

DEPARTMENT OF HEALTH AND
HUMAN SERVICES

TITLE 179, PUBLIC WATER SYSTEMS

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TITLE 179

PUBLIC WATER SYSTEMS

CHAPTER 1

FLUORIDATION OF PUBLIC WATER SUPPLIES

001. SCOPE AND AUTHORITY. This chapter applies to all public water systems required to add fluoride to their water supplies, and public and private entities that are not required, but do so voluntarily. The authority is found in Nebraska Revised Statute (Neb. Rev. Stat.) §§ 71-3305 to 71-3306.

002. DEFINITIONS.

002.01 FLUORIDATION. Fluoridation is the process of adjusting the amount of fluoride found in water to achieve optimal prevention of tooth decay.

002.02 OWNER. Owner has the same meaning as in Neb. Rev. Stat. § 71-5301 of the Nebraska Safe Drinking Water Act.

002.03 PUBLIC WATER SYSTEM. Public Water System has the same meaning as in Neb. Rev. Stat. § 71-5301(10)(a).

003. OPERATION. Operational requirements are as follows.

003.01 FLUORIDATING PUBLIC WATER SYSTEMS. The owner of a fluoridating public water system must ensure that the system is operated in a manner to provide a fluoride ion content in the water available to users at a target level of 0.7 milligrams per liter, and within the operational range of plus or minus 0.2 milligrams per liter to 0.7 milligrams per liter.

003.02 NATURALLY FLUORIDATED PUBLIC WATER SYSTEMS. The addition of a fluoride compound to the water supply is not required if the fluoride ion content of the water available to users is by nature within, or greater than, the operational range provided in this chapter.

003.02(A) PUBLIC WATER SYSTEMS WITH MULTIPLE ENTRY POINTS. Public water systems with multiple entry points to the system must demonstrate the criteria provided in this subsection for each individual entry point.

004. MONITORING. The owner of a fluoridating public water system must submit one sample each month for fluoride, representing water supplied to users, to the Department of Health and Human Services (DHHS) Public Health and Environmental Laboratory, or a laboratory certified by the Department of Health and Human Services (DHHS) Public Health and Environmental Laboratory, for analysis.

005. RECORD KEEPING. Records of all operations shall be kept for each point at which fluoride is added to the system, and a copy of each month's records sent to the Department's designee at the close of each month. These records

shall include:

- (A) Name of the water operator responsible for fluoridation of the system;
- (B) The location(s) of fluoride application;
- (C) Identification of the fluoride compound used and its purity and fluoride content;
- (D) The treatment date, amount of water treated, and the amount of the fluoride compound used for treatment;
- (F) Analytical results of fluoride content of treated water; and
- (G) Any irregularities in operations.

006. COMPUTATION OF FLUORIDE ION CONTENT. Computation of fluoride ion content as required by this chapter is based on the average fluoride content of water available to users, each month. The average fluoride content is based on each system's records, as provided to the Department as required by this chapter.

006.01 ANALYTICAL FLUORIDE RESULTS. Average monthly fluoride content, for systems that obtain analytical results of the fluoride content of water supplied to users on a weekly, or more frequent basis, will be based on the analytical fluoride results.

006.02 CALCULATED FLUORIDE CONCENTRATION. Average monthly fluoride content, for systems that do not provide adequate analytical results, will be based on calculated fluoride concentrations using the natural level of fluoride in the source water, and the information recorded as required by this chapter.

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 2 - PUBLIC WATER SUPPLY SYSTEMS

SECTION 001 GENERAL

2-001.01 SCOPE AND AUTHORITY: These regulations establish general requirements for public water systems and define terms used in Title 179. The statutory authority is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

2-001.02 DEFINITIONS: As used in these regulations, unless the context to be intelligible or prevent absurdity otherwise requires:

Air gap means the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture or other device and the flood rim of the receptor.

Backflow means the undesirable reversal of flow in a potable water distribution system as a result of a cross connection.

Backflow preventer means an assembly or means that prohibits the backflow of water into the potable water supply.

Backpressure means a pressure, higher than the supply pressure, caused by a pump, elevated tank, boiler, air/steam pressure, or any other means, which may cause backflow.

Backsiphonage means backflow caused by negative or reduced pressure in the supply piping.

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

Community water system means a public water system that (a) serves at least 15 service connections used by year-round residents of the area served by the system or (b) regularly serves at least 25 year-round residents.

Compliance cycle means the nine-year calendar year cycle during which public water systems must monitor. Each compliance cycle consists of three three-year compliance periods. The first calendar year cycle began January 1, 1993 and ended December 31, 2001; the second began January 1, 2002 and ends December 31, 2010; the third begins January 1, 2011 and ends December 31, 2019.

Compliance period means a three-year calendar year period within a compliance cycle. Each compliance cycle has three three-year compliance periods. Within the first compliance cycle, the first compliance period ran 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.

Comprehensive performance evaluation (CPE) means a thorough review and analysis of a treatment plant's performance-based capabilities and associated

administrative, operation and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance and emphasizes approaches that can be implemented without significant capital improvements. For purposes of compliance with 179 NAC 17 and 179 NAC 19, the comprehensive performance evaluation must consist of at least the following components: assessment of plant performance; evaluation of major unit processes; identification and prioritization of performance limiting factors; assessment of the applicability of comprehensive technical assistance; and preparation of a CPE report.

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

Contamination means an impairment of a potable water supply by the introduction or admission of any foreign substance that degrades the quality and creates a health hazard.

Conventional filtration treatment means a series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal.

Cross connection means any physical arrangement whereby a potable water supply is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, tank, pump, plumbing fixture, heat exchanger, or other mechanical equipment or device which contains, or may contain, contaminated water, sewage or other waste, liquid or gas of unknown or unsafe quality which may be capable of imparting contamination or pollution to the potable water supply as a result of backflow (due to either backpressure or backsiphonage). Bypass arrangements, jumper connections, hose connections, removable spools, swivel or changeover devices, four-way valve connections and other temporary or permanent devices through which, or because of which, backflow (or backsiphonage) could occur are considered to be cross-connections. Protecting a public water system against potential contamination from cross-connections is possible by containment and/or isolation.

Cross connection control means the enforcement of an ordinance or other instrument regarding cross connections.

CT or CT_{calc} is the product of "residual disinfectant concentration" (C) in mg per liter determined before or at the first customer, and the corresponding "disinfectant contact time" (T) in minutes, i.e., "C" x "T".

CT(99.9) means 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 13.1- to 13.8 of 179 NAC 13-007.02C.

Council means the Advisory Council on Public Water Supply.

Diatomaceous earth filtration means 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, additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake.

Direct filtration means a series of processes including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal.

Director means the Director of Regulation and Licensure or his/her authorized representative.

Disinfection means a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents.

Disinfection contact time ("T" in CT calculations) means 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.

Disinfection profile means a summary of Giardia lamblia inactivation through the treatment plant. The procedure for developing a disinfection profile is contained in 179 NAC 17-005 (Disinfection profiling and benchmarking) and 179 NAC 19-007.01-19-007.07 (Disinfection profile) in 179 NAC 19.

Domestic or other non-distribution system plumbing problem means 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 means 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 means a backflow prevention device consisting of two independently acting check valves, internally force loaded to a normally closed position between two tightly closing shut-off valves, and with means for testing for tightness.

Drinking water standards means the rules and regulations adopted and promulgated pursuant to Neb. Rev. Stat. § 71-5302, which

- (a) establish maximum levels for harmful materials which, in the judgment of the Director of Regulation and Licensure, may have an adverse effect on the health of persons and
- (b) apply only to public water systems.

Effective opening means the minimum cross-sectional area at the point of water supply discharge, measured or expressed in terms of the diameter of a circle, or if the opening is not circular, the diameter of a circle of equivalent cross-sectional area.

Filter profile means 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 means a process for removing particulate matter from water by passage through porous media.

Flocculation means a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable particles through hydraulic or mechanical means.

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

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

Groundwater system means a water system utilizing wells as the source of water.

Ground water under the direct influence of surface water (GWUDI) means 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 or Cryptosporidium, or significant and 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 Director. The Director 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 as described in 179 NAC 13 Attachment 2.

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

Inactivation ratio means the ratio of CT to CT(99.9), i.e., CT divided by CT(99.9).

Initial compliance period means the three-year compliance period which ended December 31, 1995 except as follows. For the contaminants listed in 179 NAC 2-002.02A(1), (5), (8), (11), (17); and in 2-002.02B2 (19), (20), (21); and in 2-002.02B3(19) to (33); the initial compliance period means the three-year compliance period which began January 1, 1993 and ended December 31, 1995 for systems with 150 or more service connections, and means the three-year compliance period which began January 1, 1996 and ended December 31, 1998 for systems having fewer than 150 service connections.

Lead free

1. When used with respect to solders and flux, means solders and flux containing not more than 0.2% lead and
2. When used with respect to pipe and pipe fittings, means pipe and pipe

fittings containing not more than 8% lead.

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

Major construction, extension, or alteration means those structural changes that affect the source of supply, treatment processes, or transmission of water to service areas, but does not include the extension of service mains within established service areas.

Man-made beta particle and photon emitters means all radionuclides emitting beta particles and/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) means the maximum permissible level of a contaminant in water which is delivered to any user of a public water system.

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

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.

Non-community water system means a public water system that is not a community water system. A non-community water system is either a "transient non-community water system (TWS)" or a "non-transient non-community water system (NTNCWS)."

Non-transient, non-community water system means a public water system that is not a community water system and that regularly serves at least 25 of the same individuals over six months per year.

Operator means the individual or individuals responsible for the continued performance of the water supply system or any part of such system, during assigned duty hours.

Owner means any person owning or operating a public water system.

Person means any individual, firm, partnership, limited liability company, association, company, corporation, political subdivision, or other entity.

Picocurie (pCi) means that quantity of radioactive material producing 2.22 nuclear transformations per minute.

Point of disinfectant application is 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 treatment device (POE) is 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) is a treatment device applied to a single tap used for the purpose of reducing contaminants in drinking water at that one tap.

Pollution means the presence of any foreign substance in water that tends to degrade its quality so as to constitute a nonhealth hazard or impair the usefulness of the water.

Potable water means water that is safe for human consumption as set forth in 179 NAC 2-002.

Protection by containment (i.e., containing the potential contamination source within the water customer's building, factory, facility, property distribution system, or trailer court, etc.) means the installation of an approved backflow prevention device or method on the water service line(s) serving any premises, location, facility or area.

Protection by isolation means control of cross-connections within a building's plumbing system by the installation of approved backflow prevention devices or methods at or near the potential sources of pollution or contamination.

Public water system means a system for providing the public with water for human consumption through pipes or, after August 5, 1998, other constructed conveyances, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days per year. Public water system includes (a) any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system and (b) any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. Public water system does not include a special irrigation district. A public water system is either a community water system or a non-community water system.

Service connection does not include a connection to a system that delivers water by a constructed conveyance other than a pipe if (i) the water is used exclusively for purposes other than residential uses, consisting of drinking, bathing, cooking, and other similar uses, (ii) the Department determines that alternative water to achieve the equivalent level of public health protection provided by the Nebraska Safe Drinking Water Act and rules and regulations under the act is provided for residential or similar uses for drinking and cooking, or (iii) the Department 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 Nebraska Safe Drinking Water Act and the rules and regulations under the Act.

Special irrigation district means an irrigation district in existence prior to May 18, 1994, that provides primarily agricultural service through a piped water system with only incidental residential or similar use if the system or the residential or similar users of the system comply with exclusion provisions of 179 NAC 2-001.02 items (ii) and (iii) of Public Water System definition.

Reduced pressure principle backflow preventer means a backflow prevention device consisting of two independently acting check valves, internally force loaded to a normally closed position and separated by an intermediate chamber (or zone) in which there is an automatic relief means of venting to atmosphere internally loaded to a normally open position between two tightly closing shut-off valves and with means for testing for tightness of the checks and opening of relief means.

Rem means 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 means any subsequent compliance period after the initial compliance period.

Residual disinfectant concentration ("C" in CT calculations) means the concentration of disinfectant measured in milligrams per liter in a representative sample of water.

Sanitary survey means 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.

Sedimentation means a process for removal of solids before filtration by gravity or separation.

Service area means the land area which the owner of a public water system has legal franchise or authority to remain the sole distributor of piped drinking water.

Service connection, as used in the definition of public water system, does not include a connection to a system that delivers water by a constructed conveyance other than a pipe if:

1. The water is used exclusively for purposes other than residential uses (consisting of drinking, bathing, and cooking, or other similar uses);
2. The Department determines that alternative water to achieve the equivalent level of public health protection provided by the applicable state drinking water regulation is provided for residential or similar uses for drinking and cooking; or
3. The Department 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 state

primary drinking water regulations. Slow sand filtration means a process involving passage of raw water through a bed of sand at a low velocity (generally less than 0.4 m/h) resulting in substantial particulate removal by physical and biological mechanisms.

Surface water means all water which is open to the atmosphere and subject to surface runoff.

Surface water system means a water system utilizing surface water as the source of water.

System with a single service connection means a system which supplies drinking water to consumers via a single service line.

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

Transient non-community water system or TWS means a non-community water system that does not regularly serve at least 25 of the same persons over six months per year.

Treatment technique means the use of aeration, settling, filtration, or other physical process and/or the addition of any chemical or chemicals for the purpose of removing, deactivation, or adjusting the level of one or more contaminants present in the raw water source.

Trihalomethane (THM) means one of a 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.

Total trihalomethanes (TTHMs) means the sum of the concentration in milligrams per liter of the trihalomethane compounds [trichloromethane (chloroform), dibromochloromethane, bromodichloromethane, and tribromomethane (bromoform)], rounded to two significant figures.

Uncovered finished water storage facility means a tank, reservoir, or other facility used to store water that will undergo no further treatment except residual disinfection and is open to the atmosphere.

Vacuum breaker, atmospheric type means a vacuum breaker which is not designed to be subject to static line pressure.

Vacuum breaker, pressure type means a vacuum breaker which is designed to be subject to static line pressure.

Virus means a virus of fecal origin which is infectious to humans by waterborne transmission.

Waterborne disease outbreak means 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.

Water supply system means all sources of water and their surroundings under the control of one owner, and includes all structures, conduits, and appurtenances by means of which such water is collected, treated, stored, or delivered, except service pipes between street mains and buildings and the plumbing within or in connection with the buildings served.

2-001.03 COVERAGE: Title 179 applies to each public water system, unless the public water system meets all of the following conditions:

1. Consists only of distribution and storage facilities and does not have any collection and treatment facilities;
2. Obtains all of its water from, but is not owned or operated by, a public water system to which such standards apply;
3. Does not sell water to any person; and
4. Is not a carrier which conveys passengers in interstate commerce.

2-001.04 RESPONSIBILITY: The owner of each public water system, as defined in Title 179, must designate an individual, or individuals, who will be responsible for contact and communications with the Director in matters relating to system alteration and construction, monitoring and sampling, maintenance, operation, record keeping, and reporting, as required by law and these regulations. The owner of a public water system must promptly report any change in assigned responsibilities or designated individuals to the Director.

SECTION 002 DRINKING WATER STANDARDS AND TREATMENT TECHNIQUES

2-002.01 SCOPE AND AUTHORITY: These regulations establish drinking water standards, treatment techniques, best available technologies (BATs) and compliance technologies for public water systems. The authority is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

2-002.02 DEFINITIONS

Best Available Technology or BAT means the best technology, treatment techniques, or other means which the U.S. Environmental Protection Agency 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.

GAC10 means granular activated carbon filter beds with an empty-bed contact time of 10 minutes based on average daily flow and a carbon reactivation frequency of every 180 days, except that the reactivation frequency for GAC10 used as a best available technology for compliance with Title 179 NAC 24 MCLs under 179 NAC 2-002.04E2a(1) is 120 days.

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

Maximum Contaminant Level (MCL) means the maximum permissible level of a contaminant in water which is delivered to any user of a public water system.

2-002.03 DRINKING WATER STANDARDS AND TREATMENT TECHNIQUES: The basis for the establishment of maximum contaminant levels is based either upon potential acute health effects over a short length of time of exposure or chronic health effects over a long length of time of exposure.

2-002.03A Standards Based upon Acute Health Effects: Standards based upon acute health effects over a short length of time of exposure shall apply to all public water systems. Contaminants governed by these standards are:

1. Nitrates;
2. Turbidity;
3. Microbiological; and
4. Chlorine dioxide

2-002.03B Standards Based upon Chronic Health Effects: Standards based upon chronic health effects over a long length of time of exposure apply to community and/or non-transient, non-community water systems as specified in Title 179. Contaminants governed by these standards are:

1. Inorganic chemicals except for nitrate;
2. Organic chemicals; and
3. Radioactive contaminants.

2-002.04 Maximum Contaminant Levels

2-002.04A Maximum Contaminant Levels for Inorganic Chemicals: All the following maximum contaminant levels (MCLs) for inorganic chemical contaminants apply to community water systems. All the following maximum contaminant levels for inorganic chemicals, except the MCL for fluoride, apply to non-transient, non-community water systems. Only the maximum contaminant levels for nitrate, nitrite, and total nitrate and nitrite apply to transient, non-community systems.

<u>CONTAMINANT</u>	<u>MCL (mg/L)</u>
(1) Antimony	0.006
(2) Asbestos (fibers >10 µm)	7 million fibers/Liter
(3) Arsenic	0.010
(4) Barium	2
(5) Beryllium	0.004
(6) Cadmium	0.005
(7) Chromium total	0.10
(8) Cyanide (as free cyanide)	0.2
(9) Fluoride*	4.0
(10) Mercury	0.002

(11) Nickel	0.1
(12) Nitrate (as Nitrogen)	10
(13) Nitrite (as Nitrogen)	1
(14) Total Nitrate and Nitrite (as Nitrogen)	10
(15) Selenium	0.05
(16) Sodium	500.0
(17) Thallium	0.002

*Community water systems experiencing fluoride levels above 2.0 milligrams per liter must notify the public as required in 179 NAC 4-010.

2-002.04A1 At the discretion of the Director, nitrate levels not to exceed 20 mg/L may be allowed in a non-community water system if the supplier of water demonstrates to the satisfaction of the Director that:

2-002.04A1a Such water will not be available to children under six months of age, pregnant women, or mothers nursing children under six months of age; and

2-002.04A1b The non-community water system is meeting the public notification requirements under 179 NAC 4-011, including continuous posting of the fact that nitrate levels exceed 10 mg/L and the potential health effects of exposure; and

2-002.04A1c Local and State public health authorities will be notified annually of nitrate levels that exceed 10 mg/L; and

2-002.04A1d No adverse health effects shall result.

2-002.04B Maximum Contaminant Levels for Synthetic Organic Chemicals: The following maximum contaminant levels for organic chemical contaminants apply to community and non-transient, non-community water systems.

2-002.04B1 Volatile Organic Chemicals (VOCs):

<u>CONTAMINANT</u>	<u>MCL (mg/L)</u>
(1) Vinyl chloride	0.002
(2) Benzene	0.005
(3) Carbon tetrachloride	0.005
(4) 1,2-Dichloroethane	0.005
(5) Trichloroethylene	0.005
(6) para-Dichlorobenzene	0.075
(7) 1,1-Dichloroethylene	0.007
(8) 1,1,1-Trichloroethane	0.2
(9) cis-1,2-Dichloroethylene	0.07
10) 1,2-Dichloropropane	0.005

(11) Ethylbenzene	0.7
(12) Monochlorobenzene	0.1
(13) o-Dichlorobenzene	0.6
(14) Styrene	0.1
(15) Tetrachloroethylene	0.005
(16) Toluene	1
(17) trans-1,2-Dichloroethylene	0.1
(18) Xylenes (total)	10
(19) Dichloromethane	0.005
(20) 1,2,4-Trichlorobenzene	0.07
(21) 1,1,2-Trichloroethane	0.005

2-002.04B2 Non-Volatile Synthetic Organic Chemicals

<u>CONTAMINANT</u>	<u>MCL (mg/L)</u>
(1) Alachlor	0.002
(2) reserved	
(3) reserved	
(4) reserved	
(5) Atrazine	0.003
(6) Carbofuran	0.04
(7) Chlordane	0.002
(8) Dibromochloropropane	0.0002
(9) 2,4-D	0.07
(10) Ethylene dibromide	0.00005
(11) Heptachlor	0.0004
(12) Heptachlor epoxide	0.0002
(13) Lindane	0.0002
(14) Methoxychlor	0.04
(15) Polychlorinated biphenyls	0.0005
(16) Pentachlorophenol	0.001
(17) Toxaphene	0.003
(18) 2,4,5-TP	0.05
(19) Benzo[a]pyrene	0.0002
(20) Dalapon	0.2
(21) Di(2-ethylhexyl)adipate	0.4
(22) Di(2-ethylhexyl)phthalate	0.006
(23) Dinoseb	0.007
(24) Diquat	0.02
(25) Endothall	0.1
(26) Endrin	0.002
(27) Glyphosate	0.7
(28) Hexachlorobenzene	0.001

(29) Hexachlorocyclopentadiene	0.05
(30) Oxamyl (Vydate)	0.2
(31) Picloram	0.5
(32) Simazine	0.004
(33) 2,3,7,8-TCDD (Dioxin)	3×10^{-8}

2-002.04C Microbiological: The maximum contaminant levels for coliform bacteria, applicable to all public water systems, are as follows:

2-002.04C1 Through March 31, 2016, the total coliform MCL is based on the presence or absence of total coliforms in a sample, rather than coliform density.

2-002.04C1a For a system which collects at least 40 samples per month, if no more than 5.0% of the samples collected during a month are total coliform-positive, the system is in compliance with the MCL for total coliforms.

2-002.04C1b For a system which collects fewer than 40 samples per month, if no more than one sample collected during a month is total coliform-positive, the system is in compliance with the MCL for total coliforms.

2-002.04C1c Results of all routine samples and repeat samples (when required by 179 NAC 3-004.02) which are not invalidated must be included in determining compliance with 179 NAC 2-002.04C1a and 2-002.04C1b.

2-002.04C2 Through March 31, 2016 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 179 NAC 4 this is a violation that may pose an acute risk to health.

2-002.04C3 Compliance with the MCL for total coliforms in 179 NAC 2-002.04C1 and 2-002.04C2 will be determined each month for systems which are required to monitor monthly for total coliforms, and each quarter for systems which are required to monitor once per quarter for total coliforms.

2-002.04C4 Beginning April 1, 2016, a system is in compliance with the MCL for E. coli for samples taken under the provisions of 179 NAC 26 unless any of the conditions identified in 179 NAC 2-002.04C4 items 1 through 4 occur. For purposes of the public notification requirements in 179 NAC 4, violation of the MCL may pose an acute risk to health.

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.

2-002.04C5 Through March 31, 2016, a public water system must determine compliance with the MCL for total coliforms in 179 NAC 2-002.04C1 and 2-002.04C2 for each month in which it is required to monitor for total coliforms. Beginning April 1, 2016, a public water system must determine compliance with the MCL for E. coli in 179 NAC 2-002.04C4 for each month in which it is required to monitor for total coliforms.

2-002.04C6 The Department identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant level for total coliforms in 179 NAC 2-002.04C1 and 2-002.04C2 and for achieving compliance with the maximum contaminant level for E. coli in 179 NAC 2-002.04C4.

1. Protection of wells from fecal contamination by appropriate placement and construction;
2. Maintenance of a disinfectant residual throughout the distribution system;
3. Proper maintenance of the distribution system including appropriate pipe replacement and repair procedures, main flushing programs, proper operation and maintenance of storage tanks and reservoirs, cross connection control, and continual maintenance of positive water pressure in all parts of the distribution system;
4. Filtration and/or disinfection of surface water, as described in 179 NAC 13, 17, 19, and 25, or disinfection of ground water, as described in 179 NAC 24, using strong oxidants such as chlorine, chlorine dioxide, or ozone; and
5. For systems using ground water, compliance with the requirements of an EPA-approved state wellhead protection program.

2-002.04C7 The Director identifies the technology, treatment techniques, or other means available identified in 179 NAC 2-002.04C6 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 total coliforms in 179 NAC 2-002.04C1 and 2-002.04C2 and for achieving compliance with the maximum contaminant level for E. coli in 179 NAC 2-002.04C4.

2-002.04D Maximum contaminant levels for radionuclides

2-002.04D1 MCL for combined radium-226 and -228: The MCL for combined radium-226 and radium-228 is 5 pCi per liter. The combined radium-226 and radium-228 value is determined by the addition of the results of the analysis for radium-226 and the analysis for radium-228.

2-002.04D2 MCL for gross alpha particle activity (excluding radon and uranium): The MCL for gross alpha particle activity (including radium-226 but excluding radon and uranium) is 15 pCi per liter.

2-002.04D3 MCL for Beta Particle and Photon Radioactivity

1. The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in drinking water must not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem per year (mrem/year).
2. Except for the radionuclides listed in the following table, the concentration of man-made radionuclides causing 4 mrem total body or organ dose equivalents must be calculated on the basis of a two liter per day drinking water intake using the 168 hour data listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure", NBS Handbook 69, as amended August 1963, U.S. Department of Commerce, which is incorporated by reference. A copy may be inspected at the Division of Public Health of the Department of Health and Human Services, 301 Centennial Mall South, Lincoln, NE 68509 or copies are available from the National Technical Information Service, NTIS, U.S. Department of Commerce, 5301 Shawnee Road, Alexandria, Virginia, 22312, phone 800-553-6847. If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ must not exceed 4 millirem per year.

AVERAGE ANNUAL CONCENTRATIONS ASSUMED TO PRODUCE A TOTAL BODY OR ORGAN DOSE OF 4 MILLIREM PER YEAR

Radionuclide	Critical Organ	pCi per liter
Tritium	Total Body	20,000
Strontium-90	Bone Marrow	8

2-002.04D4 MCL for Uranium: The maximum contaminant level for uranium is 30 µg/L.

2-002.04D5 Compliance Dates for Combined Radium-226 and -228, Gross Alpha Particle Activity, Gross Beta Particle and Photon Radioactivity, and Uranium: Community water systems must comply with the MCLs listed in 179 NAC 2-002.04D1 through 2-002.04D4 beginning December 8, 2003 and compliance will be determined in accordance with the requirements of 179 NAC 3-008.01 and 3-008.02.

2-002.04E Maximum Contaminant Levels for Disinfection Byproducts

2-002.04E1 Bromate and chlorite: The maximum contaminant levels (MCLs) for bromate and chlorite are as follows:

Disinfection Byproduct	MCL (mg/L)
Bromate	0.010
Chlorite	1.0

2-002.04E1a Compliance Dates for Community Water Systems (CWSs) and Non-Transient Non-Community Water Systems (NTNCWSs): Public water systems using surface water or ground water under the direct influence of surface water serving 10,000 or more individuals must comply with 179 NAC 2-002.04E1 beginning January 1, 2002. Public water systems using surface water or ground water under the direct influence of surface water serving fewer than 10,000 individuals and systems using only ground water not under the direct influence of surface water must comply with 179 NAC 2-002.04E1 beginning January 1, 2004.

2-002.04E1b The Department identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for bromate and chlorite identified in 179 NAC 2-002.04E1.

BATs FOR BROMATE AND CHLORITE

Disinfection Byproduct	Best Available Technology
Bromate	Control of ozone treatment process to reduce production of bromate.
Chlorite	Control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels.

2-002.04E2 TTHMs and HAA5s

2-002.04E2a Running Annual Average (RAA) Compliance for 179 NAC 16

2-002.04E2a(1) Compliance Dates: All systems must comply with these MCLs until the date specified for 179 NAC 24 compliance in 179 NAC 24-003.01.

Disinfection byproduct	MCL (mg/L)
Total trihalomethanes (TTHMs)	0.080
Haloacetic acids (five) (HAA5)	0.060

2-002.04E2a(2) The Department identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for TTHMs and HAA5s identified in 2-002.04E2a(1).

Disinfection	Best available technology
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byproduct	
Total trihalomethanes (TTHMs) and Haloacetic acids (five) (HAA5s)	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant

2-002.04E2b LRAA Compliance for 179 NAC 24

2-002.04E2b(1) Compliance Dates: The 179 NAC 24 MCLs for TTHMs and HAA5 must be complied with as a locational running annual average at each monitoring location beginning the date specified for compliance in 179 NAC 24-003.01.

Disinfection byproduct	MCL (mg/L)
Total trihalomethanes (TTHMs)	0.080
Haloacetic acids (five) (HAA5)	0.060

2-002.04E2b(2) The Department identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for TTHMs and HAA5 identified in 179 NAC 2-002.04E2b for all systems that disinfect their source water:

Disinfection byproduct	Best available technology
Total trihalomethanes (TTHMs) and Haloacetic acids (five) (HAA5s)	Enhanced coagulation or enhanced softening plus GAC10, or nanofiltration with a molecular weight cutoff <1000 Daltons; or GAC20

2-002.04E2b(3) The Department identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for TTHMs and HAA5s identified in 179 NAC 2-002.04E2b for consecutive systems and applies only to disinfected water that consecutive systems buy or otherwise receive:

Disinfection byproduct	Best available technology
Total trihalomethanes (TTHMs) and Haloacetic acids (five) (HAA5s)	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 $< 10,000$: Improved distribution system and storage tank management to reduce residence

2-002.04F Maximum Residual Disinfectant Levels

2-002.04F1 Maximum residual disinfectant levels (with compliance determined in accordance with 179 NAC 16-006) are as follows:

MRDLs

DISINFECTANT RESIDUAL	MRDL (MG/L)
Chlorine	4.0 (as Cl ₂).
Chloramines	4.0 (as Cl ₂).
Chlorine dioxide	0.8 (as ClO ₂).

2-002.04F2 Compliance dates

2-002.04F2a CWSs and NTNCWSs: Surface water systems and ground water systems under the direct influence of surface water serving 10,000 or more individuals must comply with 179 NAC 2-002.04F beginning January 1, 2002. Surface water systems and ground water systems serving fewer than 10,000 individuals and systems using only ground water not under the direct influence of surface water must comply with these maximum residual disinfectant levels beginning January 1, 2004.

2-002.04F2b Transient NCWSs: Surface water systems and ground water systems under the direct influence of surface water serving 10,000 or more individuals and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2002. Surface water systems and ground water systems serving fewer than 10,000 individuals and using chlorine dioxide as a disinfectant or oxidant and systems using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004.

2-002.04F3 The Department hereby identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum residual disinfectant levels identified in 179 NAC 2-002.04F1: control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels.

2-002.05 Treatment Techniques

2-002.05A The requirements of 179 NAC 2-002.05 establish treatment techniques in lieu of maximum contaminant levels for specified contaminants.

2-002.05B Treatment Techniques for Acrylamide and Epichlorohydrin: Each public water system owner must certify annually in writing to the Director (using third party or manufacturer's certification) that when acrylamide and

epichlorohydrin are used in drinking water systems, the combination (or product) of dose and monomer level does not exceed the levels specified as follows. Certifications can rely on manufacturers or third parties, as approved by the Director.

2-002.05B1 Acrylamide = 0.05% dosed at 1 ppm (or equivalent)

2-002.05B2 Epichlorohydrin = 0.01% dosed at 20 ppm (or equivalent)

2-002.06 BAT (Best Available Technology): The Director hereby identifies as indicated in the table below granular activated carbon (GAC), packed tower aeration (PTA), or oxidation (OX) as the best technology treatment technique, or other means available for achieving compliance with the maximum contaminant level for organic contaminants identified in 179 NAC 2-002.04B1 and 2-002.04B2.

BAT FOR CONTAMINANTS LISTED IN 179 NAC 2-002.04B1 and 2-002.04B2

CAS NO.	Contaminant	GAC	PTA	OX
15972-60-8	Alachlor	X	--	--
116-06-3	Aldicarb	X	--	--
1646-88-4	Aldicarb sulfone	X	--	--
1646-87-3	Aldicarb sulfoxide	X	--	--
1912-24-9	Atrazine	X	--	--
71-43-2	Benzene	X	X	--
1563-66-2	Carbofuran	X	--	--
56-23-5	Carbon tetrachloride	X	X	--
57-74-9	Chlordane	X	--	--
75-99-0	Dalapon	X	--	--
94-75-7	2,4-D	X	--	--
103-23-1	Di(2-ethylhexyl)adipate	X	X	--
117-81-7	Di(2-ethylhexyl)phthalate	X	--	--
96-12-8	Dibromochloropropane (DBCP)	X	X	--
95-50-1	o-Dichlorobenzene	X	X	--
106-46-7	para-Dichlorobenzene	X	X	--
CAS NO.	Contaminant	GAC	PTA	OX
107-06-2	1,2-Dichloroethane	X	X	--
75-35-4	1,1-Dichloroethylene	X	X	--
156-59-2	cis-1,2-Dichloroethylene	X	X	--

156-60-5	trans-1,2-Dichloroethylene	X	X	--
75-09-2	Dichloromethane	--	X	--
78-87-5	1,2-Dichloropropane	X	X	--
88-85-7	Dinoseb	X	--	--
72-20-8	Endrin	X	--	--
100-41-4	Ethylbenzene	X	X	--
106-93-4	Ethylene Dibromide (EDB)	X	X	--
1071-83-6	Glyphosate	--	--	X
76-44-8	Heptachlor	X	--	--
1024-57-3	Heptachlor epoxide	X	--	--
118-74-1	Hexachlorobenzene	X	--	--
77-47-3	Hexachlorocyclopentadiene	X	X	--
58-89-9	Lindane	X	--	--
72-43-5	Methoxychlor	X	--	--
108-90-7	Monochlorobenzene	X	X	--
23135-22-0	Oxamyl (Vydate)	X	--	--
87-86-5	Pentachlorophenol	X	--	--
1918-02-1	Picloram	X	--	--
1336-36-3	Polychlorinated biphenyls (PCB)	X	--	--
122-34-9	Simazine	X	--	--
100-42-5	Styrene	X	X	--
1746-01-6	2,3,7,8-TCDD (Dioxin)	X	--	--
127-18-4	Tetrachloroethylene	X	X	--
CAS NO.	Contaminant	GAC	PTA	OX
108-88-3	Toluene	X	X	--
8001-35-2	Toxaphene	X	--	--
93-72-1	2,4,5-TP (Silvex)	X	--	--
120-82-1	1,2,4-Trichlorobenzene	X	X	--
71-55-6	1,1,1-Trichloroethane	X	X	--
79-00-5	1,1,2-Trichloroethane	X	X	--
79-01-6	Trichloroethylene	X	X	--
75-01-4	Vinyl chloride	--	X	--
1330-20-7	Xylene	X	X	--

2-002.07 BAT FOR INORGANIC COMPOUNDS LISTED IN 179 NAC 2-002.04A (EXCEPT FLUORIDE)

BATs FOR INORGANIC COMPOUNDS

Chemical Name	BAT(s)
Antimony	2,7
Asbestos	2,3,8
Arsenic ⁴	1,2,5,6,7,9,12 ^{5,6}
Barium	5,6,7,9
Beryllium	1,2,5,6,7
Cadmium	2,5,6,7
Chromium	2,5,6 ² ,7
Cyanide	5,7,13
Mercury	2 ¹ ,4,6 ¹ ,7 ¹
Nickel	5,6,7
Nitrate	5,7,9
Nitrite	5,7
Selenium	1,2 ³ ,6,7,9
Thallium	1,5

¹ BAT only if influent Hg concentrations < 10mg/L.

² BAT for Chromium III only.

³ BAT for Selenium IV only.

⁴ BAT 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 Effective for the purpose of compliance on January 23, 2006.

Key to BATS in Table

1 = Activated Alumina

2 = Coagulation/Filtration (not BAT for systems <500 service connections)

3 = Direct and Diatomite Filtration

4 = Granular Activated Carbon

5 = Ion Exchange

6 = Lime Softening (not BAT for systems <500 service connections)

7 = Reverse Osmosis

8 = Corrosion Control

9 = Electrodialysis

10 = Chlorine

11 = Ultraviolet

12 = Oxidation/Filtration

13 = Alkaline Chlorination (pH > 8.5)

2-002.08 Best Available Technologies (BATs) for Radionuclides: The Director hereby identifies as indicated in the following table the best technology available for achieving compliance with the maximum contaminant levels for

combined radium-226 and -228, uranium, gross alpha particle activity, and beta particle and photon radioactivity.

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

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

2-002.09 Small Systems Compliance Technologies List for Radionuclides

LIST OF SMALL SYSTEMS COMPLIANCE TECHNOLOGIES FOR RADIONUCLIDES AND LIMITATIONS TO USE

Unit Technologies	Limitations (See Footnotes)	Operator Skill Level Required¹	Raw Water Quality Range and Considerations¹
1. Ion exchange (IE)	a	Intermediate	All ground waters
2. Point of use (POU ²) IE	b	Basic	All ground waters
Unit Technologies	Limitations (See Footnotes)	Operator Skill Level Required¹	Raw Water Quality Range and Considerations¹
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/	---	Basic to Intermediate	All ground waters

electrodialysis reversal			
9. Pre-formed hydrous manganese oxide filtration	g	Intermediate	All ground waters
10. Activated alumina	a, h	Advanced	All ground waters; competing anion concentrations may affect regeneration frequency
11. Enhanced coagulation/filtration	i	Advanced	Can treat a wide range of water qualities

¹ National Research Council (NRC), Safe Water from Every Tap: Improving Water Service to Small Communities. National Academy Press. Washington, D.C. 1997.

² A POU, or “point-of-use” technology is a treatment device installed at a single tap used for the purpose of reducing contaminants in drinking water at that one tap. POU devices are typically installed at the kitchen tap. See the April 21, 2000 Federal Register Notice of Data Availability (NODA) at <http://www.epa.gov/safewater/radws/frnoda.pdf> for more details.

Limitations Footnotes: Technologies for Radionuclides

^a The regeneration solution contains high concentrations of the contaminant ions. Disposal options should be carefully considered before choosing this technology.

^b When POU devices are used for compliance, programs for long-term operation, maintenance, and monitoring must be provided by water utility to ensure proper performance.

^c Reject water disposal options should be carefully considered before choosing this technology. See other RO limitations described in the SWTR compliance technologies table.

^d The combination of variable source water quality and the complexity of the water chemistry involved may make this technology too complex for small surface water systems.

^e Removal efficiencies can vary depending on water quality.

^f This technology may be very limited in application to small systems. Since the process requires static mixing, detention basins, and filtration, it is most applicable to systems with sufficiently high sulfate levels that already have a suitable filtration treatment train in place.

^g This technology is most applicable to small systems that already have filtration in place.

^h Handling of chemicals required during regeneration and pH adjustment may

be too difficult for small systems without an adequately trained operator.

ⁱ Assumes modification to a coagulation/filtration process already in place.

2-002.10 Small System Compliance Technologies (SSCTs) for Arsenic: The Director identifies in the following table the affordable technology, treatment technique, or other means available to systems serving 10,000 individuals or fewer for achieving compliance with the maximum contaminant level for arsenic effective for the purpose of compliance as of January 23, 2006:

SMALL SYSTEM COMPLIANCE TECHNOLOGIES (SSCTs)¹ FOR ARSENIC²

Small system compliance technology	Affordable for listed small system categories³
Activated Alumina (centralized)	All size categories
Activated Alumina (Point-of-use) ⁴	All size categories
Coagulation/Filtration ⁵	501-3,300, 3,301-10,000
Coagulation-assisted Microfiltration	501-3,300, 3,301-10,000
Electrodialysis reversal ⁶	501-3,300, 3,301-10,000
Enhanced coagulation/filtration	All size categories
Enhanced lime softening (pH>10.5)	All size categories
Ion Exchange	All size categories
Lime Softening ⁵	501-3,300, 3,301-10,000
Oxidation/Filtration ⁷	All size categories
Reverse Osmosis (centralized) ⁶	501-3,300, 3,301-10,000
Reverse Osmosis (Point-of-Use) ⁴	All size categories

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

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

³ The federal SDWA specifies three categories of small systems: (i) those serving 25 or more, but fewer than 501, (ii) those serving more than 500, but fewer than 3,301, and (iii) those serving more than 3,300, but fewer than 10,001.

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

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

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

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

2-002.11 Compliance Technologies by System Size Category for Radionuclide Drinking Water Standards

COMPLIANCE TECHNOLOGIES BY SYSTEM SIZE CATEGORY FOR RADIONUCLIDE DRINKING WATER STANDARDS

Contaminant	Compliance technologies ¹ for system size categories (population served)		
	25-500	501-3,300	3,300-10,000
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
Gross alpha particle activity	3,4	3,4	3,4
Beta particle activity and photon activity	1,2,3,4	1,2,3,4	1,2,3,4
Uranium	1,2,4,10,11	1,2,3,4,5,10,11	1,2,3,4,5,10,11

¹ Note: Numbers correspond to those technologies found listed in the unit technologies column in the table in 179 NAC 2-002.09.

Section 015 Capacity Development For New Systems

015 Scope. This section applies to all new community and new non-transient non-community public water supply systems; except for systems that were in existence prior to October 1, 1999, and do not expand their infrastructure, but expand by population only to become a public water supply.

015.01 Meet Technical, Managerial and Financial Capacity Requirements. New public water supply systems applying for a permit to operate the system after October 1, 1999, shall show, as part of their application, that the public water supply system will meet the minimum technical, managerial, and financial capacity requirements of this rule. No permit to operate the system will be issued until the requirements of this section and section 009, Permit for Operating a Public Water Supply System, are met.

015.02 Demonstration of Technical, Financial, and Managerial Capacity of Public Water Supply Systems

015.02A Minimum technical capacity requirements shall include the following:

015.02A1 Conformance to the requirements stated in section 007, Siting, Design, and Construction of Public Water Supply Systems;

015.02A2 Certified water operator(s) as required in section 010, Operator Certification;

015.02A3 A current water system map; and

015.02A4 Installation of a service meter on each service connection.

015.03 Minimum financial capacity shall include the following:

015.03A Documentation that organization and financial arrangements are in place to construct and operate the public water system in accordance with these rules. This information can be provided by submitting estimated construction, operation, and maintenance costs; and

015.03B Presentation of a proposed water rate or revenue structure sufficient to cover operating, maintenance and capital costs. A preliminary operating budget and capital budget shall be provided.

015.04 Minimum managerial capacity shall include the following:

015.04A Provision of a clear statement of legal ownership and any plans that may exist for transfer of that ownership on completion of construction or after a period of operation;

015.04B The name, address, and telephone number of the person(s), other than the water system operator(s), designated and authorized to respond to issues of the water system's compliance with these rules;

015.04C The name, address, and telephone number of the system operator(s);

015.04D A description of the staffing and chain of command shall be provided to include the name, address and telephone number of the person(s) responsible for the system's interaction with customers, regulators, and other entities such as technical assistance providers and financial assistance providers, as appropriate.

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 3 - MONITORING AND ANALYTICAL REQUIREMENTS

3-001 SCOPE AND AUTHORITY: These regulations govern the monitoring and analytical requirements of public water systems. The statutory authority is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

3-002 DEFINITIONS

Code of Federal Regulations (CFR) means the Code of Federal Regulations as it existed on the effective date of these regulations, and any CFR citations mentioned in these regulations are hereby incorporated by reference. Copies of the CFR as it existed on the effective date of these regulations can be obtained on the DHHS website at http://dhhs.ne.gov/publichealth/Pages/enh_pwsindex.aspx or by requesting a copy via email from the Department at: DHHS.drinkingwater@nebraska.gov or by calling 402-471-2541.

Compliance cycle means the nine-year calendar year cycle during which public water systems must monitor. Each compliance cycle consists of three three-year compliance periods. The first calendar year cycle began January 1, 1993 and ended December 31, 2001; the second began January 1, 2002 and ended December 31, 2010; the third began January 1, 2011 and ends December 31, 2019.

Compliance period means a three-year calendar year period within a compliance cycle. Each compliance cycle has three three-year compliance periods. Within the first compliance cycle, the first compliance period ran 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.

Department means the Division of Public Health of the Department of Health and Human Services.

Director means the Director of Public Health of the Division of Public Health or his/her authorized representative.

Ground water under the direct influence of surface water means 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* or *Cryptosporidium*, or significant and 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 Department. The Department 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 as described in 179 NAC 13 Attachment 2.

Initial compliance period means the three-year compliance period which ended December 31, 1995 except as follows. For the contaminants listed in 179 NAC 2-

002.04A(1), (5), (8), (11), (17); and in 2-002.04B1 (19), (20), (21); and in 2-002.04B2(19) to (33); the initial compliance period means the three-year compliance period which began January 1, 1993 and ended December 31, 1995 for systems with 150 or more service connections, and means the three-year compliance period which began January 1, 1996 and ended December 31, 1998 for systems having fewer than 150 service connections.

3-003 GENERAL: The owners of public water systems are responsible for accomplishing monitoring requirements as demonstrated by possession of an official copy of laboratory results. The Director will establish schedules for sampling. Samples will be examined at timed intervals and on schedules designed to meet monitoring requirements and maintain a uniform laboratory work load. The owner of each public water system will be informed of this schedule and, if for any reason the schedule is not met, will be responsible for initiating arrangements for an alternate date to effect compliance with established monitoring requirements. The arrangements must be timed to provide the required number of samples within the designated sample period used to determine compliance with these regulations. All sample analyses needed to meet monitoring requirements of 179 NAC 3, unless otherwise stated, must be examined by the Department Laboratory or a laboratory which has entered into an agreement with the Department pursuant to 179 NAC 3-009.

3-004 COLIFORM SAMPLING: The provisions of 179 NAC 3-004.01 and 3-004.04 are applicable through March 31, 2016. The provisions of 179 NAC 3-004.02, 3-004.03, 3-004.05, 3-004.06, and 3-004.07 are applicable until all required repeat monitoring under 179 NAC 3-004.02 and fecal coliform or E. coli testing under 179 NAC 3-004.05 that was initiated by a total coliform-positive sample taken before April 1, 2016 is completed, as well as analytical method, reporting, recordkeeping, public notification, and consumer confidence report requirements associated with that monitoring and testing. Beginning April 1, 2016, the provisions of 179 NAC 26 are applicable, with systems required to begin regular monitoring at the same frequency as the system-specific frequency required on March 31, 2016.

3-004.01 Routine Monitoring

3-004.01A The owners of public water systems must collect total coliform samples at sites which are representative of water throughout the distribution systems according to a written sample site plan. These plans are subject to review and revision by the Director. All biological samples must be mailed to the assigned laboratory through the U.S. Postal Service, with the owner paying the postage, unless the Director authorizes other means of transportation. The sample site plan must consist of sampling points at sites scattered throughout various zones of the distribution system. Each plan must provide for at least five sampling sites in each zone and there must be as many zones as the number of routine total coliform samples required each month up to 16 zones. Systems which are required to collect more than 16 samples per month may elect to have more than 16 zones, but it is not required. A map of the area served by the public water system, showing the distribution system and the boundaries of the various zones, labeled

numerically, must be included in the plan. A list of all sampling sites, by name and address (or by a readily identifiable location) for each zone must be included with the map and, except for supplies having only one zone, the location of the sites need not be indicated on the map. All zones must be sampled monthly. The actual sites used within each zone must be varied on a scheduled rotation basis. Both the zone number and the site location must be noted on the laboratory report form by the person taking the sample. The owner of each community water systems (CWS) must update the system's sample site plan annually. The Director, at any time, may require a plan be modified as a result of population or system changes which may have rendered an existing plan non-representative.

3-004.01B The owner of a community water system must take total coliform samples at regular time intervals established by the Director. The number of samples required must in no instance be less than as set forth below:

Population Served	Number of Sampling Zones	Minimum # or Samples per Month	Population Served	Minimum # of Sampling Zones	Minimum # of Samples per Month
25-1,000	1	1	33,001-41,000	16	40
1,001-2,500	2	2	41,001-50,000	16	50
2,501-3,300	3	3	50,001-59,000	16	60
3,301-4,100	4	4	59,001-70,000	16	70
4,101-4,900	5	5	70,001-83,000	16	80
4,901-5,800	6	6	83,001-96,000	16	90
5,801-6,700	7	7	96,001-130,000	16	100
6,701-7,600	8	8	130,001-220,000	16	120
7,601-8,500	9	9	220,001-320,000	16	150
8,501-12,900	10	10	320,001-450,000	16	180
12,901-17,200	15	15	450,001-600,000	16	210
17,201-21,500	16*	20	600,001-780,000	16	240
21,501-25,000	16*	25	780,001-970,000	16	270
25,001-33,000	16*	30	970,001-1,230,000	16	300

* Minimum Number of Sampling Zones

3-004.01C The owner of a non-community water system must take samples for total coliforms according to a frequency as follows:

1. A non-community water system using only ground water (except ground water under the direct influence of surface water) and serving 1,000 individuals or fewer must sample each calendar

quarter that the system provides water to the public.

2. A non-community water system using only ground water (except ground water under the direct influence of surface water) and serving more than 1,000 individuals during any month must sample at the same frequency as a like-sized community water system, as specified in 179 NAC 3-004.01B.

3. The owner of a non-community water system using surface water, in total or in part, must sample at the same frequency as a like-sized community water system, as specified in 179 NAC 3-004.01B, regardless of the number of individuals it serves.

4. The owner of a non-community water system using ground water under the direct influence of surface water, must sample at the same frequency as a like-sized community water system, as specified in 179 NAC 3-004.01B. The owner must sample at this frequency beginning six months after the Director determines that the ground water is under the direct influence of surface water.

3-004.01D The owner of a public water system must collect samples at regular time intervals throughout the month.

3-004.01E The owner of 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 179 NAC 13 must collect at least one sample near the first service connection each day the turbidity level of the source water, measured as specified in 179 NAC 13-007.02B exceeds 1 NTU. The owner must collect this coliform sample within 24 hours of the first exceedance. Sample results from this coliform monitoring must be included in determining compliance with the maximum contaminant level (MCL) for total coliforms in 179 NAC 2-002.04C.

3-004.01F 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 compliance with the MCL for total coliforms in 179 NAC 2-002.04C. Repeat samples taken pursuant to 179 NAC 3-004.02 are not considered special purpose samples, and must be used to determine compliance with the MCL for total coliforms in 179 NAC 2-002.04C.

3-004.02 Repeat Monitoring

3-004.02A If a routine sample is total coliform-positive, the owner of the public water system must collect a set of repeat samples within 24 hours of being notified of the positive result. A system which is required to collect more than one routine sample per month must have no fewer than three repeat samples collected for each total coliform-positive sample found. A system which is required to collect one routine sample per month or fewer must have no fewer than four repeat samples collected for each total coliform-positive sample found. The Director may

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

3-004.02B The system owner 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. The fourth repeat sample, if required by 179 NAC 3-004.02A, must be collected within five service connections upstream or downstream of the original sampling site. If a total coliform-positive sample is at the end of the distribution system, or one away from the end of the distribution system, the Director may waive the requirement to collect at least one repeat sample upstream or downstream of the original sampling site.

3-004.02C The owner must collect all repeat samples on the same day, except that an owner of a system with a single service connection may collect the required set of repeat samples over a four-day period.

3-004.02D If one or more repeat samples in the set is total coliform-positive, the owner of the public water system must collect an additional set of repeat samples in the manner specified in 179 NAC 3-004.02A to 3-004.02C. The owner must repeat this process until either total coliforms are not detected in one complete set of repeat samples or the MCL for total coliforms in 179 NAC 2-002.04C has been exceeded and the Director determines that no additional repeat samples are required.

3-004.02E If a system which is required to collect fewer than five routine samples per month has one or more total coliform-positive samples and the Director does not invalidate the sample(s) under 179 NAC 3-004.03, the owner must collect at least five routine samples during the next month the system provides water to the public, except that the Director may waive this requirement if the conditions of 179 NAC 3-004.02E1 or 3-004.02E2 are met. The Director will not waive the requirement for a system to collect repeat samples in 179 NAC 3-004.02A to 3-004.02D.

3-004.02E1 The Director may waive the requirement to collect five routine samples the next month 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 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 will not approve an employee of the system owner to perform this site visit, even if the employee is an agent approved by the Director to perform sanitary surveys.

3-004.02E2 The Director may waive the requirement to collect five routine samples the next month the system provides water to the public if the Director has determined why the sample was total coliform-positive and establishes that the owner of the system will correct the problem before the end of the next month 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 Director's authorized representative who recommends such a decision, and make this document available to the United States Environmental Protection Agency (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. The Director will not 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. If the requirement to collect five routine samples the next month is waived under 179 NAC 3-004.02E2, the system owner must still take at least one additional routine sample before the end of the next month the system serves water to the public and use it to determine compliance with the MCL for total coliforms in 179 NAC 2-002.04C.

3-004.02E3 The Director will consider the waiver of the requirement to collect five routine samples the next month only upon receipt of a request in writing from the system owner. The waiver will not be considered until after the repeat samples required in 179 NAC 3-004.02A to 3-004.02D have been collected and the results reported to the Director. The waiver will not be granted if any of the repeat samples are coliform-positive, unless all positive samples have been invalidated under 179 NAC 3-004.03, or if a similar waiver has been granted within the six months previous to the date of the collection of the initial coliform positive sample.

3-004.02F 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 179 NAC 2-002.04C.

3-004.03 Invalidation of Total Coliform Samples: A total coliform-positive sample invalidated under 179 NAC 3-004.03 does not count towards meeting the minimum monitoring requirements of 179 NAC 3-004.01. If a total coliform-positive sample is invalidated under 179 NAC 3-004.03, the system owner must collect another sample from the same zone as the original sample to meet monitoring requirements.

3-004.03A The Director may invalidate a total coliform-positive sample only if one or more of the following conditions are met:

1. The laboratory establishes that improper sample analysis caused the total coliform-positive result.

2. The Director, on the basis of the results of repeat samples collected as required by 179 NAC 3-004.02A to 3-004.02D determines that the total coliform-positive sample resulted from a domestic or other non-distribution system plumbing problem. The Director will not invalidate a sample on the basis of repeat sample results unless all repeat sample(s) collected at the same tap as the original total coliform-positive sample are also total coliform-positive, and all repeat samples collected within five service connections of the original tap are total coliform-negative (e.g., the Director will not invalidate a total coliform-positive sample on the basis of repeat samples if all the repeat samples are total coliform-negative or if the public water system has only one service connection).

3. 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 owner must still collect all repeat samples required under 179 NAC 3-004.02A to 3-004.02D and use them to determine compliance with the MCL for total coliforms in 179 NAC 2-002.04C. To invalidate a total coliform-positive sample under 179 NAC 3-004.03A item 3, the decision with the rationale for the decision must be documented in writing and approved and signed by the Director's authorized representative. 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 will not invalidate a total coliform-positive sample solely on the grounds that all repeat samples are total coliform-negative.

4. The Director will consider invalidation of a coliform-positive sample under 179 NAC 3-004.03 only upon receipt of a request in writing from the owner of the public water system from which the coliform-positive sample was collected. Such sample will not be invalidated if any of the repeat samples collected at locations other than that of the coliform-positive sample are coliform-positive. No coliform-positive sample will be invalidated if any of the most recent six samples collected from the system were coliform-positive.

3-004.03B 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 owner 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 owner must continue to re-sample within 24 hours and have the samples analyzed until a valid result is obtained. The Director may waive the 24-hour time limit on a case-by-case basis.

3-004.04 Sanitary Surveys

3-004.04A Public water systems which do not collect five or more routine samples per month must undergo an initial sanitary survey by June 29, 1994, for community public water systems and June 29, 1999, for non-community systems. Thereafter, systems must undergo another sanitary survey every five years, except that non-community water systems using only disinfected ground water and wells which have been constructed in accordance with and continue to meet the siting requirements of 179 NAC 7, must undergo subsequent sanitary surveys at least every ten years after the initial sanitary survey.

3-004.04B Sanitary surveys must be performed by Department personnel or an agent approved by the Department. The system is responsible for ensuring the survey takes place.

3-004.04C Sanitary surveys conducted by the Department under 179 NAC 8-004 may be used to meet the sanitary survey requirements of 179 NAC 3-004.04.

3-004.05 Fecal Coliforms/Escherichia coli (E. coli) Testing

3-004.05A If any routine or repeat sample is total coliform-positive, that total coliform-positive culture medium must be analyzed to determine if fecal coliforms are present, except that E. coli may be tested for in lieu of fecal coliforms. If fecal coliforms or E. coli are present in samples analyzed by a laboratory other than the Department Laboratory, the system owner must notify the Director by the end of the day when the system owner is notified of the test result, unless the system owner is notified of the result after the Director's office is closed, in which case the system owner must notify the Director before the end of the next business day.

3-004.05B The Director has the discretion to allow the owner of 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 the owner assumes that the total coliform-positive sample is fecal-coliform-positive or E. coli-positive. Accordingly, the owner must notify the Director as specified in 179 NAC 3-004.05A and the provisions of 179 NAC 2-002.04C2 apply.

3-004.06 Analytical Methodology

3-004.06A The standard sample volume required for total coliform analysis, regardless of analytical method used, is 100 ml.

3-004.06B Public water systems need only determine the presence or absence of total coliforms; a determination of total coliform density is not required.

3-004.06C Public water systems must conduct total coliform analyses in accordance with one of the analytical methods in 40 CFR 141.21(f)(5).

3-004.06D Public water systems must conduct fecal coliform analysis in accordance with 40 CFR 141.21(f)(5).

3-004.06E Public water systems must conduct analysis of Escherichia coli in accordance with one of the analytical methods found in 40 CFR 141.21(f)(6) and 141.21(f)(7).

3-004.07 Response to Violation

3-004.07A A public water system which has exceeded the MCL for total coliforms in 179 NAC 2-002.04C must report the violation to the Department no later than the end of the next business day after it learns of the violation, and notify the public in accordance with 179 NAC 4.

3-004.07B A public water system which has failed to comply with a coliform monitoring requirement, including the sanitary survey requirement, must report the monitoring violation to the Department within ten days after the system discovers the violation, and notify the public in accordance with 179 NAC 4.

3-005 INORGANIC CHEMICAL SAMPLING AND ANALYTICAL

REQUIREMENTS: Community water systems and non-transient, non-community water systems must conduct monitoring to determine compliance with the maximum contaminant levels specified in 179 NAC 2-002.04A in accordance with 179 NAC 3-005. Transient, non-community water systems must conduct monitoring to determine compliance with the nitrate and nitrite maximum contaminant levels in 179 NAC 2-002.04A (12), (13), and (14) in accordance with 179 NAC 3-005. Monitoring must be conducted as follows.

3-005.01 Sampling Sites and Protocol

1. Ground Water Sources: Ground water sources must be monitored at every entry point to the distribution system which is representative of each ground water source after treatment (hereafter called a sampling point or entry point). The system owner must 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 Sources: Surface water sources must be monitored at every entry point to the distribution system after any application of treatment or in the distribution system at a point which is representative of each source after treatment (hereafter called a sampling point or entry point). The system owner must take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

NOTE: For the purpose of 179 NAC 3-005.01 item 2, surface water systems include systems with a combination of surface and ground

sources.

3. Multiple Sources: If a system draws water from more than one source and the sources are combined before distribution, the system owner must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water is representative of all sources being used).

4. Composite Sampling: The Director may reduce the total number of samples which must be analyzed by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed. Compositing of samples must be done in the laboratory.

a. If the concentration in the composite sample is greater than or equal to the detection limit of any inorganic chemical, then a follow-up sample must be analyzed within 14 days from each sampling point included in the composite. These samples must be analyzed for the contaminants which were detected in the composite sample. Detection limits for each analytical method are the following:

DETECTION LIMITS FOR INORGANIC CONTAMINANTS

Contaminant	MCL (mg/L)	Methodology
Antimony	0.006	Atomic Absorption; Furnace Atomic Absorption; Platform ICP-Mass Spectrometry
Arsenic	0.010 ⁶	Hydride- Atomic Absorption; Atomic Absorption; Furnace Atomic Absorption; Platform Stabilized Temperature
Asbestos	7 MFL ¹	Atomic Absorption; Gaseous Hydride ICP-Mass Spectrometry
Barium	2	Transmission Electron Microscopy Atomic Absorption; furnace technique Atomic Absorption; direct aspiration
Beryllium	0.004	Inductively Coupled Plasma (0.001) Atomic Absorption; Furnace Atomic Absorption; Platform Inductively Coupled Plasma ² ICP-Mass Spectrometry
Cadmium	0.005	Atomic Absorption; furnace technique Inductively Coupled Plasma
Chromium	0.1	Atomic Absorption; furnace technique Inductively Coupled Plasma
Cyanide	0.2	Distillation, (0.001) 0.007 0.02

		Spectrophotometric ³	
		Distillation, Automated,	0.005
		Spectrophotometric ³	
		Distillation, Selective	0.05
		Electrode ^{3,4}	
		Distillation, Amenable,	0.02
		Spectrophotometric ⁴	
		UV, Distillation,	0.0005
		Spectrophotometric ⁹	
		Micro Distillation, Flow Injection,	
		Spectrophotometric ³	0.0006
		Ligand Exchange with	
		Amperometry ⁴	0.0005
Mercury	0.002	Manual Cold Vapor Technique	0.0002
		Automated Cold Vapor	0.0002
		Technique	
Nickel	xl	Atomic Absorption; Furnace	0.001
		Atomic Absorption; Platform	0.0006 ⁵
		Inductively Coupled Plasma ²	0.005
		ICP-Mass Spectrometry	0.0005
Nitrate	10 (as N)	Manual Cadmium Reduction	0.01
		Automated Hydrazine Reduction	0.01
		Automated Cadmium Reduction	0.05
		Ion Selective Electrode	1
		Ion Chromatography	0.01
Nitrite	1 (as N)	Capillary Ion Electrophoresis	0.076
		Spectrophotometric	0.01
		Automated Cadmium Reduction	0.05
		Manual Cadmium Reduction	0.01
		Ion Chromatography	0.004
		Capillary Ion Electrophoresis	0.103
Selenium	0.05	Atomic Absorption; furnace	0.002
		Atomic Absorption; gaseous	0.002
		hydride	
Thallium	0.002	Atomic Absorption; Furnace	0.001
		Atomic Absorption; Platform	0.0007 ⁵
		ICP-Mass Spectrometry	0.0003

¹ MFL = million fibers per liter >10 µm.

² Using a 2X preconcentration step as noted in Method 200.7. Lower MDLs may be achieved when using a 4X preconcentration.

³ Screening method for total cyanides.

⁴ Measures "free" cyanides when distillation, digestion, or ligand exchange is omitted.

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 an MDL of 0.0001 mg/L. ⁸ Using selective ion

monitoring, EPA Method 200.8 (ICP-MS) is capable of obtaining an MDL of 0.0001 mg/L.

⁹ Measures total cyanides when UV-digester is used, and “free” cyanides when UV-digester is bypassed.

b. If the population served by the system is greater than 3,300 individuals, then compositing may only be permitted by the Director at sampling points within a single system. In systems serving less than or equal to 3,300 individuals, the Director may permit compositing among different systems provided the five-sample limit is maintained.

c. If duplicates of the original sample taken from each sampling point used in the composite are available, the system owner may use these instead of resampling. The duplicates must be analyzed and the results reported to the Director within 14 days of collection.

3-005.02 Asbestos Sampling: The frequency of monitoring conducted to determine compliance with the maximum contaminant level for asbestos must be conducted as follows:

1. Each community and non-transient, non-community water system owner must monitor for asbestos during the first three-year compliance period of each nine-year compliance cycle beginning in the compliance period which ends December 31, 1995.

2. Waiver from Monitoring: If a system owner believes its water system is not vulnerable to either asbestos contamination in its source water or due to corrosion of asbestos-cement pipe, or both, it may apply to the Director for a waiver from the monitoring requirement in 179 NAC 3-005.02 item 1. If the Director grants the waiver, the system owner is not required to monitor.

3. Basis of an Asbestos Waiver: The director may grant a waiver based on a consideration of the following factors:

a. Potential asbestos contamination of the water source, and

b. The use of asbestos-cement pipe for finished water distribution and the corrosive nature of the water.

4. Effect of an Asbestos Waiver: A waiver remains in effect until the completion of the three-year compliance period. Systems not receiving a waiver must monitor in accordance with the provisions of 179 NAC 3-005.02 item 1.

5. Distribution System Vulnerable to Asbestos Contamination: A system vulnerable to asbestos contamination due solely to corrosion of asbestos-cement pipe must take one sample at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.

6. Source Water Vulnerable to Asbestos Contamination: A system vulnerable to asbestos contamination due solely to source water must monitor in accordance with the provisions of 179 NAC 3-005.01.

7. Combined Asbestos Vulnerability: A system vulnerable to asbestos contamination due both to its source water and corrosion of asbestos-cement pipe must take one sample at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.

8. Exceedance of the Asbestos MCL: A system which exceeds the maximum contaminant levels as determined in 179 NAC 3-005.01 item 4.a. must monitor quarterly beginning in the next quarter after the violation occurred.

9. Asbestos Reliably and Consistently Below the MCL: The Director may decrease the quarterly monitoring requirement to the frequency specified in 179 NAC 3-005.02 item 1 provided the Director has determined that the system is reliably and consistently below the maximum contaminant level. In no case will the Director make this determination unless a ground water system takes a minimum of two quarterly samples and a surface (or combined surface/ground) water system takes a minimum of four quarterly samples.

10. Grandfathered Asbestos Data: If monitoring data collected after January 1, 1990 are generally consistent with the requirements of 179 NAC 3-005.02, then the Director may allow systems to use that data to satisfy the monitoring requirement for the initial compliance period which ends December 31, 1995.

3-005.03 Monitoring for Inorganic Chemicals (Except Asbestos, Nitrate, and Nitrite): The frequency of monitoring conducted to determine compliance with the maximum contaminant levels in 179 NAC 2-002.04A for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium, and thallium is as follows.

1. Owners of ground water sources must take one sample at each sampling point during each compliance period. Owners of surface water sources or combined (surface/ground) must take one sample annually at each sampling point.

2. Monitoring Waivers: The owner of a system may apply to the Director for a waiver from the monitoring frequencies specified in 179 NAC 3-005.03 item 1.

3. Monitoring During a Waiver: As a condition of the waiver, the system owner must take a minimum of one sample while the waiver is effective. The term during which the waiver is effective must not exceed one compliance cycle (i.e., nine years).

4. Basis of a Waiver and Grandfathered Data: The Director may grant a waiver provided a surface water system has monitored annually for at least three years and a ground water system has monitored for a minimum of three rounds. (At least one sample must have been taken since January 1, 1990.) Owners of both surface and ground water systems must demonstrate that all previous analytical results were less than the maximum contaminant level. Systems that use a new water source are not eligible for a waiver until three rounds of monitoring from the new source have been completed.

5. In determining the appropriate reduced monitoring frequency, the Director will consider:

- a. Reported concentrations from all previous monitoring;
- b. The degree of variation in reported concentrations; and
- c. Other factors which may affect contaminant concentrations such as changes in ground water pumping rates, changes in the system's configuration, changes in the system's operating procedures, or changes in stream flows or characteristics.

6. A decision by the Director to grant a waiver will be made in writing and will set forth the basis for the determination. The determination may be initiated by the Director or upon an application by the public water system owner. The public water system owner must specify the basis for its request. The Director may review and, where appropriate, revise its determination of the appropriate monitoring frequency when the system owner submits new monitoring data or when other data relevant to the system's appropriate monitoring frequency become available.

