanced coagulation. The system may then apply to the Director for a waiver of enhanced coagulation requirements.

C. Compliance calculations.

1. Part VIII systems other than those identified in subsection (A)(2) or (A)(3) of this section must comply with requirements contained in subsection (B)(2) or (B)(3) of this section. Systems must calculate compliance quarterly, beginning after the system has collected 12 months of data, by determining an annual average using the following method:
 - a. Determine actual monthly TOC percent removal, equal to:

$$(1 - (\text{treated water TOC} / \text{source water TOC})) \times 100$$
 - b. Determine the required monthly TOC percent removal (from either the table in subsection (B)(2) or (B)(3) of this section).
 - c. Divide the value in subsection (C)(1)(a) of this section by the value in subsection (C)(1)(b) of this section.
 - d. Add together the results of subsection (C)(1)(c) of this section for the last 12 months and divide by 12.
 - e. If the value calculated in subsection (C)(1)(d) of this section is less than 1.00, the system is not in compliance with the TOC percent removal requirements.
2. Systems may use the provisions in subsections (C)(2)(a) through (e) of this section in lieu of the calculations in subsection (C)(1)(a) through (e) of this section to determine compliance with TOC percent removal requirements.
 - a. In any month that the system's treated or source water TOC level, measured according to Appendix E § 1101-E (D)(3), is less than 2.0 mg/L, the system may assign a monthly value of 1.0 (in lieu of the value calculated in subsection (C)(1)(c) of this section) when calculating compliance under the provisions of subsection (C)(1) of this section.
 - b. In any month that a system practicing softening removes at least 10 mg/L of magnesium hardness (as CaCO₃), the system may assign a monthly value of 1.0 (in lieu of the value calculated in subsection (C)(1)(c) of this section) when calculating compliance under the provisions of subsection (C)(1) of this section.
 - c. In any month that the system's source water SUVA, prior to any treatment and measured according to Appendix E § 1101-E (D)(4), is ≤2.0 L/mg-m, the system may assign a monthly value of 1.0 (in lieu of the value calculated in subsection (C)(1)(c) of this section) when calculating compliance under the provisions of subsection (C)(1) of this section.
 - d. In any month that the system's finished water SUVA, measured according to Appendix E § 1101-E (D)(4), is <2.0 L/mg-m, the system may assign a monthly value of 1.0 (in lieu of the value calculated in subsection (C)(1)(c) of this section) when calculating compliance under the provisions of subsection (C)(1) of this section.
 - e. In any month that a system practicing enhanced softening lowers alkalinity below 60 mg/L (as CaCO₃), the system may assign a monthly value of 1.0 (in lieu of the value calculated in subsection (C)(1)(c) of this section) when calculating compliance under the provisions of subsection (C)(1) of this section.
3. Part VIII systems using conventional treatment may also comply with the requirements of

this section by meeting the criteria in subsection (A)(2) or (3) of this section.

- D. Treatment technique requirements for DBP precursors. The Administrator identifies the following as treatment techniques to control the level of disinfection byproduct precursors in drinking water treatment and distribution systems: For Part VIII systems using conventional treatment, enhanced coagulation or enhanced softening.

Part XII
CONSUMER CONFIDENCE REPORTS

§ 1201 PURPOSE

This part establishes the minimum requirements for the content of annual reports, called "Consumer Confidence Reports" that Community Water Systems (CWSs) 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. Appendix F provides suggested value conversions, regulated contaminants and language for preparing Consumer Confidence Reports. References in this part to section numbers are to the NNPDWR, unless otherwise indicated.

§ 1202 APPLICABILITY

- A. Notwithstanding the provisions of §107, this part applies only to CWSs.
- B. For the purposes of this part, customers are defined as billing units or service connection to which water is delivered by a community water system.
- C. For the purposes of this part, detected means: At or above the levels prescribed by § 405 (C) for inorganic contaminants, at or above the levels prescribed by § 409 (F) for the contaminants listed in § 204 (A) (1), at or above the levels prescribed by § 410 (C) (2) for the contaminants listed in § 204 (A) (2), at or above the levels prescribed by Appendix E-1101-E (B) (2) (d) for the contaminants or contaminant groups listed in §207, and at or above the levels prescribed by § 411 (B) for radioactive contaminants.

§ 1203 EFFECTIVE DATES

- A. The regulations in this part shall take effect upon approval by the Navajo Nation Resources Committee.
- B. Each existing CWS must deliver its first report pursuant to these regulations by July 1, 2003, and subsequent reports by July 1 annually thereafter. The first report must contain data collected during or prior to calendar year 2003 as prescribed in § 1204(D)(3). Each report thereafter must contain data collected during or prior to the previous calendar year.
- C. A new CWS must deliver its first report by July 1 of the year after its first full calendar year in operation and annually thereafter.
- D. A CWS that sells water to another CWS must deliver the applicable information required in § 1204 to the consecutive system:
 - 1. no later than April 1, 2003, and by April 1 annually thereafter; or
 - 2. on a date mutually agreed upon by the seller and the purchaser, and specifically included in a contract between the parties.

§ 1204 CONTENTS OF THE REPORTS

- A. Each CWS must provide to its customers an annual report that contains the information specified in this section and § 1205.
- B. Information on the source of the water delivered.
 - 1. Each report must identify the source(s) of the water delivered by the CWS by providing information on:
 - a. The type of the water source: e.g., surface water, ground water; and
 - b. The commonly used name (if any) and location of the body (or bodies) of water.
 - 2. If a source water assessment has been completed, the report must notify consumers of the availability of this information and the means to obtain it. In addition, systems are encouraged to highlight in the report significant sources of contamination in the source water area if they have readily available information. Where a system has received a source water assessment from the PWSSP, the report must include a brief summary of the system's susceptibility to potential sources of contamination, using language provided by the PWSSP or written by the operator.
- C. 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 CWS operating under a variance or an exemption issued under §§ 601, 602 or 603 of the Navajo Nation Safe Drinking Water Act must include the following definition: Variances and Exemptions: PWSSP or EPA permission not to meet a MCL or a treatment technique under certain conditions.
3. A report that contains data on contaminants that EPA 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 information regarding a Level 1 or Level 2 Assessment required under Part XXVII of these regulations 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/or why total coliform bacteria have been found in our water system on multiple occasions.

D. Information on Detected Contaminants.

1. This subsection specifies the requirements for information to be included in each report for contaminants subject to mandatory monitoring (except *Cryptosporidium*). It applies to:
 - a. Contaminants subject to a MCL, action level, maximum residual disinfectant level, or treatment technique (regulated contaminants).
2. The data relating to these contaminants must be displayed in one table or in several adjacent tables. Any additional monitoring results which a CWS chooses to include in its report must be displayed separately.
3. The data must be derived from data collected to comply with EPA and PWSSP monitoring and analytical requirements during calendar year 2002 for the first report and subsequent calendar years thereafter, except that:
 - a. Where a system is allowed to monitor for regulated contaminants less often 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 5 years need be included.

4. For detected regulated contaminants (listed in Appendix F to these regulations), the table(s) must contain:
- a. The MCL for that contaminant expressed as a number equal to or greater than 1.0 (as provided in Appendix F to these regulations);
 - b. The MCLG for that contaminant expressed in the same units as the MCL;
 - c. If there is no MCL for a detected contaminant, the table must indicate that there is a treatment technique, or specify the action level, applicable to that contaminant, and the report must include the definitions for treatment technique and/or action level, as appropriate, specified in paragraph(C)(3) of this section;
 - d. For contaminants subject to a MCL, except turbidity ~~and total coliforms, fecal coliform,~~ and *E. coli*, the highest contaminant level used to determine compliance with a NNPDR and the range of detected levels, as follows:
 - i. When compliance with the MCL is determined annually or less frequently: the highest detected level at any sampling point and the range of detected levels expressed in the same units as the MCL.
 - ii. When compliance with the MCL is determined by calculating a running annual average of all samples taken at a sampling point: the highest average of any of the sampling points and the range of all sampling points expressed in the same units as the MCL. For the MCLs for TTHM and HAA5 in §207(B)(2), systems must include the highest locational running annual average for TTHM and HAA5 and the range of individual sample results for all sampling points expressed in the same units as the MCL. If more than one location exceeds the TTHM or HAA5 MCL, the systems must include the locational running annual averages 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 Part XXII of these regulations 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.

Note to paragraph (D)(4)(d): When rounding of results to determine compliance with the MCL is allowed by the regulations, rounding should be done prior to multiplying the results by the factor listed in Appendix F of these regulations.

- e. For turbidity.
 - i. When it is reported pursuant to § 206: the highest average monthly value.
 - ii. When it is reported pursuant to the requirements of § 803: the highest monthly value. The report should include an explanation of the reasons for measuring turbidity.
 - iii. When it is reported pursuant to § 805, § 1305 or §2106(B): the highest single measurement and the lowest monthly percentage of samples meeting the turbidity limits specified in § 805, or § 1305 or §2106(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 Part XXVII: the total number of positive samples.

~~For total coliform-~~

- ~~i. The highest monthly number of positive samples for systems collecting fewer than 40 samples per month; or~~
- ~~ii. The highest monthly percentage of positive samples for systems collecting at least 40 samples per month.~~

h. ~~For fecal coliform the total number of positive samples.~~

The likely source(s) of detected contaminants to the best of the operator's knowledge. Specific information regarding contaminants may be available in sanitary surveys and source water assessments, and should be used when available to the operator. If the operator lacks specific information on the likely source, the report must include one or more of the typical sources for that contaminant listed in Appendix F that is most applicable to the system.

5. If a CWS 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 Appendix F.
7. For detected unregulated contaminants for which monitoring is required (except *Cryptosporidium*), 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.

E. Information on *Cryptosporidium*, radon, and other contaminants.

1. If the system has performed any monitoring for *Cryptosporidium*, including monitoring performed to satisfy the requirements of 40 CFR § 141.143, which indicates that *Cryptosporidium* may be present in the source water or the finished water, the report must include:
 - a. A summary of the results of the monitoring; and
 - b. An explanation of the significance of the results.
2. If the system has performed any monitoring for radon which indicates that radon may be present in the finished water, the report must include:
 - a. The results of the monitoring; and
 - b. An explanation of the significance of the results.
3. If the system has performed additional monitoring which indicates the presence of other contaminants in the finished water, NNEPA strongly encourages systems to report any results which may indicate a health concern. To determine if results may indicate a health concern, NNEPA recommends that systems find out if EPA or NNEPA has proposed a NPDWR or a NNPDWR, respectively, or issued a health advisory for that contaminant by calling the PWSSP at (928) 871-7755 and/or the EPA Safe Drinking Water hotline at (800) 426-4791. NNEPA considers detects above a proposed MCL or health advisory level to indicate possible health concerns. For such contaminants, NNEPA recommends that the report include:
 - a. The results of the monitoring; and
 - b. An explanation of the significance of the results noting the existence of a health advisory or a proposed regulation.

F. Compliance with NNPDWR. In addition to the requirements of paragraph (D)(6), the report must note any violation that occurred during the year covered by the report of a requirement listed below, and include a clear and readily understandable explanation of the violation, any potential adverse health effects, and the steps the system has taken to correct the violation.

1. Monitoring and reporting of compliance data;
2. Filtration and disinfection prescribed by Part VIII-General Requirements for Surface Water Treatment. For systems which have failed to install adequate filtration or disinfection equipment or processes, or have had a failure of such equipment or processes which constitutes a violation, the report must include the following language as part of the

explanation of potential adverse health effects: "Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches."

3. Lead and copper control requirements prescribed by Part VII (Lead and Copper). For systems that fail to take one or more actions prescribed by §§ 704(B), 705, 706, 707, or 708, the report must include the applicable language of Appendix F for lead, copper, or both.
 4. Treatment techniques for Acrylamide and Epichlorohydrin prescribed by Part X-Treatment Techniques. For systems that violate the requirements of Part X, the report must include the relevant language from Appendix F.
 5. Recordkeeping of compliance data.
 6. Violation of the terms of a variance, an exemption, or an administrative or judicial order.
- G. Variances and Exemptions. If a system is operating under the terms of a variance or an exemption issued under §§ 601, 602 or 603 of Navajo Nation Safe Drinking Water Act, the report must contain:
1. An explanation of the reasons for the variance or exemption;
 2. The date on which the variance or exemption was issued;
 3. A brief status report on the steps the system is taking to install treatment, find alternative sources of water, or otherwise comply with the terms and schedules of the variance or exemption; and
 4. A notice of any opportunity for public input in the review, or renewal, of the variance or exemption.
- H. Additional information
1. The report must contain a brief explanation regarding contaminants that may reasonably be expected to be found in drinking water, including bottled water. This explanation may include the language of paragraphs (H)(1)(a) through ~~§(C)~~ or systems may use their own comparable language. The report also must include the language of paragraph (H)(1)(d) of this section.
 - a. The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.
 - b. Contaminants that may be present in source water include:
 - i. Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
 - ii. Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
 - iii. Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
 - iv. Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
 - v. Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.
 - c. In order to ensure that tap water is safe to drink, NNEPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

- d. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the PWSSP at (928) 871-7755.
2. The report must include the telephone number of the owner, operator, or designee of the CWS as a source of additional information concerning the report.
3. The report must contain information in the Navajo language regarding the importance of the report or contain a telephone number or address and a statement in Navajo that residents may contact the system at that number or address to obtain a translated copy of the report or assistance with a Navajo interpretation of the report.
4. The report must include information (e.g., time and place of regularly scheduled board or chapter meetings) about opportunities for public participation in decisions that may affect the quality of the water.
5. The systems may include such additional information as they deem necessary for public education consistent with, and not detracting from, the purpose of the report.
6. Systems required to comply with Part XXV.
 - a. Any groundwater system that receives notice from the Director of a significant deficiency or notice from a laboratory of a fecal indicator-positive groundwater source sample that is not invalidated by the Director under §2503(D) must inform its customers of any significant deficiency that is uncorrected at the time of the next report or of any fecal indicator-positive groundwater source sample in the next report. The system must continue to inform the public annually until the Director determines that particular significant deficiency is corrected or the fecal contamination in the groundwater source is addressed under §2504(A). Each report must include the following elements.
 1. The nature of the particular significant deficiency or the source of the fecal contamination (if the source is known) and the date the significant deficiency was identified by the Director of the dates of the fecal indicator-positive groundwater source samples.
 2. If the fecal contamination in the groundwater source has been addressed under §2504(A) and the date of such action;
 3. For each significant deficiency or fecal contamination in the groundwater source that has not been addressed under §2504(A), the Director-approved plan and schedule for correction, including interim measures, progress to date and any interim measures completed; and
 4. If the system receives notice of a fecal indicator-positive groundwater source sample that is not invalidated by the Director under §25038, the potential health effects using the health effects language of Appendix F.
 - b. If directed by the Director, a system with significant deficiencies that have been corrected before the next report is issued must inform its customers of the significant deficiency, how the deficiency was corrected and the data of correction under (H)(6)(A) of this section.

7. Systems required to comply with Part XXVII.

- a. Any system required to comply with the Level 1 assessment requirement or a Level 2 assessment requirement that is not due to an *E. coli* MCL violation must include in the report the text found in subsection (H)(7)(a)(i) and subsections (H)(7)(a)(ii) and (iii) of this section as appropriate, filling in the blanks accordingly and the text found in subsections (H)(7)(a)(iv)(A) and (B) of this section if appropriate.
 - i. 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.

- ii. During the past year, we were required to conduct [INSERT NUMBER OF LEVEL 1 ASSESSMENTS] Level 1 assessment(s). [INSERT NUMBER OF LEVEL 1 ASSESSMENTS] Level 1 assessment(s) were completed. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.
- iii. During the past year, [INSERT NUMBER OF LEVEL 2 ASSESSMENTS] Level 2 assessments were required to be completed for our water system. [INSERT NUMBER OF LEVEL 2 ASSESSMENTS] Level 2 assessments were completed. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.
- iv. Any system that has failed to complete all the required assessments or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate:
 - A. During the past year we failed to conduct all of the required assessment(s).
 - B. During the past year we failed to correct all identified defects that were found during the assessment.
- b. Any system required to conduct a Level 2 assessment due to an *E. coli* MCL violation must include in the report the text found in subsections (H)(7)(b)(i) and (ii) of this section, filling in the blanks accordingly and the text found in subsections (H)(7)(b)(iii)(A) and (B) of this section, if appropriate.
 - i. *E. coli* 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. We found *E. coli* bacteria, 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.
 - ii. We were required to complete a Level 2 assessment because we found *E. coli* in our water system. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we

completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

iii. Any system that has failed to complete the required assessment or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate:

A. We failed to conduct the required assessment.

B. We failed to correct all sanitary defects that were identified during the assessment that we conducted.

c. If a system detects *E. coli* and has violated the *E. coli* MCL, in addition to completing the table as required in subsection (D)(4) of this section, the system must include one or more of the following statements to describe any noncompliance, as applicable:

i. We had an *E. coli*-positive repeat sample following a total coliform-positive routine sample.

ii. We had a total coliform-positive repeat sample following an *E. coli*-positive routine sample.

iii. We failed to take all required repeat samples following an *E. coli*-positive routine sample.

iv. We failed to test for *E. coli* after a repeat sample tested positive for total coliform.

d. If a system detects *E. coli* and has not violated the *E. coli* MCL, in addition to completing the table as required in subsection (D)(4) of this section, the system may include a statement that explains that although they have detected *E. coli*, they are not in violation of the *E. coli* MCL.

§ 1205 REQUIRED ADDITIONAL HEALTH INFORMATION

A. All reports must prominently display the following language:

"Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791)."

B. Ending in the report due by July 1, 2001, a system which detects arsenic at levels above 0.025 mg/L, but below the 0.05 mg/L, and beginning in the report due by July 1, 2002, a system that detects arsenic above 0.005 mg/L and up to and including 0.010 mg/L:

1. Must include in its report a short informational statement about arsenic, using language such as: "While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems."

2. May write its own educational statement, but only in consultation with the Director.

- C. A system that detects nitrate at levels above 5 mg/L, but below the MCL:
1. Must include a short informational statement about the impacts of nitrate on children, using language such as: "Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant you should ask advice from your health care provider."
 2. May write its own educational statement, but only in consultation with the Director.
- D. Systems that detect lead above the action level in more than 5%, and up to and including 10%, of homes sampled:
1. Must include a short informational statement about the special impact of lead on children, using language such as: "Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (800-426-4791) or the PWSSP at (928) 871-7755."
 2. May write its own educational statement, but only in consultation with the Director.
- E. CWSs that detect THM above 0.080 mg/L, but below the MCL in § 210, as an annual average, monitored and calculated under the provisions of § 413, must include health effects language for THMs prescribed by Appendix F.
- F. Beginning in the report due by July 1, 2002 and ending January 22, 2006, a CWS that detects arsenic above 0.010 mg/L and up to and including 0.05 mg/L must include the arsenic health effects language prescribed by Appendix F.

§ 1206 REPORT DELIVERY AND RECORDKEEPING

- A. Except as provided in subsection (G) of this section, each CWS must mail or otherwise directly deliver one copy of the report to each customer.
- B. The system must make a good faith effort to reach consumers who do not get water bills, using means recommended by the Director. NNEPA expects that an adequate good faith effort will be tailored to the consumers who are served by the system but are not bill-paying customers, such as renters or workers. A good faith effort to reach consumers would include a mix of methods appropriate to the particular system, such as: Posting the reports on the Internet; mailing to postal patrons; advertising the availability of the report in the news media; publication in a local newspaper; posting in public places such as cafeterias or lunch rooms of public buildings; delivery of multiple copies for distribution by single-biller customers such as apartment buildings or large private employers; delivery to community, including chapter, organizations.
- C. No later than the date the system is required to distribute the report to its customers, each CWS must mail a copy of the report to the Director, followed within 3 months by a certification that the report has been distributed to customers, and that the information is correct and consistent with the compliance monitoring data previously submitted to the Director.
- D. No later than the date the system is required to distribute the report to its customers, each CWS must deliver the report to any other agency or clearinghouse identified by the Director.
- E. Each CWS must make its reports available to the public upon request.
- F. The Director may waive the requirement of subsection (A) of this section for CWSs serving fewer than 10,000 persons. Written requests to the Director must be made and the determination will be sent to the CWS owner/operator.
1. Such systems must:
 - a. Publish the reports in one or more local newspapers serving the area in which the system is located;
 - b. Inform the customers that the reports will not be mailed, either in the newspapers in which the reports are published or by other means approved by the Director; and
 - c. Make the reports available to the public upon request.
 2. Systems serving 500 or fewer persons may forego the requirements of paragraphs (F)(1)(a)

and (b) of this section if they provide notice at least once per year to their customers by mail, door-to-door delivery or by posting in an appropriate location that the report is available upon request.

- G. Any system subject to this part must retain copies of its Consumer Confidence Report for no fewer than 3 years.

Part XIX
CONSECUTIVE PUBLIC WATER SYSTEMS

§ 1901 PURPOSE

This part identifies those public water systems which purchase water from a primary public water system and identifies the water sampling/analyses requirements for such systems.

§ 1902 APPLICABILITY

The Director shall determine whether a public water system is a consecutive public water system through a sanitary survey, and shall notify in writing the owner and/or operator of the consecutive public water system of this determination within 30 days of making the determination. The Director shall also identify all requirements with which the consecutive public water system must comply, consistent with the requirements for all CWSs (community water systems) and shall notify the owner and/or operator in writing of those requirements.

§ 1903 DEFINITION

A consecutive public water system purchases water from a primary public water system. The consecutive public water system distributes the water through its own distribution system.

§ 1904 COMPLIANCE REQUIREMENTS

- A. Consecutive public water systems are required to operate and maintain their systems in a manner that ensures compliance with the NNSDWA and NNPDR. Each consecutive public water system will be required to monitor for the following contaminants:
1. Bacteriological and total coliform sampling pursuant to §404 Part XXVII.
 2. Lead and Copper sampling pursuant to Part VII, §701 of these regulations.
 3. Asbestos sampling pursuant to §406, if the system uses asbestos cement pipe or if the Director determines that asbestos sampling is required.
- B. Each consecutive public water system is required to comply with all other requirements consistent with the NNSDWA and NNPDR, such as recordkeeping, reporting requirements, and operator certification.
- C. Each consecutive public water system that is a community public water system must prepare a consumer confidence report pursuant to Part XII. Consecutive public water systems will need to request from the primary water purveyor a copy of the consumer confidence report and include the compliance/noncompliance information in their consumer confidence report.

Part XXV
Groundwater

§2501 Groundwater Sampling and Analytical Requirements

A. Applicability

This part applies to all groundwater systems, which are defined as all public water systems that use groundwater, including consecutive systems receiving finished groundwater, except for public water systems that combine all of their groundwater with surface water or with groundwater under the direct influence of surface water prior to treatment under Part 700 of these regulations.

B. General Requirements.

All groundwater systems must comply with the following requirements:

1. Sanitary survey information requirements for all groundwater systems as described in §303.
2. Microbial source water monitoring requirements for groundwater systems that do not treat all of their groundwater to at least 99.99% (4-log) treatment of viruses (using inactivation or removal) before or at the first customer as described in §2503.
3. Treatment technique requirements, described in §2504, that apply to groundwater systems that have fecally contaminated source waters, as determined by source water monitoring conducted under §2503, or that have significant deficiencies that are identified by the Director. A groundwater system with fecally contaminated source water or with significant deficiencies subject to the treatment technique requirements of this part must implement one or more of the following corrective action options;
 - a. correct all significant deficiencies;
 - b. provide an alternate source of water;
 - c. eliminate the source of contamination; or
 - d. provide treatment that reliably achieves at least 4-log treatment of viruses (using inactivation, removal, or an approved combination of 4-log virus inactivation and removal) before or at the first customer.
4. Groundwater systems that provide at least 4-log treatment of viruses (using inactivation, removal, or an approved combination of 4-log virus inactivation and removal) before or at the first customer are required to conduct compliance monitoring to demonstrate treatment effectiveness, as described in §2504(b).
5. If requested by the Director, groundwater systems must provide the Director with any existing information that will enable the Director to perform a hydrogeologic sensitivity assessment. For the purposes of this part, a hydrogeologic sensitivity assessment is a determination of whether groundwater systems obtain water from hydrogeologically sensitive settings.

C. Compliance date.

Unless otherwise noted, groundwater systems must comply with the requirements of this part upon approval of this part by the Navajo Nation Resources Committee.

§2502 Sanitary Surveys for Groundwater Systems

- A. Groundwater systems must provide the Director, at the Director's request, any existing information that will enable the PWSSP to conduct a sanitary survey as prescribed in § 300.
- B. For the purposes of this subpart, a "sanitary survey," as conducted by the PWSSP, includes but is not limited to, an onsite review of the water source(s) (identifying sources of contamination by using results of source water assessments or other relevant information where available), facilities, equipment, operation, maintenance, and monitoring compliance of a public water system to evaluate the adequacy of the system, its sources and operations and the distribution of safe drinking water.
- C. The sanitary survey must include an evaluation of the applicable components listed below:
 1. Source;
 2. Treatment;
 3. Distribution system;
 4. Finished water storage;
 5. Pumps, pump facilities, and controls;
 6. Monitoring, reporting, and data verification;

7. System management and operation; and
8. Operator compliance with PWSSP requirements.

§2503 Groundwater Source Microbial Monitoring and Analytical Methods.

A. Triggered Source Water Monitoring

1. General requirements

A groundwater system must conduct triggered source water monitoring if the conditions identified in paragraphs (A)(1)(a) and (A)(1)(b) of this section exist.

- a. The system does not provide at least 4-log treatment of viruses (using inactivation, removal, or an approved combination of 4-log virus inactivation and removal) before or at the first customer for each groundwater source; and
- b. The system is notified that a sample collected under ~~§404(A)~~ §§ 2704 through 2707 is total coliform-positive and the sample is not invalidated under ~~§404(D)~~ § 2703(C).

2. Sampling Requirements.

A groundwater system must collect, within 24 hours of notification of the total coliform-positive sample, at least one groundwater source sample from each groundwater source in use at the time the total coliform-positive sample was collected except under ~~§404(A)~~ as provided in paragraph (A)(2)(b) of this section.

- a. The Director may extend the 24-hour time limit, on a case-by-case basis, if the system cannot collect the groundwater source water sample within 24 hours due to circumstances beyond its control. In the case of an extension, the Director must specify how much time the system has to collect the sample.
- b. If approved by the Director, systems with more than one groundwater source may meet the requirements of this subsection (A)(2) by sampling a representative groundwater source or sources. If required by the Director, systems must submit for Director approval a triggered source water monitoring plan that identifies one or more groundwater sources that are representative of each monitoring site in the system's sample siting plan under ~~§404(A)~~ § 2703, and that the system intends to use for representative sampling under this subsection (A)(2).

- c. A groundwater system serving 1,000 or fewer people may use a repeat sample collected from a groundwater source to meet both the requirements of Part XXVII and to satisfy the monitoring requirements of this subsection (A)(2) for that groundwater source only if the Director approves the use of *E. coli* as a fecal indicator for source water monitoring under this subsection (A) and approves the use of a single sample for meeting both the triggered source water monitoring requirements in this subsection (A) and the repeat monitoring requirements in § 2708. If the repeat sample collected from the groundwater source is *E. coli*-positive, the system must comply with subsection (A)(3) of this section.

3. Additional Requirements.

If the Director does not require corrective action under §2504(A)(2) for a fecal indicator-positive source water sample collected under ~~paragraph~~ subsection (A)(2) of this section that is not invalidated under subsection (D) of this section, the system must collect five additional source water samples from the same source within 24 hours of being notified of the fecal indicator-positive sample.

4. Consecutive and Wholesale Systems.

- a. In addition to the other requirements of this subsection (A), a consecutive groundwater system that has a total coliform-positive sample collected ~~§404(A)~~ under §§ 2704 through 2707 must notify the wholesale system(s) within 24 hours of being notified of the total coliform-positive sample.

- b. In addition to the other requirements of subsection (A) of this section, a wholesale groundwater system must comply with paragraphs (A)(4)(b)(i) and (A)(4)(b)(ii) of this section.
 - i. A wholesale groundwater system that receives notice from a consecutive system it serves that a sample collected ~~§404(A)~~ under §§ 2704 through 2707 is total coliform-positive must, within 24 hours of being notified, collect a sample from its groundwater source(s) under ~~paragraph~~ subsection (A)(2) of this section and analyze it for a fecal indicator under subsection (C) of this section.
 - ii. If the sample collected under paragraph (A)(4)(b)(i) of this section is fecal indicator-positive, the wholesale groundwater system must notify all consecutive systems served by that groundwater source of the fecal indicator source water positive within 24 hours of being notified of the groundwater source sample monitoring result and must meet the requirements of ~~paragraph~~ subsection (A)(3) of this section.