7. Exceedance of an MCL: contaminant levels as calculated in 179 NAC 3-005.09 must monitor quarterly beginning in the next quarter after the violation occurred.

8. Entry points which exceed the maximum Reliably and Consistently Below the MCL: The Director may decrease the quarterly monitoring requirement to the frequencies specified in 179 NAC 3-005.03 items 1 and 2 provided it has determined that the system is reliably and consistently below the maximum contaminant level. In no case will the Director make this determination unless a ground water system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly samples.

9. All new systems or systems that use a new source of water that begin operation after January 22, 2004 must demonstrate compliance with the MCL within a period of time specified by the 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 must be conducted in accordance with the requirements in 179 NAC 3-005.

3-005.04 Monitoring Requirements for Nitrate: The owners of all public water systems (community; non-transient, non-community; and transient, non-community systems) must monitor to determine compliance with the maximum contaminant levels for nitrate.

3-005.04A Base Nitrate Sampling: Owners of community and non-transient, non-community water systems must monitor for nitrate as follows. Ground water entry points must be monitored annually beginning January 1, 1995 except as required in 179 NAC 3-005.04E; surface water entry points must be monitored quarterly beginning January 1, 1995.

3-005.04B Increased Nitrate Sampling Frequency: For community and non-transient non-community water systems; the monitoring frequency for ground water entry points must be quarterly following any one sample in which the concentration is greater than or equal to 5.0 milligrams per liter of nitrate as nitrogen. The monitoring frequency will reduce to annual after four consecutive quarterly samples are reliably and consistently less than the MCL except as required in 179 NAC 3-005.04E. In this case, annual monitoring must be done during the quarter which previously resulted in the highest analytical result.

3-005.04C Surface Water Reduced Nitrate Sampling Frequency: For community and non-transient, non-community water systems; the monitoring of surface water entry points will be reduced to annual if all analytical results from four consecutive quarters are less than 5.0 mg/L (as nitrogen) except as required in 179 NAC 3-005.04E. In this case, annual monitoring must be done during a quarter which previously resulted in the highest analytical result. Surface water entry points will return to quarterly monitoring if any one sample is greater than or equal to 5.0 mg/L (as nitrogen).

3-005.04D Nitrate Monitoring of Transient, Non-Community Systems: The owner of each transient, non-community water system must monitor annually for nitrate beginning January 1, 1995 except as required in 179 NAC 3-005.04E.

3-005.04E If water prior to treatment exceeds the nitrate MCL and the water is treated to reduce the nitrate concentration, then the owner of the treatment system, regardless of the type of system, must monitor the treated water on a quarterly basis.

3-005.05 Monitoring Requirements for Nitrite: The owners of all public water systems (community; non-transient, non-community; and transient, non-community systems) must monitor to determine compliance with the maximum contaminant level for nitrite in 179 NAC 2-002.04A.

1. Monitoring must be conducted at the same time and frequency as required for nitrate in 179 NAC 3-005.04 unless the requirement under 179 NAC 3-005.05 item 2 would cause monitoring to be more frequent than required under 179 NAC 3-005.04.

2. For community; non-transient, non-community; and transient, non-community water systems; the increased monitoring frequency for any entry point must be quarterly for at least one year following any one sample in which the concentration is greater than or equal to 0.5 mg/L nitrite (as nitrogen). The sampling frequency will reduce to annual after the Director has determined that the entry point is reliably and consistently below the MCL. In such case, each subsequent sample must be taken during the quarter which previously resulted in the highest nitrite result.

3-005.06 Confirmation Samples

3-005.06A Where the results of sampling for antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium, or thallium indicate an exceedance of the maximum contaminant level, the system owner must collect a confirmation sample at the same sampling point within two weeks of the system owner's receipt of notification of the analytical results of the first sample.

3-005.06B Where nitrate or nitrite sampling results indicate an exceedance of the maximum contaminant level, the system owner must take a confirmation sample within 24 hours of the system owner's receipt of notification of the analytical results of the first sample. System owners unable to comply with the 24-hour sampling requirement must immediately notify persons served by the public water system in accordance with 179 NAC 4-004 and meet other Tier 1 public notification requirements under 179 NAC 4. Systems exercising this option must take and analyze a confirmation sample within two weeks of notification of the analytical results of the first sample.

3-005.06C If a confirmation sample is taken for any contaminant as required by 179 NAC 3-005.06, then the results of the initial and confirmation sample will be averaged. The resulting average will be used to determine the system's compliance in accordance with 179 NAC 3-005.09. The Director has the discretion to delete results of obvious sampling errors.

3-005.07 Director's Designation of Increased Sampling Frequency: The Director may require more frequent monitoring than specified in 179 NAC 3-005.02 through 3-005.05 or may require confirmation samples for positive and negative results at his/her discretion.

3-005.08 Public water systems may apply to the Director to conduct more frequent monitoring than the minimum monitoring frequencies specified.

3-005.09 Compliance Calculations: Compliance with 179 NAC 2-002.04A must be determined based on the analytical result(s) obtained at each sampling point.

3-005.09A Sampling More Frequently Than Once Per Year: For entry points at which monitoring is conducted more frequently than once per year, compliance with the maximum contaminant levels for antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium, or thallium is determined by a running annual average at each sampling point. If the average at any sampling point is greater than the MCL, then the system is out of compliance. If any one sample would cause the annual average to be exceeded, then the system is out of compliance immediately. Any sample below the method detection limit will be calculated at zero for the purpose of determining the annual average. If a system fails to collect the required number of samples, compliance (average concentration) will be based on the total number of samples collected.

3-005.09B Sampling Once Per Year Or Less Frequently: For entry points at which monitoring is conducted annually or less frequently, the system is out of compliance with the maximum contaminant levels for antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium, or thallium if the level of a contaminant is greater than the MCL. If confirmation samples are required by the Director, the determination of compliance will be based on the annual average of the initial MCL exceedance and any Director required confirmation samples. If a system fails to collect the required number of samples, compliance (average concentration) will be based on the total number of samples collected.

3-005.09C Compliance Calculations for Nitrate and Nitrite: Compliance with the maximum contaminant levels for nitrate and nitrite is determined based on one sample if the levels of these contaminants are below the MCLs. If the levels of nitrate or nitrite exceed the MCLs in a sample, a confirmation sample is required in accordance with 179 NAC 3-005.06B, and compliance will be determined based on the average of the initial and confirmation samples. If a confirmation sample is not collected within two weeks, as required in 179 NAC 3-005.06B, the determination of compliance will be based on the one sample result.

3-005.09D Arsenic sampling results will be reported to the nearest 0.001 mg/L as of January 23, 2006.

3-005.10 State Designated Sampling Schedules: Each public water system owner must monitor at the time designated by the Director during each compliance period.

3-005.11 Analytical Methods for Inorganic Analysis

3-005.11A Analysis for inorganic contaminants must be done in accordance with 40 CFR 141.23(k).

3-005.11B Sample Collection for antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium, and thallium under 179 NAC 3-005.11 must be

conducted using the sample preservation, container, and maximum holding time procedures specified in the following table.

Contaminant	Preservative¹	Container²	Time³
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 Instructions 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 unacidified sample kept at 4°C is extended to 14 days.

⁶ Nitrate-Nitrite refers to a measurement of total nitrate.

3-005.11C Analysis under 179 NAC 3-005 must only be conducted by the Department Laboratory or other laboratories that have been approved by the Director in accordance with 179 NAC 3-009 and that have been certified by EPA or the Director. 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 samples which include those substances provided by EPA Environmental Monitoring Systems Laboratory or equivalent samples provided by the Director 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:

Contaminant Acceptance Limit

Antimony	± 30% at ≥0.006 mg/L
Arsenic	± 30% at ≥0.003 mg/L effective January 23, 2006
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
Nickel	± 15% at ≥0.01 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

3-005.12 If the result of an analysis made under 179 NAC 3-005 indicates that the level of arsenic exceeds the maximum contaminant level, the owner of the public water system must initiate three additional analyses at the sampling point within one month.

3-005.13 When the average of four analyses made pursuant to 179 NAC 3-005.12, rounded to the same number of significant figures as the maximum contaminant level for the substance in question, exceeds the maximum contaminant level, the owner of the system must notify the Department pursuant to 179 NAC 5 and give notice to the public pursuant to 179 NAC 4. Monitoring after public notification must be at a frequency designated by the Director and must continue until the maximum contaminant level has not been exceeded in two successive samples or until a monitoring schedule as a condition to a variance, exemption or enforcement action becomes effective.

3-005.14 The provisions of 179 NAC 3-005.12 and 3-005.13 notwithstanding, compliance with the maximum contaminant level for nitrate will be determined on the basis of the mean of two analyses. When a level exceeding the maximum contaminant level for nitrate is found, a second

analysis must be initiated within 24 hours, and if the mean of the two analyses exceeds the maximum contaminant level, the supplier of water must report his findings to the Department pursuant to 179 NAC 5 and must notify the public pursuant to 179 NAC 4.

3-006 MONITORING REQUIREMENTS FOR DISINFECTION BYPRODUCTS

3-006.01 Monitoring requirements for disinfection byproducts are specified in 179 NAC 16-005.

3-007 ORGANIC CHEMICALS OTHER THAN DISINFECTION BYPRODUCTS SAMPLING AND ANALYTICAL REQUIREMENTS

3-007.01 Analyses for the contaminants in 179 NAC 3-007 must be conducted using the methods found in 40 CFR 141.24(e).

3-007.02 Monitoring Requirements: Monitoring for the contaminants listed in 179 NAC 2-002.04B1 (VOC) for purposes of determining compliance with the maximum contaminant levels must be conducted as follows.

3-007.02A Ground Water Sources: Ground water sources must be monitored at every entry point to the distribution system which is representative of each ground water source after treatment (hereafter called a sampling point or entry point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.

3-007.02B Surface Water Sources: Surface water sources (or combined surface/ground water sources) must take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment (hereafter called a sampling point or entry point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.

3-007.02C Multiple Sources: If an entry point represents more than one source and the sources are combined before distribution, the system owner must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water representative of all sources is being used).

3-007.02D Monitoring Frequency: Each community and non-transient, non-community water system must take four consecutive quarterly samples for each contaminant listed in 179 NAC 2-002.04B during each compliance period, beginning in the initial compliance period.

3-007.02E If No Contaminant Is Detected: If the initial monitoring for contaminants listed in 179 NAC 2-002.04B1 (1) through (8) and the monitoring for the contaminants listed in 179 NAC 2-002.04B1 (9) through (21) was completed by December 31, 1992, and the system did

not detect any contaminant listed in 179 NAC 2-002.04B1 (1) through (21), then each ground and surface water system must take one sample annually beginning with the initial compliance period.

3-007.02F Reduced VOC Monitoring: After a minimum of three years of annual sampling, the Director may allow ground water systems with no previous detection of any contaminant listed in 179 NAC 2-002.04B1 to take one sample during each compliance period.

3-007.02G Waiver: The owner of each community and non-transient, non-community ground water entry point, at which no contaminant listed in 179 NAC 2-002.04B1 is detected, may apply to the Director for a waiver from the requirements of 179 NAC 3-007.02E and 3-007.02F after completing the initial monitoring. (For the purposes of 179 NAC 3-007.02G, detection is defined as ≥ 0.0005 mg/L.) A waiver will be effective for no more than six years (two compliance periods). The Director may also issue waivers to small systems for the initial round of monitoring for 1,2,4-trichlorobenzene.

3-007.02H Bases of a Sampling Waiver: The Director may grant a waiver after evaluating the following factor(s):

1. Knowledge of previous use (including transport, storage, or disposal) of the contaminant within the watershed or zone of influence of the system. If a determination by the Director reveals no previous use of the contaminant within the watershed or zone of influence, a waiver may be granted.
2. If previous use of the contaminant is unknown or it has been used previously, then the following factors must be used to determine whether a waiver is granted:
 - a. Previous analytical results;
 - b. The proximity of the sources for the entry point to a potential point or non-point source of contamination (point sources include spills and leaks of chemicals at or near a water treatment facility or at manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities);
 - c. The environmental persistence and transport of the contaminants;
 - d. The number of individuals served by the public water system and the proximity of a small system to a larger system;
 - e. How well the water source is protected against contamination, such as whether it is a surface or ground water system. (For ground water sources, the Director will consider factors such as depth of the well, the type of soil, and wellhead protection. For surface water sources, the Director will consider watershed

protection.)

3-007.02I As a condition of the waiver, the owner of a ground water system must take one sample at an entry point which received a waiver during the time the waiver is effective (i.e., one sample during two compliance periods or six years) and update its vulnerability assessment considering the factors listed in 179 NAC 3-007.02H. Based on this vulnerability assessment, the Director will reconfirm that the entry point is non-vulnerable. If the Director does not make this reconfirmation within three years of the initial determination, then the waiver is invalidated.

3-007.02J The owner of each community and non-transient, non-community surface water entry point, at which no contaminant listed in 179 NAC 2-002.04B1 is detected, may apply to the Director for a waiver from the requirements of 179 NAC

3-007.02E after monitoring at least one time. (For the purposes of this section, detection is defined as ≥ 0.0005 mg/L.) 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. Entry points meeting this criterion must be determined by the Director to be non-vulnerable based on a vulnerability assessment during each compliance period. Each system receiving a waiver must sample at the frequency specified by the Director (if any).

3-007.02K If a contaminant in 179 NAC 2-002.04B1 (1) through (21) is detected at a level exceeding 0.0005 mg/L in any sample, for the first time, then:

1. The owner of the system must monitor quarterly at each sampling point which resulted in a detection.
2. The Director may decrease the quarterly monitoring requirement specified in 179 NAC 3-007.02K item 1 provided it has determined that the system is reliably and consistently below the maximum contaminant level. In no case will the Director make this determination unless a ground water system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly samples.
3. If the Director determines that the system is reliably and consistently below the MCL, the Director may allow the system to monitor annually. Systems that monitor annually must monitor during the quarter(s) that previously yielded the highest analytical result.
4. Systems that have three consecutive annual samples with no detection of a contaminant may apply to the Director for a waiver as specified in 179 NAC 3-007.02G.

5. Vinyl Chloride Monitoring: Analysis for vinyl chloride is required only for ground water systems that have detected one or more of the following two-carbon organic compounds: Trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene. The analysis for vinyl chloride is required at each distribution or entry point at which one or more of the two-carbon organic compounds were found. If the first analysis does not detect vinyl chloride, the Director may reduce the frequency of vinyl chloride monitoring to one every three years for that sample location or other sample locations which are more representative of the same source. Surface water systems may be required to analyze for vinyl chloride at the discretion of the Director.

3-007.02L Entry points which violate the requirements of 179 NAC 2-002.04B1, as determined by 179 NAC 3-007.02O, must monitor quarterly. After a minimum of four consecutive quarterly samples which show the entry point is in compliance and the Director determines that the entry point is reliably and consistently below the maximum contaminant level, the owner of the entry point may monitor at the frequency and time specified in 179 NAC 3-007.02K item 3.

3-007.02M The Director may require confirmation samples for positive or negative results. If a confirmation sample(s) is required by the Director, then the sample result(s) must be averaged with the first sampling result and the average used for compliance determination in accordance with 179 NAC 3-007.02O. The Director has discretion to delete results of obvious sampling errors from this calculation.

3-007.02N Composite Samples: 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 is to be done in the laboratory by the procedures listed below. Samples must be analyzed within 14 days of collection.

1. If the concentration in the composite sample is greater than or equal to 0.0005 mg/L for any contaminant listed in 179 NAC 2-002.04B1, then a follow-up sample must be taken and analyzed within 14 days from each sampling point included in the composite.
2. If duplicates of the original sample taken from each sampling point used in the composite are available, the system owner may use these duplicates instead of resampling. The duplicate must be analyzed within 14 days of collection.
3. If the population served by the system is greater than 3,300 individuals, then compositing may only be permitted at sampling points within a single system. In systems serving less than or equal to 3,300 individuals, compositing among different systems is allowed

provided the 5-sample limit is maintained.

4. Compositing Samples prior to GC Analysis

- a. Add 5 ml or equal larger amounts of each sample (up to 5 samples are allowed) to a 25 ml glass syringe. Special precautions must be made to maintain zero headspace in the syringe.
- b. The samples must be cooled at 4°C during this step to minimize volatilization losses.
- c. Mix well and draw out a 5-ml aliquot for analysis.
- d. Follow sample introduction, purging and desorption steps described in the method.
- e. If less than five samples are used for compositing, a proportionately smaller syringe may be used.

5. Compositing Samples Prior to GC/MS Analysis

- a. Inject 5-ml or equal larger amounts of each aqueous sample (up to 5 samples are allowed) into a 25-ml purging device using the sample introduction technique described in the method.
- b. The total volume of the sample in the purging device must be 25 ml.
- c. Purge and desorb as described in the method.

3-007.020 Compliance Calculations: Compliance with the MCL in 179 NAC 2-002.04B1 will 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 systems monitoring more than once per year, compliance with the MCL is determined by a running annual average at each sampling point.
2. 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.
3. If any sample result will cause the running annual average to exceed the MCL at any sampling point, the system is out of compliance with the MCL immediately.
4. If a system fails to collect the required number of samples, compliance will be based on the total number of samples collected.

5. If a sample result is less than the detection limit, zero will be used to calculate the annual average.

3-007.02P Certified and Approved Laboratories: Analysis under 179 NAC 3-007 must only be conducted by the Department of Health and Human Services Public Health Environmental Laboratory or other laboratories that are certified by the Department or EPA according to the following conditions.

1. To receive certification to conduct analyses for the contaminants in 179 NAC 2-002.04B1 (2) through (21), the laboratory must:

a. Analyze Performance Evaluation (PE) samples which include these substances provided by EPA Environmental Monitoring and Support Laboratory or equivalent samples provided by the Director at least once a year by each method for which the lab desires certification.

b. Achieve the following quantitative acceptance limits under 179 NAC 3-007.02P items 1.c. and 1.d. for at least 80% of the regulated organic chemicals included in the PE sample.

c. Achieve quantitative results on the analyses performed under 179 NAC 3-007.02P item 1.a. 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 179 NAC 3-007.02P item 1.a. 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 to Part 136 of the Code of Federal Regulations.

2. To receive certification to conduct analyses for vinyl chloride, the laboratory must:

a. Analyze Performance Evaluation (PE) samples provided by EPA Environmental Monitoring and Support Laboratory or equivalent samples provided by the Director at least once a year by each method for which the laboratory desires certification.

b. Achieve quantitative results on the analyses performed under 179 NAC 3-007.02P item 2.a. 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 to Part 136 of the Code of Federal Regulations.

d. Obtain certification for the contaminants listed in 179 NAC 2-002.04B1 (2) through (21).

3-007.02Q The Director may increase required monitoring where necessary to detect variations within the system.

3-007.02R Laboratory Certification: Each approved laboratory must determine the method detection limit (MDL), (as defined in Appendix B to Part 136 of the Code of Federal Regulations. 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 179 NAC 3-007.

3-007.02S State Designated VOC Sampling Schedules: Each public water system owner must monitor at the time designated by the Director within each compliance period.

3-007.02T New Systems Or Sources: 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 must be conducted in accordance with the requirements in 179 NAC 3-007.

3-007.03 Monitoring Sites and Protocol: Analysis of the contaminants listed in 179 NAC 2-002.04B2 for the purposes of determining compliance with the maximum contaminant level must be conducted as follows:

1. Ground Water Sources: Ground water sources must be monitored at every entry point to the distribution system which is representative of each ground water source after treatment (hereafter called a sampling point or entry 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 Sources: Surface water sources must be monitored at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment (hereafter called a sampling point or entry point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

NOTE: For the purposes of 179 NAC 3-007.03 item 2, surface water systems include systems with a combination of surface and ground water sources.

3. Multiple Sources: If an entry point represents more than one source and the sources are combined before distribution, the system owner must sample at the entry point to the distribution system during periods of normal operating conditions (i.e., when water representative of all

sources is being used).

4. Monitoring Frequency

a. Initial Compliance Period Monitoring: Owners of each community and non-transient, non-community water system must take four consecutive quarterly samples during the three-year compliance period which ends December 31, 1995 for each contaminant listed in 179 NAC 2-002.04B2 during the compliance period which began January 1, 1996 and ended December 31, 1998.

b. Repeat Compliance Period Monitoring: Systems serving more than 3,300 individuals that do not detect a contaminant in the initial compliance period may reduce the sampling frequency to a minimum of two quarterly samples in one year during each repeat compliance period.

c. Systems serving less than or equal to 3,300 individuals that do not detect a contaminant in the initial compliance period may reduce the sampling frequency to a minimum of one sample during each repeat compliance period.

5. Waivers from Initial and Repeat Compliance Period Monitoring: A system owner may apply to the Director for a waiver from the requirements in 179 NAC 3-007.03 item 4. A system owner must reapply for a waiver for each compliance period.

6. The Director may grant a waiver after evaluating the following factor(s): Knowledge of previous use (including transport, storage, or disposal) of the contaminant within the watershed or zone of influence of the entry point source(s). 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. If previous use of the contaminant is unknown or it has been used previously then the following factors will be used to determine whether a waiver is granted:

a. Previous analytical results.

b. The proximity of the entry point source(s) 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 use of pesticides to control insect and weed pests on agricultural areas, forest lands, home and gardens, and other land application uses.

c. The environmental persistence and transport of the pesticide or PCBs.

d. How well the water source is protected against contamination due to such factors as depth of the well and the type of soil and the

integrity of the well casing.

e. Elevated nitrate levels at the entry point source(s).

f. Use of PCBs in equipment used in the production, storage, or distribution of water (i.e., PCBs used in pumps, transformers, etc.).

7. **If Detected:** If an organic contaminant listed in 179 NAC 2-002.04B2 is detected (as defined by 179 NAC 3-007.03 item 17) in any sample, then:

a. The owner must monitor quarterly at each sampling point which resulted in a detection for each contaminant which was detected.

b. The Director may decrease the quarterly monitoring requirement specified in 179 NAC 3-007.03 item 7.a. provided it has determined that the system is reliably and consistently below the maximum contaminant level. In no case will the Director make this determination unless a ground water system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly samples.

c. After the Director determines the system is reliably and consistently below the maximum contaminant level, the Director may allow the system to monitor annually. Systems that monitor annually must monitor during the quarter that previously yielded the highest analytical result.

d. Systems that have three consecutive annual samples with no detection of a contaminant may apply to the Director for a waiver as specified in 179 NAC 3-007.03 item 6.

e. If monitoring results in detection of one or more of certain related contaminants (aldicarb, aldicarb sulfone, aldicarb sulfoxide and heptachlor, heptachlor epoxide), then subsequent monitoring must analyze for all related contaminants.

8. MCL Violation and Reliably/Consistently Below the MCL: Entry points which violate an MCL in 179 NAC 2-002.04B2 as determined by 179 NAC 3-007.03 item 11 must monitor quarterly. After a minimum of four quarterly samples show the system is in compliance and the Director determines the entry point is reliably and consistently below the MCL, as specified in 179 NAC 3-007.03 item 11, the system owner must monitor the entry point at the frequency specified in 179 NAC 3-007.03 item 7.c.

9. Confirmation Sampling: 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 in 179 NAC 3-007.03 item 11. The Director has the discretion to delete results of obvious sampling errors from this calculation.

10. Composite Sampling: 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 detects one or more contaminants listed in 179 NAC 2-002.04B2, then a follow-up sample must be taken and analyzed within 14 days from each sampling point included in the composite.

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 duplicates must be analyzed and the results reported to the Director within 14 days of collection.

c. If the population served by the system is greater than 3,300 individuals, compositing may only be permitted by the Director at sampling points within a single system. In systems serving less than or equal to 3,300 individuals, the Director may permit compositing among different systems provided the 5-sample limit is maintained.

11. Compliance Calculations: Compliance with 179 NAC 2-002.04B2 must 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 systems monitoring more than once per year, compliance with the MCL is determined by a running annual average of all samples taken at each sampling point.

b. Systems monitoring annually or less frequently whose sample result exceeds the regulatory detection level as defined by 179 NAC 3-007 item 17 must begin quarterly sampling. The system will not be considered in violation of the MCL until it has completed one year of quarterly sampling.

c. If any sample result will cause the running annual average to exceed the MCL at any sampling point, the system is out of compliance with the MCL immediately.

d. If a system fails to collect the required number of samples, compliance will be based on the total number of samples collected.

e. If a sample result is less than the detection limit, zero will be used to calculate the annual average.

12. PCB Analysis: Analysis for PCBs must be conducted as follows using the methods in 40 CFR 141.24(e).:

a. Each system owner who monitors for PCBs must analyze each sample using either Method 508.1, 525.2, 508 or 505. (Note: 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 Aroclors) are detected (as designated in 179 NAC 3-007.03 item 12.b.) in any sample analyzed using Methods 505 or 508, the system must reanalyze the sample using Method 508A to quantitate PCBs (as decachlorobiphenyl).

<u>Aroclor</u>	<u>Detection Limit (mg/L)</u>
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 will be determined based upon the quantitative results of analyses using Method 508A.

13. Grandfathered Data: If monitoring data collected after January 1, 1990, are generally consistent with the requirements of 179 NAC 3-007.03, then the Director will allow owners of systems to use that data to satisfy the monitoring requirement for the initial compliance period.

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

15. State Enforcement: The Director has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by its sanctioned representatives and agencies.

16. Designated Sampling Schedules: Each public water system owner must monitor at the time designated by the Director within each compliance period.

17. Detection Limits: Detection as used in 179 NAC 3-007.03 item 17 is defined as greater than or equal to the following concentrations for each contaminant.

<u>Contaminant</u>	<u>Detection Limit (mg/L)</u>
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

18. Laboratory Certification: Analysis under 179 NAC 3-006 must only be conducted by the Public Health Environmental Laboratory or other laboratories approved by the Director and certified by EPA or the Director. To receive certification to conduct analyses for the contaminants in 179 NAC 2-002.04B2 the laboratory must:

- a. Analyze Performance Evaluation samples which include those substances provided by EPA Environmental Monitoring and Support Laboratory or equivalent samples provided by the Director at least once a year by each method for which the laboratory desires certification.

b. For each contaminant that has been included in the PE sample achieve quantitative results on the analyses that are within the following acceptance limits:

<u>Contaminant</u>	<u>Acceptance Limits (%)</u>
Alachlor	± 45.
Aldicarb	2 standard deviations
Aldicarb sulfoxide	2 standard deviations
Aldicarb sulfone	2 standard deviations
Atrazine	± 45.
Benzo[a]pyrene	2 standard deviations
Carbofuran	± 45.
Chlordane	± 45.
Dalapon	2 standard deviations
DBCP	± 40.
Di(2-ethylhexyl)adipate	2 standard deviations
Di(2-ethylhexyl)phthalate	2 standard deviations
Dinoseb	2 standard deviations
Diquat	2 standard deviations
EDB	± 40.
Endothall	2 standard deviations
Endrin	± 30.
Glyphosate	2 standard deviations
Heptachlor	± 45.
Heptachlor epoxide	± 45.
Hexachlorobenzene	2 standard deviations
Hexachlorocyclopentadiene	2 standard deviations
Lindane	± 45.
Methoxychlor	± 45.
Oxamyl	2 standard deviations
PCBs (as decachlorobiphenyl)	0-200.
Pentachlorophenol	± 50.
Picloram	2 standard deviations
Simazine	2 standard deviations
Toxaphene	± 45.
2,3,7,8-TCDD (Dioxin)	2 standard deviations
2,4-D	± 50.
2,4,5-TP (Silvex)	± 50.

19. 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 must be conducted in accordance with the requirements in 179 NAC 3-007.

3-008 RADIOACTIVE CONTAMINANTS

3-008.01 Analysis

3-008.01A Analysis for the contaminants listed in 40 CFR 141.25(a) must be conducted to determine compliance with 179 NAC 2-002.04D (radioactivity) in accordance with the methods in 40 CFR 141.25(a) or their equivalent as determined by EPA.

3-008.01B For the purpose of monitoring radioactivity concentrations in drinking water, the required sensitivity of the radioanalysis is defined in terms of a detection limit. The detection limit is that concentration which can be counted with a precision of plus or minus 100% at the 95% confidence level (1.96σ where σ is the standard deviation of the net counting rate of the sample).

3-008.01B1 To determine compliance with 179 NAC 2-002.04D1, 2-002.04D2, and 2-002.04D4, the detection limit must not exceed the concentrations listed in the following table:

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	1 µg/L

3-008.01B2 To determine compliance with 179 NAC 2-002.04D3 the detection limits must not exceed the concentrations listed in the following table.

DETECTION LIMITS FOR MAN-MADE BETA PARTICLE AND PHOTON EMMITTERS

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

3-008.01C To judge compliance with the maximum contaminant levels listed in 179 NAC 2-002.04, averages of data will be used and will be rounded to the same number of significant figures as the maximum contaminant level for the substance in question.

3-008.02 Monitoring Frequency and Compliance Requirements for Radionuclides in Community Water Systems

3-008.02A Monitoring and Compliance Requirements for Gross Alpha Particle Activity, Radium-226, Radium-228, and Uranium

3-008.02A1 Community water systems (CWSs) must conduct initial monitoring to determine compliance with 179 NAC 2-002.04D1, 2-002.04D2, and 2-002.04D4 by December 31, 2007. For the purposes of monitoring for gross alpha particle activity, radium-226, radium-228, uranium, and beta particles and photon radioactivity in drinking water, "detection limit" is defined as in 179 NAC 3-008.01B.

3-008.02A1a Applicability and Sampling Location for Existing Community Water Systems or Sources: All existing CWSs using ground water, surface water, or systems using both ground and surface water (for the purpose of 179 NAC 3-008.02 hereafter referred to as systems) must sample at every entry point to the distribution system that is representative of all sources being used (hereafter called a sampling point) under normal operating conditions. The system must take each sample at the same sampling point unless conditions make another sampling point more representative of each source or the Director has designated a distribution system location, in accordance with 179 NAC 3-008.02A2 item 2.c.

3-008.02A1b Applicability and Sampling Location for New Community Water Systems or Sources: All new CWSs or CWSs that use a new source of water must begin to conduct initial monitoring for the new source within the first quarter after initiating use of the source. CWSs must conduct more frequent monitoring when ordered by the 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.

3-008.02A2 Initial Monitoring: Systems must conduct initial monitoring for gross alpha particle activity, radium-226, radium-228, and uranium as follows:

1. Systems without acceptable historical data, as defined below, must collect four consecutive quarterly samples at all sampling points before December 31, 2007.
2. 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:
 - a. To satisfy initial monitoring requirements, a community water system having only one entry point to the distribution

system may use the monitoring data from the last compliance monitoring period that began between June 2000 and December 8, 2003.

b. To satisfy initial monitoring requirements, a community water system with multiple entry points and having appropriate historical monitoring data for each entry point to the distribution system may use the monitoring data from the last compliance monitoring period that began between June 2000 and December 8, 2003.

c. To satisfy initial monitoring requirements, a community water system with appropriate historical data for a representative point in the distribution system may use the monitoring data from the last compliance monitoring period that began between June 2000 and December 8, 2003, provided that the 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.

3. 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.

4. If the average of the initial monitoring results for a sampling point is above the MCL, the system must collect and analyze quarterly samples at that sampling point until the system has results from four consecutive quarters that are at or below the MCL, unless the system enters into another schedule as part of a formal compliance agreement with the Director.

3-008.02A3 Reduced Monitoring: The Director may allow community water systems to reduce the future frequency of monitoring from once every three years to one every six or nine years at each sampling point, based on the following criteria:

1. 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 the table in 179 NAC 3-008.01B1, the system must collect and analyze for that contaminant using at least one sample at that sampling point every nine years.

2. 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 $\frac{1}{2}$ the MCL, the system must

collect and analyze for that contaminant using at least one sample at that sampling point every six years. For combined radium-226 and radium-228, the analytical results must be combined. If the average of the combined initial monitoring results for radium-226 and radium-228 is at or above the detection limit but at or below $\frac{1}{2}$ the MCL, the system must collect and analyze for that contaminant using at least one sample at that sampling point every six years.

3. For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is above $\frac{1}{2}$ the MCL but at or below the MCL, the system must collect and analyze at least one sample at that sampling point every three years. For combined radium-226 and radium-228 the analytical results must be combined. If the average of the combined initial monitoring results for radium-226 and radium-228 is above $\frac{1}{2}$ the MCL but at or below the MCL, the system must collect and analyze at least one sample at that sampling point every three years.

4. 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 $\frac{1}{2}$ the MCL, then the next monitoring period for the sampling point is three years).

5. If a system has a monitoring result that exceeds the MCL while on reduced monitoring, the system must collect and analyze quarterly samples at that sampling point until the system has results from four consecutive quarters that are below the MCL, unless the system enters into another schedule as part of a formal compliance agreement with the Director.

3-008.02A4 Compositing: To fulfill quarterly monitoring requirements for gross alpha particle activity, radium-226, radium-228, or uranium, a system may composite up to four consecutive quarterly samples from a single entry point if analysis is done within a year of the first sample. The Director will treat analytical results from the composited sample 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 $\frac{1}{2}$ the MCL, the Director may direct the system to take additional quarterly samples before allowing the system to sample under a reduced monitoring schedule.

3-008.02A5 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 must have a confidence interval of 95% (1.65σ , where σ is the standard deviation of the net counting rate of the sample) for radium-226 and uranium. When a system uses a gross alpha particle activity measurement in lieu of a radium-226 and/or uranium measurement, the gross alpha particle activity analytical result will be used to determine the future monitoring frequency for radium-226 and/or uranium. If the gross alpha particle activity result is less than detection, $\frac{1}{2}$ the detection limit will be used to determine compliance and the future monitoring frequency.

3-008.02B Monitoring and Compliance Requirements for Beta Particle and Photon Radioactivity: To determine compliance with the maximum contaminant levels in 179 NAC 2-002.04D3 for beta particle and photon radioactivity, a system must monitor at a frequency as follows:

1. Community Water Systems (Both Surface and Ground Water) Designated by the Director as Vulnerable Must Sample for Beta Particle and Photon Radioactivity: Systems must collect quarterly samples for beta emitters and annual samples for tritium and strontium-90 at each entry point to the distribution system (hereafter called a sampling point) beginning within one quarter after being notified by the Director. 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. Systems must collect all samples required in 179 NAC 3-008.02B item 1 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 water system. In the event that there is a release from a nuclear facility, systems which are using surveillance data must begin monitoring at the community water system's entry point(s) in accordance with 179 NAC 3-008.02B item 1.
2. Community water systems (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. Systems must collect quarterly samples for beta emitters and iodine-131 and annual samples for tritium and strontium-90 at each entry point to the distribution system (hereafter called a sampling point), beginning with 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 will 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 must be analyzed once each quarter. As ordered by the Director, more frequent monitoring will be conducted when iodine-131 is identified in the finished water.

c. Annual monitoring for strontium-90 and tritium must 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 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 (screening level), the Director may reduce the frequency of monitoring at that sampling point to every three years. Systems must collect the same type of samples required in 179 NAC 3-008.02B item 2 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 water system. In the event that there is a release from a nuclear facility, systems which are using surveillance data must begin monitoring at the community water system's entry point(s) in accordance with 179 NAC 3-008.02B item 2.

3. Community water systems designated by the Director to monitor for beta particle and photon radioactivity cannot apply to the Director for a waiver from the monitoring frequencies specified in 179 NAC 3-008.02B item 1 or 2.

4. Community water systems may analyze for naturally occurring potassium-40 beta particle activity from the same or equivalent sample used for the gross beta particle activity analysis. Systems are allowed to subtract the potassium-40 beta particle activity value from the total gross beta particle activity value to determine if the screening level is exceeded. The potassium-40 beta particle activity must be calculated by multiplying elemental potassium concentrations (in mg/L) by a factor of 0.82.

5. If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity exceeds the appropriate 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 179 NAC 2-002.04D3 item 1 using the formula in 179 NAC 2-002.04D3 item 2. Doses must also be calculated and combined for measured levels of tritium and strontium to determine compliance.

6. Systems must monitor monthly at the sampling point(s) which exceed the maximum contaminant level in 179 NAC 3-008.02D3 beginning the month after the exceedance occurs. Systems must continue monthly monitoring until the system has established, by a rolling average of three monthly samples, that the MCL is being met. Systems that establish that the MCL is being met must return to quarterly monitoring until they meet the requirements set forth in 179 NAC 3-008.02B item 1.a. or 2.d.

3-008.02C General Monitoring and Compliance Requirements for Radionuclides

3-008.02C1 The Director may require more frequent monitoring than specified in 179 NAC 3-008.02A and 3-008.02B or may require confirmation samples at his/her discretion. The results of the initial and confirmation samples will be averaged for use in compliance determinations.

3-008.02C2 Each public water system must monitor at the time designated by the Director during each compliance period.

3-008.02C3 Compliance with 179 NAC 2-002.04D1 through 2-002.04D4 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.

3-008.02C3a For systems monitoring more than once per year, compliance with the MCL is determined by a running annual average at each sampling point. If the average of any sampling point is greater than the MCL, then the system is out of compliance with the MCL.

3-008.02C3b For systems monitoring more than once per year, if any sample result will cause the running average to exceed the MCL at any sample point, the system is out of compliance with the MCL immediately.

3-008.02C3c Systems must include all samples taken and analyzed under the provisions of 179 NAC 3-008.02 in determining compliance, even if that number is greater than the minimum required.

3-008.02C3d If a system does not collect all required samples when compliance is based on a running annual average of quarterly samples, compliance will be based on the running average of the samples collected.

3-008.02C3e 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, $\frac{1}{2}$ the detection limit will be used to calculate the annual average.

3-008.02C4 The Director has the discretion to delete results of obvious sampling or analytic errors.

3-008.02C5 If the MCL for radioactivity set forth in 179 NAC 2-002.D1 through 2-002.04D4 is exceeded, the owner of a community water system must give notice to the Director pursuant to 179 NAC 5-004 and the public as required by 179 NAC 4.

3-009 APPROVED LABORATORIES: The Department may enter into an agreement with any laboratory in accordance with the requirements of 179 NAC 20.

3-010 CONSECUTIVE SYSTEMS: When a public water system provides water to one or more other public water systems, the Director may modify the monitoring imposed by 179 NAC 3 to the extent that the inter-connection of the systems justifies treating them as one system for monitoring purposes.

3-011 ALTERNATE ANALYTICAL TECHNIQUES

3-011.01 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 is acceptable only 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. In addition to the methods listed in this chapter, methods found in Alternative Testing Methods Approved for Analyses Under the Safe Drinking Water Act, Appendix A to Subpart C of 40 CFR Part 141 may be used as specified. The use of the alternate analytical technique will not decrease the frequency of monitoring required by 179 NAC 3.

3-012 CERTIFIED LABORATORIES

3-012.01 For the purpose of determining compliance with 179 NAC 3, 179 NAC 8, 179 NAC 12, 179 NAC 13, and 179 NAC 16, samples may be considered only if they have been analyzed by the Public Health Environmental Laboratory or a laboratory certified by the Department, except that measurements for alkalinity, calcium, conductivity, disinfectant residual, orthophosphate, pH, silica, temperature and turbidity may be performed by any Grade I, Grade II, Grade III, or Grade IV licensed water

operator or an individual who has been trained to take these samples. If a licensed operator does not take the sample, Attachment 1 to 179 NAC 3, which is incorporated herein by reference, must be completed and sent to the Department.

3-012.02 The Director may take samples and use the results from such samples to determine compliance by a supplier of water with the applicable requirements of 179 NAC 3.

179 NAC 3 ATTACHMENT 1

Sampling Training For Individuals Other Than Licensed Operators

EFFECTIVE DATE
MARCH 22, 2016

NEBRASKA DEPARTMENT OF
HEALTH AND HUMAN SERVICES

179 NAC 3

179 NAC 3 ATTACHMENT 1

Sampling Training For Individuals Other Than Licensed Operators

PWS System or Community Name: _____

Name of individual taking samples: _____

Parameter(s) sampled routinely by the above individual:

Trainer and Title: _____

Training material used: _____

Handouts given to the above individual:

I certify that on _____ I personally provided the necessary sampling
(Date)

training to assure quality data and approve the above individual as qualified to perform the
above sampling tasks.

X _____
(Signature of Trainer) (License Number)

I certify that I did receive said training and I understand how to properly sample the above
parameters.

X _____
(Signature of Approved Sampling Individual)

When the above-named trained individual no longer takes the samples the individual has been
trained to take, I will inform the Division of Public Health of the Nebraska Department of Health
and Human Services, Field Services Program Manager at (402) 471-0521 within seven days.
Acknowledged by System Owner or Operator in Charge:

X _____ Date: _____
(Signature)

(Keep a copy for your records and submit original within seven days to DHHS, Public Water Program at
P. O. Box 95026, Lincoln, NE 68509-5026)

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 4 - PUBLIC NOTIFICATION OF DRINKING WATER VIOLATIONS

4-001 SCOPE AND AUTHORITY: These regulations require the owner or operator of each public water system (community, non-transient non-community, and transient non-community water systems) to give notice for all violations of drinking water maximum contaminant levels (MCLs), maximum residual disinfectant levels (MRDLs), treatment techniques (TTs), monitoring requirements, testing procedures, and situations listed in Table 1 of 179 NAC 4. Appendix A of 179 NAC 4 identifies the tier assignment for each specific violation or situation requiring a public notice. The statutory authority for these regulations is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

TABLE 1 - VIOLATION CATEGORIES AND OTHER SITUATIONS REQUIRING A PUBLIC NOTICE

1. Drinking water violations:
 - a. Failure to comply with an applicable maximum contaminant level (MCL) or maximum residual disinfectant level (MRDL).
 - b. Failure to comply with a prescribed treatment technique (TT).
 - c. Failure to perform water quality monitoring, as required by Title 179.
 - d. Failure to comply with testing procedures as prescribed by a drinking water regulation.
2. Variances and exemptions under 179 NAC 6:
 - 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:
 - a. Occurrence of a waterborne disease outbreak or other waterborne emergency.
 - b. Exceedance of the nitrate MCL by non-community water systems (NCWSs), where granted permission by the Director under 179 NAC 2-002.04A1.
 - c. Exceedance of the secondary maximum contaminant level (SMCL) for fluoride.
 - d. Availability of unregulated contaminant monitoring data.
 - e. Other violations and situations determined by the Director to require a public notice under 179 NAC 4, not already listed in Appendix A of 179 NAC 4.

4-002 DEFINITIONS

Community water system means a public water system which serves at least 15 service connections used by year round residents or regularly serves 25 year-round residents.

Department means the Division of Public Health of the Department of Health and Human Services.

Director means the Director of Public Health of the Division of Public Health or his/her authorized representative.

Drinking water standards means the rules and regulations adopted pursuant to Neb. Rev. Stat. § 71-5302, which establish maximum levels for harmful materials which, in the judgement of the Director, may have an adverse effect on the health of persons and which apply only to public water systems.

Maximum contaminant level (MCL) means the maximum permissible level of a contaminant in water which is delivered to any user of a public water system.

Non-community water system means a public water system that is not a community water system. A non-community water system is either a “transient non-community water system” (TWS) or a “non-transient non-community water system” (NTNCWS).

Non-transient, non-community water system means a public water system that is not a community water system and that regularly serves at least 25 of the same individuals over six months per year.

Operator means the individual or individuals responsible for the continued performance of the water system or any part of such system, during assigned duty hours.

Owner means any person owning or operating a public water system.

Public water system means a system for providing the public with water for human consumption through pipes or, after August 5, 1998, other constructed conveyances, if such system has at least fifteen service connections or regularly serves an average of at least 25 individuals daily at least 60 days per year. Public water system includes (a) any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system and (b) any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. Public water system does not include a special irrigation district. A public water system is either a community water system or a non-community water system. Service connection does not include a connection to a system that delivers water by a constructed conveyance other than a pipe if (i) the water is used exclusively for purposes other than residential uses, consisting of drinking, bathing, cooking, and other similar uses, (ii) the Department determines that alternative water to achieve the equivalent level of public health protection provided by the Nebraska Safe Drinking Water Act and rules and regulations under the act is provided for residential or similar uses for drinking and cooking, or (iii) the Department 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 Nebraska Safe Drinking Water Act and the rules and regulations under the act.

Special irrigation district means an irrigation district in existence prior to May 18, 1994, that provides primarily agricultural service through a piped water system with only incidental residential or similar use if the system or the residential or similar users of the system comply with exclusion provisions of (ii) or (iii) found in 179 NAC 4-002 definition of Public Water System;

Treatment technique means the use of aeration, settling, filtration, or other physical process and/or the addition of any chemical or chemicals for the purpose of removing, deactivation, or adjusting the level of one or more contaminants present in the raw water supply source.

4-003 GENERAL REQUIREMENTS

4-003.01 Types of Public Notice: Public notice requirements are divided into three tiers, to take into account the seriousness of the violation or situation and of any potential adverse health effects that may be involved. The public notice requirements for each violation or situation listed in Table 1 of 179 NAC 4 are determined by the tier to which it is assigned. Table 2 provides the definition of each tier. Appendix A to 179 NAC 4 identifies the tier assignment for each specific violation or situation.

TABLE 2 - DEFINITION OF PUBLIC NOTICE TIERS

Tier 1 Public Notice	Required for drinking water standards violations and situations with significant potential to have serious adverse effects on human health as a result of short-term exposure.
Tier 2 Public Notice	Required for all other drinking water standards violations and situations with potential to have serious adverse effects on human health.
Tier 3 Public Notice	Required for all other drinking water standards violations and situations not included in Tier 1 and Tier 2.

4-003.02 Who Must Be Notified

1. Each public water system must provide public notice to persons served by the water system, in accordance with 179 NAC 4. Public water systems that sell or otherwise provide drinking water to other public water systems (i.e., to consecutive systems) are required to give public notice to the owner or operator of the consecutive system; the consecutive system is responsible for providing public notice to the persons it serves.
2. If a public water system has a violation in a portion of the distribution system that is physically or hydraulically isolated from other parts of the distribution system, the Director may allow the system to limit distribution of the public notice to only persons served by that portion of the system that is out of compliance. The Director must grant written

permission to limit distribution of the notice.

3. A copy of the notice must also be sent to the Department in accordance with the requirements under 179 NAC 5-004.03.

4-004 TIER 1 PUBLIC NOTICE - FORM, MANNER AND FREQUENCY OF NOTICE

4-004.01 Violations or Situations Requiring Tier 1 Public Notice: Table 3 lists the violation categories and other situations requiring a Tier 1 public notice. Appendix A to 179 NAC 4 identifies the tier assignment for each specific violation or situation.

TABLE 3 - VIOLATION CATEGORIES AND OTHER SITUATIONS REQUIRING A TIER 1 PUBLIC NOTICE

1.	Violation of the MCL for total coliforms when fecal coliform or <i>E. coli</i> are present in the water distribution system (as specified in 179 NAC 2-002.04C2), or when the water system fails to test for fecal coliforms or <i>E. coli</i> when any repeat sample tests positive for coliform (as specified in 179 NAC 3-004.05). Violation of the MCL for <i>E. coli</i> (as specified in 179 NAC 2-002.04C3) ;
2.	Violation of the MCL for nitrate, nitrite, or total nitrate and nitrite, as defined in 179 NAC 2-002.04A, or when the water system fails to take a confirmation sample within 24 hours of the system’s receipt of the first sample showing an exceedance of the nitrate or nitrite MCL, as specified in 179 NAC 3-005.06B;
3.	Exceedance of the nitrate MCL by non-community water systems, where permitted to exceed the MCL by the Director under 179 NAC 2-002.04A1, as required under 179 NAC 4-011;
4.	Violation of the MRDL for chlorine dioxide, as defined in 179 NAC 2-002.04F1 when one or more samples taken in the distribution system the day following an exceedance of the MRDL at the entrance of the distribution system exceed the MRDL, or when the water system does not take the required samples in the distribution system, as specified in 179 NAC 16-006.03 item 2.a.
5.	Violation of the Surface Water Treatment Rule (SWTR - 179 NAC 13) or Interim Enhanced Surface Water Treatment Rule (IESWTR - 179 NAC 17) or Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR - 179 NAC 19) treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit (as identified in Appendix A), 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.	Occurrence of a waterborne disease outbreak, as defined in 179 NAC 2-001.02, 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);
7.	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 on a case-by-case basis.
8.	Detection of <i>E. coli</i> , enterococci, or coliphage in source water samples as specified in 179 NAC 8-005.01 and 8-005.02 (under the Ground Water Rule).

4-004.02 When Tier 1 Public Notice Is To Be Provided: 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.

4-004.03 Form and Manner of the Public Notice: Public water systems must provide the notice within 24 hours in a form and manner reasonably calculated to reach all persons served. The form and manner used by the public water system are to fit the specific situation, but must be designed to reach residential, transient, and non-transient users of the water system. In order to reach all persons served, water systems are to use, at a minimum, one or more of the following forms of delivery:

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

4-005 TIER 2 PUBLIC NOTICE - FORM, MANNER, AND FREQUENCY OF NOTICE

4-005.01 Violations or Situations Requiring a Tier 2 Public Notice: Table 4 lists the violation categories and other situations requiring a Tier 2 public notice. Appendix A to 179 NAC 4 identifies the tier assignment for each specific violation or situation.

**TABLE 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 notice is required under 179 NAC 4-004 or where the Director determines that a Tier 1 notice is required;
2.	Violations of the monitoring and testing procedure requirements, where the Director determines that a Tier 2 rather than a Tier 3 public notice is required, taking into account potential health impacts and persistence of the violation;
3.	Failure to comply with the terms and conditions of any variance or exemption in place; and
4.	Failure to take corrective action or failure to maintain at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer under 179 NAC 8-006.01.

4-005.02 When Tier 2 Public Notice Is To Be Provided

1. Public water systems must provide the public notice as soon as practical, but no later than 30 days after the system learns of the violation. If the public notice is posted, the notice must remain in place for as long as the violation or situation persists, but in no case for less than seven days, even if the violation or situation is resolved. The Director may, in appropriate circumstances, allow additional time for the initial notice of up to three months from the date the system learns of the violation. It is not appropriate for the 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. 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. In no circumstance may the repeat notice be given less frequently than once per year. It is not appropriate for the Director to allow less frequent repeat notice for an MCL or treatment technique violation under the Total Coliform Rule or 179 NAC 26 or a treatment technique violation under the Surface Water Treatment Rule or Interim Enhanced Surface Water Treatment Rule. It is also not appropriate for the Director to allow through his/her rules or policies across-the-board reductions in the repeat notice frequency for other ongoing violations requiring a Tier 2 repeat notice. 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 179 NAC 4-005.02 item 3, 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 179 NAC 4-

004.01 is required to protect public health. When consultation does not take place within the 24-hour period, the water system must distribute a Tier 1 notice of the violation within the next 24 hours (i.e., no later than 48 hours after the system learns of the violation), following the requirements under 179 NAC 4-004.02 and 4-004.03. Consultation with the Director is required for a violation of the SWTR (179 NAC 13), IESWTR (179 NAC 17) or LT1ESWTR (179 NAC 19) treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit.

4-005.03 The Form and Manner of the Tier 2 Public Notice: Public water systems must provide the initial public notice and any repeat notices in a form and manner that is reasonably calculated to reach persons served in the required time period. The form and manner of the public notice may vary based on the specific situations and type of water system, but it must at a minimum meet the following requirements:

1. Unless directed otherwise by the Director in writing, community water systems 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 reasonably calculated to reach other persons regularly served by the system, if they would not normally be reached by the notice required in 179 NAC 4-005.03 item 1.a. Such persons may include those who do not pay water bills or do not have service connection addresses (e.g., house renters, apartment dwellers, university students, nursing home patients, prison inmates, etc.). Other methods may include: Publication in a local newspaper; delivery of multiple copies for distribution by customers that provide their drinking water to others (e.g., apartment building owners or large private employers); posting in public places served by the system or on the Internet; or delivery to community organizations.

2. Unless directed otherwise by the Director in writing, non-community water systems 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 reasonably calculated to reach other persons served by the system if they would not normally be reached by the notice required in 179 NAC 4-005.03 item 2.a. Such persons may include those served who may not see a posted notice because the posted notice is not in a location they routinely pass by. Other methods may include: Publication in a local newspaper or newsletter distributed to customers; use of e-mail to notify employees or students; or, delivery of multiple copies in central locations (e.g., community centers).

4-006 TIER 3 PUBLIC NOTICE - FORM, MANNER, AND FREQUENCY OF NOTICE

4-006.01 Violations or Situations Requiring a Tier 3 Public Notice: Table 5 lists the violation categories and other situations requiring a Tier 3 public notice. Appendix A to 179 NAC 4 identifies the tier assignment for each specific violation or situation.

TABLE 5 - VIOLATION CATEGORIES AND OTHER SITUATIONS REQUIRING A TIER 3 PUBLIC NOTICE

1.	Monitoring violations under Title 179, except where a Tier 1 notice is required under 179 NAC 4-004.01 or where the Director determines that a Tier 2 notice is required;
2.	Failure to comply with a testing procedure established in Title 179, except where a Tier 1 notice is required under 179 NAC 4-004.01 or where the Director determines that a Tier 2 notice is required;
3.	Operation under a variance or an exemption granted under 179 NAC 6;
4.	Availability of unregulated contaminant monitoring results, as required under 179 NAC 4-009,
5.	Exceedance of the fluoride secondary maximum contaminant level (SMCL), as required under 179 NAC 4-010; and
6.	Reporting and Recordkeeping violations under 179 NAC 26.

4-006.02 When Tier 3 Public Notice Is To Be Provided

1. Public water systems must provide the public notice not later than one year after the public water system learns of the violation or situation or begins operating under a variance or exemption. Following the initial notice, the public water system must repeat the notice annually, for as long as the violation, variance, exemption, or other situation persists. If the public notice is posted, the notice must remain in place for as long as the violation, variance, exemption, or other situation persists, but in no case less than seven days (even if the violation or situation is resolved).
2. Instead of individual Tier 3 public notices, a public water system may use an annual report detailing all violations and situations that occurred during the previous 12 months, as long as the timing requirements of 179 NAC 4-006.02 item 1 are met.

4-006.03 The Form and Manner of the Tier 3 Public Notice: Public water systems must provide the initial notice and any repeat notices in a form and manner that is reasonably calculated to reach persons served in the required time period. The form and manner of the public notice may vary based on the specific situation and type of water system, but it must at a minimum meet the following requirements:

1. Unless directed otherwise by the Director in writing, community water systems 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 reasonably calculated to reach other persons regularly served by the system, if they would not normally be reached by the notice required in 179 NAC 4-006.03 item 1.a. Such persons may include those who do not pay water bills or do not have service connection addresses (e.g., house renters, apartment dwellers, university students, nursing home patients, prison inmates, etc.). Other methods may include: Publication in a local newspaper; delivery of multiple copies for distribution by customers that provide their drinking water to others (e.g., apartment building owners or large private employers); posting in public places or on the Internet; or delivery to community organizations.

2. Unless directed otherwise by the Director in writing, non-community water systems 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 reasonably calculated to reach other persons served by the system, if they would not normally be reached by the notice required in 179 NAC 4-006.03 item 2.a. Such persons may include those who may not see a posted notice because the notice is not in a location they routinely pass by. Other methods may include: Publication in a local newspaper or newsletter distributed to customers; use of e-mail to notify employees or students; or, delivery of multiple copies in central locations (e.g., community centers).

4-006.04 Situations in Which the Consumer Confidence Report May Be Used To Meet the Tier 3 Public Notice Requirements: For community water systems, the Consumer Confidence Report (CCR) required under 179 NAC 14 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 179 NAC 4-006.02;
2. The Tier 3 notice contained in the CCR follows the content requirements under 179 NAC 4-007; and
3. The CCR is distributed following the delivery requirements under 179 NAC 4-006.03.

4-007 CONTENT OF THE PUBLIC NOTICE

4-007.01 Elements That Must Be Included in the Public Notice for Violations of Drinking Water Standards Violations or Other Situations Requiring Public Notice: When a public water system violates a drinking water standard 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 179 NAC 4-007.04 item 1 or 2, whichever is applicable;
4. The population at risk, including subpopulations particularly vulnerable if exposed to the contaminant in their drinking water;
5. Whether alternative water supplies should be used;
6. What actions consumers should take, including when they should seek medical help, if known;
7. What the system is doing to correct the violation or situation;
8. When the water system expects to return to compliance or resolve the situation;
9. The name, business address, and phone number of the water system owner, operator, or designee of the public water system as a source of additional information concerning the notice; and
10. A statement to encourage the notice recipient to distribute the public notice to other persons served, using the standard language under 179 NAC 4-007.04 item 3, where applicable.

4-007.02 Elements That Must Be Included in the Public Notice for Public Water Systems Operating under a Variance or Exemption

1. If a public water system has been granted a variance or an exemption, the public notice must contain:
 - a. An explanation of the reasons for the variance or exemption;
 - b. The date on which the variance or exemption was issued;
 - c. 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
 - d. A notice of any opportunity for public input in the review of the variance or exemption.
2. If a public water system violates the conditions of a variance or exemption, the public notice must contain the ten elements listed in 179 NAC 4-007.01.

4-007.03 How the Public Notice Is To Be Presented

1. Each public notice required by 179 NAC 4-007:
 - a. Must be displayed in a conspicuous way when printed or posted;
 - b. Must not contain overly technical language or very small print;
 - c. Must not be formatted in a way that defeats the purpose of the notice;
 - d. Must not contain language that nullifies the purpose of the notice.

2. Each public notice required by 179 NAC 4-007 must comply with multilingual requirements, as follows:

a. For public water systems that have a population with 5% or more non-English speaking consumers, the public notice must contain information in the appropriate language(s) regarding the importance of the notice or contain a telephone number or address where persons served may contact the water system to obtain a translated copy of the notice or to request assistance in the appropriate language.

4-007.04 Standard Language Public Water Systems Must Include in Their Public Notice: Public water systems are required to include the following standard language in their public notice:

1. Standard Health Effects Language for MCL or MRDL Violations, Treatment Technique Violations, and Violations of the Condition of a Variance or Exemption: Public water systems must include in each public notice the health effects language specified in Appendix B to 179 NAC 4 corresponding to each MCL, MRDL, and treatment technique violation listed in Appendix A to 179 NAC 4, and for each violation of a condition of a variance or exemption.

2. Standard Language for Monitoring and Testing Procedure Violations: Public water systems must include the following language in their notice, including the language necessary to fill in the blanks, for all monitoring and testing procedure violations listed in Appendix A to 179 NAC 4:

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During [compliance period], we “did not monitor or test” or “did not complete all monitoring or testing” for [contaminant(s)], and therefore cannot be sure of the quality of your drinking water during that time.

3. Standard Language To Encourage the Distribution of the Public Notice to All Persons Served: Public water systems must include in their notice the following language (where applicable):

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

4-008 NOTICE TO NEW BILLING UNITS OR NEW CUSTOMERS

4-008.01 Community Water Systems Requirement: Community water systems must give a copy of the most recent public notice for any

continuing violation, the existence of a variance or exemption, or other ongoing situations requiring a public notice to all new billing units or new customers prior to or at the time service begins.

4-008.02 Non-Community Water Systems Requirement: Non-community water systems must continuously post the public notice in conspicuous locations in order to inform new consumers of any continuing violation, variance or exemption, or other situation requiring a public notice for as long as the violation, variance, exemption, or other situation persists.

4-009 SPECIAL NOTICE OF THE AVAILABILITY OF UNREGULATED CONTAMINANT MONITORING RESULTS

4-009.01 When the Special Notice Is To Be Given: The owner or operator of a community water system or non-transient, non-community water system required to monitor under the Unregulated Contaminant Monitoring Rule must notify persons served by the system of the availability of the results of such sampling no later than 12 months after the monitoring results are known.

4-009.02 Form and Manner of the Special Notice: The form and manner of the public notice must follow the requirements for a Tier 3 public notice prescribed in 179 NAC 4-006.03 and 4-006.04 items 1 and 3. The notice must also identify a person and provide the telephone number to contact for information on the monitoring results.

4-010 SPECIAL NOTICE FOR EXCEEDANCE OF THE SMCL FOR FLUORIDE

4-010.01 When the Special Notice Is To Be Given: Community water systems that exceed the fluoride secondary maximum contaminant level (SMCL) of 2 mg/L as specified in 179 NAC 2-002.04A (determined by the last single sample taken in accordance with 179 NAC 3-005), but do not exceed the maximum contaminant level (MCL) of 4 mg/L for fluoride (as specified in 179 NAC 2-002.04A) must provide the public notice in 179 NAC 4-010.03 to persons served. Public notice must be provided as soon as practical but no later than 12 months from the day the water system learns of the exceedance. A copy of the notice must also be sent to the Department and to all new billing units and new customers at the time service begins. The public water system must repeat the notice at least annually for as long as the SMCL is exceeded. If the public notice is posted, the notice must remain in place for as long as the SMCL is exceeded, but in no case less than seven days (even if the exceedance is eliminated). On a case-by-case basis, the Director may require an initial notice sooner than 12 months and repeat notices more frequently than annually.

4-010.02 Form and Manner of the Special Notice: The form and manner of the public notice (including repeat notices) must follow the requirements for a Tier 3 public notice in 179 NAC 4-006.03 and 4-006.04 items 1 and 3.

4-010.03 Mandatory Language That Must Be Contained in the Special Notice: The notice must contain the following language, including the language necessary to fill in the blanks:

This is an alert about your drinking water and a cosmetic dental problem that might affect children under nine years of age. At low levels, fluoride can help prevent cavities, but children drinking water containing more than two milligrams per liter (mg/L) of fluoride may develop cosmetic discoloration of their permanent teeth (dental fluorosis). The drinking water provided by your community water system [name] has a fluoride concentration of [insert value] mg/L.

Dental fluorosis, in its moderate or severe forms, may result in a brown staining and/or pitting of the permanent teeth. This problem occurs only in developing teeth, before they erupt from the gums. Children under nine should be provided with alternative sources of drinking water or water that has been treated to remove the fluoride to avoid the possibility of staining and pitting of their permanent teeth. You may also want to contact your dentist about proper use by young children of fluoride-containing products. Older children and adults may safely drink the water.

Drinking water containing more than 4 mg/L of fluoride (the Nebraska Department of Health and Human Services standard) can increase your risk of developing bone disease. Your drinking water does not contain more than 4 mg/L of fluoride, but we're required to notify you when we discover that the fluoride levels in your drinking water exceed 2 mg/L because of this cosmetic dental problem.

For more information, please call [name of water system contact] of [name of community water system] at [phone number]. Some home water treatment units are also available to remove fluoride from drinking water. To learn more about available home water treatment units, you may call NSF International at 1-877-867-3435.

4-011 SPECIAL NOTICE FOR NITRATE EXCEEDANCES ABOVE MCL BY NON-COMMUNITY WATER SYSTEMS (NCWSs), WHERE GRANTED PERMISSION BY THE DIRECTOR UNDER 179 NAC 2-002.04A1

4-011.01 When the Special Notice Is To Be Given: The owner or operator of a non-community water system granted permission by the Director under 179 NAC 2-002.04A1 to exceed the nitrate MCL must provide notice to persons served according to the requirements for a Tier 1 notice under 179 NAC 4-004.01 and 4-004.02.

4-011.02 Form and Manner of the Special Notice: Non-community water systems granted permission by the Director to exceed the nitrate MCL under 179 NAC 2-002.04A1 must provide continuous posting of the fact that nitrate levels exceed 10 mg/L and the potential health effects of exposure, according to the requirements for Tier 1 notice delivery under 179 NAC 4-004.03 and the content requirements under 179 NAC 4-007.

4-012 SPECIAL NOTICE FOR REPEATED FAILURE TO CONDUCT MONITORING OF THE SOURCE WATER FOR CRYPTOSPORIDIUM AND FOR FAILURE TO DETERMINE BIN CLASSIFICATION OR MEAN

CRYPTOSPORIDIUM LEVEL

4-012.01 When the special notice for repeated failure to monitor is to be given: The owner or operator of a community or non-community water system that is required to monitor source water under 179 NAC 25-004 must notify persons served by the water system that monitoring has not been completed as specified no later than 30 days after the system has failed to collect any three months of monitoring as specified in 179 NAC 25-004.03. The notice must be repeated as specified in 179 NAC 4-005.02.

4-012.02 When the special notice for failure to determine bin classification or mean Cryptosporidium level is to be given: The owner or operator of a community or non-community water system that is required to determine a bin classification under 179 NAC 25-013, or to determine mean Cryptosporidium level under 179 NAC 25-015, must notify persons served by the water system that the determination has not been made as required no later than 30 days after the system has failed to report the determination as specified in 179 NAC 25-013.05 or 25-015.01, respectively. The notice must be repeated as specified in 179 NAC 4-005.02. The notice is not required if the system is complying with a Department-approved schedule to address the violation.

4-012.03 Form and manner of the special notice: The form and manner of the public notice must follow the requirements for a Tier 2 public notice prescribed in 179 NAC 4-005.03. The public notice must be presented as required in 179 NAC 4-007.03.

4-012.04 Mandatory language that must be contained in the special notice: The notice must contain the following language, including the language necessary to fill in the blanks.

1. The special notice for repeated failure to conduct monitoring must contain the following language:

We are required to monitor the source of your drinking water for Cryptosporidium. Results of the monitoring are to be used to determine whether water treatment at the (treatment plant name) is sufficient to adequately remove Cryptosporidium from your drinking water. We are required to complete this monitoring and make this determination by (required bin determination date). We “did not monitor or test” or “did not complete all monitoring or testing” on schedule and, therefore, we may not be able to determine by the required date what treatment modifications, if any, must be made to ensure adequate Cryptosporidium removal. Missing this deadline may, in turn, jeopardize our ability to have the required treatment modifications, if any, completed by the deadline required, (date).

For more information, please call (name of water system contact) or (name of water system) at (phone number.)

2. The special notice for failure to determine bin classification or mean Cryptosporidium level must contain the following language:

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

3. Each special notice must also include a description of what the system is doing to correct the violation and when the system expects to return to compliance or resolve the situation.

APPENDIX A TO 179 NAC 4 - DRINKING WATER STANDARDS VIOLATIONS REQUIRING PUBLIC NOTICE¹

Contaminant	MCL/MRDL/TT violations²	Monitoring & testing procedure violations
	Tier of public notice required	Tier of public notice required
I. Violations of Drinking Water Standards ³		
A. Microbiological Contaminants		
1.a Total coliform bacteria*	2	3
1.b Total coliform (TT violations resulting from failure to perform assessments or corrective actions, monitoring violations and reporting violations)**	2	3
1.c Seasonal system failure to follow Department-approved start-up plan prior to serving water to the public or failure to provide certification to Department**	2	--
2.a Fecal coliform/ <i>E. coli</i> *	1	⁴ 1,3
2.b <i>E. coli</i> (MCL, monitoring, and reporting violations)**	1	3
2.c <i>E. coli</i> (TT violations resulting from failure to perform level 2 assessments or corrective action)**	2	--
3. Turbidity MCL	2	3

4. Turbidity MCL (average of 2 days' samples >5 NTU)	5 _{2,1}	3
5. Turbidity (for TT violations resulting from a single exceedance of maximum allowable turbidity level)	6 _{2,1}	3
6. Surface Water Treatment Rule violations, other than violations resulting from a single exceedance of maximum allowable turbidity level (TT)	2	3
7. Interim Enhanced Surface Water Treatment Rule violations, other than violations resulting from a single exceedance of maximum turbidity level (TT)	7 ₂	3
8. Filter Backwash Recycling Rule (179 NAC 18) violations	2	3
9. Long Term 1 Enhanced Surface Water Treatment Rule (179 NAC 19) violations	2	3
10. Long Term 2 Enhanced Surface Water Treatment Rule (179 NAC 25) violations	2	17 _{2,3}
11. Ground Water Rule (179 NAC 8) violations	2	3
B. Inorganic Chemicals (IOCs)		

Contaminant	MCL/MRDL/TT violations²	Monitoring & testing procedure violations
	Tier of public notice required	Tier of public notice required
1. Antimony	2	3
2. Arsenic	2	3
3. Asbestos (fibers > 10 µm)	2	3
4. Barium	2	3
5. Beryllium	2	3
6. Cadmium	2	3
7. Chromium (total)	2	3
8. Cyanide	2	3
9. Fluoride	2	3
10. Mercury (inorganic)	2	3
11. Nitrate	1	8 _{1, 3}
12. Nitrite	1	8 _{1, 3}
13. Total Nitrate and Nitrite	1	3

14. Selenium	2	3
15. Thallium	2	3
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	3
D. Synthetic Organic Chemicals (SOCs)		
1. 2,4-D	2	3
2. 2,4,5-TP (Silvex)	2	3
3. Alachlor	2	3
4. Atrazine	2	3
5. Benzo(a)pyrene (PAHs)	2	3
6. Carbofuran	2	3
7. Chlordane	2	3
8. Dalapon	2	3
9. Di (2-ethylhexyl) adipate	2	3
10. Di (2-ethylhexyl) phthalate	2	3
11. Dibromochloropropane	2	3
12. Dinoseb	2	3
13. Dioxin (2,3,7,8-TCDD)	2	3
14. Diquat	2	3
15. Endothall	2	3
16. Endrin	2	3
17. Ethylene dibromide	2	3
18. Glyphosate	2	3
19. Heptachlor	2	3
20. Heptachlor epoxide	2	3
21. Hexachlorobenzene	2	3
22. Hexachlorocyclopentadiene	2	3

Contaminant	MCL/MRDL/TT violations ²	Monitoring & testing procedure violations
	Tier of public notice required	Tier of public notice required
23. Lindane	2	3
24. Methoxychlor	2	3
25. Oxamyl (Vydate)	2	3
26. Pentachlorophenol	2	3
27. Picloram	2	3
28. Polychlorinated biphenyls (PCBs)	2	3
29. Simazine	2	3
30. Toxaphene	2	3
E. Volatile Organic Chemicals (VOCs)		
1. Benzene	2	3
2. Carbon tetrachloride	2	3
3. Chlorobenzene (monochlorobenzene)	2	3
4. o-Dichlorobenzene	2	3

5. p-Dichlorobenzene	2	3
6. 1,2-Dichloroethane	2	3
7. 1,1-Dichloroethylene	2	3
8. cis-1,2-Dichloroethylene	2	3
9. trans-1,2-Dichloroethylene	2	3
10. Dichloromethane	2	3
11. 1,2-Dichloropropane	2	3
12. Ethylbenzene	2	3
13. Styrene	2	3
14. Tetrachloroethylene	2	3
15. Toluene	2	3
16. 1,2,4-Trichlorobenzene	2	3
17. 1,1,1-Trichloroethane	2	3
18. 1,1,2-Trichloroethane	2	3
19. Trichloroethylene	2	3
20. Vinyl chloride	2	3
21. Xylenes (total)	2	3
F. Radioactive Contaminants		
1. Beta/photon emitters	2	3
2. Alpha emitters	2	3
3. Combined radium (226 & 228)	2	3
4. Uranium	2	3

Contaminant	MCL/MRDL/TT violations²	Monitoring & testing procedure violations
	Tier of public notice required	Tier of public notice required
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). The Director 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	3
2. Haloacetic Acids (HAA5)	2	3
3. Bromate	2	3
4. Chlorite	2	3
5. Chlorine (MRDL)	2	3
6. Chloramine (MRDL)	2	3

7. Chlorine dioxide (MRDL), where any 2 consecutive daily samples at entrance to distribution system only are above MRDL	2	1 ² ,3
8. Chlorine dioxide (MRDL), where sample(s) in distribution system the next day are also above MRDL	1 ³ 1	1
9. Control of DBP precursors - TOC (TT)	2	3
10. Benchmarking and disinfection profiling	N/A	3
11. Development of monitoring plan	N/A	3
H. Other Treatment Techniques		
1. Acrylamide (TT)	2	N/A
2. Epichlorohydrin (TT)	2	N/A
II. Unregulated Contaminant Monitoring: ¹⁴		
A. Unregulated contaminants	N/A	3
B. Nickel	N/A	3
III. Public Notification for Variances and Exemptions:		
A. Operation under a variance or exemption	3	N/A
B. Violation of conditions of a variance or exemption	2	N/A
IV. Other Situations Requiring Public Notification:		
A. Fluoride secondary maximum contaminant level (SMCL) exceedance	3	N/A
B. Exceedance of nitrate MCL for non-community systems, as allowed by Director	1	N/A
C. Availability of unregulated contaminant	3	N/A

Contaminant	MCL/MRDL/TT violations ²	Monitoring & testing procedure violations
	Tier of public notice required	Tier of public notice required
monitoring data		
D. Waterborne disease outbreak	1	N/A
E. Other waterborne emergency ¹⁵	1	N/A
F. Source Water Sample Positive for GWR Fecal Indicators: <i>E. coli</i> , enterococci, or coliphage	1	N/A

G. Other situations as determined by the Director	16 ^{1,2,3}	N/A
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Appendix A – Endnotes

* Through March 31, 2016.

** Beginning April 1, 2016.

¹ 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 Director. The Director may, at his/her option, also require a more stringent public notice tier (e.g., Tier 1 instead of Tier 2 or Tier 2 instead of Tier 3) for specific violations and situations listed in this Appendix, as authorized under 179 NAC 4-005.01 and 4-006.01.

² MCL – Maximum contaminant level, MRDL – Maximum residual disinfectant level, TT – Treatment technique.

³ The term “Violations of Drinking Water Standards” is used here to include violations of MCL, MRDL, treatment technique, monitoring, and testing procedure requirements.

⁴ Failure to test for fecal coliform or E. coli is a Tier 1 violation if testing is not done after any repeat sample tests positive for coliform. All other total coliform monitoring and testing procedure violations are Tier 3.

⁵ Systems that violate the turbidity MCL of 5 NTU based on an average of measurements over two consecutive days must consult with the Director within 24 hours after learning of the violation. Based on this consultation, the Director may subsequently decide to elevate the violation to Tier 1. If a system does not make contact with the Director in the 24-hour period, the violation is automatically elevated to Tier 1.

⁶ Systems with treatment technique violations involving a single exceedance of a maximum turbidity limit under the Surface Water Treatment Rule (SWTR), the Interim Enhanced Surface Water Treatment Rule (IESWTR) or the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) are required to consult with the Director within 24 hours after learning of the violation. Based on this consultation, the Director may subsequently decide to elevate the violation to Tier 1. If a system does not make contact with the Director in the 24-hour period, the violation is automatically elevated to Tier 1.

⁷ The Surface Water Treatment Rule (SWTR) (179 NAC 13) remains in effect for systems serving at least 10,000 individuals; the Interim Enhanced Surface Water Treatment Rule (179 NAC 17) adds additional requirements and does not in many cases supersede the SWTR.

⁸ 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.

⁹ The uranium MCL Tier 2 violation citations are effective December 8, 2003 for all community water systems.

¹⁰ The uranium Tier 3 violation citations are effective December 8, 2003 for all community water systems.

¹¹ Community and non-transient non-community water systems using surface water or ground water under the direct influence of surface water as a source and serving > 10,000 individuals 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. Transient non-community systems using surface water or ground water under the direct influence of surface water as a source and serving 10,000 or more individuals and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2002. Transient non-community systems serving fewer than 10,000 individuals and using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004.

¹² 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.

¹³ 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.

¹⁴ Some water systems must monitor for certain unregulated contaminants.

¹⁵ Other waterborne emergencies require a Tier 1 public notice under 179 NAC 4-004.01 for situations that do not meet the definition of a waterborne disease outbreak given in 179 NAC 2-001.02 but that still have the potential to have serious adverse effects on health as a result of short-term exposure. These could include outbreaks not related to treatment deficiencies, as well as situations that have the potential to cause outbreaks, such as failures or significant interruption in water treatment processes, natural disasters that disrupt the water supply or distribution system, chemical spills, or unexpected loading of possible pathogens into the source water.

¹⁶ The Director may place other situations in any tier he/she believes appropriate, based on threat to public health

¹⁷ Failure to collect three or more samples for Cryptosporidium analysis is a Tier 2 violation requiring special notice as specified in 179 NAC 4-012. All other monitoring and testing procedure violations are Tier 3.

APPENDIX B TO 179 NAC 4 - STANDARD HEALTH EFFECTS LANGUAGE FOR PUBLIC NOTIFICATION DRINKING WATER STANDARDS

A. Microbiological Contaminants

Contaminant	MCLG¹ mg/L	MCL² mg/L	Standard health effects language for public notification
1a. Total coliform*	Zero	See footnote ³	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
1b. Fecal	Zero	Zero	

coliform/ <i>E. coli</i> *			Fecal coliforms and <i>E. coli</i> 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.
1c. Fecal indicators (GWR): i. <i>E. coli</i> 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 Rule (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.
1e.179 NAC 26 Coliform Assessment and/or Corrective Action Violations**	N/A	TT	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 assessments to identify problems and to correct any problems that are found. [THE SYSTEM MUST USE THE FOLLOWING APPLICABLE SENTENCES.]

			<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>
<p>1f. 179 NAC 26 <i>E. coli</i> Assessment and/or Corrective Action Violations**</p>	N/A	TT	<p><i>E. coli</i> are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems. We violated the standard for <i>E. coli</i>, indicating</p> <p>the need to look for potential problems in water treatment or distribution. When this</p>
			<p>occurs, we are required to conduct a detailed assessment to identify problems and to correct any problems that are found. [THE SYSTEM MUST USE THE FOLLOWING APPLICABLE SENTENCES.]</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 that we conducted.</p>
<p>1g. <i>E. Coli</i>**</p>	Zero	<p>In compliance unless one of the following conditions occurs: (1) The system has an <i>E. coli</i>-positive repeat sample following a total coliform-positive</p>	<p><i>E. coli</i> are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.</p>

		<p>routine sample.</p> <p>(2) The system has a total coliform-positive repeat sample following an <i>E. coli</i>-positive routine sample.</p> <p>(3) The system fails to take all required repeat samples following an <i>E. coli</i>-positive routine sample.</p> <p>(4) The</p>	
		<p>system fails to test for <i>E. coli</i> when any repeat sample tests positive for total coliform.</p>	
<p>1h. 179 NAC 26</p> <p>Seasonal System TT Violations**</p>	N/A	TT	<p>When this violation includes the failure to monitor for total coliforms or <i>E. coli</i> prior to serving water to the public, the mandatory language found at 4-007.04 item 2 must be used.</p> <p>When this violation includes failure to complete other actions, the appropriate elements found in 4-007.01 to describe the violation must be used.</p>
<p>2a. Turbidity (MCL)⁴</p>	None	1 NTU ^{5/5} NTU	<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</p>

			organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
2b. Turbidity (SWTR TT) ⁶	None	TT ⁷	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
2c. Turbidity (IESWTR TT and LT1ESWTR TT) ⁸	None	TT	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.

B. Surface Water Treatment Rule (SWTR), Interim Enhanced Surface Water Treatment Rule (IESWTR), Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) and the Filter Backwash Recycling Rule (FBRR) violations

Contaminant	MCLG ¹ mg/L	MCL ² mg/L	Standard health effects language for public notification
3. <i>Giardia lamblia</i> (SWTR/IESWTR/LT1ESWTR). 4. Viruses (SWTR/IESWTR/LT1ESWTR). 5. Heterotrophic plate count (HPC) bacteria ⁹ (SWTR/IESWTR/LT1ESWTR). 6. <i>Legionella</i> (SWTR/IESWTR/LT1ESWTR). 7. <i>Cryptosporidium</i> (IESWTR/FBRR/LT1ESWTR).	Zero	TT ¹⁰	Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

C. Inorganic Chemicals (IOCs)

Contaminant	MCLG¹ mg/L	MCL² mg/L	Standard health effects language for public notification
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 (Effective January 23, 2006)	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 ¹¹	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.

Contaminant	MCLG¹ mg/L	MCL² mg/L	Standard health effects language for public notification
16. Fluoride	4.0	4.0	Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Fluoride in drinking water at half the MCL or more may cause mottling of children's teeth, usually in children less than nine years old. Mottling, also known as dental fluorosis, may include brown staining and/or pitting of the teeth and occurs only in developing teeth before they erupt from the gums.

17. Mercury (inorganic)	0.002	0.002	Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.
18. Nitrate	10	10	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
19. Nitrite	1	1	Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
20. Total Nitrate and Nitrite	10	10	Infants below the age of six months who drink water containing nitrate and nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
21. Selenium	0.05	0.05	Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.
22. Thallium	0.0005	0.002	Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.

D. Lead and Copper Rule

Contaminant	MCLG ¹ mg/L	MCL ² mg/L	Standard health effects language for public notification
23. Lead	Zero	TT ¹²	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 ¹³	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.
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E. Synthetic Organic Chemicals (SOCs)

Contaminant	MCLG¹ mg/L	MCL² mg/L	Standard health effects language for public notification
25. 2,4-D	0.07	0.07	Some people who drink water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.
26. 2,4,5-TP (Silvex)	0.05	0.05	Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.
27. Alachlor	Zero	0.002	Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer.
28. Atrazine	0.003	0.003	Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.
29. Benzo(a)pyrene (PAHs)	Zero	0.0002	Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
30. Carbofuran	0.04	0.04	Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.
31. Chlordane	Zero	0.002	Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.
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.

Contaminant	MCLG¹	MCL²	Standard health effects language for public notification
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	mg/L	mg/L	
33. Di (2-ethylhexyl) adipate	0.4	0.4	Some people who drink water containing di (2-ethylhexyl) adipate well in excess of the MCL over many years could experience toxic effects such as weight loss, liver enlargement or reproductive difficulties.
34. Di (2-ethylhexyl) phthalate	Zero	0.006	Some people who drink water containing di (2-ethylhexyl) phthalate well in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
35. Dibromochloropropane (DBCP)	Zero	0.0002	Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
36. Dinoseb	0.007	0.007	Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
37. Dioxin (2,3,7,8-TCDD)	Zero	3x10 ⁻⁸	Some people who drink water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
38. Diquat	0.02	0.02	Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
39. Endothall	0.1	0.1	Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.
40. Endrin	0.002	0.002	Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.
41. Ethylene dibromide	Zero	0.00005	Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach, reproductive system, or kidneys, and may have an increased risk of getting cancer.
42. Glyphosate	0.7	0.7	Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their

			kidneys or reproductive difficulties.
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. Hexachlorocyclopentadiene	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.

Contaminant	MCLG¹ mg/L	MCL² mg/L	Standard health effects language for public notification
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.
50. Pentachlorophenol	Zero	0.001	Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer.
51. Picloram	0.5	0.5	Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.
52. Polychlorinated biphenyls (PCBs)	Zero	0.0005	Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland,

			immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.
53. Simazine	0.004	0.004	Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.
54. Toxaphene	Zero	0.003	Some people who drink water containing toxaphene in excess of the MCL 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)

Contaminant	MCLG¹ mg/L	MCL² mg/L	Standard health effects language for public notification
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.

Contaminant	MCLG¹ mg/L	MCL² mg/L	Standard health effects language for public notification
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 their liver.
62. cis-1,2-Dichloroethylene	0.07	0.07	Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
63. trans-1,2-Dichloroethylene	0.1	0.1	Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
64. Dichloromethane	Zero	0.005	Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.
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 of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
74. Vinyl chloride	Zero	0.002	Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.

Contaminant	MCLG¹ mg/L	MCL² mg/L	Standard health effects language for public notification
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

Contaminant	MCLG¹ mg/L	MCL² mg/L	Standard health effects language for public notification
76. Beta/photon emitters	Zero	4 mrem/yr ¹⁴	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 ¹⁵	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 ¹⁶	Zero	30 µg/L	Some people who drink water containing uranium in excess of the MCL over many years may have an increased risk of getting cancer and kidney toxicity.

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). The Director sets standards for controlling the levels of disinfectants and DBPs in drinking water, including

trihalomethanes (THMs) and haloacetic acids (HAAs)¹⁷

Contaminant	MCLG¹ mg/L	MCL² mg/L	Standard health effects language for public notification
80. Total trihalomethanes (TTHMs)	N/A	0.080 ^{18,19}	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.
81. Haloacetic Acids (HAA)	N/A	0.060 ²⁰	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
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.

Contaminant	MCLG¹ mg/L	MCL² mg/L	Standard health effects language for public notification
83. Chlorite	0.08	1.0	Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.
84. Chlorine	4 (MRDLG) ²¹	4.0 (MRDL) ²²	Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
85. Chloramines	4 (MRDLG)	4.0 (MRDL)	Some people who use water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.
86a. Chlorine dioxide, where any two consecutive daily samples	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

<p>taken at the entrance to the distribution system are above the MRDL</p>			<p>of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia. <i>Add for public notification only:</i> The chlorine dioxide violations reported today are the result of exceedances at the treatment facility only, not within the distribution system that delivers water to consumers. Continued compliance with chlorine dioxide levels within the distribution system minimizes the potential risk of these violations to consumers.</p>
<p>86b. Chlorine dioxide, where one or more distribution system samples are above the MRDL</p>	<p>0.8 (MRDLG)</p>	<p>0.8 (MRDL)</p>	<p>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. <i>Add for public notification only:</i> The chlorine dioxide violations reported today include exceedances of the Department of Health and Human Services Regulation and Licensure standard within the distribution system that 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.</p>
<p>87. Control of DBP precursors (TOC)</p>	<p>None</p>	<p>TT</p>	<p>Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.</p>

Contaminant	MCLG¹ mg/L	MCL² mg/L	Standard health effects language for public notification
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.

Appendix B – Endnotes

* Through March 31, 2016.

** Beginning April 1, 2016.

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% 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 the 1989 Surface Water Treatment Rule (179 NAC 13), the 1998 Interim Enhanced Surface Water Treatment Rule (179 NAC 17), and the 2002 Long Term 1 Enhanced Surface Water Treatment Rule (179 NAC 19). 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.

5. NTU – Nephelometric turbidity unit.

6. There are various regulations that set turbidity standards for different types of systems, including the 1989 Surface Water Treatment Rule (179 NAC 13), the 1998 Interim Enhanced Surface Water Treatment Rule (IESWTR 179 NAC 17)), and the 2002 Long Term 1 Enhanced Surface Water Treatment Rule (179 NAC 19). Systems subject to the Surface Water Treatment Rule (both filtered and unfiltered) may not exceed 5 NTU. In addition, in filtered systems, 95% of the samples each month must not exceed 0.5 NTU in systems using conventional or direct filtration and must not exceed 1 NTU in systems using slow sand or diatomaceous earth filtration or other filtration technologies approved by the Director.

7. TT – Treatment technique.

8. There are various regulations that set turbidity standards for different types of systems, including the 1989 Surface Water Treatment Rule (179 NAC 13) and the 1998 Interim Enhanced Surface Water Treatment Rule (IESWTR) (179 NAC 17), and the 2002 Long Term 1 Enhanced Surface Water Treatment Rule

LT1ESWTR (179 NAC 19). For systems subject to 179 NAC 17 (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% of the 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 Director. For systems subject to the LT1ESWTR (systems serving fewer than 10,000 people, using surface water or ground water under the direct influence of surface water) that use conventional filtration or direct filtration, after January 14, 2005 the turbidity level of a system's combined filter effluent may not exceed 0.3 NTU in at least 95% of monthly measurements, and the turbidity level of a system's combined filter effluent must not exceed 1 NTU at any time. Systems subject to the LT1ESWTR using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the Director.

9. The bacteria detected by heterotrophic plate count (HPC) are not necessarily harmful. HPC is simply an alternative method of determining disinfectant residual levels. The number of such bacteria is an indicator of whether there is enough disinfectant in the distribution system.

10. SWTR, IESWTR, and LT1ESWTR treatment technique violations that involve turbidity exceedances may use the health effects language for turbidity instead.

11. Million fibers per liter.

12. Action Level = 0.015 mg/L

13. Action Level = 1.3 mg/L

14. Millirems per year

15. Picocuries per liter

16. The uranium MCL is effective December 8, 2003 for all community water systems.

17. Surface water systems and ground water systems under the direct influence of surface water (GWUDI) are regulated under 179 NAC 13. Surface water and GWUDI community and non-transient non-community systems serving > 10,000 individuals must comply with Title 179 NAC 16 DBP MCLs, and disinfectant maximum residual disinfectant levels MRDLs, beginning January 1, 2002. All other community and non-transient non-community systems must comply with 179 NAC 16 DBP MCLs and disinfectant MRDLs beginning January 1, 2004. Transient non-community systems using surface water or ground water under the direct influence of surface water as a source serving > 10,000 individuals and 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.

18. Community and non-transient non-community systems must comply with Title 179 NAC 24 TTHM and HAA5 MCLs of 0.080 mg/L and 0.060 mg/L, respectively (with compliance calculated as a locational running annual average) on the schedule in 179 NAC 24-003.

19. The MCL for total trihalomethanes is the sum of the concentrations of the individual trihalomethanes.

20. The MCL for haloacetic acids is the sum of the concentrations of the

individual haloacetic acids.

21. MRDLG - Maximum residual disinfectant level goal.

22. MRDL - Maximum residual disinfectant level.

APPENDIX C to 179 NAC 4 - LIST OF ACRONYMS USED IN PUBLIC NOTIFICATION REGULATION

CCR: Consumer Confidence Report

CWS: Community Water System

DBP: Disinfection Byproduct

GWR: Ground Water Rule

HPC: Heterotrophic Plate Count

IESWTR: Interim Enhanced Surface Water Treatment Rule

IOC: Inorganic Chemical

LCR: Lead and Copper Rule

MCL: Maximum Contaminant Level

MCLG: Maximum Contaminant Level Goal

MRDL: Maximum Residual Disinfectant Level

NCWS: Non-Community Water System

NTNCWS Non-Transient Non-Community Water System

NTU: Nephelometric Turbidity Unit

PN: Public Notification

PWS: Public Water System

SDWA: Safe Drinking Water Act

SMCL: Secondary Maximum Contaminant Level

SOC: Synthetic Organic Chemical

SWTR: Surface Water Treatment Rule

TCR: Total Coliform Rule

TT: Treatment Technique

TWS: Transient Non-Community Water System

VOC: Volatile Organic Chemical

TITLE 179 PUBLIC WATER SYSTEMS

CHAPTER 5 REPORTING AND RECORDKEEPING

5-001 SCOPE AND AUTHORITY: These regulations require public water systems to keep certain records and reports for stated periods of time. The statutory authority is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

5-002 DEFINITIONS

Department means the Division of Public Health of the Department of Health and Human Services.

Director means the Director of Public Health of the Division of Public Health or his/her authorized representative.

5-003 REQUIRED REPORTS: The owner of a public water supply must report to the Director within the time prescribed on each of the following occurrences which influence or alter the reliability of the system or the safety of drinking water delivered to the consumer:

1. Any disruption in service that results in a likelihood for the entrance of contaminants into the system, including reduced pressure due to fire fighting operations or breakdown should be recorded by the owner of the system. Any loss of pressure or disruption of service for reasons beyond normal repair or replacement must be reported to the Director when more than 10% of the consumers are affected.
2. Any proposed change in source of supply or treatment processes, or any expansion of storage or to the distribution service area must be reported to the Director before implementing a change.
3. All reports, studies, and investigations pertinent to the operation and management of a public water system must be made available to the Director on request.
4. Any change in personnel, elected or appointed, having primary responsibility for the operation of a public water supply system, must be promptly reported to the Director by the owner or a representative of the owner.
5. Any change in ownership of a public water system must be reported to the Director by the prior owner, and the prior owner is responsible for informing the new owner of the general provisions of the Nebraska Safe Drinking Water Act and the regulations implementing it.

5-004 REPORTING REQUIREMENTS: Except where a shorter period is specified in Title 179 the owner of a public water system must report to the Director the results of any test measurement or analysis required by Title 179 within (1) the first ten days following the month in which the result is received, or (2) the first ten days following the end of the required monitoring period as stipulated by the Director, whichever of these is shortest.

5-004.01 Except where a different reporting period is specified in Title 179, the owner of a public water supply system must report to the Director within 48 hours the failure to comply with any state drinking water standard regulation (including failure to comply with monitoring requirements) set forth in 179 NAC 5.

5-004.02 The owner of a public water system is not required to report analytical results to the Director in cases where the Department Laboratory performs all of the analysis and reports all of the results.

5-004.03 The public water system, within ten days of completing the public notification requirements under 179 NAC 4 for the initial public notice and repeat notices, must submit to the Director a certification that it has fully complied with the public notification regulations. The public water system must include with this certification a representative copy of each type of notice distributed, published, posted, and made available to the persons served by the system and to the media.

5-004.04 The owner of a public water system must submit to the Director within the time stated in the request copies of any record required to be maintained under Title 179 or that the Director is entitled to inspect pursuant to Neb. Rev. Stat §§ 71-5301 to 71-5313.

5-005 RECORDS MAINTENANCE: Any owner of a public water system subject to the provisions of Title 179 must retain on the premises of the public water system or a convenient location near such premises, the following records:

1. Records of microbiological analyses and turbidity analyses made pursuant to Title 179 must be kept for not less than five years. Records of chemical analyses made pursuant to Title 179 must be kept for not less than ten years. Actual laboratory reports may be kept or data may be transferred to tabular summaries, provided that the following information is included:

- a. The date, place, time of sampling, and the name of the person who collected the sample;
- b. Identification of the sample as to whether it was a routine distribution system sample, a check sample, a raw or processed sample, or any other special purpose sample;
- c. Date of analysis;
- d. Laboratory and person responsible for performing analysis;
- e. The analytical technique or method used; and
- f. The results of the analysis.

2. Ground Water Under the Direct Influence of Surface Water

- a. Owners of public water systems that use a ground water source under the direct influence of surface water which does not provide filtration must keep records of source water bacteriological and turbidity measurements on Department Forms PWS 401 and PWS 402 which are attached and incorporated into these regulations, or on an alternate format that includes the same information.
 - b. Owners of public water systems that use a surface water source or a ground water source under the direct influence of surface water which provides filtration must keep records of the disinfection residual and turbidity measurements on Department Form PWS 407 which is attached and incorporated into these regulations, or on an alternate format that includes the same information..
3. Records of action taken by the owner or the system to correct violations of primary drinking water regulations must be kept for a period of not less than three years after the last action taken with respect to the particular violation involved.
 4. Copies of any written reports, summaries or communications relating to sanitary surveys of the system conducted by the owner of the system, by a private consultant, or by any local, state or federal agency including the Department must be kept for a period of not less than ten years after completion of the sanitary survey involved.
 5. Records concerning a variance or exemption granted to the system and records relating to receipt and compliance with Administrative Orders to correct construction or operational deficiencies must be kept for a period ending not less than five years following the expiration of such variance, exemption or order.
 6. Copies of public notices issued pursuant to 179 NAC 4 and certifications made to the Department pursuant to 179 NAC 5-004 must be kept for three years after issuance.
 7. Copies of monitoring plans developed pursuant to 179 NAC 23 (upon its effective date) must be kept for the same period of time as the records of analyses taken under the plan are required to be kept under 179 NAC 5-005 item 1, except as specified elsewhere in Title 179.
 8. Records that must be maintained for the Ground Water Rule are found in 179 NAC 8-008.02.

5-006 AVAILABILITY OF RECORDS: All records required by Title 179 must be available for public inspection at any reasonable hour and will be reviewed periodically for completeness by the Director.

179 NAC 5 Attachment

PWS 401

CT DETERMINATION FOR UNFILTERED SYSTEMS - MONTHLY REPORT TO PRIMARY AGENCY¹

Month _____ System/Treatment Plant _____
 Year _____ PWS ID _____

Date	Coliform Measurements				Turbidity Measurements	
	No. of Samples	No. of Samples Meeting Specified Limits	Days with Turbidity > 1 NTU	Number of Turbidity Events	Maximum Turbidity (NTU)	Turbidity > 5 NTU (Yes or No)
	Fecal	Total	Fecal (1:100,000)	Total (1:100,000)		
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
Total					Maximum Daily Turbidity -	Total No. of Turbidity Events -

Continued on Back

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179 NAC 5 Attachment

PWS 401

CT DETERMINATION FOR UNFILTERED SYSTEMS - MONTHLY REPORT TO PRIMARY AGENCY¹

Month _____ System/Treatment Plant _____
 Year _____ PWS ID _____

Date	Coliform Measurements				Turbidity Measurements	
	No. of Samples	No. of Samples Meeting Specified Limits	Days with Turbidity > 1 NTU	Number of Turbidity Events	Maximum Turbidity (NTU)	Turbidity > 5 NTU (Yes or No)
	Fecal	Total	Fecal (1:100,000)	Total (1:100,000)		
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
Total					Maximum Daily Turbidity -	Total No. of Turbidity Events -

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PWS 402

LONG TERM SOURCE WATER QUALITY CONDITIONS FOR UNFILTERED SYSTEMS (For System Use Only)

Year _____ System/Treatment Plant _____
 PWS ID _____

Month	Coliform Measurements				Turbidity Measurements	
	No. of Samples	No. of Samples Meeting Specified Limits	Days with Turbidity > 1 NTU	Number of Turbidity Events	Maximum Turbidity (NTU)	Turbidity > 5 NTU (Yes or No)
	Fecal	Total	Fecal (1:100,000)	Total (1:100,000)		
January						
February						
March						
April						
May						
June						
July						
August						
September						
October						
November						
December						
Total						

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PWS 407

DAILY DATA SHEET FOR FILTERED SYSTEMS (For System Use Only)

Month _____ System/Treatment Plant _____
 Year _____ PWS ID _____

Date	Minimum Filtered Water Turbidity (1)				(2)	(3)	(4)	(5)
	Minimum Disinfection Residual at Distribution System (mg/L)	Filter Effluent	Clean well effluent	Plant effluent				
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
Total								

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- Notes:
- For multiple distribution systems, this column must only be completed for the last distribution added prior to entering the distribution system. If one event is noted, the duration of the event must be recorded.
 - For systems using conventional treatment, direct filtration, disinfection prior to raw water feed or disinfection with filtration, turbidity measurements may be taken at the combined filter effluent, clear well effluent, or distribution prior to entry into the distribution system. The turbidity may also be measured for each individual filter with a separate sheet maintained for each distribution system. The turbidity may also be measured for each individual filter with a separate sheet maintained for each.
 - For continuous monitoring, count each 4 hour period as 1 sample.
 - Depending on the filtration technology employed, the number of turbidity samples meeting the following levels must be recorded: conventional treatment or direct filtration - 0.5 NTU, slow sand filtration - 1 NTU, ultrafiltration or membrane filtration - 1 NTU. The site may specify alternate performance levels for conventional treatment or direct filtration, not exceeding 1 NTU, and slow sand filtration not exceeding 5 NTU, in which case the number of turbidity measurements meeting these levels must be recorded.
 - In recording the number of turbidity measurements exceeding 5 NTU, the turbidity values should also be recorded.

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TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 6 - VARIANCES AND EXEMPTIONS

6-001 SCOPE AND AUTHORITY: These regulations establish the requirements for variances from drinking water standards, including small systems variances. They also establish the requirements for exemptions from any requirement respecting a maximum contaminant level or any treatment technique requirement, or from both, of a drinking water standard. The statutory authority is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

6-002 DEFINITIONS

Code of Federal Regulations (CFR) means the Code of Federal Regulations as it existed on the effective date of these regulations, and any CFR citations mentioned in these regulations are hereby incorporated by reference. Copies of the CFR as it existed on the effective date of these regulations can be obtained on the DHHS website at http://dhhs.ne.gov/publichealth/Pages/enh_pwsindex.aspx or by requesting a copy via email from the Department at: DHHS.drinkingwater@nebraska.gov or by calling 402-471-2541.

Department means the Division of Public Health of the Department of Health and Human Services.

Director means the Director of Public Health or his/her authorized representative.

EPA means the U.S. Environmental Protection Agency.

6-003 CONDITIONS:

6-003.01 In accordance with the requirements of Neb. Rev. Stat. 71-5310 the Director may grant variances or exemptions from certain provisions of the regulations under the Nebraska Safe Drinking Water Act, in compliance with 42 U.S.C. §300g-4 and 42 U.S.C. §300g-5 and 40 CFR 142 Subpart K of the Code of Federal Regulations (for small system variances), except that variances or exemptions from the MCLs for total coliforms and E. coli and variances from any of the treatment technique requirements of 179 NAC 13 may not be granted. These documents are available for viewing at the Division of Public Health of the Department of Health and Human Services, 301 Centennial Mall South, Lincoln, NE 68509; or 42 U.S.C. §300g-4 and 42 U.S.C. §300g-5 are available online at <http://www.gpo.gov/fdsys/search/submitcitation.action?publication=USCODE>.

6-003.02 The Director has stayed the effective date of this chapter relating to the total coliform MCL of 179 NAC 2-002.04C for systems that demonstrate to the Department that the violation of the total coliform MCL is due to a persistent growth of total coliforms in the distribution system rather than fecal or pathogenic contamination, a treatment lapse or deficiency, or a problem in the operation or maintenance of the distribution

system. This is stayed through March 31, 2016, at which time the total coliform MCL is no longer effective.

6-003.03 Small system variances are not available for rules addressing microbial contaminants, which would include 179 NAC 8, 13, 17, 19, 25, and 26.

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 7 - SITING, DESIGN AND CONSTRUCTION OF PUBLIC WATER SYSTEMS

7-001 SCOPE AND AUTHORITY: These regulations establish standards for the siting, design, and construction of public water systems and the associated fees. The authority is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

7-001.01 Other Regulations: Persons designing and/or constructing water projects are advised that regulations and/or codes that are not enforced by the Department may exist and apply to the project, including but not limited to electrical codes, plumbing codes, building codes, wastewater regulations, and regulations issued and enforced by Natural Resources Districts, federal, state, county, or city authorities.

7-002 DEFINITIONS

Certification of Project Completion means documentation signed and dated by the engineer indicating that a project or portion of a project has been completed in accordance with the approved plans and specifications for placement into service.

Community public water supply distribution system means that part of the public water system including distribution mains, valves and hydrants that are under the ownership and/or legal control of the public water system owner.

Department means the Division of Public Health of the Department of Health and Human Services.

Director means the Director of Public Health of the Division of Public Health or his/her authorized representative.

Distribution main means a pipe through which water is delivered to a water service main.

Emergency condition means any event that causes the complete loss of water supply or loss of adequate pressure in the system.

Engineer means a professional engineer registered in the State of Nebraska.

Project means plans and specifications from a public water system that are submitted on one date for review and approval.

Major construction, extension, or alteration means those structural changes that affect the source of supply, treatment processes, or transmission of water to service areas, but does not include the extension of service mains within established service areas.

Non-community public water supply distribution system means that part of the public water system including the well discharge piping, all buried pipe and building plumbing that is under the ownership and/or legal control of the public

water system owner.

Service main means the portion of a pipe from a distribution main to the user. Service main also means service pipe or service line.

Substantial conformance means that the siting, design, and construction of drinking water facilities will not adversely impact public health and/or the ability of a public water system to deliver safe drinking water on a continuous basis.

Transmission main means a pipe through which water is conveyed from a source of supply or storage to a point of storage, treatment, or the distribution system. Transmission mains may have individual service connections where there is no other economical or convenient system designed to provide service to individual customers.

Tremie pipe means a pipe or hose that carries grout or gravel pack to the placement depth.

7-003 SUBMISSION OF PLANS AND SPECIFICATIONS: Plans and specifications for all major construction, extension or alteration to public water systems must be prepared by an engineer and must be submitted to the Director for review and written approval prior to the beginning of construction, except as provided in 179 NAC 7-004. Upon approval of the plans and specifications the Director will issue a construction permit. A construction permit is valid for a period of two years from the date of issuance. If construction is not started within two years from the issuance of the permit, the owner and/or the engineer must request a time extension in writing prior to the expiration of the construction permit and the Director must approve it with an expiration date in order for it to continue to be valid.

7-003.01 The plans and specifications:

1. Must be presented in legible form and with a scale of one inch equal to not more than 100 feet on full size drawings to establish construction requirements and facilitate effective review, except that rural water or regional water systems that do not have firefighting capabilities may use a scale of one inch equal to not more than 500 feet;
2. Must be submitted by the engineer in triplicate (at least one copy should be in a reduced form of 11"X17" for use by Department staff in the field) and in sufficient time to permit 30 working days for review and comment or approval and with time for the incorporation of changes if required. Systems having an engineer on staff may submit plans and specifications in duplicate;
3. May not be amended in a manner that alters the capacity, hydraulic conditions and operation of water system components; functioning of water treatment processes; or water quality before the Director has approved change orders directing such amendments;

7-003.02 Record drawings must be submitted to the Department within one year of the project placement into service date.

7-003.03 Review of Plans and Specifications: When review of the plans and specifications does not indicate substantial conformance to Neb. Rev. Stat. §§ 71-5301 to 71-5313 or regulations in Title 179 NAC 7, or if inadequate information is provided for a complete review, a comment letter will be issued by the Department to the engineer. The issues identified in the Department's comment letter must be addressed within 60 calendar days from the date of issuance of the comment letter unless the owner and/or the engineer request in writing and the Department approves an extension of time. If the engineer does not respond in writing to the Department's comment letter within 60 calendar days from the issuance of the comment letter, the Department will deny the construction permit for the project. When a project is denied for construction, new sets of plans and specifications, along with a review fee per Title 179 NAC 7-005, must be submitted for review and written approval prior to starting construction.

7-003.04 The Department may deny approval of plans and specifications for failure to comply with any of the provisions of Neb. Rev. Stat. §§ 71-5301 to 71-5313 or 179 NAC 7. The Department will inform the engineer and the public water system owner, in writing, of the factual basis for the denial and the statutory or regulatory provisions supporting the decision. The denial will become final 30 days after the mailing of the notice, unless the public water system owner, within the 30-day period, requests a hearing in writing. The hearing shall be conducted in accordance with the Nebraska Administrative Procedure Act and 184 NAC 1, the Department's Rules of Practice and Procedure for Administrative hearings.

7-004 PLANS AND SPECIFICATIONS -- REQUIRED/NOT REQUIRED

7-004.01 Plans and specifications must be submitted for the following types of projects:

1. All components of new public water systems and/or interconnection between public water systems;
2. New wells, new intake structures, relining of existing wells or replacement of one type of well pump with a different type of well pump;
3. Alterations that influence the capacity of existing wells or intake structures;
4. New treatment plants, modifications to existing treatment plants, and new or modifications to existing waste residual treatment at water treatment facilities;
5. Permanent installation of chemical feed equipment;
6. Storage facilities and repair to existing storage facilities, including interior lining, painting and/or coatings;
7. Pump stations;
8. Transmission mains; and
9. Construction of new distribution mains and replacement of existing distribution mains that are not exempted by 179 NAC 7-004.02 item 3.

7-004.02 Plans and specifications are not required for the following activities unless required by a state or federal funding source.

1. Installation of service mains,
2. Installation of service meters,
3. Replacement of existing distribution mains with pipes of a similar size (not to exceed one nominal size and not to exceed \$86,000 in project costs) and in a similar location; or
4. Minor repairs and maintenance which includes:
 - a. Repair of distribution or transmission mains,
 - b. Replacement of valves and fire hydrants,
 - c. Maintenance such as exterior painting, reconditioning or servicing of existing equipment,
 - d. Replacement of equipment such as chemical feeders, pumps or controls within 10% of the original approved capacity, and
 - e. Similar items with the approval of the Department.
5. For non-community systems, small water treatment units which are certified by NSF (National Sanitation Foundation), NAMA (National Automatic Merchandising Association), or other national organizations recognized by the Department and have a total capacity not to exceed 10 gpm may be installed if the Department is notified and provided with the proper certification information. The Department may require chlorination/disinfection depending on the type of water treatment unit provided.

7-004.03 Three-Year Review Program: The Department will not require the submission of plans and specifications for the construction of new distribution mains and replacement of existing distribution water mains (those not already exempted by 179 NAC 7-004.02 item 3) if a public water system enters into a three-year renewable review program agreement with the Department. The Department will enter into an initial three-year agreement with a system that pays the fee indicated in 179 NAC 7-005.02 and meets the following requirements. At the end of the initial three-year period, the agreement may be renewed. If at any time the system fails to meet any of the requirements, the Department may withdraw its approval.

1. The system must submit two sets of standard specifications and standard drawings sealed, signed and dated by an engineer for approval by the Director. Changes of sanitary significance to the approved standard specifications and standard drawings must be submitted to the Director for review and written approval prior to implementation.
2. The sizing of the mains and appurtenances must not cause any part of the system pressure to go below 20 psi under normal operating conditions. All distribution main projects must be designed by an engineer and must be in substantial conformance to the "Recommended Standards for Water Works," 2007 Edition, which is hereby incorporated into these regulations by reference. It is available for viewing at the Department of Health and Human Services, Division of Public Health, 301 Centennial Mall South, Lincoln, NE 68509. It is available from Health Research Inc., Health Education Services Division, P.O. Box 7126, Albany, NY 12224, (518)439-7286, www.hes.org. Any distribution main project with estimated or actual costs that do not exceed \$86,000 do not need

to be designed by an engineer, but must follow the standard specifications and standard drawings approved by the Department.

3. The Department may at any time request a system to provide a set of plans and specifications for a recently constructed water distribution main project to allow Department staff to conduct a field inspection.

4. The system must provide the Department with an annual list of all water distribution main projects that were placed in service during the previous calendar year by March 31 of each year. Those projects that deviated from the contamination separation standards in 179 NAC 7-007 must be noted.

5. In addition, the system must maintain the following records for each project and make them available to the Department on request:

- a. A set of plans and specifications for each project, until replaced by record drawings which must be kept as long as the project is in service,
- b. A project description indicating the purpose of the project, the proposed piping material design, operating pressure and design flows where applicable,
- c. Copies of certification of project completion for each water distribution main project (by the engineer or owner, as applicable),
- d. Copies of satisfactory bacteriological testing results and pressure/leakage tests, and
- e. Documentation and justification for any deviation, for each project where applicable, from the contamination separation standards for water mains and fire hydrants listed in 179 NAC 7-007.

7-005 FEES

7-005.01 An initial fee for the review of plans and specifications for the types of projects for which plans and specifications are required in 179 NAC 7-004 must be submitted with each project in the amount of one hundred dollars plus 0.5% of the engineer's estimated cost for the project, alteration or improvement described in the documents to be reviewed but such total fee will not exceed \$7600 and:

7-005.01A Documentation of the contract or actual cost of the project must be provided to the Director by the engineer or owner of the system for the purpose of determining the final fee amount;

7-005.01B Payment of the final fee amount -- one hundred dollars plus 0.5% of the contract or actual cost of the project minus the initial fee paid -- must be made, except that amounts of \$25 or less need not be paid or refunded;

7-005.01C Failure to pay the final fee amount constitutes cause to deny or revoke the permit to operate the system.

7-005.02 For the review and approval of standard specifications and standard drawings, annual audit and field inspection for the three-year review program in 179 NAC 7-004.03, the following fees apply

Systems with a population greater than or equal to 100,000	\$1800/ year
Systems with a population greater than or equal to 10,000 but less than 100,000	\$ 900/ year
Systems with population greater than or equal to 3300 but less than 10,000	\$ 600/ year
Systems with a population less than 3300	\$ 300/ year

7-005.03 There is a fee of \$1000 in addition to the plan review fee if construction is begun or completed prior to obtaining approval from the Department unless the project was initiated or completed under emergency conditions.

7-006 SITING

7-006.01 All wells, treatment and storage facilities, and other appurtenances necessary for the continued operation of a public water system must be located:

1. To protect against damage or breakdown as a result of floods, fire, earthquakes, or other natural disasters to the greatest extent possible, and
2. To prevent contamination of the drinking water by existing sources of pollution to the greatest extent possible.

7-007 DESIGN STANDARDS

7-007.01 The Director will review plans and specifications for substantial conformance to the "Recommended Standards for Water Works", 2007 Edition and the requirements of Title 179 NAC 7. In the event of discrepancy, Title 179 NAC 7 will govern. The Department will consider approving designs that follow generally accepted engineering guidelines and standards published by national engineering societies, federal environmental agencies, public health boards, engineering textbooks used by accredited university engineering programs, documented successful installations or successful pilot/full scale testing.

7-007.02 Chemical Feed Systems: All chemical feeders must have primary and secondary interconnect control devices to prevent overfeeding. Where applicable, chemical feeders must be electrically interconnected with the well or service pump and must also be provided with secondary control devices as a means of reducing the possibility of overfeed. An exception to this may be made for systems that have warning devices and are staffed 24 hours a day, 7 days a week.

7-007.03 Wells/Groundwater Source(s)

1. Every well, infiltration line or spring serving or intended to provide water for a public water system, to the greatest extent possible, shall be located, constructed, or modified in such a manner that neither

underground nor surface contamination by any biological, chemical or radioactive substance or by the physical property of any substance from any cesspool, privy, septic tank, sub-surface tile system, sewer, drain, pit below ground surface, abandoned or decommissioned well, animal or avian wastes, or any other possible source of pollution can adversely affect such water supply. The minimum recommended horizontal distances in feet separating the well, infiltration gallery or spring from potential sources of contamination are as described in the following table. The Department will consider location, of wells and springs at closer proximity than the minimum distances below. Approval for such location may be given when circumstances require such location, but only if, in the opinion of the Director, the engineer demonstrates that such location will not constitute a pollution hazard to the supply. The examples are not meant to be all inclusive. When locating a ground water source, the owner of a public water system shall consider all potential sources of contamination and anything which may affect the ability of the source to produce an adequate supply of safe water on a continuous basis. When surface runoff or underground movement from potential sources of contamination may adversely affect the quality of water from such supplies, the distance separating these potential sources of contamination and the well, infiltration gallery, or spring should be greater than that listed in the following schedule.

CATEGORY	DISTANCE Feet
Water Well	1,000
Sewage Lagoon	1,000
Land application of municipal/industrial waste material	1,000
Feedlot or Feedlot Runoff	1,000
Underground disposal system (septic system, cesspool, etc.)	500
Corral	500
Pit Toilet/Vault Toilet	500
Wastewater Holding Tanks	500
Sanitary Landfill/Dump	500
Chemical or Petroleum Product Storage	500
Sewage Treatment Plant	500
Sewage Wet Well	500
Sanitary Sewer Connection	100
Sanitary Sewer Manhole	100
Sanitary Sewer Line	50

NOTE: If the distance requirements in 179 NAC 13 Attachment 2 are not met, the well is subject to testing to determine if it is ground water under the direct influence of surface water. If a well meets that definition, it is treated as a surface water source subject to all the requirements of the rules regarding surface water.

2. A test hole is required for all proposed well sites or the engineer must provide similar information that would have been provided by the test hole.
3. The annular space must be grouted (cement based grout) to a minimum depth of 10 feet below the ground surface. If a pitless unit is to be installed, the upper limit of the cement based grout must be one foot below the field connection of the adapter. Crushed or chip bentonite must be installed from the top of the designed gravel pack to the base of the cement based grout. In order to accomplish this, the annular space must be 4 to 12 inches larger than the nominal casing size. Pouring into a dry annular space is preferred. Placement of the bentonite into the annular space must be done in a manner which ensures that bridging does not occur. Prior to using this material, it must be sieved over a 1/4 inch mesh screen to remove fines which may have accumulated in the bag during shipment. Any alternate annular space grouting/sealing proposed must be justified by the engineer with supporting documents.
4. The following information must be submitted with the plans and specifications, addenda thereto, or prior to construction:
 - a. Test hole driller's logs and reports or similar information.
 - b. All sieve analysis and calculations used in gravel pack and screen design. This information must be submitted prior to the placement of the screen and gravel pack.
5. The well casing must be at least two nominal sizes larger than the bowl size of the pump.
6. Well casing lengths must be joined by a watertight method appropriate to the material used so that the resulting joint will have the same structural integrity as the casing itself.
7. Cement-based grout must be placed by tremie pouring. The tremie pipe must be kept full continuously from the start to finish of the grouting procedure, with the discharge end of the tremie pipe being continuously submerged just below the surface of the grout until the zone to be grouted is completely filled.
8. The filter pack grain size must be determined by taking the 70% retained grain size of the finest formation to be filtered and multiplying it by 4, 5, or 6. This is the 70% retained grain size of the filter material to be used. The uniformity coefficient (the size of sieve that retains 40% of the sample divided by the size that retains 90%) must not be greater than 2.5. The gradation of the filter material must form a smooth and gradual size distribution curve when plotted. The screen aperture openings must be of such size as to retain between 85% and 100% of the filter material. The total open area of the screen must be such that the entrance velocity of water at the design condition does not exceed 0.1 feet per second (fps) with 50% of the screen open area blocked off.
9. The length of filter pack must extend a distance of 2-1/2 times the maximum diameter of the well above the screen and below the screen, unless terminating in bedrock or clay.
10. The filter pack must be placed with a tremie pipe by washing or pumping the filter material in with water as a slurry.

11. The sand content must be determined from averaging the results of at least 5 samples collected over the course of the constant rate pump testing. The average of the sand content from these test results must not exceed two parts per million (ppm).

7-008 WATER QUALITY

7-008.01 Test Well: Water quality samples (except for asbestos, dioxin and endoHall) must be collected from a test well to demonstrate that it will meet the requirements of Title 179 prior to construction of the production well. The Department may forgo this requirement if the following conditions are met:

1. The public water system's design engineer provides justification as to why the above requirement would not be necessary and the basis for making that determination, and
2. The system owner sends a letter to the Department requesting approval of the project without the water quality information. The letter must include a statement that the owner is aware that if the water quality from the production well does not comply with the water quality requirements of Title 179, the well may not be allowed to be placed into service.

7-008.02 Production Well: Water quality information must be obtained from the production well to demonstrate that it will meet the requirements of Title 179 prior to placement into service.

7-009 CONSTRUCTION: All major construction, extensions or alterations, except projects subject to the three-year review program in 179 NAC 7-004.03 must be completed in accordance with approved plans and specifications or approved change orders and must comply with the following requirements:

1. No part of a public water system falling within the definition of major construction may be placed in service prior to certification of project completion by the engineer, a final inspection by the department, and issuance of approval by the Director with the exception of water distribution main and interior tank coating projects. The Director may allow placement of these projects into service when requested by the owner and/or the engineer if the request is accompanied with a certification of project completion by the engineer and copies of satisfactory bacteriological testing results.
2. Any part of a public water system falling within the definition of major construction found not to be constructed in substantial conformance to approved plans and specifications or change orders, or for which plans and specifications were not approved, must not be placed in service until such time as the Director determines the construction to be in substantial conformance to the standards in 179 NAC 7-007.
3. If a public water system begins or completes any major construction, extension or alteration as defined in 179 NAC 7-002, prior to obtaining written approval from the Department, the system may be subject to an administrative penalty for the violation of Title 179 NAC 7-003. In addition, the system must do the following:

- a. Submit a copy of the project plans and specifications prepared by an engineer (as-built or as-recorded where applicable) to the Department for review and written approval,
- b. Submit the plan review fee in 179 NAC 7-005.01.
- c. Submit an additional review fee of \$1000 unless the project was completed under emergency conditions.
- d. Correct any portion of the construction found not be constructed in accordance with the requirements of Title 179 NAC 7.

7-010 DISTINCTIONS APPLIED TO NON-COMMUNITY WATER SYSTEMS

7-010.01 By first providing written notification to the Department, the owner of a non-community water system may accomplish siting, design, and construction in accordance with Title 178 NAC 12, Water Well Construction, Pump Installation, and Water Well Decommissioning Standards if the project involves a well:

1. With a capacity of less than 100 gallons per minute (gpm), associated bladder tank and piping in a water system with a total system capacity not exceeding 200 gpm, and
2. With the top of its well screen greater than 50 feet from the original ground surface, and
3. That is greater than 200 feet from a surface water source.

7-010.02 All other non-community water system projects meeting the definition of major construction, extension, or alteration must be accomplished in accordance with Title 179 NAC 7.

TITLE - 179 PUBLIC WATER SYSTEMS

CHAPTER 8 - GROUND WATER RULE

8-001 SCOPE AND AUTHORITY: This rule applies to all public water systems 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 (GWUDI) prior to treatment under 179 NAC 13. The authority is found in Neb. Rev. Stat. §§71-5301 to 71-5313.

8-002 DEFINITIONS

Code of Federal Regulations means the Code of Federal Regulations (CFR) as it existed on the effective date of these regulations, and any CFR citations mentioned in these regulations are hereby incorporated by reference. Copies of the CFR as it existed on the effective date of these regulations can be obtained on the DHHS website at http://dhhs.ne.gov/publichealth/Pages/enh_pwsindex.aspx or by requesting a copy via email from the Department at: DHHS.drinkingwater@nebraska.gov or by calling 402-471-2541.

Consecutive System means a public water system that receives some or all of its finished water from one or more wholesale systems. Delivery may be through a direction connection or through the distribution system of one or more consecutive systems.

Department means the Division of Public Health of the Department of Health and Human Services.

EPA means the United States Environmental Protection Agency.

Ground Water System, for this chapter, means any public water system meeting the applicability statement in 179 NAC 8-001, including consecutive systems receiving finished ground water.

GWUDI means ground water under the direct influence of surface water.

Hydrogeologic Sensitivity Assessment, for this chapter, means a determination of whether ground water systems obtain water from hydrogeologically sensitive settings.

Significant deficiency means a defect in design, operation, or maintenance, or a failure or malfunction of the sources, treatment, storage, or distribution system found during a sanitary survey that the Department determines to be causing, or has the potential for causing the introduction of contamination into the water delivered to consumers.

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

8-003 GENERAL REQUIREMENTS: Systems subject to 179 NAC 8 must comply with the following requirements:

1. Sanitary survey information requirements for all ground water systems as described in 179 NAC 8-004.

2. Microbial source water monitoring requirements for ground water systems that do not treat all of their ground water to at least 99.99% (4-log) treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer as described in 179 NAC 8-005.

3. Treatment technique requirements, described in 179 NAC 8-006, that apply to ground water systems that have fecally contaminated source waters, as determined by source water monitoring conducted under 179 NAC 8-005, or that have significant deficiencies that are identified by the Department. A ground water system with fecally contaminated source water or with significant deficiencies subject to the treatment technique requirements of this chapter 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 a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer.

4. Ground water systems that provide at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer are required to conduct compliance monitoring to demonstrate treatment effectiveness, as described in 179 NAC 8-006.02.

5. If requested by the Department, ground water systems must provide the Department with any existing information that will enable the Department to perform a hydrogeologic sensitivity assessment.

8-004 SANITARY SURVEYS FOR GROUND WATER SYSTEMS

8-004.01 Ground water systems must provide the Department, at the Department's request, any existing information that will enable the Department to conduct a sanitary survey.

8-004.02 For purposes of this chapter, a "sanitary survey," as conducted by the Department, 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.

8-004.03 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 Department requirements.

8-005 GROUND WATER SOURCE MICROBIAL MONITORING AND ANALYTICAL METHODS

8-005.01 Triggered Source Water Monitoring

8-005.01A General Requirements: A ground water system must conduct triggered source water monitoring if the conditions identified in items 1 and either 2 or 3 below exist:

1. The system does not provide at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer for each ground water source; and either
2. The system is notified that a sample collected under 179 NAC 3-004.01 is total coliform-positive and the sample is not invalidated under 179 NAC 3-004.03 through March 31, 2016, or
3. The system is notified that a sample collected under 179 NAC 26-006 through 179 NAC 26-009 is total coliform-positive and the sample is not invalidated under 179 NAC 26-005.03 beginning April 1, 2016.

8-005.01B Sampling Requirements: A ground water system must collect, within 24 hours of notification of the total coliform-positive sample, at least one ground water source sample from each ground water source in use at the time the total coliform-positive sample was collected under 179 NAC 3-004.01 through March 31, 2016, or collected under 179 NAC 26-006 through 26-009 beginning April 1, 2016 except as provided in

179 NAC 8-005.01B2.

8-005.01B1 The Department may extend the 24-hour time limit on a case-by-case basis if the system cannot collect the ground water source water sample within 24 hours due to circumstances beyond its control. In the case of an extension, the Department must specify how much time the system has to collect the sample.

8-005.01B2 If approved by the Department, systems with more than one ground water source may meet the requirements of 179 NAC 8-005.01B by sampling a representative ground water source or sources. If directed by the Department, systems must submit for Department approval a triggered source water monitoring plan that identifies one or more ground water sources that are representative of each monitoring site in the system's sample siting plan under 179 NAC 3-004.01 through March 31, 2016, or under 179 NAC 26-005 beginning April 1, 2016, and that the system intends to use for representative sampling under this paragraph.

8-005.01B3 Through March 31, 2016, a ground water system serving 1,000 people or fewer may use a repeat sample collected from a ground water source to meet both the requirements of 179 NAC 3-004.02 and the monitoring requirements of 179 NAC 8-005.01B for that ground water source only if the Department approves the use of E. coli as a fecal indicator for source water monitoring under 179 NAC 8-005.01. If the repeat sample collected from the ground water source is E. coli positive, the system must comply with 179 NAC 8-005.01C.

8-005.01B4 Beginning April 1, 2016, a ground water system serving 1,000 or fewer people may use a repeat sample collected from a ground water source to meet both the requirements of 179 NAC 26-010 and to satisfy the monitoring requirements of 179 NAC 8-005.01B for that ground water source only if the Department approves the use of E. coli as a fecal indicator for source water monitoring under 179 NAC 8-005.01 and approves the use of a single sample for meeting both the triggered source water monitoring requirements in 179 NAC 8-005.01 and the repeat monitoring requirements in 179 NAC 26-010. If the repeat sample collected from the ground water source is E. coli-positive, the system must comply with 179 NAC 8-005.01C.

8-005.01C Additional Requirements: If the Department does not require corrective action under 179 NAC 8-006.01B for a fecal indicator-positive source water sample collected under 8-005.01B that is not invalidated under 179 NAC 8-005.04, 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.

8-005.01D Consecutive and Wholesale Systems

8-005.01D1 In addition to the other requirements of 179 NAC 8-005.01 a consecutive ground water system that has a total coliform-

positive sample collected under 179 NAC 3-004.01 through March 31, 2016, or under 179 NAC 26-006 through 179 NAC 26-009 beginning April 1, 2016, must notify the wholesale system(s) within 24 hours of being notified of the total coliform-positive sample.

8-005.01D2 In addition to the other requirements of 179 NAC 8-005.01, a wholesale ground water system must comply with the following:

1. A wholesale ground water system that receives notice from a consecutive system it serves that a sample collected under 179 NAC 3-004.01 through March 31, 2016, or collected under 179 NAC 26-006 through 179 NAC 26-009 beginning April 1, 2016, is total coliform-positive must, within 24 hours of being notified, collect a sample from its ground water source(s) under 179 NAC 8-005.01B and analyze it for a fecal indicator under 179 NAC 8-005.03.
2. If the sample collected under 179 NAC 8-005.01D2 item 1 is fecal indicator-positive, the wholesale ground water system must notify all consecutive systems served by that ground water source of the fecal indicator source water positive within 24 hours of being notified of the ground water source sample monitoring result and must meet the requirements of 179 NAC 8-005.01C.

8-005.01E Exceptions to the Triggered Source Water Monitoring Requirements: A ground water system is not required to comply with the source water monitoring requirements of 179 NAC 8-005.01 if either of the following conditions exists:

1. The Department determines, and documents in writing, that the total coliform-positive sample collected under 179 NAC 3-004.01 through March 31, 2016, or under 179 NAC 26-006 through 179 NAC 26-009 beginning April 1, 2016 is caused by a distribution system deficiency; or
2. The total coliform-positive sample collected under 179 NAC 3-004.01 through March 31, 2016, or under 179 NAC 26-006 through 179 NAC 26-009 beginning April 1, 2016, is collected at a location that meets Department criteria for distribution system conditions that will cause total coliform-positive samples.

8-005.02 Assessment Source Water Monitoring: If directed by the Department, ground water systems must conduct assessment source water monitoring that meets Department-determined requirements for such monitoring. A ground water system conducting assessment source water monitoring may use a triggered source water sample collected under 179 NAC 8-005.01B to meet the requirements of 179 NAC 8-005.02. Department-determined assessment source water monitoring requirements may include:

1. Collection of a total of 12 ground water source samples that represent each month the system provides ground water to the public,
2. Collection of samples from each well unless the system obtains written Department approval to conduct monitoring at one or more wells within the ground water 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 ground water source samples using one of the analytical methods incorporated in 179 NAC 8-005.03B for the presence of E. coli, enterococci, or coliphage,
5. Collection of ground water source samples at a location prior to any treatment of the ground water source unless the Department approves a sampling location after treatment, and
6. Collection of ground water source samples at the well itself unless the system's configuration does not allow for sampling at the well itself and the Department approves an alternate sampling location that is representative of the water quality of that well.

8-005.03 Analytical Methods

8-005.03A A ground water system subject to the source water monitoring requirements of 179 NAC 8-005.01 must collect a standard sample volume of at least 100 mL for fecal indicator analysis regardless of the fecal indicator or analytical method used.

8-005.03B A ground water system must analyze all ground water source samples collected under 179 NAC 8-005.01 using one of the analytical methods listed in 40 CFR 141.402(c)(2) or the equivalent as determined by EPA for the presence of E. coli, enterococci, or coliphage:

8-005.04 Invalidation of a Fecal Indicator-Positive Ground Water Source Sample

8-005.04A A ground water system may obtain Department invalidation of a fecal indicator-positive ground water source sample collected under 179 NAC 8-005.01 only under the following conditions:

1. The system provides the Department with written notice from the laboratory that improper sample analysis occurred; or
2. The Department determines and documents in writing that there is substantial evidence that a fecal indicator-positive ground water source sample is not related to source water quality.

8-005.04B If the Department invalidates a fecal indicator-positive ground water source sample, the ground water system must collect another source water sample under 179 NAC 8-005.01 within 24 hours of being notified by the Department of its invalidation decision and have it analyzed for the same fecal indicator using the analytical methods incorporated in 179 NAC 8-005.03. The Department 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 Department must specify how much time the system has to collect the sample.

8-005.05 Sampling Location

8-005.05A Any ground water source sample required under 179 NAC 8-005.01 must be collected at a location prior to any treatment of the ground water source unless the Department approves a sampling location after treatment.

8-005.05B If the system's configuration does not allow for sampling at the well itself, the system may collect a sample at a Department-approved location to meet the requirements of 179 NAC 8-005.01 if the sample is representative of the water quality of that well.

8-005.06 New Sources: If directed by the Department, a ground water system that places a new ground water source into service must conduct assessment source water monitoring under 179 NAC 8-005.02. If directed by the Department, the system must begin monitoring before the ground water source is used to provide water to the public.

8-005.07 Public Notification: A ground water system with a ground water source sample collected under 179 NAC 8-005.01 or 8-005.02 that is fecal indicator-positive and that is not invalidated under 179 NAC 8-005.04, including consecutive systems served by the ground water source, must conduct public notification under 179 NAC 4-004.

8-005.08 Monitoring Violations: Failure to meet the requirements of 179 NAC 8-005.01 through 8-005.06 is a monitoring violation and requires the ground water system to provide public notification under 179 NAC 4-006.

8-006 TREATMENT TECHNIQUE REQUIREMENTS FOR GROUND WATER SYSTEMS

8-006.01 Ground Water Systems with Significant Deficiencies or Source Water Fecal Contamination

8-006.01A The treatment technique requirements of 179 NAC 8-006 must be met by ground water systems when the Department identifies a significant deficiency or when a ground water source sample collected under 179 NAC 8-005.01C is fecal indicator-positive.

8-006.01B If directed by the Department, a ground water system with a ground water source sample collected under 179 NAC 8-005.01B, 8-005.01D, or 8-005.02 that is fecal indicator-positive must comply with the treatment technique requirements of 179 NAC 8-006.

8-006.01C When the Department identifies a significant deficiency at a surface water or ground water under the direct influence of surface water public water system that uses both ground water and surface water or ground water under the direct influence of surface water, the system must comply with provisions of this paragraph except in cases where the Department determines that the significant deficiency is in a portion of the distribution system that is served solely by surface water or ground water under the direct influence of surface water.

8-006.01D Unless the Department directs the ground water system to implement a specific corrective action, the ground water system must consult with the Department regarding the appropriate corrective action within 30 days of receiving written notice from the Department of a significant deficiency, written notice from a laboratory that a ground water source sample collected under 179 NAC 8-005.01C was found to be fecal indicator-positive, or direction from the Department that a fecal indicator-positive sample collected under 179 NAC 8-005.01B, 8-005.01D, or 8-005.02 requires corrective action. For the purposes of this chapter, significant deficiencies include, but are not limited to, defects in design, operation, or maintenance, or a failure or malfunction of the sources, treatment, storage, or distribution system that the Department determines to be causing, or have potential for causing, the introduction of contamination into the water delivered to consumers.

8-006.01E Within 120 days (or earlier if directed by the Department) of receiving written notification from the Department of a significant deficiency, written notice from a laboratory that a ground water source sample collected under 179 NAC 8-005.01C was found to be fecal indicator-positive, or direction from the Department that a fecal indicator-positive sample collected under 179 NAC 8-005.01B, 8-005.01D, or 8-005.02 requires corrective action, the ground water system must either:

1. Have completed corrective action in accordance with applicable Department plan review processes or other Department guidance or direction, if any, including Department-specified interim measures; or
2. Be in compliance with a Department-approved corrective action plan and schedule subject to the following conditions:
 - a. Any subsequent modifications to a Department-approved corrective action plan and schedule must also be approved by the Department.

b. If the Department specifies interim measures for protection of the public health pending Department 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 Department.

8-006.01F Corrective Action Alternatives: Ground water systems that meet the conditions of 179 NAC 8-006.01A or 8-006.01B must implement one or more of the following corrective action alternatives:

1. Correct all significant deficiencies;
2. Provide an alternate source of water;
3. Eliminate the source of contamination; or
4. Provide treatment that reliably achieves at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of a 4-log virus inactivation and removal) before or at the first customer for the ground water source.