5. Exceptions to the Triggered Source Water Monitoring Requirements.

A groundwater system is not required to comply with the source water monitoring requirements of subsection (A) of this section if either of the following conditions exists:

- a. The Director determines, and documents in writing, that the total coliform-positive sample collected ~~§404(A)~~ under §§ 2704 through 2707 is caused by a distribution system deficiency; or
- b. The total coliform-positive sample collected ~~§404(A)~~ under §§ 2704 through 2707 is collected at a location that meets Director-approved criteria for distribution system conditions that will cause total coliform-positive samples.

B. Assessment Source Water Monitoring

If required by the Director, groundwater systems must conduct assessment source water monitoring that meets Director-determined requirements for such monitoring. A groundwater system conducting assessment source water monitoring may use a triggered source water sample collected under paragraph (A)(2) of this section to meet the requirements of this subsection (B). Assessment source water monitoring requirements may include:

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

C. Analytical Methods.

- 1. A groundwater system subject to the source water monitoring requirement of subsection (A) of this section must collect a standard sample volume of at least 100mL for fecal indicator analysis regardless of the fecal indicator or analytical method used.
- 2. A groundwater system must analyze all groundwater sources samples collected under subsection (A) of this section using one of the analytical methods listed in Appendix H

for the presence of *E. coli*, enterococci, or coliphage.

D. Invalidation of a Fecal Indicator-positive groundwater source sample.

1. A groundwater system may obtain Director invalidation of a fecal indicator-positive groundwater source sample collected under subsection (A) of this section only under the conditions specified in paragraphs (D)(1)(a) and (b) of this section.
 - a. The system provides the Director with written notice from the laboratory that improper sample analysis occurred; or
 - b. The Director determines and documents in writing that there is substantial evidence that a fecal indicator-positive groundwater source sample is not related to source water quality.
2. If the Director invalidates a fecal indicator-positive groundwater source sample, the groundwater system must collect another source water sample under subsection (A) of this section within 24 hours of being notified by the Director of its invalidation decision and have it analyzed for the same fecal indicator using the analytical methods in Appendix H of these regulations. The Director may extend the 24-hour time limit on a case-by-case basis if the system cannot collect the source water sample within 24 hours due to circumstances beyond its control. In the case of an extension the Director must specify how much time the system has to collect the sample.

E. Sampling Location

1. Any groundwater source sample required under subsection (A) of this section must be collected at a location prior to any treatment of the groundwater source unless the Director approves a sampling location after treatment.
2. If the system's configuration does not allow for sampling at the well itself, the system may collect a sample at a Director approved location to meet the requirements of subsection (A) of this section if the sample is representative of the water quality of that well.

F. New Sources.

If required by the Director, a groundwater system that places a new groundwater source into service after November 30, 2009, must conduct assessment source water monitoring under subsection (B) of this section. If required by the Director, the system must begin monitoring before the groundwater source is used to provide water to the public.

G. Public Notification

A groundwater system with a groundwater source sample collected under subsection (A) or (B) of this section that is fecal indicator-positive and that is not invalidated under subsection (D) of this section, including consecutive systems served by the groundwater source, must conduct public notification under §603.

H. Monitoring Violations

Failure to meet the requirements of subsections (A)-(F) of this section is a monitoring violation and requires the groundwater system to provide public notification under §605.

§2504 Treatment Technique Requirements for Groundwater Systems

A. Groundwater Systems with Significant Deficiencies or Source Water Fecal Contamination

1. The treatment technique requirements of this section must be met by groundwater systems when a significant deficiency is identified or when a groundwater source sample collected under §2503(A)(3) is fecal indicator-positive.
2. If required by the Director, a groundwater system with a groundwater source sample collected under §2503(A)(2), §2503(A)(4), or §2503(B) that is fecal indicator-positive must comply with the treatment technique requirements of this section.
3. When a significant deficiency is identified at a Part 800 public water system that uses both groundwater and surface water or groundwater under the direct influence of surface water, the system must comply with the provisions of this paragraph except in cases where the Director determines that the significant deficiency is in a portion of the distribution system that is served solely by surface water or groundwater under the direct influence of surface water.

4. Unless the Director requires the groundwater system to implement a specific corrective action, the groundwater system must consult with the Director regarding the appropriate corrective action within 30 days of receiving written notice from the Director of a significant deficiency, written notice from a laboratory that a groundwater source sample collected under §2503(A)(3) was found to be fecal indicator-positive, or written notice from the Director that a fecal indicator-positive collected under §2503(A)(2), §2503(A)(4), or §2503(B) requires corrective action. For the purposes of this part, significant deficiencies include, but are not limited to, defects in design, operation, or maintenance, or failure or malfunction of the sources, treatment, storage, or distribution system that the Director determines to be causing, or have potential for causing, the introduction of contamination into the water delivered to consumers.
5. Within 120 days (or earlier if required by the Director) of receiving written notification from the Director of a significant deficiency, written notice from a laboratory that a groundwater source sample collected under §2503(A)(3) was found to be fecal indicator-positive, or written notice from the Director that a fecal indicator-positive sample collected under §2503(A)(2), §2503(A)(4), or §2503(B) requires corrective action, the groundwater system must either:
 - a. Have completed corrective action in accordance with applicable PWSSP plan review processes or other guidance or direction, if any, including Director-specified interim measures; or
 - b. Be in compliance with a Director-approved corrective action plan and schedule subject to the conditions specified in (A)(5)(b)(i) and (A)(5)(b)(ii) of this section.
 - i. Any subsequent modifications to an approved corrective action plan and schedule must also be approved by the Director.
 - ii. If the Director specifies interim measures for protection of the public health pending Director approval of the corrective action plan and schedule or pending completion of the corrective action plan, the system must comply with these interim measures as well as with any schedule specified by the Director.
6. **Corrective Action Alternatives**
Groundwater systems that meet the conditions of paragraph (A)(1) or (A)(2) of this section must implement one or more of the following corrective action alternatives:
 - a. Correct all significant deficiencies;
 - b. Provide an alternate source of water;
 - c. Eliminate the source of contamination; or
 - d. Provide treatment that reliably achieves at least 4-log treatment of viruses (using inactivation, removal, or a Director-approved combination of 4-log virus inactivation and removal) before or at the first customer for the groundwater source.
7. **Special Notice to the Public of Significant Deficiencies or Source Water Fecal Contamination.**
 - a. In addition to the applicable public notification requirements of §2503, a community groundwater system that receives notice from the Director of a significant deficiency or notification of a fecal indicator-positive groundwater source sample that is not invalidated by the Director under §2503(D) must inform the public served by the water system under §1204(H)(6) of the fecal indicator-positive source sample or of any significant deficiency that has not been corrected. The system must continue to inform the public annually until the significant deficiency is corrected or the fecal contamination in the groundwater source is determined by the Director to be corrected under paragraph (A)(5) of this section.
 - b. In addition to the applicable public notification requirements of §603, a non-community groundwater system that receives notice from the Director of a significant deficiency must inform the public served by the water system in a manner approved by the Director of any significant deficiency that has not been corrected within 12 months of being notified by the Director, or earlier if required by the Director. The system must continue to inform the public annually until the significant deficiency is corrected. The information must include:

- i. The nature of the significant deficiency and the date the significant deficiency was identified by the Director;
 - ii. The Director-approved plan and schedule for correction of the significant deficiency, including interim measures, progress to date, and any interim measures completed; and
 - iii. For systems with a large proportion of non-English speaking consumers, as determined by the Director, information in the appropriate language(s) regarding the importance of the notice or a telephone number or address where consumers may contact the system to obtain a translated copy of the notice or assistance in the appropriate language.
- c. If required by the Director, a non-community water system with significant deficiencies that have been corrected must inform its customers of the significant deficiencies, how the deficiencies were corrected, and the dates of correction under paragraph (A) (7) (b) of this section.

B. Compliance Monitoring

1. Existing Groundwater Sources

A groundwater system that is not required to meet the source water monitoring requirements of this part for any groundwater source because it provides at least 4-log treatment of viruses (using inactivation, removal, or a Director-approved combination of 4-log virus inactivation and removal) before or at the first customer for any groundwater source before the compliance date of this part, must notify the Director in writing that it provides at least 4-log treatment of viruses (using inactivation, removal, or a Director-approved combination of 4-log virus inactivation and removal) before or at the first customer for the specified groundwater source and ~~being~~ begin compliance monitoring in accordance with paragraph (B) (3) of this section by the compliance date for this part. Notification to the Director must include engineering, operational, or other information that the Director requests to evaluate the submission. If the system subsequently discontinues 4-log treatment of viruses (using inactivation, removal, or a Director-approved combination of 4-log virus inactivation and removal) before or at the first customer for a groundwater source, the system must conduct groundwater source monitoring as required under §2503.

2. New Groundwater Sources

A groundwater system that places a groundwater source in service on or after the compliance date for this part that is not required to meet the source water monitoring requirements of this part because the system provides at least 4-log treatment of viruses (using inactivation, removal, or a Director approved combination of 4-log virus inactivation and removal) before or at the first customer for the groundwater source must comply with the requirements of paragraphs (B) (2) (a), (B) (2) (b), and (B) (2) (C) of this section.

- a. The system must notify the Director in writing that it provides at least 4-log treatment of viruses (using inactivation, removal, or a Director-approved combination of 4-log virus inactivation and removal) before or at the first customer for the groundwater source. Notification to the Director must include engineering, operational, or other information that the Director requests to evaluate the submission.
- b. The system must conduct compliance monitoring as required under §2504 (B) (3) of this part within 30 days of placing the source in service.
- c. The system must conduct groundwater source monitoring under §2503 if the system subsequently discontinues 4-log treatment of viruses (using inactivation, removal, or a Director-approved combination of 4-log virus inactivation and removal) before or at the first customer for the groundwater source.

3. Monitoring Requirements

A groundwater system subject to the requirements of subsection (A) or paragraph (B) (1) or (B) (2) of this section must monitor the effectiveness and reliability of treatment for that groundwater source before or at the first customer as follows:

- a. Chemical Disinfection
 - i. Groundwater systems serving more than 3,300 people.

A groundwater system that serves more than 3,300 people must continuously monitor the residual disinfectant concentration using analytical methods specified in Appendix D, §801-D (A)(2) at a location approved by the Director and must record the lowest residual disinfectant concentration each day that water from the groundwater source is served to the public. The groundwater system must maintain the Director-determined residual disinfectant concentration every day the groundwater system serves water from the groundwater source to the public. If there is a failure in the continuous monitoring equipment, the groundwater system must conduct grab sampling every four hours until the continuous monitoring equipment is returned to service. The system must resume continuous residual disinfectant monitoring within 14 days.

ii. Groundwater systems serving 3,300 or fewer people.

A groundwater system that serves 3,300 or fewer people must monitor the residual disinfectant concentration using analytical methods specified in Appendix D, §801-D (A)(2) at a location approved by the Director and record the residual disinfection concentration each day that water from the groundwater source is served to the public. The groundwater system must maintain the Director-determined residual disinfectant concentration every day the groundwater system serves water from the groundwater source to the public. The groundwater system must take a daily grab sample during the hour of peak flow or at another time specified by the Director. If any daily grab sample measurement falls below the Director-determined residual disinfectant concentration, the groundwater system must take follow-up samples every four hours until the residual disinfectant concentration is restored to the Director-determined level. Alternatively, a groundwater system that serves 3,300 or fewer people may monitor continuously and meet the requirements of paragraph (B)(3)(a)(i) of this section.

b. Membrane Filtration

A groundwater system that uses membrane filtration to meet the requirements of this part must monitor the membrane filtration process in accordance with all Director-specified monitoring requirements and must operate the membrane filtration in accordance with all Director-specified compliance requirements. A groundwater system that uses membrane filtration is in compliance with the requirement to achieve at least 4-log removal of viruses when:

- i. The membrane has an absolute molecular weight cut-off (MWCO), or an alternate parameter that describes the exclusion characteristics of the membrane, that can reliably achieve at least 4-log removal of viruses;
- ii. The membrane process is operated in accordance with Director-specified compliance requirements; and
- iii. The integrity of the membrane is intact.

c. Alternative Treatment

A groundwater system that uses a Director-approved alternative treatment to meet the requirements of this part by providing at least 4-log treatment of viruses (using inactivation, removal, or a Director-approved combination of 4-log virus inactivation and removal) before or at the first customer must:

- i. Monitor the alternative treatment in accordance with all Director-specified monitoring requirements; and
- ii. Operate the alternative treatment in accordance with all compliance requirements that the Director determines to be necessary to achieve at least 4-log treatment of viruses.

C. Discontinuing Treatment

A groundwater system may discontinue 4-log treatment of viruses (using inactivation, removal, or a Director-approved combination of 4-log virus inactivation and removal) before or at the first customer for a groundwater source if the Director determines and documents in writing that 4-log treatment of viruses is no longer necessary for that groundwater source. A system that discontinues 4-log treatment of viruses is subject to the source water monitoring and analytical methods requirements of §2503.

- D. Failure to meet the monitoring requirements of subsection (B) of this section is a monitoring violation and requires the groundwater system to provide public notification under §605.

§2505 Treatment Technique Violations for Groundwater Systems

- A. A groundwater system with a significant deficiency is in violation of the treatment technique requirement if, within 120 days (or earlier if required by the Director) of receiving written notice from the Director of the significant deficiency, the system:
1. Does not complete corrective action in accordance with any applicable PWSSP plan review processes or other guidance and direction, including Director-specified interim actions and measures, or
 2. Is not in compliance with a Director-approved corrective action plan and schedule.
- B. Unless the Director invalidates a fecal indicator-positive groundwater source sample under §2503(D), a groundwater system is in violation of the treatment technique requirement if, within 120 days (or earlier if required by the Director) of meeting the conditions of §2504(A)(1) or §2504(A)(2), the system:
1. Does not complete corrective action in accordance with any applicable PWSSP plan review processes or other guidance and direction, including Director-specified interim measures, or
 2. Is not in compliance with a Director-approved corrective action plan and schedule.
- C. A groundwater system subject to the requirements of §2504(B)(3) that fails to maintain at least 4-log treatment of viruses (using inactivation, removal, or a Director-approved combination of 4-log virus inactivation and removal) before or at the first customer for a groundwater source is in violation of the treatment technique requirement if the failure is not corrected within four hours of determining the system is not maintaining at least 4-log treatment of viruses before or at the first customer.
- D. Groundwater systems must give public notification under §604 for the treatment technique violations specified in subsections (A), (B) and (C) of this section.

§2506 Reporting and Recordkeeping for Groundwater Systems

A. Reporting

In addition to the requirements of §502, a groundwater system regulated under this part must provide the following information to the Director:

1. A groundwater system conducting compliance monitoring under §2504(B) must notify the Director any time the system fails to meet any Director-specified requirements including, but not limited to, minimum residual disinfectant concentration, membrane operating criteria or membrane integrity, and alternative treatment operating criteria, if operation in accordance with the criteria or requirements is not restored within four hours. The groundwater system must notify the Director as soon as possible, but in no case later than the end of the next business day.
2. After completing any corrective action under §2504(A), a groundwater system must notify the Director within 30 days of completion of the corrective action.
3. If a groundwater system subject to the requirements of §2503(A) does not conduct source water monitoring under §2503(A)(5)(b), the system must provide documentation to the Director within 30 days of the total coliform positive sample that it met the Director-specified criteria.

B. Recordkeeping

In addition to the requirements of §503, a groundwater system regulated under this part must maintain the following information in its records:

1. Documentation of corrective actions. Documentation shall be kept for a period of not less than 10 years.
2. Documentation of notice to the public as required under §2504(A)(7). Documentation shall be kept for a period of not less than three years.
3. Records of decisions under §2503(A)(5)(b) and records of invalidation of fecal indicator-positive groundwater source samples under §2503(D). Documentation shall be kept for a

period of not less than five years.

4. For consecutive systems, documentation of notification to the wholesale system(s) of total -coliform positive samples that are not invalidated ~~under §404(D)~~ under §2703. Documentation shall be kept for a period of not less than five years.
5. For systems, including wholesale systems that are required to perform compliance monitoring under §2504(B):
 - a. Records of the Director-specified minimum disinfectant residual. Documentation shall be kept for a period of not less than ten years.
 - b. Records of the lowest daily residual disinfectant concentration and records of the date and duration of any failure to maintain the Director-prescribed minimum residual disinfectant concentration for a period of more than four hours. Documentation shall be kept for a period of not less than five years.
 - c. Records of Director-specified compliance requirements for membrane filtration and of parameters specified by the Director for Director-approved alternative treatment and records of the date and duration of any failure to meet the membrane operating, membrane integrity, or alternative treatment operating requirements for more than four hours. Documentation shall be kept for a period of not less than five years.

Part XXVII
Revised Total Coliform Rule

§ 2701 **GENERAL**

A. General.

The provisions of this part include both maximum contaminant level and treatment technique requirements.

B. Applicability.

The provisions of this part apply to all public water systems.

C. Compliance date.

Systems must comply with the provisions of this part beginning on the effective date of this part, pursuant to 40 C.F.R. § 142.12(e) (Interim Primary Enforcement Authority), unless otherwise specified in this part. The effective date of this part is the date that this part is approved by the Resources and Development Committee.

D. Violations of Navajo Nation primary drinking water regulations.

Failure to comply with the applicable requirements of §§ 2701 through 2711, including requirements established by the Director pursuant to these provisions, is a violation of the Navajo Nation primary drinking water regulations under this Part XXVII.

§ 2702 **ANALYTICAL METHODS AND LABORATORY CERTIFICATION**

Analytical methods and laboratory certification requirements for sampling conducted pursuant to this part are codified at Appendix A of these regulations.

§ 2703 **GENERAL MONITORING REQUIREMENTS FOR ALL PUBLIC WATER SYSTEMS**

A. Sample siting plans.

1. Pursuant to EPA direction under 40 C.F.R. § 141.851(d), not later than March 31, 2016 systems will have developed a written sample siting plan that identified sampling sites and a sample collection schedule that are representative of water throughout the distribution system and must update the plan every two years. These plans are subject to Director-review and revision upon the effective date of this Part. Systems must collect total coliform samples according to the written sample siting plan. Monitoring required by § 2704 through § 2708 may take place at a customer's premise, 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 XXV must be reflected in the sampling plan.
2. Systems must collect samples at regular time intervals throughout the month, except that systems that use only ground water and serve 4,900 or fewer people may collect all required samples on a single day if they are taken from different sites.

3. Systems must 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 § 2709(A).
4. A system may conduct more compliance monitoring than is required by this Part to investigate potential problems in the distribution system and use monitoring as a tool to assist in uncovering problems. A system may take more than the minimum number of required routine samples and must include the results in calculating whether the coliform treatment technique trigger in § 2709(A)(1)(a) and (b) has been exceeded only if the samples are taken in accordance with the existing sample siting plan and are representative of water throughout the distribution system.
5. Systems must identify repeat monitoring locations in the sample siting plan. Unless the provisions of subsections (A)(5)(a) or (A)(5)(b) of this section are met, the system must collect at least one repeat sample from the sampling tap where the original total coliform-positive sample was taken, and at least one repeat sample at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site. If a total coliform-positive sample is at the end of the distribution system, or one service connection away from the end of the distribution system, the system must still take all required repeat samples. However, the Director 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. Except as provided for in subsection (A)(5)(b) of this section, systems required to conduct triggered source water monitoring under § 2503(A) must take ground water source sample(s) in addition to repeat samples required under this part.
 - a. Systems may propose repeat monitoring locations to the Director 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 sample siting plan. The system must 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 Director may modify the SOP or require alternative monitoring locations as needed.
 - b. Ground water systems serving 1,000 or fewer people may propose repeat sampling locations to the Director that differentiate potential source water and distribution system contamination (e.g., by sampling at entry points to the distribution system). A ground water system with a single well required to conduct triggered source water monitoring may, with written Director approval, take one of its repeat samples at the monitoring location required for triggered source water monitoring under § 2503(A) if the system demonstrates to the Director's satisfaction that the sample siting plan remains representative of water quality in the distribution system. If approved by the Director, the system may use that sample result to meet the monitoring requirements in both § 2503(A) and this section.

i. If a repeat sample taken at the monitoring location required for triggered source water monitoring is *E. coli*-positive, the system has violated the *E. coli* MCL and must also comply with § 2503(A)(3). If a system takes more than one repeat sample at the monitoring location required for triggered source water monitoring, the system may reduce the number of additional source water samples required under § 2503(A)(3) by the number of repeat samples taken at that location that were not *E. coli*-positive.

ii. If a system takes more than one repeat sample at the monitoring location required for triggered source water monitoring under § 2503(A), and more than one repeat sample is *E. coli*-positive, the system has violated the *E. coli* MCL and must also comply with § 2504(A).

iii. If all repeat samples taken at the monitoring location required for triggered source water monitoring are *E. coli*-negative and a repeat sample taken at a monitoring location other than the one required for triggered source water monitoring is *E. coli*-positive, the system has violated the *E. coli* MCL, but is not required to comply with § 2503(A)(3).

6. The Director may review, revise, and approve, as appropriate, repeat sampling proposed by systems under paragraphs (A)(5)(a) and (b) of this section. The system must demonstrate that the sample siting plan remains representative of the water quality in the distribution system. The Director may determine that monitoring at the entry point to the distribution system (especially for undisinfected ground water systems) is effective to differentiate between potential source water and distribution system problems.

B. Special purpose samples.

Special purpose 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 the coliform treatment technique trigger has been exceeded. Repeat samples taken pursuant to § 2708 are not considered special purpose samples, and must be used to determine whether the coliform treatment technique trigger has been exceeded.

C. Invalidation of total coliform samples.

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

1. The Director may invalidate a total coliform-positive sample only if the conditions of subsection (C)(1)(a), (b), or (c) of this section are met.
 - a. The laboratory establishes that improper sample analysis caused the total coliform-positive result.
 - b. The Director, on the basis of the results of repeat samples collected as required under § 2708(A), determines that the total coliform-positive sample resulted from a domestic or other nondistribution system plumbing problem. The Director cannot invalidate a sample on the basis of repeat sample results unless all

repeat sample(s) collected at the same tap as the original total coliform-positive sample are also total coliform-positive, and all repeat samples collected at a location other than the original tap are total coliform-negative (e.g., the Director cannot invalidate a total coliform-positive sample on the basis of repeat samples if all the repeat samples are total coliform-negative, or if the system has only one service connection).

- c. The Director 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 must still collect all repeat samples required under § 2708(A), and use them to determine whether a coliform treatment technique trigger in § 2709 has been exceeded. To invalidate a total coliform-positive sample under this subsection, the decision and supporting rationale must be documented in writing, and approved and signed by the supervisor of the NNEPA official who recommended the decision. The Director must make this document available to EPA and the public. The written documentation must state the specific cause of the total coliform-positive sample, and what action the system has taken, or will take, to correct this problem. The Director may not invalidate a total coliform-positive sample solely on the grounds that all repeat samples are total coliform-negative.

2. A laboratory must invalidate a total coliform sample (unless total coliforms are detected) if the sample produces a turbid culture in the absence of gas production using an analytical method where gas formation is examined (e.g., the Multiple-Tube Fermentation Technique), produces a turbid culture in the absence of an acid reaction in the Presence-Absence (P-A) Coliform Test, or exhibits confluent growth or produces colonies too numerous to count with an analytical method using a membrane filter (e.g., Membrane Filter Technique). If a laboratory invalidates a sample because of such interference, the system must collect another sample from the same location as the original sample within 24 hours of being notified of the interference problem, and have it analyzed for the presence of total coliforms. The system must continue to re-sample within 24 hours and have the samples analyzed until it obtains a valid result. The Director may waive the 24-hour time limit on a case-by-case basis. Alternatively, the 24-hour time limit is automatically waived if the laboratory invalidates a total coliform sample under this subsection, the system has performed all proper operation and maintenance procedures to address the presence of coliforms in the system, and any of the following apply:

- a. The laboratory is more than a 5 hour drive from the sampling site;
- b. Severe weather conditions prevent the system from obtaining an additional sample and delivering it to the laboratory within the 24-hour time period; or
- c. The laboratory is closed for the weekend or a holiday and no other laboratory is available within a 5 hour drive of the sampling site.

§ 2704 ROUTINE MONITORING REQUIREMENTS FOR NON-COMMUNITY WATER SYSTEMS SERVING 1,000 OR FEWER PEOPLE USING ONLY GROUND WATER

A. General.

1. The provisions of this section apply to non-community water systems using only ground

water (except ground water under the direct influence of surface water, as defined in § 104) and serving 1,000 or fewer people.

2. Following any total coliform-positive sample taken under the provisions of this section, systems must comply with the repeat monitoring requirements and *E. coli* analytical requirements in § 2708.
3. Once all monitoring required by this section and § 2708 for a calendar month has been completed, systems must determine whether any coliform treatment technique triggers specified in § 2709 have been exceeded. If any trigger has been exceeded, systems must complete assessments as required by § 2709.
4. For the purpose of determining eligibility for remaining on or qualifying for quarterly monitoring under the provisions of subsections (F)(4) and (G)(2), respectively, of this section for transient non-community water systems, the Director may elect to not count monitoring violations under § 2710(C)(1) of these regulations if the missed sample is collected no later than the end of the monitoring period following the monitoring period in which the sample was missed. The system must collect the make-up sample in a different week than the routine sample for that monitoring period and should collect the sample as soon as possible during the monitoring period. The Director may not use this provision under subsection (H) of this section. This authority does not affect the provisions of §§ 2710(C)(1) and 2711(A)(4) of these regulations.

B. Monitoring frequency for total coliforms.

Systems must monitor each calendar quarter that the system provides water to the public, except for seasonal systems or as provided under subsections (C) through (H) and (J) of this section. Seasonal systems must meet the monitoring requirements of subsection (I) of this section.

C. Transition to Part XXVII.

1. Systems, including seasonal systems, must continue to monitor according to the total coliform monitoring schedule that was in effect for the system on the effective date of this Part as established in § 2701(C), unless any of the conditions for increased monitoring in subsection (F) of this section are triggered on or after the effective date of this Part, or unless otherwise directed by the Director.
2. The Director must perform a special monitoring evaluation during each sanitary survey to review the status of the system, including the distribution system, to determine whether the system is on an appropriate monitoring schedule. After the Director has performed the special monitoring evaluation during each sanitary survey, the Director may modify the system's monitoring schedule, as necessary, or the Director may allow the system to stay on its existing monitoring schedule, consistent with the provisions of this section. The Director may not allow systems to begin less frequent monitoring under the special monitoring evaluation unless the system has already met the applicable criteria for less frequent monitoring in this section. For seasonal systems on quarterly or annual monitoring, this evaluation must include review of the approved sample siting plan, which must designate the time period(s) for monitoring based on site-specific considerations (e.g., during periods of highest demand or highest vulnerability to contamination). The seasonal system must collect compliance samples

during these time periods.

D. Annual site visits.

Systems on annual monitoring, including seasonal systems, must have an initial and recurring annual site visit by the Director that is equivalent to a Level 2 assessment or an annual voluntary Level 2 assessment that meets the criteria in § 2709(B) to remain on annual monitoring. The periodic required sanitary survey may be used to meet the requirement for an annual site visit for the year in which the sanitary survey was completed.

E. Criteria for annual monitoring.

Beginning on the effective date of these regulations, the Director may reduce the monitoring frequency for a well-operated ground water system from quarterly routine monitoring to no less than annual monitoring, if the system demonstrates that it meets the criteria for reduced monitoring in subsections (E)(1) through (E)(3) of this section, except for a system that has been on increased monitoring under the provisions of subsection (F) of this section. A system on increased monitoring under subsection (F) of this section must meet the provisions of subsection (G) of this section to go to quarterly monitoring and must meet the provisions of subsection (H) of this section to go to annual monitoring.

1. The system has a clean compliance history for a minimum of 12 months;
2. The most recent sanitary survey shows that the system is free of sanitary defects or has corrected all identified sanitary defects, has a protected water source, and meets approved construction standards; and
3. The Director has conducted an annual site visit within the last 12 months and the system has corrected all identified sanitary defects. The system may substitute a Level 2 assessment that meets the criteria in § 2709(B) for the Director's annual site visit.