8-006.01G Special Notice to the Public of Significant Deficiencies or Source Water Fecal Contamination

8-006.01G1 In addition to the applicable public notification requirements of 179 NAC 4-004, a community ground water system that receives notice from the Department of a significant deficiency or notification of a fecal indicator-positive ground water source sample that is not invalidated by the Department under 179 NAC 8-005.04 must inform the public served by the water system under 179 NAC 14-004.08A item 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 ground water source is determined by the Department to be corrected under 179 NAC 8-006.01E.

8-006.01G2 In addition to the applicable public notification requirements of 179 NAC 4-004, a non-community ground water system that receives notice from the Department of a significant deficiency must inform the public served by the water system in a manner approved by the Department of any significant deficiency that has not been corrected within 12 months of being notified by the Department, or earlier if directed by the Department. The system must continue to inform the public annually until the significant deficiency is corrected. The information must include:

1. The nature of the significant deficiency and the date the significant deficiency was identified by the Department.

2. The Department-approved plan and schedule for correction of the significant deficiency, including interim measures, progress to date, and any interim measures completed; and

3. For systems that have a population with 5% or more non-English speaking consumers, 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.

8-006.01G3 If directed by the Department, 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 179 NAC 8-006.01G2.

8-006.02 Compliance Monitoring

8-006.02A Existing Ground Water Sources: A ground water system that is not required to meet the source water monitoring requirements of this chapter for any ground water source because it provides at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer must conduct compliance monitoring as required under 179 NAC 8-006.02C. If the system discontinues 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer for a ground water source, it must conduct ground water source monitoring as required under 179 NAC 8-005.

8-006.02B New Ground Water Sources: A ground water system that places a ground water source in service after December 22, 2012, that is not required to meet the source water monitoring requirements of this chapter because the system provides at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer for the ground water source must comply with the following requirements:

1. The system must notify the Department in writing that it provides at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer for the ground water source. Notification to the Department must include engineering, operational, or other information that the Department requests to evaluate the submission.

2. The system must conduct compliance monitoring as required under 179 NAC 8-006.02C within 30 days of placing the source in service.

3. The system must conduct ground water source monitoring under 179 NAC 8-005 if the system subsequently discontinues 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer for the ground water source.

8-006.02C Monitoring Requirements: A ground water system subject to the requirements of 179 NAC 8-006.01, 8-006.02A, or 8-006.02B must monitor the effectiveness and reliability of treatment for that ground water source before or at the first customer as follows:

1. Chemical Disinfection

a. Ground water systems serving greater than 3,300 people: A ground water system that serves greater than 3,300 people must continuously monitor the residual disinfectant concentration using analytical methods incorporated in 179 NAC 13-007.01B at a location approved by the Department and must record the lowest residual disinfectant concentration each day that water from the ground water source is served to the public. The ground water system must maintain the Department-determined residual disinfectant concentration every day the ground water system serves water from the ground water source to the public. If there is a failure in the continuous monitoring equipment, the ground water 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.

b. Ground water systems serving 3,300 or fewer people: A ground water system that serves 3,300 or fewer people must monitor the residual disinfectant concentration using analytical methods incorporated in 179 NAC 13-007.01B at a location approved by the Department and record the residual disinfection concentration each day that water from the ground water source is served to the public. The ground water system must maintain the Department-determined residual disinfectant concentration every day the ground water system serves water from the ground water source to the public. The ground water system must take a daily grab sample during the hour of peak flow or at another time specified by the Department. If any daily grab sample measurement falls below the Department-determined residual disinfectant concentration, the ground water system must take follow-up samples every four hours until the residual disinfectant concentration is restored to the Department-determined level. Alternatively, a ground water system that serves 3,300 or fewer people may monitor continuously and meet the requirements of 179 NAC 8-006.02C item 1.a.

2. Membrane Filtration: A ground water system that uses membrane filtration to meet the requirements of this chapter must monitor the

membrane filtration process in accordance with all Department-specified monitoring requirements and must operate the membrane filtration in accordance with all Department-specified compliance requirements. A ground water system that uses membrane filtration is in compliance with the requirement to achieve at least 4-log removal of viruses when:

- a. 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;
- b. The membrane process is operated in accordance with Department-specified compliance requirements; and
- c. The integrity of the membrane is intact.

3. Alternative Treatment: A ground water system that uses a Department-approved alternative treatment to meet the requirements of this chapter by providing at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer must:

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

8-006.03 Discontinuing Treatment: A ground water system may discontinue 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer for a ground water source if the Department determines and documents in writing that 4-log treatment of viruses is no longer necessary for that ground water source. A system that discontinues 4-log treatment of viruses is subject to the source water monitoring requirements of 179 NAC 8-005 and the analytical methods incorporated in 179 NAC 8-005.

8-006.04 Failure to meet the monitoring requirements of 179 NAC 8-006.02 is a monitoring violation and requires the ground water system to provide public notification under 179 NAC 4-006.

8-007 TREATMENT TECHNIQUE VIOLATIONS FOR GROUND WATER SYSTEMS

8-007.01 A ground water system with a significant deficiency is in violation of the treatment technique requirement if, within 120 days (or earlier if directed by the Department) of receiving written notice from the Department of the significant deficiency, the system:

1. Does not complete corrective action in accordance with any applicable Department plan review processes or other Department guidance and direction, including Department specified interim actions and measures, or
2. Is not in compliance with a Department-approved corrective action plan and schedule.

8-007.02 Unless the Department invalidates a fecal indicator-positive ground water source sample under 179 NAC 8-005.04, a ground water system is in violation of the treatment technique requirement if, within 120 days (or earlier if directed by the Department) of meeting the conditions of 179 NAC 8-006.01A or 8-006.01B, the system:

1. Does not complete corrective action in accordance with any applicable Department plan review processes or other Department guidance and direction, including Department-specified interim measures, or
2. Is not in compliance with a Department-approved corrective action plan and schedule.

8-007.03 A ground water system subject to the requirements of 179 NAC 8-006.02C that fails to maintain at least 4-log treatment of viruses (using inactivation, removal, or a Department-approved combination of 4-log virus inactivation and removal) before or at the first customer for a ground water 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.

8-007.04 Ground water systems must give public notification under 179 NAC 4-005 for the treatment technique violations specified in 179 NAC 8-007.01 through 8-007.03.

8-008 REPORTING AND RECORDKEEPING FOR GROUND WATER SYSTEMS

8-008.01 Reporting: In addition to the requirements of 179 NAC 5-004, a ground water system regulated under this chapter must provide the following information to the Department:

1. A ground water system conducting compliance monitoring under 179 NAC 8-006.02 must notify the Department any time the system fails to meet any Department-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 ground water system must notify the Department as soon as possible, but in no case later than the end of the next business day.

2. After completing any corrective action under 179 NAC 8-006.01, a ground water system must notify the Department within 30 days of completion of the corrective action.

3. If a ground water system subject to the requirements of 179 NAC 8-005.01 does not conduct source water monitoring under 179 NAC 8-005.01E item 2, the system must provide documentation to the Department within 30 days of the total coliform positive sample that it met the Department criteria.

8-008.02 Recordkeeping: In addition to the requirements of 179 NAC 5-005, a ground water system regulated under this chapter must maintain the following information in its records:

1. Documentation of corrective actions. Documentation must be kept for a period of not less than ten years.

2. Documentation of notice to the public as required under 179 NAC 8-006.01G. Documentation must be kept for a period of not less than three years.

3. Records of decisions under 179 NAC 8-005.01E item 2 and records of invalidation of fecal indicator-positive ground water source samples under 179 NAC 8-005.04. Documentation must 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 179 NAC 3-004.03 through March 31, 2016, or under 179 NAC 26-005 beginning April 1, 2016. Documentation must 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 179 NAC 8-006.02:

a. Records of the Department-specified minimum disinfectant residual. Documentation must 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 Department-prescribed minimum residual disinfectant concentration for a period of more than four hours. Documentation must be kept for a period of not less than five years.

c. Records of Department-specified compliance requirements for membrane filtration and of parameters specified by the Department for Department-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 must be kept

for a period of not less than five years.

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 9 - PERMIT TO OPERATE A PUBLIC WATER SYSTEM

9-001 SCOPE AND AUTHORITY: These regulations establish requirements relating to a permit to operate a public water system. They apply to all public water systems in Nebraska. The authority is found in Neb. Rev. Stat. §§71-5301 to 71-5313.

9-002 DEFINITIONS

Director means the Director of Regulation and Licensure or his/her authorized representative.

Owner means any person owning or operating a public water system.

9-003 PERMIT REQUIRED: Each owner of a public water system within the state must have a permit to operate the system.

9-004 INFORMATION REQUIRED: Any person constructing a public water system must provide the information required in 179 NAC 9 Attachment 1 and 179 NAC 2-015 (if applicable) with the submission of plans and specifications as required in 179 NAC 2-007. An operating permit will be issued upon confirmation that the completed works are constructed in accordance with approved plans and specifications and upon demonstration the system will be maintained and operated as prescribed by 179 NAC 2 to 22. Any person otherwise acquiring a new system must provide the information required in 179 NAC 9 Attachment 1.

9-005 INSPECTION OF THE SYSTEM: The Director will, as promptly as is possible, inspect and survey the system, reporting findings to the owner of the system, and issue or deny a permit based on compliance with the requirements of the Nebraska Safe Drinking Water Act and of 179 NAC 2 to 22.

9-006 ENFORCEMENT: Any person operating a public water system prior to the issuance of a permit and found to be in violation of any provisions of 179 NAC 2- to 22 or the provisions of the Nebraska Safe Drinking Water Act, will be subject to enforcement action as provided by law. A permit to operate a public water system may be denied or revoked for failure to comply with the requirements of Neb. Rev. Stat. §§ 71-5301 to 71-5313 or 179 NAC 2 to 22.

9-007 PERMIT TIME FRAME: Permits shall be issued for an indefinite period of time, subject only to continued compliance with the Nebraska Safe Drinking Water Act and 179 NAC 2 to 22.

9-008 OPPORTUNITY FOR HEARING: Any person will be granted, upon request, an opportunity for a hearing before the Department under the provisions of Neb. Rev. Stat. 84-901 to 84-917, prior to the denial or revocation of a permit. Judicial review of the denial or revocation may be obtained.

EFFECTIVE DATE
MARCH 22, 2004

NEBRASKA HEALTH AND HUMAN SERVICES
REGULATION AND LICENSURE

179 NAC 9

Nebraska Health and Human Services
Regulation and Licensure
Environmental Health Services Section
P.O. Box 95007
Lincoln, NE 68509-5007

Rev. 04/03

Office Use Only				
Permit #	NE 31- _____			
Date Issued	_____			
Type of PWS:				
C	NTNC	TNC		
Classification of PWS:				
I	II	III	IV	V
Date Inspection Completed		_____		
Capacity Development		Yes _____ No _____		

179 NAC 9 Attachment 1

**APPLICATION FOR PERMIT TO OPERATE
A PUBLIC WATER SYSTEM**

- Name of System _____
- Location of System _____
- County in which System Is Located _____
- Area served (attach map) _____
- Is the System Open and Serving Water to the Public Year-round? _____
If the answer is no, please check the months open.
January ___ February ___ March ___ April ___ May ___ June ___ July ___
August ___ September ___ October ___ November ___ December ___
- Owner's Name _____
- Owner's Address
Street or RFD _____
City, State, Zip _____
Telephone: Home _____ Emergency number _____
Work _____ Cellular number _____
- Name of Individual Responsible for Operation and Maintenance:

Street or RFD _____
City, State, Zip _____
Telephone: Home _____ Emergency number _____
Work _____ Cellular number _____
E-mail Address _____
- Name of Individual Responsible for Retaining Records (if different from #7).

- Certified Water Operator(s) (include those person(s) currently applying for certification):
Name, Address, Telephone Number Grade Certification Number Expiration Date

11. Number of People in Service Area: _____
- a. Year-round Residential Population: _____
 - b. Seasonal Residential Population: _____
 - c. Average Daily Population Served: _____
 - d. Non-residential, Non-transient Population (check the one that applies to your PWS and include the number of people served):
 - * school _____
 - * medical facility _____
 - * day care center _____
 - * institution _____
 - * industrial/agricultural _____
 - * other _____
 - e. Non-residential, Transient Population (daily average during the peak season if applicable):
 - * recreation area _____
 - * summer camp _____
 - * highway rest area _____
 - * service station _____
 - * restaurant _____
 - * hotel/motel _____
 - * other (specify) _____
 - f. Source of Population Information (e.g., census, estimate, etc.) _____
12. Number of Service Connections (generally equals the number of services that are billed for water usage):
- * residential _____
 - * institutional _____
 - * commercial _____
 - * other _____
13. Source Water Utilized: (Total should equal 100%)
- a. Non-purchased Source Water:
 - 1) % from groundwater source(s) = _____
 - 2) % from surface water source(s) = _____
 - 3) % groundwater under the influence of surface water _____
 - b. Purchased Water (from another public water system):
 - 1) % from a system using groundwater = _____
 - 2) % from a system using surface water = _____
 - 3) % from a system using groundwater under the direct influence of surface water _____
 - c. Name of System(s) from Which Water Is Purchased

14. Since 1999, has there been any new construction within this public water system? _____

Well Information (complete one page for each well):

15. Description of Source(s)

a. Required Information for Each Groundwater Source

1) Source Name/Designation: _____

2) Operating Status: _____ Operating Season: _____

P = Used year-round

S = Seasonal use (indicate season used)

E1 = Emergency status only (connected to distribution system with automatic operation)

E2 = Emergency status only (connected to distribution system with manual operation)

A = Decommission/Plug

D = Physically disconnected from the distribution system

3) Department of Natural Resources Registration Number: _____

4) Year Drilled: _____ Total Depth _____ feet

Screen Locations _____ to _____

_____ to _____

Operating Capacity _____ gpm

Well Latitude _____
Degree Minute Second

Well Longitude _____
Degree Minute Second

b. Treatment Provided (yes/no) _____ If yes, fill in 1 through 3.

1) Treatment objective [check appropriate objective(s)]

_____ Disinfection Byproducts Control _____ Organics Removal

_____ Corrosion Control _____ Particulate Removal

_____ Disinfection _____ Radionuclides Removal

_____ Dechlorination _____ Softening (Hardness Removal)

_____ Iron Removal _____ Taste/Odor Control

_____ Inorganics Removal _____ Other (specify)

_____ Manganese Removal _____

2) Treatment Process Used (check appropriate process(es) used:

_____ Filtration (List type of filter media used) _____

_____ Gaseous Chlorination _____ before or _____ after other treatment

_____ Hypochlorination _____ before or _____ after other treatment

_____ Inhibitor (list type of inhibitor used) _____

_____ Sequestration

_____ Other (Explain) _____

3) Chemicals Used: _____

Well Information (complete one page for each well):

15. Description of Source(s)

a. Required Information for Each Groundwater Source

1) Source Name/Designation: _____

2) Operating Status: _____ Operating Season: _____

P = Used year-round
S = Seasonal use (indicate season used)
E1 = Emergency status only (connected to distribution system with automatic operation)
E2 = Emergency status only (connected to distribution system with manual operation)
A = Decommission/Plug
D = Physically disconnected from the distribution system

3) Department of Natural Resources Registration Number: _____

4) Year Drilled: _____ Total Depth _____ feet

Screen locations _____ to _____

_____ to _____

Operating Capacity _____ gpm

Well Latitude _____
Degree Minute Second

Well Longitude _____
Degree Minute Second

b. Treatment Provided (yes/no) _____ If yes, fill in 1 through 3.

1) Treatment objective [check appropriate objective(s)]

_____ Disinfection Byproducts Control	_____ Organics Removal
_____ Corrosion Control	_____ Particulate Removal
_____ Disinfection	_____ Radionuclides Removal
_____ Dechlorination	_____ Softening (Hardness Removal)
_____ Iron Removal	_____ Taste/Odor Control
_____ Inorganics Removal	_____ Other (specify)
_____ Manganese Removal	_____

2) Treatment Process Used (check appropriate process(es) used:

_____ Filtration (List type of filter media used) _____

_____ Gaseous Chlorination _____ before or _____ after other treatment

_____ Hypochlorination _____ before or _____ after other treatment

_____ Inhibitor (list type of inhibitor used) _____

_____ Sequestration

_____ Other (Explain) _____

3) Chemicals Used: _____

Well Information (complete one page for each well):

15. Description of Source(s)

a. Required Information for Each Groundwater Source

1) Source Name/Designation: _____

2) Operating Status: _____ Operating Season: _____

- P = Used year-round
- S = Seasonal use (indicate season used)
- E1 = Emergency status only (connected to distribution system with automatic operation)
- E2 = Emergency status only (connected to distribution system with manual operation)
- A = Decommission/Plug
- D = Physically disconnected from the distribution system

3) Department of Natural Resources Registration Number: _____

4) Year Drilled: _____ Total Depth _____ feet

Screen Locations _____ to _____

_____ to _____

Operating Capacity _____ gpm

Well Latitude _____
Degree Minute Second

Well Longitude _____
Degree Minute Second

b. Treatment Provided (yes/no) _____ If yes, fill in 1 through 3.

1) Treatment Objective [check appropriate objective(s)]

- | | |
|---------------------------------------|------------------------------------|
| _____ Disinfection Byproducts Control | _____ Organics Removal |
| _____ Corrosion Control | _____ Particulate Removal |
| _____ Disinfection | _____ Radionuclides Removal |
| _____ Dechlorination | _____ Softening (Hardness Removal) |
| _____ Iron Removal | _____ Taste/Odor Control |
| _____ Inorganics Removal | _____ Other (specify) |
| _____ Manganese Removal | _____ |

2) Treatment Process Used (check appropriate process(es) used:

_____ Filtration (List type of filter media used) _____

_____ Gaseous Chlorination _____ before or _____ after other treatment

_____ Hypochlorination _____ before or _____ after other treatment

_____ Inhibitor (list type of inhibitor used) _____

_____ Sequestration

_____ Other (Explain) _____

3) Chemicals Used: _____

3c

Well Information (complete one page for each well):

15. Description of Source(s)

a. Required Information for Each Groundwater Source

1) Source Name/Designation: _____

2) Operating Status: _____ Operating Season: _____

P = Used year-round

S = Seasonal use (indicate season used)

E1 = Emergency status only (connected to distribution system with automatic operation)

E2 = Emergency status only (connected to distribution system with manual operation)

A = Decommission/Plug

D = Physically disconnected from the distribution system

3) Department of Natural Resources Registration Number: _____

4) Year Drilled: _____ Total Depth _____ feet

Screen Locations _____ to _____

_____ to _____

Operating Capacity _____ gpm

Well Latitude _____
Degree Minute Second

Well Longitude _____
Degree Minute Second

b. Treatment Provided (yes/no) _____ If yes, fill in 1 through 3.

1) Treatment Objective [check appropriate objective(s)]

_____ Disinfection Byproducts Control _____ Organics Removal

_____ Corrosion Control _____ Particulate Removal

_____ Disinfection _____ Radionuclides Removal

_____ Dechlorination _____ Softening (Hardness Removal)

_____ Iron Removal _____ Taste/Odor Control

_____ Inorganics Removal _____ Other (specify)

_____ Manganese Removal _____

2) Treatment Process Used (check appropriate process(es) used:

_____ Filtration (List type of filter media used) _____

_____ Gaseous Chlorination _____ before or _____ after other treatment

_____ Hypochlorination _____ before or _____ after other treatment

_____ Inhibitor (list type of inhibitor used) _____

_____ Sequestration

_____ Other (Explain) _____

3) Chemicals Used: _____

9A1-3d

EFFECTIVE DATE
MARCH 22, 2004

NEBRASKA HEALTH AND HUMAN SERVICES
REGULATION AND LICENSURE

179 NAC 9

16. Storage Facilities (list the type, capacity, and approximate date of construction of each storage unit):

17. Distribution System (list the type of material and approximate length of each diameter of the pipe used in the distribution system):

18. Attach current Emergency Plan or complete the attached "Local Emergency Plan" and submit it with the completed application.

19. Other Information:

20. Submitted by Name
 Title
 Signature
 Date
 Phone

21. Return this form and any related forms/information to:

HHS Regulation and Licensure
Environmental Health Services Section
P.O. Box 95007
Lincoln, NE 68509

9A1-4

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 10 - LICENSURE OF WATER OPERATORS

10-001 SCOPE AND AUTHORITY. These regulations govern credentialing of water operators under Neb. Rev. Stat. §§71-5301 to 71-5313, and the Uniform Credentialing Act (UCA).

10-002 DEFINITIONS

Active addiction means current physical or psychological dependence on alcohol or a substance, which develops following the use of alcohol or a substance on a periodic or continuing basis.

Alcohol or substance abuse means a maladaptive pattern of alcohol or substance use leading to clinically significant impairment or distress as manifested by one or more of the following occurring at any time during the same 12-month period:

1. Recurrent alcohol or substance use resulting in a failure to fulfill major role obligations at work, school, or home;
2. Recurrent alcohol or substance use in situations in which it is physically hazardous;
3. Recurrent legal problems related to alcohol or substance use; or
4. Continued alcohol or substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the alcohol or substance use.

Attest or attestation means that the individual declares that all statements on the application are true and complete.

Available means that based on system size, number of persons served, system classification, treatment technique and purpose, distribution complexity, and source of water, a licensed operator must be on site or able to be contacted as needed to initiate the appropriate action in a timely manner.

Community water system means a public water system which serves at least 15 service connections used by year-round residents or regularly serves 25 year-round residents.

Complete application means an application that contains all of the information requested on the application, with attestation to its truth and completeness, and that is submitted with the required fees and all required documentation.

Confidential information means information protected as privileged under applicable law.

Consumer means a person receiving health or health-related services or environmental services and includes a patient, client, resident, customer, or person with a similar designation.

Conviction means a plea or verdict of guilty or a conviction following a plea of nolo contendere or non vult contendere made to a formal criminal charge, or a judicial finding of guilt irrespective of the pronouncement of judgment or the suspension thereof, and includes instances in which the imposition or the execution of sentence is suspended following a judicial finding of guilt and the defendant is placed on probation.

Council means the Advisory Council on Public Water Supply.

Credential means a license, certificate, or registration.

Department means the Division of Public Health of the Department of Health and Human Services.

Dependence means a maladaptive pattern of alcohol or substance use, leading to clinically significant impairment or distress, as manifested by three or more of the following occurring at any time in the same 12-month period:

1. Tolerance as defined by either of the following:
 - a. A need for markedly increased amounts of alcohol or the substance to achieve intoxication or desired effect; or
 - b. A markedly diminished effect with continued use of the same amount of alcohol or the substance;
2. Withdrawal as manifested by either of the following:
 - a. The characteristic withdrawal syndrome for alcohol or the substance as referred to in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, published by the American Psychiatric Association; or
 - b. Alcohol or the same substance or a closely related substance is taken to relieve or avoid withdrawal symptoms;
3. Alcohol or the substance is often taken in larger amounts or over a longer period than was intended;
4. A persistent desire or unsuccessful efforts to cut down or control alcohol or substance use;
5. A great deal of time is spent in activities necessary to obtain alcohol or the substance, to use alcohol or the substance; or to recover from the effects of use of alcohol or the substance;
6. Important social, occupational, or recreational activities are given up or reduced because of alcohol or substance use; or
7. Alcohol or substance use continues despite knowledge of having had a persistent or recurrent physical or psychological problem that was likely to have been caused or exacerbated by alcohol or the substance.

Director means the Director of Public Health of the Division of Public Health or his/her authorized representative.

Inactive credential means a credential which the credential holder has voluntarily placed on inactive status and by which action has terminated the right to practice or represent him/herself as having an active credential.

License means an authorization issued by the Department to an individual to engage in a profession or to a business to provide services which would otherwise be unlawful in this state in the absence of such authorization. For Title 179 NAC 10, it means a license to make process control or system integrity decisions about water quality or quantity in public water systems.

Licensed operator means a person who holds a license issued by the Department that authorizes the person to make process control or system integrity decisions about water quality or quantity in public water systems.

Military service means full-time duty in the active military service of the United States, a National Guard call to active service for more than 30 consecutive days, or active service as a commissioned officer of the Public Health Service or the National Oceanic and Atmospheric Administration. Military service may also include any period during which a servicemember is absent from duty on account of sickness, wounds, leave, or other lawful cause. (From the Servicemembers Civil Relief Act, 50 U.S.C. App. 501 et seq., as it existed on January 1, 2007.)

Non-transient, non-community water system means a public water system that is not a community water system and that regularly serves at least 25 of the same individuals over six months per year.

Operating shift means that period of time during which licensed operator decisions that affect public health are necessary for proper operation of the system.

Operator in responsible charge means the person(s) designated by the owner to be the licensed 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.

Pattern of incompetent or negligent conduct means a continued course of incompetent or negligent conduct in performing the duties of the profession.

Practice means practice as a licensed operator.

Profession means any profession or occupation named in subsection (1) or (2) of Neb. Rev. Stat. § 38-121.

Provisional license means a non-renewable license that is issued on a case-by-case basis, and is site specific.

Public water system means a system for providing the public with water for human consumption through pipes or other constructed conveyances, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days per year. Public water system includes

(i) any collection, treatment, storage, and distribution facilities under control of the operator of such system and 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. Public water system does not include a special irrigation district. A public water system is either a community water system or a non-community water system. Service connection does not include a connection to a system that delivers water by a constructed conveyance other than a pipe if (i) the water is used exclusively for purposes other than residential uses, consisting of drinking, bathing, cooking, and other similar uses, (ii) the Department determines that alternative water to achieve the equivalent level of public health protection provided by the Nebraska Safe Drinking Water Act and rules and regulations under the act is provided for residential or similar uses for drinking and cooking, or (iii) the Department 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 Nebraska Safe Drinking Water Act and the rules and regulations under the act.

Special irrigation district means an irrigation district in existence prior to May 18, 1994, that provides primarily agricultural service through a piped water system with only incidental residential or similar use if the system or the residential or similar users of the system comply with exclusion provisions of (ii) or (iii) found in 179 NAC 10-002 definition of a Public Water System;

Served in the regular armed forces has the same meaning as “military service” in these regulations.

10-003 LICENSED OPERATOR REQUIRED: A public water system must have a licensed operator. The Department will issue a permit only to a public water system that has an operator holding a license equal to or greater than the level of classification of the water system.

10-003.01 The owner of a community or a non-transient non-community water system must place the direct supervision of their water system under the responsible charge of an operator(s) holding a valid license equal to or greater than the classification of the water system.

10-003.02 All operating personnel for community or non-transient non-community water systems that make process control or system integrity decisions about water quality or quantity that affect public health are required to hold a license of at least Grade IV.

10-003.03 For community and non-transient non-community water systems, a designated licensed operator must be available for each operating shift and must hold a license of at least Grade IV.

10-003.04 Two or more public water systems may share or utilize the services of a single licensed operator provided that the conditions in 179 NAC 10-003.04, items 1 to 4 are met. The Department will approve or disapprove each application for a shared operator (Attachment 1 which is incorporated herein by reference) based on the following conditions:

1. The shared operator must hold a license equal to or greater than the highest classification of the systems involved.
2. The systems are located so as to permit reasonable travel time between work areas with sufficient time remaining to perform necessary routine supervisory maintenance and operational activity for each system. As a guide, 40 miles is considered to be an acceptable distance.
3. Each system involved must develop a written plan to coordinate the activities required of the shared operator which must include a local person or persons for contact.
4. Companies or corporations established for the purpose of providing operational service to owners of public water systems must employ one or more persons holding a license appropriate to the highest classification of the systems served.

10-004 CLASSIFICATION OF SYSTEMS: Public water systems are classified as follows. If a system meets the qualifications for more than one classification, the highest classification applies.

1. Class I - All community water systems and non-transient, non-community water systems
 - a. That use any treatment technology involving filtration to remove harmful materials from the raw water source or to improve the aesthetic quality of delivered water, and which serve a population in excess of 15,000 persons; and
 - b. All other community and non-transient non-community water systems that have a distribution system and that serve a population in excess of 50,000 persons.
2. Class II - All community water systems and non-transient, non-community water systems
 - a. That use any treatment technology involving filtration to remove harmful materials from the raw water source or to improve the aesthetic quality of the delivered water, and which serve between 2,000 and 15,000 persons; and
 - b. All other community and non-transient non-community water systems that have a distribution system and that serve a population between 15,000 and 50,000.
3. Class III - All community water systems and non-transient, non-community water systems
 - a. That use any treatment technology involving filtration to remove harmful materials from the raw water source or to improve the aesthetic quality of the delivered water, and which serve fewer than 2,000 persons; and
 - b. All other community and non-transient non-community water systems that have a distribution system and that serve between 2,000 and 15,000 persons; and

c. All community water systems which purchase water from one or more systems for the purpose of supplementing or providing service to more than 15,000 persons.

4. Class IV - All community water systems and non-transient, non-community water systems

- a. That do not use a treatment technology involving filtration and which serve fewer than 2,000 persons; and
- b. All other community water systems which purchase water from one or more systems for the purpose of supplementing or providing service to fewer than 15,000 persons.

5. Class V - All other public water systems (transient, non-community systems).

10-005 INITIAL CREDENTIAL

10-005.01 Qualifications: To receive a credential to practice as a licensed operator, an individual must meet the following qualifications:

1. Age and Good Character: Be at least 19 years old and of good character;
2. Citizenship/Resident Information: Be a citizen of the United States, an alien lawfully admitted into the United States for permanent residence under the Immigration and Nationality Act (INA) and who is eligible for a credential under the Uniform Credentialing Act, or a nonimmigrant whose visa for entry, or application for visa for entry, is related to employment as a credential holder in the United States.
3. Education, Experience, and Examination Required: All applicants for licensure, except those for provisional licensure (See 179 NAC 10-005.01 item 7), must meet the following education and experience requirements prior to examination for the appropriate grade requested. The Department offers six grades of licensure: five grades to public water system operators, and one grade of licensure to public water system authorized backflow preventer testing and repair technicians, in accordance with the following criteria. Any individual who tests or repairs backflow preventers with test ports, installed to protect a public water system from backflow, is required to hold a Grade VI license.

NOTE: The Department, with the advice of the Council, may accept a substitution for required experience or education for Grades I, II, III and IV water operators when deemed equivalent to the requirements of 179 NAC 10-005 and when the applicant for licensure requests substitution and submits documentation of appropriate education or experience. Experience that is used to meet the experience requirement for any grade of licensure may not be used to meet the education requirement. Education that is used to meet the education requirement for any grade of licensure may not be used to meet the experience requirement.

- a. Grade I Licensure -

(1) Prior successful completion of a Grade II licensure examination and successful completion of a validated examination on the subject of operation of a public water system recommended by the Advisory Council on Public Water Supply and approved by the Director; and

(2) A degree of Bachelor of Science (with special courses in sanitary sciences) and three years in responsible charge or operation of a public water system or three years as a regulatory agent of public water systems (e.g., State or Federal Safe Drinking Water Act enforcement experience); or three years as a provider of technical assistance to public water systems; or

(3) Four years of college and four years of responsible charge of a public water system or four years as a licensed operator of a public water system; or four years as a regulatory agent of public water systems (e.g., State or Federal Safe Drinking Water Act enforcement experience); or four years as a provider of technical assistance to public water systems; or

(4) High school diploma or equivalent and six years responsible charge of a Class II or III public water system or eight years operation of a system under the supervision of a person possessing a license as a Grade I operator or eight years as a licensed operator of a public water system or eight years as a regulatory agent of public water systems (e.g., State or Federal Safe Drinking Water Act enforcement experience); or eight years as a provider of technical assistance to public water systems.

b. Grade II Licensure -

(1) Prior successful completion of a Grade III licensure examination and successful completion of a validated examination recommended by the Advisory Council on Public Water Supply and approved by the Director; and

(2) Two years of college, plus three years responsible charge of a public water system or three years as a licensed operator of a public water system; or three years as a regulatory agent of public water systems (e.g., State or Federal Safe Drinking Water Act enforcement experience); or three years as a provider of technical assistance to public water systems; or

(3) High school diploma or equivalent and six years responsible charge of a Class III public water system or six years operation of a system under the supervision of a person possessing a license as a Grade I or Grade II operator or six years as a regulatory agent of public water systems (e.g., State or Federal Safe Drinking Water Act enforcement experience) or six years as a provider of technical assistance to public water systems, or six years as a licensed operator of a public water system.

c. Grade III Licensure -

- (1) Successful completion of a validated examination recommended by the Advisory Council on Public Water Supply and approved by the Director; and
- (2) High school diploma or equivalent and two years responsible charge of a community water system; or
- (3) High school diploma or equivalent, and three years operation of a system under the supervision of a person possessing a license as a Grade I, Grade II, or Grade III operator of a public water system; or four years as a regulatory agent of public water systems (e.g., State or Federal Safe Drinking Water Act enforcement experience); or four years as a provider of technical assistance to public water systems, or four years as a licensed operator of a public water system.

d. Grade IV Licensure -

- (1) High school diploma or equivalent and
- (2) Successful completion of a validated examination following
 - (a) Six months experience as a water operator; or
 - (b) A basic training course for water system operators recommended by the Council and approved by the Director; or
 - (c) A correspondence course recommended by the Council and approved by the Director.

e. Grade V Licensure -

- (1) Successful completion of an examination that demonstrates ability in the collection of water samples, interpretation of results of biological examination and the maintenance of required records.

f. Grade VI Licensure -

- (1) A minimum 32 hour course which includes hands-on instruction, and successful completion of an examination recommended by the Council and approved by the Director on the subject of cross connections, backflow preventer operation, maintenance, testing, and repair. Such examination must include a written test as well as a hands-on portion to test actual testing and repair proficiency.

4. In adequate physical condition;
5. Able to read and write the English language;
6. Able to maintain logs and records of operation and perform maintenance consistent with the grade applied for;
7. Compliance with the requirements of 179 NAC 10-005 in regard to the appropriate grade with the exception that the Department may issue a provisional license to any applicant for a Grade I, II, III, or IV license for that period in which experience is being acquired. All education and experience requirements must be met during the provisional period.

10-005.02 Application: To apply for a credential to practice as a licensed operator, the individual must submit a complete application to the Department. A complete application includes all required documentation, the required fee, and a written application. The applicant may obtain an application from the Department or construct an application that must contain the following information:

1. Written Application:

a. Personal Information:

- (1) The legal name of the applicant, maiden name (if applicable), and any other names by which the applicant is known;
- (2) Date of birth (month, day, and year);
- (3) Place of birth (city and state or country if not born in the United States);
- (4) Mailing address (street, rural route, or post office address; and city, state, and zip code, or country information);
- (5) The applicant's:

- (a) Social Security Number (SSN); or
 - (b) Alien Registration Number ("A#"); or
 - (c) Form I-94 (Arrival-Departure Record) number.
- Certain applicants may have both a SSN and an A# or I-94 number, and if so, must report both.

- (6) The applicant's telephone number including area code;
- (7) The applicant's e-mail address (optional);
- (8) The applicant's fax number (optional);
- (9) Citizenship: The applicant must state that s/he is one of the following:

- (a) A citizen of the United States;
- (b) An alien lawfully admitted into the United States for permanent residence under the Immigration and Nationality Act (INA) and who is eligible for a credential under the Uniform Credentialing Act; or
- (c) A non-immigrant whose visa for entry, or application for visa for entry, is related to employment as a credential holder in the United States;

- (10) County in which the water system is located;
- (11) Whether or not the individual has a high school diploma or the equivalent;
- (12) The number of years of college the applicant has completed or other applicable post-high school education;
- (13) The number of months of water system operation experience the applicant has and for which system, provider, or regulatory agency; including a description of experience, if applicable, as an operator in responsible charge, a provider of technical assistance to public water systems, or a regulatory agent of public water systems and the location where the experience was obtained;
- (14) The name of the applicant's supervisor;
- (15) The current licensure grade held, number, and expiration if applicable;
- (16) The grade of licensure that is requested.

b. Practice Before Application: The applicant must state:

- (1) That s/he has not practiced as a licensed water operator in Nebraska before submitting the application; or
- (2) If s/he has practiced as a licensed water operator in Nebraska before submitting the application, the actual number of days practiced in Nebraska before submitting the application for a credential and the name and location of practice;

c. Attestation: The applicant must attest that:

- (1) S/he has read the application;
- (2) All statements on the application are true and complete;
- (3) S/he is of good character;
- (4) S/he has not committed any act that would be grounds for denial under 179 NAC 10-008.01. and
- (5) For the purpose of complying with Neb. Rev. Stat. §§ 4-108 to 4-114, s/he is a citizen of the United States or a qualified alien under the federal Immigration and Nationality Act. The applicant must provide his/her immigration status and alien number, and agree to provide a copy of his/her United States Citizenship and Immigration Services (USCIS) documentation upon request.

2. Documentation: The applicant must submit the following documentation with the application:

a. Evidence of age, such as:

- (1) Driver's license;
- (2) Birth certificate;
- (3) Marriage license that provides date of birth;
- (4) Transcript that provides date of birth;
- (5) U.S. State identification card;
- (6) Military identification; or

(7) Other similar documentation;

b. Evidence of good character, including:

(1) Other Credential Information: If the applicant holds a credential to provide health services, health-related services, or environmental services in Nebraska or in another jurisdiction, the applicant must submit the state, credential number, type of credential, date issued, and expiration date of each credential where the applicant has been or is currently credentialed. The applicant must have the licensing agency submit to the Department a certification of his/her credential;

(2) Disciplinary Action: A list of any disciplinary actions taken against the applicant's credential and a copy of the disciplinary action(s), including charges and disposition;

(3) Denial: If the applicant was denied a credential or denied the right to take an examination, an explanation of the basis for the denial;

(4) Conviction Information: If the applicant has been convicted of a felony or misdemeanor, the applicant must submit to the Department:

(a) A list of any misdemeanor or felony convictions;

(b) A copy of the court record, which includes charges and disposition;

(c) Explanation from the applicant of the events leading to the conviction (what, when, where, why) and a summary of actions the applicant has taken to address behaviors/actions related to the conviction;

(d) All addiction/mental health evaluations and proof of treatment, if the conviction involved a drug and/or alcohol related offense and if treatment was obtained and/or required;

(e) A letter from the probation officer addressing probationary conditions and current status, if the applicant is currently on probation; and

(f) Any other information as requested by the Department;

c. Evidence that the applicant is:

(1) A citizen;

(2) An alien lawfully admitted into the United States for permanent residence under the Immigration and Nationality Act (INA) who is eligible for a credential under the Uniform Credentialing Act; or

(3) A non-immigrant whose visa for entry, or application for visa for entry, is related to employment as a credential holder in the United States;

d. Evidence of citizenship, lawful permanent residence, and/or immigration status may include a copy of:

- (1) A U.S. Passport (unexpired or expired);
- (2) A birth certificate issued by a state, county, municipal authority or outlying possession of the United States bearing an official seal;
- (3) An American Indian Card (I-872);
- (4) A Certificate of Naturalization (N-550 or N-570);
- (5) A Certificate of Citizenship (N-560 or N-561);
- (6) Certification of Report of Birth (DS-1350);
- (7) A Consular Report of Birth Abroad of a Citizen of the United States of America (FS-240);
- (8) Certification of Birth Abroad (FS-545 or DS-1350);
- (9) A United States Citizen Identification Card (I-197 or I-179);
- (10) A Northern Mariana Card (I-873);
- (11) An Alien Registration Receipt Card (Form I-551, otherwise known as a "Green Card");
- (12) An unexpired foreign passport with an unexpired Temporary I-551 stamp bearing the same name as the passport;
- (13) A document showing an Alien Registration Number ("A#") with visa status; or
- (14) A Form I-94 (Arrival-Departure Record) with visa status;

e. Documentation of education, including:

- (1) Name and date of diploma/degree awarded; and
- (2) Name of school, college, university that awarded the diploma/degree. and

3. Fee: The applicant must submit the required license fee along with the application and all required documentation.

10-005.03 Department Review: The Department will act within 150 days upon all completed applications for initial credentialing.

10-005.04 Denial of Initial Credential: If an applicant for an initial credential does not meet all of the requirements for a credential, the Department will deny issuance of a credential. If the applicant is found to have committed any act which would be grounds for denial of a credential as listed in 179 NAC 10-008, the Department may deny issuance of a credential. To deny a credential, the Department will notify the applicant in writing of the denial and the reasons for the determination. The denial will become final 30 days after mailing the notice unless the applicant, within that 30-day period, requests a hearing in writing. The hearing will be conducted in accordance with the Administrative Procedure Act and 184 NAC 1, the Department's Rules of Practice and Procedure for Administrative Hearings.

10-005.05 Withdrawn License Applications: An applicant for a credential who withdraws his/her application or whose application is rejected by the Department prior to administration of the examination will be allowed the return of his/her fee, except for a \$25 administrative fee to be retained by the Department.

10-005.06 Practice Prior to Credential: An individual who practices as a licensed operator prior to issuance of a credential is subject to assessment of an administrative penalty under 179 NAC 10-011 or such other action as provided in the statutes and regulations governing the credential.

10-005.07 Confidentiality: Social Security Numbers obtained under this section are not public information but may be shared by the Department for administrative purposes if necessary and only under appropriate circumstances to ensure against any unauthorized access to this information.

10-005.08 Address Information: Each credential holder must notify the Department of any change to the address of record.

10-005.09 Non-English Documents: Any documents written in a language other than English must be accompanied by a complete translation into the English language. The translation must be an original document and contain the notarized signature of the translator. An individual may not translate his/her own documents.

10-006 CONTINUING COMPETENCY REQUIREMENTS: On or before the credential expiration date, each licensed operator must obtain acceptable Department approved continuing education consistent with the licensure grade held. Except as otherwise provided in 179 NAC 10-007.04 and 10-007.05, the Department will not renew the credential of any person who has not complied with these requirements. Each credentialed individual is responsible for maintaining certificates or records of continuing education activities.

10-006.01 Number of Hours Required at Renewal: Grade V licensees are exempt from the continuing education and renewal requirements. All other licensed operators must obtain the number of continuing education hours as follows:

1. The Department waives the continuing education requirement for initial licensees that obtain their initial license in odd-numbered years.
2. Licensees obtaining their initial license after [the effective date of these regulations] must have 5 hours of continuing education at their first renewal, if the license was obtained in an even-numbered year.
3. For licenses that expire on December 31, 2011

- a. Initial licensees who obtained their license in 2008 must have 15 hours of continuing education,
- b. Initial licensees who obtained their license in 2009 must have 10 hours of continuing education.
- c. Initial licensees who obtain their license in 2011 need no hours of continuing education,
- d. Those licensees who renewed in 2009 must have 10 hours of continuing education,
- e. Those licensees who renewed in 2010 must have 5 hours of continuing education.

4. After December 31, 2011, all licensees other than initial licensees covered by 179 NAC 10-006.01 item 2, must have 10 hours of continuing education at the time of renewal.

10-007 RENEWAL: An individual who wants to renew his/her water operator license must request renewal as specified in 179 NAC 10-007.03. To qualify for reinstatement, the applicant must first meet the requirements for each renewal period. If a license has expired or been on inactive status, the individual must re-take and re-pass the examination in order to have a license reinstated if:

1. The license has been expired or on inactive status for a period of two or more years; or
2. The individual did not meet the requirements for continuing competency before each renewal period.

10-007.01 Renewal Periods: After December 31, 2011, all licenses will expire on December 31 of odd-numbered years.

10-007.02 Renewal Notice: At least 30 days before the expiration of a credential, the Department will notify each credential holder at the last known address of record. The renewal notice will include:

1. The type of credential;
2. The credential number;
3. The expiration date;
4. Continuing competency requirements for renewal;
5. The amount of the renewal fee; and
6. Information on how to request renewal and how to place a credential on inactive status.

10-007.03 Renewal Procedures: The request for renewal may be submitted in person or by mail or Internet, and must include all required documentation and the renewal fee, which must be paid no later than the expiration date. The applicant may obtain an application from the Department or construct an application.

1. Application: The applicant must attest that all information in the application is truthful and complete, and the applicant, in his/her application:

a. Must provide the following information:

- (1) The legal name of the applicant, maiden name (if applicable), and any other names by which the applicant is known;
- (2) Mailing address (street, rural route, or post office address; and city, state, and zip code, or country information);
- (3) The applicant's:

- (a) Social Security Number (SSN); or
- (b) Alien Registration Number (A#) or
- (c) Form I-94 (Arrival-Departure Record) number. Certain

applicants may have both a SSN and an A# or I-94 number, and if so, must report both; and
(d) Telephone number including area code;

(4) Proof of meeting continuing competency requirements if Department records do not indicate the applicant has obtained the required hours at approved continuing competency programs;

b. Must state that s/he is one of the following:

- (1) A citizen of the United States;
- (2) An alien lawfully admitted into the United States for permanent residence under the Immigration and Nationality Act (INA) and who is eligible for a credential under the Uniform Credentialing Act; or
- (3) A non-immigrant whose visa for entry, or application for visa for entry, is related to employment as a credential holder in the United States;

c. May provide the following information about him/herself:

- (1) The applicant's e-mail address; and
- (2) The applicant's fax number;

d. Continuing competency: The individual:

- (1) Must attest to meeting the continuing competency requirements as specified in 179 NAC 10-006; or
- (2) May request a waiver of continuing competency requirements as specified in 179 NAC 10-007.04 and 10-007.05; and

e. Must indicate that s/he:

- (1) Is of good character;
- (2) Has met the continuing competency requirements specified in 179 NAC 10-006 or has requested a waiver if s/he meets the requirements of 179 NAC 10-007.04 and/or 10-007.05
- (3) Has not, since the last renewal of the credential, committed any act which would be grounds for action against a credential as specified in 179 NAC 10-008.01 or if an act(s) was committed, must provide an explanation of all such acts, and
- (4) Is a citizen of the United States or a qualified alien under the federal Immigration and Nationality Act, for the purpose of complying with Neb. Rev. Stat. §§ 4-108 to 4-114. The applicant must provide his/her immigration status and alien number, and agree to provide a copy of his/her USCIS documentation upon request.

2. Documentation: The applicant must submit the following documentation with the application:

a. Alien or Non-immigrant: Evidence of lawful permanent residence, and/or immigration status may include a copy of:

- (1) An Alien Registration Receipt Card (Form I-551, otherwise known as a "Green Card");
- (2) An unexpired foreign passport with an unexpired Temporary I-551 stamp bearing the same name as the passport;
- (3) A document showing an Alien Registration Number ("A#") with visa status; or
- (4) A Form I-94 (Arrival-Departure Record) with visa status;

b. Other Credential Information: If the applicant holds a credential to provide health services, health-related services, or environmental services in Nebraska or in another jurisdiction, the applicant must submit the state, credential number, type of credential, date issued, and expiration date of each credential where the applicant has been or is currently credentialed;

c. Disciplinary Action: A list of any disciplinary actions taken against the applicant's credential and a copy of the disciplinary action(s), including charges and disposition;

d. Denial: If the applicant was denied a credential or denied the right to take a credentialing examination, an explanation of the basis for the denial;

e. Conviction Information: If the applicant has been convicted of a felony or misdemeanor since his/her last renewal or during the time period since initial credentialing if such occurred within the previous two years, the applicant must submit to the Department:

- (1) A list of any misdemeanor or felony convictions;
- (2) A copy of the court record, which includes charges and disposition;
- (3) Explanation from the applicant of the events leading to the conviction (what, when, where, why) and a summary of actions the applicant has taken to address the behaviors/actions related to the convictions;
- (4) All addiction/mental health evaluations and proof of treatment, if the conviction involved a drug and/or alcohol related offense and if treatment was obtained and/or required;
- (5) A letter from the probation officer addressing probationary conditions and current status, if the applicant is currently on probation;
- (6) Any other information as requested by the Department; and

3. The renewal fee according to 179 NAC 10-012.

10-007.04 Waivers for Military Service: A credential holder who has served in the regular armed forces of the United States during part of the credentialing period immediately preceding the renewal date, or is actively engaged in military service as defined in 179 NAC 10-002, is not required to pay the renewal fee or to meet the continuing competency requirements if acceptable documentation is submitted to the Department. The individual

must document his/her military service by submitting to the Department:

1. Military identification proving that s/he is in active service;
2. Military orders; or
3. A letter from his/her Commanding Officer indicating that s/he is on active duty. Upon receipt of acceptable documentation, the Department will waive the fee and the continuing competency requirements and renew the credential. The credential will remain active until the next renewal period.

10-007.05 Waiver of Continuing Competency Requirements: The Department waives continuing competency requirements for individuals who were first credentialed within the 12-month period immediately preceding the renewal date.

10-007.06 Department Review: The Department will act within 150 days upon all completed applications for renewal.

10-007.06A False Information: The Department may refuse to renew a credential for falsification of any information submitted for renewal of a credential. The refusal will be made according to 184 NAC 1, the Department's Rules of Practice and Procedure for Administrative Hearings.

10-007.07 Address Information: Each credential holder must notify the Department of any change to the address of record.

10-007.08 Expiration of a Credential: A credential expires if a credential holder fails to:

1. Notify the Department that s/he wants to place his/her credential on inactive status upon its expiration;
2. Meet the requirements for renewal on or before the date of expiration of his/her credential; or
3. Otherwise fails to renew his/her credential.

10-007.08A Failure to Renew: A credential automatically expires without further notice or opportunity for hearing if a credential holder fails by the expiration date of the credential to either:

1. Submit documentation of continuing competency; or
2. Pay the required renewal fee.

10-007.08B Failure to Meet Continuing Competency Requirements: The Department will refuse to renew a credential, after notice and opportunity for hearing, if a credential holder fails to meet the continuing competency requirements for renewal by the expiration date of the credential.

10-007.08C Right to Practice: When an individual's credential expires, the right to represent him/herself as a credential holder and to practice as a licensed water operator terminates.

10-007.08D Practice After Expiration: An individual who practices as a licensed operator after expiration of his/her credential is subject to assessment of an administrative penalty under 179 NAC 10-011 or such other action as provided in the statutes and regulations governing the credential.

10-007.08E Reinstatement of an Expired Credential: If a credential holder wants to resume practice as a licensed water operator after failing to renew his/her credential by the expiration date, s/he must apply to the Department for reinstatement and meet the requirements specified in 179 NAC 10-007 and 10-010.

10-007.09 Inactive Status: When an individual wants to have his/her credential placed on inactive status, s/he must notify the Department in writing. There is no fee to have a credential placed on inactive status.

10-007.09A Request for Inactive Status: When the Department has received notification that an individual wants to have his/her credential placed on inactive status, the Department will notify the credential holder in writing of the acceptance or denial of the request.

10-007.09B Placement on Inactive Status: When an individual's credential is placed on inactive status, the credential holder must not engage in practice as a licensed operator, but may represent him/herself as having an inactive credential.

10-007.09C Return to Active Status: A credential may remain on inactive status for an indefinite period of time. An individual who wants to have his/her credential returned to active status must apply to the Department for reinstatement and meet the requirements specified in 179 NAC 10-007 and 10-010.

10-008 DISCIPLINARY ACTIONS

10-008.01 Grounds for Action Against a Credential: A credential to practice a profession may have disciplinary actions taken against it on any of the following grounds:

1. Misrepresentation of material facts in procuring or attempting to procure a credential;
2. Immoral or dishonorable conduct evidencing unfitness to practice the profession in this state;
3. Abuse of, dependence on, or active addiction to alcohol, any controlled substance, or any mind-altering substance;
4. Failure to comply with a treatment program or an aftercare program, including, but not limited to, a program entered into under the Licensee Assistance Program established pursuant to Neb. Rev. Stat. § 38-175;
5. Conviction of:
 - a. A misdemeanor or felony under Nebraska law or federal law, or
 - b. A crime in any jurisdiction which, if committed within this state,

would have constituted a misdemeanor or felony under Nebraska law and which has a rational connection with the fitness or capacity of the applicant or credential holder to practice the profession;

6. Practice of the profession:

- a. Fraudulently,
- b. Beyond its authorized scope,
- c. With gross incompetence or gross negligence, or
- d. In a pattern of incompetent or negligent conduct;

7. Practice of the profession while the ability to practice is impaired by alcohol, controlled substances, drugs, mind-altering substances, physical disability, mental disability, or emotional disability;

8. Physical or mental incapacity to practice the profession as evidenced by a legal judgment or a determination by other lawful means;

9. Illness, deterioration, or disability that impairs the ability to practice the profession;

10. Permitting, aiding, or abetting the practice of a profession or the performance of activities requiring a credential by a person not credentialed to do so;

11. Having had his/her credential denied, refused renewal, limited, suspended, revoked, or disciplined in any manner similar to 179 NAC 10-008.05 by another state or jurisdiction based upon acts by the applicant or credential holder similar to acts described in this part;

12. Use of untruthful, deceptive, or misleading statements in advertisements;

13. Conviction of fraudulent or misleading advertising or conviction of a violation of the Uniform Deceptive Trade Practices Act;

14. Distribution of intoxicating liquors, controlled substances, or drugs for any other than lawful purposes;

15. Violations of the Uniform Credentialing Act, the Nebraska Safe Drinking Water Act, or the rules and regulations adopted under these acts;

16. Unlawful invasion of the field of practice of any profession regulated by the Uniform Credentialing Act which the credential holder is not credentialed to practice;

17. Violation of the Uniform Controlled Substances Act or any rules and regulations adopted pursuant to the act;

18. Failure to file a report required by Neb. Rev. Stat. §§ 38-1,124 or 38-1,125;

19. Failure to maintain the requirements necessary to obtain a credential;

20. Violation of an order issued by the Department;

21. Violation of an assurance of compliance entered into under Neb. Rev. Stat. § 38-1,108;

22. Failure to pay an administrative penalty; or

23. Unprofessional conduct as defined in 179 NAC 10-008.02.

10-008.02 Unprofessional Conduct: Unprofessional conduct means any departure from or failure to conform to the standards of acceptable and prevailing practice of a profession or the ethics of the profession, regardless

of whether a person, consumer, or entity is injured, but does not include a single act of ordinary negligence. Unprofessional conduct also means conduct that is likely to deceive or defraud the public or is detrimental to the public interest. Unprofessional conduct includes but is not limited to:

1. Obtaining any fee for professional services by fraud, deceit, or misrepresentation, including, but not limited to, falsification of third-party claim documents;
2. Cheating on or attempting to subvert the credentialing examination;
3. Use of any letters, words, or terms, either as a prefix, affix, or suffix, on stationery, in advertisements, or otherwise, indicating that the person is entitled to practice a profession for which s/he is not credentialed;
4. Knowingly disclosing confidential information except as otherwise permitted by law;
5. Commission of any act of sexual abuse, misconduct, or exploitation related to the practice of the profession of the applicant or credential holder;
6. Failure to keep and maintain adequate records of service; and
7. Failure to comply with any federal, state, or municipal law, ordinance, rule, or regulation that pertains to the applicable profession.

10-008.03 Temporary Suspension or Limitation

10-008.03A The Department may temporarily suspend or temporarily limit any credential issued by the Department without notice or a hearing if the Director determines that there is reasonable cause to believe that grounds exist under 179 NAC 10-008.01 for the revocation, suspension, or limitation of the credential and that the credential holder's continuation in practice would constitute an imminent danger to the public health and safety. Simultaneously with the action, the Department will institute proceedings for a hearing on the grounds for revocation, suspension, or limitation of the credential. The hearing will be held no later than 15 days from the date of the temporary suspension or temporary limitation of the credential.

10-008.03B A continuance of the hearing will be granted by the Department upon the written request of the credential holder, and the continuance must not exceed 30 days unless waived by the credential holder. A temporary suspension or temporary limitation order by the Director will take effect when served upon the credential holder.

10-008.03C A temporary suspension or temporary limitation of a credential under 179 NAC 10-008.03 will not be in effect for more than 90 days unless waived by the credential holder. If a decision is not reached within 90 days, the credential will be reinstated unless and until the Department reaches a decision to revoke, suspend, or limit the credential or otherwise discipline the credential holder.

10-008.04 Department Action: The Department will follow the procedures delineated in the Uniform Credentialing Act to notify credential holders of any disciplinary action to be imposed and the time and place of the hearing.

10-008.05 Sanctions: Upon the completion of any hearing held regarding discipline of a credential, the Director may dismiss the action or impose the following sanctions:

1. Censure;
2. Probation;
3. Limitation;
4. Civil Penalty;
5. Suspension; or
6. Revocation.

10-008.05A Additional Terms and Conditions of Discipline: If any discipline is imposed pursuant to 179 NAC 10-008.05, the Director may, in addition to any other terms and conditions of that discipline:

1. Require the credential holder to obtain additional professional training and to pass an examination upon the completion of the training. The examination may be written or practical or both, at the option of the Director;
2. Require the credential holder to submit to a complete diagnostic examination by one or more physicians or other qualified professionals appointed by the Director. If the Director requires the credential holder to submit to an examination, the Director will receive and consider any other report of a complete diagnostic examination given by one or more physicians or other qualified professionals of the credential holder's choice if the credential holder chooses to make available the report or reports by his/her physician or physicians or other qualified professionals; and
3. Limit the extent, scope, or type of practice of the credential holder.

10-009 VOLUNTARY SURRENDER OR LIMITATION: A credential holder may offer to voluntarily surrender or limit a credential issued by the Department. The credential holder must make the offer in writing on a form provided by the Department or constructed by the credential holder, which must include the following information:

1. Personal Information:

- a. First, middle and last name;
- b. Mailing address (street, rural route, or post office address), city, state, and zip code;
- c. Telephone number; and
- d. Fax number.

2. Information Regarding the Credential Being Offered for Surrender or Limitation:

- a. List credential(s) and credential number(s) that would be surrendered or limited;
- b. Indicate the desired time frame for offered surrender or limitation:

- (1) Permanently;
- (2) Indefinitely; or
- (3) Definite period of time (specify);

- c. Specify reason for offered surrender or limit of credential; and
- d. Specify any terms and conditions that the credential holder wishes to have the Department consider and apply to the offer.

3. Attestation: The credential holder must:

- a. Attest that all the information on the offer is true and complete; and
- b. Sign and date the attestation.

10-009.01 The Department may accept an offer of voluntary surrender or limitation of a credential based on:

1. An offer made by the credential holder on his/her own volition;
2. An offer made with the agreement of the Attorney General or the legal counsel of the Department to resolve a pending disciplinary matter;
3. A decision by the Attorney General to negotiate a voluntary surrender or limitation in lieu of filing a petition for disciplinary action; or
4. A decision by the legal counsel of the Department to negotiate a voluntary surrender or limitation in response to a notice of disciplinary action.

10-009.02 The Department may reject an offer of voluntary surrender of a credential under circumstances which include, but are not limited to, when the credential:

1. Is under investigation;
2. Has a disciplinary action pending but a disposition has not been rendered; or
3. Has had a disciplinary action taken against it.

10-009.03 When the Department either accepts or rejects an offer of voluntary surrender or limitation, the Director will issue the decision in a written order. The order will be issued within 30 days after receipt of the offer of voluntary surrender or limitation and will specify:

1. Whether the Department accepts or rejects the offer of voluntary surrender; and
2. The terms and conditions under which the voluntary surrender is accepted or the basis for the rejection of an offer of voluntary surrender. The terms and conditions governing the acceptance of a voluntary surrender will include, but not be limited to:
 - a. Duration of the surrender;
 - b. Whether the credential holder may apply to have the credential reinstated; and
 - c. Any terms and conditions for reinstatement.

10-009.04 A limitation may be placed on the right of the credential holder to practice as a licensed operator to the extent, for the time, and under the conditions as imposed by the Director.

10-009.05 Violation of any of the terms and conditions of a voluntary surrender or limitation by the credential holder will be due cause for the refusal of renewal of the credential, for the suspension or revocation of the credential, or for refusal to restore the credential.

10-009.06 Reinstatement following voluntary surrender is set out in 179 NAC 10-010.

10-010 REINSTATEMENT: This section applies to individuals previously credentialed in Nebraska who seek the authority to return to practice in Nebraska with a valid Nebraska credential. To qualify for reinstatement, the applicant must first meet the requirements for each renewal period. Individuals may apply for reinstatement as follows:

1. An individual whose credential has expired, been placed on inactive status, voluntarily surrendered for an indefinite period of time, or suspended or limited for disciplinary reasons, may apply for reinstatement at any time.
2. An individual whose credential has been voluntarily surrendered for a definite period of time may apply for reinstatement after that period of time has elapsed.
3. An individual whose credential has been revoked may apply for reinstatement only after a period of two years has elapsed from the date of revocation.
4. An individual whose credential has been permanently voluntarily surrendered may not apply for reinstatement.

The voluntary surrender of a credential may be unrelated to disciplinary matters, or may be done to resolve a pending disciplinary matter, in lieu of disciplinary action, or in response to a notice of disciplinary action.

10-010.01 Reinstatement From Expired or Inactive Status or Following Voluntary Surrender Unrelated to a Disciplinary Matter

The applicant must submit to the Department a written application on a form provided by the Department or constructed by the applicant.

1. Application: The applicant must attest that all information in the application is truthful and complete, and the applicant, in his/her application:

a. Must provide the following information:

- (1) The legal name of the applicant, maiden name (if applicable), and any other names by which the applicant is known;
- (2) Mailing address (street, rural route, or post office address; and city, state, and zip code or country information);

(3) The applicant's

- (a) Social Security Number (SSN); or
 - (b) Alien Registration Number (A#); or
 - (c) Form I-94 (Arrival-Departure Record) number.
- Certain applicants may have both a SSN and an A# or I-94 number, and if so, must report both.

- (4) If the applicant holds a professional credential in another state, a list of the state(s) and type of credential;
- (5) Telephone number including area code;
- (6) Proof of meeting continuing competency requirements if Department records do not indicate the applicant has obtained the required hours at approved continuing competency programs;

b. Must state that s/he is one of the following:

- (1) A citizen of the United States;
- (2) An alien lawfully admitted into the United States for permanent residence under the Immigration and Nationality Act (INA) and who is eligible for a credential under the Uniform Credentialing Act, or
- (3) A non-immigrant whose visa for entry, or application for visa for entry, is related to employment as a credential holder in the United States;

c. If the applicant is an alien or non-immigrant, s/he must submit evidence of lawful permanent residence and/or immigration status which may include a copy of:

- (1) An Alien Registration Receipt Card (Form I-551, otherwise known as a "Green Card");
- (2) An unexpired foreign passport with an unexpired Temporary I-551 stamp bearing the same name as the passport;
- (3) A document showing an Alien Registration Number ("A#") with a visa status; or
- (4) A Form I-94 (Arrival-Departure Record) with a visa status;

d. May provide the following information about him/herself:

- (1) E-mail address;
- (2) Fax number; and

e. Must indicate that s/he:

- (1) Is of good character;
- (2) Has met the continuing competency requirements specified in 179 NAC 10-006 for each renewal period;
- (3) Has not practiced in Nebraska since s/he last held an active credential, or if the applicant has practiced in Nebraska since s/he last held an active credential, the actual number of days

practiced;

(4) Has not committed any act which would be grounds for action against a credential as specified in 179 NAC 10-008.01 since the last renewal or issuance of the credential (whichever is later), or if an act(s) was committed, provide an explanation of all such acts; and

(5) Is a citizen of the United States or a qualified alien under the federal Immigration and Nationality Act, for the purpose of complying with Neb. Rev. Stat. §§ 4-108 to 4-114. The applicant must provide his/her immigration status and alien number, and agree to provide a copy of his/her USCIS documentation upon request; and

2. Fee(s): The following fee(s):

- a. If the credential is expired or inactive, the reinstatement and renewal fees; or
- b. If the credential was voluntarily surrendered, the renewal fee.

10-010.01A If an applicant has practiced as a licensed operator while his/her credential was expired, inactive, or voluntarily surrendered, the Department may take one or more of the following actions:

1. Deny the application to reinstate the credential;
2. Reinstatement the credential to active status and impose limitation(s) or other disciplinary actions on the credential; and/or
3. Reinstatement the credential.

10-010.01B If an applicant has committed any other violation of the statutes and regulations governing the credential, the Department may:

1. Deny the application for reinstatement of the credential;
2. Reinstatement the credential to active status and impose limitation(s) or other disciplinary actions on the credential; or
3. Reinstatement the credential.

10-010.01C The Department will act within 150 days on all completed applications.

10-010.01D The Department's decision may be appealed to the Director by any party to the decision. The appeal must be in accordance with the Administrative Procedure Act.

10-010.02 Reinstatement Following Suspension, Limitation, Revocation, or Voluntary Surrender to Resolve a Pending Disciplinary Matter, In Lieu of Discipline, or In Response to a Notice of Disciplinary Action: An individual whose credential was suspended or limited may apply for reinstatement at any time. An individual whose credential has been revoked may apply for reinstatement after a period of two years has elapsed from the date of revocation. An individual whose credential was voluntarily surrendered to resolve a pending disciplinary matter may apply for reinstatement according

to the order entered by the Director. The applicant must submit to the Department a written application on a form provided by the Department or constructed by the applicant.

1. **Application:** The applicant must attest that all information in the application is truthful and complete, and the applicant, in his/her application:

a. Must provide the following information:

- (1) The legal name of the applicant, maiden name (if applicable), and any other names by which the applicant is known;
- (2) Mailing address (street, rural route, or post office address; and city, state, and zip code or country information);
- (3) The applicant's:

- (a) Social Security Number (SSN); or
 - (b) Alien Registration Number (A#); or
 - (c) Form I-94 (Arrival-Departure Record) number.
- Certain applicants may have both a SSN and an A# or I-94 number, and if so, must report both.

- (4) If the applicant holds a professional credential in another state, a list of the state(s) and type of credential;
- (5) A statement of the reason the applicant believes his/her credential should be reinstated;
- (6) Telephone number including area code;
- (7) Proof of meeting continuing competency requirements if Department records do not indicate the applicant has obtained the required hours at approved continuing competency programs;

b. Must state that s/he is one of the following:

- (1) A citizen of the United States;
- (2) An alien lawfully admitted into the United States for permanent residence under the Immigration and Nationality Act (INA) and who is eligible for a credential under the Uniform Credentialing Act; or
- (3) A non-immigrant whose visa for entry, or application for visa for entry, is related to employment as a credential holder in the United States;

c. If the applicant is an alien or non-immigrant, s/he must submit evidence of lawful permanent residence and/or immigration status which may include a copy of:

- (1) An Alien Registration Receipt Card (Form 551, otherwise known as a "Green Card");
- (2) An unexpired foreign passport with an unexpired Temporary I-551 stamp bearing the same name as the passport;
- (3) A document showing an Alien Registration Number ("A#")

with visa status; or
(4) A Form I-94 (Arrival-Departure Record) with visa status;

d. May provide the following information about him/herself:

(1) E-mail address;
(2) Fax number; and

e. Must indicate that s/he:

(1) Is of good character;
(2) Has met the continuing competency requirements specified in 179 NAC 10-006 for each renewal period;
(3) Has not practiced in Nebraska since s/he last held an active credential, or if the applicant has practiced in Nebraska since s/he last held an active credential, the actual number of days practiced;
(4) Has not committed any act which would be grounds for action against a credential as specified in 179 NAC 10-008.01 since the last renewal or issuance of the credential (whichever is later), or if an act(s) was committed, provide an explanation of all such acts; and
(5) Is a citizen of the United States or a qualified alien under the federal Immigration and Nationality Act, for the purpose of complying with Neb. Rev. Stat. §§ 4-108 to 4-114. The applicant must provide his/her immigration status and alien number and agree to provide a copy of his/her USCIS documentation upon request; and

2. Fee: The renewal fee.

10-010.02A The Department will consider an application for reinstatement following suspension, limitation, revocation, or voluntary surrender to resolve a disciplinary matter within 150 days of receipt of the application. The Department may:

1. Conduct an investigation to determine if the applicant has committed acts or offenses prohibited by 179 NAC 10-008.01;
2. Require the applicant to submit to a complete diagnostic examination, at the expense of the applicant, by one or more physician(s) or other professionals appointed by the Department. The applicant may also consult a physician(s) or other professionals of his/her own choice for a complete diagnostic examination and make available a report(s) of the examination(s) to the Department;
3. Require the applicant to pass a written and/or practical examination at the expense of the applicant;
4. Require the applicant to complete additional education at the expense of the applicant; or
5. Take any combination of these actions.