F. Increased monitoring requirements for systems on quarterly or annual monitoring.

A system on quarterly or annual monitoring that experiences any of the events identified in subsections (F)(1) through (F)(4) of this section must begin monthly monitoring the month following the event. A system on annual monitoring that experiences the event identified in subsection (F)(5) of this section must begin quarterly monitoring the quarter following the event. The system must continue monthly or quarterly monitoring until the requirements in subsection (G) of this section for quarterly monitoring or subsection (H) of this section for annual monitoring are met. A system on monthly monitoring for reasons other than those identified in subsections (F)(1) through (F)(4) of this section is not considered to be on increased monitoring for the purposes of subsections (G) and (H) of this section.

1. The system triggers a Level 2 assessment or two Level 1 assessments under the provisions of § 2709 in a rolling 12-month period.
2. The system has an *E. coli* MCL violation.
3. The system has a coliform treatment technique violation.

4. The system has two Part XXVII monitoring violations or one Part XXVII monitoring violation and one Level 1 assessment under the provisions of § 2709 in a rolling 12-month period for a system on quarterly monitoring.
5. The system has one Part XXVII monitoring violation for a system on annual monitoring.

G. Requirements for returning to quarterly monitoring.

The Director may reduce the monitoring frequency for a system on monthly monitoring triggered under subsection (F) of this section to quarterly monitoring if the system meets the criteria in subsections (G)(1) and (G)(2) of this section.

1. Within the last 12 months, the system must have a completed sanitary survey or a site visit by the Director or a voluntary Level 2 assessment by a party approved by the Director, be free of sanitary defects, and have a protected water source; and
2. The system must have a clean compliance history for a minimum of 12 months.

H. Requirements for systems on increased monitoring to qualify for annual monitoring.

The Director may reduce the monitoring frequency for a system on increased monitoring under subsection (F) of this section if the system meets the criteria in subsection (G) of this section plus the criteria in subsections (H)(1) and (H)(2) of this section.

1. An annual site visit by the Director and correction of all identified sanitary defects. The system may substitute a voluntary Level 2 assessment by a party approved by the Director for the Director's annual site visit in any given year.
2. The system must have in place or adopt one or more additional enhancements to the water system barriers to contamination in subsections (H)(2)(a) through (H)(2)(e) of this section.
 - a. Cross connection control, as approved by the Director.
 - b. An operator that meets Part XIV Public Water System Operator Certification provisions, or regular visits by a circuit rider certified under Part XIV.
 - c. Continuous disinfection entering the distribution system and a residual in the distribution system in accordance with criteria specified by these regulations including Parts XI and XXIII and §208 and/or the Director.
 - d. Demonstration of maintenance of at least a 4-log removal or inactivation of viruses as provided for under § 2504(B)(3).
 - e. Other equivalent enhancements to water system barriers as approved by the Director.

I. Seasonal systems.

1. All seasonal systems must demonstrate completion of a Director-approved start-up

procedure, which may include a requirement for startup sampling prior to serving water to the public.

2. A seasonal system must monitor every month that it is in operation unless it meets the criteria in subsections (I)(2)(a) through (c) of this section to be eligible for monitoring less frequently than monthly, except as provided under subsection (C) of this section.
 - a. Seasonal systems monitoring less frequently than monthly must have an approved sample siting plan that designates the time period for monitoring based on site-specific considerations (e.g., during periods of highest demand or highest vulnerability to contamination). Seasonal systems must collect compliance samples during this time period.
 - b. To be eligible for quarterly monitoring, the system must meet the criteria in subsection (G) of this section.
 - c. To be eligible for annual monitoring, the system must meet the criteria under subsection (H) of this section.
3. The Director may exempt any seasonal system from some or all the start-up requirements for seasonal systems 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 must still monitor during the vulnerable period designated by the Director.

J. Additional routine monitoring the month following a total coliform-positive sample.

Systems collecting samples on a quarterly or annual frequency must conduct additional routine monitoring the month following one or more total coliform-positive samples (with or without a Level 1 treatment technique trigger). Systems must collect at least three routine samples during the next month, except that the Director may waive this requirement if the conditions of subsection (J)(1), (2), or (3) of this section are met. Systems may either collect samples at regular time intervals throughout the month or may collect all required routine samples on a single day if samples are taken from different sites. Systems must use the results of additional routine samples in coliform treatment technique trigger calculations under § 2709(A).

1. The Director may waive the requirement to collect three routine samples the next month in which the system provides water to the public if the Director, or an agent approved by the Director, performs a site visit before the end of the next month in which the system provides water to the public. Although a sanitary survey need not be performed, the site visit must be sufficiently detailed to allow the Director to determine whether additional monitoring and/or any corrective action is needed. The Director cannot approve an employee of the system to perform this site visit, even if the employee is an agent approved by the Director to perform sanitary surveys.
2. The Director may waive the requirement to collect three routine samples the next month in which the system provides water to the public if the Director has determined why the sample was total coliform-positive and has established that the system has corrected the problem or will correct the problem before the end of the next month in which the system serves water to the public. In this case, NNEPA must document the decision to

waive the following month's additional monitoring requirement in writing, have it approved and signed by the supervisor of the NNEPA official who recommends such a decision, and make this document available to the EPA and public. The written documentation must describe the specific cause of the total coliform-positive sample and what action the system has taken and/or will take to correct this problem.

3. The Director may not waive the requirement to collect three additional routine samples the next month in which the system provides water to the public solely on the grounds that all repeat samples are total coliform-negative. If the Director determines that the system has corrected the contamination problem before the system takes the set of repeat samples required in § 2708, and all repeat samples were total coliform-negative, the Director may waive the requirement for additional routine monitoring the next month.

§ 2705 ROUTINE MONITORING REQUIREMENTS FOR COMMUNITY WATER SYSTEMS SERVING 1,000 OR FEWER PEOPLE USING ONLY GROUND WATER

A. General.

1. The provisions of this section apply to community water systems using only ground water (except ground water under the direct influence of surface water, as defined in § 104) and serving 1,000 or fewer people.
2. Following any total coliform-positive sample taken under the provisions of this section, systems must comply with the repeat monitoring requirements and *E. coli* analytical requirements in § 2708.
3. Once all monitoring required by this section and § 2708 for a calendar month has been completed, systems must determine whether any coliform treatment technique triggers specified in § 2709 have been exceeded. If any trigger has been exceeded, systems must complete assessments as required by § 2709.

B. Monitoring frequency for total coliforms.

The monitoring frequency for total coliforms is one sample/month, except as provided for under subsections (C) through (F) of this section.

C. Transition to Part XXVII.

- (1) All systems must continue to monitor according to the total coliform monitoring schedules that were in effect on the effective date of this part unless any of the conditions in subsection (E) of this section are triggered on or after the effective date of this part, or unless otherwise directed by the Director.
- (2) Beginning on the effective date of this part, the Director must perform a special monitoring evaluation during each sanitary survey to review the status of the system, including the distribution system, to determine whether the system is on an appropriate monitoring schedule. After the Director has performed the special monitoring evaluation during each sanitary survey, the Director may modify the system's monitoring schedule, as necessary, or it may allow the system to stay on its existing monitoring schedule, consistent with the provisions of this section. The Director may not allow systems to

begin less frequent monitoring under the special monitoring evaluation unless the system has already met the applicable criteria for less frequent monitoring in this section.

D. Criteria for reduced monitoring.

1. The Director may reduce the monitoring frequency from monthly monitoring to no less than quarterly monitoring if the system is in compliance with Part XIV Public Water System Operator Certification provisions and demonstrates that it meets the criteria in subsections (D)(1)(a) through (D)(1)(c) of this section. A system that loses its certified operator must return to monthly monitoring the month following that loss.
 - a. The system has a clean compliance history for a minimum of 12 months.
 - b. The most recent sanitary survey shows the system is free of sanitary defects (or has an approved plan and schedule to correct them and is in compliance with the plan and the schedule), has a protected water source and meets approved construction standards.
 - c. The system meets at least one of the following criteria:
 - i. An annual site visit by the Director that is equivalent to a Level 2 assessment or an annual Level 2 assessment by a party approved by the Director and correction of all identified sanitary defects (or an approved plan and schedule to correct them and is in compliance with the plan and schedule).
 - ii. Cross connection control, as approved by the Director.
 - iii. Continuous disinfection entering the distribution system and a residual in the distribution system in accordance with criteria specified by the Director.
 - iv. Demonstration of maintenance of at least a 4-log removal or inactivation of viruses as provided for under § 2504(B)(3).
 - v. Other equivalent enhancements to water system barriers as approved by the Director.

E. Return to routine monthly monitoring requirements.

Systems on quarterly monitoring that experience any of the events in subsections (E)(1) through (E)(4) of this section must begin monthly monitoring the month following the event. The system must continue monthly monitoring until it meets the reduced monitoring requirements in subsection (D) of this section.

1. The system triggers a Level 2 assessment or two Level 1 assessments in a rolling 12-month period.
2. The system has an *E. coli* MCL violation.

3. The system has a coliform treatment technique violation.
4. The system has two Part XXVII monitoring violations in a rolling 12-month period.

F. Additional routine monitoring the month following a total coliform-positive sample.

Systems collecting samples on a quarterly frequency must conduct additional routine monitoring the month following one or more total coliform-positive samples (with or without a Level 1 treatment technique trigger). Systems must collect at least three routine samples during the next month, except that the Director may waive this requirement if the conditions of subsection (F)(1), (2), or (3) of this section are met. Systems may either collect samples at regular time intervals throughout the month or may collect all required routine samples on a single day if samples are taken from different sites. Systems must use the results of additional routine samples in coliform treatment technique trigger calculations.

1. The Director may waive the requirement to collect three routine samples the next month in which the system provides water to the public if the Director, or an agent approved by the Director, performs a site visit before the end of the next month in which the system provides water to the public. Although a sanitary survey need not be performed, the site visit must be sufficiently detailed to allow the Director to determine whether additional monitoring and/or any corrective action is needed. The Director cannot approve an employee of the system to perform this site visit, even if the employee is an agent approved by the Director to perform sanitary surveys.
2. The Director may waive the requirement to collect three routine samples the next month in which the system provides water to the public if the Director has determined why the sample was total coliform-positive and has established that the system has corrected the problem or will correct the problem before the end of the next month in which the system serves water to the public. In this case, the Director must document this decision to waive the following month's additional monitoring requirement in writing, have it approved and signed by the supervisor of the NNEPA official who recommends such a decision, and make this document available to the EPA and the public. The written documentation must describe the specific cause of the total coliform-positive sample and what action the system has taken and/or will take to correct this problem.
3. The Director may not waive the requirement to collect three additional routine samples the next month in which the system provides water to the public solely on the grounds that all repeat samples are total coliform-negative. If the Director determines that the system has corrected the contamination problem before the system takes the set of repeat samples required in § 2708, and all repeat samples were total coliform-negative, the Director may waive the requirement for additional routine monitoring the next month.

§ 2706 **ROUTINE MONITORING REQUIREMENTS FOR PART VIII PUBLIC WATER SYSTEMS SERVING 1,000 OR FEWER PEOPLE**

A. General.

1. The provisions of this section apply to Part VIII public water systems of these regulations serving 1,000 or fewer people.

2. Following any total coliform-positive sample taken under the provisions of this section, systems must comply with the repeat monitoring requirements and *E. coli* analytical requirements in § 2708.
3. Once all monitoring required by this section and § 2708 for a calendar month has been completed, systems must determine whether any coliform treatment technique triggers specified in § 2709 have been exceeded. If any trigger has been exceeded, systems must complete assessments as required by § 2709.
4. Seasonal systems.
 - a. Beginning on the effective date of this part, all seasonal systems must demonstrate completion of a NNEPA-approved start-up procedure, which may include a requirement for start-up sampling prior to serving water to the public.
 - b. The Director may exempt any seasonal system from some or all the start-up requirements for seasonal systems if the entire distribution system remains pressurized during the entire period that the system is not operating.

B. Routine monitoring frequency for total coliforms.

Part VIII systems of these regulations (including consecutive systems) must monitor monthly. Systems may not reduce monitoring.

C. Unfiltered Part VIII systems.

A Part VIII system of these regulations that does not practice filtration in compliance with Parts VIII, XIII, XXI, and XXIV must collect at least one total coliform sample near the first service connection each day the turbidity level of the source water, measured as specified in Appendix D(B)(2), exceeds 1 NTU. When one or more turbidity measurements in any day exceed 1 NTU, the system must collect this coliform sample within 24 hours of the first exceedance, unless the Director determines that the system, for logistical reasons outside the system's control, cannot have the sample analyzed within 30 hours of collection and identifies an alternative sample collection schedule. Sample results from this coliform monitoring must be included in determining whether the coliform treatment technique trigger in § 2709 has been exceeded.

§ 2707 **ROUTINE MONITORING REQUIREMENTS FOR PUBLIC WATER SYSTEMS SERVING MORE THAN 1,000 PEOPLE**

A. General.

1. The provisions of this section apply to public water systems serving more than 1,000 persons.
2. Following any total coliform-positive sample taken under the provisions of this section, systems must comply with the repeat monitoring requirements and *E. coli* analytical requirements in § 2708.

3. Once all monitoring required by this section and § 2708 for a calendar month has been completed, systems must determine whether any coliform treatment technique triggers specified in § 2709 have been exceeded. If any trigger has been exceeded, systems must complete assessments as required by § 2709.
4. Seasonal systems.
 - a. Beginning on the effective date of this part, all seasonal systems must demonstrate completion of a NNEPA-approved start-up procedure, which may include a requirement for start-up sampling prior to serving water to the public.
 - b. The Director may exempt any seasonal system from some or all the start-up requirements for seasonal systems if the entire distribution system remains pressurized during the entire period that the system is not operating.

B. Monitoring frequency for total coliforms.

The monitoring frequency for total coliforms is based on the population served by the system, as follows:

TABLE 2700.1 TOTAL COLIFORM MONITORING FREQUENCY FOR PUBLIC WATER SYSTEMS SERVING MORE THAN 1,000 PEOPLE

<u>Population served</u>	<u>Minimum number of samples per month</u>
<u>1,001 to 2,500</u>	<u>2</u>
<u>2,501 to 3,300</u>	<u>3</u>
<u>3,301 to 4,100</u>	<u>4</u>
<u>4,101 to 4,900</u>	<u>5</u>
<u>4,901 to 5,800</u>	<u>6</u>
<u>5,801 to 6,700</u>	<u>7</u>
<u>6,701 to 7,600</u>	<u>8</u>
<u>7,601 to 8,500</u>	<u>9</u>
<u>8,501 to 12,900</u>	<u>10</u>
<u>12,901 to 17,200</u>	<u>15</u>
<u>17,201 to 21,500</u>	<u>20</u>
<u>21,501 to 25,000</u>	<u>25</u>
<u>25,001 to 33,000</u>	<u>30</u>
<u>33,001 to 41,000</u>	<u>40</u>
<u>41,001 to 50,000</u>	<u>50</u>
<u>50,001 to 59,000</u>	<u>60</u>
<u>59,001 to 70,000</u>	<u>70</u>
<u>70,001 to 83,000</u>	<u>80</u>
<u>83,001 to 96,000</u>	<u>90</u>
<u>96,001 to 130,000</u>	<u>100</u>
<u>130,001 to 220,000</u>	<u>120</u>
<u>220,001 to 320,000</u>	<u>150</u>
<u>320,001 to 450,000</u>	<u>180</u>
<u>450,001 to 600,000</u>	<u>210</u>

<u>600,001 to 780,000</u>	<u>240</u>
<u>780,001 to 970,000</u>	<u>270</u>
<u>970,001 to 1,230,000</u>	<u>300</u>
<u>1,230,001 to 1,520,000</u>	<u>330</u>
<u>1,520,001 to 1,850,000</u>	<u>360</u>
<u>1,850,001 to 2,270,000</u>	<u>390</u>
<u>2,270,001 to 3,020,000</u>	<u>420</u>
<u>3,020,001 to 3,960,000</u>	<u>450</u>
<u>3,960,001 or more</u>	<u>480</u>

C. Unfiltered Part VIII systems.

A Part VIII system of these regulations that does not practice filtration in compliance with Parts VIII, XIII, XXI, and XXV must collect at least one total coliform sample near the first service connection each day the turbidity level of the source water, measured as specified in Appendix D(B)(2), exceeds 1 NTU. When one or more turbidity measurements in any day exceed 1 NTU, the system must collect this coliform sample within 24 hours of the first exceedance, unless the Director determines that the system, for logistical reasons outside the system's control, cannot have the sample analyzed within 30 hours of collection and identifies an alternative sample collection schedule. Sample results from this coliform monitoring must be included in determining whether the coliform treatment technique trigger in § 2709 has been exceeded.

D. Reduced monitoring.

Systems may not reduce monitoring, except for non-community water systems using only ground water (and not ground water under the direct influence of surface water) serving 1,000 or fewer people in some months and more than 1,000 persons in other months. In months when more than 1,000 persons are served, the systems must monitor at the frequency specified in subsection (B) of this section. In months when 1,000 or fewer people are served, the Director may reduce the monitoring frequency, in writing, to a frequency allowed under § 2704 for a similarly situated system that always serves 1,000 or fewer people, taking into account the provisions in § 2704(E) through (G).

§ 2708 REPEAT MONITORING AND E. COLI REQUIREMENTS

A. Repeat monitoring.

1. If a sample taken under §§ 2704 through 2707 is total coliform-positive, the system must collect a set of repeat samples within 24 hours of being notified of the positive result. The system must collect no fewer than three repeat samples for each total coliform-positive sample found. The Director may extend the 24-hour limit on a case-by-case basis if the system has a logistical problem in collecting the repeat samples within 24 hours that is beyond its control. Alternatively, the Director may implement criteria for the system to use in lieu of case-by-case extensions. In the case of an extension, the Director must specify how much time the system has to collect the repeat samples. The Director cannot waive the requirement for a system to collect repeat samples in subsections (A)(1) through (A)(3) of this section.
2. The system must collect all repeat samples on the same day, except that the Director may allow a system with a single service connection to collect the required set of repeat samples over a three-day period or to collect a larger volume repeat sample(s) in one or

more sample containers of any size, as long as the total volume collected is at least 300 ml.

3. The system must collect an additional set of repeat samples in the manner specified in subsections (A)(1) through (A)(3) of this section if one or more repeat samples in the current set of repeat samples is total coliform-positive. The system must collect the additional set of repeat samples within 24 hours of being notified of the positive result, unless the Director extends the limit as provided in subsection (A)(1) of this section. The system must 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 § 2709(A) has been exceeded as a result of a repeat sample being total coliform-positive and notifies the Director. If a trigger identified in § 2709 is exceeded as a result of a routine sample being total coliform-positive, systems are required to conduct only one round of repeat monitoring for each total coliform-positive routine sample.
4. After a system collects a routine sample and before it learns the results of the analysis of that sample, if it collects another routine sample(s) from within five adjacent service connections of the initial sample, and the initial sample, after analysis, is found to contain total coliforms, then the system may count the subsequent sample(s) as a repeat sample instead of as a routine sample.
5. Results of all routine and repeat samples taken under §§ 2704 through 2708 not invalidated by the Director must be used to determine whether a coliform treatment technique trigger specified in § 2709 has been exceeded.

B. Escherichia coli (E. coli) testing

1. If any routine or repeat sample is total coliform-positive, the system must analyze that total coliform-positive culture medium to determine if E. coli are present. If E. coli are present, the system must notify the Director by the end of the day when the system is notified of the test result, unless the system is notified of the result after the Director's office is closed and the Director does not have either an after-hours phone line or an alternative notification procedure, in which case the system must notify the Director before the end of the next business day.
2. The Director has the discretion to allow a system, on a case-by-case basis, to forgo E. coli testing on a total coliform-positive sample if that system assumes that the total coliform-positive sample is E. coli-positive. Accordingly, the system must notify the Director as specified in subsection (B)(1) of this section and the provisions of § 205(C) apply.

§ 2709 COLIFORM TREATMENT TECHNIQUE TRIGGERS AND ASSESSMENT REQUIREMENTS FOR PROTECTION AGAINST POTENTIAL FECAL CONTAMINATION

A. Treatment technique triggers.

Systems must conduct assessments in accordance with subsection (B) of this section after exceeding treatment technique triggers in subsections (A)(1) and (A)(2) of this section.

1. Level 1 treatment technique triggers.

- a. For systems taking 40 or more samples per month, the system exceeds 5.0% total coliform-positive samples for the month.
- b. For systems taking fewer than 40 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 sample.

2. Level 2 treatment technique triggers.

- a. An *E. coli* MCL violation, as specified in § 2710(A).
- b. A second Level 1 trigger as defined in subsection (A)(1) of this section, within a rolling 12-month period, unless the Director 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.
- c. For systems with approved annual monitoring, a Level 1 trigger in two consecutive years.

B. Requirements for assessments.

1. Systems must ensure that Level 1 and 2 assessments are conducted in order to identify the possible presence of sanitary defects and defects in distribution system coliform monitoring practices. Level 2 assessments must be conducted by parties approved by the Director.
2. When conducting assessments, systems must ensure that the assessor evaluates minimum elements that include review and identification of inadequacies in sample sites; sampling protocol; sample processing; atypical events that could affect distributed water quality or indicate that distributed water quality was impaired; changes in distribution system maintenance and operation that could affect distributed water quality (including water storage); source and treatment considerations that bear on distributed water quality, where appropriate (e.g., small ground water systems); and existing water quality monitoring data. The system must conduct the assessment consistent with any NNEPA 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.
3. Level 1 Assessments. A system must conduct a Level 1 assessment consistent with NNEPA requirements if the system exceeds one of the treatment technique triggers in subsection (A)(1) of this section.
 - a. The system must complete a Level 1 assessment as soon as practical after any trigger in subsection (A)(1) of this section. In the completed assessment form, the system must describe sanitary defects detected, corrective actions completed, and a proposed timetable for any corrective actions not already completed. The

assessment form may also note that no sanitary defects were identified. The system must submit the completed Level 1 assessment form to the Director within 30 days after the system learns that it has exceeded a trigger.

- b. If the Director reviews the completed Level 1 assessment and determines that the assessment is not sufficient (including any proposed timetable for any corrective actions not already completed), the Director must consult with the system. If the Director requires revisions after consultation, the system must submit a revised assessment form to the Director on an agreed-upon schedule not to exceed 30 days from the date of the consultation.
 - c. Upon completion and submission of the assessment form by the system, the Director must determine if the system has identified a likely cause for the Level 1 trigger and, if so, establish that the system has corrected the problem, or has included a schedule acceptable to the Director for correcting the problem.
4. Level 2 Assessments. A system must ensure that a Level 2 assessment consistent with NNEPA requirements is conducted if the system exceeds one of the treatment technique triggers in subsection (A)(2) of this section. The system must comply with any expedited actions or additional actions required by the Director in the case of an *E. coli* MCL violation.
- a. The system must ensure that a Level 2 assessment is completed by the Director or by a party approved by the Director as soon as practical after any trigger in subsection (A)(2) of this section. The system must submit a completed Level 2 assessment form to the Director within 30 days after the system learns that it has exceeded a trigger. The assessment form must describe sanitary defects detected, corrective actions completed, and a proposed timetable for any corrective actions not already completed. The assessment form may also note that no sanitary defects were identified.
 - b. The system may conduct Level 2 assessments if the system has staff or management with the certification or qualifications specified by the Director unless otherwise directed by the Director. If a system requests permission and the Director approves, a system may conduct Level 2 assessments if the system has staff or management with the certification or qualifications specified by the Director.
 - c. If the Director reviews the completed Level 2 assessment form and determines that the assessment and corrective action is not sufficient (including any proposed timetable for any corrective actions not already completed), the Director must consult with the system. If the Director requires revisions after consultation, the system must submit a revised assessment form to the Director on an agreed-upon schedule not to exceed 30 days.
 - d. Upon completion and submission of the assessment form by the system, the Director must determine if the assessment identified a likely cause for the Level 2 trigger and determine whether the system has corrected the problem, or has included a schedule acceptable to the Director for correcting the problem.

C. Corrective action.

Systems must correct sanitary defects found through either Level 1 or 2 assessments conducted under subsection (B) of this section. For corrections not completed by the time of submission of the assessment form, the system must complete the corrective action(s) in compliance with a timetable approved by the Director in consultation with the system. The system must notify the Director when each scheduled corrective action is completed, and perform any follow-up monitoring required by the Director to confirm sanitary defects are corrected.

D. Consultation.

At any time during the assessment or corrective action phase, either the water system or the Director may request a consultation with the other party to determine the appropriate actions to be taken. The system may consult with the Director on all relevant information that may impact on its ability to comply with a requirement of this subpart, including the method of accomplishment, an appropriate timeframe, and other relevant information.

§ 2710 **VIOLATIONS**

A. *E. coli* MCL violation.

A system is in violation of the MCL for *E. coli* when any of the conditions identified in subsections (A)(1) through (A)(4) of this section occur.

1. The system has an *E. coli*-positive repeat sample following a total coliform-positive routine sample.
2. The system has a total coliform-positive repeat sample following an *E. coli*-positive routine sample.
3. The system fails to take all required repeat samples following an *E. coli*-positive routine sample.
4. The system fails to test for *E. coli* when any repeat sample tests positive for total coliform.

B. Treatment technique violation.

1. A treatment technique violation occurs when a system exceeds a treatment technique trigger specified in § 2709(A) and then fails to conduct the required assessment or corrective actions within the timeframe specified in § 2709(B) and (C).
2. A treatment technique violation occurs when a seasonal system fails to complete a NNEPA-approved start-up procedure prior to serving water to the public.

C. Monitoring violations.

1. Failure to take every required routine or additional routine sample in a compliance period is a monitoring violation.

2. Failure to analyze for *E. coli* following a total coliform-positive routine sample is a monitoring violation.

D. Reporting violations.

1. Failure to submit a monitoring report or completed assessment form after a system properly conducts monitoring or assessment in a timely manner is a reporting violation.
2. Failure to notify the Director following an *E. coli*-positive sample as required by § 2708(B)(1) in a timely manner is a reporting violation.
3. Failure to submit certification of completion of NNEPA-approved start-up procedure by a seasonal system is a reporting violation.

§ 2711 **REPORTING AND RECORDKEEPING**

A. Reporting.

1. *E. coli.*
 - a. A system must notify the Director by the end of the day when the system learns of an *E. coli* MCL violation, unless the system learns of the violation after the Director's office is closed and the Director does not have either an after-hours phone line or an alternative notification procedure, in which case the system must notify the Director before the end of the next business day, and notify the public in accordance with Part VI of these regulations.
 - b. A system must notify the Director by the end of the day when the system is notified of an *E. coli*-positive routine sample, unless the system is notified of the result after the Director's office is closed and the Director does not have either an after-hours phone line or an alternative notification procedure, in which case the system must notify the Director before the end of the next business day.
2. A system that has violated the treatment technique for coliforms in § 2709 must report the violation to the Director no later than the end of the next business day after it learns of the violation, and notify the public in accordance with Part VI of these regulations.
3. A system required to conduct an assessment under the provisions of § 2709 of these regulations must submit the assessment report within 30 days. The system must notify the Director in accordance with § 2709(C) when each corrective action scheduled as a result of either a Level 1 or Level 2 assessment is completed for corrections not completed by the time of submission of the assessment form.
4. A system that has failed to comply with a coliform monitoring requirement must report the monitoring violation to the Director within 10 days after the system discovers the violation, and notify the public in accordance with Part VI of these regulations.
5. A seasonal system must certify, prior to serving water to the public, that it has complied with the NNEPA-approved start-up procedure.

B. Recordkeeping.

1. The system must maintain any assessment form, regardless of who conducts the assessment, and documentation of corrective actions completed as a result of those assessments, or other available summary documentation of the sanitary defects and corrective actions taken under § 2709 for Director review. This record must be maintained by the system for a period not less than five years after completion of the assessment or corrective action.
2. The system must maintain a record of any repeat sample taken that meets the Director's criteria for an extension of the 24-hour period for collecting repeat samples as provided for under § 2708(A)(1) of these regulations.

§ 2712 **FEES**

A. Fee schedule.

The following fees will be assessed in conjunction with the requirements of this Part. All fees must be paid to the Navajo Nation Public Water Systems Supervision Program.

1. Performance by NNEPA of Level 2 Assessment or annual site visit for systems on annual monitoring: \$300, plus any additional staff time required to perform the assessment or site visit billed at \$30 per hour.

B. Revisions to fee schedule.

1. The Director shall revise this fee schedule periodically as he or she deems appropriate, pursuant to the provisions for rulemaking in the NNSDWA § 2507(D) and Uniform Rules §§ 401-410.
2. The fees set under this section shall increase automatically at the beginning of each calendar year to reflect any percentage increase by which the Consumer Price Index for the most recent year exceeds the Consumer Price Index for the year 2017.

APPENDIX A¹
SAMPLING AND ANALYTICAL METHODOLOGY

401-A ALTERNATIVE ANALYTICAL TECHNIQUES

With written permission of the Director, concurred in by the Administrator of the EPA, an alternate analytical technique may be employed. An alternate technique shall be accepted if it is substantially equivalent to the prescribed test in both precision and accuracy as it relates to the determination of compliance with any MCL. The use of the alternate analytical technique shall not decrease the frequency of sampling required by these regulations.

402-A MICROBIOLOGICAL SAMPLING AND ANALYTICAL REQUIREMENTS

A. Analytical methodology.

1. The standard sample volume required for analysis, regardless of analytical method used, is 100 ml.
2. Systems need only determine the presence or absence of total coliforms and *E. coli*; a determination of density is not required.
3. The time from sample collection to initiation of test medium incubation may not exceed 30 hours. Systems are encouraged but not required to hold samples below 10 deg. C during transit.
4. If water having residual chlorine (measured as free, combined, or total chlorine) is to be analyzed, sufficient sodium thiosulfate (Na₂S₂O₃) must be added to the sample bottle before sterilization to neutralize any residual chlorine in the water sample. Dechlorination procedures are addressed in Section 9060A.2 of *Standard Methods for the Examination of Water and Wastewater* (20th and 21st editions).
5. Systems must conduct total coliform and *E. coli* analyses in accordance with one of the analytical methods in the following table or one of the alternative methods listed in Appendix A to subpart C of 40 C.F.R. part 141.

TABLE 400-A-1 ANALYTICAL METHODS FOR TOTAL COLIFORM AND *E. COLI*

<u>Organism</u>	<u>Methodology category</u>	<u>Method 1</u>	<u>Citation 1</u>
<u>Total Coliforms</u>	<u>Lactose Fermentation Methods</u>	<u>Standard Total Coliform Fermentation Technique.</u>	<u>Standard Methods 9221 B.1, B.2 (20th ed.; 21st ed.) 2, 3</u> <u>Standard Methods Online 9221 B.1, B.2-99 2, 3</u>
		<u>Presence-Absence (P-A) Coliform Test.</u>	<u>Standard Methods 9221 D.1, D.2 (20th ed.; 21st ed.) 2, 7</u> <u>Standard Methods Online 9221 D.1, D.2-99 2, 7</u>
	<u>Membrane Filtration Methods</u>	<u>Standard Total Coliform Membrane Filter Procedure.</u>	<u>Standard Methods 9222 B, C (20th ed.; 21st ed.) 2, 4</u> <u>Standard Methods Online 9222 B-97 2, 4, 9222 C-97 2, 4</u>

		<u>Membrane Filtration using MI medium</u> <u>m-ColiBlue24® Test 2,4</u> <u>Chromocult 2, 4</u>	<u>EPA Method 1604 2</u>
	<u>Enzyme Substrate Methods</u>	<u>Colilert®</u>	<u>Standard Methods 9223 B (20th ed.; 21st ed.) 2, 5</u> <u>Standard Methods Online 9223 B-97 2, 5</u>
		<u>Colisure®</u>	<u>Standard Methods 9223 B (20th ed.; 21st ed.) 2, 5, 6</u>
		<u>E*Colite® Test 2</u> <u>Readycult® Test 2</u> <u>modified Colitag® Test 2</u>	
	<u>Escherichia coli Procedure (following Lactose Fermentation Methods).</u>	<u>EC-MUG medium</u>	<u>Standard Methods 9221 F.1 (20th ed.; 21st ed.) 2</u>
	<u>Escherichia coli Partition Method</u>	<u>EC broth with MUG (EC-MUG)</u> <u>NA-MUG medium</u>	<u>Standard Methods 9222 G.1c(2) (20th ed.; 21st ed.) 2, 8</u> <u>Standard Methods 9222 G.1c(1) (20th ed.; 21st ed.) 2</u>
<u>Escherichia coli.</u>	<u>Membrane Filtration Methods</u>	<u>Membrane Filtration using MI medium.</u> <u>m-ColiBlue24® Test 2, 4</u> <u>Chromocult 2 4</u>	<u>EPA Method 1604 2</u>
	<u>Enzyme Substrate Methods</u>	<u>Colilert®</u>	<u>Standard Methods 9223 B (20th ed.; 21st ed.) 2, 5</u> <u>Standard Methods Online 9223 B-97 2, 5, 6</u>
		<u>Colisure®</u>	<u>Standard Methods 9223 B (20th ed.; 21st ed.) 2, 5, 6</u> <u>Standard Methods Online 9223 B-97 2, 5, 6</u>
		<u>E*Colite® Test 2</u> <u>Readycult® Test 2</u> <u>modified Colitag® Test 2</u>	

1 The procedures must be done in accordance with the documents listed in subsection (C) of this section. For Standard Methods, either editions, 20th (1998) or 21st (2005), may be used. For the Standard Methods Online, the year in which each method was approved by the Standard Methods

Committee is designated by the last two digits following the hyphen in the method number. The methods listed are the only online versions that may be used. For vendor methods, the date of the method listed in subsection (C) of this section is the date/version of the approved method. The methods listed are the only versions that may be used for compliance with this rule. Laboratories should be careful to use only the approved versions of the methods, as product package inserts may not be the same as the approved versions of the methods.

2 Incorporated by reference. See subsection (C) of this section.

3 Lactose broth, as commercially available, may be used in lieu of lauryl tryptose broth, if the system conducts at least 25 parallel tests between lactose broth and lauryl tryptose broth using the water normally tested, and if the findings from this comparison demonstrate that the false-positive rate and false-negative rate for total coliforms, using lactose broth, is less than 10 percent.

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

5 Multiple-tube and multi-well enumerative formats for this method are approved for use in presence-absence determination under this regulation.

6 Colisure® results may be read after an incubation time of 24 hours.

7 A multiple tube enumerative format, as described in *Standard Methods for the Examination of Water and Wastewater* 9221, is approved for this method for use in presence-absence determination under this regulation.

8 The following changes must be made to the EC broth with MUG (EC-MUG) formulation: Potassium dihydrogen phosphate, KH₂PO₄, must be 1.5g, and 4-methylumbelliferyl-Beta-D-glucuronide must be 0.05 g.

B. Laboratory certification. Systems must have all compliance samples required under this subpart analyzed by a laboratory certified by the EPA to analyze drinking water samples. The laboratory used by the system must be certified for each method (and associated contaminant(s)) used for compliance monitoring analyses under this rule.

C. Incorporation by reference. The standards required in this section are incorporated by reference into this section. All approved material is available for inspection either electronically at www.regulations.gov, in hard copy at the Water Docket, or from the sources indicated below. The Docket ID is EPA-HQ-OW-2008-0878. Hard copies of these documents may be viewed at the Water Docket in the EPA Docket Center, (EPA/DC) EPA West, Room 3334, 1301 Constitution Ave. NW., Washington, DC. The EPA Docket Center Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is 1-202-566-1744, and the telephone number for the Water Docket is 1-202-566-2426. Copyrighted materials are only available for viewing in hard copy. These documents are also available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 1-202-741-6030 or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

1. American Public Health Association, 800 I Street, NW., Washington, DC 20001.

- a. "Standard Methods for the Examination of Water and Wastewater," 20th edition (1998):
 - i. Standard Methods 9221, "Multiple-Tube Fermentation Technique for Members of the Coliform Group," B.1, B.2, "Standard Total Coliform Fermentation Technique."

- ii. Standard Methods 9221, "Multiple-Tube Fermentation Technique for Members of the Coliform Group," D.1, D.2, "Presence-Absence (P–A) Coliform Test."
 - iii. Standard Methods 9222, "Membrane Filter Technique for Members of the Coliform Group," B, "Standard Total Coliform Membrane Filter Procedure."
 - iv. Standard Methods 9222, "Membrane Filter Technique for Members of the Coliform Group," C, "Delayed-Incubation Total Coliform Procedure."
 - v. Standard Methods 9223, "Enzyme Substrate Coliform Test," B, "Enzyme Substrate Test," Colilert® and Colisure®.
 - vi. Standard Methods 9221, "Multiple Tube Fermentation Technique for Members of the Coliform Group," F.1, "*Escherichia coli* Procedure: EC–MUG medium."
 - vii. Standard Methods 9222, "Membrane Filter Technique for Members of the Coliform Group," G.1.c(2), "*Escherichia coli* Partition Method: EC broth with MUG (EC– MUG)."
 - viii. Standard Methods 9222, "Membrane Filter Technique for Members of the Coliform Group," G.1.c(1), "*Escherichia coli* Partition Method: NA–MUG medium."
- b. "Standard Methods for the Examination of Water and Wastewater," 21st edition (2005):
- i. Standard Methods 9221, "Multiple-Tube Fermentation Technique for Members of the Coliform Group," B.1, B.2, "Standard Total Coliform Fermentation Technique."
 - ii. Standard Methods 9221, "Multiple-Tube Fermentation Technique for Members of the Coliform Group," D.1, D.2, "Presence-Absence (P–A) Coliform Test."
 - iii. Standard Methods 9222, "Membrane Filter Technique for Members of the Coliform Group," B, "Standard Total Coliform Membrane Filter Procedure."
 - iv. Standard Methods 9222, "Membrane Filter Technique for Members of the Coliform Group," C, "Delayed-Incubation Total Coliform Procedure."
 - v. Standard Methods 9223, "Enzyme Substrate Coliform Test," B, "Enzyme Substrate Test," Colilert® and Colisure®.
 - vi. Standard Methods 9221, "Multiple Tube Fermentation Technique for Members of the Coliform Group," F.1, "*Escherichia coli* Procedure: EC–MUG medium."
 - vii. Standard Methods 9222, "Membrane Filter Technique for Members of the Coliform Group," G.1.c(2), "*Escherichia coli* Partition Method: EC broth with MUG (EC– MUG)."
 - viii. Standard Methods 9222, "Membrane Filter Technique for Members of the Coliform Group," G.1.c(1), "*Escherichia coli* Partition Method: NA–MUG medium."
- c. "Standard Methods Online" available at <http://www.standardmethods.org>:
- i. Standard Methods Online 9221, "Multiple-Tube Fermentation Technique for Members of the Coliform Group" (1999), B.1, B.2-99, "Standard Total Coliform Fermentation Technique."
 - ii. Standard Methods Online 9221, "Multiple-Tube Fermentation Technique for Members of the Coliform Group" (1999), D.1, D.2-99, "Presence-Absence (P–A) Coliform Test."

- iii. Standard Methods Online 9222, "Membrane Filter Technique for Members of the Coliform Group" (1997), B-97, "Standard Total Coliform Membrane Filter Procedure."
- iv. Standard Methods Online 9222, "Membrane Filter Technique for Members of the Coliform Group" (1997), C-97, "Delayed-Incubation Total Coliform Procedure."
- v. Standard Methods Online 9223, "Enzyme Substrate Coliform Test" (1997), B-97, "Enzyme Substrate Test", Colilert® and Colisure®.

2. Charm Sciences, Inc., 659 Andover Street, Lawrence, MA 01843-1032, telephone 1-800-343-2170:

- a. E*Colite®—"Charm E*Colite™ Presence/Absence Test for Detection and Identification of Coliform Bacteria and *Escherichia coli* in Drinking Water," January 9, 1998.

3. CPI International, Inc., 5580 Skylane Blvd., Santa Rosa, CA, 95403, telephone 1-800-878-7654:

- a. modified Colitag®, ATP D05-0035—"Modified Colitag™ Test Method for the Simultaneous Detection of *E. coli* and other Total Coliforms in Water," August 28, 2009.

4. EMD Millipore (a division of Merck KGaA, Darmstadt Germany), 290 Concord Road, Billerica, MA 01821, telephone 1-800-645-5476:

- a. Chromocult—"Chromocult® Coliform Agar Presence/Absence Membrane Filter Test Method for Detection and Identification of Coliform Bacteria and *Escherichia coli* for Finished Waters," November 2000, Version 1.0.
- b. Readycult®—"Readycult® Coliforms 100 Presence/Absence Test for Detection and Identification of Coliform Bacteria and *Escherichia coli* in Finished Waters," January 2007, Version 1.1.

5. EPA's Water Resource Center (MC-4100T), 1200 Pennsylvania Avenue NW., Washington, DC 20460, telephone 1-202-566-1729:

- a. EPA Method 1604, EPA 821-R-02-024—"EPA Method 1604: Total Coliforms and *Escherichia coli* in Water by Membrane Filtration Using a Simultaneous Detection Technique (MI Medium)," September 2002, <http://www.epa.gov/nerlcwww/1604sp02.pdf>.

6. Hach Company, P.O. Box 389, Loveland, CO 80539, telephone 1-800-604-3493:

- a. m-ColiBlue24®—"Membrane Filtration Method m-ColiBlue24® Broth," Revision 2, August 17, 1999.

~~A. ANALYTICAL METHODOLOGY~~

- ~~1. The standard sample volume required for total coliform analysis, regardless of analytical method used, is 100 ml.~~
- ~~2. Public water systems need only determine the presence or absence of total coliforms; a determination of total coliform density is not required.~~
- ~~3. Public water systems must conduct total coliform analyses in accordance with one of the analytical methods in the following table or one of the alternative methods listed in~~

Table 400-A-1 Analytical Methods for Total Coliform

Organism	Methodology ²	Citation ³
Total coliforms ³	Total Coliform Fermentation Technique^{4,5,6} Total Coliform Membrane Filter Technique⁷ Presence Absence (P-A) Coliform Test^{6,8} ONPG-MUG Test⁹ Colisure Test¹⁰ E*Colite7 Test¹¹ m-ColiBlue247 Test¹²	9221 A, B 9222 A, B, C 9221 9223

The procedures shall be done in accordance with the documents listed below. Copies of the documents may be obtained from the sources listed below. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline at 800-426-4791. Documents may be inspected at EPA's Drinking Water Docket, 1200 North Capitol Street, NW, Suite 700, Washington D.C. 20460 (Telephone: 202-260-3027), or at the Office of the Federal Register, 800 North Capitol Street, NW, Suite 700, Washington D.C. 20408.

¹ EPA strongly recommends that laboratories evaluate the false positive and negative rates for the method(s) they use for monitoring total coliforms. EPA also encourages laboratories to establish false positive and false negative rates within their own laboratory and sample matrix (drinking water or source water) with the intent that if the method they choose has an unacceptable false positive or negative rate, another method can be used. The Agency suggests that laboratories perform these studies on a minimum of 5% of all total coliform positive samples, except for those methods where verification/confirmation is already required, e.g., the M-Endo and LES Endo Membrane Filter Tests, Standard Total Coliform Fermentation Technique, and Presence Absence Coliform Test. Methods for establishing false positive and negative rates may be based on lactose fermentation, the rapid test for β -galactosidase and cytochrome oxidase, multi test identification systems, or equivalent confirmation tests. False positive and false negative information is often available in published studies and/or from the manufacturer(s).

² Methods 9221 A, B, 9222 A, B, C, 9221 D and 9223 are contained in *Standard Methods for the Examination of Water and Wastewater*, 18th Edition (1992) and 19th Edition (1995) American Public Health Association, 1015 Fifteenth Street NW, Washington D.C. 20005; Either edition may be used.

⁴ In addition to all methods specifically referenced in the Appendices A-C, NNEPA incorporates by reference the methods identified by USEPA on its website as approved analytical methods, for the purposes for which those methods are identified, as those methods may be updated from time to time. The USEPA website may be found at: www.epa.gov/safewater.

³ The time from sample collection to initiation of analysis may not exceed 30 hours. Systems are encouraged but not required to hold samples below 10EC during transit.

⁴ Lactose broth, as commercially available, may be used in lieu of lauryl tryptose broth, if the system conducts at least 25 parallel tests between this medium and lauryl tryptose broth using the water normally tested, and this comparison demonstrates that the false positive rate for total coliforms, using lactose broth, is less than 10%.

⁵ If inverted tubes are used to detect gas production, the media should cover these tubes at least one half to two thirds after the sample is added.

⁶ No requirements exist to run the completed phase on 10% of all total coliform positive confirmed tubes.

⁷ MI agar also may be used. Preparation and use of MI agar is set forth in the article, "New medium for the simultaneous detection of total coliform and *Escherichia coli* in water" by Brenner, K.P., et al., 1993, Appl. Environ. Microbiol. 59:3534-3544. Also available from the Office of Water Resource Center (RC 4100), 401 M. Street SW, Washington, DC 20460, EPA/600/J-99/225.

⁸ Six-times formulation strength may be used if the medium is filter sterilized rather than autoclaved.

⁹ The ONPG MUG Test is sometimes referred to as the Autoanalysis Colilert System.

¹⁰ A description of the Colisure Test, Feb 28, 1994, may be obtained from IDEXX Laboratories, Inc., One IDEXX Drive, Westbrook, Maine 04092. The Colisure Test may be read after an incubation time of 24 hours.

A description of the E-Colite7 Test, "Presence/Absence for Coliforms and *E. Coli* in Water," Dec 21, 1997 is available from Charm Sciences, Inc., 36 Franklin Street, Malden, MA 02148-4120.

¹² A description of the m-ColiBlue247 Test, Aug 17, 1999, is available from the Hach Company, 100 Dayton Avenue, Ames, IA 50010.

B. ~~Public water systems must conduct fecal coliform analysis in accordance with the following procedure.~~

1. ~~When the MTF Technique or Presence Absence (PA) Coliform Test is used to test for total coliforms, shake the lactose positive presumptive tube or P A vigorously and transfer the growth with a sterile 3 mm loop or sterile applicator stick into brilliant green lactose bile broth and EC medium to determine the presence of total and fecal coliforms, respectively.~~

2. ~~For EPA approved analytical methods which use a membrane filter, transfer the total coliform positive culture by one of the following methods:~~

a. ~~Remove the membrane containing the total coliform colonies from the substrate with a sterile forceps and carefully curl and insert the membrane into a tube of EC medium (the laboratory may first remove a small portion of selected colonies for verification), swab the entire membrane filter surface with a sterile cotton swab and transfer the inoculum to EC medium (do not leave the cotton swab in the EC medium), or inoculate individual total coliform positive colonies into EC Medium. Gently shake the inoculated tubes of EC medium to insure adequate mixing and incubate in a waterbath at $44.5 \pm 0.2^\circ\text{C}$ for 24 ± 2 hours. Gas production of any amount in the inner fermentation tube of the EC medium indicates a positive fecal coliform test.~~

b. ~~The preparation of EC medium is described in the 18th edition (1992) and 19th edition (1995) of *Standard Methods for the Examination of Water and Wastewater*, Method 9221E (paragraph 1a), either edition may be used.~~

c. ~~Public water systems need only determine the presence or absence of fecal coliforms; a determination of fecal coliform density is not required.~~

C. ~~Public water systems must conduct analysis of *Escherichia coli* in accordance with one of the following analytical methods or one of the alternative methods listed in Appendix A to subpart C of 40 C.F.R. pt. 141:~~

1. ~~EC medium supplemented with 50 µg/ml of 4-methylumbelliferyl beta-D glucuronide (MUG) (final concentration). EC medium is described in as referenced in subsection (B)(2)(b) of this section. MUG may be added to EC medium before autoclaving. EC medium supplemented with 50 µg/ml of MUG is commercially available. At least 10 ml of EC medium supplemented with MUG must be used. The inner inverted fermentation tube may be omitted. The procedure for transferring a total coliform positive culture to EC medium supplemented with MUG shall be as specified in subsection (B)(2) of this section for transferring a total coliform positive culture to EC medium. Observe fluorescence with an ultraviolet light (366 nm) in the dark after incubating tube at $44.5 \pm 0.2^\circ\text{C}$ for 24 ± 2 hours; or~~

2. ~~Nutrient agar supplemented with 100 µg/ml 4-methylumbelliferyl beta-D glucuronide (MUG) (final concentration). Nutrient Agar is described in Method 9221E (paragraph 3) in *Standard*~~

~~Methods for the Examination of Water and Wastewater, 18th edition, 1992 and in the 19th edition, 1995; either edition may be used. This test is used to determine if a total coliform-positive sample, as determined by the Membrane Filter technique or any other method in which a membrane filter is used, contains *E. coli*. Transfer the membrane filter containing a total coliform colony(ies) to nutrient agar supplemented with 100µg/ml (final concentration) of MUG. After incubating the agar plate at 35°C for 4 hours, observe the colony(ies) under ultraviolet light (366 nm) in the dark for fluorescence. If fluorescence is visible, *E. coli* are present.~~

- ~~4. Minimal Medium ONPG-MUG (MMO-MUG) Test, as set forth in the article "National Field Evaluation of a Defined Substrate Method for the Simultaneous Detection of Total Coliforms and *Escherichia coli* from Drinking Water: Comparison with Presence-Absence Techniques" (Edberg et al.), Applied and Environmental Microbiology, Volume 55, pp. 1003-1008, April 1989. (Note: The Autoanalysis Colilert System is an MMO-MUG test). If the MMO-MUG test is total coliform positive after a 24-hour incubation, test the medium for fluorescence with a 366 nm ultraviolet light (preferably with a 6 watt lamp) in the dark. If fluorescence is observed, the sample is *E. coli* positive. If fluorescence is questionable (cannot be definitively read) after 24 hours incubation, incubate the culture for an additional four hours (but not to exceed 28 hours total), and again test the medium for fluorescence. The MMO-MUG Test with hepes buffer in lieu of phosphate buffer is the only approved formulation for the detection of *E. coli*.~~
- ~~4. The Colisure Test. A description of the Colisure Test may be obtained from the Millipore Corporation, Technical Services Department, 80 Ashby Road, Bedford, MA, 01730.~~
- ~~5. The membrane filter method with MI-agar.~~
- ~~6. B*Colite[®] Test, a description of which is cited in footnote 10 to Table 400-A-1 in subsection (A)(3) of this section.~~
- ~~7. m-ColiBlue24[®] Test, a description of which is cited in footnote 11 to Table 400-A-1 in subsection (A)(3) of this section.~~

~~D. As an option to subsection (C)(iii) of this section, a system with a total coliform positive, MUG-negative, MMO-MUG test may further analyze the culture for the presence of *E. coli* by transferring a 0.1 ml, 28-hour MMO-MUG culture to EC Medium + MUG with a pipet. The formulation and incubation conditions of EC Medium + MUG, and observation of the results are described in subsection (C)(1) of this section.~~

~~E. The following materials are incorporated by reference in this section with the approval of the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of the analytical methods cited in *Standard Methods for the Examination of Water and Wastewater* (18th and 19th editions) may be obtained from the American Public Health Association et al., 1015 Fifteenth Street, NW., Washington, DC 20005. Copies of the methods set forth in *Microbiological Methods for Monitoring the Environment, Water and Wastes* may be obtained from ORD Publications, U.S. EPA, 26 W. Martin Luther King Drive, Cincinnati, Ohio 45268. Copies of the MMO-MUG Test as set forth in the article "National Field Evaluation of a Defined Substrate Method for the Simultaneous Enumeration of Total Coliforms and *Escherichia coli* from Drinking Water: Comparison with the Standard Multiple Tube Fermentation Method" (Edberg et al.) may be obtained from the American Water Works Association Research Foundation, 6666 West Quincy Avenue, Denver, CO 80235. A description of the Colisure Test may be obtained from the Millipore Corp., Technical Services Department, 80 Ashby Road, Bedford, MA 01730. Copies may be inspected at EPA's Drinking Water Pocket, 401 M Street, SW., Washington, DC 20460, or at the Office of the Federal Register, 200 North Capitol Street, NW., Suite 700, Washington, DC 20408.~~

403-A INORGANIC CHEMICAL SAMPLING AND ANALYTICAL REQUIREMENTS

TABLE 400-A-2 DETECTION LIMITS FOR INORGANIC CHEMICALS

CONTAMINANT	MCL (mg/l)	METHODOLOGY	DETECTION LIMIT (mg/l)
ANTIMONY	0.006	Atomic Absorption: Furnace Atomic Absorption: Platform ICP-Mass Spectrometry Hydride-Atomic Absorption	0.003 0.0008 ⁵ 0.0004 0.001

ARSENIC	⁶ 0.010	Atomic Absorption; Furnace Atomic Absorption; Platform--Stabilized Temperature. Atomic Absorption; Gaseous Hydride ICP-Mass Spectrometry	0.001 ⁷ 0.0005 0.001 ⁸ 0.0014
ASBESTOS	7 MFL ¹	Transmission Electron Microscopy	0.01 MFL
BARIUM	2	Atomic Absorption: furnace technique Atomic Absorption: direct aspiration Inductively Coupled Plasma	0.002 0.1 0.002 (0.001)
BERYLLIUM	0.004	Atomic Absorption: Furnace Atomic Absorption: Platform Inductively Coupled Plasma ² ICP-Mass Spectrometry.	0.0002 0.00002 ⁵ 0.0003 0.0003
CADMIUM	0.005	Atomic Absorption: furnace technique Inductively Coupled Plasma	0.0001 0.001
CHROMIUM	0.1	Atomic Absorption: furnace technique Inductively Coupled Plasma	0.001 0.007 (0.001)
CYANIDE	0.2	Distillation, Spectrophotometric ³ Distillation: Automated, Spectrophotometric ³ Distillation, Selective Electrode ³ Distillation, Amenable, Spectrophotometric ⁴	0.02 0.005 0.05 0.02
MERCURY	0.002	Manual Cold Vapor Technique Automated Cold Vapor Technique	0.0002 0.0002
NICKEL	x1	Atomic Absorption: Furnace Atomic Absorption: Platform Inductively Coupled Plasma ² ICP-Mass Spectrometry	0.001 0.0006 ⁵ 0.005 0.0005
NITRATE	10 (as N)	Manual Cadmium Reduction Automated Hydrazine Reduction Automated Cadmium Reduction Ion Selective Electrode Ion Chromatography	0.01 0.01 0.05 1 0.01
NITRITE	1 (as N)	Spectrophotometric Automated Cadmium Reduction Manual Cadmium Reduction Ion Chromatography	0.01 0.05 0.01 0.004
SELENIUM	0.05	Atomic Absorption: furnace Atomic Absorption: gaseous hydride	0.002 0.002

¹ MFL = million fibers per liter > 10 micrometers

² Using a 2X preconcentration step as noted in Method 200.7. Lower MDLs may be achieved when using a 4X preconcentration.

³ Screening method for total cyanides.

⁴ Measures "free" cyanides.

⁵ Lower MDLs are reported using stabilized temperature graphite furnace atomic absorption.

⁶ The value for arsenic is effective January 23, 2006. Until then, the MCL is 0.05 mg/L.

⁷ The MDL reported for EPA Method 200.9 (Atomic Absorption; Platform - Stabilized Temperature) was determined using a 2x concentration step during sample digestion. The MDL determined for samples analyzed using direct analyses (i.e. no sample digestion) will be higher. Using multiple depositions, EPA 200.9 is capable of obtaining MDL of 0.0001 mg/L.

⁸ Using selective ion monitoring, EPA method 200.8 (ICP-MS) is capable of obtaining a MDL of 0.0001 mg/L.

A. Inorganic Analysis:

1. Analysis for the following contaminants shall be conducted in accordance with the methods in the Table 400-A-3, or their equivalent as determined by EPA. Criteria for analyzing arsenic, barium, beryllium, cadmium, calcium, chromium, copper, lead, selenium, sodium, and thallium with digestion or directly without digestion, and other analytical test procedures are contained in *Technical Notes on Drinking Water Methods*, EPA-600/R-94-173, October 1994. This document also contains approved analytical test methods which remain available for compliance monitoring until July, 1996. These methods will not be available for use after July 1, 1996. This document is available from the National Technical Information Service, NTIS PB95-104766, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161 (1-800-553-6847).