10-010.02B On the basis of the information obtained under 179 NAC 10-010.02A, the Department may:

1. Deny the application for reinstatement;
2. Fully reinstate the credential;
3. Modify the suspension or limitation; or
4. Reinstate the credential subject to limitations or subject to probation with terms and conditions.

10-010.02C The Department's decision will be mailed to the applicant by certified mail.

1. The decision of the Department will become final 30 days after the decision is mailed to the applicant unless the applicant requests a hearing within that 30-day period.
2. If the applicant has been afforded a hearing or an opportunity for a hearing on an application for reinstatement within two years prior to filing the current application, the Department may grant or deny the application without another hearing.
3. If the applicant requests a hearing, the Department will mail a notice of the date, time, and location of the hearing. The notice will be sent by certified mail at least 30 days before the hearing.
4. Following the hearing, the applicant will be notified of the Department's decision by certified mail.
5. The applicant may appeal the Department's decision to District Court in accordance with the Administrative Procedure Act.

10-011 ADMINISTRATIVE PENALTY: The Department may assess an administrative penalty when evidence exists of practice without a credential to practice as a licensed operator. Practice as a licensed operator without a credential for the purpose of this regulation means practice:

1. Prior to the issuance of a credential;
2. Following the expiration of a credential; or
3. Prior to the reinstatement of a credential.

10-011.01 Evidence of Practice: The Department will consider any of the following conditions as prima facie evidence of practice without being credentialed:

1. The person admits to engaging in practice;
2. Staffing records or other reports from the employer of the person indicate that the person was engaged in practice;
3. Billing or payment records document the provision of service by the person;
4. Service records document the provision of service by the person;
5. Appointment records indicate that the person was engaged in practice;
6. The person opens a business and announces or advertises that the business is open to provide service; and
7. Evidence of Making Process Control Or System Integrity Decisions. The Department will consider any of the following conditions as prima facie evidence of making process control or system integrity decisions

without a license:

- a. The person admits to making process control or system integrity decisions;
- b. Staffing records or other reports from the employer of the person indicate that the person made process control or system integrity decisions; and Government records indicate the person made process control or system integrity decisions.
- c. For purposes of this regulation, prima facie evidence means a fact presumed to be true unless disproved by some evidence to the contrary.

10-011.02 Penalty: The Department may assess an administrative penalty in the amount of \$10 per day, not to exceed a total of \$1,000 for practice without a credential. To assess the penalty, the Department will:

1. Provide written notice of the assessment to the person. The notice will specify:

- a. The total amount of the administrative penalty;
- b. The evidence on which the administrative penalty is based;
- c. That the person may request, in writing, a hearing to contest the assessment of an administrative penalty;
- d. That the Department will within 30 days following receipt of payment of the administrative penalty, remit the penalty to the State Treasurer to be disposed of in accordance with Article VII, section 5 of the Constitution of Nebraska;
- e. That an unpaid administrative penalty constitutes a debt to the State of Nebraska which may be collected in the manner of a lien foreclosure or sued for and recovered in a proper form of action in the name of the state in the District Court of the county in which the violator resides or owns property. The Department may also collect in such action attorney's fees and costs incurred directly in the collection of the administrative penalty; and
- f. Failure to pay an administrative penalty may result in disciplinary action.

2. Send by certified mail, a written notice of the administrative penalty to the last known address of the person to whom the penalty is assessed.

10-011.03 Administrative Hearing: When a person contests the administrative penalty and requests a hearing, the Department will hold a hearing pursuant to the Administrative Procedure Act and 184 NAC 1, the Department's Rules of Practice and Procedure for Administrative Hearings.

10-012 FEES

10-012.01 Schedule of Fees:

1. Initial Licensure Fee: Each applicant must submit a fee of \$115 except that a Grade V operator must submit a fee of \$31.

2. Correspondence Course Fee: Each applicant must submit a fee of \$80 with each application for a correspondence course conducted by the Department.

3. Training Course Fee: Each applicant must submit a fee of \$40 for each day of a scheduled basic training course delivered by the Department with each application for enrollment in a course that terminates with a written examination qualifying the attendee to apply for a license.

4. Examination Fees: Each applicant must submit a fee of \$50 with each request for individual examination without attendance at a scheduled basic training course delivered by or approved by the Department except that there is no charge for the Grade V examination.

5. Renewal Fee: A licensed water operator may renew for the fee of \$115 for two years.

10-012.02 Proration of Credentialing Fees: When a credential will expire within 180 days after its initial issuance date and the initial credentialing fee is \$25 or more, the Department will collect \$25 or one-fourth of the initial credentialing fee, whichever is greater, for the initial credential. The credential will be valid until the next subsequent renewal date.

10-012.03 Administrative Fees These fees are:

1. \$10 for a duplicate original or reissued credential.

2. \$25 for certification of a water operator license. The certification includes a certified statement that provides information regarding the basis on which a license was issued; the date of issuance; and whether disciplinary action has been taken against the license holder; and whether a credential is valid at the time the request is made.

3. \$5 for verification of a credential.

4. \$35 reinstatement fee (when required) in addition to the renewal fee.

5. \$25 retained by the Department from the credentialing fee when a credential is denied or an application is withdrawn. If the credentialing fee is less than \$25, the fee is forfeited. Exam fees are not returned.

THESE AMENDED RULES AND REGULATIONS Replace Title 179 NAC 10 Operator Certification, effective October 3, 2004.

EFFECTIVE DATE
JUNE 21, 2011

NEBRASKA DEPARTMENT OF
HEALTH AND HUMAN SERVICES

179 NAC 10

179 NAC 10 Attachment 1

**APPLICATION TO SERVE AS A LICENSED OPERATOR FOR MORE THAN ONE
NEBRASKA PUBLIC WATER SYSTEM**

The operator or water system taking on responsibilities for more than one water system is required to notify the Department by sending this form to the DHHS, Division of Public Health, P.O. Box 95026, Lincoln, NE 68509-5026. When the agreement terminates, the operator or water system is also required to notify the Department.

System 1 is the system with a current licensed operator.

System 2 is the system requesting to share the licensed operator of System 1.

System 1			
Public Water System Name:			
	Street:		
System Address:	City:	State:	Zip:
System Classification:		System ID Number: NE31-	
Business Phone for Operator:		Cell Phone:	
E-mail Address:		Home Phone:	
Licensed Water Operator(s) and Grade(s):			

System 2			
Public Water System Name:			
	Street:		
System Address:	City:	State:	Zip:
System Classification:		System ID Number: NE31-	
Business Phone for Operator:		Cell Phone:	
E-mail Address:		Home Phone:	
Licensed Water Operator(s) and Grade(s):			

Additional Information:
Distance between the two systems:

EFFECTIVE DATE
JUNE 21, 2011

NEBRASKA DEPARTMENT OF
HEALTH AND HUMAN SERVICES

179 NAC 10

Duties to be Performed by the Shared Operator at System 2 Include (check all that apply):	
<input type="checkbox"/>	Taking water samples
<input type="checkbox"/>	Receiving kits from the lab
<input type="checkbox"/>	Receiving results from the lab
<input type="checkbox"/>	Making public notification when required
<input type="checkbox"/>	Maintaining records
<input type="checkbox"/>	Maintaining all correspondence from the Department
<input type="checkbox"/>	Routine maintenance of water system components
<input type="checkbox"/>	Other (please specify):

Sample Kits for System 2 are to be sent to:			
Name:			
Address:		Street:	
	City:	State:	Zip:
E-mail Address:		Home Phone:	
Licensed Water Operator(s) and Grade(s):			

Shared Operator

Signature Date

Printed or Typed Name

System 1

System 2

Signature Signature

Title Title

Printed or Typed Name Printed or Typed Name

Date Date

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 11 - LEAD BAN

11-001 SCOPE AND AUTHORITY: These regulations set standards for lead in public water system pipes, pipe fittings, solder, or flux after July 1, 1988. The authority for these regulations is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

11-002 DEFINITIONS

Director means the Director of Regulation and Licensure or his/her authorized representative.

Lead free

1. When used with respect to solders and flux, means solders and flux containing not more than 0.2% lead and
2. When used with respect to pipe and pipe fittings, means pipe and pipe fittings containing not more than 8% lead.

11-003 SOLDER AND PIPES: After July 1, 1988, any pipe, pipe fitting, solder, or flux which is used in the installation or repair of any public water system must be lead free.

11-004 ADOPTION OF CODE(S), ORDINANCES: By July 1, 1988, the owner of any public water system must, by the adoption of plumbing codes or ordinances, contract, or other enforceable means, require that any pipe, pipe fitting, solder, or flux used in the installation or repair of any residential or nonresidential facility which is connected to the public water system be lead free.

11-004.01 The owner of any public water system must inspect the installation or repair of facilities as described in 179 NAC 11-004 constructed or repaired after July 1, 1988 to determine compliance with 179 NAC 11-004.

11-004.02 The owner of any public water system must cause any joint or pipe in facilities as described in 179 NAC 11-004 constructed or repaired after July 1, 1988, to be replaced if the owner or the Director finds that such joint or pipe is not lead free.

11-005 APPLICATION: 179 NAC 11 does not apply to the repair of leaded joints in cast iron pipes in any public water systems that are in existence and use on July 1, 1988.

11-006 EVIDENCE REQUIRED: The owner of each public water system must, by January 1, 1989, submit to the Director a copy of the plumbing code, ordinances, contracts other enforceable means required in 179 NAC 11-004.

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 12 - CONTROL OF LEAD AND COPPER

12-001 SCOPE AND AUTHORITY: Unless otherwise stated, these regulations apply to community and non-transient, non-community public water systems. These regulations establish a treatment technique that includes requirements for corrosion control treatment, source water treatment, lead service line replacement, and public education. The statutory authority is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

12-002 DEFINITIONS

Action level means the concentration of lead or copper in water specified in 179 NAC 12-003.01 which determines what treatment requirements contained in 179 NAC 12, if any, a water system is required to complete.

Compliance cycle means the nine-year calendar year cycle during which public water systems must monitor. Each compliance cycle consists of three three-year compliance periods. The first calendar year cycle began January 1, 1993 and ended December 31, 2001; the second began January 1, 2002 and ended December 31, 2010; the third begins January 1, 2011 and ends December 31, 2019.

Compliance period means a three-year calendar year period within a compliance cycle. Each compliance cycle has three three-year compliance periods. Within the first compliance cycle, the first compliance period ran 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.

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

Department means the Division of Public Health of the Department of Health and Human Services.

Director means the Director of Public Health of the Division of Public Health or his/her authorized representative.

Effective corrosion inhibitor residual means a concentration sufficient to form a passivating film on the interior walls of a pipe.

First draw sample means a one-liter sample of tap water, collected in accordance with 179 NAC 12-009.02B that has been standing in plumbing pipes at least six hours and is collected without flushing the tap.

Large water system means a water system that serves more than 50,000 individuals.

Lead free

1. When used with respect to solders and flux means solders and flux containing not more than 0.2% lead; and
2. When used with respect to pipes and pipe fittings means pipes and pipe fittings containing not more than 8.0% lead.

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

Medium-size water system means a water system that serves greater than 3,300 and less than or equal to 50,000 individuals.

Operator means the individual or individuals responsible for the continued performance of the water supply system or any part of such system during assigned duty hours.

Optimal corrosion control treatment means the corrosion control treatment that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate Nebraska's Regulations Governing Public Water Systems.

Service line sample means a one-liter sample of water, collected in accordance with 179 NAC 12-009.02C, that has been standing for at least six hours in a service line.

Single family structure means a building constructed as a single-family residence that is currently used as either a residence or a place of business.

Small water system means a water system that serves 3,300 individuals or fewer.

12-003 GENERAL REQUIREMENTS

12-003.01 Lead and Copper Action Levels

12-003.01A The lead action level is exceeded if the concentration of lead in more than 10% of tap water samples collected during any monitoring period conducted in accordance with 179 NAC 12-009 is greater than 0.015 mg/L (i.e., if the "90th percentile" lead level is greater than 0.015 mg/L).

12-003.01B The copper action level is exceeded if the concentration of copper in more than 10% of tap water samples collected during any monitoring period conducted in accordance with 179 NAC 12-009 is greater than 1.3 mg/L (i.e., if the "90th percentile" copper level is greater than 1.3 mg/L).

12-003.01C The 90th percentile lead and copper levels is computed as follows:

1. The results of all lead or copper samples taken during a monitoring period are placed in ascending order from the sample with the lowest concentration to the sample with the highest concentration. Each sampling result is assigned a number, ascending by single integers beginning with the number one for the sample with the lowest contaminant level. The number assigned to the sample with the highest contaminant level must be equal to the total number of samples taken.
2. The number of samples taken during the monitoring period is multiplied by 0.9.
3. The contaminant concentration in the numbered sample yielded by the calculation in 179 NAC 12-003.01C item 2 is the 90th percentile contaminant level.
4. Water systems which serve fewer than 100 people and collect five samples per monitoring period must compute the 90th percentile by taking the average of the highest and second highest concentrations.
5. For a public water system that has been allowed by the Director to collect fewer than five samples in accordance with 179 NAC 12-009.03, the sample result with the highest concentration is considered the 90th percentile value.

12-003.02 Corrosion Control Treatment Requirements

12-003.02A All water systems must install and operate optimal corrosion control treatment as defined in 179 NAC 12-002.

12-003.02B Any water system that complies with the applicable corrosion control treatment requirements specified by the Director under 179 NAC 12-004 and 12-005 is deemed in compliance with the treatment requirement contained in 179 NAC 12-003.02 item 1.

12-003.03 Source Water Treatment Requirements: Any system exceeding the lead or copper action level must implement all applicable source water treatment requirements specified by the Director under 179 NAC 12-006.

12-003.04 Lead Service Line Replacement Requirements: Any system exceeding the lead action level after implementation of applicable corrosion control and source water treatment requirements must complete the lead service line replacement requirements contained in 179 NAC 12-007.

12-003.05 Public Education Requirements: Pursuant to 179 NAC 12-008, all water systems must provide a consumer notice of lead tap water monitoring results to persons served at the sites (taps) that are tested. Any system exceeding the lead action level must implement the public education requirements.

12-003.06 Monitoring and Analytical Requirements: Tap water monitoring for lead and copper, monitoring for water quality parameters, source water monitoring for lead and copper, and analyses of the monitoring results under 179 NAC 12 must be completed in compliance with 179 NAC 12-009, 12-010, 12-011 and 12-012.

12-003.07 Reporting Requirements: Systems must report to the Director any information required by the treatment provisions of 179 NAC 12-013.

12-003.08 Recordkeeping Requirements: Systems must maintain records in accordance with 179 NAC 12-014.

12-003.09 Violation of Drinking Water Regulations: Failure to comply with the applicable requirements of 179 NAC 12, including requirements established by the Director pursuant to these provisions, constitutes a violation of the drinking water regulations for lead and/or copper.

12-004 APPLICABILITY OF CORROSION CONTROL TREATMENT STEPS

12-004.01 Systems must complete the applicable corrosion control treatment requirements described in 179 NAC 12-005 by the deadlines established in 179 NAC 12-004.

12-004.01A A large system (serving more than 50,000 individuals) must complete the corrosion control treatment steps specified in 179 NAC 12-004.04 unless it is deemed to have optimized corrosion control under 179 NAC 12-004.02B or 12-004.02C.

12-004.01B A small system (serving ≤ 3300 individuals) and a medium-size system (serving $>3,300$ and $\leq 50,000$ individuals) must complete the corrosion control treatment steps specified in 179 NAC 12-004.05 unless it is deemed to have optimized corrosion control under 179 NAC 12-004.02A, 12-004.02B, or 12-004.02C.

12-004.02 A system is deemed to have optimized corrosion control and is not required to complete the applicable corrosion control treatment steps identified in 179 NAC 12-004 if the system satisfies one of the following criteria. Any such system deemed to have optimized corrosion control under 179 NAC 12-004.02, and which has treatment in place, must continue to operate and maintain optimal corrosion control treatment and meet any requirements that the Director determines appropriate to ensure optimal corrosion control treatment is maintained.

12-004.02A A small or medium-size water system is deemed to have optimized corrosion control if the system meets the lead and copper action levels during each of two consecutive six-month monitoring periods conducted in accordance with 179 NAC 12-009.

12-004.02B Any water system may be deemed by the Director to have optimized corrosion control treatment if the system demonstrates to the satisfaction of the Director that it has conducted activities equivalent to

the corrosion control steps applicable to such system under 179 NAC 12-004. If the Director makes this determination, s/he will provide the system with written notice explaining the basis for his/her decision and will specify the water quality control parameters representing optimal corrosion control in accordance with 179 NAC 12-005.06. Water systems deemed to have optimized corrosion control under 179 NAC 12-004.02B must operate in compliance with the Director-designated optimal water quality control parameters in accordance with 179 NAC 12-005.07 and continue to conduct lead and copper tap and water quality parameter sampling in accordance with 179 NAC 12-009.04C and 179 NAC 12-010.04, respectively. A system must provide the Director with the following information in order to support a determination under 179 NAC 12-004.02B:

1. The results of all test samples collected for each of the water quality parameters in 179 NAC 12-005.03C.
2. A report explaining the test methods used by the water system to evaluate the corrosion control treatments listed in 179 NAC 12-005.03A, the results of all tests conducted, and the basis for the system's selection of optimal corrosion control treatment;
3. A report explaining how corrosion control has been installed and how it is being maintained to insure minimal lead and copper concentrations at consumers' taps; and
4. The results of tap water samples collected in accordance with 179 NAC 12-009 at least once every six months for one year after corrosion control has been installed.

12-004.02C Any water system is deemed to have optimized corrosion control if it submits results of tap water monitoring conducted in accordance with 179 NAC 12-009 and source water monitoring conducted in accordance with 179 NAC 12-011 that demonstrates for two consecutive six-month monitoring periods that the difference between the 90th percentile tap water lead level computed under 179 NAC 12-003.01C, and the highest source water lead concentration, is less than the Practical Quantitation Level (PQL) for lead specified in 179 NAC 12-012.01A item 2.

12-004.02C(1) Those systems whose highest source water lead level is below the Method Detection Limit may also be deemed to have optimized corrosion control under 179 NAC 12-004.02C if the 90th percentile tap water lead level is less than or equal to the Practical Quantitation Level for lead for two consecutive six-month monitoring periods.

12-004.02C(2) Any water system deemed to have optimized corrosion control in accordance with 179 NAC 12-004.02C must continue monitoring for lead and copper at the tap no less frequently than once every three calendar years using the reduced number of sites specified in 179 NAC 12-009.03 and collecting the samples at

times and locations specified in 179 NAC 12-009.04D4.

12-004.02C(3) Any water system deemed to have optimized corrosion control pursuant to 179 NAC 12-004.02C must notify the Director in writing pursuant to 179 NAC 12-013.01C of any upcoming long-term change in treatment or addition of a new source as described 179 NAC 12-013.01C. The Director will review and must approve the addition of a new source or long-term change in water treatment before it is implemented by the water system. The Director may require any such system to conduct additional monitoring or to take other action the Director deems appropriate to ensure that such systems maintain minimal levels of corrosion in the distribution system.

12-004.02C(4) A system is not deemed to have optimized corrosion control under 179 NAC 12-004.02C, and must implement corrosion control treatment pursuant to 179 NAC 12-004.02C(5) unless it meets the copper action level.

12-004.02C(5) Any system triggered into corrosion control because it is no longer deemed to have optimized corrosion control under 179 NAC 12-004.02C must implement corrosion control treatment in accordance with the deadlines in 179 NAC 12-004.05. Any such large system must adhere to the schedule specified in 179 NAC 12-004.05 for medium-size systems, with the time periods for completing each step being triggered by the date the system is no longer deemed to have optimized corrosion control under 179 NAC 12-004.02C.

12-004.03 Any small or medium-size water system that is required to complete the corrosion control steps due to its exceedance of the lead or copper action level may cease completing the treatment steps whenever the system meets both action levels during each of two consecutive monitoring periods conducted pursuant to 179 NAC 12-009 and submits the results to the Director. If any such water system thereafter exceeds the lead or copper action level during any monitoring period, the system (or the Director, as the case may be) must recommence completion of the applicable treatment steps, beginning with the first treatment step which was not previously completed in its entirety. The Director may require a system to repeat treatment steps previously completed by the system where the Director determines that this is necessary to implement properly the treatment requirements of 179 NAC 12-004. The Director will notify the system in writing of such a determination and explain the basis for his/her decision. The requirement for any small- or medium-size system to implement corrosion control treatment steps in accordance with 179 NAC 12-004.05 (including systems deemed to have optimized corrosion control under 179 NAC 12-004.02A) is triggered whenever any small- or medium-size system exceeds the lead or copper action level.

12-004.04 Treatment Steps and Deadlines for Large Systems

Serving >50,000 Individuals: Except as provided in 179 NAC 12-004.02B and 12-004.02C large systems must complete the following corrosion control treatment steps (described in the referenced portions of 179 NAC

12-005, 12-009 and 12-010) by the indicated dates (which are included for informational purposes only).

1. Step 1: The system must conduct initial monitoring during two consecutive six-month monitoring periods by January 1, 1993.
2. Step 2: The system must complete corrosion control studies by July 1, 1994.
3. Step 3: The Director must designate optimal corrosion control treatment by January 1, 1995.
4. Step 4: The system must install optimal corrosion control treatment by January 1, 1997.
5. Step 5: The system must complete follow-up sampling by January 1, 1998.
6. Step 6: The Director must review installation of treatment and designate optimal water quality control parameters by July 1, 1998.
7. Step 7: The system must operate in compliance with the optimal water quality control parameters specified by the Director (179 NAC 12-005.07) and continue to conduct tap sampling (179 NAC 12-009.04C and 12-010.04).

12-004.05 Treatment Steps and Deadlines for Small and Medium-Size Systems: Except as provided in 179 NAC 12-004.02, small and medium-size systems must complete the following corrosion control treatment steps (described in the referenced portions of 179 NAC 12-005, 12-009 and 12-010) by the indicated time periods.

1. Step 1: The system must conduct initial tap sampling (179 NAC 12-009.04A and 12-010.02) until the system either exceeds the lead or copper action level or becomes eligible for reduced monitoring under 179 NAC 12-009.04D. A system exceeding the lead or copper action level must recommend optimal corrosion control treatment (179 NAC 12-005.01) within six months after the end of the monitoring period during which it exceeds one of the action levels.
2. Step 2: Within 12 months after the end of the monitoring period during which a system exceeds the lead or copper action level, the Director may require the system to perform corrosion control studies (179 NAC 12-005.02). If the Director does not require the system to perform such studies, the Director will specify optimal corrosion control treatment (179 NAC 12-005.04) within the following time frames:
 - a. For medium-size systems, within 18 months after the end of the monitoring period during which such system exceeds the lead or copper action level.

b. For small systems, within 24 months after the end of the monitoring period during which such system exceeds the lead or copper action level.

3. Step 3: If the Director requires a system to perform corrosion control studies under step 2, the system must complete the studies (179 NAC 12-005.03) within 18 months after the Director requires that such studies be conducted.

4. Step 4: If the system has performed corrosion control studies under step 2, the Director will designate optimal corrosion control treatment (179 NAC 12-005.04) within six months after completion of step 3.

5. Step 5: The system must install optimal corrosion control treatment (179 NAC 12-005.05) within 24 months after the Director designates such treatment.

6. Step 6: The system must complete follow-up sampling (179 NAC 12-009.04B and 179 NAC 12-010.03) within 36 months after the Director designates optimal corrosion control treatment.

7. Step 7: The Director will review the system's installation of treatment and designate optimal water quality control parameters (179 NAC 12-005.06) within six months after completion of step 6.

8. Step 8: The system must operate in compliance with the optimal water quality control parameters that have been designated by the Director (179 NAC 12-005.07) and continue to conduct tap sampling (179 NAC 12-009.04C and 12-010.04).

12-005 DESCRIPTION OF CORROSION CONTROL TREATMENT

REQUIREMENTS: Each system must complete the corrosion control treatment requirements described below which are applicable to such system under 179 NAC 12-004.

12-005.01 System Recommendation Regarding Corrosion Control

Treatment: Based upon the results of lead and copper tap monitoring and water quality parameter monitoring, small and medium-size water systems exceeding the lead or copper action level must recommend installation of one or more of the corrosion control treatments listed in 179 NAC 12-005.03A which the system believes constitutes optimal corrosion control for that system. The Director may require the system to conduct additional water quality parameter monitoring in accordance with 179 NAC 12-010.02 to assist the Director in reviewing the system's recommendation.

12-005.02 Director Decision to Require Studies of Corrosion Control

Treatment (Applicable to Small and Medium-Size Systems): The Director may require any small or medium-size system that exceeds the lead or copper action level to perform corrosion control studies under 179 NAC 12-005.03 to identify optimal corrosion control treatment for the system.

12-005.03 Performance of Corrosion Control Studies

12-005.03A Any public water system performing corrosion control studies must evaluate the effectiveness of each of the following treatments, and, if appropriate, combinations of the following treatments to identify the optimal corrosion control treatment for that system:

1. Alkalinity and pH adjustment;
2. Calcium hardness adjustment; and
3. The addition of a phosphate or silicate based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration in all test tap samples.

12-005.03B The water system must evaluate each of the corrosion control treatments using either pipe rig/loop tests, metal coupon tests, partial-system tests, or analyses based on documented analogous treatments with other systems of similar size, water chemistry and distribution system configuration.

12-005.03C The water system must measure the following water quality parameters in any tests conducted under 179 NAC 12-005.03C before and after evaluating the corrosion control treatments listed above:

1. Lead;
2. Copper;
3. pH;
4. Alkalinity;
5. Calcium;
6. Conductivity;
7. Orthophosphate (when an inhibitor containing a phosphate compound is used);
8. Silicate (when an inhibitor containing a silicate compound is used); and
9. Water temperature.

12-005.03D The water system must identify all chemical or physical constraints that limit or prohibit the use of a particular corrosion control treatment and document such constraints with at least one of the following:

1. Data and documentation showing that a particular corrosion control treatment has adversely affected other water treatment processes when used by another water system with comparable water quality characteristics; and/or

2. Data and documentation demonstrating that the water system has previously attempted to evaluate a particular corrosion control treatment and has found that the treatment is ineffective or adversely affects other water quality treatment processes.

12-005.03E The water system must evaluate the effect of the chemicals used for corrosion control treatment on other water quality treatment processes.

12-005.03F On the basis of an analysis of the data generated during each evaluation, the water system must recommend to the Director in writing the treatment option that the corrosion control studies indicate constitutes optimal corrosion control treatment for that system. The water system must provide a rationale for its recommendation along with all supporting documentation specified in 179 NAC 12-005.03A through 12-005.03E.

12-005.04 Designation of Optimal Corrosion Control Treatment by the Director

12-005.04A Based upon consideration of available information including, where applicable, studies performed under 179 NAC 12-005.03 and a system's recommended treatment alternative, the Director will either approve the corrosion control treatment option recommended by the system, or designate alternative corrosion control treatment(s) from among those listed in 179 NAC 12-005.03A. When designating optimal treatment the Director will consider the effects that additional corrosion control treatment will have on water quality parameters and on other water quality treatment processes.

12-005.04B The Director will notify the system of its decision on optimal corrosion control treatment in writing and explain the basis for this determination. If the Director requests additional information to aid its review, the water system must provide the information.

12-005.05 Installation of Optimal Corrosion Control: Each system must properly install and operate throughout its distribution system the optimal corrosion control treatment designated by the Director under 179 NAC 12-005.04.

12-005.06 Director Review of Treatment and Specification of Optimal Water Quality Control Parameters: The Director will evaluate the results of all lead and copper tap samples and water quality parameter samples submitted by the water system and determine whether the system has properly installed and operated the optimal corrosion control treatment designated by the Director in 179 NAC 12-005.04. Upon reviewing the results of tap water and

water quality parameter monitoring by the system, both before and after the system installs optimal corrosion control treatment, the Director will designate:

1. A minimum value or a range of values for pH measured at each entry point to the distribution system;
2. A minimum pH value, measured in all tap samples. Such value must be equal to or greater than 7.0, unless the Director determines that meeting a pH level of 7.0 is not technologically feasible or is not necessary for the system to optimize corrosion control;
3. If a corrosion inhibitor is used, a minimum concentration or a range of concentrations for the inhibitor, measured at each entry point to the distribution system and in all tap samples, that the Director determines is necessary to form a passivating film on the interior walls of the pipes of the distribution system;
4. If alkalinity is adjusted as part of optimal corrosion control treatment, a minimum concentration or a range of concentrations for alkalinity, measured at each entry point to the distribution system and in all tap samples;
5. If calcium carbonate stabilization is used as part of corrosion control, a minimum concentration or a range of concentrations for calcium, measured in all tap samples. The values for the applicable water quality control parameters listed above must be those that the Director determines to reflect optimal corrosion control treatment for the system. The Director may designate values for additional water quality control parameters determined by the Director to reflect optimal corrosion control for the system. The Director will notify the system in writing of these determinations and explain the basis for its decisions.

12-005.07 Continued Operation and Monitoring: All systems optimizing corrosion control must continue to operate and maintain optimal corrosion control treatment, including maintaining water quality parameter values at or above minimum values or within ranges designated by the Director under 179 NAC 12-005.06, in accordance with 179 NAC 12-005.07 for all samples collected under 179 NAC 12-010.04 through 12-010.06. Compliance with the requirements of 179 NAC 12-005.07 must be determined every six months, as specified under 179 NAC 12-010.04. A water system is out of compliance with the requirements of 179 NAC 12-005.07 for a six-month period if it has excursions for any Director-specified parameter on more than nine days during the period. An excursion occurs whenever the daily value for one or more of the water quality parameters measured at a sampling location is below the minimum value or outside the range designated by the Director. Daily values are calculated as follows. The Director has discretion to delete results of obvious sampling errors from this calculation.

1. On days when more than one measurement for the water quality parameter is collected at the sampling location, the daily value must be the average of all results collected during the day regardless of whether

they are collected through continuous monitoring, grab sampling, or a combination of both.

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

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

12-005.08 Modification of Treatment Decisions Made by the Director: Upon its own initiative or in response to a request by a water system or other interested party, the Director may modify his/her determination of the optimal corrosion control treatment under 179 NAC 12-005.04 or optimal water quality control parameters under 179 NAC 12-005.06. A request for modification by a system or other interested party must be in writing, explain why the modification is appropriate, and provide supporting documentation. The Director may modify his/her determination where s/he concludes that such change is necessary to ensure that the system continues to optimize corrosion control treatment. A revised determination must be made in writing, set forth the new treatment requirements, explain the basis for the Director's decision, and provide an implementation schedule for completing the treatment modifications.

12-006 SOURCE WATER TREATMENT REQUIREMENTS: Systems must complete the applicable source water monitoring and treatment requirements (described in the referenced portions of 179 NAC 12-006.02, 12-009, and 12-011) by the following deadlines.

12-006.01 Deadlines for Completing Source Water Treatment Steps

1. Step 1: A system exceeding the lead or copper action level must complete lead and copper source water monitoring (179 NAC 12-011.02) and make a treatment recommendation to the Director (179 NAC 12-006.02A) no later than 180 days after the end of the monitoring period during which the lead or copper action level was exceeded.

2. Step 2: The Director will make a determination regarding source water treatment (179 NAC 12-006.02B) within six months after submission of monitoring results under step 1.

3. Step 3: If the Director requires installation of source water treatment, the system must install the treatment (179 NAC 12-006.02C) within 24 months after completion of step 2.

4. Step 4: The system must complete follow-up tap water monitoring (179 NAC 12-009.04B) and source water monitoring (179 NAC 12-011.03) within 36 months after completion of step 2.

5. Step 5: The Director will review the system's installation and operation of source water treatment and specify maximum permissible source water levels (179 NAC 12-006.02D) within six months after completion of step 4.

6. Step 6: The system must operate in compliance with the maximum permissible lead and copper source water levels specified by the Director (179 NAC 12-006.02D) and continue source water monitoring (179 NAC 12-011.04).

12-006.02 Description of Source Water Treatment Requirements

12-006.02A System Treatment Recommendation: Any system which exceeds the lead or copper action level will recommend in writing to the Director the installation and operation of one of the source water treatments listed in 179 NAC 12-006.02B. A system may recommend that no treatment be installed based upon a demonstration that source water treatment is not necessary to minimize lead and copper levels at users' taps.

12-006.02B Director Determination Regarding Source Water Treatment: The Director will complete an evaluation of the results of all source water samples submitted by the water system to determine whether source water treatment is necessary to minimize lead or copper levels in water delivered to users' taps. If the Director determines that treatment is needed, the Director will either require installation and operation of the source water treatment recommended by the system (if any) or require the installation and operation of another source water treatment from among the following: ion exchange, reverse osmosis, lime softening or coagulation/filtration. If the Director requests additional information to aid in his/her review, the water system must provide the information by the date specified by the Director in his/her request. The Director will notify the system in writing of his/her determination and set forth the basis for his/her decision.

12-006.02C Installation of Source Water Treatment: Each system must properly install and operate the source water treatment designated by the Director under 179 NAC 12-006.02B.

12-006.02D Director Review of Source Water Treatment and Specification of Maximum Permissible Source Water Levels: The Director will review the source water samples taken by the water system both before and after the system installs source water treatment, and determine whether the system has properly installed and operated the source water treatment designated by the Director. Based upon his/her review, the Director will designate the maximum permissible lead and copper concentrations for finished water entering the distribution system. Such levels will reflect the contaminant removal capability of the treatment properly operated and maintained. The Director will notify the system in writing and explain the basis for his/her decision.

12-006.02E Continued Operation and Maintenance: Each water system must maintain lead and copper levels below the maximum permissible concentrations designated by the Director at each sampling point monitored in accordance with 179 NAC 12-011. The system is out of compliance with 179 NAC 12-006.02E if the level of lead or copper at any sampling point is greater than the maximum permissible concentration designated by the Director.

12-006.02F Modification of Director Treatment Decisions: Upon his/her own initiative or in response to a request by a water system or other interested party, the Director may modify his/her determination of the source water treatment under 179 NAC 12-006.02, or maximum permissible lead and copper concentrations for finished water entering the distribution system under 179 NAC 12-006.02D. A request for modification by a system or other interested party must be in writing, explain why the modification is appropriate, and provide supporting documentation. The Director may modify his/her determination where s/he concludes that such change is necessary to ensure that the system continues to minimize lead and copper concentrations in source water. A revised determination will be made in writing, set forth the new treatment requirements, explain the basis for the Director's decision, and provide an implementation schedule for completing the treatment modifications.

12-007 LEAD SERVICE LINE REPLACEMENT REQUIREMENTS

12-007.01 Systems that fail to meet the lead action level in tap samples taken pursuant to 179 NAC 12-009.04B, after installing corrosion control and/or source water treatment (whichever sampling occurs later), must replace lead service lines in accordance with the requirements of 179 NAC 12-007. If a system is in violation of 179 NAC 12-004 or 12-006 for failure to install source water or corrosion control treatment, the Director may require the system to commence lead service line replacement under 179 NAC 12-007 after the date by which the system was required to conduct monitoring under 179 NAC 12-009.04B has passed.

12-007.02 Replacement Schedule

12-007.02A A water system must replace annually at least 7% of the initial number of lead service lines in its distribution system. The initial number of lead service lines is the number of lead lines in place at the time the replacement program begins. The system must identify the initial number of lead service lines in its distribution system, including an identification of the portion(s) owned by the system, based on a materials evaluation, including the evaluation required under 179 NAC 12-009.01 and relevant legal authorities (e.g., contracts, local ordinances) regarding the portion owned by the system. The first year of lead service line replacement begins on the first day following the end of the monitoring period in which the action level was exceeded under 179 NAC 12-007.01. If monitoring is required annually or less frequently, the end of the monitoring period is September 30 of the calendar year in

which the sampling occurs. If the Director has established an alternate monitoring period, then the end of the monitoring period will be the last day of that period.

12-007.02B Any water system resuming a lead service line replacement program after the cessation of its lead service line replacement program as allowed by 179 NAC 12-007.06 must update its inventory of lead service lines to include those sites that were previously determined not to require replacement through the sampling provision under 179 NAC 12-007.03. The system will then divide the updated number of remaining lead service lines by the number of remaining years in the program to determine the number of lines that must be replaced per year (7% lead service line replacement is based on a 15-year replacement program, so, for example, systems resuming lead service line replacement after previously conducting two years of replacement would divide the updated inventory by 13). For those systems that have completed a 15-year lead service line replacement program, the Director will determine a schedule for replacing or retesting lines that were previously tested out under the replacement program when the system re-exceeds the action level.

12-007.03 A system is not required to replace an individual lead service line if the lead concentration in all service line samples from that line, taken pursuant to 179 NAC 12-009.02C, is less than or equal to 0.015 mg/L.

12-007.04 A water system must replace that portion of the lead service line that it owns. In cases where the system does not own the entire lead service line, the system must notify the owner of the line, or the owner's authorized agent, that the system will replace the portion of the service line that it owns and must offer to replace the owner's portion of the line. A system is not required to bear the cost of replacing the privately-owned portion of the line, nor is it required to replace the privately-owned portion where the owner chooses not to pay the cost of replacing the privately-owned portion of the line, or where replacing the privately-owned portion would be precluded by state, local or common law. A water system that does not replace the entire length of the service line also must complete the following tasks:

1. At least 45 days prior to commencing with the partial replacement of a lead service line, the water system must provide notice to the resident(s) of all buildings served by the line explaining that they may experience a temporary increase of lead levels in their drinking water, along with guidance on measures consumers can take to minimize their exposure to lead. The Director may allow the water system to provide notice under the previous sentence less than 45 days prior to commencing partial lead service line replacement where such replacement is in conjunction with emergency repairs. In addition, the water system must inform the resident(s) served by the line that the system will, at the system's expense, collect a sample from each partially-replaced lead service line that is representative of the water in the service line for analysis of lead content, as prescribed under 179 NAC 12-009.02C, within 72 hours after the completion of the partial

replacement of the service line. The system must collect the sample and report the results of the analysis to the owner and the resident(s) served by the line within three business days of receiving the results. Mailed notices post-marked within three business days of receiving the results are considered "on time."

2. The water system must provide the information required by 179 NAC 12-007.04 item 1 to the residents of individual dwellings by mail or by other methods approved by the Director. In instances where multi-family dwellings are served by the line, the water system must have the option to post the information at a conspicuous location.

12-007.05 The Director will require a system to replace lead service lines on a shorter schedule than that required by 179 NAC 12-007, taking into account the number of lead service lines in the system, where such a shorter replacement schedule is feasible. The Director will make this determination in writing and notify the system of its finding within six months after the system is triggered into lead service line replacement based on monitoring referenced in 179 NAC 12-007.01.

12-007.06 Any system may cease replacing lead service lines whenever first draw samples collected pursuant to 179 NAC 12-009.02B meet the lead action level during each of two consecutive monitoring periods and the system submits the results to the Director. If first draw tap samples collected in any such water system thereafter exceed the lead action level, the system must recommence replacing lead service lines, pursuant to 179 NAC 12-007.02B.

12-007.07 To demonstrate compliance with 179 NAC 12-007.01 through 12-007.04, a system must report to the Director the information specified in 179 NAC 12-013.05.

12-008 PUBLIC EDUCATION AND SUPPLEMENTAL MONITORING

REQUIREMENTS: All water systems must deliver a consumer notice of lead tap water monitoring results to persons served by the water system at sites that are tested, as specified in 179 NAC 12-008.04. A water system that exceeds the lead action level based on tap water samples collected in accordance with 179 NAC 12-009 must deliver the public education materials contained in 179 NAC 12-008.01 in accordance with the requirements in 179 NAC 12-008.02. Water systems that exceed the lead action level must sample the tap water of any customer who requests it in accordance with 179 NAC 12-008.03

12-008.01 Content of Written Public Education Materials

12-008.01A Community Water Systems and Non-transient Non-community Water Systems: Water systems must include the following elements in printed materials (e.g., brochures and pamphlets) in the same order as listed below. In addition, language in 179 NAC 12-008.01 items 1 through 2 and 6 must be included in the materials, exactly as written, except for the text in brackets in these paragraphs for which the water system must include system-specific information. Any additional information presented by a water system must be consistent with the

information below and be in plain language that can be understood by the general public. Water systems must submit all written public education materials to the Director prior to delivery. The Director may require the system to obtain approval of the content of written public materials prior to delivery.

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

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

3. Sources of Lead

- a. Explain what lead is.
- b. Explain possible sources of lead in drinking water and how lead enters drinking water. Include information on home/building plumbing materials and service lines that may contain lead.
- c. Discuss other important sources of lead exposure in addition to drinking water (e.g., paint).

4. Discuss the steps consumers can take to reduce their exposure to lead in drinking water

- a. Encourage running the water to flush out the lead.
- b. Explain concerns with using hot water from the tap and specifically caution against the use of hot water for preparing baby formula.
- c. Explain that boiling water does not reduce lead levels.
- d. Discuss other options consumers can take to reduce exposure to lead in drinking water, such as alternative sources or treatment of water.

- e. Suggest that parents have their child's blood tested for lead.
5. Explain why there are elevated levels of lead in the system's drinking water (if known) and what the water system is doing to reduce the lead levels in homes/buildings in this area.
6. For more information, call us at [INSERT YOUR NUMBER] [(IF APPLICABLE), or visit our web site at (INSERT YOUR WEB SITE HERE)] For more information on reducing lead exposure around your home/building and the health effects of lead, visit EPA's web site at <http://www.epa.gov/lead> or contact your health care provider.

12-008.01B Community Water Systems: In addition to including the elements specified in 179 NAC 12-008.01A, community water systems must:

1. Tell consumers how to get their water tested.
2. Discuss lead in plumbing components and the difference between low lead and lead free.

12-008.02 Delivery of Public Education Materials

12-008.02A For public water systems that have a population with 5% or more non-English speaking consumers, the public education materials must contain information in the appropriate language(s) regarding the importance of the notice or contain a telephone number or address where persons served may contact the water system to obtain a translated copy of the public education materials or to request assistance in the appropriate language.

12-008.02B A community water system that exceeds the lead action level on the basis of tap water samples collected in accordance with 179 NAC 12-009 and that is not already conducting public education tasks under this section, must conduct the public education tasks under this section within 60 days after the end of the monitoring period in which the exceedance occurred:

1. Deliver printed materials meeting the content requirements of 179 NAC 12-008.01 to all bill paying customers.

2. Other Contacts

a. Contact customers who are most at risk by delivering education materials that meet the content requirements of 179 NAC 12-008.01 to local public health agencies even if they are not located within the water system's service area, along with an informational notice that encourages distribution to all the organization's potentially affected customers or community water system's users. The water system must contact the local public health agencies directly by phone or in person. The local public health agencies may provide a specific list of

additional community based organizations serving target populations, which may include organizations outside the service area of the water system. If such lists are provided, systems must deliver education materials that meet the content requirements of 179 NAC 12-008.01 to all organizations on the provided lists.

b. Contact customers who are most at risk by delivering materials that meet the content requirements of 179 NAC 12-008.01 to the following organizations listed below that are located within the water system's service area, along with an informational notice that encourages distribution to all the organization's potentially affected customers or community water system's users:

- (1) Public and private schools or school boards.
- (2) Women, Infants and Children (WIC) and Head Start programs.
- (3) Public and private hospitals and medical clinics.
- (4) Pediatricians.
- (5) Family planning clinics.
- (6) Local welfare agencies.

c. Make a good faith effort to locate the following organizations within the service area and deliver materials that meet the content requirements of 179 NAC 12-008.01 to them, along with an informational notice that encourages distribution to all potentially affected customers or users. The good faith effort to contact at-risk customers may include requesting a specific contact list of these organizations from the local public health agencies, even if the agencies are not located within the water system's service area:

- (1) Licensed childcare centers.
- (2) Public and private preschools.
- (3) Obstetricians-Gynecologists and Midwives.

3. No less often than quarterly, provide information on or in each water bill as long as the system exceeds the action level for lead. The message on the water bill must include the following statement exactly as written except for the text in brackets for which the water system must include system-specific information: [INSERT NAME OF WATER SYSTEM] found high levels of lead in drinking water in some homes. Lead can cause serious health problems. For more information please call [INSERT NAME OF WATER SYSTEM] [or visit (INSERT YOUR WEB SITE HERE)]. The message or delivery mechanism can be modified in consultation with the Director; specifically, the Director may allow a separate mailing of public education materials to customers if the water system cannot place the information on water bills.

4. Post material meeting the content requirements of 179 NAC 12-008.01 on the water system's web site if the system serves a population greater than 100,000.

5. Submit a press release to newspaper, television and radio stations.

6. In addition to 179 NAC 12-008.02B items 1-5, systems must implement at least three activities from one or more categories listed below. The educational content and selection of these activities must be determined in consultation with the Director.

- a. Public service announcements.
- b. Paid advertisements.
- c. Public area informational displays.
- d. E-mails to customers.
- e. Public Meetings.
- f. Household deliveries.
- g. Targeted individual customer contact.
- h. Direct material distribution to all multi-family homes and institutions.
- i. Other methods approved by the Director.

7. For systems that are required to conduct monitoring annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs, or, if the Director has established an alternate monitoring period, the last day of that period.

12-008.02C As long as a community water system exceeds the action level, it must repeat the activities pursuant to 179 NAC 12-008.02B as described in the following paragraphs.

1. A community water system must repeat the tasks contained in 179 NAC 12-008.02B items 1, 2, and 6 every 12 months.

2. A community water system must repeat tasks contained in 179 NAC 12-008.02B item 3 with each billing cycle.

3. A community water system serving a population greater than 100,000 must post and retain material on a publicly accessible web site pursuant to 179 NAC 12-008.02B item 4.

4. A community water system must repeat the task in 179 NAC 12-008.02B item 5 twice every 12 months on a schedule agreed upon with the Director. The Director can allow activities in 179 NAC 12-008.02B to extend beyond the 60-day requirement if needed for implementation purposes on a case-by-case basis; however, this extension must be approved in writing by the Director in advance of the 60-day deadline.

12-008.02D Within 60 days after the end of the monitoring period in which the exceedance occurred (unless it already is repeating public education tasks pursuant to 179 NAC 12-008.02E), a non-transient non-community water system must deliver the public education materials

specified by 179 NAC 12-008.01 as follows:

1. Post informational posters on lead in drinking water in a public place or common area in each of the buildings served by the system; and
2. Distribute informational pamphlets and/or brochures on lead in drinking water to each person served by the non-transient non-community water system. The Director may allow the system to utilize electronic transmission in lieu of or combined with printed materials as long as it achieves at least the same coverage.
3. For systems that are required to conduct monitoring annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs, or, if the Director has established an alternate monitoring period, the last day of that period.

12-008.02E A non-transient non-community water system must repeat the tasks contained in 179 NAC 12-008.02D at least once during each calendar year in which the system exceeds the lead action level. The Director can allow activities in 179 NAC 12-008.02D to extend beyond the 60-day requirement if needed for implementation purposes on a case-by-case basis; however, this extension must be approved in writing by the Director in advance of the 60-day deadline.

12-008.02F A water system may discontinue delivery of public education materials if the system has met the lead action level during the most recent six-month monitoring period conducted pursuant to 179 NAC 12-009. Such a system must recommence public education in accordance with 179 NAC 12-008 if it subsequently exceeds the lead action level during any monitoring period.

12-008.02G A community water system may apply to the Director, in writing, to use only the text specified in 179 NAC 12-008.01A in lieu of the text in 179 NAC 12-008.01A and 12-008.01B and to perform the tasks listed in 179 NAC 12-008.02D and 12-008.02E in lieu of the tasks in 179 NAC 12-008.02B and 12-008.02C if:

1. The system is a facility, such as a prison or a hospital, where the population served is not capable of or is prevented from making improvements to plumbing or installing point of use treatment devices; and
2. The system provides water as part of the cost of services provided and does not separately charge for water consumption.

12-008.02H Communities Serving 3,300 or Fewer People: A community water system serving 3,300 or fewer people may limit certain aspects of their public education programs as follows:

1. With respect to the requirements of 179 NAC 12-008.02B item 6, a system serving 3,300 or fewer must implement at least one of the activities listed in that paragraph.
2. With respect to the requirements of 179 NAC 12-008.02B item 2, a system serving 3,300 or fewer people may limit the distribution of the public education materials required under that paragraph to facilities and organizations served by the system that are most likely to be visited regularly by pregnant women and children.
3. With respect to the requirements of 179 NAC 12-008.02B item 5, the Director may waive this requirement for systems serving 3,300 or fewer persons as long as the system distributes notices to every household served by the system.

12-008.03 Supplemental Monitoring and Notification of Results: A water system that fails to meet the lead action level on the basis of tap samples collected in accordance with 179 NAC 12-009 must offer to sample the tap water of any customer who requests it. The system is not required to pay for collecting or analyzing the sample, nor is the system required to collect and analyze the sample itself.

12-008.04 Notification of Results

12-008.04A Reporting Requirement: All water systems must provide a notice of the individual tap results from lead tap water monitoring carried out under the requirements of 179 NAC 12-009 to the persons served by the water system at the specific sampling site from which the sample was taken (e.g., the occupants of the residence where the tap was tested).

12-008.04B Timing of Notification: A water system must provide the consumer notice as soon as practical, but no later than 30 days after the system learns of the tap monitoring results.

12-008.04C Content: The consumer notice must include the results of lead tap water monitoring for the tap that was tested, an explanation of the health effects of lead, a list of steps consumers can take to reduce exposure to lead in drinking water and contact information for the water utility. The notice must also provide the maximum contaminant level goal and the action level for lead and the definitions for these two terms from 179 NAC 14-004.03.

12-008.04D Delivery: The consumer notice must be provided to persons served at the tap that was tested, either by mail or by another method approved by the Director. For example, upon approval by the Director, a non-transient non-community water system could post the results on a bulletin board in the facility to allow users to review the information. The system must provide the notice to customers at sample taps tested, including consumers who do not receive water bills.

12-009 MONITORING REQUIREMENTS FOR LEAD AND COPPER IN TAP WATER

12-009.01 Sample Site Location

12-009.01A Each water system must complete a materials evaluation of its distribution system in order to identify a pool of targeted sampling sites that meets the requirements of 179 NAC 12-009, and which is sufficiently large to ensure that the water system can collect the number of lead and copper tap samples required in 179 NAC 12-009.03. All sites from which first draw samples are collected must be selected from this pool of targeted sampling sites. Sampling sites may not include faucets that have point-of-use or point-of-entry treatment devices designed to remove inorganic contaminants.

12-009.01B The system must seek to collect the following information where possible in the course of its normal operations (e.g., checking service line materials when reading water meters or performing maintenance activities):

1. All plumbing codes, permits, and records in the files of the building department(s) which indicate the plumbing materials that are installed within publicly and privately owned structures connected to the distribution system;
2. All inspections and records of the distribution system that indicate the material composition of the service connections that connect a structure to the distribution system; and
3. All existing water quality information, which includes the results of all prior analyses of the system or individual structures connected to the system, indicating locations that may be particularly susceptible to high lead or copper concentrations.

12-009.01C The sampling sites selected for a community water system's sampling pool ("tier 1 sampling sites") must consist of single family structures that:

1. Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or
2. Are served by a lead service line. When multiple-family residences comprise at least 20% of the structures served by a water system, the system may include these types of structures in its sampling pool.

12-009.01D Any community water system with insufficient tier 1 sampling sites must complete its sampling pool with "tier 2 sampling sites", consisting of buildings, including multiple-family residences that:

1. Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or

2. Are served by a lead service line.

12-009.01E Any community water system with insufficient tier 1 and tier 2 sampling sites must complete its sampling pool with "tier 3 sampling sites", consisting of single family structures that contain copper pipes with lead solder installed before 1983. A community water system with insufficient tier 1, tier 2, and tier 3 sampling sites must complete its sampling pool with representative sites throughout the distribution system. For the purpose of 179 NAC 12-009.01E, a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system.

12-009.01F The sampling sites selected for a non-transient non-community water system ("tier 1 sampling sites") must consist of buildings that:

1. Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or

2. Are served by a lead service line.

12-009.01G A non-transient non-community water system with insufficient tier 1 sites that meet the targeting criteria in 179 NAC 12-009.01F must complete its sampling pool with sampling sites that contain copper pipes with lead solder installed before 1983. If additional sites are needed to complete the sampling pool, the non-transient non-community water system must use representative sites throughout the distribution system. For the purpose of 179 NAC 12-009.01G, a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system.

12-009.01H Any water system whose distribution system contains lead service lines must draw 50% of the samples it collects during each monitoring period from sites that contain lead pipes, or copper pipes with lead solder, and 50% of the samples from sites served by a lead service line. A water system that cannot identify a sufficient number of sampling sites served by a lead service line must collect first-draw samples from all of the sites identified as being served by such lines.

12-009.02 Sample Collection Methods

12-009.02A All tap samples for lead and copper collected in accordance with 179 NAC 12, with the exception of lead service line samples collected under 179 NAC 12-007.03, and samples collected under 179 NAC 12-009.02E, must be first-draw tap samples.

12-009.02B Each first-draw tap sample for lead and copper must be one liter in volume and have stood motionless in the plumbing system of each sampling site for at least six hours. First draw samples from residential housing must be collected from the cold-water kitchen tap or bathroom sink tap. First-draw samples from a non-residential building must be one liter in volume and must be collected at an interior tap from which water is typically drawn for consumption. Non-first-draw samples collected in lieu of first-draw samples pursuant to 179 NAC 12-009.02E must be one liter in volume and must be collected at an interior tap from which water is typically drawn for consumption. First draw samples may be collected by the system or the system may allow residents to collect first draw samples after instructing the residents of the sampling procedures specified in 179 NAC 12-009.02B. To avoid problems of residents handling nitric acid, acidification of first-draw samples may be done up to 14 days after the sample is collected. After acidification to resolubilize the metals, the sample must stand in the original container for the time specified in the approved EPA method before the sample can be analyzed. If a system allows residents to perform sampling, the system may not challenge, based on alleged errors in sample collection, the accuracy of sampling results.

12-009.02C Each service line sample must be one liter in volume and have stood motionless in the lead service line for at least six hours. Lead service line samples must be collected in one of the three following ways:

1. At the tap after flushing the volume of water between the tap and the lead service line. The volume of water must be calculated based on the interior diameter and length of the pipe between the tap and the lead service line;
2. Tapping directly into the lead service line; or
3. If the sampling site is a building constructed as a single-family residence, allowing the water to run until there is a significant change in temperature that would be indicative of water that has been standing in the lead service line.

12-009.02D A water system must collect each first draw tap sample from the same sampling site from which it collected a previous sample. If, for any reason, the water system cannot gain entry to a sampling site in order to collect a follow-up tap sample, the system may collect the follow-up tap sample from another sampling site in its sampling pool as long as the new site meets the same targeting criteria, and is within reasonable proximity of the original site.

12-009.02E A non-transient non-community water system, or a community water system that meets the criteria of 179 NAC 12-008.02G that does not have enough taps that can supply first draw samples, as defined in 179 NAC 12-002, may apply to the Director in writing to substitute non-first draw samples. Such systems must collect

as many first draw samples from appropriate taps as possible and identify sampling times and locations that would likely result in the longest standing time for the remaining sites. The Director has the discretion to waive the requirement for prior Director approval of non-first draw sample sites selected by the system, either through Department regulation or written notification to the system.

12-009.03 Number of Samples: Water systems must collect at least one sample during each monitoring period specified in 179 NAC 12-009.04 from the number of sites listed in the "Number of Sites (Standard Monitoring)" column below. A system conducting reduced monitoring under 179 NAC 12-009.04D must collect at least one sample from the number of sites specified in the last column below during each monitoring period specified in 179 NAC 12-009.04D. Such reduced monitoring sites must be representative of the sites required for standard monitoring. A public water system that has fewer than five drinking water taps that can be used for human consumption meeting the sample site criteria of 179 NAC 12-009.01 to reach the required number of sample sites listed below, must collect at least one sample from each tap and then must collect additional samples from those taps on different days during the monitoring period to meet the required number of sites. Alternatively the Director may allow these public water systems to collect a number of samples less than the number of sites specified below, provided that 100% of all taps that can be used for human consumption are sampled. The Director will approve this reduction of the minimum number of samples in writing based on a request from the system or onsite verification by the Director. The Director may specify sampling locations when a system is conducting reduced monitoring. The table is as follows:

System Size (# People Served)	Number of Sites (Standard Monitoring)	Number of sites (Reduced Monitoring)
>100,000	100	50
10,001-100,000	60	30
3,301 to 10,000	40	20
501 to 3,300	20	10
101 to 500	10	5
≤100	5	5

12-009.04 Timing of Monitoring

12-009.04A Initial Tap Sampling: The first six-month monitoring period for small, medium-size and large systems began on the following dates which are included for convenience:

System Size (# People Served)	Monitoring Date
>50,000	January 1,1992
3,301 to 50,000	July 1, 1992
≤3,300	July 1, 1993

12-009.04A1 All large systems must monitor during two consecutive six-month periods.

12-009.04A2 All small and medium-size systems must monitor during each six-month monitoring period until:

1. The system exceeds the lead or copper action level and is therefore required to implement the corrosion control treatment requirements under 179 NAC 12-004, in which case the system must continue monitoring in accordance with 179 NAC 12-009.04B, or
2. The system meets the lead and copper action levels during two consecutive six-month monitoring periods, in which case the system may reduce monitoring in accordance with 179 NAC 12-009.04D.

12-009.04B Monitoring after Installation of Corrosion Control and Source Water Treatment

12-009.04B1 Any large system which installs optimal corrosion control treatment pursuant to 179 NAC 12-004.04 item 4 must monitor during two consecutive six-month monitoring periods by the date specified in 179 NAC 12-004.04 item 5.

12-009.04B2 Any small or medium-size system which installs optimal corrosion control treatment pursuant to 179 NAC 12-004.05 item 5 must monitor during two consecutive six-month monitoring periods by the date specified in 179 NAC 12-004.05 item 6.

12-009.04B3 Any system which installs source water treatment pursuant to 179 NAC 12-006.01 item 3 must monitor during two consecutive six-month monitoring periods by the date specified in 179 NAC 12-006.01 item 4.

12-009.04C Monitoring after the Director Specifies Water Quality Parameter Values for Optimal Corrosion Control: After the Director specifies the values for water quality control parameters under 179 NAC 12-005.06, the system must monitor during each subsequent six-month monitoring period, with the first monitoring period to begin on the date the Director specifies the optimal values under 179 NAC 12-005.06.

12-009.04D Reduced Monitoring

12-009.04D1 A small or medium-size water system that meets the lead and copper action levels during each of two consecutive six-month monitoring periods may reduce the number of samples in accordance with 179 NAC 12-009.03, and reduce the frequency of sampling to once per year. A small or medium water system collecting fewer than five samples as specified in 179 NAC 12-009.03, that meets the lead and copper action levels during each of two consecutive six-month monitoring periods may reduce the frequency of sampling to once per year. In no case can the system

reduce the number of samples required below the minimum of one sample per available tap. This sampling must begin during the calendar year immediately following the end of the second consecutive six-month monitoring period.

12-009.04D2 Any water system that meets the lead action level and maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the Director under 179 NAC 12-005.06 during each of two consecutive six-month monitoring periods may reduce the frequency of monitoring to once per year and reduce the number of lead and copper samples in accordance with 179 NAC 12-009.03 if it receives written approval from the Director. This sampling must begin during the calendar year immediately following the end of the second consecutive six-month monitoring period. The Director will review monitoring, treatment, and other relevant information submitted by the water system in accordance with 179 NAC 12-013 and will notify the system in writing when it determines the system is eligible to commence reduced monitoring pursuant to 179 NAC 12-009.04D2. The Director will review, and where appropriate, revise his/her determination when the system submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap sampling becomes available.

12-009.04D3 A small or medium-size water system that meets the lead and copper action levels during three consecutive years of monitoring may reduce the frequency of monitoring for lead and copper from annually to once every three years. Any water system that meets the lead action level and maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the Director under 179 NAC 12-005.06 during three consecutive years of monitoring may reduce the frequency of monitoring from annually to once every three years if it receives written approval from the Director. Samples collected once every three years must be collected no later than every third calendar year. The Director will review monitoring, treatment, and other relevant information submitted by the water system in accordance with 179 NAC 12-013, and will notify the system in writing when s/he determines the system is eligible to reduce the frequency of monitoring to once every three years. The Director will review, and where appropriate, revise his/her determination when the system submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap sampling becomes available.

12-009.04D4 A water system that reduces the number and frequency of sampling must collect these samples from representative sites included in the pool of targeted sampling sites identified in 179 NAC 12-009.01. Systems sampling annually or less frequently must conduct the lead and copper tap sampling during the months of June, July, August or September unless the Director has approved a different sampling period in accordance with 179

NAC 12-009.04D4 item 1.

1. The Director, at his/her discretion, may approve a different period for conducting the lead and copper tap sampling for systems collecting a reduced number of samples. Such a period must be no longer than four consecutive months and must represent a time of normal operation where the highest levels of lead are most likely to occur. For a non-transient non-community water system that does not operate during the months of June through September, and for which the period of normal operation where the highest levels of lead are most likely to occur is not known, the Director will designate a period that represents a time of normal operation for the system. This sampling must begin during the period approved or designated by the Director in the calendar year immediately following the end of the second consecutive six-month monitoring period for systems initiating annual monitoring and during the three-year period following the end of the third consecutive calendar year of annual monitoring for systems initiating triennial monitoring.

2. Systems monitoring annually, that have been collecting samples during the months of June through September and that receive Director approval to alter their sample collection period under 179 NAC 12-009.04D4 item 1, must collect their next round of samples during a time period that ends no later than 21 months after the previous round of sampling. Systems monitoring triennially that have been collecting samples during the months of June through September, and receive Director approval to alter the sampling collection period as per 179 NAC 12-009.04D4 item 1, must collect their next round of samples during a time period that ends no later than 45 months after the previous round of sampling. Subsequent rounds of sampling must be collected annually or triennially, as required by 179 NAC 12-009. Small systems with waivers, granted pursuant to 179 NAC 12-009.07, that have been collecting samples during the months of June through September and receive Director approval to alter their sample collection period under 179 NAC 12-009.04D4 item 1 must collect their next round of samples before the end of the nine-year period.

12-009.04D5 Any water system that demonstrates for two consecutive six-month monitoring periods that the tap water lead level computed under 179 NAC 12-003.01C is less than or equal to 0.005 mg/L and the tap water copper level computed under 179 NAC 12-003.01C is less than or equal to 0.65 mg/L may reduce the number of samples in accordance with 179 NAC 12-009.03 and reduce the frequency of sampling to once every three calendar years.

12-009.04D6 Exceedance Under Reduced Monitoring

12-009.04D6a A small or medium-size water system subject to reduced monitoring that exceeds the lead or copper action level must resume sampling in accordance with 179 NAC 12-009.04C and collect the number of samples specified for standard monitoring under 179 NAC 12-009.03. Such a system must also conduct water quality parameter monitoring in accordance with 179 NAC 12-010.02, 12-010.03 or 12-010.04 (as appropriate) during the monitoring period in which it exceeded the action level. Any such system may resume annual monitoring for lead and copper at the tap at the reduced number of sites specified in 179 NAC 12-009.03 after it has completed two subsequent consecutive six-month rounds of monitoring that meet the criteria of 179 NAC 12-009.04D1, and/or may resume triennial monitoring for lead and copper at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that it meets the criteria of either 179 NAC 12-009.04D3 or 179 NAC 12-009.04D5.

12-009.04D6b Any water system subject to the reduced monitoring frequency that fails to meet the lead action level during any four-month monitoring period or that fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the Director under 179 NAC 12-005.06 for more than nine days in any six-month period specified in 179 NAC 12-010.04 must conduct tap water sampling for lead and copper at the frequency specified in 179 NAC 12-009.04C, collect the number of samples specified for standard monitoring under 179 NAC 12-009.03, and must resume monitoring for water quality parameters within the distribution system in accordance with 179 NAC 12-010.04. This standard tap water sampling must begin no later than the six-month period beginning January 1 of the calendar year following the lead action level exceedance or water quality parameter excursion. Such a system may resume reduced monitoring for lead and copper at the tap and for water quality parameters within the distribution system under the following conditions:

1. The system may resume annual monitoring for lead and copper at the tap at the reduced number of sites specified in 179 NAC 12-009.03 after it has completed two subsequent six-month rounds of monitoring that meet the criteria of 179 NAC 12-009.04D2 and the system has received written approval from the Director that it is appropriate to resume reduced monitoring on an annual frequency. This sampling must begin during the calendar year immediately following the end of the second consecutive six-month monitoring period.
2. The system may resume triennial monitoring for lead and copper at the tap at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that

it meets the criteria of either 179 NAC 12-009.04D3 or 12-009.04D5 and the system has received written approval from the Director that it is appropriate to resume triennial monitoring.

3. The system may reduce the number of water quality parameter tap water samples required in accordance with 179 NAC 12-010.05A and the frequency with which it collects such samples in accordance with 179 NAC 12-010.05B. Such a system may not resume triennial monitoring for water quality parameters at the tap until it demonstrates, in accordance with the requirements of 179 NAC 12-010.05B, that it has re-qualified for triennial monitoring.

12-009.04D7 Any water system subject to a reduced monitoring frequency under 179 NAC 12-009.04D must notify the Director in writing in accordance with 179 NAC 12-013.01C of any upcoming long-term change in treatment or addition of a new source as described in that section. The Director will review and must approve the addition of a new source or long-term change in water treatment before it is implemented by the water system. The Director may require the system to resume sampling in accordance with 179 NAC 12-009.04C and collect the number of samples specified for standard monitoring under 179 NAC 12-009.03 or take other appropriate steps such as increased water quality parameter monitoring or re-evaluation of its corrosion control treatment given the potentially different water quality considerations.

12-009.05 Additional Monitoring by Systems: The results of any monitoring conducted in addition to the minimum requirements of 179 NAC 12-009 will be considered by the system and the Director in making any determinations (i.e., calculating the 90th percentile lead or copper level) under 179 NAC 12.

12-009.06 Invalidation of Lead or Copper Tap Water Samples: A sample invalidated under 179 NAC 12-009.06 does not count toward determining lead or copper 90th percentile levels under 179 NAC 12-003.01C or toward meeting the minimum monitoring requirements of 179 NAC 12-009.03.

12-009.06A The Director may invalidate a lead or copper tap water sample if at least one of the following conditions is met.

1. The laboratory establishes that improper sample analysis caused erroneous results.
2. The Director determines that the sample was taken from a site that did not meet the site selection criteria of 179 NAC 12-009.
3. The sample container was damaged in transit.
4. There is substantial reason to believe that the sample was subject to tampering.

12-009.06B The system must report the results of all samples to the Director and all supporting documentation for samples the system believes should be invalidated.

12-009.06C To invalidate a sample under 179 NAC 12-009.06A, the decision and the rationale for the decision must be documented in writing. The Director may not invalidate a sample solely on the grounds that a follow-up sample result is higher or lower than that of the original sample.

12-009.06D The water system must collect replacement samples for any samples invalidated under 179 NAC 12-009 if, after the invalidation of one or more samples, the system has too few samples to meet the minimum requirements of 179 NAC 12-009.03. Any such replacement samples must be taken as soon as possible, but no later than 20 days after the date the Director invalidates the sample or by the end of the applicable monitoring period, whichever occurs later. Replacement samples taken after the end of the applicable monitoring period must not also be used to meet the monitoring requirements of a subsequent monitoring period. The replacement samples must be taken at the same locations as the invalidated samples or, if that is not possible, at locations other than those already used for sampling during the monitoring period.

12-009.07 Monitoring Waivers for Small Systems: Any small system that meets the criteria of 179 NAC 12-009.07 may apply to the Director to reduce the frequency of monitoring for lead and copper under 179 NAC 12-009 to once every nine years (i.e., a “full waiver”) if it meets all of the materials criteria specified in 179 NAC 12-009.07A and all of the monitoring criteria specified in 179 NAC 12-009.07B. Any small system that meets the criteria in 179 NAC 12-009.07A and 12-009.07B only for lead, or only for copper, may apply to the Director for a waiver to reduce the frequency of tap water monitoring to once every nine years for that contaminant only (i.e., a “partial waiver”).

12-009.07A Materials Criteria: The system must demonstrate that its distribution system and service lines and all drinking water supply plumbing, including plumbing conveying drinking water within all residences and buildings connected to the system, are free of lead-containing materials and/or copper-containing materials, as those terms are defined below:

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

a. It contains no plastic pipes that contain lead plasticizers, or plastic service lines that contain lead plasticizers; and

b. It is free of lead service lines, lead pipes, lead soldered pipe joints, and leaded brass or bronze alloy fittings and fixtures, unless the fittings and fixtures meet the specifications of any standard established pursuant to 42 U.S.C. 300 g-6(e) (Attachment 1).

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

12-009.07B Monitoring Criteria for Waiver Issuance: The system must have completed at least one six-month round of standard tap water monitoring for lead and copper at sites approved by the Director and from the number of sites required by 179 NAC 12-009.03 and demonstrate that the 90th percentile levels for any and all rounds of monitoring conducted since the system became free of all lead-containing and/or copper-containing materials, as appropriate, meet the following criteria.

1. Lead Levels: To qualify for a full waiver, or a lead waiver, the system must demonstrate that the 90th percentile lead level does not exceed 0.005 mg/L.

2. Copper Levels: To qualify for a full waiver, or a copper waiver, the system must demonstrate that the 90th percentile copper level does not exceed 0.65 mg/L.

12-009.07C Director Approval of Waiver Application: The Director will notify the system of his/her waiver determination in writing, setting forth the basis of its decision and any condition of the waiver. As a condition of the waiver, the Director may require the system to perform specific activities (e.g., limited monitoring, periodic outreach to customers to remind them to avoid installation of materials that might void the waiver) to avoid the risk of lead or copper concentration of concern in tap water. The small system must continue monitoring for lead and copper at the tap as required by 179 NAC 12-009.04A through 12-009.04D, as appropriate, until it receives written notification from the Director that the waiver has been approved.

12-009.07D Monitoring Frequency for Systems with Waivers

12-009.07D1 A system with a full waiver must conduct tap water monitoring for lead and copper in accordance with 179 NAC 12-009.04D4 at the reduced number of sampling sites identified in 179 NAC 12-009.03 at least once every nine years and provide the materials certification specified in 179 NAC 12-009.07A for both lead and copper to the Director along with the monitoring results. Samples collected every nine years must be collected no later than every ninth calendar year.

12-009.07D2 A system with a partial waiver must conduct tap water monitoring for the waived contaminant in accordance with 179 NAC 12-009.04D4 at the reduced number of sampling sites specified in 179 NAC 12-009.03 at least once every nine years and provide the materials certification specified in 179 NAC 12-009.07A pertaining to the waived contaminant along with the monitoring results. The system also must continue to monitor for the non-waived contaminant in accordance with requirements of 179 NAC 12-009.04A through 12-009.04D, as appropriate.

12-009.07D3 Any water system with a full or partial waiver must notify the Director in writing in accordance with 179 NAC 12-013.01C of any upcoming long-term change in treatment or addition of a new source, as described in that section. The Director will review and must approve the addition of a new source or long-term change in water treatment before it is implemented by the water system. The Director has the authority to require the system to add or modify waiver conditions [e.g., require recertification that the system is free of lead-containing and/or copper-containing materials, require additional round(s) of monitoring], if s/he deems the modifications are necessary to address treatment or source water changes at the system.

12-009.07D4 If a system with a full or partial waiver becomes aware that it is no longer free of lead-containing or copper-containing materials, as appropriate, (e.g., as a result of new construction or repairs), the system must notify the Director in writing no later than 60 days after becoming aware of such a change.

12-009.07E Continued Eligibility: If the system continues to satisfy the requirements of 179 NAC 12-009.07D, the waiver will be renewed automatically, unless any of the conditions listed in 179 NAC 12-009.07E items 1 through 3 occurs. A system whose waiver has been revoked may re-apply for a waiver at the time it again meets the appropriate materials and monitoring criteria of 179 NAC 12-009.07A and 12-009.07B.

1. A system with a full waiver or a lead waiver no longer satisfies the materials criteria of 179 NAC 12-009.07A item 1 or has a 90th percentile lead level greater than 0.005 mg/L.
2. A system with a full waiver or a copper waiver no longer satisfies the materials criteria of 179 NAC 12-009.07A item 2 or has a 90th percentile copper level greater than 0.65 mg/L.
3. The Director notifies the system in writing that the waiver has been revoked, setting forth the basis of his/her decision.

12-009.07F Requirements Following Waiver Revocation: A system whose full or partial waiver has been revoked by the Director is subject to the corrosion control treatment and lead and copper tap water monitoring

requirements, as follows:

1. If the system exceeds the lead and/or copper action level, the system must implement corrosion control treatment in accordance with the deadlines specified in 179 NAC 12-004.05, and any other applicable requirements of 179 NAC 12.
2. If the system meets both the lead and the copper action level, the system must monitor for lead and copper at the tap no less frequently than once every three years using the reduced number of sample sites specified in 179 NAC 12-009.03.

12-010 MONITORING REQUIREMENTS FOR WATER QUALITY

PARAMETERS: All large systems, and all small and medium-size systems that exceed the lead or copper action level must monitor water quality parameters in addition to lead and copper in accordance with 179 NAC 12-010. These monitoring requirements are summarized in the table at the end of 179 NAC 12-010.

12-010.01 General Requirements

12-010.01A Sample Collection Methods

12-010.01A1 Tap samples must be representative of water quality throughout the distribution system taking into account the number of individuals served, the different sources of water, the different treatment methods employed by the system, and seasonal variability. Tap sampling under 179 NAC 12-010 is not required to be conducted at taps targeted for lead and copper sampling under 179 NAC 12-009.01. [Note: Systems may find it convenient to conduct tap sampling for water quality parameters at sites used for coliform sampling.]

12-010.01A2 Samples collected at the entry point(s) to the distribution system must be from locations representative of each source after treatment. If a system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water is representative of all sources being used).

12-010.01B Number of Samples

12-010.01B1 Systems must collect two tap samples for applicable water quality parameters during each monitoring period specified under 179 NAC 12-010.02 through 12-010.05 from the following number of sites.

System Size	# of Sites For
<u>(# People Served)</u>	<u>Water Quality Parameters</u>
>100,000	25

10,001-100,000	10
3,301 to 10,000	3
501 to 3,300	2
101 to 500	1
<100	1

12-010.01B2 Except as provided in 179 NAC 12-010.03C, systems must collect two samples for each applicable water quality parameter at each entry point to the distribution system during each monitoring period specified in 179 NAC 12-010.02. During each monitoring period specified in 179 NAC 12-010.03 to 12-010.05, systems must collect one sample for each applicable water quality parameter at each entry point to the distribution system.

12-010.02 Initial Sampling: All large water systems must measure the applicable water quality parameters as specified below at taps and at each entry point to the distribution system during each six-month monitoring period specified in 179 NAC 12-009.04A. All small and medium-size systems must measure the applicable water quality parameters at the locations specified below during each six-month monitoring period specified in 179 NAC 12-009.04A during which the system exceeds the lead or copper action level.

12-010.02A At taps:

1. pH;
2. Alkalinity;
3. Orthophosphate, when an inhibitor containing a phosphate compound is used;
4. Silica, when an inhibitor containing a silicate compound is used;
5. Calcium;
6. Conductivity; and
7. Water temperature.

12-010.02B At each entry point to the distribution system: all of the applicable parameters listed in 179 NAC 12-010.02A.

12-010.03 Monitoring after Installation of Corrosion Control: Any large system which installs optimal corrosion control treatment pursuant to 179 NAC 12-004.04 item 4 must measure the water quality parameters at the locations and frequencies specified below during each six-month monitoring period specified in 179 NAC 12-009.04B1. Any small or medium-size system which installs optimal corrosion control treatment must conduct such monitoring during each six-month monitoring period specified in 179 NAC 12-009.04B2 in which the system exceeds the lead or copper action level.

12-010.03A At taps, two samples for:

1. pH;
2. Alkalinity;
3. Orthophosphate, when an inhibitor containing a phosphate compound is used;
4. Silica, when an inhibitor containing a silicate compound is used;
5. Calcium, when calcium carbonate stabilization is used as part of corrosion control.

12-010.03B Except as provided in 179 NAC 12-010.03C, at each entry point to the distribution system, one sample no less frequently than every two weeks (bi-weekly) for:

1. pH;
2. When alkalinity is adjusted as part of optimal corrosion control, a reading of the dosage rate of the chemical used to adjust alkalinity, and the alkalinity concentration; and
3. When a corrosion inhibitor is used as part of optimal corrosion control, a reading of the dosage rate of the inhibitor used, and the concentration of orthophosphate or silica (whichever is applicable).

12-010.03C Any ground water system can limit entry point sampling described in 179 NAC 12-010.03B to those entry points that are representative of water quality and treatment conditions throughout the system. If water from untreated ground water sources mixes with water from treated ground water sources, the system must monitor for water quality parameters both at representative entry points receiving treatment and representative entry points receiving no treatment. Prior to the start of any monitoring under 179 NAC 12-010.03C, the system must provide to the Director written information identifying the selected entry points and documentation, including information on seasonal variability, sufficient to demonstrate that the sites are representative of water quality and treatment conditions throughout the system.

12-010.04 Monitoring after the Director Specifies Water Quality Parameter Values for Optimal Corrosion Control: After the Director specifies the values for applicable water quality control parameters reflecting optimal corrosion control treatment under 179 NAC 12-005.06, all large systems must measure the applicable water quality parameters in accordance with 179 NAC 12-010.03 and determine compliance with the requirements of 179 NAC 12-005.07 every six months with the first six-month period to begin on either January 1 or July 1, whichever comes first, after the Director specifies the optimal values under 179 NAC 12-005.06. Any small or medium-size system must conduct such monitoring during each six-month period

specified in 179 NAC 12-010.04 in which the system exceeds the lead or copper action level. For any such small and medium-size system that is subject to a reduced monitoring frequency pursuant to 179 NAC 12-009.04D at the time of the action level exceedance, the start of the applicable six-month period under 12-010.04 must coincide with the start of the applicable monitoring period under 179 NAC 12-009.04D. Compliance with the Director-designated optimal water quality parameter values will be determined as specified under 179 NAC 12-005.07.

12-010.05 Reduced Monitoring

12-010.05A Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment during each of two consecutive six-month monitoring periods under 179 NAC 12-010.04 must continue monitoring at the entry point(s) to the distribution system as specified in 179 NAC 12-010.03B. The system may collect two tap samples for applicable water quality parameters from the following reduced number of sites during each six-month monitoring period.

<u>System Size (# People Served)</u>	<u>Reduced # of Sites for Water Quality Parameters</u>
>100,000	10
10,001 to 100,000	7
3,301 to 10,000	3
501 to 3,300	2
101 to 500	1
≤100	1

12-010.05B Systems Maintaining Range of Water Quality Parameters Reflecting Optimal Corrosion Control

12-010.05B1 Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the Director under 179 NAC 12-005.06 during three consecutive years of monitoring may reduce the frequency with which it collects the number of tap samples for applicable water quality parameters specified in 179 NAC 12-010.05A from every six months to annually. This sampling begins during the calendar year immediately following the end of the monitoring period in which the third consecutive year of six-month monitoring occurs. Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the Director under 179 NAC 12-005.06 during three consecutive years of annual monitoring under 179 NAC 12-010.05B1 may reduce the frequency with which it collects the number of tap samples for applicable water quality parameters specified in 179 NAC 12-010.05A from annually to every three years. This sampling begins no later than the third calendar year following the end of the monitoring

period in which the third consecutive year of monitoring occurs.

12-010.05B2 A water system may reduce the frequency with which it collects tap samples for applicable water quality parameters specified in 179 NAC 12-010.05A to every three years if it demonstrates during two consecutive monitoring periods that its tap water lead level at the 90th percentile is less than or equal to the PQL for lead specified in 179 NAC 12-012.01A item 2, that its tap water copper level at the 90th percentile is less than or equal to 0.65 mg/L for copper in 179 NAC 12-003.01B, and that it also has maintained the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the Director under 179 NAC 12-005.06. Monitoring conducted every three years must be done no later than every third calendar year.

12-010.05C A water system that conducts sampling annually must collect these samples evenly throughout the year so as to reflect seasonal variability.

12-010.05D Any water system subject to reduced monitoring frequency that fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the Director under 179 NAC 12-005.06 for more than nine days in any six-month period specified in 179 NAC 12-005.07 must resume distribution system tap water sampling in accordance with the number and frequency requirements in 179 NAC 12-010.04. The system may resume annual monitoring for water quality parameters at the tap at the reduced number of sites specified in 179 NAC 12-010.05A after it has completed two subsequent consecutive six-month rounds of monitoring that meet the criteria of 179 NAC 12-010.05A and/or may resume triennial monitoring for water quality parameters at the tap at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that it meets the criteria of either 179 NAC 12-010.05B1 or 12-010.05B2.

12-010.06 Additional Monitoring by Systems: The results of any monitoring conducted in addition to the minimum requirements of 179 NAC 12-010 will be considered by the system and the Director in making any determinations (i.e., determining concentrations of water quality parameters) under 179 NAC 12-010 or 12-005.

SUMMARY OF MONITORING REQUIREMENTS FOR WATER QUALITY PARAMETERS¹

Monitoring Period	Parameters²	Location	Frequency
Initial Monitoring	pH, alkalinity, orthophosphate or silica ³ , calcium, conductivity, temperature.	Taps and at entry point(s) to distribution system	Every six months
After	pH, alkalinity, orthophosphate	Taps	Every

Installation of Corrosion Control	or silica ³ , calcium ⁴ .		six months
	pH, alkalinity, dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate and inhibitor residual ⁵ .	Entry point(s) to distribution system ⁶	No less frequently than every two weeks
After Director Specifies Parameter Values For Optimal Corrosion Control	pH, alkalinity, orthophosphate or silica ³ , calcium ⁴ .	Taps	Every six months
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate and inhibitor residual ⁵ .	Entry point(s) to distribution system ⁶	No less frequently than every two weeks
Reduced Monitoring	pH, alkalinity, orthophosphate or silica ³ , calcium ⁴ .	Taps	Every six months; annually ⁷ or every three years ⁸ ; reduced number of sites
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate and inhibitor residual ⁵ .	Entry point(s) to distribution system ⁶	No less frequently than every 2 weeks

¹ Table is for illustrative purposes; consult the text of 179 NAC 12-010 for precise regulatory requirements.

² Small and medium-size systems have to monitor for water quality parameters only during monitoring periods in which the system exceeds the lead or copper action level.

³ Orthophosphate must be measured only when an inhibitor containing a phosphate compound is used. Silica must be measured only when an inhibitor containing a silicate compound is used.

⁴ Calcium must be measured only when calcium carbonate stabilization is used as part of corrosion control.

⁵ Inhibitor dosage rates and inhibitor residual concentrations (orthophosphate or silica) must be measured only when an inhibitor is used.

⁶ Ground water systems may limit monitoring to representative locations throughout the system.

⁷ Water systems may reduce frequency of monitoring for water quality parameters at the tap from every six months to annually if they have maintained the range of values for water quality parameters reflecting optimal

corrosion control during three consecutive years of monitoring.

⁸ Water systems may further reduce the frequency of monitoring for water quality parameters at the tap from annually to once every three years if they have maintained the range of values for water quality parameters reflecting optimal corrosion control during three consecutive years of annual monitoring. Water systems may accelerate to triennial monitoring for water quality parameters at the tap if they have maintained 90th percentile lead levels less than or equal to 0.005 mg/L, 90th percentile copper levels less than or equal to 0.65 mg/L, and the range of water quality parameters designated by the Director under 179 NAC 12-005.06 as representing optimal corrosion control during two consecutive 6-month monitoring periods.

12-011 MONITORING REQUIREMENTS FOR LEAD AND COPPER IN SOURCE WATER

12-011.01 Sample Location, Collection Methods, and Number of Samples

12-011.01A A water system that fails to meet the lead or copper action level on the basis of tap samples collected in accordance with 179 NAC 12-009 must collect lead and copper source water samples in accordance with the following requirements regarding sample location, number of samples, and collection methods:

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

Note: For the purposes of 179 NAC 12-011.01A item 2, surface water systems include systems with a combination of surface and ground sources.

3. If a system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water is representative of all sources being used).
4. The Director may reduce the total number of samples which must be analyzed by allowing the use of compositing. Compositing of samples must be done by certified laboratory personnel. Composite samples from a maximum of five samples are allowed, provided that

if the lead concentration in the composite sample is greater than or equal to 0.001 mg/L or the copper concentration is greater than or equal to 0.160 mg/L, then either:

- a. A follow-up sample must be taken and analyzed within 14 days at each sampling point included in the composite; or
- b. If duplicates of or sufficient quantities from the original samples from each sampling point used in the composite are available, the system may use these instead of resampling.

12-011.01B Where the results of sampling indicate an exceedance of maximum permissible source water levels established under 179 NAC 12-006.02D, the Director may require that one additional sample be collected as soon as possible after the initial sample was taken (but not to exceed two weeks after the results are known) at the same sampling point. If a Director-required confirmation sample is taken for lead or copper, then the results of the initial and confirmation sample must be averaged in determining compliance with the maximum permissible levels specified by the Director. Any sample value below the detection limit is considered to be zero. Any value above the detection limit but below the PQL is either considered as the measured value or as one-half the PQL.

12-011.02 Monitoring Frequency after System Exceeds Tap Water Action Level: Any system which exceeds the lead or copper action level at the tap must collect one source water sample from each entry point to the distribution system no later than six months after the end of the monitoring period during which the lead or copper action level was exceeded. For monitoring periods that are annual or less frequent, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs, or if the Director has established an alternate monitoring period, the last day of that period.

12-011.03 Monitoring Frequency after Installation of Source Water Treatment: Any system which installs source water treatment pursuant to 179 NAC 12-006.01 item 3 must collect an additional source water sample from each entry point to the distribution system during two consecutive six-month monitoring periods by the deadline specified in 179 NAC 12-006.01 item 4.

12-011.04 Monitoring Frequency after the Director Specifies Maximum Permissible Source Water Levels or Determines that Source Water Treatment is Not Needed

12-011.04A A system must monitor at the frequency specified below in cases where the Director specifies maximum permissible source water levels under 179 NAC 12-006.02D or determines that the system is not required to install source water treatment under 179 NAC 12-006.02B.

12-011.04A1 A water system using only ground water must collect samples once during the three-year compliance period in effect

when the applicable Director determination under 179 NAC 12-011.04A is made. The systems must collect samples once during each subsequent compliance period. Triennial samples must be collected every third calendar year.

12-011.04A2 A water system using surface water (or a combination of surface and ground water) must collect samples once during each calendar year, the first annual monitoring period to begin during the year in which the applicable Director determination is made under 179 NAC 12-011.04A.

12-011.04B A system is not required to conduct source water sampling for lead and/or copper if the system meets the action level for the specific contaminant in tap water samples during the entire source water sampling period applicable to the system under 179 NAC 12-011.04A1 or 12-011.04A2.

12-011.05 Reduced Monitoring Frequency

12-011.05A A water system using only ground water may reduce the monitoring frequency for lead and copper in source water to once during each nine-year compliance cycle provided that the samples are collected no later than every ninth calendar year and if the system meets one of the following criteria:

1. The system demonstrates that finished drinking water entering the distribution system has been maintained below the maximum permissible lead and copper concentrations specified by the Director in 179 NAC 12-006.02D during at least three consecutive compliance periods under 179 NAC 12-011.04A; or
2. The Director has determined that source water treatment is not needed and the system demonstrates that, during at least three consecutive compliance periods in which sampling was conducted under 179 NAC 12-011.04A, the concentration of lead in source water was less than or equal to 0.005 mg/L and the concentration of copper in source water was less than or equal to 0.65 mg/L.

12-011.05B A water system using surface water (or a combination of surface and ground water) may reduce the monitoring frequency in 179 NAC 12-011.04A to once during each nine-year compliance cycle (as that term is defined in 179 NAC 12-002) provided that the samples are collected no later than every ninth calendar year and if the system meets one of the following criteria:

1. The system demonstrates that finished drinking water entering the distribution system has been maintained below the maximum permissible lead and copper concentrations specified by the Director in 179 NAC 12-006.02D for at least three consecutive years; or
2. The Director has determined that source water treatment is not needed and the system demonstrates that, during at least three

consecutive years, the concentration of lead in source water was less than or equal to 0.005 mg/L and the concentration of copper in source water was less than or equal to 0.65 mg/L.

12-011.05C A water system that uses a new source of water is not eligible for reduced monitoring for lead and/or copper until concentrations in samples collected from the new source during three consecutive monitoring periods are below the maximum permissible lead and copper concentrations specified by the Director in 179 NAC 12-006.01 item 5.

12-012 ANALYTICAL METHODS

12-012.01 Analyses for lead, copper, pH, conductivity, calcium, alkalinity, orthophosphate, silica, and temperature must be conducted with the methods found in 179 NAC 3-005.11A.

12-012.01A Analyses for alkalinity, calcium, conductivity, orthophosphate, pH, silica, and temperature may be performed by any Grade IV, III, II or I licensed water operator or a person who has been trained to take the samples. If a licensed operator does not take the sample, Attachment 1, which is incorporated herein by reference must be completed and sent to the Department. Analyses under 179 NAC 12 for lead and copper must only be conducted by the Public Health Environmental Laboratory or a laboratory which has entered into agreement with the Department pursuant to 179 NAC 3-009. To obtain certification to conduct analyses for lead and copper, laboratories must:

1. Analyze performance evaluation samples which include lead and copper, provided by EPA, the Department or by a third party (with the approval of the Department or EPA) at least once a year by each method for which the laboratory desires certification; and
2. Achieve quantitative acceptance limits as follows:
 - a. For Lead: +30% of the actual amount in the Performance Evaluation sample when the actual amount is greater than or equal to 0.005 mg/L. The Practical Quantitation Level, or PQL for lead is 0.005 mg/L.
 - b. For Copper: +10% of the actual amount in the Performance Evaluation sample when the actual amount is greater than or equal to 0.050 mg/L. The Practical Quantitation Level, or PQL for copper is 0.050 mg/L;
3. Achieve the method detection limit (MDL) for lead of 0.001 mg/L according to the procedures in Appendix B of Part 136 of the Code of Federal Regulations, incorporated herein as Attachment 2. This need only be accomplished if the laboratory will be processing source water composite samples under 179 NAC 12-011.01A item 4.

12-012.01B All lead and copper levels measured between the PQL and the MDL must be either reported as measured or they can be reported as one-half the PQL specified for lead and copper in 179 NAC 12-012.01A item 2. All levels below the lead and copper MDLs must be reported as zero.

12-012.01C All copper levels measured between the PQL and the MDL must be either reported as measured or they can be reported as one-half the PQL (0.025 mg/L). All levels below the copper MDL must be reported as zero.

12-013 REPORTING REQUIREMENTS: All water systems must report all of the following information to the Director in accordance with 179 NAC 12-013.

12-013.01 Reporting Requirements for Tap Water Monitoring for Lead and Copper and for Water Quality Parameter Monitoring

12-013.01A Except as provided in 179 NAC 12-013.01A item 7, a water system must report the information specified below for all tap water samples specified in 179 NAC 12-009 and for all water quality parameter samples specified in 179 NAC 12-010 within the first ten days following the end of each applicable monitoring period specified in 179 NAC 12-009 and 12-010 (i.e., every six months, annually, every three years, or every nine years). For monitoring periods with a duration less than six months, the end of the monitoring period is the last date samples can be collected during that period as specified in 179 NAC 12-009 and 12-010.

1. The results of all tap samples for lead and copper including the location of each site and the criteria under 179 NAC 12-009.01C, 12-009.01D, 12-009.01E, 12-009.01F, and/or 12-009.01G under which the site was selected for the system's sampling pool;
2. Documentation for each tap water lead or copper sample for which the water system requests invalidation pursuant to 179 NAC 12-009.06B;
3. The 90th percentile lead and copper concentrations measured from among all lead and copper tap water samples collected during each monitoring period (calculated in accordance with 179 NAC 12-003.01C unless the Director calculates the system's 90th percentile lead and copper levels under 179 NAC 12-013.08);
4. With the exception of initial tap sampling, the system must designate any site which was not sampled during previous monitoring periods, and include an explanation of why sampling sites have changed;
5. The results of all tap samples for pH, and where applicable, alkalinity, calcium, conductivity, temperature, and orthophosphate or silica collected under 179 NAC 12-010.02 to 12-010.05;

6. The results of all samples collected at the entry point(s) to the distribution system for applicable water quality parameters under 179 NAC 12-010.02 to 12-010.05;

7. A water system must report the results of all water quality parameter samples collected under 179 NAC 12-010.03 through 12-010.06 during each six-month monitoring period specified in 179 NAC 12-010.04 within the first ten days following the end of the monitoring period unless the Director has specified a more frequent reporting requirement.

12-013.01B For a non-transient non-community water system, or a community water system meeting the criteria of 179 NAC 12-008.02G items 1 and 2, that does not have enough taps that can provide first draw samples, the system must either:

1. Provide written documentation to the Director identifying standing times and locations for enough non-first draw samples to make up its sampling pool under 179 NAC 12-009.02E by the start of the first applicable monitoring period under 179 NAC 12-009.04 that commences after April 11, 2000, unless the Director has waived prior Director approval of non-first draw sample sites selected by the system pursuant to 179 NAC 12-009.02E; or

2. If the Director has waived prior approval of non-first draw sample sites selected by the system, identify, in writing, each site that did not meet the six-hour minimum standing time and the length of standing time for that particular substitute sample collected pursuant to 179 NAC 12-009.02E and include this information with the lead and copper tap sample results required to be submitted pursuant to 179 NAC 12-013.01A item 1.

12-013.01C At a time specified by the Director, or if no specific time is designated by the Director, then as early as possible prior to the addition of a new source or any long-term change in water treatment, a water system deemed to have optimized corrosion control under 179 NAC 12-004.02C, a water system subject to reduced monitoring pursuant to 179 NAC 12-009.04D, or a water system subject to a monitoring waiver pursuant to 179 NAC 12-009.07, must submit written documentation to the Director describing the change or addition. The Director will review and must approve the addition of a new source or long-term change in treatment before it is implemented by the water system. Examples of long-term treatment changes include the addition of a new treatment process or modification of an existing treatment process. Examples of long-term treatment changes include the addition of a new treatment process or modification of an existing treatment process. Examples of modifications include switching secondary disinfectants, switching coagulants (e.g., alum to ferric chloride), and switching corrosion inhibitor products (e.g., orthophosphate to blended phosphate). Long-term changes can include dose changes to existing chemicals if the system is planning long-term changes to its finished

water pH or residual inhibitor concentration. Long-term treatment changes would not include chemical dose fluctuations associated with daily raw water quality changes.

12-013.01D Any small system applying for a monitoring waiver under 179 NAC 12-009.07, or subject to a waiver granted pursuant to 179 NAC 12-009.07C, must provide the following information to the Director in writing by the specified deadline:

1. By the start of the first applicable monitoring period in 179 NAC 12-009.04, any small water system applying for a monitoring waiver must provide the documentation required to demonstrate that it meets the waiver criteria of 179 NAC 12-009.07A and 12-009.07B.
2. No later than nine years after the monitoring previously conducted pursuant to 179 NAC 12-009.07B or 12-009.07D1, each small system desiring to maintain its monitoring waiver must provide the information required by 179 NAC 12-009.07D1 and 12-009.07D2.
3. No later than 60 days after it becomes aware that it is no longer free of lead-containing and/or copper-containing material, as appropriate, each small system with a monitoring waiver must provide written notification to the Director, setting forth the circumstances resulting in the lead-containing and/or copper-containing materials being introduced into the system and what corrective action, if any, the system plans to remove these materials.

12-013.01E Each ground water system that limits water quality parameter monitoring to a subset of entry points under 179 NAC 12-010.03C must provide, by the commencement of the monitoring, written correspondence to the Director that identifies the selected entry points and includes information sufficient to demonstrate that the sites are representative of water quality and treatment conditions throughout the system.

12-013.02 Source Water Monitoring Reporting Requirements

12-013.02A A water system must report the sampling results for all source water samples collected in accordance with 179 NAC 12-011 within the first ten days following the end of each source water monitoring period (i.e., annually, per compliance period, per compliance cycle) specified in 179 NAC 12-011.

12-013.02B With the exception of the first round of source water sampling conducted pursuant to 179 NAC 12-011.02, the system must specify any site which was not sampled during previous monitoring periods, and include an explanation of why the sampling point has changed.

12-013.03 Corrosion Control Treatment Reporting Requirements: By the applicable dates under 179 NAC 12-004, systems must report the following information to the Director:

1. For systems demonstrating that they have already optimized corrosion control, information required in 179 NAC 12-004.02B or 12-004.02C.
2. For systems required to optimize corrosion control, their recommendation regarding optimal corrosion control treatment under 179 NAC 12-005.01.
3. For systems required to evaluate the effectiveness of corrosion control treatments under 179 NAC 12-005.03, the information required by 179 NAC 12-005.03.
4. For systems required to install optimal corrosion control designated by the Director under 179 NAC 12-005.04, a letter certifying that the system has completed installing that treatment.

12-013.04 Source Water Treatment Reporting Requirements: By the applicable dates in 179 NAC 12-006, systems must provide the following information to the Director:

1. If required under 179 NAC 12-006.02A, their recommendation regarding source water treatment;
2. For systems required to install source water treatment under 179 NAC 12-006.02B, a letter certifying that the system has completed installing the treatment designated by the Director within 24 months after the Director designated the treatment.

12-013.05 Lead Service Line Replacement Reporting Requirements: Systems must report the following information to the Director to demonstrate compliance with the requirements of 179 NAC 12-007:

1. No later than 12 months after the end of a monitoring period in which a system exceeds the lead action level in sampling referred to in 179 NAC 12-007.01, the system must submit written documentation to the Director of the material evaluation, conducted as required in 179 NAC 12-009.01, identify the initial number of lead service lines in its distribution system at the time the system exceeds the lead action level, and provide the system's schedule for annually replacing at least 7% of the initial number of lead service lines in its distribution system.
2. No later than 12 months after the end of a monitoring period in which a system exceeds the lead action level in sampling referred to in 179 NAC 12-007.01, and every 12 months thereafter, the system must demonstrate to the Director in writing that the system has either:

- a. Replaced in the previous 12 months at least 7% of the initial lead service lines (or a greater number of lines specified by the Director under 179 NAC 12-007.05) in its distribution system, or
 - b. Conducted sampling which demonstrates that the lead concentration in all service line samples from an individual line(s), taken pursuant to 179 NAC 12-009.02C, is less than or equal to 0.015 mg/L. In such cases, the total number of lines replaced and/or which meet the criteria in 179 NAC 12-007.03 must equal at least 7% of the initial number of lead lines identified under 179 NAC 12-013.05 item 1 (or the percentage specified by the Director under 179 NAC 12-007.05).
3. The annual letter submitted to the Director under 179 NAC 12-013.05 item 2 must contain the following information:
 - a. The number of lead service lines scheduled to be replaced during the previous year of the system's replacement schedule;
 - b. The number and location of each lead service line replaced during the previous year of the system's replacement schedule;
 - c. If measured, the water lead concentration and location of each lead service line sampled, the sampling method, and the date of sampling.
4. Any system that collects lead service line samples following partial lead service line replacement required by 179 NAC 12-007 must report the results to the Director within the first ten days of the month following the month in which the system receives the laboratory results, or as specified by the Director. The Director, at his/her discretion, may eliminate this requirement to report these monitoring results. Systems must also report any additional information as specified by the Director, and in a time and manner prescribed by the Director, to verify that all partial lead service line replacement activities have taken place.

12-013.06 Public Education Program Reporting Requirements

12-013.06A Any water system that is subject to the public education requirements in 179 NAC 12-008 must, within ten days after the end of each period in which the system is required to perform public education tasks in accordance with 179 NAC 12-008.02, send written documentation to the Director that contains:

1. A demonstration that the system has delivered the public education materials that meet the content requirements in 179 NAC 12-008.01 and the delivery requirements in 179 NAC 12-008.02; and
2. A list of all the newspapers, radio stations, television stations, and facilities and organizations to which the system delivered public education materials during the period in which the system was

required to perform public education tasks.

12-013.06B Unless required by the Director, a system that previously has submitted the information required by 179 NAC 12-013.06A item 2 need not resubmit the information required by 179 NAC 12-013.06A item 2, as long as there have been no changes in the distribution list and the system certifies that the public education materials were distributed to the same list submitted previously.

12-013.06C No later than 3 months following the end of the monitoring period, each system must mail a sample copy of the consumer notification of tap results to the Director along with a certification that the notification has been distributed in a manner consistent with the requirements of 179 NAC 12-008.04.

12-013.07 Reporting of Additional Monitoring Data: Any system which collects sampling data in addition to that required by 179 NAC 12 must report the results to the Director within the first ten days following the end of the applicable monitoring period under 179 NAC 12-009, 12-010, and 12-011 during which the samples are collected.

12-013.08 Reporting of 90th Percentile Lead and Copper Concentrations Where the Director Calculates a System's 90th Percentile Concentrations: A water system is not required to report the 90th percentile lead and copper concentrations measured from among all lead and copper tap water samples collected during each monitoring period, as required by 179 NAC 12-013.01A item 4 if:

1. The Director has previously notified the water system that it will calculate the water system's 90th percentile lead and copper concentrations, based on the lead and copper tap results submitted pursuant to 179 NAC 12-013.08 item 2.a., and has specified a date before the end of the applicable monitoring period by which the system must provide the results of lead and copper tap water samples;
2. The system has provided the following information to the Director by the date specified in 179 NAC 12-013.08 item 1:
 - a. The results of all tap samples for lead and copper including the location of each site and the criteria under 179 NAC 12-009.01C, 12-009.01D, 12-009.01E, 12-009.01F, and/or 12-009.01G under which the site was selected for the system's sampling pool, pursuant to 179 NAC 12-013.01A item 1; and
 - b. An identification of sampling sites utilized during the current monitoring period that were not sampled during previous monitoring periods, and an explanation why sampling sites have changed; and
3. The Director has provided the results of the 90th percentile lead and copper calculations, in writing, to the water system before the end of the monitoring period.

12-014 RECORDKEEPING REQUIREMENTS: Any system subject to the requirements of 179 NAC 12 must retain on its premises original records of all sampling data and analyses, reports, surveys, letters, evaluations, schedules, Director determinations, and any other information required by 179 NAC 12-004 through 12-011. Each water system must retain the records required by 179 NAC 12-014 for no fewer than 12 years.

179 NAC 12 ATTACHMENT 1

Sampling Training For Individuals Other Than Licensed Operators

PWS System or Community Name: _____

Name of individual taking samples: _____

Parameter(s) sampled routinely by the above individual:

Trainer and Title: _____

Training material used: _____

Handouts given to the above individual:

I certify that on _____ I personally provided the necessary sampling
(Date)

training to assure quality data and approve the above individual as qualified to perform the above sampling tasks.

X _____

(Signature of Trainer) (License Number)

I certify that I did receive said training and I understand how to properly sample the above parameters.

X _____

(Signature of Approved Sampling Individual)

When the above-named trained individual no longer takes the samples the individual has been

trained to take, I will inform the Nebraska Department of Health and Human Services Division of

Public Health, Field Services Program Manager at (402) 471-0521 within seven days.

Acknowledged by System Owner or Operator in Charge:

X _____ Date: _____

(Signature)

(Keep a copy for your records and submit original within seven days to DHHS, Division of Public Health, Public Water Program at P. O. Box 95026, Lincoln, NE 68509-5026)

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 13 - SURFACE WATER TREATMENT

13-001 - SCOPE AND AUTHORITY: These regulations establish treatment technique requirements in lieu of maximum contaminant levels for the following contaminants: *Giardia lamblia*, viruses, heterotrophic plate count bacteria, *Legionella*, and turbidity. The authority is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

13-002 DEFINITIONS

Code of Federal Regulations (CFR) means the Code of Federal Regulations as it existed on the effective date of these regulations, and any CFR citations mentioned in these regulations are hereby incorporated by reference. Copies of the CFR as it existed on the effective date of these regulations can be obtained on the DHHS website at http://dhhs.ne.gov/publichealth/Pages/enh_pwsindex.aspx or by requesting a copy via email from the Department at: DHHS.drinkingwater@nebraska.gov or by calling 402-471-2541.

Conventional filtration treatment means a series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal.

CT or CTcalc means the product of “residual disinfectant concentration” (C) in milligrams per liter determined before or at the first customer, and the corresponding “disinfectant contact time” (T) in minutes, i.e., “C” x “T”.

CT_(99.9) means 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 13.1 to 13.8 of 179 NAC 13-007.02C.

Department means the Division of Public Health of the Department of Health and Human Services.

Diatomaceous earth filtration means 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, additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake.

Direct filtration means a series of processes including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal.

Director means the Director of Public Health of the Division of Public Health or his/her authorized representative.

Disinfection means a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents.

Disinfection contact time ("T" in CT calculations) means 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.

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

Flocculation means a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable particles through hydraulic or mechanical means.

Ground water under the direct influence of surface water (GWUDI) means 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 or Cryptosporidium, or significant and 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 Director. The Director 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 as described in 179 NAC 13 Attachment 2 which is hereby incorporated by reference.

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

Inactivation ratio means the ratio of CT to CT_(99.9), i.e., CT divided by CT_(99.9).

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

Sedimentation means a process for removal of solids before filtration by gravity or separation.

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

Surface water means all water which is open to the atmosphere and subject to surface runoff.

Surface water system means a water system utilizing surface water as the source of water.

Treatment technique means the use of aeration, settling, filtration, or other physical process and/or the addition of any chemical or chemicals for the purpose of removing, deactivation, or adjusting the level of one or more contaminants present in the raw water source.

Trihalomethane (THM) means one of a 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.

Total trihalomethanes (TTHMs) means the sum of the concentration in milligrams per liter of the trihalomethane compounds [trichloromethane (chloroform), dibromochloromethane, bromodichloromethane, and tribromomethane (bromoform)], rounded to two significant figures.

Virus means a virus of fecal origin which is infectious to humans by waterborne transmission.

Waterborne disease outbreak means 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.

13-003 GENERAL REQUIREMENTS

13-003.01 Each public water system with a surface water source or a ground water 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 recontamination 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 recontamination by surface water runoff and a point downstream before or at the first customer.

13-003.02 Each ground water source providing water to a public system will be examined to determine whether or not it is under the direct influence of surface water. The examination will be performed in accordance with the protocol described in Attachment 2 to 179 NAC 13.

13-003.02A Each ground water source for a community water system must have been examined no later than June 19, 1994.

13-003.02B Each ground water source for a non-community system must have been examined by June 19, 1999.

13-003.02C If the Director determines that a ground water source is under the direct influence of surface water, s/he will so indicate in writing to the owner of the public water system.

13-003.03 A public water system using surface water as a source must include filtration which meets the requirements of 179 NAC 13-006.

13-003.04 A public water system using a ground water source under the direct influence of surface water is considered to be in compliance with the requirements of 179 NAC 13-003 if:

1. It meets the requirements for avoiding filtration in 179 NAC 13-004 and meets the disinfection requirements in 179 NAC 13-005; or
2. It meets the filtration requirements in 179 NAC 13-006 and the disinfection requirements in 179 NAC 13-005.

13-003.05 Additional Requirements for Systems Serving at Least 10,000 People: In addition to complying with the requirements in 179 NAC 13, systems serving at least 10,000 people must also comply with the requirements in 179 NAC 17.

13-003.06 Additional Requirements for Systems Serving Fewer Than 10,000 People: In addition to complying with the requirements in 179 NAC 13, systems serving fewer than 10,000 people must also comply with the requirements in 179 NAC 19.

13-004 CRITERIA FOR AVOIDING FILTRATION: A public water system that uses a ground water source under the direct influence of surface water must meet all of the conditions of 179 NAC 13-004.01 and 13-004.02 and is subject to 179 NAC 13-004.03 beginning 18 months after the Director determines that it is under the direct influence of surface water. Within 18 months of the failure of a system using a ground water source under the direct influence of surface water to meet any one of the requirements of 179 NAC 13-004.01 to 13-004.06 the system owner must have installed filtration and meet the criteria for filtered systems specified in 179 NAC 13-006.

13-004.01 Source Water Quality Conditions

13-004.01A The fecal coliform concentration must be equal to or less than 20 per 100 ml or the total coliform concentration must be equal to or less than 100 per 100 ml (measured by the Department Laboratory or an approved laboratory pursuant to 179 NAC 3-009) in representative samples of the source water immediately prior to the first or only point of disinfection application in at least 90% of the measurements made for the six previous months that the system served water to the public on an ongoing basis. If a system measures both fecal and total coliforms, the fecal coliform criterion, but not the total coliform criterion, in this paragraph must be met.

13-004.01B The turbidity level cannot exceed 5 NTU (measured as specified in 179 NAC 13-007.01A and 13-007.02B) in representative samples of the source water immediately prior to the first or only point of disinfectant application unless:

1. The Director determines that any such event was caused by circumstances that were unusual and unpredictable; and
2. As a result of any such event, there have not been more than two events in the past 12 months the system served water to the public, or more than five events in the past 120 months the 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.

13-004.02 Site-Specific Conditions

13-004.02A The public water system must meet the requirements of 179 NAC 13-005.01A at least 11 of the 12 previous months that the system served water to the public on an ongoing basis, unless the system fails to meet the requirements during 2 of the 12 previous months that the 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.

13-004.02B The public water system must meet the requirements of 179 NAC 13-005.01B at all times the system serves water to the public.

13-004.02C The public water system must meet the requirements of 179 NAC 13-005.01C at all times the system serves water to the public unless the Director determines that any such failure was caused by circumstances that were unusual and unpredictable.

13-004.02D The public water system must meet the requirements of 179 NAC 13-005.01D 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.

13-004.02E The public water system owner must develop and implement a wellhead protection program sufficient to exclude potential sources of microbiological contamination within a one year time-of-travel from the well or well field. A wellhead protection program must consist of the following:

1. A Wellhead Protection Area Delineation: The area delineated must be based on a one year time-of-travel and must be determined by use of a computer model acceptable to the Department or by the following formula:

$$T = 3.14nbL^2 \text{ divided by } Q$$

Where

T = Time-of-Travel (days)

L = Distance from the well (feet)

n = Effective porosity (assumed to be 0.2 unless supporting evidence indicates otherwise)

b = Aquifer thickness (feet)
Q = Pumping rate (cubic feet per day)

2. Identification of all sources of microbiological contamination within the delineated area.
3. Management of all sources identified in 179 NAC 13-004.02E item 2 to prevent contamination from the sources.

13-004.03 The public water system must be subject to an annual on-site inspection to assess the wellhead protection program specified in 179 NAC 13-004.02E and the 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 must be prepared every year and indicate to the Director's satisfaction that the disinfection treatment process is adequately designed and maintained. The on-site inspection must include:

1. A review of the effectiveness of the wellhead protection program required by 179 NAC 13-004.02E;
2. A review of the physical condition of the well and the extent of protection provided;
3. A review of the system's equipment maintenance program to ensure there is low probability for failure of the disinfection process;
4. An inspection of the disinfection equipment for physical deterioration;
5. A review of operating procedures;
6. A review of data records to ensure that all required tests are being conducted and recorded and disinfection is effectively practiced; and
7. Identification of any improvements which are needed in the equipment, system maintenance and operation, or data collection.

13-004.04 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.

13-004.05 The public water system must comply with the maximum contaminant level (MCL), for total coliforms in 179 NAC 2-002.04C1 and 2-002.04C2 and the MCL for E. coli in 179 NAC 2-002.04C4 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.

13-004.06 The public water system was required to comply with the requirements for trihalomethanes in 179 NAC 2-002.04B1 and 179 NAC 3-006 until December 31, 2001. After December 31, 2001, the system must comply with the requirements for total trihalomethanes, haloacetic acids (five), bromate, chlorite, chlorine, chloramines, and chlorine dioxide in 179

NAC 16.

13-004.07 A system that fails to meet any one of the criteria in 179 NAC 13-004.01 and 13-004.02, and/or for which filtration is required, and fails to install filtration is in violation of a treatment technique requirement.

13-004.08 A system that has not installed filtration is in violation of a treatment technique requirement if:

1. The turbidity level (measured as specified in 179 NAC 13-007.01A) in a representative sample of the source water immediately prior to the first or only point of disinfection application exceeds 5 NTU; or
2. The system is identified as a source of a waterborne disease outbreak.

13-005 DISINFECTION: A public water system that uses a ground water source under the direct influence of surface water and does not provide filtration treatment must provide disinfection treatment specified in 179 NAC 13-005.01 beginning 18 months after the Director determines that the ground water source is under the direct influence of surface water. If filtration is required in accordance with 179 NAC 13-006, the system must comply with any interim disinfection requirements the Director deems necessary before filtration is installed. A system that uses a surface water source and provides filtration treatment must provide the disinfection treatment specified in 179 NAC 13-005.02 beginning June 29, 1993, or beginning when filtration is installed, whichever is later. A system that uses a ground water source under the direct influence of surface water and provides filtration treatment must provide disinfection treatment as specified in 179 NAC 13-005.02 by June 29, 1993, or beginning when filtration is installed, whichever is later. Failure to meet any requirement of 179 NAC 13-005 is a treatment technique violation.

13-005.01 Disinfection Requirements for Public Water Systems That Do Not Provide Filtration: Each public water system that uses a ground water source under the direct influence of surface water and does not provide filtration treatment must provide disinfection treatment as follows:

13-005.01A 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 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 179 NAC 13-007.02D 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 owner may demonstrate to the Director that CT(gg.g) values other than those specified in Tables 13.7 and 13.8 in 179 NAC 13-007.02C or other operational parameters are adequate to demonstrate that the system is achieving minimum inactivation rates required by 179 NAC 13-005.

13-005.01B The disinfection system must have either 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 automatic shut-off of delivery of water to the distribution system whenever there is less than 0.2 milligrams (mg) per liter of residual disinfectant concentration in the water. If the Director determines that automatic shut-off would cause unreasonable risk to health or interference with fire protection, the system must have the above redundant components.

13-005.01C The residual disinfectant concentration in the water entering the distribution system, measured as specified in 179 NAC 13-007.01B and 13-007.02E cannot be less than 0.2 mg per liter for more than four hours.

13-005.01D Residual Disinfectant Concentration

13-005.01D1 The residual disinfectant concentration in the distribution system, measured as total chlorine, combined chlorine, or chlorine dioxide as specified in 179 NAC 13-007.01B and 13-007.02F must be detectable, as defined in Attachment 1 which is hereby incorporated by reference, in at least 95% of the samples each month for any two consecutive months that the system serves water to the public. Thus, the value “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 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 greater than 500 ml;

e = number of instances where the residual disinfectant concentration is not measured and HPC is greater than 500 per ml; and

V = percent of samples with undetectable residual disinfectant concentration.

13-005.01D2 If the Director determines, based on site-specific considerations, that a system does not have the means for having a sample transported and analyzed for heterotrophic plate count (HPC)

by the Department Laboratory or an approved laboratory under the requisite time and temperature conditions required of the laboratory and that the system is providing adequate disinfection in the distribution system, the requirements of 179 NAC 13-005.01D1 do not apply to that system.

13-005.02 Disinfection Requirements for Public Water Systems Which Provide Filtration: Each public water system that provides filtration treatment must provide disinfection treatment as follows:

13-005.02A The disinfection treatment must be sufficient to ensure that the total treatment processes of that 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.

13-005.02B The residual disinfectant concentration in the water entering the distribution system, measured as specified in 179 NAC 13-007.01B and 13-007.03B cannot be less than 0.2 mg per liter for more than four hours.

13-005.02C The residual disinfectant concentration in the distribution system, measured as total chlorine, combined chlorine, or chlorine dioxide, as specified in 179 NAC 13-007.01B and 13-007.03B must be detectable, as defined in Attachment 1 in at least 95% of the samples each month, for any two consecutive months that the system serves water to the public. Thus, the value "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 no residual disinfectant concentration is detected and where the HPC is greater than 500 per ml;

e = number of instances where the residual disinfectant concentration is not measured and HPC is greater than 500 per ml; and

V = percent of samples with undetectable residual disinfectant concentration.

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 the Department Laboratory or an approved laboratory under the requisite time and temperature conditions required of the laboratory and that the system is providing adequate disinfection in the distribution system, the requirements of 179 NAC 13-005.02C do not apply.

13-006 FILTRATION: A public water system that uses a surface water source must provide treatment consisting of both disinfection, as specified in 179 NAC 13-005.02 and filtration treatment which complies with the requirements of 179 NAC 13-006.01 to 13-006.04 by June 29, 1993. A public water system that uses a ground source which is under the direct influence of surface water and does not meet all the criteria in 179 NAC 13-004 for avoiding filtration, must provide treatment consisting of both disinfection, as specified in 179 NAC 13-005.02 and filtration which complies with the requirements of 179 NAC 13-006.01 to 13-006.04 within 18 months of the failure to meet any one of the criteria for avoiding filtration in 179 NAC 13-004. Failure to meet any requirement of 179 NAC 13-006 is a treatment technique violation.

13-006.01 Conventional Filtration Treatment or Direct Filtration

13-006.01A For 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 179 NAC 13-007.01A and 13-007.03A, 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 179 NAC 13-007.01A and 13-007.03A.

13-006.01B The turbidity level of representative samples of a system's filtered water must at no time exceed 5 NTU, measured as specified in 179 NAC 13-007.01A and 13-007.03A.

13-006.01C Beginning January 1, 2002, systems serving at least 10,000 people must meet the turbidity requirements in 179 NAC 17-006.01.

13-006.01D Beginning January 14, 2005, systems serving fewer than 10,000 people must meet the turbidity requirements in 179 NAC 19-009.01 through 19-009.04.

13-006.02 Slow Sand Filtration

13-006.02A For 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 179 NAC 13-007.01A and 13-007.03A, 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.

13-006.02B The turbidity level of representative samples of a system's filtered water must at no time exceed 5 NTU, measured as specified in 179 NAC 13-007.01A and 13-007.03A.

13-006.03 Diatomaceous Earth Filtration

13-006.03A For 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 179 NAC 13-007.01A and 13-007.03A.

13-006.03B The turbidity level of representative samples of a system's filtered water must at no time exceed 5 NTU, measured as specified in 179 NAC 13-007.01A to 13-007.03A.

13-006.04 Other Filtration Technologies: A public water system may use a filtration technology not listed in 179 NAC 13-006.01 to 13-006.03 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 179 NAC 13-005.02, 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 179 NAC 13-006.02 apply. Beginning January 1, 2002, systems serving at least 10,000 people must meet the requirements for other filtration technologies in 179 NAC 17-005.02. Beginning January 14, 2005, systems serving fewer than 10,000 people must meet the requirements for other filtration technologies in 179 NAC 19-009.01 through 19-009.04.

13-007 ANALYTICAL AND MONITORING REQUIREMENTS

13-007.01 Analytical Requirements: Only the analytical method(s) specified in 179 NAC 13-007 can be used to demonstrate compliance with the requirements of 179 NAC 13-004, 13-005, and 13-006. Measurements for pH, temperature, turbidity, and residual disinfectant concentrations must be conducted by a Grade I, II, III, or IV operator or a person who has been trained to take the samples. Attachment 4 (which is hereby incorporated by reference), which states that the person taking the samples has been trained to take them, must be completed, dated, and signed by the person doing the training (a Grade I, II, III, or IV licensed water operator) as well as the person trained. That form must be sent to the Department. Measurements for total coliforms, fecal coliforms, and heterotrophic plate count (HPC) must be conducted by the Department Laboratory or an approved laboratory as required in 179 NAC 3-009. Until laboratory certification criteria are developed for the analysis of fecal coliforms and HPC, any laboratory certified for total coliforms analysis by the Department

or EPA is deemed certified for fecal coliforms and HPC analysis.

13-007.01A Public water systems must conduct analysis of pH and temperature in accordance with one of the methods found in 179 NAC 3-005.11A. Public water systems must conduct analysis of total coliforms, fecal coliforms, heterotrophic bacteria, and turbidity in accordance with one of the analytical methods in 40 CFR 141.74(a)(1) or an equivalent method approved by EPA and by using analytical test procedures contained in Technical Notes on Drinking Water Methods, EPA-600/R-94-173, October 1994, which is available at NTIS PB95-104766.

13-007.01B Public water systems must measure residual disinfectant concentrations with one of the analytical methods in 40 CFR 141.74(a)(2) or an equivalent method approved by EPA.

13-007.02 Monitoring Requirements for Systems That Do Not Provide Filtration: A public water system that uses a ground water source under the direct influence of surface water and does not provide filtration treatment must begin monitoring as specified in 179 NAC 13 beginning six months after the Director determines that the ground water source is under the direct influence of surface water, unless filtration is required, in which case the Director may specify alternative monitoring requirements, as appropriate, until filtration is in place.

13-007.02A Fecal coliform or total coliform density measurements as required by 179 NAC 13-004.01A must be performed on representative source water samples immediately prior to the first or only point of disinfectant application. The owner of the system must sample for fecal or total coliforms at the following minimum frequency each week the system serves water to the public:

System size (individuals served)	Samples per week¹
500 or less	1
501 to 3,300	2
3,301 to 10,000	3
10,001 to 25,000	4
Over 25,000	5

¹Must 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 toward 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.

13-007.02B Turbidity measurements as required by 179 NAC 13-004.01B 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 owner may substitute continuous turbidity monitoring for grab sample monitoring if it validates the continuous measurement for accuracy on a regular basis.

13-007.02C 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 13.1 through 13.8 of 179 NAC 13-007. The parameters necessary to determine the total inactivation ratio must be monitored as follows:

13-007.02C1 The temperature of the disinfected water must be measured at least once per day at each residual disinfectant concentration sampling point.

13-007.02C2 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.

13-007.02C3 The disinfectant contact time(s) (“T”) must be determined for each day during peak hourly flow.

13-007.02C4 The residual disinfectant concentration(s) (“C”) of the water before or at the first customer must be measured each day during peak hourly flow.

13-007.02C5 If a system uses a disinfectant other than chlorine, the system may demonstrate to the Director that CT_(99.9) values other than those specified in Tables 13.7 and 13.8 in 179 NAC 13-007 or other operational parameters are adequate to demonstrate that the system is achieving the minimum inactivation rates required by 179 NAC 13-005.

TABLE 13.1

CT VALUES [CT_(99.9)] for 99.9% INACTIVATION OF GIARDIA LAMBLIA CYSTS BY FREE CHLORINE AT 0.5°C OR LOWER*

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

*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 13.2

CT VALUES [CT(99.9)] for 99.9% INACTIVATION OF GIARDIA LAMBLIA CYSTS BY FREE CHLORINE AT 5.0°C *

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

*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 13.3

CT VALUES [CT(99.9)] for 99.9% INACTIVATION OF GIARDIA LAMBLIA CYSTS BY FREE CHLORINE AT 10.0°C *

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

*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 13.4

CT VALUES [CT(99.9)] for 99.9% INACTIVATION OF GIARDIA LAMBLIA CYSTS BY FREE CHLORINE AT 15.0°C *

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

*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 13.5

CT VALUES [CT(99.9)] for 99.9% INACTIVATION OF GIARDIA LAMBLIA CYSTS BY FREE CHLORINE AT 20.0°C *

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

*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 13.6

CT VALUES [CT(99.9)] for 99.9% INACTIVATION OF GIARDIA LAMBLIA CYSTS BY FREE CHLORINE AT 25.0°C AND HIGHER*

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

*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 13.7

CT VALUES [CT(99.9)] for 99.9% INACTIVATION OF GIARDIA LAMBLIA CYSTS BY CHLORINE DIOXIDE AND OZONE*

	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

*These CT values achieve greater than a 99.99% inactivation of viruses. 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 13.8

CT VALUES [CT(99.9)] for 99.9% INACTIVATION OF GIARDIA LAMBLIA CYSTS BY CHLORAMINES*

	Temperature					
	<1°C	5°C	10°C	15°C	20°C	25°C
Chloramine	3,800	2,200	1,850	1,500	1,100	750

*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, in accordance with 179 NAC 13-006, 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.

13-007.02D The total inactivation ratio must be calculated as follows:

13-007.02D1 If the system uses only one point of disinfectant application, the system owner may determine the total inactivation ratio based on either of the following two methods:

1. One inactivation ratio [CTcalc divided by CT(99.9)] is determined before or at the first customer during peak hourly flow and if CTcalc divided by CT(99.9) is greater than or equal to 1.0, the 99.9%

Giardia lamblia inactivation requirement has been achieved; or
 2. Successive CT_{calc} divided by 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:

- a. Determine CT_{calc} divided by CT_(99.9) for each sequence;
- b. Add the CT_{calc} divided by CT_(99.9) values together; and
- c. If the sum of CT_{calc} divided by CT_(99.9) is greater than or equal to 1.0, the 99.9% Giardia lamblia inactivation requirement has been achieved.

13-007.02D2 If the system used more than one point of disinfectant application before or at the first customer, the system owner 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} divided by CT_(99.9) value of each sequence and the sum of CT_{calc} divided by CT_(99.9) must be calculated using the method in 179 NAC 13-007.02D1 item 2 to determine if the system is in compliance with 179 NAC 13-005.01.

13-007.02D3 Although not required, the total percent inactivation for a system with one or more points of residual disinfectant concentration monitoring may be calculated by solving the following equation:

$$\text{Percent inactivation} = 100 - 100 \text{ divided by } 10^Z$$

Where:

$$Z = 3 \text{ times the sum of } CT_{\text{calc}} \text{ divided by } CT_{(99.9)}$$

13-007.02E 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 monitoring equipment, grab sampling every four hours may be conducted in lieu of continuous monitoring, but for no more than five working days following the failure of the equipment. Owners of systems serving 3,300 or fewer individuals may take grab samples in lieu of providing continuous monitoring on an ongoing basis at the frequencies prescribed below:

System size by population	Samples per day ¹
500 or less	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 review and approval by the Director. If at any time the residual disinfectant concentration falls below 0.2 mg per liter in a system using grab sampling in lieu of continuous monitoring, the system must take a grab sample every four hours until the residual concentration is equal to or greater than 0.2 mg per liter.

13-007.02F Measurement of Residual Disinfectant

13-007.02F1 Through March 31, 2016, 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 179 NAC 3-004. Beginning April 1, 2016, 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 179 NAC 26-006 through 26-010. The Director may allow a public water system which uses both a surface water source or a ground water source under the direct influence of surface water, and a ground water 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 179 NAC 13-007.01A may be measured in lieu of residual disinfectant concentration.

13-007.02F2 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 an approved laboratory under the requisite time and temperature conditions required of the approved laboratory, and that the system is providing adequate disinfection in the distribution system, the requirements of 179 NAC 13-007.02F1 do not apply to that system.

13-007.03 Monitoring Requirements for Systems Using Filtration

Treatment: A public water system that uses a surface water source or a ground water source under the influence of surface water and provides filtration treatment must monitor in accordance with 179 NAC 13-007 beginning June 29, 1993, or when filtration is installed, whichever is later.

13-007.03A Turbidity measurements as required by 179 NAC 13-006 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 public water system owner may substitute continuous turbidity monitoring for grab sample monitoring if the owner validates the continuous measurement for accuracy on a regular basis. 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 the Director determines that less frequent monitoring is sufficient to indicate effective filtration performance. For systems serving 500 or

fewer individuals, 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 monitoring is sufficient to indicate effective filtration performance.

13-007.03B 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 monitoring equipment, grab sampling every four hours may be conducted in lieu of continuous monitoring, but for no more than five working days following the failure of the equipment. Owners of systems serving 3,300 or fewer individuals may take grab samples in lieu of providing continuous monitoring on an ongoing basis at the frequencies each day prescribed below:

System size by population	Samples per day ¹
500 or less	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 review and approval by the Director. If at any time the residual disinfectant concentration falls below 0.2 mg per liter in a system using grab sampling in lieu of continuous monitoring, the system must take a grab sample every four hours until the residual concentration is equal to or greater than 0.2 mg per liter.

13-007.03C Measurement of Residual Disinfectant: Through March 31, 2016, 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 179 NAC 3-004.01B. Beginning April 1, 2016, 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 179 NAC 26-006 through 26-010. The Director may allow a public water system which uses both a surface water source or a ground water source under the direct influence of surface water, and a ground water 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 179 NAC 13-007.01A may be measured in lieu of residual disinfectant concentration.

13-008 REPORTING AND RECORDKEEPING REQUIREMENTS

13-008.01 A public water system that uses a ground water source under the direct influence of surface water and does not provide filtration treatment must report monthly to the Director the information specified in 179 NAC

13-008 beginning six months after the Director determines that the ground water source is under the direct influence of surface water, unless filtration is required, in which case the Director may specify alternative reporting requirements, as appropriate, until filtration is in place. The reports must be submitted on Forms PWS 403, PWS 404, and PWS 405 in Attachment 3 to 179 NAC 13 (which is hereby incorporated by reference) or in an alternate format that includes the same information as contained on the appropriate form.

13-008.01A Source water quality information must be reported to the Director within ten days after the end of each month the system serves water to the public. Information that must be reported includes:

1. The cumulative number of months for which results are reported.
2. 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.
3. The number of samples during the month that had equal to or less than 20 per 100 ml fecal coliforms and/or equal to or less than 100 per 100 ml total coliforms.
4. The cumulative number of fecal or total coliform samples, whichever are analyzed, during the previous six months the system served water to the public.
5. The cumulative number of samples that had equal to or less than 20 per 100 ml of fecal coliforms or equal to or less than 100 per 100 ml total coliforms, whichever are analyzed, during the previous six months the system served water to the public.
6. The percentage of samples that had equal to or less than 20 per 100 ml fecal coliforms or equal to or less than 100 per 100 ml total coliforms, whichever are analyzed, during the previous six months the system served water to the public.
7. The maximum turbidity level measured during the month, the date(s) of occurrence(s) for any measurement(s) which exceeded 5 NTU, and the date(s) the occurrence(s) was reported to the Director.
8. For the first 12 months of recordkeeping, the dates and cumulative number of events during which turbidity exceeded 5 NTU, and after one year of recordkeeping for turbidity measurement, the dates and cumulative number of events during which the turbidity exceeded 5 NTU in the previous 12 months the system served water to the public.
9. 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 the system served water to the public.

13-008.01B Disinfection information specified in 179 NAC 13-007 must be reported to the Director within ten days after the end of each month the system serves water to the public. Information that must be

reported includes:

1. For each day, the lowest measurement of residual disinfectant concentration in mg per liter in water entering the distribution system.
2. The date and duration of each period when the residual disinfectant concentration in water entering the distribution system fell below 0.2 mg per liter and when the Director was notified of the occurrence.
3. The daily residual disinfectant concentration(s) in mg per liter and disinfectant contact time(s) in minutes used for calculating the CT value(s).
4. If chlorine is used, the daily measurement(s) of pH of disinfected water following each point of chlorine disinfection.
5. The daily measurement(s) of water temperature in degrees Celsius following each point of chlorine disinfection.
6. The daily CT_{calc} and CT_{calc} divided by CT(99.9) values for each disinfectant measurement or sequence and the sum of all CT_{calc} divided by CT(99.9) values before or at the first customer.
7. The daily determination of whether disinfection achieves adequate Giardia cyst and virus inactivation, i.e., whether CT_{calc} divided by CT(99.9) is at least 1.0 or, where disinfectants other than chlorine are used, other indicator conditions that the Director determines are appropriate, are met.
8. The following information on the samples taken in the distribution system in conjunction with total coliform monitoring pursuant to 179 NAC 13-005:

- 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 detected and where HPC is greater than 500 per ml;
- e. Number of instances where the residual disinfectant concentration is not measured and HPC is greater than 500 per ml;
- f. For the current and previous month 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 179 NAC 13-008.01B item 8.a.
b = the value in 179 NAC 13-008.01B item 8.b.
c = the value in 179 NAC 13-008.01B item 8.c.
d = the value in 179 NAC 13-008.01B item 8.d.
e = the value in 179 NAC 13-008.01B item 8.e.
V = percent of samples with undetectable residual
disinfectant concentration

g. 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 the Department Laboratory or an approved laboratory under the requisite time and temperature conditions required of the laboratory and that the system is providing adequate disinfection in the distribution system, the requirements of 179 NAC 13-008.01B item 8 do not apply to that system.

9. A system need not report the data listed in 179 NAC 13-008.01B item 1 and 13-008.01B items 3 to 6, if all data listed in 179 NAC 13-008.01B items 1 to 8 remain on file at the system, and the Director determines that:

1. The system owner has submitted to the Director all the information required by 179 NAC 13-008.01B items 1 to 8 for at least 12 months, and
2. The Director has determined that the system is not required to provide filtration treatment.

13-008.01C No later than ten days after the end of each federal fiscal year (September 30), each system owner must provide to the Director a report which summarizes its compliance with all wellhead protection requirements specified in 179 NAC 13-004.02E.

13-008.01D No later than ten days after the end of each federal fiscal year (September 30) each system must provide to the Director a report on the on-site inspection conducted during that year pursuant to 179 NAC 13-004.03, unless the on-site inspection was conducted by the Director.