TABLE 400-A-3 INORGANIC CONTAMINANTS ANALYTICAL METHODS

CONTAMINANT	METHODOLOGY	EPA	ASTM ³	SM ⁴	SM Online ²⁷	Other
Antimony	Atomic Absorption; Furnace			3113 B		
	Atomic Absorption; Platform	² 200.9				
	ICP-Mass Spectrometry	² 200.8				
Arsenic	Hydride-Atomic Absorption		D-3697-92			
	Inductively Coupled Plasma	² 200.7		¹⁵ 3120 B		
	ICP-Mass Spectrometry	² 200.8				
	Atomic Absorption; Platform	² 200.9				
	Atomic Absorption; Furnace		D-2972-97,03 C	3113 B	3113B-99	
	Hydride Atomic Absorption		D-2972-97,03 B	3114 B	3114B-97	
Asbestos	Transmission Electron Microscopy	⁹ 100.1				
	Transmission Electron Microscopy	¹⁰ 100.2				
Barium	Inductively coupled plasma	² 200.7		3120 B		
	ICP Mass Spectrometry	² 200.8				
	Atomic Absorption; Direct			3111 D		
	Atomic Absorption; Furnace			3113 B		
Beryllium	Atomic Absorption; furnace		D-3645-93B	3113 B		
	Atomic Absorption; platform	² 200.9				
	Inductively Coupled Plasma	² 200.7		3120 B		
	ICP-Mass Spectrometry	² 200.8				
Cadmium	Inductively Coupled plasma	² 200.7				
	ICP Mass Spectrometry	² 200.8				
	Atomic Absorption; Platform	² 200.9				
	Atomic Absorption; Furnace			3113 B		
Chromium	Inductively Coupled Plasma	² 200.7		3120 B		
	ICP-Mass Spectrometry	² 200.8				
	Atomic Absorption; Platform	² 200.9				
	Atomic absorption; Furnace			3113 B		
Cyanide	Manual Distillation followed by Spectrophotometric. Amendable		D2036-98A	4500-CN-C		
	Spectrophotometric Manual		D-2036-98A	4500-CN-E		I-3300-85 ⁵
	Spectrophotometric Semi-Automated Selective Electrode	⁶ 335.4		4500-CN-F		
Fluoride	Ion Chromatography	⁶ 300.0	D4327-91	4110B		

	Manual Distill; color. SPADNS			4500F-B, D	
	Manual Electrode		D1179-93B	4500F-C	
	Automated Electrode				380-75 WE ¹¹
	Automated Alizarin			4500F-E	129-71 W ¹¹
	Capillary Ion Electrophoresis				D6508, Rev. 2 ²³
Mercury	Manual cold vapor	² 245.1	D3223-97, 02	3112 B	
	Automated cold vapor	¹ 245.2			
	ICP-Mass Spectrometry	² 200.8			
Nickel	Inductively Coupled Plasma	² 200.7		3120B	
	ICP-Mass Spectrometry	² 200.8			
	Atomic Absorption; Platform	² 200.9			
	Atomic Absorption; Direct			3111B	
	Atomic Absorption; Furnace			3113B	
Nitrate	Ion chromatography	⁶ 300.0	D4327-97, 03	4110B	B-1011 ⁸
	Automated cadmium reduction	⁶ 353.2	D3867-90A	4500-NO ₃ -F	
	Ion selective electrode			4500-NO ₃ -D	601 ⁷
	Manual cadmium reduction		D3867-90B	4500-NO ₃ -E	
	Capillary Ion Electrophoresis				D6508, Rev. 2 ²³
Nitrite	Ion chromatography	⁶ 300.0	D4327-97, 03	4110B	B-1011 ⁸
	Automated cadmium reduction	⁶ 353.2	D3867-90A	4500-NO ₃ -F	
	Manual cadmium reduction		D3867-90B	4500-NO ₃ -E	
	Spectrophotometric			4500-NO ₂ -B	
	Capillary Ion Electrophoresis				D6508, Rev. 2 ²³
Selenium	Hydride-Atomic Absorption		D3859-93A	3114B	
	ICP Mass Spectrometry	² 200.8			
	Atomic Absorption; Platform	² 200.9			
	Atomic absorption; Furnace		D3859-98B, 03	3113B	
Thallium	Atomic Absorption; Platform	² 200.9			
	ICP-Mass Spectrometry	² 200.8			
Lead	Atomic Absorption; furnace		D3559-95D	3113B	
	ICP Mass Spectrometry	² 200.8			
	Atomic Absorption; platform	² 200.9			
	Differential Pulse Anodic Stripping Voltametry				Method 1001 ¹⁵
Copper	Atomic absorption; furnace		D1688-95C	3113B	
	Atomic absorption; direct aspiration		D1688-95A	3111B	
	ICP	² 200.7		3120B	
	ICP-Mass Spectrometry	² 200.8			
	Atomic absorption; platform	² 200.9			
Conductivity	Conductance		D1125-95A	2510B	
Alkalinity	Trisrimetric		D1067-92B	2320B	
	Electrometric titration				I-1030 -85 ⁵
Calcium	EDTA titrimetric		D511-93 A	3500-Ca- D	
	Atomic Absorption; direct aspiration		D511-93 B	3111B	
	Inductively-coupled plasma	² 200.7		3120B	
	Ion Chromatography		D6919-03		
Magnesium	Atomic Absorption		D 511-93, 03B	3111 B	
	ICP	² 200.7		3120 B	
	Complexation Titrimetric Methods		D 511-93, 03A	3500-Mg E	
	Ion Chromatography		D6919-03		
Orthophos-ph ate ¹²	Colorimetric, automated, ascorbic acid	⁶ 365.1		4500-P F	
	Colorimetric, ascorbic acid, single reagent		D515-88A	4500-P E	
	Colorimetric, phosphomolybdate				I-1602 -85 ⁵

	automated-segmented flow;				I-2601-90 ⁵
	automated discrete				I-2598-85 ⁵
	Ion chromatography	⁶ 300.0	D4327-97, 03	4110 B	
	Capillary Ion Electrophoresis				D6508, Rev. 2 ²³
pH	Electrometric	¹ 150.1 ¹ 150.2	D1293-95	4500-H+-B	
Silica	Colorimetric, molybdate blue;				I-1700-85 ⁵
	automated-segmented flow				I-2700-85 ⁵
	Colorimetric		D859-94, 00		
	Molybdosilicate			4500-Si-D	
	Heteropoly blue			4500-Si-E	
	Automated method for molybdate-reactive silica			4500-Si-F	
	Inductively-couple plasma	² 200.7		3120B	
Sodium	Inductively-coupled plasma	² 200.7			
	Atomic Absorption; direct aspiration			3111B	
	Ion chromatography		D6919-03		
Temperature	Thermometric			2500B	

The procedures shall be done in accordance with the documents listed below. Copies of the documents may be obtained from the sources listed below. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline 800-426-4791. Documents may be inspected at EPA's Drinking Water Docket, EPA West, 1301 Constitution Avenue, NW, Room B135, Washington, D.C. (Telephone: 202-566-2426); or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, Call 202-741-6030, or go to:

http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

¹ "Method for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, March 1983. Available at NTIS, PB84-128677.

² "Methods for the Determination of Metals in Environmental Samples-Supplement I", EPA-600/R-94-111, May 1994. Available at NTIS, PB 95-125472.

³ Annual Book of ASTM Standards, 1994, 1996, 1999 or 2003, Vols. 11.01 and 11.02, ASTM International; any year containing the cited version of the method may be used. The previous versions of D1688-95A, D1688-95C (copper), D3559-95D (lead), D1293-95 (pH), D1125-91A (conductivity) and D859-94 (silica) are also approved. These previous versions D1688-90A, C; D3559-90D, D1293-84, D1125-91A and D859-88, respectively are located in the Annual Book of ASTM Standards, 1994, Vol. 11.01. Copies may be obtained from the ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

⁴ Standard Methods for the Examination of Water and Wastewater, 18th edition (1992), 19th edition (1995), or 20th edition (1998). American Public Health Association 1015 Fifteenth Street NW, Washington, DC 20005. The cited methods published in any of these three editions may be used, except that the versions of 3111B, 3111D, 3113B and 3114B in the 20th edition may not be used.

⁵ Method I-2601-90, Methods for Analysis by the U.S. Geological Survey National Water Quality Laboratory - Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments, Open File Report 93-125, 1993; For Methods I-1030-85; I-1601-85; I-1700-85; I-2598-85; I-2700-85; and I-3300-85 see Techniques of Water Resources Investigation of the U.S. Geological Survey, Book 5 Chapter A-1, 3rd ed., 1989; Available from Information Services, U.S. Geological Survey, Federal Center, Box 25286, Denver, CO 80225-0425.

⁶ "Methods for the Determination of Inorganic Substances in Environmental Samples", EPA 600/R-93-100, August 1993, Available at NTIS, PB94-120821.

⁷ The procedure shall be done in accordance with the Technical Bulletin 601 "Standard Method of Test for Nitrate in Drinking Water", July, 1994, PN 221890-001, Analytical Technology, Inc. Copies may be obtained from ATI Orion, 529 Main Street, Boston, MA 02129.

⁸ Method B-1011, "Waters Test Method for Determination of Nitrite/Nitrate in Water Using Single Column Ion Chromatography" August 1987. Copies may be obtained from Waters Corporation, Technical Services Division, 34 Maple Street, Milford, MA 01757, Telephone 508/482-2131, Fax 508/482-3625.

⁹ Method 100.1 "Analytical Method for Determination of Asbestos Fibers in Water," EPA-600/4-83/043, September 1983, Available at NTIS, PB83-260471.

¹⁰ Method 100.2, "Determination of Asbestos Structure Over 10-µm in Length in Drinking Water", EPA-600/R-94-134, June 1994, Available at NTIS, PB94-201902.

¹¹ Industrial Method No. 129-71W, "Fluoride in Water and Wastewater," December 1972 and Method No. 380-75WE, "Fluoride in Water and Wastewater," February 1976, Technicon Industrial Systems. Copies may be obtained from Bran & Leubbe, 1025 Busch Parkway, Buffalo Grove, IL 60089.

¹² Unfiltered, no digestion or hydrolysis.

¹³ Because MDLs reported in EPA Methods 200.7 and 200.9 were determined using a 2X preconcentration step during sample digestion, MDLs determined when samples are analyzed by direct analysis (i.e., no sample digestion) will be higher. For direct analysis of cadmium by Method 200.7, sample preconcentration using pneumatic nebulization may be required to achieve lower detection limits. Preconcentration may also be required for direct analysis of antimony, lead, and thallium by Method 200.9; antimony and lead by Method 3113 B; and lead by Method D3559-90D unless multiple in-furnace depositions are made.

¹⁴ If ultrasonic nebulization is used in the determination of arsenic by Method 200.8, or SM 3120 B, the arsenic must be in the pentavalent state to provide uniform signal response. For direct analysis of arsenic with method 200.8 using ultrasonic nebulization, samples and standards must contain one mg/L of sodium hypochlorite.

¹⁵ Reserved.

¹⁶ The description for Method Number 1001 for lead is available from Palintest, LTD, 21 Kenton Lands Road, P.O. Box 18395, Erlanger, KY 41018 or from the Hach Company, P.O. Box 389, Loveland, CO 80539.

¹⁷ The description for the Kelada 01 Method, "Kelada Automated Test Methods for Total Cyanide, Acid Dissociable Cyanide, and Thiocyanate," Revision 1.2, August 2001, EPA #821-B-01-009 for cyanide is available from the National Technical Information Service (NTIS), PB 2001-108275, 5282 Port Royal Road, Springfield, VA 22161. The toll free telephone number is 800-553-6847. Note: A 450-W UB lamp may be used in this method instead of the 550-W lamp specified if it provides performance within the quality control (QC) acceptance criteria of the method in a given instrument. Similarly, modified flow cell configurations and flow conditions may be used in the method, provided that the QC acceptance criteria are met.

¹⁸ The description for the QuikChem Method 10-204-001-X, "Digestion and distillation of total cyanide in drinking and wastewaters using MICRO DIST and determination of cyanide by flow injection analysis," Revision 2.1, November 30, 2000 for cyanide is available from Lachat Instruments, 6645 W. Mill Rd, Milwaukee, WI 53218, USA. Phone 414-358-4200.

¹⁹ "Methods for the Determination of Organic and Inorganic Compounds in Drinking Water," Vol. 1, EPA 815-R-00-014, August 2000. Available at NTIS, PB2000-106981.

²⁰ Method OIA-1677, DW "Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry," January 2004. EPA-821-R-04-001, Available from ALPKEM, A Division of OI Analytical, P.O. Box 9010, College Station, TX 77842-9010.

²¹ Sulfide levels below those detected using lead acetate paper may produce positive method interferences. Test samples using a more sensitive sulfide method to determine if a sulfide interference is present, and treat samples accordingly.

²² Standards Methods Online are available at <http://www.standardmethods.org>. The year in which each method was approved by the Standard Methods Committee is designated by the last two digits in the method number. The methods listed are the only online versions that may be used.

²³ Method D6508, Rev. 2, "Test Method for Determination of Dissolved Inorganic Anions in Aqueous Matrices Using Capillary ion Electrophoresis and Chromate Electrolyte," Available from Waters Corp, 34 Maple St. Milford, MA, 07157, Telephone: 508/482-2131, Fax: 508/482-3625.

B. Sample collection for antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium and thallium under this section shall be conducted using the sample preservation, container, and maximum holding time procedures specified in the table below:

TABLE 400-A-4 SAMPLE COLLECTION PROCEDURE

CONTAMINANT	PRESERVATIVE ¹	CONTAINER ²	TIME ³
Antimony	HNO ₃	P or G	6 months
Arsenic	Conc HNO ₃ to pH < 2	P or G	6 months
Asbestos	4°C	P or G	48 hours ⁴
Barium	HNO ₃	P or G	6 months
Beryllium	HNO ₃	P or G	6 months
Cadmium	HNO ₃	P or G	6 months
Chromium	HNO ₃	P or G	6 months
Cyanide	4°C, NaOH	P or G	14 days
Fluoride	NONE	P or G	1 month

Mercury	HNO ₃	P or G	28 days
Nickel	HNO ₃	P or G	6 months
Nitrate	4°C	P or G	48 hours ⁵
Nitrate-Nitrite ⁶	H ₂ SO ₄	P or G	28 days
Nitrite	4°C	P or G	48 hours
Selenium	HNO ₃	P or G	6 months
Thallium	HNO ₃	P or G	6 months

¹ For cyanide determinations samples must be adjusted with sodium hydroxide to pH 12 at the time of collection. When chilling is indicated the sample must be shipped and stored at 4 °C or less. Acidification of nitrate or metals samples may be with a concentrated acid or a dilute (50% by volume) solution of the applicable concentrated acid. Acidification of samples for metals analysis is encouraged and allowed at the laboratory rather than at the time of sampling provided the shipping time and other instructions in Section 8.3 of EPA Methods 200.7 or 200.8 or 200.9 are followed.

² P = plastic, hard or soft; G = glass, hard or soft.

³ In all cases, samples should be analyzed as soon after collection as possible. Follow additional (if any) information on preservation, containers, or holding times that is specified in method.

⁴ Instruction for containers, preservation procedures and holding times as specified in Method 100.2 must be adhered to for all compliance analyses including those conducted with Method 100.1.

⁵ If the sample is chlorinated, the holding time for an un-acidified sample kept at 4°C is extended to 14 days.

⁶ Nitrate-Nitrite refers to a measurement of total nitrate.

C. Analysis under this section shall only be conducted by laboratories that have been certified by EPA. Laboratories may conduct sample analysis under provisional certification until January 1, 1996. To receive certification to conduct analyses for antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium and thallium, the laboratory must:

1. Analyze Performance Evaluation (PE) provided by EPA, at least once a year.
2. For each contaminant that has been included in the PE sample and for each method for which the laboratory desires certification achieve quantitative results on the analyses that are within the following acceptance limits:

TABLE 400-A-5 CONTAMINANT ACCEPTANCE LIMIT

CONTAMINANT	ACCEPTANCE LIMIT
Antimony	± 30 at ≥ 0.006 mg/l
Arsenic	± 30 at ≥ 0.003 mg/L
Asbestos	2 standard deviations based on study statistics
Barium	± 15% at ≥ 0.15 mg/l
Beryllium	± 15% at ≥ 0.001 mg/l
Cadmium	± 20% at ≥ 0.002 mg/l
Chromium	± 15% at ≥ 0.01 mg/l
Cyanide	± 25% at ≥ 0.1 mg/l
Fluoride	± 10% at ≥ 1 to 10 mg/l
Mercury	± 30% at ≥ 0.0005 mg/l
Nitrate	± 10% at ≥ 0.4 mg/l
Nitrite	± 15% at ≥ 0.4 mg/l

Selenium	± 20% at ≥ 0.01 mg/l
Thallium	± 30% at ≥ 0.002 mg/l

404-A ORGANIC CHEMICALS SAMPLING AND ANALYTICAL REQUIREMENTS

A. Analyses for the contaminants listed in § 204, Table 200.3 (1) through (21), shall be conducted using the following EPA methods or their equivalent as approved by EPA or the alternative methods listed in Appendix A to Subpart C of 40 C.F.R. pt. 141, or their equivalent as determined by EPA.

- The following documents are incorporated by reference. Copies may be inspected at EPA's Drinking Water Docket, 401 M Street, SW., Washington, DC 20460; at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC. Method 508A and 515.1 are in *Methods for the Determination of Organic Compounds in Drinking Water*, EPA-600/R-88-039, December 1988, revised July 1991. Methods 547, 550 and 550.1 are in *Methods for the Determination of Organic Compounds in Drinking Water-Supplement I*, EPA-600-4-90-020, July 1990. Methods 548.1, 549.1, 552.1 and 555 are in *Methods for the Determination of Organic Compounds in Drinking Water-Supplement II*, EPA-600/R-92-129, August 1992. Methods 502.2, 504.1, 505, 506, 507, 508, 508.1, 515.2, 524.2, 525.2, 531.1, 551.1, and 552.2 are in *Methods for the Determination of Organic Compounds in Drinking Water-Supplement III*, EPA/600/R-95-131, August 1995. Method 1613 is titled "Tetra-through Octa-Chlorinated Dioxins and Furans by Isotope-Dilution HRGC/HRMS," EPA -821-B-94-005, October 1994. These documents are available from the NTIS PB91-231480, PB91-146027, PB92-207703, PB95-261616 and PB95-104774, US Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161 (1-800-553-6847). Method 6651 shall be followed in accordance with *Standard Methods for the Examination of Water and Wastewater*, 18th edition, 1992 and 19th edition, 1995, American Public Health Association (APHA); either edition may be used. Method 6610 shall be followed in accordance with the *Supplement to the 18th edition of Standard Methods for the Examination of Water and Wastewater*, 1994, or with the 19th edition of *Standard Methods for the Examination of Water and Wastewater*, 1995, APHA; either publication may be used. The APHA documents are available from APHA 1015, Fifteenth Street NW., Washington, D.C. 20005. Other required analytical test procedures germane to the conduct of these analyses are contained in *Technical Notes on Drinking Water Methods*, EPA 600/R-94-173, October 1994, NTIS PB95-104766. EPA Methods 515.3 and 549.2 are available from U.S. Environmental Protection Agency, National Exposure Research Laboratory (NERL)-Cincinnati, 26 West Martin Luther King Drive, Cincinnati, OH 45268. ASTM Method D 5317-93 is available in the *Annual Book of ASTM Standards*, 1996, Vol. 11.02, American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428, or in any edition published after 1993.

TABLE: 400-A-6 ORGANIC CHEMICALS OTHER THAN TOTAL TRIHALOMETHANES SAMPLING AND ANALYTICAL METHODS

Contaminant	Method	Standard Methods	ASTM	Other
Benzene	502.2, 524.2			
Carbon Tetrachloride	502.2, 524.2, 551.1			
Chlorobenzene	502.2, 524.2			
1,2-Dichlorobenzene	502.2, 524.2			
1,4-Dichlorobenzene	502.2, 524.2			
1,2-Dichloroethane	502.2, 524.2			
cis-Dichloroethylene	502.2, 524.2			
trans-Dichloroethylene	502.2, 524.2			
1,2-Dichloropropane	502.2, 524.2			
Ethylbenzene	502.2, 524.2			

Styrene	502.2, 524.2			
Tetrachloroethylene	502.2, 524.2, 551.1			
1,1,1-Trichloroethane	502.2, 524.2, 551.1			
Trichloroethylene	502.2, 524.2, 551.1			
Toluene	502.2, 524.2			
1,2,4-Trichlorobenzene	502.2, 524.2			
1,1-Dichloroethylene	502.2, 524.2			
1,1,2-Trichloroethane	502.2, 524.2, 551.1			
Vinyl Chloride	502.2, 524.2			
Xylenes (total)	502.2, 524.2			
2,3,7,8-TCDD (dioxin)	1613			
2,4-D ⁴ (as acids, salts, and esters)	515.2, 555, 515.1, 515.3, 515.4			D5317-93, 98 (Reapproved 2003).
2,4,5-TP ⁴ (Silvex)	515.2, 555, 515.1, 515.3, 515.4			D5317-93, 98 (Reapproved 2003).
Alachlor ²	507, 525.2, 508.1, 505, 551.1			
Atrazine ²	507, 525.2, 508.1, 505, 551.1			Syngenta ⁵ AG-625
Benzo(a)pyrene	525.2, 550, 550.1			
Carbofuran	531.1, 531.2	6610		
Chlordane	508, 525.2, 508.1, 505			
Dalapon	552.1, 515.1, 552.2, 515.3, 515.4, 552.3			
Di(2-ethylhexyl)adipate	506, 525.2			
Di(2-ethylhexyl)phthalate	506, 525.2			
Dibromochloropropane (DBCP)	504.1, 551.1			
Dinoseb ⁴	515.2, 555, 515.1, 515.3, 515.4			
Diquat	549.2			
Endothall	548.1			
Endrin	505, 508, 525.2, 508.1, 551.1			
Ethylene dibromide (EDB)	504.1, 551.1			
Glyphosate	547	6651		
Heptachlor	505, 508, 525.2, 508.1, 551.1			
Heptachlor epoxide	505, 508, 525.2,			

	508.1, 551.1			
Hexachlorobenzene	505, 508, 525.2, 508.1, 551.1			
Hexachlorocyclopentadiene	505, 508, 525.2, 508.1, 551.1			
Lindane	505, 508, 525.2, 508.1, 551.1			
Methoxychlor	505, 508, 525.2, 508.1, 551.1			
Oxamyl	531.1, 531.2	6610		
PCBs ³ (as decachlorobiphenyl)	508A			
PCBs ³ (as Aroclors)	508A 505, 508, 508.1, 525.2			
Pentachlorophenol	515.2, 525.2, 555, 515.1, 515.3, 515.4		D5317-93, 98 (Reapproved 2003).	
Picloram ⁴	515.2, 555, 515.1, 515.3, 515.4		D5317-93, 98 (Reapproved 2003).	
Simazine ²	507, 525.2, 508.1, 505, 551.1			
Toxaphene	508, 508.1, 525.2, 505			
Total Trihalomethanes	502.2, 524.2, 551.1			

¹ Reserved.

² Substitution of the detector specified in Method 505, 507, 508, or 508.1 for the purpose of achieving lower detection limits is allowed as follows. Either an electron capture or nitrogen phosphorous detector may be used provided all regulatory requirements and quality control criteria are met.

³ PCBs are qualitatively identified as Aroclors and measured for compliance purposes as decachlorobiphenyl. Users of Method 505 may have more difficulty in achieving the required detection limits than users of Methods 508.1, 525.2 or 508.

⁴ Accurate determination of the chlorinated esters requires hydrolysis of the sample as described in EPA methods 515.1, 515.2, 515.3, and 555, and ASTM Method D 5317-93.

⁵ This method may not be used for the analyses of atrazine in any system where chlorine dioxide is used for drinking water treatment. In samples from all other systems, any result for atrazine generated by Method AG-625 that is greater than one-half the maximum contaminant level (MCL) (in other words, greater than 0.0015 mg/L or 1.5 µg/L) must be confirmed using another approved method for this contaminant and should use additional volume of the original sample collected for compliance monitoring. In instances where a result from Method AG-625 triggers such confirmatory testing, the confirmatory result is to be used to determine compliance.

B. Compositing samples prior to GC analysis.

1. Add 5 ml or equal larger amounts of each sample (up to 5 samples are allowed) to a 25 ml glass syringe. Special precautions must be made to maintain zero head-space in the syringe.
2. The samples must be cooled at 4° Celsius during this step to minimize volatilization losses.
3. Mix well and draw out a 5-ml aliquot for analysis.
4. Follow sample introduction, purging, and desorption steps described in the method.
5. If less than five samples are used for compositing, proportionately small syringe may be used.

C. Compositing samples prior to GC/MS analysis.

1. Inject 5-ml or equal larger amounts of each aqueous sample (up to 5 samples are allowed) into a 25-ml purging device using the sample introduction technique described in the method.
 2. The total volume of the sample in the purging device must be 25 ml.
 3. Purge and desorb as described in the method.
- D. Analysis under this section shall only be conducted by laboratories that are certified by EPA according to the following conditions (laboratories may conduct sample analysis under provisional certification until January 1, 1996):
1. To receive certification to conduct analyses for the contaminants in § 204 (A)(1) Table 200.3 (2) through (21) the laboratory must:
 - a. Analyze Performance Evaluation (PE) samples provided by EPA at least once a year by each method for which the laboratory desires certification.
 - b. Achieve the quantitative acceptance limits under subsection (E)(1)(c) and (d) of this section for at least 80% of the regulated organic chemicals listed in Table 200.3 (2) through (21).
 - c. Achieve quantitative results on the analyses performed under subsection (E)(1)(a) of this section that are within $\pm 20\%$ of the actual amount of the substances in the Performance Evaluation sample when the actual amount is greater than or equal to 0.010 mg/l.
 - d. Achieve quantitative results on the analyses performed under subsection (E)(1)(a) of this section that are within $\pm 40\%$ of the actual amount of the substances in the Performance Evaluation sample when the actual amount is less than 0.010 mg/l.
 - e. Achieve a method detection limit of 0.0005 mg/l, according to the procedures in Appendix B of 40 CFR Part 136.
 2. To receive certification for vinyl chloride, the laboratory must:
 - a. Analyze Performance Evaluation (PE) samples provided by EPA at least once a year by each method for which the laboratory desires certification.
 - b. Achieve quantitative results on the analyses performed under subsection (E)(2)(a) of this section that are within $\pm 40\%$ of the actual amount of vinyl chloride in the Performance Evaluation sample.
 - c. Achieve a method detection limit of 0.0005 mg/l, according to the procedures in Appendix B of 40 CFR Part 136.
 - d. Obtain certification for the contaminants listed in Table 200.3 (2) through (21).
 3. Each certified laboratory must determine the method detection limit (MDL), as defined in Appendix B to 40 CFR Part 136, at which it is capable of detecting VOCs. The acceptable MDL is 0.0005 mg/l. This concentration is the detection concentration for purposes of this section.
 4. Analysis for PCBs shall be conducted as follows using the methods in subsection A of this section:
 - a. Each system which samples for PCBs shall analyze each sample using either Method 508.1, 525.2, 508 or 505. Users of method 505 may have more difficulty in achieving the required Aroclor detection limits than users of Methods 508.1, 525.2, or 508.
 - b. If PCBs (as one of seven Arochlors) are detected (as designated in this subsection) in any sample analyzed using Methods 505 or 508, the system shall reanalyze the sample using Method 508A to quantitate PCBs (as decachlorobiphenyl).

TABLE 400-A-7 DETECTION LIMIT OF PCB

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AROCHLOR	DETECTION LIMIT mg/l)
1016	0.00008
1221	0.02
1232	0.0005
1242	0.0003
1248	0.0001
1254	0.0001
1260	0.0002

c. Compliance with the PCB MCL shall be determined based upon the quantitative results of analyses using Method 508A.

5. Detection, as used in this subsection, shall be defined as greater than or equal to the following concentrations for each contaminant.

TABLE 400-A-8 DETECTION LIMIT

CONTAMINANT	LIMIT (mg/l)
Alachlor	0.0002
Aldicarb	0.0005
Aldicarb sulfoxide	0.0005
Aldicarb sulfone	0.0008
Atrazine	0.0001
Benzo(a)pyrene	0.00002
Carbofuran	0.0009
Chlordane	0.0002
Dalapon	0.001
Dibromochloropropane (DBCP)	0.00002
Di(2-ethylhexyl) adipate	0.0006
Di(2-ethylhexyl) phthalate	0.0006
Dinoseb	0.0002
Diquat	0.0004
2,4-D	0.0001
Endothall	0.009
Endrin	0.00001
Ethylene dibromide (EDB)	0.00001
Glyphosate	0.006
Heptachlor	0.00004
Heptachlor epoxide	0.00002

Hexachlorobenzene	0.0001
Hexachlorocyclopentadiene	0.0001
Lindane	0.00002
Methoxychlor	0.0001
Oxamyl	0.002
Picloram	0.0001
Polychlorinated biphenyls (PCBs) (as decachlorobiphenyl)	0.0001
Pentachlorophenol	0.00004
Simazine	0.00007
Toxaphene	0.001
2,3,7,8-TCDD (Dioxin)	0.000000005
2,4,5-TP (Silvex)	0.0002

6. Analysis under this section shall only be conducted by laboratories that have received certification by EPA and have met the following conditions:
- a. To receive certification to conduct analyses for the contaminants in § 204 (A) (2) the laboratory must:
 1. Analyze Performance Evaluation (PE) samples provided by EPA at least once a year by each method for which the laboratory desires certification.
 2. For each contaminant that has been included in the PE sample achieve quantitative results on the analyses that are within the following acceptance limits:

TABLE 400-A-9 ACCEPTANCE LIMITS

CONTAMINANT	ACCEPTANCE LIMITS (%)
Dibromochloropropane (DBCP)	± 40
Ethylidibromide (EDB)	± 40
Alachlor	± 45
Atrazine	± 45
Benzo(a)pyrene	2 Standard deviations
Carbofuran	± 45
Chlordane	± 45
Dalapon	2 Standard deviations
Di(2-ethylhexyl) adipate	2 Standard deviations
Di(2-ethylhexyl) phthalate	2 Standard deviations
Dinoseb	2 Standard deviations
Diquat	2 Standard deviations

Endothall	2 Standard deviations
Endrin	± 30
Glyphosate	2 Standard deviations
Heptachlor	± 45
Heptachlor Epoxide	± 45
Hexachlorobenzene	2 Standard deviations
Hexachloro-cyclopentadiene	2 Standard deviations
Lindane	± 45
Methoxychlor	± 45
Oxamyl	2 Standard deviations
PCBs (as Decachlorobiphenyl)	0-200
Picloram	2 Standard deviations
Simazine	2 Standard deviations
Toxaphene	± 45
Aldicarb	2 Standard deviations
Aldicarb sulfoxide	2 Standard deviations
Aldicarb sulfone	2 Standard deviations
Pentachlorophenol	± 50
2,3,7,8-TCDD (Dioxin)	2 Standard deviations
2,4-D	± 50
2,4-TP (Silvex)	± 50

405-A ANALYTICAL METHODS FOR RADIOACTIVITY

A. Analysis for the following contaminants shall be conducted to determine compliance with §209 (radioactivity) in accordance with the methods in the following table, or the alternative methods listed in Appendix A to subpart C of 40 C.F.R. pt. 141, or their equivalent determined by EPA in accordance with § 415.

TABLE 400-A-10 RADIOACTIVITY METHODS

Contaminant	Methodology	Reference (method or page number)								
		EPA ¹	EPA ²	EPA ³	EPA ⁴	SM ⁵	ASTM ⁶	USGS ⁷	DOE ⁸	Other
Naturally occurring: Gross alpha ¹¹ and beta	Evaporation	900.0	p 1	00-01	p 1	302, 7110 B		R-1120-76		
Gross Alpha ¹¹	Co-precipitation			00-02		7110 C				
Radium 226	Radon emanation	903.1	p 16	Ra-04	p 19	305, 7500-R a C	D 3454-97	R-1141-76	Ra-04	N.Y. ⁹
		903.0	p 13	Ra-0		304 7500-Ra	D 2460-97	R-1140-7		

	Radio chemical			3		B		6		
Radium 228	Radio chemical	904.0	p 24	Ra-0 5	p 19	7500-Ra D		R-1142-7 6		N.Y. ⁹ N.J. ¹⁰
Uranium ¹²	Radio Chemical	908.0				7500-U B				
	Fluorometric	908.1				7500-U C (17th Ed)	D2907-97	R-1180-7 6 R-1181-7 6	U-04	
	ICP-MS	200.8 ¹ 3				3125	D5673-03			
	Alpha spectrometry			00-0 7	p 33	7500-U C (18 th 19 th or 20 th Ed)	D3972-97	R-1182-7 6	U-02	
	Laser Phosphorimetry						D5174-97			

Man-made:

Radioactive cesium	Radio chemical	901.0	p 4			7500-Cs B	D 2459-72	R-1111-7 6		
	gamma ray spectrometry	901.1			p 92	7120	D 3649-91	R-1110-7 6	4.5.2 .3	
Radioactive iodine	Radio chemical	902.0	p 6 p.9			7500-I B 7500-I C 7500-I D	D 3649-91			
	Gamma ray spectrometry	901.1			p 92	7120	D 4785-93		4.5.2 .3	
Radioactive Strontium 89, 90	Radio chemical	905.0	p 29	Sr-0 4	p 65	303, 7500-Sr B		R-1160-7 6	Sr-01 Sr-02	
Tritium	Liquid scintillation	906.0	p 34	H-02	p 87	306, 7500- ³ H B, 306, 7500- ³ H B-00	D 4107-91	R-1171-7 6		
Gamma emitters	gamma ray	901.1			p 92	7120	D 3649-91	R-1110-7 6	Ga-01 -R	
	spectrometry	902.0				7500-Cs B, 7500-I B	D4785 93			
		901.0								

The procedures shall be done in accordance with the documents listed below. Copies of the documents may be obtained from the sources listed below. Information regarding obtaining these documents can be obtained from the Safe Drinking Water hotline at 800-426-4791. Documents may be inspected at EPA's Drinking Water Docket, EPA West, 1301 Constitution Avenue, NW, Room B135, Washington, D.C., 20460 (telephone: 202- 566-2426); or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

¹ "Prescribed Procedure for Measurement of Radioactivity in Drinking Water", EPA 600/4-80-032, August 1980. Available at U.S. Department of Commerce, National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161 (Telephone 800-553-6847), PB 80-224744, except Method 200.8, "Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma-Mass Spectrometry," Revision 5.4, which is published in "Methods for the Determination of Metals in Environmental Samples-Supplement I," EPA 600-R-94-111, May 1994. Available at NTIS, PB95-125472.

² "Interim Radiochemical Methodology for Drinking Water", EPA 600/4-75-008 (revised), March 1976, Available at NTIS, *ibid.* PB 253258.

³ "Radiochemistry Procedures Manual", EPA 520/8-84-006, December 1987, Available at NTIS ibid, PB 84-215581.

⁴ "Radiochemical Analytical Procedures for Analysis of Environmental Samples", March 1979, Available at NTIS, ibid. EMSL LV 053917

⁵ "Standard Methods for the Examination of Water and Wastewater", 13th, 17th, 18th, 19th Editions, or 20th edition, 1971, 1989, 1992, 1995, 1998. Available at American Public Health Association, 1015 Fifteenth Street, N.W., Washington, D.C., 20005. Methods 302, 303, 304, 305 and 306 are only in the 13th edition. Methods 711B, 7500-Ra B, 7500-Ra C, 7500-Ra D, 7500-U B, 7500-Cs B, 7500-I B, 7500-I C, 7500-I D, 7500-Sr B, 7500-3H B are in the 17th, 18th, 19th, and 20th editions. Methods 7110 C is in the 18th, 19th and 20th editions. Method 7500-U C Fluorometric Uranium is only in the 17th edition, and 7500-U C Alpha spectrometry is only in the 18th, 19th and 20th editions. Method 7120 is only in the 19th and 20th editions. Methods 302, 303, 304, 305 and 306 are only in the 13th edition. Method 3125 is only in the 20th edition.

⁶ Annual Book of ASTM Standards, Vol. 11.01 and 11.02, 1999; ASTM International any year containing the cited version of the method may be used. Copies of these two volumes and the 2003 version of D 5673-03 may be obtained from ASTM International. 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA, 19428-2959.

⁷ "Methods for Determination of Radioactive Substances in Water and Fluvial Sediments", Chapter A5 in Book 5 of *Techniques of Water-Resources Investigations of the United States Geological Survey*, 1977. Available at U.S. Geological Survey (USGS) Information Services, Box 25286, Federal Center, Denver CO 80225-0425.

⁸ "EML Procedures Manual", 28th (1997) or 27th (1990) Editions, Volumes 1 and 2; either may be used. In the 27th Edition Method Ra-04 is listed as Ra-05 and Method Ga-01-R is listed as Sect. 4.5.2.3. Available at the Environmental Measurements Laboratory, U.S. Department of Energy (DOE), 376 Hudson Street, New York, NY 10014 3621.

⁹ "Determination of Ra-226 and Ra-228 (Ra-02)", January 1980, revised June 1982. Available at Radiological Sciences Institute Center for Laboratories and Research, New York State Department of Health, Empire State Plaza, Albany, NY 12201.

¹⁰ "Determination of Radium 228 in Drinking Water", August 1980. Available at State of New Jersey, Department of Environmental Protection, Division of Environmental Quality. Bureau of Radiation and Inorganic Analytical Services, 9 Ewing Street, Trenton, NJ 08625.

¹¹ Natural uranium and thorium-230 are approved as gross alpha calibration standards for gross alpha with co-precipitation and evaporation methods; americium-241 is approved with co-precipitation methods.

¹² If uranium (U) is determined by mass, a 0.67 pCi/µg of uranium conversion factor must be used. This conversion factor is based on the 1:1 activity of U-234 to U-238 that is characteristic of naturally occurring uranium.

¹³ "Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma-Mass Spectrometry," Revision 5.4, which is published in "Methods for the Determination of Metals in Environmental Samples-Supplement I," EPA 600-R-94-111, May 1994. Available at NTIS, PB 95-125472.

B. When the identification and measurement of radionuclides other than those listed in subsection (A) of this section is required, the following references are to be used, except in cases where alternative methods have been approved in accordance with § 415.

1. *Procedures for Radiochemical Analysis of Nuclear Reactors Aqueous Solutions*, H.L. Krieger and S. Gold, EPA-R4-73-014, USEPA, Cincinnati, Ohio 45268, May 1973.
2. *HASL Procedures Manual*, Edited by John H. Harley. HASL 300, ERDA Health and Safety Laboratory, New York, NY, 1973.

C. For the purpose of sampling radioactivity concentrations in drinking water, the required sensitivity of the radioanalysis is defined in terms of a detection limit. The detection limit shall be that concentration which can be counted with a precision of $\pm 100\%$ at the 95% confidence level (1.96 sigma, where sigma is the standard deviation of the net counting rate of the sample).

1. To determine compliance with § 211 (A), the detection limit shall not exceed 1 pCi/l. To determine compliance with § 211 (B), the detection limit shall not exceed 3 pCi/l.
2. To determine compliance with § 211, the detection limits shall not exceed the concentrations listed in Table 400.10.

TABLE 400-A-11 DETECTION LIMITS FOR MAN-MADE
BETA PARTICLE AND PHOTON EMITTERS

RADIONUCLIDE	DETECTION LIMIT
Tritium	1,000 pCi/l

Strontium-89	10 pCi/l
Strontium-90	2 pCi/l
Iodine-131	1 pCi/l
Cesium-134	10 pCi/l
Gross Beta	4 pCi/l
Other Radionuclides	1/10 of the applicable limit

406-A TOTAL TRIHALOMETHANES SAMPLING, ANALYTICAL AND OTHER REQUIREMENTS

- A. Sampling and analyses made pursuant to this section shall be conducted by the total trihalomethane methods as directed in § 207 and in Technical Notes on Drinking Water Methods, EPA-600/R-94-173, October 1994, which is available at NTIS, PB95-104766.

PUBLIC NOTIFICATION OF DRINKING WATER VIOLATIONS

601-B NNPDMR Violations and Other Situations Requiring Public Notice¹

Contaminant	MCL/MRD/TT violations ²		Monitoring and Testing Procedure Violations
	Tier of public notice required	Citation	
I. Violations of Navajo Nation Primary Drinking Water Regulations (NNPDWR): ³			
A. Microbiological Contaminants			
1. Total Coliform	<u>2</u>	205 (B)(1)	<u>3</u>
<u>1 a Total coliform (TT violations resulting from failure to perform assessments or corrective actions, monitoring violations, and reporting violations)</u>	<u>2</u>	<u>2710(B)(1)</u>	<u>3</u>
<u>2 a E. coli (MCL, monitoring, and reporting violations)</u>	<u>1</u>	<u>2710(A)</u>	<u>3</u>
<u>2 b E. coli (TT violations resulting from failure to perform required assessments or corrective action)</u>	<u>2</u>	<u>2710(B)(1)</u>	
<u>2 c E. coli (Seasonal system failure to follow NNEPA-approved start-up plan prior to serving water to the public or failure to provide certification to the Director)</u>	<u>2</u>	<u>2710(B)(2)</u>	<u>3</u>
3. Turbidity MCL	2	206 (A)	3
4. Turbidity MCL (average of 2 days' samples >5 NTU)	⁵ 2, 1	206 (B)	3

5. Turbidity (for TT violations resulting from a single exceedance of maximum allowable turbidity level)	6 ² , 1	803(A) (2), 803(C) (2) (a), 805(A) (2), 805(B) (2), 805(C) (2), 805(D), 1305(A) (2), 1305(B), 2106(B)	3	Appendix D §801-D (A) (1), Appendix D §801-D (B) (2), Appendix D §801-D(C) (1), 1306, 2107 (A) (1) - (3), 2107 (B)
6. Surface Water Treatment Rule violations, other than violations resulting from single exceedance of max. Allowable turbidity level (TT).	2	802-805	3	Appendix D
7. Interim Enhanced Surface Water Treatment Rule violations, other than violations resulting from single exceedance of max. turbidity level (TT)	2 ⁷	⁷ 1302-1305, 2101-2104 (A-D)	3	1304, 1306, 2104-2105, 2107
8. Filter Backwash Recycling Rule Violations	2	807	3	807
9. Long Term 1 Enhanced Surface Water Treatment Rule violations	2	2101-2106	3	2104-2105, 2107 (A-E)
10. LT2ESWTR violations	2	2409-2419	²² 2, 3	2402-2404, Appendix G-2401-G - 2402-G, and 2407-2408
11. Ground Water Regulations violations	2	2504	3	2503 (H) 2504 (D)
B. Inorganic Chemicals (IOCs)				
1. Antimony	2	203 (A)	3	405 (A), (B)
2. Arsenic	2	203 (A) ⁸	3	¹⁴ 405 (A), (B)
3. Asbestos (fibers >10 m)	2	203 (A)	3	406
4. Barium	2	203 (A)	3	405 (A), (B)
5. Beryllium	2	203 (A)	3	405 (A), (B)
6. Cadmium	2	203 (A)	3	405 (A), (B)
7. Chromium (total)	2	203 (A)	3	405 (A), (B)
8. Cyanide	2	203 (A)	3	405 (A), (B)
9. Fluoride	2	203 (A)	3	405 (A), (B)
10. Mercury (inorganic)	2	203 (A)	3	405 (A), (B)
11. Nitrate	1	203 (A)	¹² 1, 3	407

12. Nitrite	1	203 (A)		121, 3	408
13. Total Nitrate and Nitrite	1	203 (A)		3	407
14. Selenium	2	204 (A)		3	405 (A), (B)
15. Thallium	2	204 (A)		3	405 (A), (B)
C. Lead and Copper Rule (Action Level for lead is 0.015 mg/L, for copper is 1.3 mg/L)					
1. Lead and Copper Rule (TT)	2	701-707		3	708-710, Appendix C
D. Synthetic Organic Chemicals (SOCs)					
1. 2,4-D	2	204 (A) (2)		3	410, Appendix A (\$404-A)
2. 2,4,5-TP (Silvex)	2	204 (A) (2)		3	410, Appendix A (\$404-A)
3. Alachlor	2	204 (A) (2)		3	410, Appendix A (\$404-A)
4. Atrazine	2	204 (A) (2)		3	410, Appendix A (\$404-A)
5. Benzo(a)pyrene (PAHs)	2	204 (A) (2)		3	410, Appendix A (\$404-A)
6. Carbofuran	2	204 (A) (2)		3	410, Appendix A (\$404-A)
7. Chlordane	2	204 (A) (2)		3	410, Appendix A (\$404-A)
8. Dalapon	2	204 (A) (2)		3	410, Appendix A (\$404-A)
9. Di(2-ethylhexyl) adipate	2	204 (A) (2)		3	410, Appendix A (\$404-A)
10. Di(2-ethylhexyl) phthalate	2	204 (A) (2)		3	410, Appendix A (\$404-A)
11. Dibromochloropropane	2	204 (A) (2)		3	410, Appendix A (\$404-A)
12. Dinoseb	2	204 (A) (2)		3	410, Appendix A (\$404-A)
13. Dioxin (2,3,7,8-TCDD)	2	204 (A) (2)		3	410, Appendix A (\$404-A)
14. Diquat	2	204 (A) (2)		3	410, Appendix A (\$404-A)
15. Endosulfan	2	204 (A) (2)		3	410, Appendix A (\$404-A)
16. Endrin	2	204 (A) (2)		3	410, Appendix A (\$404-A)
17. Ethylene dibromide	2	204 (A) (2)		3	410, Appendix A (\$404-A)
18. Glyphosate	2	204 (A) (2)		3	410, Appendix A (\$404-A)
19. Heptachlor	2	204 (A) (2)		3	410, Appendix A (\$404-A)

20. Heptachlor epoxide	2	204 (A) (2)	3	410, Appendix A (\$404-A)
21. Hexachlorobenzene	2	204 (A) (2)	3	410, Appendix A (\$404-A)
22. Hexachlorocyclopentadiene	2	204 (A) (2)	3	410, Appendix A (\$404-A)
23. Lindane	2	204 (A) (2)	3	410, Appendix A (\$404-A)
24. Methoxychlor	2	204 (A) (2)	3	410, Appendix A (\$404-A)
25. Oxamyl (Vydate)	2	204 (A) (2)	3	410, Appendix A (\$404-A)
26. Pentachlorophenol	2	204 (A) (2)	3	410, Appendix A (\$404-A)
27. Picloram	2	204 (A) (2)	3	410, Appendix A (\$404-A)
28. Polychlorinated biphenyls (PCBS)	2	204 (A) (2)	3	410, Appendix A (\$404-A)
29. Simazine	2	204 (A) (2)	3	410, Appendix A (\$404-A)
30. Toxaphene	2	204 (A) (2)	3	410, Appendix A (\$404-A)

E. Volatile Organic Chemicals (VOCs)

1. Benzene	2	204 (A) (1)	3	409, Appendix A (\$404-A)
2. Carbon tetrachloride	2	204 (A) (1)	3	409, Appendix A (\$404-A)
3. Chlorobenzene (monochlorobenzene)	2	204 (A) (1)	3	409, Appendix A (\$404-A)
4. o-Dichlorobenzene	2	204 (A) (1)	3	409, Appendix A (\$404-A)
5. p-Dichlorobenzene	2	204 (A) (1)	3	409, Appendix A (\$404-A)
6. 1,2-Dichloroethane	2	204 (A) (1)	3	409, Appendix A (\$404-A)
7. 1,1-Dichloroethylene	2	204 (A) (1)	3	409, Appendix A (\$404-A)
8. cis-1,2-Dichloroethylene	2	204 (A) (1)	3	409, Appendix A (\$404-A)
9. trans-1,2-Dichloroethylene	2	204 (A) (1)	3	409, Appendix A (\$404-A)
10. Dichloromethane	2	204 (A) (1)	3	409, Appendix A (\$404-A)
11. 1,2-Dichloropropane	2	204 (A) (1)	3	409, Appendix A (\$404-A)
12. Ethylbenzene	2	204 (A) (1)	3	409, Appendix A (\$404-A)
13. Styrene	2	204 (A) (1)	3	409, Appendix A (\$404-A)
14. Tetrachloroethylene	2	204 (A) (1)	3	409, Appendix A (\$404-A)

15. Toluene	2	204 (A) (1)	3	409, Appendix A (§404-A)
16. 1,2,4-Trichlorobenzene	2	204 (A) (1)	3	409, Appendix A (§404-A)
17. 1,1,1-Trichloroethane	2	204 (A) (1)	3	409, Appendix A (§404-A)
18. 1,1,2-Trichloroethane	2	204 (A) (1)	3	409, Appendix A (§404-A)
19. Trichloroethylene	2	204 (A) (1)	3	409, Appendix A (§404-A)
20. Vinyl chloride	2	204 (A) (1)	3	409, Appendix A (§404-A)
21. Xylenes (total)	2	204 (A) (1)	3	409, Appendix A (§404-A)
F. Radioactive Contaminants				
1. Beta/photon emitters	2	209 (A) (1)	3	Appendix A (§405-A), 412
2. Alpha emitters	2	209 (A) (1)	3	Appendix A (§405-A), 411
3. Combined radium (226&228)	2	209 (A) (1)	3	Appendix A (§405-A), 411
4. Uranium	2 ⁹	209 (A) (1)	3 ¹⁰	Appendix A (§405-A), 411
G. Disinfection Byproducts (DBPs), Byproduct Precursors, Disinfectant Residuals. Where disinfection is used in the treatment of drinking water, disinfectants combine with organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). EPA sets standards for controlling the levels of disinfectants and DBPs in drinking water, including trihalomethanes (THMs) and haloacetic acids (HAAs). ¹¹				
1. Total trihalomethanes (TTHMs)	2	207 (B) ¹⁴	3	1103 (a) - (b), 2201-2206, 2301-2310
2. Haloacetic Acids (HAAs)	2	207 (B)	3	1103 (a) - (b), 2201-2206, 2301-2310
3. Bromate	2	207 (A) (1)	3	1103 (a) - (b)
4. Chlorite	2	207 (A) (1)	3	1103 (a) - (b)
5. Chlorine (MRDL)	2	208 (A) (1), 1104 (C) (1)	3	1104 (a), (c)
6. Chloramine (MRDL)	2	208 (A) (1), 1104 (C) (1)	3	1104 (a), (c)
7. Chlorine dioxide (MRDL), where any 2 consecutive daily samples at entrance to distribution system only are above MRDL	2	208 (A) (1), 1104 (C) (2)	2 ¹⁵ , 3	1104 (a), (c), 1105 (c) (2)
8. Chlorine dioxide (MRDL), where sample(s) in distribution system the next day are also above MRDL	1 ⁴ 1	208 (A) (1), 1104 (C) (2)	1	1104 (a), (c), 1105 (c) (2)

9. Control of DBP precursors--TOC (TT)	2	1106(a) - (b)	3	1103 (a), (d)
10. Bench marking and disinfection profiling	N/A	N/A	3	1304, (reserved)
11. Development of monitoring plan	N/A	N/A	3	1103 (F)
H. Other Treatment Techniques				
1. Acrylamide (TT)	2	1002	N/A	N/A
2. Epichlorohydrin (TT)	2	1002	N/A	N/A
II. Public Notification for Variances and Exemptions:				
A. Operation under a variance or exemption	3	¹⁷ NNSDWA 601 & 603, 22 N.N.C. 2561 & 2563	N/A	N/A
B. Violation of conditions of a variance or exemption	2	NNSDWA 601 & 603, 22 N.N.C. 2561 & 2563 ¹⁸ NNSDWA 602, 22 N.N.C. 2562	N/A	N/A
III. Other Situations Requiring Public Notification:				
A. Fluoride secondary maximum contaminant level (SMCL) exceedance	3	1803	N/A	N/A
B. Exceedance of nitrate MCL for non community systems, as allowed by primary agency	1	202(c)	N/A	N/A
C. Waterborne disease outbreak	1	104, 803(c)(2) (ii)	N/A	N/A
D. Other waterborne emergency ¹⁹	1	N/A	N/A	N/A
E. Other situations as determined by primary agency	²⁰ 1, 2, 3	N/A	N/A	N/A
F. Source Water Sample Positive for GWR Fecal indicators: E.coli, enterococci, or coliphage.	1	2502(G)	N/A	N/A

Appendix B--Endnotes

- Violations and other situations not listed in this table (e.g., failure to prepare Consumer Confidence Reports) do not require notice unless otherwise determined by the primary agency. Primary agencies may, at their option, also require a more stringent public notice tier (e.g., Tier 1 instead of Tier 2 or Tier 2 instead of Tier 3) for specific violations and situations listed in this Appendix.
- MCL--Maximum contaminant level, MRDL--Maximum residual disinfectant level, TT--Treatment technique.
- The term Violations of Navajo Nation Primary Drinking Water Regulations (NNPDWR) is used here to include violations of MCL, MRDL, treatment technique, monitoring, and testing procedure requirements.

4. Failure to test for ~~fecal coliform~~ *E. coli* is a Tier 1 violation if testing is not done after any repeat sample tests positive for coliform. All other total coliform monitoring and testing procedure violations are Tier 3.
5. Systems that violate the turbidity MCL of 5 NTU based on an average of measurements over two consecutive days must consult with the primacy agency within 24 hours after learning of the violation. Based on this consultation, the primacy agency may subsequently decide to elevate the violation to Tier 1. If a system is unable to make contact with the primacy agency in the 24-hour period, the violation is automatically elevated to Tier 1.
6. Systems with treatment technique violations involving a single exceedance of a maximum turbidity limit under the Surface Water Treatment Rule (SWTR), the Interim Enhanced Surface Water Treatment Rule (IESWTR), or the Long Term 1 Enhanced Surface Water Treatment Rule (L1ESWTR), are required to consult with the primacy agency within 24 hours after learning of the violation. Based on this consultation, the primacy agency may subsequently decide to elevate the violation to Tier 1. If a system is unable to make contact with the primacy agency in the 24-hour period, the violation is automatically elevated to Tier 1.
7. Most of the requirements of the Interim Enhanced Surface Water Treatment Rule (63 FR 69477) (§§ 1302-1303, 1305-1306) became effective January 1, 2002 for Part VIII (surface water systems and ground water systems under the direct influence of surface water) serving at least 10,000 persons. However, § 1304 has some requirements that became effective as early as April 16, 1999. The Surface Water Treatment Rule remains in effect for systems serving at least 10,000 persons even after 2002; the Interim Enhanced Surface Water Treatment Rule adds additional requirements and does not in many cases **supersede** the SWTR.
8. The arsenic MCL citations are effective January 23, 2006. Until then, the citations are § 202(A) and § 405(F) (4).
9. The uranium MCL Tier 2 violation citations are effective December 8, 2003 for all community water systems.
10. The uranium MCL Tier 3 violation citations are effective December 8, 2000 for all community water systems.
11. The arsenic MCL Tier 3 violation citations are effective January 23, 2006. Until then, the citations are § 405(A) and (B).
12. Failure to take a confirmation sample within 24 hours for nitrate or nitrite after an initial sample exceeds the MCL is a Tier 1 violation. Other monitoring violations for nitrate are Tier 3.
13. Part VIII community and non-transient non-community systems serving \pm 10,000 persons must comply with new DBP MCLs, disinfectant MRDLs, and related monitoring requirements beginning January 1, 2002. All other community and non-transient non-community systems must meet the MCLs and MRDLs beginning January 1, 2004. Part VIII transient non-community systems serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2002. Part VIII transient non-community systems serving fewer than 10,000 persons and using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004.
14. §§ 207(B) (1), 1103(A) - (B) apply until §§ 2301-2310 take effect under the schedule in § 2301 (C)
15. Failure to monitor for chlorine dioxide at the entrance to the distribution system the day after exceeding the MRDL at the entrance to the distribution system is a Tier 2 violation.
16. If any daily sample taken at the entrance to the distribution system exceeds the MRDL for chlorine dioxide and one or more samples taken in the distribution system the next day exceed the MRDL, Tier 1 notification is required. Failure to take the required samples in the distribution system after the MRDL is exceeded at the entry point also triggers Tier 1 notification.
17. This citation refers to §§ 601, and 603 of the Navajo Nation Safe Drinking Water Act, which require that "a schedule prescribed . . . for a public water system granted a variance [or exemption] shall require compliance by the system . . ."
18. In addition to §§ 1415 and 1416 of the Safe Drinking Water Act and 602 of the Navajo Nation Safe Drinking Water Act, 40 CFR 142.307 specifies the items and scheduled milestones that must be included in a variance for small systems.
19. Other waterborne emergencies require a Tier 1 public notice under § 604(a) for situations that do not meet the definition of a waterborne disease outbreak given in §104 but that still have the potential to have serious adverse effects on health as a result of short-term exposure. These could include outbreaks not related to treatment deficiencies, as well as situations that have the potential to cause outbreaks, such as failures or significant interruption in water treatment processes, natural disasters that have the potential to cause outbreaks, system, chemical spills, or unexpected loading of possible pathogens into the source water.
20. Primacy agencies may place other situations in any tier they believe appropriate, based on threat to public health.
21. Failure to collect three or more samples for Cryptosporidium analysis is a Tier 2 violation requiring special notice as specified in § 612. All other monitoring and testing procedure violations are Tier 3.