13-008.01E Special Reports

13-008.01E1 Each system, upon discovering that a water-borne disease outbreak potentially attributable to the water system has occurred, must report that occurrence to the Director as soon as possible, but not later than by the end of the next business day.

13-008.01E2 If at any time the turbidity exceeds 5 NTU, the system must consult with the Department as soon as practical, but no later than 24 hours after the exceedance is known, in accordance with the public notification requirements under 179 NAC 4-005.02 item 3.

13-008.01E3 If at any time the residual falls below 0.2 mg per liter 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 per liter within four hours.

13-008.02 A public water system that uses a surface water source or a ground water source under the direct influence of surface water and provides filtration treatment must report monthly to the Director the information specified 179 NAC 13-008 beginning June 29, 1993, or when filtration is installed, whichever is later. The reports must be submitted on Forms PWS 405 and PWS 408 in Attachment 3 to 179 NAC 13 (which is hereby incorporated by reference) or in an alternate format that includes the same information as contained on the appropriate form.

13-008.02A Turbidity measurements as required by 179 NAC 13-007.03A must be reported within ten days after the end of each month the system serves water to the public. Information that must be reported includes:

1. The total number of filtered water turbidity measurements taken during the month.
2. 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 179 NAC 13-006.
3. The date and value of any turbidity measurements taken during the month which exceed 5 NTU.

13-008.02B Disinfection information specified in 179 NAC 13-007.03 must be reported to the Director within ten days after the end of each month the system serves water to the public. Information that must be reported includes:

1. For each day, the lowest measurement of residual disinfectant concentration in mg per liter in water entering the distribution system.
2. The date and duration of each period when the residual disinfectant concentration in water entering the distribution system fell below 0.2 mg per liter and when the Director was notified of the occurrence.
3. The following information on the samples taken in the distribution system in conjunction with total coliform monitoring pursuant to 179 NAC 13-005:
 - 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 the HPC is greater than 500 per ml;
- e. Number of instances where the residual disinfectant concentration is not measured and HPC is greater than 500 per ml;
- f. For the current and previous month 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 179 NAC 13-008.02B item 3.a.
 b = the value in 179 NAC 13-008.02B item 3.b.
 c = the value in 179 NAC 13-008.02B item 3.c.
 e = the value in 179 NAC 13-008.02B item 3.e.
 V = percent of samples with undetectable residual disinfectant concentration

g. If the Director determines, based on site-specific considerations, that a system has no means of having a sample transported and analyzed for HPC by the Department Laboratory or an approved laboratory under the requisite time and temperature conditions required of the laboratory and that the system is providing adequate disinfection in the distribution system, the requirements of 179 NAC 13-008.02B items 3.a. to 3.f. do not apply.

4. A system need not report the data listed in 179 NAC 13-008.02B item 1 if all the data listed in 179 NAC 13-008.02B items 1 to 3 remain on file at the system and the Director determines that the system has submitted all the information required by 179 NAC 13-008.02B items 1 to 3 for at least 12 months.

13-008.02C Special Reports

13-008.02C1 Each system owner, upon discovering that a waterborne disease outbreak potentially attributable to that water 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.

13-008.02C2 If at any time the turbidity exceeds 5 NTU, the system must consult with the Director as soon as practical, but no later than 24 hours after the exceedance is known, in accordance with the public notification requirements under 179 NAC 4-005.02 item 3.

13-008.02C3 If at any time the residual falls below 0.2 mg per liter in the water entering the distribution system, the system owner must notify the Director as soon as possible, but no later than by the end of the next business day. The system owner must also notify the Director by the end of the next business day whether or not the residual was restored to at least 0.2 mg per liter within four hours.

179 NAC 13 Attachment 1

Minimum Detectable Residuals

A. The following requirements establish the minimum allowable disinfectant residuals for each type of system.

1. For systems that are utilizing surface water sources, or sources determined to be groundwater under the direct influence of surface water, one of the following options must be implemented to meet the minimum residual requirements.

- a. 0.2 ppm residual for free chlorine or 0.5 ppm for total chlorine or
- b. 0.1 ppm residual for free chlorine or 0.25 ppm for total chlorine provided the requirements in Section C items 1-5 of this attachment are met or
- c. HPC of <500 cfu/ml.

2. All groundwater systems serving water to the public that contains chlorine or chloramines as a chemical disinfectant or oxidant on a continuous basis must use one of the following criteria for minimum residuals.

- a. 0.1 ppm residual for free chlorine or
- b. 0.05 ppm for free chlorine if qualifying criteria in section C items 3-5 of this attachment are met or
- c. HPC of <500 cfu/ml.

B. If a system is required to disinfect under an Administrative Order (AO), the requirements listed in the AO will supersede any requirements for minimum residuals established in this attachment.

C. In order for a system to maintain the lower minimum residual requirement for free or total chlorine (referred to in A, items 1.b. and 2.b.), the following criteria must be met:

1. Any public water system using surface water or ground water under the direct influence of surface water must meet or exceed all CT inactivation requirements in 179 NAC 13., Tables 13.1 to 13.8 at all times through the treatment process in order to utilize the lower requirements of A, item 1.b.

2. Any public water system using surface water, or ground water determined to be under the direct influence of surface water, must maintain effluent turbidity levels of less than or equal to 0.3 NTU in 95% of all

readings, and at no time exceed 1 NTU.

A system may submit a study to the Department showing that turbidity values in excess of the specified turbidity limits are a direct result of the treatment process and do not represent a threat to public health. The Department will review the study to determine the nature of the high turbidity levels and if they pose a threat to public health.

3. The system must demonstrate that the field test method being used can consistently, reliably, and precisely measure residuals less than or equal to the specified limit being used.

4. The system must document that the manufacturer's recommendations for calibration or standardization are being done according to manufacturer's specifications and frequency, and make this information available for review during sanitary surveys.

5. The system must demonstrate that there is no interference with the testing method, or document that interference has been corrected for. This can be done by any one of the following methods:

- a. Demonstration through historical source water data (a minimum of 12 months of data, or at least four quarterly samples for non-transient non-community systems) that no interference listed under the manufacturer's instructions is present in the system.
- b. Sampling for applicable interferences once each day that a residual disinfectant compliance sample(s) is taken to obtain a correction factor to be added to all residual compliance samples taken that day.
- c. Using an EPA approved method that provides a correction for interference as part of the procedure, and documenting all corrections.
- d. Adjusting all results based on stable historical data and adding the maximum interference obtained, with the Department's approval.

D. Disinfectant residuals must be at or above the required minimum residual limits in at least 95% of all distribution residuals taken for the month. If the system fails to meet the 95% requirement for two consecutive months, or for > 50% of the previous 12 consecutive months, the system will be deemed to be in violation of prescribed treatment techniques and will be issued a Treatment Technique violation.

179 NAC 13 ATTACHMENT 2

Protocol for the Determination of Influence of Surface Water on Ground Water Sources

I. Background: The Surface Water Treatment Rule (SWTR) promulgated by EPA requires that treatment sufficient to produce a three-log (99.9%) reduction in *Giardia lamblia* cysts and a four log (99.99%) reduction in viruses be provided for all surface water sources and all ground water sources under the direct influence of surface water. The basic criteria which determines direct influence of surface water on ground water sources, within the context of the SWTR, is the possibility of *Giardia* cysts being carried into the ground water by infiltrating

surface water. The more recent Interim Enhanced Surface Water Treatment Rule (IESWTR) and Long Term 1 Enhanced Surface Water Treatment Rule (LT1) add the requirement for 2-log (99%) removal of *Cryptosporidium* oocysts for all surface water sources and all ground water sources under the direct influence of surface water.

II. Obvious Surface Water Sources: The Department has identified ponds, lakes, and streams as obvious sources of surface water.

III. Protocol for Ground Water Under the Direct Influence of Surface Water

Determination: The definitive determination of the influence of surface water is to perform particulate analyses on water samples collected from public water sources.

A. New Sources: The following screening protocol will identify the sources for which particulate analysis will be necessary. Department personnel will examine information on file to determine if a source of water is potentially at risk to the direct influence of surface water. If any one of the following conditions is true, then the source of water is potentially at risk to the direct influence of surface water:

1. The source of water is a spring, horizontal/radial collector well, or an infiltration gallery;
2. The top of the uppermost intake structure of a well is less than or equal to 50 feet from the ground surface;
3. There is evidence of *E. coli* contamination of the discharge of the source;
4. The source of water is less than 200 feet from a source of surface water or the sloping margin of, or the ground bordering a stream that serves to confine the water to the natural channel during the normal course of flow. It is best marked where a distinct channel has been eroded in the valley floor, or where there is a cessation of land vegetation.
5. There are defects in the condition of the upper terminus (e.g., defective well seals, grouting, or other defects in the upper annulus);
6. There is inadequate information on file to assess whether the source of water meets one or more of the conditions in III.A.1 through III.A.4. In this case, owners of the public water system will be given the opportunity to provide the required information.

B. Existing Sources: Any existing source will be evaluated under the screening protocol for new sources if any one of the following conditions exists:

1. A waterborne disease outbreak takes place in the public water system service area and the public water system is suspected of being the cause;

2. There is evidence of E. coli contamination in the source water and the source water meets any of the criteria in III.A above; or

3. The public water system has continuous disinfection, the source water meets any of the criteria in III.A above, and the source has not been previously evaluated by the Department using temperature, pH, turbidity, or microscopic particulate analysis.

C. Not Under the Direct Influence: A source of water that does not meet any of the criteria in III.A or III.B above is not considered to be at risk to the direct influence of surface water and Title 179 regulations regarding surface water and ground water under the direct influence of surface water do not apply.

D. At Risk: If a source of water is determined to be potentially at risk to the direct influence of surface water in accordance with the criteria in III.A or III.B above, particulate analysis samples must be taken from the source as follows:

1. A minimum of a set of two samples must be collected and analyses performed for the presence of green algae, blue-green algae, diatoms, nematodes, flagellates, and gastrotrichs. The second sample must be taken a minimum of 24 hours after the conclusion of the previous sampling. Samples must be collected in accordance with the Consensus Method for Determining Groundwaters under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA) which is incorporated herein by reference. This publication is available from the National Technical Information Service, NTIS PB93-180818, U.S. Department of Commerce, 5301 Shawnee Road, Alexandria, Virginia 22161. The toll-free number is 800-553-6847. This document may be inspected at the Division of Public Health of the Department of Health and Human Services, 301 Centennial Mall South, Lincoln, NE 68509. Sample collection must be at such times as the ground water source is most vulnerable to surface water infiltration (e.g., during periods of high surface water stages, after heavy rainfall or runoff events); however, sample collection will not be required when the source would not be used due to abnormal conditions including but not limited to flooding and natural disasters. Sample volumes must be at least 500 gallons. Analysis must be made by a certified laboratory that has entered into an agreement with the Department laboratory as specified in 179 NAC 20.

2. The identification of girardia or cryptosporidium cyst in any source water samples will be considered conclusive evidence of direct surface water influence. The presence of any of the indicators given in III.D.1 in both samples will be considered evidence of potential surface water influence and trigger an engineering review of the source. The engineering review will include but not be limited to the risk levels presented in the MPA results. If the source is determined to be ground water under the direct influence of surface water, it will

be subject to Title 179 regulations regarding surface water and ground water under the direct influence of surface water unless the system is able to determine that a structural defect led to the presence of indicator organisms in the sample(s). If a structural defect is found and corrected, the system may sample again in order to determine if the source is under the direct influence of surface water.

EFFECTIVE DATE
MARCH 22, 2016

NEBRASKA DEPARTMENT OF
HEALTH AND HUMAN SERVICES

179 NAC 13

179 NAC 13 Attachment 3

PWS 403⁽¹⁾

CT DETERMINATION FOR UNFILTERED SYSTEMS – MONTHLY REPORT TO THE DEPARTMENT ⁽³⁾⁽²⁾

Month _____ System/Treatment Plant _____
 Year _____ PWSID NE 31 - _____
 Disinfectant/Sequence of Application _____

Date	Disinfectant ⁽³⁾ Concentration, C (mg/l)	Disinfectant ⁽³⁾ Contact Time, T (min)	CTcalc ⁽⁴⁾ (C x T)	pH ^(3,5)	Water ⁽³⁾ Temp. (deg. C)	CT _{99.9} ⁽⁶⁾	CTcalc/CT _{99.9}
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
				Prepared By _____			
				Date _____			

- Notes: (1) To be included in the monthly report for at least 12 months after the initiation of the reporting. After that time, the Department may no longer require this form.
 (2) Use a separate form for each disinfectant/sampling site. Enter disinfection and sequence position, e.g., "ozone/1st" or "c102/3rd."
 (3) Measurement taken at peak hourly flow.
 (4) CTcalc – c (mg/L) x T (Min.)
 (5) Only required if the disinfectant is free chlorine.
 (6) From Tables 13.1-13.8, 179 NAC 13-007.02C5

EFFECTIVE DATE
MARCH 22, 2016

NEBRASKA DEPARTMENT OF
HEALTH AND HUMAN SERVICES

179 NAC 13

PWS 404
DISINFECTION INFORMATION
FOR UNFILTERED SYSTEMS – MONTHLY REPORT TO THE DEPARTMENT

Month _____ System/Treatment Plant _____
Year _____ PWSID NE 31- _____

Date	Minimum Disinfectant Residual at Point-of-Entry to Distribution System (mg/L) ⁽¹⁾	(CT _{calc} /CT _{99.9}) (from Table 6-3)						Sum (CT _{calc} /CT _{99.9}) ⁽²⁾	Sum (CT _{calc} /CT _{99.9}) < 1 (Yes or No) ⁽³⁾
		Disinfectant Sequence							
		1 st	2 nd	3 rd	4 th	5 th	6 th		
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									

Prepared By _____
 Date _____

- Notes:
- (1) If less than 0.2 mg/L, the lowest level and duration of the period must be reported, e.g., "0.1-3 hrs."
 - (2) To determine SUM (CT_{calc}/CT_{99.9}), add (CT_{calc}/CT_{99.9}) values from the first disinfection sequence to the last.
 - (3) If SUM (CT_{calc}/CT_{99.9}) < 1, a treatment technique violation has occurred, and a "yes" response must be entered.

EFFECTIVE DATE
MARCH 22, 2016

NEBRASKA DEPARTMENT OF
HEALTH AND HUMAN SERVICES

179 NAC 13

PWS 405

DISTRIBUTION SYSTEM DISINFECTANT RESIDUAL DATA FOR UNFILTERED AND FILTERED SYSTEMS
MONTHLY REPORT FOR THE DEPARTMENT

Month _____ System/Treatment Plant _____
Year _____ PWSID NE 31- _____

Date	No. of sites where disinfectant residual was measured (=a)	No. of sites where no disinfectant residual was measured, but HPC measured (=b)	No. of sites where disinfectant residual was not detected, no HPC measured (=c)	No. of sites where disinfectant residual not detected, HPC > 500/ml (=d)	No. of sites where disinfectant residual not measured, HPC > 500 ml (=e)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
Total	a=	b=	c=	d=	e=

$V = (c+d+e)/(a+b) \times 100 = (_ + _ + _) / (_ + _) \times 100 = _ \%$

Prepared by _____
Date _____

EFFECTIVE DATE
MARCH 22, 2016

NEBRASKA DEPARTMENT OF
HEALTH AND HUMAN SERVICES

179 NAC 13

PWS 408

MONTHLY REPORT TO THE DEPARTMENT FOR COMPLIANCE DETERMINATION – FILTERED SYSTEMS

Month _____ System/Treatment Plant _____
 Year _____ Type of Filtration _____
 Turbidity Limit _____ PWSID NE-31 _____

Turbidity Performance Criteria

- A. Total number of filtered water turbidity measurements = _____
- B. Total number of filtered water turbidity measurements that are less than or equal to the specified limits for the filtration technology employed = _____
- C. The percentage of turbidity measurements meeting the specified limits = $B/A \times 100 = \frac{\quad}{\quad} \times 100 = \quad\%$
- D. Record the date and turbidity value for any measurements exceeding 5 NTU: if none, enter "none."

Date	Turbidity, NTU

Disinfection Performance Criteria

- A. Point-of Entry Minimum Disinfectant Residual Criteria

Date	Minimum Disinfectant Residual at Point-of-Entry to Distribution System (mg/L)	Date	Minimum Disinfectant Residual at Point-of-Entry to Distribution System (mg/L)	Date	Minimum Disinfectant Residual at Point-of-Entry to Distribution System (mg/L)
1		11		21	
2		12		22	
3		13		23	
4		14		24	
5		15		25	
6		16		26	
7		17		27	
8		18		28	
9		19		29	
10		20		30	
				31	

Days the Residual was <0.2 mg/L		
Day	Duration of Low Level (hrs.)	Date Reported to the Department

- B. Distribution System Disinfectant Residual Criteria
 The value of a, b, c, d, and e, from Title 179 NAC 13-008.02B item 3f:
 a = _____, b = _____, c = _____, d = _____, e = _____

$$v = \frac{c + d + e}{a + b} \times 100 = \quad\%$$

For previous month, V = _____%

Prepared by _____
 Date _____

179 NAC 13 ATTACHMENT 4

Sampling Training For Individuals Other Than Licensed Operators

PWS System or Community Name: _____

Name of individual taking samples: _____

Parameter(s) sampled routinely by the above individual:

Trainer and Title: _____

Training material used: _____

Handouts given to the above individual:

I certify that on _____ I personally provided the necessary sampling
(Date)

training to assure quality data and approve the above individual as qualified to perform the
above sampling tasks.

X _____
(Signature of Trainer) (License Number)

I certify that I did receive said training and I understand how to properly sample the above
parameters.

X _____
(Signature of Approved Sampling Individual)

When the above-named trained individual no longer takes the samples the individual has been
trained to take, I will inform the Division of Public Health of the Nebraska Department of Health
and Human Services, Field Services Program Manager at (402) 471-0521 within seven days.
Acknowledged by System Owner or Operator in Charge:

X _____ Date: _____
(Signature)

(Keep a copy for your records and submit original within seven days to DHHS Public Health
Division, Public Water Program at P. O. Box 95026, Lincoln, NE 68509-5026)

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 14 - CONSUMER CONFIDENCE REPORTS

14-001 SCOPE AND AUTHORITY: This chapter establishes the minimum requirements for the content of annual reports that community water systems must deliver to their customers. These reports must contain information on the quality of the water delivered by the systems and characterize the risks (if any) from exposure to contaminants detected in the drinking water in an accurate and understandable manner. The authority is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

14-002 DEFINITIONS: For this chapter:

Code of Federal Regulations (CFR) means the Code of Federal Regulations as it existed on the effective date of these regulations, and any CFR citations mentioned in these regulations are hereby incorporated by reference. Copies of the CFR as it existed on the effective date of these regulations can be obtained on the DHHS website at http://dhhs.ne.gov/publichealth/Pages/enh_pwsindex.aspx or by requesting a copy via email from the Department at: DHHS.drinkingwater@nebraska.gov or by calling 402-471-2541.

Customers means billing units or service connections to which water is delivered by a community water system.

Detected means at or above the levels prescribed by 179 NAC 3-005.01 item 4.a for inorganic contaminants; at or above the levels prescribed by 179 NAC 3-007.02G for the contaminants listed in 179 NAC 2-002.04B1; at or above the level prescribed by 179 NAC 3-007.03 item 17 for the contaminants listed in 179 NAC 2-002.04B2; at or above the levels prescribed by 179 NAC 16-004.02B item 4 for the contaminants or contaminant groups listed in 179 NAC 2-002.04E1, and at or above the levels prescribed by 179 NAC 3-008.01B for radioactive contaminants.

14-003 DATES REPORTS DUE

14-003.01 Existing Systems: Each existing community water system must deliver its first report by October 19, 1999, its second report by July 1, 2000, and subsequent reports by July 1 annually thereafter.

14-003.02 New Systems: A new community water system must deliver its first report by July 1 of the year after its first full calendar year in operation and annually thereafter.

14-003.03 Systems That Sell Water to Consecutive Systems: A community water system that sells water to another community water system must deliver the applicable information required in 179 NAC 14 to the buyer system:

1. No later than April 19, 1999, by April 1, 2000, 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.

14-004 CONTENT OF THE REPORTS

14-004.01 Each community water system must provide to its customers an annual report that contains the information specified in 179 NAC 14-004 and 14-005.

14-004.02 Information on the source of the water delivered:

14-004.02A Each report must identify the source(s) of the water delivered by the community water system by providing information on:

1. The type of the water: e.g., surface water, ground water; and
2. The commonly used name (if any) and location of the body (or bodies) of water.

14-004.02B 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. Systems are encouraged to highlight in the report significant sources of contamination in the source water area if they have readily available information. When a source water assessment has been completed, the report must include a brief summary of the system's susceptibility to potential sources of contamination, using language provided by the Department or written by the system.

14-004.03 Definitions

14-004.03A Each report must include the following definitions:

1. Maximum Contaminant Level Goal (MCLG) means 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.
2. Maximum Contaminant Level (MCL) means 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.

14-004.03B A community water system operating under a variance or an exemption must include the following definition: Variances and Exemptions means state permission not to meet an MCL or a treatment technique under certain conditions.

14-004.03C A report which contains data on contaminants that the Department regulates using any of the following terms must include the applicable definitions:

1. Treatment Technique means a required process intended to reduce the level of a contaminant in drinking water.

2. Action Level means the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
3. 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.
4. 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.

14.004.03D A report that contains information regarding a Level 1 or Level 2 Assessment required under 179 NAC 26 must include the applicable definitions:

1. 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.
2. 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.

14-004.04 Information on Detected Contaminants

14-004.04A 179 NAC 14-004.04A specifies the requirements for information to be included in each report for contaminants subject to mandatory monitoring (except *Cryptosporidium*). It applies to:

1. Contaminants subject to an MCL, action level, maximum residual disinfectant level, or treatment technique (regulated contaminants); and
2. Contaminants for which monitoring is required by 40 CFR 141.40.

14-004.04B The data relating to these contaminants must be displayed in one table or in several adjacent tables. Any additional monitoring results which a community water system chooses to include in its report must be displayed separately.

14-004.04C The data must be derived from data collected to comply with state monitoring and analytical requirements during calendar year 1998 for the first report and subsequent calendar years thereafter except that 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 for the most recent testing done in accordance with the regulations. No data older than five years need be included.

14-004.04D For detected regulated contaminants (listed in Appendix A to this chapter), the table(s) must contain:

1. The MCL for that contaminant expressed as a number equal to or greater than 1.0 (as provided in Appendix A to 179 NAC 14).
2. The MCLG for that contaminant expressed in the same units as the MCL.
3. 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 179 NAC 14-004.03C.
4. For contaminants subject to an MCL, except turbidity and total coliforms, total coliform, fecal coliform and E. coli, the highest contaminant level used to determine compliance with a drinking water standard and the range of detected levels, as follows: (Note that 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 A of 179 NAC 14).

- a. When compliance with the MCL is determined annually or less frequently, use the highest detected level at any sampling point and the range of detected levels expressed in the same units as the MCL.
- b. When compliance with the MCL is determined by calculating a running annual average of all samples taken at a monitoring location, use the highest average of any of the monitoring locations and the range of all monitoring locations expressed in the same units as the MCL. For the MCLs for TTHMs and HAA5s in 179 NAC 2-002.04E, systems must include the highest locational running annual average for TTHMs and HAA5s and the range of individual sample results for all monitoring locations expressed in the same units as the MCL. If more than one location exceeds the TTHM or HAA5 MCL, the system must include the locational running annual averages for all locations that exceed the MCL.
- c. When compliance with the MCL is determined on a system-wide basis by calculating a running annual average of all samples at all monitoring locations, use the average and range of detection expressed in the same units as the MCL. When the system has individual sample results for an initial distribution system evaluation (IDSE), the system must include those results 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.

5. For Turbidity

- a. When it is reported pursuant to 40 CFR 141.13, use the highest average monthly value.

- b. When it is reported pursuant to the requirements of 179 NAC 13-004, use the highest monthly value. The report should include an explanation of the reasons for measuring turbidity.
- c. When it is reported pursuant to 179 NAC 13-006 or 179 NAC 17-005 or 179 NAC 19-009.02: the highest single measurement and the lowest monthly percentage of samples meeting the turbidity limits specified in 179 NAC 13-006 or 179 NAC 17-005 or 179 NAC 19-009.02 for the filtration technology being used. The report should include an explanation of the reasons for measuring turbidity.

6. For Lead and Copper, use the 90th percentile value of the most recent round of sampling and the number of sampling sites exceeding the action level.

7. For Total Coliform analytical results through March 31, 2016:

- a. Use the highest monthly number of positive samples for systems collecting fewer than 40 samples per month, or
- b. Use the highest monthly percentage of positive samples for systems collecting at least 40 samples per month.

8. For Fecal Coliform and E. coli through March 31, 2016: The total number of positive samples;

9. Likely Source: Include 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 A to 179 NAC 14 that is most applicable to the system.

10. For E. coli analytical results under 179 NAC 26: The total number of positive samples.

14-004.04E Multiple Independent Distribution Systems: If a community water system distributes water to its customers from multiple hydraulically independent distribution systems that are fed by different raw water sources, the table should contain a separate column for each service area and the report should identify each separate distribution system. Alternatively, systems could produce separate reports tailored to include data for each service area.

14-004.04F 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 A to 179 NAC 14.

14-004.04G 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.

14-004.05 Information on Cryptosporidium, radon, and other contaminants:

14-004.05A If the system has performed any monitoring for Cryptosporidium which indicates that Cryptosporidium may be present in the source water or the finished water, the report must include:

1. A summary of the results of the monitoring, and
2. An explanation of the significance of the results.

14-004.05B If the system has performed any monitoring for radon which indicates that radon may be present in the finished water, the report must include:

1. The results of the monitoring, and
2. An explanation of the significance of the results.

14-004.06 Compliance with Drinking Water Standards: In addition to the requirements of 179 NAC 14-004.04F, 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 179 NAC 13, Surface Water Treatment (for surface water and ground water under the influence of surface water systems). 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 179 NAC 12. For systems that fail to take one or more actions prescribed by 179 NAC 12-003.02, 12-004, 12-005, 12-006, 12-007 the report must include the applicable language of Appendix A to 179 NAC 14 for lead, copper or both;
4. Treatment techniques for Acrylamide and Epichlorohydrin prescribed in 179 NAC 2-002.05. For systems that violate the requirements of 179 NAC 2-002.05, the report must include the relevant language from Appendix A to 179 NAC 14;
5. Recordkeeping of compliance data;
6. Special monitoring requirements for unregulated contaminants and sodium; and
7. Violation of the terms of a variance, an exemption, or an

administrative or judicial order.

14-004.07 Variances and Exemptions: If a system is operating under the terms of a variance or an exemption issued under 179 NAC 6, 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.

14-004.08 Additional Information:

14-004.08A The report must contain a brief explanation regarding contaminants which may reasonably be expected to be found in drinking water including bottled water. This explanation may include the language of 179 NAC 14-004.08A items one to three or systems may use their own comparable language. The report also must include the language of 179 NAC 14-004.08A item 4.

1. The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and ground water 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.
2. Contaminants that may be present in source water include:
 - a. Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
 - b. 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.
 - c. Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
 - d. 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.
 - e. Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.
3. In order to ensure that tap water is safe to drink, the Director prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water which

must provide the same protection for public health.

4. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791) or the Department of Health and Human Services, Division of Public Health at 402-471-2541.

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 179 NAC 8.

a. Any ground water system that receives notice from the Department of a significant deficiency or notice from a laboratory of a fecal indicator-positive ground water source sample that is not invalidated by the Department under 179 NAC 8-005.04 must inform its customers of any significant deficiency that is uncorrected at the time of the next report or of any fecal indicator-positive ground water source sample in the next report. The system must continue to inform the public annually until the Department determines that particular significant deficiency is corrected or the fecal contamination in the ground water source is addressed under 179 NAC 8-006.01. 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 Department or the dates of the fecal indicator-positive ground water source samples;
- (2) If the fecal contamination in the ground water source has been addressed under 179 NAC 8-006.01 and the date of such action;
- (3) For each significant deficiency or fecal contamination in the ground water source that has not been addressed under 179 NAC 8-006.01, the Department-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 ground water source sample that is not invalidated by the Department under 179 NAC 8-005.04, the potential health effects using the health effects language of Appendix A of 179 NAC 14.

b. If directed by the Department, 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 date of correction under 179 NAC 14-004.08A item 6.a.

7. Systems required to comply with 179 NAC 26.

a. Any system required to comply with a 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 179 NAC 14-004.08 items 7.a.(1) to 7.a.(3) as appropriate, filling in the blanks accordingly and the text found in 179 NAC 14-004.08 items 7.a.(4)(a) and 7.a.(4)(b) if appropriate.

(1) 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 the 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.

(2) 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] of corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

(3) 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.

(4) 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 179 NAC 14-004.08 items 7.b.(1) and (2), filling in the blanks accordingly and the text found in 179 NAC 14-004.08

items 7.b.(3)(a) and (b), if appropriate.

(1) 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.

(2) 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.

(3) 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 179 NAC 14-004.04D, the system must include one or more of the following statements to describe any noncompliance, as applicable:

(1) We had an E. coli-positive repeat sample following a total coliform-positive routine sample.

(2) We had a total coliform-positive repeat sample following an E. coli-positive routine sample.

(3) We failed to take all required repeat samples following an E. coli-positive routine sample.

(4) We failed to test for E. coli when (a) repeat sample(s) 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 179 NAC 14-004.04D, 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.

14-004.08B Phone Number: The report must include the telephone number of the owner, operator, or designee of the community water system as a source of additional information concerning the report.

14-004.08C Other Languages: In communities that have a population with 20% or more non-English speaking residents, the report must contain information in the appropriate language(s) regarding the importance of the report or contain a telephone number or address where such residents may contact the system to obtain a translated copy of the report or assistance in the appropriate language.

14-004.08D Meetings: The report must include information (e.g., time and place of regularly scheduled board meetings) about opportunities for public participation in decisions that may affect the quality of the water.

14-004.08E 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.

14-005 REQUIRED ADDITIONAL HEALTH INFORMATION

14-005.01 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) or the Department of Health and Human Services, Division of Public Health at 402-471-2541.

14-005.02 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 Department.

14-005.03 A system which 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 in consultation with the Department.

14-005.04 Every report must include the following lead-specific information:

1. A short informational statement about lead in drinking water and its effects on children. The statement must include the following information: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. [NAME OF UTILITY] is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

2. A system may write its own educational statement in consultation with the Department.

14-005.05 Community Water Systems that detect TTHMs above 0.080 mg/L, but below the MCL in 179 NAC 2-002.04E1, as an annual average, monitored and calculated under the provisions of 179 NAC 16-005, must include health effects language for TTHMs prescribed by Appendix A to 179 NAC 14.

14-005.06 A community water system 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 A to 179 NAC 14.

14-006 REPORT DELIVERY AND RECORDKEEPING

14-006.01 Except as provided in 179 NAC 14-006.07, each community water system must mail or otherwise directly deliver one copy of the report to each customer.

14-006.02 The system must make a good faith effort to reach consumers who do not get water bills, using means recommended by the Department. An adequate good faith effort must be tailored to the consumers who are served by the system but are not bill-paying customers, such as renters or workers. A good faith effort to reach consumers would include a mix of methods appropriate to the particular system such as: Posting the reports on the internet; mailing to postal patrons in

metropolitan areas; advertising the availability of the report in the news media; publication in a local newspaper; posting in public places such as cafeterias or lunch rooms of public buildings; delivery of multiple copies for distribution by single-biller customers such as apartment buildings or large private employers; delivery to community organizations.

14-006.03 No later than the date the system is required to distribute the report to its customers, each community water system must mail a copy of the report to the primacy agency, followed within three months by a certification that the report has been distributed to customers, and that the information is correct and consistent with the compliance monitoring data previously submitted to the Department.

14-006.04 No later than the date the system is required to distribute the report to its customers, each community water system must deliver the report to any other agency or clearinghouse identified by the Department.

14-006.05 Each community water system must make its reports available to the public upon request.

14-006.06 Each community water system serving 100,000 or more individuals must post its current year's report to a publicly-accessible site on the internet.

14-006.07 The Governor or his/her designee can waive the requirement of 179 NAC 14-006.01 for community water systems serving fewer than 10,000 individuals.

14-006.07A Those systems receiving waivers must:

1. Publish the reports in one or more local newspapers serving the area in which the system is located;
2. 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 Department, and
3. Make the reports available to the public upon request.

14-006.07B Systems Serving 500 or Fewer Individuals may forego the requirements of 179 NAC 14-006.07A, items 1 and 2 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.

14-007 RETENTION: Any system subject to this chapter must retain copies of its consumer confidence report for no less than three years.

APPENDIX A to 179 NAC 14

	Tradition- al MCL in mg/L	To convert for CCR, multiply	MCL in CCR		Major sources	
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Contaminants (units)		by	units	MCLG	in drinking water	
Microbiological contaminants: Total Coliform Bacteria*.	MCL: (systems that collect ≥40 samples/ month) 5% of monthly samples are positive; (systems that collect <40 samples/ month) 1 positive monthly sample	MCL: (systems that collect ≥40 samples/ month) 5% of monthly samples are positive; (Systems that collect <40 samples/ month) 1 positive monthly sample	0	Naturally present in the environment.	Colifo bacte are n prese envir and a as an that c poten harm bacte be pr Colifo found samp allow this w warn poten probl
Total Coliform Bacteria**	TT		TT	N/A	Naturally present in the environment	Colifo bacte are n prese the envir and a as an indica other poten harm water patho may h prese that a poten pathv

exists which contain may be the drinking water distribution system found coliforms indicate need for problem the water treatment distribution. When occur are related to compliance assessments to identify problem to compliance problem were during assessments

Contaminants (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water
Fecal coliform and <i>E. coli</i> *	0 .....	.....	0	0	Human and animal fecal waste.

Fecal coliform *E. coli* bacteria whose presence indicate the water may be contaminated with human or animal wastes. Microbes these can cause short-term

						<p>effects as diarrhea, cramps, nausea, headache, and other symptoms. They may pose a special health concern for infants and young children, and some of the elderly and people with severely compromised immune systems.</p>
<i>E. coli</i> **	<p>Routine and repeat samples are total coliform-positive and either is <i>E. coli</i>-positive or system fails to take repeat samples following <i>E. coli</i>-positive routine sample or system fails to analyze total coliform-</p>		<p>Routine and repeat samples are total coliform-positive and either is <i>E. coli</i>-positive or system fails to take repeat samples following <i>E. coli</i>-positive routine sample or system fails to analyze total</p>	0	<p>Human and animal fecal waste.</p>	<p><i>E. coli</i> bacteria whose presence in the waste may be contaminated with human or animal wastes. Human pathogens, these viruses can cause short-term effects as diarrhea, cramps, nausea, headache, and other symptoms. They may pose a health concern for infants and children, elderly people, and severely compromised immune systems.</p>

Contaminants (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
Fecal Indicators (enterococci or coliphage)	TT	.....	TT	N/A	Human and animal fecal waste.	Fecal indicators are microorganisms whose presence indicates that the water may be contaminated with human or animal waste. Microbes in these wastes can cause short-term health effects such as diarrhea, cramps, nausea, headaches and other symptoms. They may also pose a special health risk to infants, young children, and the elderly and people who are severely immunocompromised.
Total organic carbon (ppm)	TT .....	.....	TT	N/A	Naturally present in the environment.	Total organic carbon (TOC) has no health effects. However, TOC provides a medium for the formation of disinfection byproducts.

						<p>disinfection byproducts. These byproducts include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, such as liver or kidney problems, nervous system effects, and may lead to an increased risk of getting cancer.</p>
<p>Turbidity (NTU)</p>	<p>TT</p>	<p>.....</p>	<p>TT</p>	<p>N/A</p>	<p>Soil runoff</p>	<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 bacteria, viruses, and parasites that can cause symptoms such as nausea,</p>

cramps,
diarrhea a
associated
headaches

Contaminants (units)	Tradition- al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water
Radioactive contaminants: Beta/photon emitters (mrem/yr)	4 mrem/yr .	.....	4	0	Decay of natural and man- made deposits.
Alpha emitters (pCi/L)	15 pCi/L ....	.....	15	0	Erosion of natural deposits.

Combined radium (pCi/L)	5 pCi/L .....	.....	5	0	Erosion of natural deposits.
Uranium (µg/L)	30 µg/L.....	.....	30.....	0.....	Erosion of natural deposits.
Inorganic contaminants: Antimony (ppb) .....	.006..... .	1000	6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics, solder.
Arsenic (ppb) .....	.05 through	1000	50 through	N/A through	Erosion of natural

	01/22/06		01/22/06	01/22/06	deposits; Runoff from orchards; Runoff from glass and electronics production wastes.
	0.010		10	0	
	Effective 01/23/06.....		Effective 01/23/06.....	Effective 01/23/06...	

Contaminants (units)	Tradition- al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health Effects
Asbestos (MFL)	7 MFL .....	.....	7	7	Decay of asbestos cement water mains; Erosion of natural deposits.	Some who d water contai asbes exces MCL o many may h increa of develo benig intest polyps
Barium (ppm)	2 .....	.....	2	2	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.	Some who d water contai barium exces MCL o many years exper increa their l pressu
Beryllium (ppb) .....	.004	1000	4	4	Discharge	Some

					from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries.	who d water contain beryll well in excess the M over n years develo intest lesion
Bromate (ppb)	0.010.....	1000	10	0	Byproduct of drinking water disinfection	Some who water contain broma excess the M over n years have increa risk o gettin
Cadmium (ppb) .....	.005	1000	5 .....	.5	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Runoff from waste batteries and paints.	Some who d water contain cadmi excess MCL o many could exper kidney dama
Chloramines (ppm)	MRDL = 4	.....	MRDL = 4	MRDLG = 4	Water additive used to control microbes.	Some who u water contain chlora well in excess MRDL exper irritat effect

Contaminants (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects
Chlorine (ppm)	MRDL = 4	.....	MRDL = 4	MRDLG = 4	Water additive used to control microbes.	Some people who use water containing chlorine in excess of the MRDL could experience irritative effects on their eyes and nose. Some people who drink water containing chlorine in excess of the MRDL could experience stomach discomfort.
Chlorine dioxide (ppm) ..	MRDL = .8	1000	MRDL = 800	MRDLG = 800	Water additive used to control microbes.	Some infants and young children who drink water containing chlorine dioxide

						<p>excess MRDL experi nervou system effects Simila effects occur fetuse pregna wome drink contai chlorin dioxid excess MCL. people experi</p> <p>anemi</p>
Chlorite (ppm)	1 .....	.....	1	0.8	Byproduct of drinking water disinfection.	<p>Some and yo childre drink contai chlorit excess MCL o experi nervou system effects Simila effects occur fetuse pregna wome drink contai chlorit excess MCL. people experi</p> <p>anemi</p>
Chromium (ppb) .....	.1	1000	100	100	Discharge from steel and pulp	<p>Some who u contai</p>

Contaminants (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects
Copper (ppm)	AL = 1.3 ...	.....	AL = 1.3 ...	1.3	Corrosion of household plumbing systems; Erosion of natural deposits.	Copper is an essential nutrient for some people who drink water containing copper in excess of action level over a relatively small amount could experience gastrointestinal distress. People who drink water containing copper in excess of action level over many years could suffer liver and kidney damage. People with Wilson's Disease should consult their physician.
Cyanide (ppb) .....	.2	1000	200	200	Discharge from steel/metal factories; Discharge from plastic	Some people who drink water containing cyanide in excess of

					and fertilizer factories.	MCL over many years could experience nerve damage or problems with the thyroid.
Fluoride (ppm)	4 .....	.....	4	4	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories.	Some people who drink water containing fluoride in excess of MCL over many years could get disease, including and tend of the b Fluoride drinking at half t MCL or may cau mottling children teeth, u in childr than nin years ol Mottling known a dental fluorosis include staining and/or p of the te and occ only in develop teeth be they eru from the gum
Lead (ppb)	AL = .015	1000	AL = 15	0	Corrosion of household plumbing systems; Erosion of	Infants children drink w containi in exces action l

					natural deposits.	could experience delays in physical and mental development. Children show slight deficits in attention and learning abilities. Adults who drink the water over many years could develop kidney problems, high blood pressure.
Contaminants (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects
Mercury (inorganic) (ppb)	.002	1000	2	2	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland.	Some people who drink water containing inorganic mercury in excess of the MCL over many years could experience kidney damage.
Nitrate (ppm)	10 .....	.....	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural	Infants below the age of 6 months who drink water containing nitrate in excess of the MCL could become

					deposits.	serious and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
Nitrite (ppm)	1.....	.....	1	1	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.	Infants below the age of 6 months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
Selenium (ppb) .....	.05	1000	50	50	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines.	Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers and toes, or problems with the circulatory system.

Thallium (ppb)002	1000	2	0.5	Leaching from ore-processing sites; Discharge from electronics, glass, and drug factories.	Some people who drink water containing excess thallium could experience hair loss, changes in their behavior, or problems with the kidneys, intestines, and liver.
Contaminants (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	
Synthetic organic contaminants including pesticides and herbicides: 2,4-D (ppb) .....	.07	1000	70	70	Runoff from herbicide used on row crops.
2,4,5-TP [Silvex] (ppb)	.05	1000	50	50	Residue of banned herbicide.	
Acrylamide	TT .....	.....	TT	0	Added to water during sewage/wastewater treatment.

Alachlor (ppb) .....	.002	1000	2 .....	.0	Runoff from herbicide used on row crops.
Atrazine (ppb) .....	.003	1000	3 .....	.3	Runoff from herbicide used on row crops.
Benzo(a)pyrene [PAH] (nanograms/L)	.0002	1,000,000	200 .....	.0	Leaching from linings of water storage tanks and distribution lines.

Carbofuran (ppb) .....	.04	1000	40	40	Leaching of soil fumigant used on rice and alfalfa.
Contaminants (units)	Tradition- al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major source in drinking water
Chlordane (ppb) .....	.002	1000	2	0	Residue of banned termiticide.
Dalapon (ppb) .....	.2	1000	200	200	Runoff from herbicide use on rights of way.

<p>Di(2-ethylhexyl) adipate (ppb)</p>	<p>.4</p>	<p>1000</p>	<p>.400.....</p>	<p>400</p>	<p>Discharge from chemical factories.</p>
<p>Di(2-ethylhexyl) phthalate (ppb)</p>	<p>.006</p>	<p>1000</p>	<p>.6</p>	<p>0</p>	<p>Discharge from rubber and chemical factories.</p>
<p>Dibromochloropropane (ppt)</p>	<p>.0002</p>	<p>1,000,000</p>	<p>.200</p>	<p>0</p>	<p>Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards.</p>

Dinoseb (ppb) .....	.007	1000 .....	.7	7	Runoff from herbicide use on soybeans and vegetables.
Diquat (ppb) .....	.02	1000 .....	.20	20	Runoff from herbicide use.

Contaminants (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water
Dioxin [2,3,7,8-TCDD] (ppq)	.00000003	1,000,000,000	30	0	Emissions from waste incineration and other combustion; Discharge from chemical factories.
Endothall (ppb) .....	.1	1000	100	100	Runoff from herbicide use.

Endrin (ppb) .....	.002	1000	2 .....	.2	Residue of banned insecticide.
Epichlorohydrin	.TT.....	.....	TT	0	Discharge from industrial chemical factories; An impurity of some water treatment chemicals
Ethylene dibromide (ppt)	.00005	1,000,000	50	0	Discharge from petroleum refineries.
Glyphosate (ppb) .....	.7	1000	700	700	Runoff from herbicide use.

Heptachlor (ppt) .....	.0004	1,000,000	400 .....	.0	Residue of banned pesticide.	
Contaminants (units)	Tradition- al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major source in drinking water	
Heptachlor epoxide (ppt)	.0002	1,000,000 .....	.200 .....	.0	Breakdown of heptachlor.	
Hexachlorobenzene (ppb)	.001	1000 .....	.1 .....	.0	Discharge from metal refineries and agricultural chemical factories.	
Hexachlorocyclopentadiene (ppb)	.05	1000 .....	.50 .....	.50	Discharge from chemical factories.	

Lindane (ppt) .....	.0002	1,000,000 ..	200	200	Runoff/leach from insecticide used on cattl lumber, gardens.
Methoxychlor (ppb) .....	.04	1000	40	40	Runoff/leach from insecticide used on fruits, vegetables, alfalfa, livestock.
Oxamyl [Vydate] (ppb) ..	.2	1000	200	200	Runoff/leach from insectic used on apples, potat and tomatoe
PCBs [Polychlorinated biphenyls] (ppt)	.0005	1,000,000 ..	500	0	Runoff from landfills; Discharge of waste chemicals.
Contaminants (units)	Tradition- al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water
Pentachlorophenol (ppb)	.001	1000	1	0	Discharge from wood preserving factories.

Picloram (ppb) .....	.5	1000 .....	.500 .....	.500	Herbicide runoff
Simazine (ppb) .....	.004	1000 .....	.4 .....	.4	Herbicide runoff
Toxaphene (ppb) .....	.003	1000 .....	.3 .....	.0	Runoff/leaching from insecticide used on cotton and cattle.
Volatile organic contaminants: Benzene (ppb) .....	.005	1000 .....	.5 .....	.0	Discharge from factories; Leaching from gas storage tanks and landfills.
Carbon tetrachloride (ppb)	.005	1000 .....	.5 .....	.0	Discharge from chemical plants and

					other industrial activities.	
Chlorobenzene (ppb) ....	.1	1000	100	100	Discharge from chemical and agricultural chemical factories.	
Contaminants (units)	Tradition- al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	
o-Dichlorobenzene (ppb)	.6	1000	600	600	Discharge from industrial chemical factories.	
p-Dichlorobenzene (ppb)	.075	100 .....	.75 .....	.75	Discharge from industrial chemical factories.	

1,2-Dichloroethane (ppb)	.005	1000 .....	.5.....	.0	Discharge from industrial chemical factories.	sp ch bl So w w co di in M ye ar ri ca
1,1-Dichloroethylene (ppb)	.007	1000 .....	.7.....	.7	Discharge from industrial chemical factories.	So w w co di in M ye ex pr th
cis-1,2-Dichloroethylene (ppb)	.07	1000 .....	.70 .....	.70	Discharge from industrial chemical factories.	So w w co 1, di in M ye ex pr th
trans-1,2-Dichloroethylene (ppb)	.1	1000 .....	.100 .....	.100	Discharge from industrial chemical factories.	So w w co 1, di w th m co ex pr w
Dichloromethane (ppb)..	.005	1000 .....	.5.....	.0	Discharge from pharmaceutical and chemical factories.	So w w co di in M ye liv ar

Contaminants (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water
1,2-Dichloropropane (ppb)	.005	1000	.5	.0	Discharge from industrial chemical factories.
Ethylbenzene (ppb)	.7	1000	.700	.700	Discharge from petroleum refineries.
Haloacetic Acids (HAA) (ppb)	.060	1000	.60	N/A	Byproduct of drinking water disinfection.
Styrene (ppb)	.1	1000	.100	.100	Discharge from rubber and plastic factories; Leaching from landfills.
Tetrachloroethylene	.005	1000	.5	.0	Discharge from

(ppb)					factories and dry cleaners.
1,2,4-Trichlorobenzene (ppb)	.07	1000 .....	.70.....	.70	Discharge from textile-finishing factories.
1,1,1-Trichloroethane (ppb)	.2	1000 .....	.200	200	Discharge from metal degreasing sites and other factories.
1,1,2-Trichloroethane (ppb)	.005	1000 .....	.5.....	.3	Discharge from industrial chemical factories.
Trichloroethylene (ppb) ..	.005	1000 .....	.5.....	.0	Discharge from metal degreasing sites and other factories.

Contaminants (units)	Tradition- al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major source in drinking water
TTHMs [Total trihalomethanes] (ppb)	0.10/.080 ..	1000	100/80	N/A	Byproduct of drinking water disinfection.
Toluene (ppm)	1 .....	.....	1	1	Discharge from petroleum factories.
Vinyl Chloride (ppb) .....	.002	1000	2	0	Leaching from PVC piping; Discharge from plastics factories.
Xylenes (ppm)	10	10	10	Discharge from petroleum

						factories; Discharge from chemical factories.
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* Through March 31, 2016.

** Beginning April 1, 2016.

Key:

AL = Action Level

MCL = Maximum Contaminant Level

MCLG = Maximum Contaminant Level Goal

MFL = million fibers per liter

MRDL = Maximum Residual Disinfectant Level

MRDLG = Maximum Residual Disinfectant Level Goal

mrem/year = millirems per year (a measure of radiation absorbed by the body)

N/A = Not Applicable

NTU = Nephelometric Turbidity Units (a measure of water clarity)

pCi/L = picocuries per liter (a measure of 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

TITLE 179 PUBLIC WATER SYSTEMS

CHAPTER 16 DISINFECTANTS AND DISINFECTION BYPRODUCTS

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TITLE 179 PUBLIC WATER SUPPLY SYSTEMS

CHAPTER 16 DISINFECTANTS AND DISINFECTION BYPRODUCTS

16-001 SCOPE AND AUTHORITY: This chapter applies to all community and non-transient, non-community water systems that add a chemical disinfectant to the water in any part of the drinking water treatment process, except for those systems that meet the time limitations for maintenance chlorination as defined in Attachment 1 which is hereby incorporated into these regulations. It also applies to transient non-community water systems that use chlorine dioxide as a disinfectant or oxidant. The authority is found in Neb. Rev. Stat. §§71-5301 to 71-5313.

16-001.01 Compliance Dates

1. Community Water Systems (CWSs) and Non-Transient Non-Community Water Systems (NTNCWSs): Unless otherwise noted, systems must comply with the requirements of this chapter as follows. Public water systems using surface water or ground water under the direct influence of surface water serving 10,000 or more individuals must comply with this chapter beginning January 1, 2002. Public water systems using surface water or ground water under the direct influence of surface water serving fewer than 10,000 individuals and systems using only ground water not under the direct influence of surface water must comply with this chapter beginning January 1, 2004.
2. Transient Non-Community Water Systems (NCWSs): Public water systems using surface water or ground water under the direct influence of surface water serving 10,000 or more individuals and using chlorine dioxide as a disinfectant or oxidant must comply with any requirements for chlorine dioxide in this chapter beginning January 1, 2002. Public water systems using surface water or ground water under the direct influence of surface water serving fewer than 10,000 individuals and using chlorine dioxide as a disinfectant or oxidant and systems using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with any requirements for chlorine dioxide in this chapter beginning January 1, 2004.

16-002 DEFINITIONS

Code of Federal Regulations (CFR) means the Code of Federal Regulations as it existed on the effective date of these regulations, and any CFR citations mentioned in these regulations are hereby incorporated by reference. Copies of the CFR as it existed on the effective date of these regulations can be obtained on the DHHS website at http://dhhs.ne.gov/publichealth/Pages/enh_pwsindex.aspx or by requesting via email a copy from the Department at DHHS.drinkingwater@nebraska.gov or by calling 402-471-2541.

Enhanced coagulation means the addition of sufficient coagulant for improved removal of disinfection byproduct precursors by conventional filtration treatment.

Enhanced softening means the improved removal of disinfection byproduct precursors by precipitative softening.

GAC10 means granular activated carbon filter beds with an empty-bed contact time of 10 minutes based on average daily flow and a carbon reactivation frequency of every 180 days, except that the reactivation frequency for GAC10 used as a best available technology for compliance with Title 179 NAC 24 MCLs under 179 NAC 2-002.04E2a(1) is 120 days.

Haloacetic acids (five) (HAA5) means 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.

Maximum residual disinfectant level (MRDL) means a level of a disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects. For chlorine and chloramines, a public water system (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 179 NAC 2-002.04F1, operators may increase residual disinfectant levels of chlorine or chloramines (but not chlorine dioxide) in the distribution system to a level and for a time necessary to protect public health to address specific microbiological contamination problems caused by circumstances such as distribution line breaks, storm runoff events, source water contamination, or cross-connections.

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

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

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

16-003 GENERAL REQUIREMENTS

16-003.01 The regulations in 179 NAC 16 establish criteria under which community water systems (CWSs) and non-transient, non-community water systems (NTNCWSs) which add a chemical disinfectant to the water in any part of the drinking water treatment process must modify their practices to meet maximum contaminant levels (MCLs) and MRDLs in 179 NAC 2-002.04E and 2-002.04F, and must meet the treatment technique requirements for disinfection byproduct precursors in 179 NAC 16-008.

16-003.02 The regulations in 179 NAC 16 establish criteria under which transient NCWSs that use chlorine dioxide as a disinfectant or oxidant must modify their practices to meet the MRDL for chlorine dioxide in 179 NAC 2-002.04F1.

16-003.03 The Department has established MCLs for Total Trihalomethanes (TTHMs) 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.

16-003.04 Each CWS and NTNCWS must be operated by a licensed water operator who meets the requirements specified by the Department for the level of licensure required in 179 NAC 10 and is included in a Department list of licensed operators.

16-003.05 Control of Disinfectant Residuals: Notwithstanding the MRDLs in 179 NAC 2-002.04F, 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.

16-004 ANALYTICAL REQUIREMENTS

16-004.01 General

16-004.01A Systems must use only the analytical method(s) specified in 40 CFR 141.131(a)(1) through (b)(1) or their equivalent as approved by the United States Environmental Protection Agency (EPA) to demonstrate compliance with the requirements of 179 NAC 16, 179 NAC 23 and 179 NAC 24..

16-004.02B Analysis under 179 NAC 16 for disinfection byproducts must be conducted by the Department Public Health Environmental Laboratory (certified by EPA) or a laboratory that has entered into an agreement with the Department Laboratory except as specified under 179 NAC 20. To receive certification to

conduct analyses for the DBP contaminants in 179 NAC 2-002.04E, 179 NAC 16-008, 179 NAC 23 and 179 NAC 24 the laboratory must:

1. Analyze performance evaluation (PE) samples that are acceptable to the Department at least once during each consecutive 12 month period by each method for which the laboratory desires certification.
2. The laboratory must achieve quantitative results on the PE sample analyses that are within the following acceptance limits:

<u>Disinfection Byproduct</u>	<u>Acceptance limits (percent of true value)</u>	<u>Comments</u>
TTHM Chloroform	<u>+20</u>	Laboratory must meet all 4 individual THM acceptance limits in order to successfully pass a PE sample for TTHMs
Bromodichloromethane	<u>+20</u>	
Dibromochloromethane	<u>+20</u>	
Bromoform	<u>+20</u>	
HAA5 Monochloroacetic Acid	<u>+40</u>	Laboratory must meet the acceptance limits for 4 out of 5 of the HAA5 compounds in order to successfully pass a PE sample for HAA5
Dichloroacetic Acid	<u>+40</u>	
Trichloroacetic Acid	<u>+40</u>	
Monobromoacetic Acid	<u>+40</u>	
Dibromoacetic Acid	<u>+40</u>	
Chlorite	<u>+30</u>	
Bromate	<u>+30</u>	

3. Report quantitative data for concentrations at least as low as the ones listed in the following table for all DBP samples analyzed for compliance with 179 NAC 2-002.04E, 179 NAC 16-008, and 179 NAC 23 and 179 NAC 24.

<u>Disinfection Byproduct</u>	<u>Minimum reporting level (mg/L) ¹</u>	<u>Comments</u>
TTHM ² Chloroform	0.0010	
Bromodichloromethane	0.0010	
Dibromochloromethane	0.0010	
Bromoform	0.0010	
HAA5 ² Monochloroacetic Acid	0.0020	
Dichloroacetic Acid	0.0010	
Trichloroacetic Acid	0.0010	
Monobromoacetic Acid	0.0010	
Dibromoacetic Acid	0.0010	
Chlorite	0.020	Applicable to monitoring as prescribed in 179 NAC 16-005.02 items 2.a(2) and 2.b.

Bromate	0.0050 or 0.0010	Laboratories that use EPA Methods 317.0 Revision 2.0, 326.0 or 321.8 must meet a 0.0010 mg/L MRL for bromate.
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¹ The calibration curve must encompass the regulatory minimum reporting level (MRL) concentration. Data may be reported for concentrations lower than the regulatory MRL as long as the precision and accuracy criteria are met by analyzing an MRL check standard at the lowest reporting limit chosen by the laboratory. The laboratory must verify the accuracy of the calibration curve at the MRL concentration by analyzing an MRL check standard with a concentration less than or equal to 110% of the MRL with each batch of samples. The measured concentration for the MRL check standard must be $\pm 50\%$ of the expected value, if any field sample in the batch has a concentration less than 5 times the regulatory MRL. Method requirements to analyze higher concentration check standards and meet tighter acceptance criteria for them must be met in addition to the MRL check standard requirement.

² When adding the individual trihalomethane or haloacetic acid concentrations to calculate the TTHM or HAA5 concentrations, respectively, a zero is used for any analytical result that is less than the MRL concentration for that DBP, unless otherwise specified by the Department.

16-004.02C A Grade I, II, III, or IV licensed water operator or a person who has been trained to take the samples must measure daily chlorite samples at the entrance to the distribution system. If a licensed operator does not take the sample, Attachment 3, which is incorporated herein by reference must be completed and sent to the Department.

16-004.03 Disinfectant Residuals

16-004.03A Systems must measure residual disinfectant concentrations for free chlorine, combined chlorine (chloramines), and chlorine dioxide by the methods listed in 40 CFR 141.131(c) or an equivalent method approved by EPA:

16-004.03B If approved by the Department, systems may also measure residual disinfectant concentrations for chlorine, chloramines, and chlorine dioxide by using DPD colorimetric test kits.

16-004.03C A Nebraska licensed Grade I, II, III, or IV operator or a person who has been trained to take the samples must measure residual disinfectant concentration. If the sample is not taken by a licensed operator, Attachment 3 to 179 NAC 16 must be completed and sent to the Department.

16-004.04 Additional Analytical Methods: Systems required to analyze parameters not included in 179 NAC 16-004.02 and 16-004.03 must use the following methods or an equivalent method approved by EPA. The Department Laboratory (certified by EPA) or a laboratory that has entered into an agreement with the Department Laboratory must analyze for the following parameters, except that pH may be analyzed by the Department Laboratory, or a laboratory that has entered into an agreement with the Department Laboratory, or on-site by a Nebraska licensed Grade I, II, III, or IV operator or a person who has been trained on how to take the samples. If the sample is not taken by a licensed operator, Attachment 3 must be completed and sent to the Department.

1. Alkalinity: All methods allowed in 179 NAC 3-005.11A for measuring alkalinity.
2. Bromide: Methods found in 40 CFR 141.131(d) (2).

3. Total Organic Carbon (TOC): Methods found in 40 CFR 141.131(d)(3). Inorganic carbon must be removed from the samples prior to analysis. TOC samples may not be filtered prior to analysis. TOC samples must be acidified at the time of sample collection to achieve pH less than or equal to 2 with minimal addition of the acid specified in the method or by the instrument manufacturer. Acidified TOC samples must be analyzed within 28 days.
4. Specific Ultraviolet Absorbance (SUVA): SUVA is equal to the UV absorption at 254 nm (UV_{254}) (measured in m^{-1} divided by the dissolved organic carbon (DOC) concentration (measured as mg/L). In order to determine SUVA, it is necessary to separately measure UV_{254} and DOC. When determining SUVA, systems must use the methods stipulated in 179 NAC 16-004.04 item 4.a. to measure DOC and the method stipulated in 179 NAC 16-004.04 item 4.b. to measure UV_{254} . SUVA must be determined on water prior to the addition of disinfectants/oxidants by the system. DOC and UV_{254} samples used to determine a SUVA value must be taken at the same time and at the same location. SUVA may be calculated using DOC and UV_{254} data as found in EPA Method 415.3 Rev. 1.2, "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water," August 2009. EPA/600/R-09/122. Available at <http://www.epa.gov/nerlcwww/ordmeth.htm>.
- a. Dissolved Organic Carbon (DOC): Methods in CFR 141.131(d)(4)(i). DOC samples must be filtered through a 0.45 μm pore-diameter filter as soon as practical after sampling, not to exceed 48 hours. After filtration, DOC samples must be acidified to achieve pH less than or equal to 2-with minimal addition of the acid specified in the method or by the instrument manufacturer. Acidified DOC samples must be analyzed within 28 days of sample collection. Inorganic carbon must be removed from the samples prior to analysis. Water passed through the filter prior to filtration of the sample must serve as the filtered blank. This filtered blank must be analyzed using procedures identical to those used for analysis of the samples and must meet the following criteria: $DOC < 0.5$ mg/L.
- b. Ultraviolet Absorption at 254 nm (UV_{254}): Methods in CFR 141.131(d)(4)(ii). UV absorption must be measured at 253.7 nm (may be rounded off to 254 nm). Prior to analysis, UV_{254} samples must be filtered through a 0.45 μm pore-diameter filter. The pH of UV_{254} samples may not be adjusted. Samples must be analyzed as soon as practical after sampling, not to exceed 48 hours.
5. pH: All methods allowed in 179 NAC 3-005.11A for measuring pH.
6. Magnesium. All methods allowed in 179 NAC 3-005.11A for measuring magnesium.

16-005 MONITORING REQUIREMENTS

16-005.01 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 Department approval.
3. Failure to monitor in accordance with the monitoring plan required under 179 NAC 16-005.06 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 179 NAC 16 to qualify for reduced monitoring.

16-005.02 Monitoring Requirements for Disinfection Byproducts

1. Total Trihalomethanes (THMs) and HAA5
 - a. Routine Monitoring: Systems must monitor at the frequency indicated in the following table:

ROUTINE MONITORING FREQUENCY FOR TTHM AND HAA5

Type of System	Minimum Monitoring Frequency	Sample Location in the Distribution System
Public water system using surface water or ground water under the direct influence of surface water serving at least 10,000 individuals	Four water samples per quarter per treatment plant	At least 25% 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 individuals served, different sources of water, and different treatment methods ¹
Public water system using surface water or ground water under the direct influence of surface water serving from 500 to 9,999 individuals	One water sample per quarter per treatment plant	Locations representing maximum residence time ¹

Public water system using surface water or ground water under the direct influence of surface water serving fewer than 500 individuals	One sample per year per treatment plant during month of warmest water temperature	Locations representing maximum residence time. ¹ If the sample (or average of annual samples, if more than one sample is taken) exceeds the MCL, the system must increase monitoring to one sample per treatment plant per quarter, taken at a point reflecting the maximum residence time in the distribution system, until the system meets criteria in 179 NAC 16-005.02 item 1.d.
System using only ground water not under direct influence of surface water using chemical disinfectant and serving at least 10,000 individuals	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 individuals	One sample per year per treatment plant ² during month of warmest water temperature	Locations representing maximum residence time. ¹ If the sample (or average of annual samples, if more than one sample is taken) exceeds the MCL, the system must increase monitoring to one sample per treatment plant per quarter, taken at a point reflecting the maximum residence time in the distribution system, until the system meets criteria in 179 NAC 16-005.02 item 1.d.

¹ If a system elects to sample more frequently than the minimum required, at least 25% 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 Department approval.

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

REDUCED MONITORING FREQUENCY FOR TTHM AND HAA5

If You Are a . . .	You May Reduce Monitoring If You Have Monitored At Least One Year and Your . . .	To This Level
Public water system using surface water or ground water under the direct influence of surface water serving at least 10,000 individuals which has a source water annual average TOC level, before any treatment, < 4.0 mg/L	TTHM annual average \leq 0.040 mg/L and HAA5 annual average \leq 0.030 mg/L	One sample per treatment plant per quarter at distribution system location reflecting maximum residence time

<p>Public water system using surface water or ground water under the direct influence of surface water serving from 500 to 9,999 individuals which has a source water annual average TOC level, before any treatment, ≤ 4.0 mg/L</p>	<p>TTHM annual average ≤ 0.040 mg/L and HAA5 annual average ≤ 0.030 mg/L</p>	<p>One sample per treatment plant per year at distribution system location reflecting maximum residence time during month of warmest water temperature. NOTE: Any public water system using surface water or ground water under the direct influence of surface water serving fewer than 500 individuals may not reduce its monitoring to less than one sample per treatment plant per year</p>
<p>System using only ground water not under direct influence of surface water using chemical disinfectant and serving at least 10,000 individuals</p>	<p>TTHM annual average ≤ 0.040 mg/L and HAA5 annual average ≤ 0.030 mg/L</p>	<p>One sample per treatment plant per year at distribution system location reflecting maximum residence time during month of warmest water temperature</p>
<p>System using only ground water not under direct influence of surface water using chemical disinfectant and serving fewer than 10,000 individuals</p>	<p>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</p>	<p>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</p>

- c. Monitoring Requirements for Source Water TOC: In order to qualify for reduced monitoring for TTHMs and HAA5s under 179 NAC 16-005.02 item 1.b., systems using surface water and ground water under the direct influence of surface water not monitoring under 179 NAC 16-005.04 must take monthly TOC samples every 30 days at a location prior to any treatment. In addition to meeting other criteria for reduced monitoring in 179 NAC 16-005.02 item 1.b., the source water TOC running annual average must be ≤ 4.0 mg/L (based on the most recent four quarters of monitoring) on a continuing basis at each treatment plant to reduce or remain on reduced monitoring for TTHMs and HAA5s. Once qualified for reduced monitoring for TTHMs and HAA5s under 179 NAC 16-005.02 item 1.b., 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 0.060 mg/L and 0.045 mg/L for TTHMs and HAA5, respectively. Systems that do not meet these levels must resume monitoring at the frequency identified in 179 NAC 16-005.02 item 1.a. (minimum monitoring frequency column) in the quarter immediately following the monitoring period in which the system exceeds 0.060 mg/L or 0.045 mg/L for TTHMs and HAA5, respectively. For systems using only ground water not under the direct influence of surface water and serving fewer than 10,000 individuals, 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 179 NAC 16-005.02 item 1.a. (sample location column) in the quarter immediately following the monitoring period in which the system exceeds 0.080 mg/L or 0.060 mg/L for TTHMs or HAA5, respectively.
 - 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 Department may return a system to routine monitoring at the Department's discretion.
2. Chlorite: Community and non-transient non-community water systems using chlorine dioxide, for disinfection or oxidation, must conduct monitoring for chlorite.
- a. Routine Monitoring
 - (1) 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 179 NAC 16-005.02 item 2.b., in addition to the sample required at the entrance to the distribution system.
 - (2) 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 179 NAC 16-005.02 item 2.b. to meet the requirement for monitoring in this paragraph.