602-B Standard Health Effects Language for Public Notification

Contaminant	MCLG ¹ mg/L	MCL ² mg/L	Standard Health Effects Language for Public Notification
A. Microbiological Contaminants:			
1a. Total Coliforms	Zero	See footnote	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
1b. Fecal coliforms/E.coli	Zero	ZERO	Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term 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.
1e2. Fecal Indicators (GWR) i. E. coli ii. enterococci iii. coliphage	Zero None None	TT TT TT	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.
1d. Ground Water Regulations (GWR) TT violations	None	TT	Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.
1c. Part XXVII Coliform Assessment and/or Corrective Action Violations	N/A	TT	<p>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.</p> <p>We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessments to identify problems and to correct any problems that are found.</p> <p>THE SYSTEM MUST USE THE FOLLOWING APPLICABLE SENTENCES.1</p> <p>We failed to conduct the required assessment. _____</p> <p>We failed to correct all identified sanitary defects that were found during the assessment(s).</p>

Contaminant	MCLG ¹ mg/L	MCL ² mg/L	Standard Health Effects Language for Public Notification
<u>1d. Part XXVII E. coli Assessment and or Corrective Action Violations</u>	<u>N/A</u>	<u>TT</u>	<p><u>E. coli 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. We violated the standard for E. coli, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct a detailed assessment to identify problems and to correct any problems that are found.</u></p> <p><u>THE SYSTEM MUST USE THE FOLLOWING APPLICABLE SENTENCES.]</u></p> <p><u>We failed to conduct the required assessment.</u></p> <p><u>We failed to correct all identified sanitary defects that were found during the assessment that we conducted.</u></p>
<u>1e. E. coli</u>	<u>Zero</u>	<p><u>In compliance unless one of the following conditions occurs: (1) The system has an E. coli-positive repeat sample following a total coliform-positive routine sample.</u></p> <p><u>(2) The system has a total coliform-positive repeat sample following an E. coli-positive routine sample.</u></p> <p><u>(3) The system fails to take all required repeat samples following an E. coli-positive routine</u></p>	<p><u>E. coli 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.</u></p>

Contaminant	MCLG ¹ mg/L	MCL ² mg/L	Standard Health Effects Language for Public Notification
		<u>sample.</u> <u>(4) The system fails to test for E. coli when any repeat sample tests positive for total coliform.</u>	
<u>1f. Part XXVII Seasonal Systems TT Violations</u>	<u>N/A</u>	<u>TT</u>	<u>When this violation includes the failure to monitor for total coliforms or E. coli prior to serving water to the public, the mandatory language found at § 606(D)(2) must be used.</u> <u>When this violation includes failure to complete other actions, the appropriate elements found in § 606(A) to describe the violation must be used.</u>
2a. Turbidity (MCL) ⁴	None	1 NTU ⁵ /5 NTU	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
2b. Turbidity (SWTR TT) ⁶	None	TT ⁷	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
2c. Turbidity (IESWTR TT and LTIESWTR TT) ⁸	None	TT	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
B. Surface Water Treatment Rule (SWTR), Interim Enhanced Surface Water Treatment Rule (LTIESWTR), and the Filter Backwash Recycling Rule (FBRR) violations:			
3. Giardia lamblia (SWTR/IESWTR/ LTIESWTR).	Zero	TT ¹⁰	Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
4. Viruses (SWTR/IESWTR/LTIESWTR).			

Contaminant	MCLG ¹ mg/L	MCL ² mg/L	Standard Health Effects Language for Public Notification
5. Heterotrophic plate count (HPC) bacteria ⁹ (SWTR/IESWTR/LTIESWTR). 6. Legionella (SWTR/IESWTR/LTIESWTR). 7. Cryptosporidium (IESWTR/FBRR/LTIESWTR).			
C. Inorganic Chemicals (IOCs)			
8. Antimony	0.006	0.006	Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.
9. Arsenic ¹¹	0	0.010	Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
10. Asbestos (10 µm)	7 MFL ¹²	7 MFL	Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.
11. Barium	2	2	Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
12. Beryllium	0.004	0.004	Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
13. Cadmium	0.005	0.005	Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
14. Chromium (total)	0.1	0.1	Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.
15. Cyanide	0.2	0.2	Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid.
16. Fluoride	4.0	4.0	Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Fluoride in drinking water at half the MCL or more may cause mottling of children's teeth, usually in children less than nine years old. Mottling, also known as dental fluorosis, may include brown staining and/or pitting of the teeth, and occurs only in developing teeth before they erupt from the gums.
17. Mercury (inorganic)	0.002	0.002	Some people who drink water containing inorganic mercury well in

Contaminant	MCLG ¹ mg/L	MCL ² mg/L	Standard Health Effects Language for Public Notification
			excess of the MCL over many years could experience kidney damage.
18. Nitrate	10	10	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
19. Nitrite	1	1	Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
20. Total Nitrate and Nitrite	10	10	Infants below the age of six months who drink water containing nitrate and nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
21. Selenium	0.05	0.05	Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.
22. Thallium	0.0005	0.002	Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.
D. Lead and Copper Requirements:			
23. Lead	Zero	TT ¹³	Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.
24. Copper	1.3	TT ¹⁴	Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.
E. Synthetic Organic Chemicals (SOCs):			
25. 2,4-D	0.07	0.07	Some people who drink water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.

Contaminant	MCL ¹ mg/L	MCL ² mg/L	Standard Health Effects Language for Public Notification
26. 2,4,5-TP (Silvex)	0.05	0.05	Standard Health Effects Language for Public Notification Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.
27. Alachlor	Zero	0.002	Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer.
28. Atrazine	0.003	0.003	Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.
29. Benzo(a)pyrene (PAHs)	Zero	0.0002	Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
30. Carbofuran	0.04	0.04	Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.
31. Chlordane	Zero	0.002	Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.
32. Dalapon	0.2	0.2	Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
33. Di(2-ethylhexyl)adipate.	0.4	0.4	Some people who drink water containing di(2-ethylhexyl) adipate well in excess of the MCL over many years could experience general toxic effects such as weight loss, liver enlargement or possible reproductive difficulties.
34. Di(2-ethylhexyl)phthalate	Zero	0.006	Some people who drink water containing di(2-ethylhexyl) phthalate in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
35. Dibromochloropropane (DBCP)	Zero	0.0002	Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
36. Dinoseb	0.007	0.007	Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
37. Dioxin (2,3,7,8-TCDD)	Zero	3 x 10 ⁻⁸	Some people who drink water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.

Contaminant	MCL ¹ mg/L	MCL ² mg/L	Standard Health Effects Language for Public Notification
38. Diquat	0.02	0.02	Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
39. Endothall	0.1	0.1	Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.
40. Endrin	0.002	0.002	Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.
41. Ethylene dibromide	Zero	0.00005	Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach, reproductive system, or kidneys, and may have an increased risk of getting cancer.
42. Glyphosate	0.7	0.7	Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties.
43. Heptachlor	Zero	0.0004	Some people who drink water containing heptachlor in excess of the MCL over many years could experience liver damage and may have an increased risk of getting cancer.
44. Heptachlor epoxide	Zero	0.0002	Some people who drink water containing heptachlor epoxide in excess of the MCL over many years could experience liver damage, and may have an increased risk of getting cancer.
45. Hexachlorobenzene	Zero	0.001	Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys, or adverse reproductive effects, and may have an increased risk of getting cancer.
46. Hexachlorocyclo pentadiene	0.05	0.05	Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach.
47. Lindane	0.0002	0.0002	Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.
48. Methoxychlor	0.04	0.04	Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.
49. Oxamyl (Vydate)	0.2	0.2	Some people who drink water containing oxamyl in excess of the MCL over many years could experience slight nervous system effects.
			Some people who drink water containing pentachlorophenol in excess

Contaminant	MCLG ¹ mg/L	MCL ² mg/L	Standard Health Effects Language for Public Notification
50. Pentachlorophenol	Zero	0.001	of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer.
51. Picloram	0.5	0.5	Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.
52. Polychlorinated biphenyls (PCBs)	Zero	0.0005	Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.
53. Simazine	0.004	0.004	Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.
54. Toxaphene	Zero	0.003	Some people who drink water containing toxaphene in excess of the MCL over many years could have problems with their kidneys, liver, or thyroid, and may have an increased risk of getting cancer.
F. Volatile Organic Chemicals (VOCs)			
55. Benzene	Zero	0.005	Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.
56. Carbon tetrachloride	Zero	0.005	Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
57. Chlorobenzene (monochlorobenzene)	0.1	0.1	Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.
58. o-Dichlorobenzene	0.6	0.6	Some people who drink water containing o-dichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems.
59. p-Dichlorobenzene	0.075	0.075	Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood.
60. 1,2-Dichloroethane	Zero	0.005	Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.
61. 1,1-Dichloroethylene	0.007	0.007	Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with

Contaminant	MCL ₁ mg/L	MCL ₂ mg/L	Standard Health Effects Language for Public Notification
62. cis-1,2-Dichloroethylene	0.07	0.07	Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
63. trans-1,2-Dichloroethylene	0.1	0.1	Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
64. Dichloromethane	Zero	0.005	Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.
65. 1,2-Dichloropropane	Zero	0.005	Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.
66. Ethylbenzene	0.7	0.7	Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.
67. Styrene	0.1	0.1	Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.
68. Tetrachloroethylene	Zero	0.005	Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.
69. Toluene	1	1	Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.
70. 1,2,4-Trichlorobenzene	0.07	0.07	Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.
71. 1,1,1-Trichloroethane	0.2	0.2	Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.
72. 1,1,2-Trichloroethane	0.003	0.005	Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.
73. Trichloroethylene	Zero	0.005	Some people who drink water containing trichloroethylene in excess

Contaminant	MCLG ¹ mg/L	MCL ² mg/L	Standard Health Effects Language for Public Notification
74. Vinyl chloride	Zero	0.002	Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.
75. Xylenes (total)	10	10	Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.
G. Radioactive Contaminants:			
76. Beta/photon emitters	Zero	4 mrem/Yr ¹⁵	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.
77. Alpha emitters	Zero	15 pCi/L ¹⁶	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
78. Combined radium (226 & 228)	Zero	5 pCi/L	Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.
79. Uranium ¹⁷	Zero	30µg/L	Some people who drink water containing uranium in excess of the MCL over many years may have an increased risk of getting cancer and kidney toxicity.
H. Disinfection Byproducts (DBPs), Byproduct Precursors, and Disinfectant Residuals: Where disinfection is used in the treatment of drinking water, disinfectants combine with organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). EPA sets standards for controlling the levels of disinfectants and DBPs in drinking water, including trihalomethanes (THMs) and haloacetic acids (HAAs): ¹⁸			
80. Total trihalomethanes (TTHMs)	N/A	0.080 ^{19, 20}	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.
81. Haloacetic Acids (HAA)	N/A	0.060 ²¹	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
82. Bromate	Zero	0.010	Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
83. Chlorite	0.08	1.0	Some infants and young children who drink water containing chlorite

Contaminant	MCLG ¹ mg/L	MCL ² mg/L	Standard Health Effects Language for Public Notification
84. Chlorine	4 (MRDLG) ²²	4 (MRDL) ²³	Standard Health Effects Language for Public Notification in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.
85. Chloramines	4 (MRDLG)	4 (MRDL)	Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
86a. Chlorine dioxide, where any 2 consecutive samples taken at the entrance to the distribution system are above the MRDL.	0.8 (MRDLG)	0.8 (MRDL)	Some people who use 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.
86b. Chlorine dioxide, where one or more distribution system samples are above the MRDL.	0.8 (MRDLG)	0.8 (MRDL)	Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia. Add for public notification only: The chlorine dioxide violations reported today include exceedances of the EPA standard within the distribution system which delivers water to consumers. Violations of the chlorine dioxide standard within the distribution system may harm human health based on short-term exposures. Certain groups, including fetuses, infants, and young children, may be especially susceptible to nervous system effects from excessive chlorine dioxide exposure.
87. Control of DBP precursors (TOC)	None	TT	Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these

Contaminant	MCLG ¹ mg/L	MCL ² mg/L	Standard Health Effects Language for Public Notification
I. Other Treatment Techniques:			
88. Acrylamide	Zero	TT	Some people who drink water containing high levels of acrylamide over a long period of time could have problems with their nervous system or blood, and may have an increased risk of getting cancer.
89. Epichlorohydrin	Zero	TT	Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer.

1. MCLG--Maximum contaminant level goal.
2. MCL--Maximum contaminant level.
3. For water systems analyzing at least 40 samples per month, no more than 5.0 percent of the monthly samples may be positive for total coliforms. For systems analyzing fewer than 40 samples per month, no more than one sample per month may be positive for total coliforms.
4. There are various regulations that set turbidity standards for different types of systems, including §206, the 1989 Surface Water Treatment Rule, and the 1998 Interim Enhanced Surface Water Treatment Rule (IESWTR), and the 2002 Long Term 1 Enhanced Surface Water Treatment Rule. The MCL for the monthly turbidity average is 1 NTU; the MCL for the 2-day average is 5 NTU for systems that are required to filter but have not yet installed filtration (§ 206).
5. NTU--Nephelometric turbidity unit.
6. There are various regulations that set turbidity standards for different types of systems, including §206, the 1989 Surface Water Treatment Rule (SWTR), and the 1998 Interim Enhanced Surface Water Treatment Rule (IESWTR), and the 2001 Long Term 1 Enhanced Surface Water Treatment Rule (LTIESWTR). For systems subject to the IESWTR (systems serving at least 10,000 people, using surface water or ground water under the direct influence of surface water), that use conventional filtration or direct filtration, after January 1, 2002, the turbidity level of a system's combined filter effluent may not exceed 0.3 NTU in at least 95 percent of monthly measurements, and the turbidity level of a system's combined filter effluent must not exceed 1 NTU at any time. Systems subject to the IESWTR using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the primary agency. For systems subject to the LTIESWTR (systems serving fewer than 10,000 people, using surface water or ground water under the direct influence of surface water) that use conventional filtration or direct filtration, after January 1, 2005, the turbidity level of a system's combined filter effluent may not exceed 0.3 NTU in at least 95 percent of monthly measurements, and the turbidity level of a system's combined filter effluent must not exceed 1 NTU at any time. Systems subject to the LTIESWTR using technologies other than conventional direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the primary agency.
9. The bacteria detected by heterotrophic plate count (HPC) are not necessarily harmful. HPC is simply an alternative method of determining disinfectant residual levels. The number of such bacteria is an indicator of whether there is enough disinfectant in the distribution system.
10. SWTR, IESWTR, and LTIESWTR treatment technique violations that involve turbidity exceedances may use the health effects language for turbidity instead.
11. These arsenic values are effective January 23, 2006. Until then, the MCL is 0.05 mg/L and there is no MCLG.

12. Millions fibers per liter.
13. Action Level = 0.015 mg/L.
14. Action Level = 1.3 mg/L.
15. Millirems per year.
16. Picocuries per liter.
17. The uranium MCL is effective December 8, 2003 for all community water systems.
18. Surface water systems and ground water systems under the direct influence of surface water are regulated under Part VIII. Part VIII community and non-transient non-community systems serving >10,000 persons must comply with Part XI DBP MCLs and disinfectant maximum residual disinfectant levels (MRDLs) beginning January 1, 2002. All other community and non-transient noncommunity systems must comply with Part XI DBP MCLs and disinfectant MRDLs beginning January 1, 2005. Part VIII transient non-community systems serving 310,000 that use chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2002. All other transient non-community systems that use chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004.
19. Community and non-transient non-community systems must comply with Part XXIII TTHM and HAA5 MCLs of 0.080mg/L and 0.060mg/L respectively (with compliance calculated as a locational running annual average) on the schedule in § 2301.
20. The MCL for total trihalomethanes is the sum of the concentrations of the individual trihalomethanes.
21. The MCL for haloacetic acids is the sum of the concentrations of the individual haloacetic acids.
22. MRDLG--Maximum residual disinfectant level goal.
23. MRDL--Maximum residual disinfectant level.

603-B List of Acronyms Used in Public Notification Regulation

CCR	Consumer Confidence Report	NTNCWS	Non-Transient Non-Community Water System
CWS	Community Water System	NTU	Nephelometric Turbidity Unit
DBP	Disinfection Byproduct	OGWDW	Office of Ground Water and Drinking Water
EPA	Environmental Protection Agency	OW	Office of Water
HPC	Heterotrophic Plate Count	PN	Public Notification
IESWTR	Interim Enhanced Surface Water Treatment Rule	PWS	Public Water System
IOC	Inorganic Chemical	SDWA	Safe Drinking Water Act
GWR	Ground Water Rule	SMCL	Secondary Maximum Contaminant Level
LCR	Lead and Copper Rule	SOC	Synthetic Organic Chemical
MCL	Maximum Contaminant Level	SWTR	Surface Water Treatment Rule
MCLG	Maximum Contaminant Level Goal	TCR	Total Coliform Rule
MRDL	Maximum Residual Disinfectant Level	TT	Treatment Technique
MRDLG	Maximum Residual Disinfectant Level Goal	TWS	Transient Non-Community Water System
NCWS	Non-Community Water System	VOC	Volatile Organic Chemical
NPDWR	National Primary Drinking Water Regulation	LT1ESTR	Long Term 1 Enhanced Surface Water Treatment Rule

**APPENDIX D
SURFACE WATER TREATMENT**

801-D ANALYTICAL AND SAMPLING REQUIREMENTS

A. ANALYTICAL REQUIREMENTS. Only the analytical method(s) specified in this subsection, or otherwise approved by the EPA, may be used to demonstrate compliance with the requirements of §§ 803, 804, and 805. Measurements for pH, temperature, turbidity, and residual disinfectant concentrations must be conducted by a party approved by the Director. Measurements for total coliforms, fecal coliforms, and HPC must be conducted by a laboratory certified by the EPA to do such analysis. Until laboratory certification criteria are developed for the analysis of HPC and fecal coliforms, any laboratory certified for total coliform analysis by EPA is deemed certified for HPC and fecal coliform analysis. The following procedures shall be conducted in accordance with the publications listed in the following section. Copies of the methods published in *Standard Methods for the Examination of Water and Wastewater* may be obtained from the American Public Health Association et al., 1015 Fifteenth Street, NW., Washington, DC, 20005; copies of the Minimal Medium ONPG-MUG Method as set forth in the article "National Field Evaluation of a Defined Substrate Method for the Simultaneous Enumeration of Total Coliforms and *Escherichia coli* from Drinking Water: Comparison with the Standard Multiple Tube Fermentation Method" (Edberg et al.), *Applied and Environmental Microbiology*, Volume 54, PP. 1595-1601, June 1988 (as amended under Erratum, *Applied and Environmental Microbiology*, Volume 54 p. 3197, December, 1988), may be obtained from the American Water Works Association Research Foundation, 6666 West Quincy Avenue, Denver, Colorado, 80235; and copies of the Indigo Method as set forth in the article "Determination of Ozone in Water by the Indigo Method" (Bader and Hoigne), may be obtained from Ozone Science & Engineering, Pergamon Press Ltd., Fairview Park, Elmsford, New York, 10523. Copies may be inspected at the U.S.EPA, Room EB15, 401 M Street, SW., Washington, DC, 20460 or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.

1. Public water systems must conduct analysis of pH in accordance with one of the methods listed in Appendix A § 403-A (A)(1) Table 400-A-3. Water systems must conduct analyses of total coliforms, fecal coliforms, heterotrophic bacteria, and turbidity in accordance with one of the following analytical methods, or one of the alternative methods listed in Appendix A to subpart C of 40 C.F.R. pt. 141, and by using analytical test procedures contained in *Technical Notes on Drinking Water Methods*, EPA-600/R-94-173, October 1994. This document is available from the National Service Center for Environmental Publications (NSCEP), P.O. Box 42419, Cincinnati, OH 45242-0419 or <http://www.epa.gov/nscep/>.

TABLE 800-D-1 ANALYTICAL METHODS

Organism	Methodology	Citation ¹
Total Coliforms ²	Total Coliform Fermentation technique ^{3,4,5} Total Coliform Membrane Filter technique ⁶ ONPG-MUG Test ⁷	9221A, B, C 9222A, B, C 9223
Fecal Coliforms ²	Fecal Coliform Procedure ⁸ Fecal Coliforms Filter Procedure	9221E 9222D
Heterotrophic bacteria ²	Pour Plate Method	9215B
Turbidity	Nephelometric Method Nephelometric Method Great lakes instruments	2130B 180.1 ⁸ Method 2 ⁹
Temperature		2550

The procedures shall be done in accordance with the documents listed below. Copies of the documents may be obtained from the sources listed below. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline at 800-426-4791. Documents may be inspected at EPA's Drinking Water Docket, 1200 Pennsylvania Ave., NW., Washington, D.C. 20460 (Telephone: 202-260 3027); or at the Office of the Federal Register, 800 North Capitol Street, NW, Suite 700, Washington, D.C. 20408.

¹ Except where noted, all methods refer to Standard Methods for the Examination of Water and Wastewater, Appendix D

18th edition, 1992, and 19th edition, 1995, American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C., 20005.

² The time from sample collection to initiation of analysis may not exceed 8 hours. Systems must hold samples below 10°C during transit.

³ Lactose broth, as commercially available, may be used in lieu of lauryl tryptose broth, if the system conducts at least 25 parallel tests between this medium and lauryl tryptose broth using the water normally tested, and this comparison demonstrates that the false-positive rate and false-negative rate for total coliforms, using lactose broth, is less than 10%.

⁴ Media should cover inverted tubes at least one-half to two-thirds after the sample is added.

⁵ No requirement exists to run the completed phase on 10% of all total coliform-positive confirmed tubes.

⁶ The ONPG-MUG test is also known as the Autoanalysis Colilert System.

⁷ A-1 Broth may be held up to three months in a tightly closed screwcap tube at 4°C.

⁸ "Methods for the Determination of Inorganic Substances in Environmental Samples", EPA-600/R-93-100, August 1993. Available at NTIS, PB94-121811.

⁹ GLI Method 2, "Turbidity," November 2, 1992, Great Lakes Instruments, Inc., 8855 North 55th Street, Milwaukee, Wisconsin 53223.

2. Water systems must measure residual disinfectant concentrations with one of the analytical methods in the following table or one of the alternative methods listed in Appendix A to subpart C of 40 C.F.R. pt. 141. If approved by the Director, residual disinfectant concentrations for free chlorine and combined chlorine also may be measured by using DPD colorimetric test kits. In addition, the Director may approve the use of the ITS free chlorine test strip for the determination of free chlorine. Use of the test strips is described in Method D99-003, "Free Chlorine Species (HOCl- and OCl-) by Test Strip," Revision 3.0, November 21, 2003, available from Industrial Test Systems, Inc., 1875 Langston St., Rock Hill, SC 29730. Free and total chlorine residuals may be measured continuously by adapting a specified chlorine residual method for use with a continuous monitoring instrument provided the chemistry, accuracy, and precision remain the same. Instruments used for continuous monitoring must be calibrated with a grab sample measurement at least every five days, or with a protocol approved by the Director.

Table 800-D-2 RESIDUAL DISINFECTANT CONCENTRATIONS ANALYTICAL METHODS

Residual	Methodology	Methods
Free chlorine	Amperometric Titration DPD Ferrous Titrimetric DPD Colorimetric Syringaldazine (FACTS)	4500-Cl D 4500-Cl F 4500-Cl G 4500-Cl H
Total Chlorine	Amperometric Titration Amperometric Titration (low level measurement) DPD Ferrous Titrimetric DPD Colorimetric Iodometric Electrode	4500-Cl D 4500-Cl E 4500-Cl F 4500-Cl G 4500-Cl I
Chlorine dioxide	Amperometric Titration DPD Method Amperometric Titration Spectrophotometric	4500-ClO ₂ C 4500-ClO ₂ D 4500-ClO ₂ E EPA Method 327.0, Rev. 1.1
Ozone	Indigo Method	4500-O ₃ B

¹ EPA Method 327.0, Rev. 1.1, "Determination of Chlorine Dioxide and Chlorite Ion in Drinking Water Using N,N-Diethyl-p-aminosalicylic Acid and Horseradish Peroxidase with Detection by Visible Spectrophotometry," USEPA May 2005, EPA 815-R-05-008. Available online at <http://www.epa.gov/safewater/methods/sourcalt.html>.

- B. Sampling requirements for systems that do not provide filtration. A public water system that uses a surface water source and does not provide filtration treatment must begin sampling unless the Director has determined in writing that filtration is required pursuant to § 305 of the NNSDWA, 22 N.N.C. § 2535, in which case the Director may specify alternative sampling requirements, as appropriate, until filtration is in place. A water system that uses a groundwater source under the direct influence of surface water and does not provide filtration treatment must begin sampling 6 months after the Director determines that the groundwater source is under the direct influence of surface water, unless the Director has determined that

filtration is required in writing pursuant to § 305 of the NNSDWA, 22 N.N.C. § 2535, in which case the Director may specify alternative sampling requirements, as appropriate, until filtration is in place.

1. Fecal coliform or total coliform density measurements as required by § 803 (A)(1) must be performed on representative source water samples immediately prior to the first or only point of disinfectant application. The system must sample for fecal or total coliforms at the following minimum frequency each week the system serves water to the public:

TABLE 800-D-3 SAMPLE FREQUENCY

SYSTEM SIZE (persons served)	SAMPLES/WEEK ¹
≤500	1
501 TO 3,300	2
3,301 TO 10,000	3
10,001 TO 25,000	4
>25,000	5

¹ Must be taken on separate days.

Also, one fecal or total coliform density measurement must be made every day the system serves water to the public and the turbidity of the source water exceeds 1 NTU (these samples count towards the weekly coliform sampling requirement) unless the Director determines that the system, for logistical reasons outside the system's control, cannot have the sample analyzed within 30 hours of collection.

2. Turbidity measurements as required by § 803 (A)(2) must be performed on representative grab samples of source water immediately prior to the first or only point of disinfectant application every four hours (or more frequently) that the system serves water to the public. A public water system may substitute continuous turbidity sampling for grab sample sampling if it validates the continuous measurement for accuracy on a regular basis using a protocol approved by the Director.
3. The total inactivation ratio for each day that the system is in operation must be determined based on the $CT_{99.9}$ values in Tables 800-D-4 through 800-D-11 of this section, as appropriate. The parameters necessary to determine the total inactivation ratio must be monitored as follows:
 - a. The temperature of the disinfected water must be measured at least once per day at each residual disinfectant concentration sampling point.
 - b. If the system uses chlorine, the pH of the disinfected water must be measured at least once per day at each chlorine residual disinfectant concentration sampling point.
 - c. The disinfectant contact time(s) ("T") must be determined for each day during peak hourly flow.
 - d. The residual disinfectant concentration(s) ("C") of the water before or at the first customer must be measured each day during peak hourly flow.
 - e. If a system uses a disinfectant other than chlorine, the system may demonstrate to the Director, through the use of a Director-approved protocol for on-site disinfection challenge studies or other information satisfactory to the Director, that $CT_{99.9}$ values other than those specified in Tables 800-D-10 and 800-D-11 in this section or other operational parameters are adequate to demonstrate that the system is achieving the minimum inactivation rates required by § 804 (A)(1).

TABLE 800-D-4 CT VALUES ($CT_{99.9}$) FOR 99.9 PERCENT INACTIVATION OF GIARDIA LAMBLIA CYSTS BY FREE CHLORINE AT 0.5°C OR LOWER¹

Residual mg/L	pH						
	≤6.0	6.5	7.0	7.5	8.0	8.5	≤9.0
≤0.4	137	163	195	237	277	329	390
0.6	141	168	200	239	286	342	407
0.8	145	172	205	246	295	354	422
1.0	148	176	210	253	304	365	437
1.2	152	180	215	259	313	376	451
1.4	155	184	221	266	321	387	464
1.6	157	189	226	273	329	397	477
1.8	162	193	231	279	338	407	489
2.0	165	197	236	286	346	417	500
2.2	169	201	242	297	353	426	511
2.4	172	205	247	298	361	435	522
2.6	175	209	252	304	368	444	533
2.8	178	213	257	310	375	452	543
3.0	181	217	261	316	382	460	552

¹ These CT values achieve greater than a 99.99 % inactivation of viruses. CT values between the indicated pH values may be determined by linear interpolation. CT values between the indicated temperature of different tables may be determined by linear interpolation. If no interpolation is used, use the CT_{99.9} value at the lower temperature and at the higher pH.

TABLE 800-D-5 CT VALUES (CT_{99.9}) FOR 99.9 PERCENT INACTIVATION OF GIARDIA LAMBLIA CYSTS BY FREE CHLORINE

AT 5.0 °C¹

Free Residual mg/L	pH						
	≤6.0	6.5	7.0	7.5	8.0	8.5	≤9.0
≤0.4	97	117	139	166	198	236	279
0.6	100	120	143	171	204	244	291
0.8	103	122	146	175	210	252	301
1.0	105	125	149	179	216	260	312
1.2	107	127	152	183	221	267	320
1.4	109	130	155	187	227	274	329
1.6	111	132	158	192	232	281	337
1.8	114	135	162	196	238	287	345
2.0	116	138	165	200	243	294	353
2.2	118	140	169	204	248	300	361
2.4	120	143	172	209	253	306	368
2.6	122	146	175	213	258	312	375
2.8	124	148	178	217	263	318	382
3.0	126	151	182	221	268	324	389

¹ These CT values achieve greater than a 99.99 % inactivation of viruses. CT values between the indicated pH values may be determined by linear interpolation. CT values between the indicated temperature of different tables may be determined by linear interpolation. If no interpolation is used, use the CT_{99.9} value at the lower temperature, and at the higher pH.

TABLE 800-D-6 CT VALUES (CT_{99.9}) FOR 99.9 PERCENT INACTIVATION OF GIARDIA LAMBLIA CYSTS BY FREE CHLORINE AT 10.0 °C¹

Free Residual mg/L	pH						
	≤6.0	6.5	7.0	7.5	8.0	8.5	≤9.0
≤0.4	73	88	104	125	149	177	209
0.6	75	90	107	128	153	183	218
0.8	78	92	110	131	158	189	226
1.0	79	94	112	134	162	195	234
1.2	80	95	114	137	166	200	240
1.4	82	98	116	140	170	206	247
1.6	83	99	119	144	174	211	253
1.8	86	101	122	147	179	215	259
2.0	87	104	124	150	182	221	265
2.2	89	105	127	153	186	225	271
2.4	90	107	129	157	190	230	276
2.6	92	110	131	160	194	234	281
2.8	93	111	134	163	197	239	287
3.0	95	113	137	166	201	243	292

¹ These CT values achieve greater than a 99.99 % inactivation of viruses. CT values between the indicated pH values may be determined by linear interpolation. CT values between the indicated temperatures of different tables may be determined by linear interpolation. If no interpolation is used, use the CT_{99.9} value at the lower temperature, and at the higher pH.

TABLE 800-D-7 CT VALUES (CT_{99.9}) FOR 99.9 PERCENT INACTIVATION OF GIARDIA LAMBLIA CYSTS BY FREE CHLORINE AT 15.0 °C¹

Free Residual mg/L	pH						
	≤6.0	6.5	7.0	7.5	8.0	8.5	≤9.0
≤0.4	49	59	70	83	99	118	140
0.6	50	60	72	86	102	122	146
0.8	52	61	73	88	105	126	151
1.0	53	63	75	90	108	130	156
1.2	54	64	76	92	111	134	160
1.4	55	65	78	94	114	137	165
1.6	56	66	79	96	116	141	169
1.8	57	68	81	98	119	144	173
2.0	58	69	83	100	122	147	177
2.2	59	70	85	102	124	150	181

2.4	60	72	86	105	127	153	184
2.6	61	73	88	107	129	156	188
2.8	62	74	89	109	132	159	191
3.0	63	76	91	111	134	162	195

¹ These CT values achieve greater than a 99.99 % inactivation of viruses. CT values between the indicated pH values may be determined by linear interpolation. CT values between the indicated temperatures of different tables may be determined by linear interpolation. If no interpolation is used, use the CT_{99.9} value at the lower temperature, and at the higher pH.

TABLE 800-D-8 CT VALUES (CT_{99.9}) FOR 99.9 PERCENT INACTIVATION OF GIARDIA LAMBLIA CYSTS BY FREE CHLORINE AT 20.0°C¹

Free Residual mg/L	pH						
	≤6.0	6.5	7.0	7.5	8.0	8.5	≤9.0
≤0.4	36	44	52	62	74	89	105
0.6	38	45	54	64	77	92	109
0.8	39	46	55	66	79	95	113
1.0	39	47	56	67	81	98	117
1.2	40	48	57	69	83	100	120
1.4	41	49	58	70	85	103	123
1.6	42	50	59	72	87	105	126
1.8	43	51	61	74	89	108	129
2.0	44	52	62	75	91	110	132
2.2	44	53	63	77	93	113	135
2.4	45	54	65	78	95	115	138
2.6	46	55	66	80	97	117	141
2.8	47	56	67	81	99	119	143
3.0	47	57	68	83	101	122	146

¹ These CT values achieve greater than a 99.99 % inactivation of viruses. CT values between the indicated pH values may be determined by linear interpolation. CT values between the indicated temperatures of different tables may be determined by linear interpolation. If no interpolation is used, use the CT_{99.9} value at the lower temperature, and at the higher pH.

TABLE 800-D-9 CT VALUES (CT_{99.9}) FOR 99.9 PERCENT INACTIVATION OF GIARDIA LAMBLIA CYSTS BY FREE CHLORINE AT 25.0 °C¹ AND HIGHER

Free Residual mg/L	pH						
	≤6.0	6.5	7.0	7.5	8.0	8.5	≤9.0
≤0.4	24	29	35	42	50	59	70
0.6	25	30	36	43	51	61	73
0.8	26	31	37	44	53	63	75
1.0	26	31	37	45	54	65	78
1.2	27	32	38	46	55	67	80

1.4	27	33	39	47	57	69	82
1.6	28	33	40	48	58	70	84
1.8	29	34	41	49	60	72	86
2.0	29	35	41	50	61	74	88
2.2	30	35	42	51	62	75	90
2.4	30	36	43	52	63	77	92
2.6	31	37	44	53	65	78	94
2.8	31	37	45	54	66	80	96
3.0	32	38	46	55	67	81	97

¹ These CT values achieve greater than a 99.99 % inactivation of viruses. CT values between the indicated pH values may be determined by linear interpolation. CT values between the indicated temperatures of different tables may be determined by linear interpolation. If no interpolation is used, use the CT_{99.9} value at the lower temperature, and at the higher pH.

TABLE 800-D-10 CT VALUES (CT_{99.9}) FOR 99.9 PERCENT INACTIVATION OF GIARDIA LAMBLIA CYSTS BY CHLORINE DIOXIDE AND OZONE¹

Temperature	≤1°C	5 °C	10 °C	15 °C	20 °C	≥25 °C
Chlorine Dioxide	63	26	23	19	15	11
Ozone	2.9	1.9	1.4	0.95	0.72	0.48

¹ These CT values achieve greater than 99.99 % inactivation of viruses. CT values between the indicated temperatures may be determined by linear interpolation. If no interpolation is used, use the CT_{99.9} value at the lower temperature for determining CT_{99.9} values between indicated temperatures.

TABLE 800-D-11 CT VALUES (CT_{99.9}) FOR 99.9 PERCENT INACTIVATION OF GIARDIA LAMBLIA CYSTS BY CHLORAMINES¹

Temperature					
≤1 °C	5 °C	10 °C	15 °C	20 °C	25 °C
3,800	2,200	1,850	1,500	1,100	750

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

4. The total inactivation ratio must be calculated as follows:
 - a. If the system uses only one point of disinfectant application, the system may determine the total inactivation ratio based on either of the following two methods:
 1. One inactivation ratio (CT_{calc}/CT_{99.9}) is determined before or at the first customer during peak hourly flow and if the CT_{calc}/CT_{99.9} ≥ 1.0, the 99.9 % *Giardia lamblia* inactivation requirement has been achieved; or
 2. Successive CT_{calc}/CT_{99.9} values, representing sequential inactivation ratios, are determined between the point of disinfectant application and a point before or at the first customer during peak hourly flow. Under this alternative, the following method must be used to calculate the total inactivation ratio:

- (1) Determine $\frac{CT_{calc}}{CT_{99.9}}$ for each sequence.
- (2) Add the $\frac{CT_{calc}}{CT_{99.9}}$ values together $\left(\sum \frac{CT_{calc}}{CT_{99.9}} \right)$
- (3) If $\sum \left(\frac{CT_{calc}}{CT_{99.9}} \right) \geq 1.0$, the 99.9 percent Giardia

Lambda inactivation requirement has been achieved.

- b. If the system uses more than one point of disinfectant application before or at the first customer, the system must determine the CT value of each disinfection sequence immediately prior to the next point of disinfectant application during peak hourly flow. The $CT_{calc}/CT_{99.9}$ value of each sequence and

$$\sum \frac{CT_{calc}}{CT_{99.9}}$$

must be calculated using the method in subsection (B) (4) (a) (2) of this section to determine if the system is in compliance with § 804 (A).

- c. Although not required, the total percent inactivation for a system with one or more points of residual disinfectant concentration sampling may be calculated by solving the following equation:

$$\text{Percent inactivation} = 100 - \frac{100}{10^z}$$

$$\text{where } z = 3 \times \sum \left(\frac{CT_{calc}}{CT_{99.9}} \right)$$

5. The residual disinfectant concentration of the water entering the distribution system must be monitored continuously, and the lowest value must be recorded each day, except that if there is a failure in the continuous sampling equipment, grab sampling every 4 hours may be conducted in lieu of continuous sampling, but for no more than 5 working days following the failure of the equipment, and systems serving 3,300 or fewer persons may take grab samples in lieu of providing continuous sampling on an ongoing basis at the frequencies prescribed below:

TABLE 800-D-12 SAMPLING INTERVALS

SYSTEM SIZE BY POPULATION	SAMPLES/DAY ¹
<500	1
501 to 1,000	2
1,001 to 2,500	3
2,501 to 3,300	4

¹The day's samples cannot be taken at the same time. The sampling intervals are subject to the Director's review and approval.

If at any time the residual disinfectant concentration falls below 0.2 mg/l in a system using grab sampling in lieu of continuous sampling, the system must take a grab sample every 4 hours until the residual concentration is equal to or greater than 0.2 mg/l.

6. a. The residual disinfectant concentration must be measured at least at the same points in the distribution system and at the same time as total coliforms are sampled, as specified in ~~§ 404 §§ 2704 through 2708~~. ~~—except that~~ ~~†~~ The Director may allow a public water system which uses both a surface water source or a groundwater source under direct influence of surface water, and a groundwater source, to take disinfectant residual samples at points other than the total coliform sampling points if the Director determines that such points are more representative of treated (disinfected) water quality within the distribution system. Heterotrophic bacteria, measured as heterotrophic plate count (HPC) as specified in subsection (A)(1) of this section, may be measured in lieu of residual disinfectant concentration.
- b. If the Director determines, based on site-specific considerations, that a system has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions specified by subsection (A)(1) of this section and that the system is providing adequate disinfection in the distribution system, the requirements of subsection (B)(6)(a) of this section do not apply to that system.

C. Sampling requirements for systems using filtration treatment.

A public water system that uses a surface water source or a groundwater source under the influence of surface water and provides filtration treatment must monitor in accordance with this subsection (C) when filtration is installed.

1. Turbidity measurements as required by § 805 must be performed on representative samples of the system's filtered water every four hours (or more frequently) that the system serves water to the public. A water system may substitute continuous turbidity sampling for grab sampling if it validates the continuous measurement for accuracy on a regular basis using a protocol approved by the Director. For any systems using slow sand filtration or filtration treatment other than conventional treatment, direct filtration, or diatomaceous earth filtration, the Director may reduce the sampling frequency to once per day if it determines that less frequent sampling is sufficient to indicate effective filtration performance. For systems serving 500 or fewer persons, the Director may reduce the turbidity sampling frequency to once per day, regardless of the type of filtration treatment used, if the Director determines that less frequent sampling is sufficient to indicate effective filtration performance.
2. The residual disinfectant concentration of the water entering the distribution system must be monitored continuously, and the lowest value must be recorded each day, except that if there is a failure in the continuous sampling equipment, grab sampling every 4 hours may be conducted in lieu of continuous sampling, but for no more than 5 working days following the failure of the equipment, and systems serving 3,300 or fewer persons may take grab samples in lieu of providing continuous sampling on an ongoing basis at the frequencies each day prescribed below:

TABLE 800-D-13 SAMPLING FREQUENCIES

SYSTEM SIZE BY POPULATION	SAMPLES/DAY ¹
<500	1
501 to 1,000	2
1,001 to 2,500	3
2,501 to 3,300	4

¹ The day's samples cannot be taken at the same time. The sampling intervals are subject to the Director's review and approval.

If at any time the residual disinfectant concentration falls below 0.2 mg/l in a system using grab sampling in lieu of continuous sampling, the system must take a grab sample every 4 hours until the residual disinfectant concentration is equal to or greater than 0.2 mg/l.

3. a. The residual disinfectant concentration must be measured at least at the same points in the distribution system and at the same time as total coliforms are sampled, as

specified in ~~in §404~~ §§ 2704 through 2708. The Director may allow a public water system which uses both a surface water source or a groundwater source under direct influence of surface water, and a groundwater source, to take disinfectant residual samples at points other than the total coliform sampling points if the Director determines that such points are more representative of treated (disinfected) water quality within the distribution system. Heterotrophic bacteria, measured as heterotrophic plate count (HPC) as specified in subsection (A) (1) of this section, may be measured in lieu of residual disinfectant concentration.

- b. If the Director determines, based on site-specific considerations, that a system has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions specified by subsection (A) (1) of this section and that the system is providing adequate disinfection in the distribution system, the requirements of subsection (C) (3) (a) of this section do not apply to that system.

Addendum: Baffling Classification-Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems using Surface Water Sources, March, 1991 Edition, Science and Technology Branch Criteria and Standards Division, Office of Drinking Water, U.S. Environmental Protection Agency, Washington, D.C.

TABLE 800-D-14 BAFFLING CLASSIFICATION

BAFFLING CONDITION	T_{10}/T	BAFFLING DESCRIPTION
Unbaffled (mixed flow)	0.1	None, agitated basin, very low length to width ratio, high inlet and outlet flow velocities.
Poor	0.3	Single or multiple unbaffled inlets and outlets, no intra-basin baffles.
Average	0.5	Baffled inlet or outlet with some intra-basin baffles.
Superior	0.7	Perforated inlet baffle, serpentine or perforated intra-basin baffles, outlet weir or perforated launders.
Perfect (plug flow)	1.0	Very high length to width ratio (pipeline flow), perforated inlet, outlet, and intra-basin baffles.

Appendix F
CONSUMER CONFIDENCE REPORT

Regulated Contaminants

Contaminant (units)	Traditional MCL mg/L	To convert for CCR, multiply by:	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
Microbiological Contaminants						
Total Coliform Bacteria	MCL: (systems that collect 240 samples/month) 5% of monthly samples are positive; (Systems that collect 40 samples/month) 1 positive monthly sample.		MCL: (systems that collect 240 samples/month) 5% of monthly samples are positive; (Systems that collect 40 samples/month) 1 positive monthly sample.	0	Naturally present in the environment.	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
<u>Total Coliform Bacteria</u>	<u>TT</u>		<u>TT</u>	<u>N/A</u>	<u>Naturally present in the environment.</u>	<u>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.</u>
Fecal Coliform and E. coli	0		0	0	Human and animal fecal waste	Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.
<u>E. coli</u>	<u>Routine and repeat</u>		<u>Routine and repeat</u>	<u>0</u>	<u>Human and animal fecal</u>	<u>E. coli are bacteria whose presence indicates that the water may be contaminated with human or</u>

		<p><u>samples are total coliform-positive and either is E. coli-positive or system fails to take repeat samples following E. coli-positive routine sample or system fails to analyze total coliform-positive repeat sample for E. coli.</u></p>		<p><u>samples are total coliform-positive and either is E. coli-positive or system fails to take repeat samples following E. coli-positive routine sample or system fails to analyze total coliform-positive repeat sample for E. coli.</u></p>			<p><u>waste.</u></p>	<p><u>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.</u></p>
<p>Fecal Indicators (enterococci or coliphage)</p>	TT		TT	N/A	Human and animal fecal waste.	<p>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.</p>		
<p>Total organic carbon (ppm)</p>	TT		TT	N/A	Naturally present in the environment.	<p>Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection by products. These byproducts include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these by products in excess of the MCL may lead to adverse health effects, liver or kidney problems or nervous system effects, and may lead to an increased risk of getting cancer.</p>		
<p>Turbidity (NTU)</p>	TT			N/A	Soil runoff.	<p>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</p>		

									bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
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Radioactive Contaminants

Beta/photon emitters (mrem/year)	4 mrem/year		4	0	Decay of natural and man-made deposits.	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.
Alpha emitters (pCi/l)	15 pCi/l		15	0	Erosion of natural deposits.	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
Combined radium (pCi/l)	5 pCi/l		5	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	30µg/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)	0.006	1000	6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics, solder.	Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.
Arsenic (ppb)	¹⁰ 0.010	1000	¹⁰ 10	¹⁰ 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 in 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	Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.

						metal refineries; erosion of natural deposits.	
Beryllium (ppb)	0.004	1000	4	4	4	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries.	Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
Bromate (ppb)	0.01	1000	10	0	0	By-product of drinking water chlorination.	Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
Cadmium (ppb)	0.005	1000	5	5	5	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints.	Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
Chloramines (ppm)	MRDL = 4		MRDL = 4	MRDLG = 4	MRDLG = 4	Water additive used to control microbes	Some people who use 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	MRDLG = 4	Water additive used to control microbes	Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
Chlorite (ppm)	1		1	0.8	0.8	By-product of drinking water chlorination.	Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.
Chloride dioxide (ppb)	MRDL = 0.8	1000	MRDL = 800	MRDLG = 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 women who drink water containing chlorine dioxide in excess of the MRDL. Some

						people may experience anemia.
Chromium (ppb)	0.1	1000	100	100	Discharge from steel and pulp mills; erosion of natural deposits.	Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.
Copper (ppm)	AL = 1.3		AL=1.3	1.3	Corrosion of household plumbing systems; erosion of natural deposits; Leaching from wood preservatives.	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 Wilsons Disease should consult their personal doctor.
Cyanide (ppb)	0.2	1000	200	200	Discharge from steel/metal factories; discharge from plastic and fertilizer factories.	Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid.
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 of the MCL or more may cause mottling of childrens teeth, usually in children less than nine years old. Mottling, also known as dental fluorosis, may include brown staining and/or pitting of the teeth, and occurs only in developing teeth before they erupt from the gums.
Lead (ppb)	AL = 0.015	1000	AL=15	0	Corrosion of household plumbing systems; erosion of natural deposits.	Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.
Mercury [Inorganic] (ppb)	0.002	1000	2	2	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland.	Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.
Nitrate (ppm)	10		10	10	Runoff from fertilizer use; leaching from	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

					septic tanks, sewage; erosion of natural deposits.	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)	0.05	1000	50	50	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines.	Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.
Thallium (ppb)	0.002	1000	2	0.5	Leaching from ore-processing sites; discharge from electronic, glass and drug factories.	Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.
Synthetic Organic Contaminants including Pesticides and Herbicides						
2,4-D (ppb)	0.07	1000	70	70	Runoff from herbicide used on row crops.	Some people who drink water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.
2,4,5-TP [Silvex] (ppb)	0.05	1000	50	50	Residue of banned herbicide.	Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.
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)	0.002	1000	2	0	Runoff from herbicide used on row crops.	Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys or spleen, or experience anemia, and may have an increased risk of getting cancer.
Atrazine (ppb)	0.003	1000	3	3	Runoff from herbicide used on row crops.	Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.

Benzo(a)pyrene [PAH] (nanograms/l)	0.0002	1,000,000	200	0	Leaching from linings of water storage tanks and distribution lines.	Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
Carbofuran (ppb)	0.04	1000	40	40	Leaching of soil fumigant used on rice and alfalfa.	Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.
Chlordane (ppb)	0.002	1000	2	0	Residue of banned herbicide	Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.
Dalapon (ppb)	0.2	1000	200	200	Runoff from herbicide used on rights of way.	Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
Di(2-ethylhexyl)adipate (ppb)	0.4	1000	400	400	Discharge from chemical factories.	Some people who drink water containing di(2-ethylhexyl)adipate in excess of the MCL over many years could experience general toxic effects such as weight loss, liver enlargement, or possible reproductive difficulties.
Di(2-ethylhexyl)phthalate (ppb)	0.006	1000	6	0	Discharge from rubber and chemical factories.	Some people who drink water containing di(2-ethylhexyl)phthalate 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)	0.0002	1,000,000	200	0	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards.	Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive problems and may have an increased risk of getting cancer.
Dinoseb (ppb)	0.007	1000	7	7	Runoff from herbicide used on soybeans and vegetables.	Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
Diquat (ppb)	0.02	1000	20	20	Runoff from herbicide use.	Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
Dioxin [2,3,7,8-TCDD] (ppq)	0.00000003	1,000,000,000	30	0	Emissions from waste incineration and other combustion; discharge from chemical	Some people who drink water containing dioxin in excess of the MCL over many years could experience difficulties and may have an increased risk of getting cancer.

							factories.	
Endothall (ppb)	0.1	1000	100	100	Runoff from herbicide use.	Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.		
Endrin (ppb)	0.002	1000	2	2	Residue of banned insecticide.	Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.		
Epichlorohydrin	TT		TT	0	Discharge from industrial chemical factories; an impurity of some water treatment chemicals.	Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer.		
Ethylene dibromide (ppt)	0.00005	1,000,000	50	0	Discharge from petroleum refineries.	Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach, reproductive system, or kidneys, and may have an increased risk of getting cancer.		
Glyphosate (ppb)	0.7	1000	700	700	Runoff from herbicide use.	Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties.		
Heptachlor (ppt)	0.0004	1,000,000	400	0	Residue of banned pesticide.	Some people who drink water containing heptachlor in excess of the MCL over many years could experience liver damage and may have an increased risk of getting cancer.		
Heptachlor epoxide (ppt)	0.0002	1,000,000	200	0	Breakdown of heptachlor.	Some people who drink water containing heptachlor epoxide in excess of the MCL over many years could experience liver damage, and may have an increased risk of getting cancer.		
Hexachlorobenzene (ppb)	0.001	1000	1	0	Discharge from metal refineries and agricultural chemical factories.	Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys, or adverse reproductive effects, and may have an increased risk of getting cancer.		
Hexachlorocyclopentadiene (ppb)	0.05	1000	50	50	Discharge from chemical factories.	Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach.		
Lindane (ppt)	0.0002	1,000,000	200	200	Runoff/leaching from insecticide used on cattle, lumber, gardens.	Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.		
Methoxychlor (ppb)	0.04	1000	40	40	Runoff/leaching from insecticide used on fruits,	Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.		

						vegetables, alfalfa, livestock.	
Oxamyl [Vydate] (ppb)	0.2	1000	200	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.
PCB [Polychlorinated bi-phenyls] (ppt)	0.0005	1,000,000	500	0	0	Runoff from landfills; discharge of waste chemicals	Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.
Pentachlorophenol (ppb)	0.001	1000	1	0	0	Discharge from wood preserving factories.	Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer.
Picloram (ppb)	0.5	1000	500	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)	0.004	1000	4	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)	0.003	1000	3	0	0	Runoff/leaching from insecticide used in 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)	0.005	1000	5	0	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.
Carbon tetrachloride (ppb)	0.005	1000	5	0	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.
Chlorobenzene (ppb)	0.10	1000	100	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)	0.60	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)	0.075	1000	75	75	Discharge from industrial chemical factories.	Some people who drink water containing p-dichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems.
1,2-Dichloroethane (ppb)	0.005	1000	5	0	Discharge from industrial chemical factories.	Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.
1,1-Dichloroethylene (ppb)	0.007	1000	7	7	Discharge from industrial chemical factories.	Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
cis-1,2-Dichloroethylene (ppb)	0.07	1000	70	70	Discharge from industrial chemical factories.	Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
trans-1,2-Dichloroethylene (ppb)	0.10	1000	100	100	Discharge from industrial chemical factories.	Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
Dichloromethane (ppb)	0.005	1000	5	0	Discharge from pharmaceutical and chemical factories.	Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.
1,2-Dichloropropane (ppb)	0.005	1000	5	0	Discharge from industrial chemical factories.	Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.
Ethylbenzene (ppb)	0.7	1000	700	700	Discharge from petroleum refineries.	Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.
Haloacetic Acids (HAA) (ppb)	0.06	1000	60	N/A	By-product of drinking water disinfection.	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
Styrene (ppb)	0.1	1000	100	100	Discharge from rubber and plastic factories; leaching from landfills.	Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.
Tetrachloroethylene	0.005	1000	5	0	Discharge from	Some people who drink water containing

(ppb)						factories and dry cleaners.	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)	0.07	1000	70	70	Discharge from textile-finishing factories.	Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.	
1,1,1,-Trichloroethane (ppb)	0.2	1000	200	200	Discharge from metal degreasing sites and other factories.	Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.	
1,1,2-Trichloroethane (ppb)	0.005	1000	5	3	Discharge from industrial chemical factories.	Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys or immune systems.	
Trichloroethylene (ppb)	0.005	1000	5	0	Discharge from metal degreasing sites and other factories.	Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.	
THHMs [Total trihalomethanes] (ppb)	0.10/0.08	1000	100/80	N/A	By-product of drinking water chlorination.	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys or central nervous systems, and may have an increased risk of getting cancer.	
Toluene (ppm)	1		1	1	Discharge from petroleum factories.	Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys or liver.	
Vinyl Chloride (ppb)	0.002	1000	2	0	Leaching from PVC piping; discharge from plastics factories.	Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.	
Xylenes (ppm)	10		10	10	Discharge from petroleum factories; discharge from chemical factories.	Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.	

Radioactive Contaminants:

Beta/photon emitters (mrem/yr)	4 mrem/yr		4	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 particle and photon radioactivity in excess of the MCL over many years may have an increased risk of getting cancer.
Alpha emitters (pCi/L)	15 pCi/L		15	0	Erosion of natural	Certain minerals are radioactive and may emit forms of radiation known as alpha radiation. Some people who

					deposits.	drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
Combined radium (pCi/L)	5 pCi/L		5	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 (µg/L)	30 µg/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.

¹ These arsenic values are effective January 23, 2006. Until then, the MCL is 0.05 mg/L and there is no MCLG.

- 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 (a measure of water clarity)
 - pCi/L PicoCuries per liter (a measure radioactivity)
 - ppm Parts per million or milligrams per liter (mg/L)
 - ppb Parts per billion or micrograms per liter (µg/L)
 - ppt Parts per trillion or nanograms per liter
 - ppq Parts per quadrillion or picograms per liter
 - TT Treatment Technique



NAVAJO NATION DEPARTMENT OF JUSTICE

DOCUMENT REVIEW REQUEST FORM



DOJ 02-27-18 3524 DATE / TIME 7 Day Deadline DOC #: 009935 SAS #: UNIT: Nrw

RESUBMITTAL

Handwritten initials BS

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CLIENT TO COMPLETE

DATE OF REQUEST: 2/27/2018 DIVISION: NNEPA CONTACT NAME: Yolanda Barney DEPARTMENT: Public Water Systems PHONE NUMBER: 928-871-7755 E-MAIL: yolandabarney@navajopublicwater.org TITLE OF DOCUMENT: Amendments Navajo Nation Primary Drinking Regs RTCR.

DOJ SECRETARY TO COMPLETE

DATE/TIME IN UNIT: 2-27-18 4pm REVIEWING ATTORNEY/ADVOCATE: April Pruden 7-19-18 Oliver Whaley 7-30-18 DATE TIME OUT OF UNIT: 7-27-18 1457

DOJ ATTORNEY / ADVOCATE COMMENTS

Sufficient. See attached memo.

REVIEWED BY: (Print) Date / Time SURNAMED BY: (Print) Date / Time Oliver Whaley 7/27/18 10:40am V Blackhart 7/27/18 11:55am

DOJ Secretary Called: Emailed Yolanda Barney for Document Pick Up on 7-27-18 at 12:15 By: B

PICKED UP BY: (Print) DATE / TIME:

COMPLETED

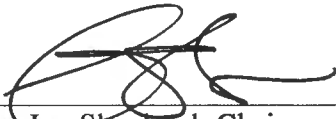
RESOURCES AND DEVELOPMENT COMMITTEE
Special Meeting

October 22, 2018

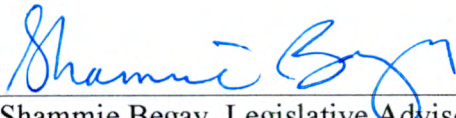
ROLL CALL
VOTE TALLY SHEET:

Legislation # 0336-18: An Action Relating to the Resources and Development Committee; Approving Amendments to the Navajo Nation Primary Drinking Water Regulations. *Sponsor: Honorable Benjamin Bennett*

Main Motion: Davis Filfred Second: Leonard Pete Vote: 3-0-1 (CNV)
YEAS: Davis Filfred, Leonard Pete and Benjamin Bennett
NAYS: None
EXCUSED: Walter Phelps and Jonathan Perry



Alton Joe Shepherd, Chairperson
Resources and Development Committee



Shammie Begay, Legislative Advisor
Resources and Development Committee