- 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
 - (1) Chlorite monitoring at the entrance to the distribution system required by 179 NAC 16-005.02 item 2.a.(1) may not be reduced.
 - (2) Chlorite monitoring in the distribution system required by 179 NAC 16-005.02 item 2.a.(2) 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 179 NAC 16-005.02 item 2.a.(2) has exceeded the chlorite MCL and the system has not been required to conduct monitoring under 179 NAC 16-005.02 item 2.b. 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 179 NAC 16-005.02 item 2.a.(2) exceeds the chlorite MCL or the system is required to conduct monitoring under 179 NAC 16-005.02 item 2.b., at which time the system must revert to routine monitoring.
3. Bromate
- a. Routine Monitoring: Community and non-transient non-community 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:
 - (1) A system required to analyze for bromate may reduce monitoring from monthly to quarterly, if the system's running annual average bromate concentration is ≤ 0.0025 mg/L based on monthly bromate measurements under 179 NAC 16-005.02 item 3.a. for the most recent four quarters, with samples analyzed using Method 317.0 Revision 2.0, 326.0 321.8, 301.0 or 557. If a system has qualified for reduced bromate monitoring under 179 NAC 16-005.02 item 3.b.(1), that system may remain on reduced monitoring as long as the running annual average of quarterly bromate samples ≤ 0.0025 mg/L based on samples analyzed using Method 317.0 Revision 2.0, 326.0, 321.8, 301.0 or 557. If the running annual average bromate concentration is > 0.0025 mg/L,

the system must resume routine monitoring required by 179 NAC 16-005.02 item 3.a.

16-005.03 Monitoring Requirements for Disinfectant Residuals

1. Chlorine and Chloramines

- a. Routine Monitoring: Through March 31, 2016, community and non-transient non-community water systems that use chlorine or chloramines must measure the residual disinfectant level in the distribution system at the same point in the distribution system and at the same time as total coliforms (routine, repeat, and additional, but not specials) are sampled, as specified in 179 NAC 3-004. Beginning April 1, 2016, community and non-transient non-community water systems that use chlorine or chloramines must measure the residual disinfectant level in the distribution system at the same point in the distribution system and at the same time as total coliforms are sampled, as specified in 179 NAC 26-006 through 26-009. Public water systems using surface water or ground water under the direct influence of surface water may use the results of residual disinfectant concentration sampling conducted under 179 NAC 13-007.02F1 for unfiltered systems or 179 NAC 13-007.03C for systems which filter, in lieu of taking separate samples.
- b. Reduced Monitoring: Monitoring may not be reduced.

2. Chlorine Dioxide

- a. Routine Monitoring: Community, non-transient non-community, and transient non-community water systems that use chlorine dioxide for disinfection or oxidation must take daily samples at the entrance to the distribution system. For any daily sample that exceeds the MRDL, the system must take samples in the distribution system the following day at the locations required by 179 NAC 16-005.03 item 2.b. 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 chlorine dioxide distribution system samples. If chlorine dioxide or chloramines are used to maintain a disinfectant residual in the distribution system, or if chlorine is used to maintain a disinfectant residual in the distribution system and there are no disinfection addition points after the entrance to the distribution system (i.e., no booster chlorination), the system must take three samples as close to the first customer as possible, at intervals of at least six hours. If chlorine is used to maintain a disinfectant residual in the distribution system and there are one or more disinfection addition points after the entrance to the distribution system (i.e., booster chlorination), the system must take one sample at each of the following locations: as close to the first customer as possible, in a location representative of average residence

time, and as close to the end of the distribution system as possible (reflecting maximum residence time in the distribution system).

- c. Reduced Monitoring: Chlorine dioxide monitoring may not be reduced.

16-005.04 Monitoring Requirements for Disinfection Byproduct Precursors (DBPP)

1. Routine Monitoring: Public water systems using surface water or ground water under the direct influence of surface water which use conventional filtration treatment as defined in 179 NAC 13-002 must monitor each treatment plant for TOC no later than the point of combined filter effluent turbidity monitoring and representative of the treated water. All systems required to monitor under this paragraph 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: Public water systems using surface water or ground water under the direct influence of surface water 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.

16-005.05 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.

16-005.06 Monitoring Plans: Each system required to monitor under 179 NAC 16 must develop and implement a monitoring plan. The system must maintain the plan and make it available for inspection by the Department and the general public no later than 30 days following the applicable compliance dates specified in 179 NAC 16-001.01. All public water systems using surface water or ground water under the direct influence of surface water serving more than 3300 people must submit a copy of the monitoring plan to the Department no later than the date of the first report required under 179 NAC 16-007. The Department may also require the plan to be submitted by any other system. After review, the Department 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 179 NAC 16.

2. How the system will calculate compliance with MCLs, MRDLs, and treatment techniques.
3. If approved for monitoring as a consecutive system, or if providing water to a consecutive system, under the provisions of 179 NAC 3-010, the sampling plan must reflect the entire distribution system.

16-006 COMPLIANCE REQUIREMENTS

16-006.01 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 TTHMs, 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 179 NAC 16 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 179 NAC 16-005, any individual quarter's average will cause the running annual average of that system to exceed the MCL for total trihalomethanes, haloacetic acids (five), or bromate; or the MRDL for chlorine or chloramines, the system is out of compliance at the end of that quarter.

16-006.02 Disinfection Byproducts

1. TTHMs and HAA5
 - a. For systems monitoring quarterly, compliance with MCLs in 179 NAC 2-002.04E 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 179 NAC 16-005.02 item 1. 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 179 NAC 4, in addition to reporting to the Department pursuant to 179 NAC 16-007. If a PWS fails to complete four consecutive quarters' monitoring, compliance with the MCL for the last four-quarter compliance period must be based on an average of the available data.
 - b. For systems monitoring less frequently than quarterly, systems demonstrate MCL compliance if the average of samples taken that year under the provisions of 179 NAC 16-005.02 item 1 does not exceed the

MCLs in 179 NAC 2-002.04E. If the average of these samples exceeds the MCL, the system must increase monitoring to once per quarter per treatment plant and such system is not in violation of the MCL until it has completed one year of quarterly monitoring, unless the result of fewer than four quarters of monitoring will cause the running annual average to exceed the MCL, in which case the system is in violation at the end of that quarter. Systems required to increase monitoring frequency to quarterly monitoring must calculate compliance by including the sample which triggered the increased monitoring plus the following three quarters of monitoring.

- 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 179 NAC 4, in addition to reporting to the Department pursuant to 179 NAC 16-007.
 - d. If a PWS fails to complete four consecutive quarters of monitoring, compliance with the MCL for the last four-quarter compliance period must be based on an average of the available data.
2. Bromate: Compliance must be based on a running annual arithmetic average, computed quarterly, of monthly samples (or, for months in which the system takes more than one sample, the average of all samples taken during the month) collected by the system as prescribed by 179 NAC 16-005.02 item 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 179 NAC 4, in addition to reporting to the Department pursuant to 179 NAC 16-007. If a PWS fails to complete 12 consecutive months' monitoring, compliance with the MCL for the last four-quarter compliance period must be based on an average of the available data.
 3. Chlorite: Compliance must be based on an arithmetic average of each three sample set taken in the distribution system as prescribed by 179 NAC 16-005.02 item 2.a.(2) and 16-005.02 item 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 179 NAC 4, in addition to reporting to the Department pursuant to 179 NAC 16-007.

16-006.03 Disinfectant Residuals

1. Chlorine and Chloramines
 - a. Compliance (with the MRDL) must be based on a running annual arithmetic average, computed quarterly, of monthly averages of all samples collected by the system under 179 NAC 16-005.03 item 1. If the average covering any consecutive four-quarter period exceeds the MRDL, the system is in violation of the MRDL and must notify the public pursuant to 179 NAC 4, in addition to reporting to the Department pursuant to 179 NAC 16-007.

- b. In cases where systems switch between the use of chlorine and chloramines for residual disinfection during the year, compliance (with the MRDL) must be determined by including together all monitoring results of both chlorine and chloramines in calculating compliance. Reports submitted pursuant to 179 NAC 16-007 must clearly indicate which residual disinfectant was analyzed for each sample.
- c. Compliance with the minimum detectable residual is based on the requirements of Attachment 2 to 179 NAC 16.

2. Chlorine Dioxide

- a. Acute Violations: Compliance must be based on consecutive daily samples collected by the system under 179 NAC 16-005.03 item 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 179 NAC 4 in addition to reporting to the Department pursuant to 179 NAC 16-007. 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 179 NAC 4 in addition to reporting to the Department pursuant to 179 NAC 16-007.
- b. Nonacute Violations: Compliance must be based on consecutive daily samples collected by the system under 179 NAC 16-005.03 item 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 179 NAC 4 in addition to reporting to the Department pursuant to 179 NAC 16-007. 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 179 NAC 4 in addition to reporting to the Department pursuant to 179 NAC 16-007.

16-006.04 Disinfection Byproduct Precursors (DBPP): Compliance must be determined as specified by 179 NAC 16-008.03. 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 179 NAC 16-008.02B 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 179 NAC 16-008.02C 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 179 NAC 16-008.03A item 4 is less than 1.00, the system is in violation of the treatment technique requirements and must notify the public pursuant to 179 NAC 4, in addition to reporting to the Department pursuant to 179 NAC 16-007.

16-007 REPORTING AND RECORDKEEPING REQUIREMENTS

16-007.01 Systems required to sample quarterly or more frequently must report to the Department within 10 days after the end of each monitoring period in which samples were collected. Systems required to sample less frequently than quarterly must report to the Department within 10 days after the end of each monitoring period in which samples were collected.

16-007.02 Disinfection Byproducts: Systems must report the information specified in the following table:

If You Are a . . .	You Must Report . . .¹
System monitoring for TTHMs and HAA5 under the requirements of 179 NAC 16-005.02 on a quarterly or more frequent basis.	(1) The number of samples taken during the last quarter. (2) The location, date, and result of each sample taken during the last quarter. (3) The arithmetic average of all samples taken in the last quarter. (4) The annual arithmetic average of the quarterly arithmetic averages of this section for the last four quarters. (5) Whether, based on 179 NAC 16-006.02 item 1, the MCL was violated.
System monitoring for TTHMs and HAA5 under the requirements of 179 NAC 16-005.02 less frequently than quarterly (but at least annually).	(1) The number of samples taken during the last year. (2) The location, date, and result of each sample taken during the last monitoring period. (3) The arithmetic average of all samples taken over the last year. (4) Whether, based on 179 NAC 16-006.02 item 1, the MCL was violated.
System monitoring for TTHMs and HAA5 under the requirements of 179 NAC 16-005.02 less frequently than annually.	(1) The location, date, and result of each sample taken. (2) Whether, based on 179 NAC 16-006.02 item 1, the MCL was violated.
System monitoring for chlorite under the requirements of 179 NAC 16-005.02.	(1) The number of entry point samples taken each month for the last 3 months. (2) The location, date, and result of each sample (both entry point and distribution system) taken during the last quarter. (3) For each month in the reporting period, the

	<p>arithmetic average of all samples taken in each three sample set taken in the distribution system.</p> <p>(4) Whether, based on 179 NAC 16-006.02 item 3, the MCL was violated, in which month, and how many times it was violated each month.</p>
System monitoring for bromate under the requirements of 179 NAC 16-005.02.	<p>(1) The number of samples taken during the last quarter.</p> <p>(2) The location, date, and result of each sample taken during the last quarter.</p> <p>(3) The arithmetic average of the monthly arithmetic averages of all samples taken in the last year.</p> <p>(4) Whether, based on 179 NAC 16-006.02 item 2, the MCL was violated.</p>

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

16-007.03 Disinfectants: Systems must report the information specified in the following table:

If You Are a . . .	You Must Report . . .¹
System monitoring for chlorine or chloramines under the requirements of 179 NAC 16-005.03.	<p>(1) The number of samples taken during each month of the last quarter.</p> <p>(2) The monthly arithmetic average of all samples taken in each month for the last 12 months.</p> <p>(3) The arithmetic average of all monthly averages for the last 12 months.</p> <p>(4) Whether, based on 179 NAC 16-006.03 item 1, the MRDL was violated.</p>
System monitoring for chlorine dioxide under the requirements of 179 NAC 16-005.03.	<p>(1) The dates, results, and locations of samples taken during the last quarter.</p> <p>(2) Whether, based on 179 NAC 16-006.03 item 2, the MRDL was violated.</p> <p>(3) Whether the MRDL was exceeded in any two consecutive daily samples and whether the resulting violation was acute or nonacute.</p>

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

16-007.04 Disinfection Byproduct Precursors and Enhanced Coagulation or Enhanced Softening: Systems must report the information specified in the following table:

If You Are a . . .	You Must Report . . .¹
System monitoring monthly or quarterly for TOC under the requirements of 179 NAC 16-005.04 and required to meet the enhanced coagulation or enhanced softening requirements in 179 NAC 16-008.02B or 16-008.02C.	<p>(1) The number of paired (source water and treated water) samples taken during the last quarter.</p> <p>(2) The location, date, and results of each paired sample and associated alkalinity taken during the last quarter.</p> <p>(3) For each month in the reporting period that paired</p>

	<p>samples were taken, the arithmetic average of the percent reduction of TOC for each paired sample and the required TOC percent removal.</p> <p>(4) Calculations for determining compliance with the TOC percent removal requirements, as provided in 179 NAC 16-008.03A.</p> <p>(5) Whether the system is in compliance with the enhanced coagulation or enhanced softening percent removal requirements in 179 NAC 16-008.02 for the last four quarters.</p>
<p>System monitoring monthly or quarterly for TOC under the requirements of 179 NAC 16-005.04 and meeting one or more of the alternative compliance criteria in 179 NAC 16-008.01B or 16-008.01C.</p>	<p>(1) The alternative compliance criterion that the system is using.</p> <p>(2) The number of paired samples taken during the last quarter.</p> <p>(3) The location, date, and result of each paired sample and associated alkalinity taken during the last quarter.</p> <p>(4) The running annual arithmetic average based on monthly averages (or quarterly samples) of source water TOC for systems meeting a criterion in 179 NAC 16-008.01B, item 1 or 3, or of treated water TOC for systems meeting the criterion in 179 NAC 16-008.01B, item 2.</p> <p>(5) The running annual arithmetic average based on monthly averages (or quarterly samples) of source water SUVA for systems meeting the criterion in 179 NAC 16-008.01B, item 5, or of treated water SUVA for systems meeting the criterion in 179 NAC 16-008.01B, item 6.</p> <p>(6) The running annual average of source water alkalinity for systems meeting the criterion in 179 NAC 16-008.01B, item 3 and of treated water alkalinity for systems meeting the criterion in 179 NAC 16-008.01B, item 1.</p> <p>(7) The running annual average for both TTHMs and HAA5 for systems meeting the criterion in 179 NAC 16-008.01B, item 3 or 4.</p> <p>(8) The running annual average of the amount of magnesium hardness removal (as CaCO₃, in mg/L) for systems meeting the criterion in 179 NAC 16-008.01B, item 2.</p> <p>(9) Whether the system is in compliance with the particular alternative compliance criterion in 179 NAC 16-008.01B or 16-008.01C.</p>

¹The Department may choose to perform calculations and determine whether the treatment technique was met, in lieu of having the system report that information.

16-008 TREATMENT TECHNIQUE FOR CONTROL OF DISINFECTION BYPRODUCT (DBP) PRECURSORS

16-008.01 Applicability

16-008.01A Public water systems using surface water or ground water under the direct influence of surface water using conventional filtration treatment must operate with enhanced coagulation or enhanced softening to achieve the TOC percent removal levels specified in 179 NAC 16-008.02 unless the system meets at least one of the alternative compliance criteria listed in 179 NAC 16-008.01B or 16-008.01C.

16.008.01B Alternative Compliance Criteria for Enhanced Coagulation and Enhanced Softening Systems: Public water systems using surface water or ground water under the direct influence of surface water using conventional filtration treatment may use the alternative compliance criteria in 179 NAC 16-008.01B items 1 through 6 to comply with this section in lieu of complying with 179 NAC 16-008.02. Systems must still comply with monitoring requirements in 179 NAC 16-005.04.

1. The system's source water TOC level, measured according to 179 NAC 16-004.04 item 3, is less than 2.0 mg/L, calculated quarterly as a running annual average.
2. The system's treated water TOC level, measured according to 179 NAC 16-004.04 item 3, is less than 2.0 mg/L, calculated quarterly as a running annual average.
3. The system's source water TOC level, measured according to 179 NAC 16-004.04 item 3, is less than 4.0 mg/L, calculated quarterly as a running annual average; the source water alkalinity, measured according to 179 NAC 16-004.04 item 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 179 NAC 16-001.01, the system has made a clear and irrevocable financial commitment not later than the effective date for compliance in 179 NAC 16-001.01 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 Department for approval not later than the effective date for compliance in 179 NAC 16-001.01. These technologies must be installed and operating not later than June 30, 2005. Failure to install and operate these technologies by the date in the approved schedule will constitute a violation of these regulations.
4. 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.

5. The system's source water SUVA, prior to any treatment and measured monthly according to 179 NAC 16-004.04 item 4 is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average.
6. The system's finished water SUVA, measured monthly according to 179 NAC 16-004.04 item 4 is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average.

16.008.01C Additional Alternative Compliance Criteria for Softening Systems: Systems practicing enhanced softening that cannot achieve the TOC removals required by 179 NAC 16-008.02B may use the alternative compliance criteria in 179 NAC 16-008.01C items 1 and 2 in lieu of complying with 179 NAC 16-008.02. Systems must still comply with the monitoring requirements in 179 NAC 16-005.04.

1. Softening that results in lowering the treated water alkalinity to less than 60 mg/L (as CaCO₃), measured monthly according to 179 NAC 16-004.04 item 1 and calculated quarterly as a running annual average.
2. Softening that results in removing at least 10 mg/L of magnesium hardness (as CaCO₃), measured monthly according to 179 NAC 16-004.04 item 6 and calculated quarterly as an annual running average.

16-008.02 Enhanced Coagulation and Enhanced Softening Performance Requirements

16-008.02A Systems must achieve the percent reduction of TOC specified in 179 NAC 16-008.02B between the source water and the combined filter effluent, unless the Department approves a system's request for alternate minimum TOC removal (Step 2) requirements under 179 NAC 16-008.02C.

16-008.02B Required Step 1 TOC reductions, indicated in the following table, are based upon specified source water parameters measured in accordance with 179 NAC 16-004.04. 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 PUBLIC WATER SYSTEMS USING SURFACE WATER OR GROUND WATER UNDER THE DIRECT INFLUENCE OF SURFACE WATER USING CONVENTIONAL TREATMENT^{1,2}

Source-Water TOC, Mg/L	Source-Water Alkalinity, Mg/L as CaCO ₃ (in Percentages)		
	0-60	>60-120	>120 ³
>2.0-4.0	35.0	25.0	15.0
>4.0-8.0	45.0	35.0	25.0
>8.0	50.0	40.0	30.0

¹ Systems meeting at least one of the conditions in 179 NAC 16-008.01B, items 1 to 6, are not required to operate with enhanced coagulation.

² Softening systems meeting one of the alternative compliance criteria in 179 NAC 16-008.01C are not required to operate with enhanced softening.

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

16-008.02C Public water systems using surface water or ground water under the direct influence of surface water as a source and having conventional treatment systems that cannot achieve the Step 1 TOC removals required by 179 NAC 16-008.02B due to water quality parameters or operational constraints must apply to the Department, within three months of failure to achieve the TOC removals required by 179 NAC 16-008.02B, for approval of alternative minimum TOC (Step 2) removal requirements submitted by the system. If the Department approves the alternative minimum TOC removal (Step 2) requirements, the Department may make those requirements retroactive for the purposes of determining compliance. Until the Department approves the alternate minimum TOC removal (Step 2) requirements, the system must meet the Step 1 TOC removals contained in 179 NAC 16-008.02B.

16-008.02D Alternate Minimum TOC Removal (Step 2) Requirements: Applications made to the Department by enhanced coagulation systems for approval of alternative minimum TOC removal (Step 2) requirements under 179 NAC 16-008.02C must include, at a minimum, results of bench- or pilot-scale testing conducted under 179 NAC 16-008.02D1. The submitted bench- or pilot-scale testing must be used to determine the alternate enhanced coagulation level.

16-008.02D1 Alternate enhanced coagulation level is defined as coagulation at a coagulant dose and pH as determined by the method described in 179 NAC 16-008.02D1 through 16-008.02D5 such that an incremental addition of 10 mg/L of alum (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 Department, this minimum requirement supersedes the minimum TOC removal required by the table in 179 NAC 16-008.02B. This requirement will be effective until such time as the Department approves a new value based on the results of a new bench- and pilot-scale test. Failure to achieve Department-set alternative minimum TOC removal levels is a violation of these regulations.

16-008.02D2 Bench- or pilot-scale testing of enhanced coagulation must be conducted by using representative water samples and adding 10 mg/L increments of alum (or equivalent amounts of ferric salt) until the pH is reduced to a level less than or equal to the enhanced coagulation Step 2 target pH shown in the following table:

ENHANCED COAGULATION STEP 2 TARGET pH

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

16-008.02D3 For waters with alkalinities of less than 60 mg/L for which addition of small amounts of alum or equivalent addition of iron coagulant drives the pH below 5.5 before significant TOC removal occurs, the system must add necessary chemicals to maintain the pH between 5.3 and 5.7 in samples until the TOC removal of 0.3 mg/L per 10 mg/L alum added (or equivalent addition of iron coagulant) is reached.

16-008.02D4 The system may operate at any coagulant dose or pH necessary to achieve the minimum TOC percent removal approved under 179 NAC 16-008.02C.

16-008.02D5 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 Department for a waiver of enhanced coagulation requirements.

16-008.03 Compliance Calculations

16-008.03A Public water systems using surface water or ground water under the direct influence of surface water other than those identified in 179 NAC 16-008.01B or 16-008.01C must comply with requirements contained in 179 NAC 16-008.02B or 16-008.02C. Systems must calculate compliance quarterly, beginning after the system has collected 12 months of data, by determining an annual average using the following method:

1. Determine actual monthly TOC percent removal, equal to:
 $[1 - (\text{treated water TOC}/\text{source water TOC})] \times 100$.
2. Determine the required monthly TOC percent removal (from either the table in 179 NAC 16-008.02B or from 179 NAC 16-008.02C).
3. Divide the value in 179 NAC 16-008.03A item 1 by the value in by 179 NAC 16-008.03A item 2.
4. Add together the results of 179 NAC 16-008.03A item 3 for the last 12 months and divide by 12.

5. If the value calculated in 179 NAC 16-008.03A, item 4 is less than 1.00, the system is not in compliance with the TOC percent removal requirements.

16-008.03B Systems may use the provisions in 179 NAC 16-008.03B items 1 through 5 in lieu of the calculations in 179 NAC 16-008.03A items 1 through 5 to determine compliance with TOC percent removal requirements.

1. In any month that the system's treated or source water TOC level, measured according to 179 NAC 16-004.04 item 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 179 NAC 16-008.03A item 3) when calculating compliance under the provisions of 179 NAC 16-008.03A.
2. 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 179 NAC 16-008.03A item 3) when calculating compliance under the provisions of 179 NAC 16-008.03A.
3. In any month that the system's source water SUVA, prior to any treatment and measured according to 179 NAC 16-004.04 item 4 is ≤ 2.0 L/mg-m, the system may assign a monthly value of 1.0 (in lieu of the value calculated in 179 NAC 16-008.03A item 3) when calculating compliance under the provisions of 179 NAC 16-008.03A.
4. In any month that the system's finished water SUVA, measured according to 179 NAC 16-004.04 item 4 is ≤ 2.0 L/mg-m, the system may assign a monthly value of 1.0 (in lieu of the value calculated in 179 NAC 16-008.03A item 3) when calculating compliance under the provisions of 179 NAC 16-008.03A.
5. 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 179 NAC 16-008.03A item 3) when calculating compliance under the provisions of 179 NAC 16-008.03A.

16-008.03C Public water systems using surface water or ground water under the direct influence of surface water using conventional treatment may also comply with the requirements of this section by meeting the criteria in 179 NAC 16-008.01B or 16-008.01C.

16-008.04 Treatment Technique Requirements for DBP Precursors: The Department identifies the following as treatment techniques to control the level of disinfection byproduct precursors in drinking water treatment and distribution systems: For public water systems using surface water or ground water under the direct influence of surface water using conventional treatment, enhanced coagulation or enhanced softening.

179 NAC 16 Attachment 1

**I. TIME REQUIREMENTS TO DETERMINE NEED FOR TESTING UNDER
DISINFECTANT/DISINFECTION BYPRODUCTS RULE**

- A. Time Periods – Public water systems using only groundwater sources that use chlorine, chloramines, chlorine dioxide, or ozone as any part of the treatment or system maintenance process are required to test for disinfection byproducts (DBPs) under the requirements of the Disinfectants/Disinfection Byproducts Rule unless levels of Total Organic Carbon (TOC) for all sources are ≤ 2 mg/L and the use of chlorine or chloramines is limited to usage for a period not longer than 30 consecutive days; or 45 total cumulative days for each calendar year.
- B. Groundwater systems using chlorination for maintenance purposes as defined in I.A. above, or in response to a specific event in the distribution system are exempt from the disinfectant residual requirements set in Attachment 2 to 179 NAC 16.
- C. Reporting – Public water systems using only groundwater that are adding chlorine or chloramines for maintenance purposes, or in response to a specific event in the distribution system, must submit a report for each month in which chlorine or chloramines are used. The report must contain the daily total flows, source of chlorine, percent of available chlorine, the pounds or gallons of solution added for each day, and an explanation of why the chemical was used. The report must be submitted within 10 days of the end of the month in which chlorine or chloramines were used.
- D. Day of Disinfection Definition – Any portion of a 24 hour period, from 12:00 a.m. to 11:59 p.m., that chlorine or chloramines are added to the system's water is considered a day of disinfection. The total number of days of disinfection will be determined from the time the maintenance practice begins until the practice has ceased.
- E. Regardless of the duration for which chlorine or chloramines are used, the Maximum Residual Disinfectant Level must not exceed 4.0 mg/L except as allowed in 179 NAC 16-003.05.

179 NAC 16 Attachment 2

Minimum Detectable Residuals

- A. The following requirements establish the minimum allowable disinfectant residuals for each type of system.
1. For systems that are utilizing surface water sources, or sources determined to be groundwater under the direct influence of surface water, one of the following options must be implemented to meet the minimum residual requirements.
 - a. 0.2 ppm residual for free chlorine or 0.5 ppm for total chlorine or
 - b. 0.1 ppm residual for free chlorine or 0.25 ppm for total chlorine provided the requirements in Section C items 1-5 of this attachment are met or
 - c. HPC of <500 cfu/ml.
 2. All groundwater systems serving water to the public that contains chlorine or chloramines as a chemical disinfectant or oxidant on a continuous basis must use one of the following criteria for minimum residuals.
 - a. 0.1 ppm residual for free chlorine or
 - b. 0.05 ppm for free chlorine if qualifying criteria in section C items 3-5 of this attachment are met or
 - c. HPC of <500 cfu/ml.
- B. If a system is required to disinfect under an Administrative Order (AO), the requirements listed in the AO will supersede any requirements for minimum residuals established in this attachment.
- C. In order for a system to maintain the lower minimum residual requirement for free or total chlorine (referred to in A, items 1.b. and 2.b.), the following criteria must be met:
1. Any public water system using surface water or ground water under the direct influence of surface water must meet or exceed all CT inactivation requirements in 179 NAC 13., Tables 13.1 to 13.8 at all times through the treatment process in order to utilize the lower requirements of A, item 1.b.
 2. Any public water system using surface water, or ground water determined to be under the direct influence of surface water, must maintain effluent turbidity levels of less than or equal to 0.3 NTU in 95% of all readings, and at no time exceed 1 NTU. A system may submit a study to the Department showing that turbidity values in excess of the specified turbidity limits are a direct result of the treatment process and do not represent a threat to public health. The Department will review the study to determine the nature of the high turbidity levels and if they pose a threat to public health.
 3. The system must demonstrate that the field test method being used can consistently, reliably, and precisely measure residuals less than or equal to the specified limit being used.

4. The system must document that the manufacturer's recommendations for calibration or standardization are being done according to manufacturer's specifications and frequency, and make this information available for review during sanitary surveys.
 5. The system must demonstrate that there is no interference with the testing method, or document that interference has been corrected for. This can be done by any one of the following methods:
 - a. Demonstration through historical source water data (a minimum of 12 months of data, or at least four quarterly samples for non-transient non-community systems) that no interference listed under the manufacturer's instructions is present in the system.
 - b. Sampling for applicable interferences once each day that a residual disinfectant compliance sample(s) is taken to obtain a correction factor to be added to all residual compliance samples taken that day.
 - c. Using an EPA approved method that provides a correction for interference as part of the procedure, and documenting all corrections.
 - d. Adjusting all results based on stable historical data and adding the maximum interference obtained, with the Department's approval.
- D. Disinfectant residuals must be at or above the required minimum residual limits in at least 95% of all distribution residuals taken for the month. If the system fails to meet the 95% requirement for two consecutive months, or for $\geq 50\%$ of the previous 12 consecutive months, the system will be deemed to be in violation of prescribed treatment techniques and will be issued a Treatment Technique violation.

EFFECTIVE DATE
MARCH 22, 2016

NEBRASKA DEPARTMENT OF
HEALTH AND HUMAN SERVICES

179 NAC 16

179 NAC 16 ATTACHMENT 3

Sampling Training For Individuals Other Than Licensed Operators

PWS System or Community Name: _____

Name of individual taking samples: _____

Parameter(s) sampled routinely by the above individual:

Trainer and Title: _____

Training material used: _____

Handouts given to the above individual:

I certify that on _____ I personally provided the necessary sampling
(Date)

training to assure quality data and approve the above individual as qualified to perform the
above sampling tasks.

X _____
(Signature of Trainer) (License Number)

I certify that I did receive said training and I understand how to properly sample the above
parameters.

X _____
(Signature of Approved Sampling Individual)

When the above-named trained individual no longer takes the samples the individual has been
trained to take, I will inform the Nebraska Department of Health and Human Services Division of
Public Health, Field Services Program Manager at (402) 471-0521 within seven days.

Acknowledged by System Owner or Operator in Charge:

X _____ Date: _____
(Signature)

(Keep a copy for your records and submit original within seven days to DHHS, Division of Public Health,
Public Water Program at P. O. Box 95026, Lincoln, NE 68509-5026)

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 17 - INTERIM ENHANCED SURFACE WATER TREATMENT (SYSTEMS SERVING 10,000 OR MORE PEOPLE)

17-001 SCOPE AND AUTHORITY: This chapter applies to surface water and ground water under the direct influence of surface water systems serving at least 10,000 people, beginning January 1, 2002, unless otherwise specified in 179 NAC 17. The authority is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

17-002 GENERAL REQUIREMENTS

17-002.01 These regulations establish requirements for filtration and disinfection that are in addition to criteria under which filtration and disinfection are required under 179 NAC 13. The regulations in this chapter establish or extend treatment technique requirements in lieu of maximum contaminant levels for the following contaminants: *Giardia lamblia*, viruses, heterotrophic plate count bacteria, *Legionella*, *Cryptosporidium*, and turbidity. Each surface water system or ground water under the direct influence of surface water system serving at least 10,000 people must provide treatment of its source water that complies with these treatment technique requirements and are in addition to those identified in 179 NAC 13-003. The treatment technique requirements consist of installing and properly operating water treatment processes which reliably achieve:

1. At least 99% (2-log) removal of *Cryptosporidium* between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer for filtered systems, or *Cryptosporidium* control under the wellhead protection program for unfiltered systems.
2. Compliance with the profiling and benchmark requirements under the provisions of 179 NAC 17-004.

17-002.02 A public water system subject to the requirements of 179 NAC 17 is considered to be in compliance with the requirements of 179 NAC 17-002.01 if:

1. It meets the requirements for avoiding filtration in 179 NAC 13-004 and 179 NAC 17-003 and the disinfection requirements in 179 NAC 13-005 and 17-004; or
2. It meets the applicable filtration requirements in either 179 NAC 13-006 or 179 NAC 17-005 and the disinfection requirements in 179 NAC 13-005 and 179 NAC 17-004.

17-002.03 Systems are not permitted to begin construction of uncovered finished water storage facilities.

17-002.04 Systems using surface water or ground water under the direct influence of surface water that did not conduct optional monitoring under 179 NAC 17-004 because they served fewer than 10,000 persons when such

monitoring was required, but serve more than 10,000 persons prior to January 14, 2005 must comply with 179 NAC 17-002, 17-003, 17-005, 17-006, and 17-007. These systems must also consult with the Director to establish a disinfection benchmark. A system that decides to make a significant change to its disinfection practice, as described in 179 NAC 17-004.03A items 1 through 3 must consult with the Director prior to making such change.

17-002.05 All surface water systems must provide filtration.

17-003 CRITERIA FOR AVOIDING FILTRATION: In addition to the requirements of 179 NAC 13-004, a public water system using groundwater under the direct influence of surface water, subject to the requirements of this chapter that does not provide filtration must meet all of the conditions of 179 NAC 17-003.01 and 17-003.02.

17-003.01 Site-Specific Conditions: In addition to site-specific conditions in 179 NAC 13-004.02, systems must maintain a wellhead protection program under 179 NAC 13-004.02B to minimize the potential for contamination by *Cryptosporidium* oocysts in the source water. The wellhead protection program must, for *Cryptosporidium*:

1. Identify wellhead protection area characteristics and activities which may have an adverse effect on source water quality, and
2. Monitor the occurrence of activities which may have an adverse effect on source water quality.

17-003.02 During the onsite inspection conducted under the provisions of 179 NAC 13-004.02C, the Department will determine whether the wellhead protection program established under 179 NAC 13-004.02B is adequate to limit potential contamination by *Cryptosporidium* oocysts. The adequacy of the program must be based on the comprehensiveness of the wellhead protection review; the effectiveness of the system's program to monitor and control detrimental activities occurring in the wellhead protection area; and the extent to which the water system has maximized land ownership and/or controlled land use within the wellhead protection area.

17-004 DISINFECTION PROFILING AND BENCHMARKING

17-004.01 Determination of Systems Required to Profile: A public water system subject to the requirements of 179 NAC 17 must determine its total trihalomethane (TTHM) annual average using the procedure in 179 NAC 17-004.01A and its five haloacetic acids (HAA5) annual average using the procedure in 179 NAC 17-004.01B. The annual average is the arithmetic average of the quarterly averages of four consecutive quarters of monitoring.

17-004.01A The TTHM annual average must be the annual average during the same period as is used for the HAA5 annual average.

17-004.01A1 Those systems that collected data under the provisions of the Information Collection Rule must use the results of the samples collected during the last four quarters of required monitoring. The Department will approve any data, location, handling, and analytical requirements submitted from previous testing.

17-004.01B The HAA5 annual average must be the annual average during the same period as is used for the TTHM annual average.

17-004.01B1 Those systems that collected data under the provisions of the Information Collection Rule must use the results of the samples collected during the last four quarters of required monitoring. The Department will approve any data, location, handling, and analytical requirements submitted from previous testing.

17-004.01C The system may request that the Department approve a more representative annual data set than the data set determined under 179 NAC 17-004.01A or 17-004.01B for the purpose of determining applicability of the requirements of this section.

17-004.01D The Department may require that a system use a more representative annual data set than the data set determined under 179 NAC 17-004.01A or 17-004.01B for the purpose of determining applicability of the requirements of 179 NAC 17-004.02.

17-004.01E Any system having either a TTHM annual average >0.064 mg/L or an HAA5 annual average >0.048 mg/L during the period identified in 179 NAC 17-004.01A and 17-004.01B must comply with 179 NAC 17-004.02.

17-004.02 Disinfection Profiling

17-004.02A Any system that meets the criteria in 179 NAC 17-004.01E must develop a disinfection profile of its disinfection practice for a period of up to three years.

17-004.02B The system must monitor daily for a period of 12 consecutive calendar months to determine the total logs of inactivation for each day of operation, based on the CT99.9 values in Tables 13.1-13.6, 13.7, and 13.8 of 179 NAC 13-007.02 as appropriate, through the entire treatment plant. As a minimum, the system with a single point of disinfectant application prior to entrance to the distribution system must conduct the monitoring in 179 NAC 17-004.02B items 1 to 4. A system with more than one point of disinfectant application must conduct the monitoring in 179 NAC 17-004.02B Items 1. to 4. for each disinfection segment. The system must monitor the parameters necessary to determine the total inactivation ratio, using analytical methods in 179 NAC 13-007.01 as follows:

1. The temperature of the disinfected water must be measured once per day at each residual disinfectant concentration sampling point during peak hourly flow.
2. If the system uses chlorine, the pH of the disinfected water must be measured once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.
3. The disinfectant contact times ("T") must be determined for each day during peak hourly flow.
4. The residual disinfectant concentration(s) ("C") of the water before or at the first customer and prior to each additional point of disinfection must be measured each day during peak hourly flow.

17-004.02C In lieu of the monitoring conducted under the provisions of 179 NAC 17-004.02B to develop the disinfection profile, the system may elect to meet the requirements of 179 NAC 17-004.02C1. In addition to the monitoring conducted under the provisions of 179 NAC 17-004.02B to develop the disinfection profile, the system may elect to meet the requirements of 179 NAC 17-004.02C2.

17-004.02C1 A PWS that has three years of existing operational data may submit those data, a profile generated using those data, and a request that the Department approve use of those data in lieu of monitoring. The Department will determine whether these operational data are substantially equivalent to data collected under the provisions of 179 NAC 17-004.02B. These data must also be representative of *Giardia lamblia* inactivation through the entire treatment plant and not just of certain treatment segments. Until the Department approves this request, the system is required to conduct monitoring under the provisions of 179 NAC 17-004.02B.

17-004.02C2 In addition to the disinfection profile generated under 179 NAC 17-004.02B, a PWS that has existing operational data may use those data to develop a disinfection profile for additional years. Such systems may use these additional yearly disinfection profiles to develop a benchmark under the provisions of 179 NAC 17-004.03. The Department will determine whether these operational data are substantially equivalent to data collected under the provisions of 179 NAC 17-004.02B. These data must also be representative of inactivation through the entire treatment plant and not just of certain treatment segments.

17-004.02D The system must calculate the total inactivation ratio as follows:

1. If the system uses only one point of disinfectant application, the system may determine the total inactivation ratio for the disinfection segment based on either of the following methods:

a. Determine one inactivation ratio $CT_{calc}/CT(99.9)$ before or at the first customer during peak hourly flow.

b. Determine successive $CT_{calc}/CT(99.9)$ values, representing sequential inactivation ratios, between the point of disinfectant application and a point before or at the first customer during peak hourly flow. Under this alternative, the system must calculate the total inactivation ratio by determining $CT_{calc}/CT(99.9)$ for each sequence and then adding the $CT_{calc}/CT(99.9)$ values together to determine $(\sum CT_{calc}/CT99.9)$.

2. If the system uses more than one point of disinfectant application before the first customer, the system must determine the CT value of each disinfection segment immediately prior to the next point of disinfectant application, or for the final segment, before or at the first customer, during peak hourly flow. The $(CT_{calc}/CT99.9)$ value of each segment and $[\sum(CT_{calc}/CT99.9)]$ must be calculated using the method in 179 NAC 17-004.02D item 1.

3. The system must determine the total logs of inactivation by multiplying the value calculated in 179 NAC 17-004.02D item 1 or 2 by 3.0.

17-004.02E A system that uses either chloramines or ozone for primary disinfection must also calculate the logs of inactivation for viruses using a method approved by the Department.

17-004.02F The system must retain disinfection profile data in graphic form, as a spreadsheet, or in some other format acceptable to the Department for review as part of sanitary surveys conducted by the Department.

17-004.03 Disinfection Benchmarking

17-004.03A Any system required to develop a disinfection profile under the provisions of 179 NAC 17-004.01 and 17-004.02 and that decides to make a significant change to its disinfection practice must consult with the Department prior to making such change. Significant changes to disinfection practice are:

1. Changes to the point of disinfection;
2. Changes to the disinfectant(s) used in the treatment plant; and
3. Changes to the disinfection process.

17-004.03B Any system that is modifying its disinfection practice must calculate its disinfection benchmark using the following procedure:

1. For each year of profiling data collected and calculated under 179 NAC 17-004.02, the system must determine the lowest average

monthly *Giardia lamblia* inactivation in each year of profiling data. The system must determine the average *Giardia lamblia* inactivation for each calendar month for each year of profiling data by dividing the sum of daily *Giardia lamblia* of inactivation by the number of values calculated for that month.

2. The disinfection benchmark is the lowest monthly average value (for systems with one year of profiling data) or average of lowest monthly average values (for systems with more than one year of profiling data) of the monthly logs of *Giardia lamblia* inactivation in each year of profiling data.

17-004.03C A system that uses either chloramines or ozone for primary disinfection must also calculate the disinfection benchmark for viruses using a method approved by the Department.

17-004.03D The system must submit the following information to the Department as part of its consultation process:

1. A description of the proposed change;
2. The disinfection profile for *Giardia lamblia* (and, if necessary, viruses) under 179 NAC 17-004.02 and benchmark as required by 179 NAC 17-004.03B; and
3. An analysis of how the proposed change will affect the current levels of disinfection.

17-005 FILTRATION: A public water system subject to the requirements of 179 NAC 17 that does not meet all of the criteria in this section and 179 NAC 13 for avoiding filtration must provide treatment consisting of both disinfection, as specified in 179 NAC 13-005.01, and filtration treatment which complies with the requirements of 179 NAC 17-005.01 or 17-005.02 or 179 NAC 13-006.02 or 13-006.03 by December 31, 2001, which is included for informational purposes only.

17-005.01 Conventional Filtration Treatment or Direct Filtration

17-005.01A For 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 0.3 NTU in at least 95% of the measurements taken each month, measured as specified in 179 NAC 13-007.01 and 13-007.03.

17-005.01B The turbidity level of representative samples of a system's filtered water must at no time exceed 1 NTU, measured as specified in 179 NAC 13-007.01 and 13-007.03.

17-005.01C A system that uses lime softening may acidify representative samples prior to analysis using a protocol approved by the Department.

17-005.02 Filtration Technologies Other Than Conventional Filtration Treatment, Direct Filtration, Slow Sand Filtration, or Diatomaceous Earth Filtration: A public water system may use a filtration technology not listed in 179 NAC 17-005.01 or in 179 NAC 13-006.02 or 13-006.03 if it demonstrates to the Department, using pilot plant studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of 179 NAC 13-005.02, consistently achieves 99.9% removal and/or inactivation of *Giardia lamblia* cysts and 99.99% removal and/or inactivation of viruses, and 99% removal *Cryptosporidium* oocysts, and the Department approves the use of the filtration technology. For each approval, the Department will set turbidity performance requirements that the system must meet at least 95% of the time and that the system may not exceed at any time at a level that consistently achieves 99.9% removal and/or inactivation of *Giardia lamblia* cysts, 99.99% removal and/or inactivation of viruses, and 99% removal of *Cryptosporidium* oocysts.

17-006 FILTRATION SAMPLING REQUIREMENTS:

17-006.01 Monitoring Requirements for Systems Using Filtration Treatment: In addition to monitoring required by 179 NAC 13-007, a public water system subject to the requirements of 179 NAC 17 that provides conventional filtration treatment or direct filtration must conduct continuous monitoring of turbidity for each individual filter using an approved method in 179 NAC 13-007.01 and must calibrate turbidimeters using the procedure specified by the manufacturer and by using analytical test procedures contained in *Technical Notes on Drinking Water Methods*, EPA-600/R-94-173, October 1994, which is incorporated herein by reference. 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. The toll-free number is 800-553-6847. The document may be inspected at the Department of Health and Human Services Regulation and Licensure, Public Health Assurance Division, 301 Centennial Mall South, Lincoln, NE 68509.

Systems must record the results of individual filter monitoring a minimum of every 15 minutes.

17-006.02 If there is a failure in the continuous turbidity monitoring equipment, the system must conduct grab sampling every four hours in lieu of continuous monitoring, but for no more than five working days following the failure of the equipment.

17-007 REPORTING AND RECORDKEEPING REQUIREMENTS: In addition to the reporting and recordkeeping requirements in 179 NAC 13-008, a public water system subject to the requirements of 179 NAC 17 that provides conventional filtration treatment or direct filtration must report monthly to the Department the information specified in 179 NAC 17-007.01 and 17-007.02 beginning January 1, 2002. In addition to the reporting and recordkeeping requirements in 179 NAC 13-008, a public water system subject to the requirements of this chapter that provides filtration approved under 179 NAC

17-005.02 must report monthly to the Department the information specified in 179 NAC 17-007.01 beginning January 1, 2002. The reporting in 179 NAC 17-007.01 is in lieu of the reporting specified in 179 NAC 13-008.02A.

17-007.01 Turbidity measurements as required by 179 NAC 17-005 must be reported within 10 days after the end of each month the system serves water to the public. Information that must be reported includes:

1. The total number of filtered water turbidity measurements taken during the month.
2. 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 179 NAC 17-005.01 or 17-005.02.
3. The date and value of any turbidity measurements taken during the month which exceed 1 NTU for systems using conventional filtration treatment or direct filtration, or which exceed the maximum level set by the Department under 179 NAC 17-005.02.

17-007.02 Systems must maintain the results of individual filter monitoring taken under 179 NAC 17-006 for at least three years. Systems must report that they have conducted individual filter turbidity monitoring under 179 NAC 17-006 within 10 days after the end of each month the system serves water to the public. Systems must report individual filter turbidity measurement results taken under 179 NAC 17-006 within 10 days after the end of each month the system serves water to the public only if measurements demonstrate one or more of the conditions in 179 NAC 17-007.02A to 17-007.02D. Systems that use lime softening may apply to the Department for alternative exceedance levels for the levels specified in 179 NAC 17-007.02A to 17-007.02D if they can demonstrate that higher turbidity levels in individual filters are due to lime carryover only and not due to degraded filter performance.

17-007.02A For any individual filter that has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements taken 15 minutes apart, the system must report the filter number, the turbidity measurement, and the date(s) on which the exceedance occurred. In addition, the system must either produce a filter profile for the filter within seven days of the exceedance (if the system is not able to identify an obvious reason for the abnormal filter performance) and report that the profile has been produced or report the obvious reason for the exceedance.

17-007.02B For any individual filter that has a measured turbidity level of greater than 0.5 NTU in two consecutive measurements taken 15 minutes apart at the end of the first four hours of continuous filter operation after the filter has been backwashed or otherwise taken offline, the system must report the filter number, the turbidity, and the date(s) on which the exceedance occurred. In addition, the system must either produce a filter profile for the filter within seven days of the exceedance (if the system is not able to identify an obvious reason for

the abnormal filter performance) and report that the profile has been produced or report the obvious reason for the exceedance.

17-007.02C For any individual filter that has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements taken 15 minutes apart at any time in each of three consecutive months, the system must report the filter number, the turbidity measurement, and the date(s) on which the exceedance occurred. In addition, the system must conduct a self-assessment of the filter within 14 days of the exceedance and report that the self-assessment was conducted. The self assessment must consist of at least the following components: assessment of filter performance; development of a filter profile; identification and prioritization of factors limiting filter performance; assessment of the applicability of corrections; and preparation of a filter self-assessment report.

17-007.02D For any individual filter that has a measured turbidity level of greater than 2.0 NTU in two consecutive measurements taken 15 minutes apart at any time in each of two consecutive months, the system must report the filter number, the turbidity measurement, and the date(s) on which the exceedance occurred. In addition, the system must arrange for the conduct of a comprehensive performance evaluation by the Department or a third party approved by the Department no later than 30 days following the exceedance and have the evaluation completed and submitted to the Department no later than 90 days following the exceedance.

17-007.03 Additional Reporting Requirements

1. If at any time the turbidity exceeds 1 NTU in representative samples of filtered water in a system using conventional filtration treatment or direct filtration, the system must inform the Department as soon as possible, but no later than the end of the next business day.
2. If at any time the turbidity in representative samples of filtered water exceeds the maximum level set by the Department under 179 NAC 17-005.02 for filtration technologies other than conventional filtration treatment, direct filtration, slow sand filtration, or diatomaceous earth filtration, the system must inform the Department as soon as possible, but no later than the end of the next business day.

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 18 - FILTER BACKWASH RECYCLING

18-001 SCOPE AND AUTHORITY: These regulations apply to all public water systems that use surface water or ground water under the direct influence of surface water that employ conventional filtration or direct filtration treatment and that recycle spent filter backwash water, thickener supernatant, or liquids from dewatering processes. The authority is found in Neb. Rev. Stat. §§ 71-5301 through 71-5313.

18-002 DEFINITIONS

Conventional filtration treatment means a series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal.

Direct filtration means a series of processes including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal.

Director means the Director of Regulation and Licensure or his/or her authorized representative.

18-003 REPORTING: A system 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 18-003.01 and 18-003.02.

18-003.01 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.

18-003.02 Typical recycle flow in gallons per minute (gpm), the highest observed plant flow experienced in the previous year (gpm), design flow for the treatment plant (gpm), and the Director-approved operating capacity for the plant where the Director has made such determinations.

18-004 TREATMENT TECHNIQUE REQUIREMENT: 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 179 NAC 18-002 or at an alternate location approved by the Director by June 8, 2004. 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.

18-005 RECORDKEEPING: The system must collect and retain on file recycle flow information specified in 179 NAC 18-005 items 1 through 6 for review and evaluation by the Director beginning June 8, 2004.

1. Copy of the recycle notification and information submitted to the Department under 179 NAC 18-003.
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.

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 19 - LONG TERM 1 (LT 1) ENHANCED SURFACE WATER TREATMENT (for Systems Serving Fewer Than 10,000 People)

19-001 SCOPE AND AUTHORITY: These regulations establish requirements for filtration and disinfection that are in addition to criteria under which filtration and disinfection are required under 179 NAC 13. This chapter (179 NAC 19) applies to public water systems that use surface water or ground water under the direct influence of surface water as a source and serve fewer than 10,000 persons. The requirements were effective for the purpose of compliance beginning January 14, 2005 (which date is listed for informational purposes only) except where otherwise noted. The statutory authority is found in Neb. Rev. Stat. §§71-5301 to 71-5313.

19-002 DEFINITIONS

Comprehensive performance evaluation (CPE) is 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 the purpose of compliance with 179 NAC 17 and 179 NAC 19, the comprehensive performance evaluation must consist of at least the following components: Assessment of plant performance; evaluation of major unit processes; identification and prioritization of performance limiting factors; assessment of the applicability of comprehensive technical assistance; and preparation of a CPE report.

Disinfection profile is a summary of Giardia lamblia inactivation through the treatment plant. The procedure for developing a disinfection profile is contained in 179 NAC 17-004 (Disinfection profiling and benchmarking) in 179 NAC 17 and 179 NAC 19-007.01 to 19-007.07 (Disinfection profile) in 179 NAC 19.

Ground water under the direct influence of surface water (GWUDI) means 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 or Cryptosporidium, or significant and 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 the criteria established by the Director. The Director 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.

19-003 GENERAL: These regulations establish or extend treatment technique requirements in lieu of maximum contaminant levels for the following contaminants: Giardia lamblia, viruses, heterotrophic plate count bacteria, Legionella, Cryptosporidium and turbidity. The treatment technique requirements consist of installing and properly operating water treatment processes which reliably achieve:

1. At least 99% (2 log) removal of *Cryptosporidium* between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer for filtered systems, or *Cryptosporidium* control under the watershed control plan for unfiltered systems; and
2. Compliance with the profiling and benchmark requirements in 179 NAC 19-007.01 through 19-008.05.

19-004 BASIC REQUIREMENTS: Systems must comply with all the following requirements that are applicable to their system:

1. Finished water reservoirs must be covered as described in 179 NAC 19-005.01 and 19-005.02.
2. Public water systems that are unfiltered must comply with the updated watershed control requirements described in 179 NAC 19-006.01 to 19-006.03;
3. Community and non-transient non-community water systems must develop a disinfection profile as described in 179 NAC 19-007.01 to 19-007.07;
4. Systems considering making a significant change to their disinfection practices must develop a disinfection benchmark and consult with the Director for approval of the change as described in 179 NAC 19-008.01 to 19-008.05;
5. Filtered systems must comply with the combined filter effluent requirements as described in 179 NAC 19-009.01 to 19-009.04;
6. Filtered systems that use conventional or direct filtration must comply with the individual filter turbidity requirements as described in 179 NAC 19-010.01 to 19-010.05; and
7. Systems must comply with applicable reporting and recordkeeping requirements as described in 179 NAC 19-011.01 and 19-011.02.

19-005 FINISHED WATER RESERVOIRS

19-005.01 All public water systems that use surface water or ground water under the direct influence of surface water and serve fewer than 10,000 persons are subject to the finished water reservoir requirements.

19-005.02 Requirements: Systems that begin construction on or after (the effective date of these regulations) must be covered.

19-006 ADDITIONAL WATERSHED CONTROL REQUIREMENTS FOR UNFILTERED SYSTEMS

19-006.01 Systems using surface water or ground water under the direct influence of surface water that serve fewer than 10,000 persons and do not provide filtration must continue to comply with all the filtration avoidance criteria in 179 NAC 13-004, as well as the additional watershed control requirements in 179 NAC 19-006.02.

19-006.02 Systems must take any additional steps necessary to minimize the potential for contamination by *Cryptosporidium* oocysts in the source

water. Watershed control programs must, for Cryptosporidium:

1. Identify watershed characteristics and activities which may have an adverse effect on source water quality; and
2. Monitor the occurrence of activities which may have an adverse effect on source water quality.

19-006.03 During an onsite inspection conducted under the provisions of 179 NAC 13-004.03, the Director must determine whether your watershed control program is adequate to limit potential contamination by Cryptosporidium oocysts. The adequacy of the program must be based on the comprehensiveness of the watershed review; the effectiveness of the system's program to monitor and control detrimental activities occurring in the watershed; and the extent to which the system has maximized land ownership and/or controlled land use within the watershed.

19-007 DISINFECTION PROFILE

19-007.01 What It Is, Who Must Develop One: A disinfection profile is a graphical representation of a system's level of Giardia lamblia or virus inactivation measured during the course of a year. Community and non-transient non-community water systems that use surface water or ground water under the direct influence of surface water and serve fewer than 10,000 persons must develop a disinfection profile unless the Director determines the system's profile is unnecessary. The Director may approve the use of a more representative data set for disinfection profiling than the data set required under 179 NAC 19-007.03 to 19-007.07.

19-007.02 Criteria used by the Director to determine that a profile is unnecessary: The Director may only determine that a system's profile is unnecessary if a system's TTHM and HAA5 levels are below 0.064 mg/L and 0.048 mg/L, respectively. To determine these levels, TTHM and HAA5 samples must be collected after January 1, 1998, during the month with the warmest water temperature, and at the point of maximum residence time in the distribution system. The Department may approve a more representative TTHM and HAA5 data set to determine these levels.

19-007.03 Development of a disinfection profile, when to begin: A disinfection profile consists of three steps:

1. First, collect data for several parameters from the plant as discussed in 179 NAC 19-007.04 over the course of 12 months. Systems serving between 500 and 9,999 persons must begin collecting the data no later than July 1, 2003. Systems serving fewer than 500 persons must begin to collect data no later than January 1, 2004.
2. Second, use this data to calculate weekly log inactivation as discussed in 179 NAC 19-007.05 and 19-007.06; and
3. Third, use these weekly log inactivations to develop a disinfection profile as specified in 179 NAC 19-007.07.

19-007.04 Data Required to Calculate a Disinfection Profile: Systems must monitor the following parameters to determine the total log inactivation

using the analytical methods in 179 NAC 13-007.01, once per week on the same calendar day, over 12 consecutive months.

1. The temperature of the disinfected water at each residual disinfectant concentration sampling point during peak hourly flow;
2. For systems that use chlorine, the pH of the disinfected water at each residual disinfectant concentration sampling point during peak hourly flow;
3. The disinfectant contact time(s) ["T"] during peak hourly flow; and
4. The residual disinfectant concentration(s) ["C"] of the water before or at the first customer and prior to each additional point of disinfection during peak hourly flow.

19-007.05 How To Use the Previous Information to Calculate an Inactivation Ratio: Use the tables in 179 NAC 13-007.02C5 to determine the appropriate CT_{99.9} value. Calculate the total inactivation ratio as follows, and multiply the value by 3.0 to determine log inactivation of *Giardia lamblia*:

If Your System	Your System Must Determine
a. Uses only one point of disinfectant application	1. One inactivation ratio ($CT_{calc}/CT_{99.9}$) before or at the first customer during peak hourly flow or 2. Successive $CT_{calc}/CT_{99.9}$ values, representing sequential inactivation ratios, between the point of disinfectant application and a point before or at the first customer during peak hourly flow. Under this alternative, your system must calculate the total inactivation ratio by determining ($CT_{calc}/CT_{99.9}$) for each sequence and then adding the ($CT_{calc}/CT_{99.9}$) values together to determine ($\Sigma CT_{calc}/CT_{99.9}$).
b. Uses more than one point of disinfectant application before the first customer	The ($CT_{calc}/CT_{99.9}$) value of each disinfection segment immediately prior to the next point of disinfectant application, or for the final segment, before or at the first customer, during peak hourly flow using the procedure specified in a.2. above.

19-007.06 Systems That Use Chloramines, Ozone, or Chlorine Dioxide for Primary Disinfection: These systems must also calculate the logs of inactivation for viruses and develop an additional disinfection profile for viruses using methods approved by the Director.

19-007.07 After Inactivation Ratio Has Been Developed: Each log inactivation serves as a data point in a system's disinfection profile. Once a system has obtained 52 measurements (one for every week of the year), the system and the Director will have the opportunity to evaluate how microbial inactivation varied over the course of the year by looking at all 52 measurements (the disinfection profile). Systems must retain the

disinfection profile data in graphic form, such as a spreadsheet, which must be available for review by the Director as part of a sanitary survey. Systems must use this data to calculate a benchmark if they are considering changes to disinfection practices.

19-008 DISINFECTION BENCHMARK

19-008.01 Who Must Develop a Disinfection Benchmark: Systems that use surface water or ground water under the direct influence of surface water that are required to develop a disinfection profile under 179 NAC 19-007.01 through 19-007.07 must develop a disinfection benchmark if they decide to make a significant change to their disinfection practice. These systems must consult with the Director for approval before implementing a significant disinfection practice change.

19-008.02 Significant changes to disinfection practices include:

1. Changes to the point of disinfection;
2. Changes to the disinfectant(s) used in the treatment plant; or
3. Changes to the disinfection process.

19-008.03 If a system is considering a significant change to its disinfection practice, the system must calculate a disinfection benchmark(s) as described in 179 NAC 19-008.04 and 19-008.05 and provide the benchmark(s) to the Director. Systems may only make a significant disinfection practice change after consulting with the Director for approval. Systems must submit the following information to the Director as part of the consultation and approval process:

1. A description of the proposed change;
2. The disinfection profile for *Giardia lamblia* (and, if necessary, viruses) and disinfection benchmark; and
3. An analysis of how the proposed change will affect the current levels of disinfection.

19-008.04 Calculating the disinfection benchmark: Systems making a significant change to their disinfection practice must calculate a disinfection benchmark using the procedure specified in the following table.

To Calculate a Disinfection Benchmark Your System Must Perform the Following Steps

Step 1: Using the data your system collected to develop the disinfection profile, determine the average <i>Giardia lamblia</i> inactivation for each calendar month by dividing the sum of all <i>Giardia lamblia</i> inactivations for that month by the number of values calculated for that month.

Step 2: Determine the lowest monthly average value out of the twelve values. This value

becomes the disinfection benchmark.

19-008.05 Systems That Use Chloramines, Ozone, or Chlorine Dioxide for Primary Disinfection: These systems must calculate the disinfection benchmark from the data the system collected for viruses to develop the

disinfection profile in addition to the Giardia lamblia disinfection benchmark calculated under 179 NAC 19-008.04. This viral benchmark must be calculated in the same manner used to calculate the Giardia lamblia disinfection benchmark in 179 NAC 19-008.04.

19-009 COMBINED FILTER EFFLUENT REQUIREMENTS

19-009.01 All systems that use surface water or ground water under the direct influence of surface water and serve fewer than 10,000 persons, are required to filter, and utilize filtration other than slow sand filtration or diatomaceous earth filtration must meet the combined filter effluent turbidity requirements of 179 NAC 19-009.02 to 19-009.04. Systems that use slow sand or diatomaceous earth filtration are not required to meet the combined filter effluent turbidity limits of 179 NAC 19, but they must continue to meet the combined filter effluent turbidity limits in 179 NAC 13-006.

19-009.02 Strengthened Combined Filter Effluent Turbidity Limits: Systems must meet two strengthened combined filter effluent turbidity limits:

1. The first combined filter effluent turbidity limit is a “95th percentile” turbidity limit that systems must meet in at least 95% of the turbidity measurements taken each month. Measurements must continue to be taken as described in 179 NAC 13-007.01 and 13-007.03. Monthly reporting must be completed according to 179 NAC 19-011.01. The following table describes the required limits for specific filtration technologies.

If Your System Consists of	Your 95th Percentile Turbidity Value Is
1. Conventional Filtration or Direct Filtration	0.3 NTU.
2. All other “Alternative” Filtration	A value determined by the Director (not to exceed 1 NTU) based on the demonstration described in 179 NAC 19-009.03.

2. The second combined filter effluent turbidity limit is a “maximum” turbidity limit which your system may at no time exceed during the month. Measurements must continue to be taken as described in 179 NAC 13-007.01 and 13-007.03. Monthly reporting must be completed according to 179 NAC 19-011.01. The following table describes the required limits for specific filtration technologies.

If Your System Consists of	Your Maximum Turbidity Value Is
1. Conventional Filtration or Direct Filtration	1 NTU
2. All other “Alternative” Filtration	A value determined by the Director (not to exceed 5 NTU) based on the demonstration as described in 179 NAC 19-009.03.

19-009.03 Systems Using “Alternative Filtration:”

19-009.03A Systems using alternative filtration (filtration other than slow sand filtration, diatomaceous earth filtration, conventional filtration, or direct filtration) are required to conduct a demonstration (see tables in 179 NAC 19-009.02). Systems must demonstrate to the Director, using pilot plant studies or other means, that their system's filtration, in combination with disinfection treatment, consistently achieves:

1. 99% removal of *Cryptosporidium* oocysts;
2. 99.9% removal and/or inactivation of *Giardia lamblia* cysts; and
3. 99.99% removal and/or inactivation of viruses.

19-009.04 Systems using lime softening may acidify representative combined filter effluent turbidity samples prior to analysis using a protocol approved by the Director.

19-010 INDIVIDUAL FILTER TURBIDITY REQUIREMENTS

19-010.01 Systems that use surface water or ground water under the direct influence of surface water and serve fewer than 10,000 people and utilize conventional filtration or direct filtration must conduct continuous monitoring of turbidity for each individual filter. The following requirements apply to continuous turbidity monitoring:

1. Monitoring must be conducted using an approved method in 179 NAC 13-007.01;
2. Calibration of turbidimeters must be conducted using procedures specified by the manufacturer and by analytical test procedures contained in Technical Notes on Drinking Water Methods, EPA-600/R-94-173, October 1994 which is hereby incorporated by reference. (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. The toll-free number is 800-553-6847.) The document may be inspected at the Department of Health and Human Services Regulation and Licensure, Public Health Assurance Division, 301 Centennial Mall South, Lincoln, NE 68509.
3. Results of turbidity monitoring must be recorded at least every 15 minutes;
4. Monthly reporting must be completed according to 179 NAC 19-011.01; and
5. Records must be maintained according to 179 NAC 19-011.02.

19-010.02 Turbidity Monitoring Equipment Failure: If there is a failure in the continuous turbidity monitoring equipment, the system must conduct grab sampling every four hours in lieu of continuous monitoring until the turbidimeter is back on-line. The system has 14 days to resume continuous monitoring before a violation is incurred.

19-010.03 One Or Two Filters: If a system consists of only one or two filters, the system may conduct continuous monitoring of combined filter effluent turbidity in lieu of individual filter effluent turbidity monitoring. Continuous monitoring must meet the same requirements set forth in 179 NAC 19-

010.01 items 1 through 4 and 19-010.02.

19-010.04 Follow-up action is required according to the following tables:

If	Your System Must
<p>a. The turbidity of an individual filter (or the turbidity of combined filter effluent (CFE) for systems with 2 filters that monitor CFE in lieu of individual filters) exceeds 1.0 NTU in two consecutive recordings 15 minutes apart</p>	<p>Report to the Department by the 10th of the following month and include the filter number(s), corresponding date(s), turbidity value(s) which exceeded 1.0 NTU, and the cause (if known) for the exceedance(s).</p>
If a System Was Required to Report to the Director	Your System Must
<p>b. For three months in a row and turbidity exceeded 1.0 NTU in two consecutive recordings 15 minutes apart at the same filter (or CFE for systems with 2 filters that monitor CFE in lieu of individual filters)</p>	<p>Conduct a self-assessment of the filter(s) within 14 days of the day the filter exceeded 1.0 NTU in two consecutive measurements for the third straight month unless a CPE as specified in 17919-010.04 item c was required. Systems with two filters that monitor CFE in lieu of individual filters must conduct a self assessment on both filters. The self-assessment must consist of at least the following components: assessment of filter performance; development of a filter profile; identification and prioritization of factors limiting filter performance; assessment of the applicability of corrections; and preparation of a filter self-assessment report.</p>
<p>c. For two months in a row and turbidity exceeded 2.0 NTU in two consecutive recordings 15 minutes apart at the same filter (or CFE for systems with two filters that monitor CFE in lieu of individual filters)</p>	<p>Arrange to have a comprehensive performance evaluation (CPE) conducted by the Director or a third party approved by the Director not later than 60 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month. If a CPE has been completed by the Director or a third party approved by the Director within the 12 prior months or the system and the Director are jointly participating in an ongoing Comprehensive Technical Assistance (CTA) project at the system, a new CPE is not required. If conducted, a CPE must be completed and submitted to the Department no later than 120 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight</p>

month.

19-010.05 Lime Softening: Systems that utilize lime softening may apply to the Director for alternative turbidity exceedance levels for the levels specified in the table in 179 NAC 19-010.04. The system must be able to demonstrate to the Director that higher turbidity levels are due to lime carryover only, and not due to degraded filter performance.

19-011 REPORTING AND RECORDKEEPING REQUIREMENTS

19-011.01 The following table lists the items that must be reported and the frequency of reporting. Systems subject to the specific requirement shown in the first column are required to report the information that follows.

Corresponding Requirement	Description of Information to Report	Frequency
<p>a. Combined Filter Effluent Requirements (179 NAC 19-009.01 to 19-009.04)</p>	<p>1. The total number of filtered water turbidity measurements taken during the month.</p> <p>2. The number and percentage of filtered water turbidity measurements taken during the month which are less than or equal to the system's required 95th percentile limit.</p> <p>3. The date and value of any turbidity measurements taken during the month which exceed the maximum turbidity value for your filtration system.</p>	<p>By the 10th month.</p> <p>By the 10th of the following month.</p> <p>By the 10th of the following month.</p>
<p>b. Individual Turbidity Requirements (179 NAC 19-010.01 to 19-010.05)</p>	<p>1. That the system conducted individual filter turbidity monitoring during the month.</p> <p>2. The filter number(s), corresponding date(s), and the turbidity value(s) which exceeded 1.0 NTU during the month, and the cause (if known) for the exceedance(s), but only if</p>	<p>By the 10th of the following month.</p> <p>By the 10th of the following month.</p>

	<p>two consecutive measurements exceeded 1.0 NTU.</p> <p>3. If a self-assessment is required, the date that it was triggered and the date that it was completed.</p> <p>4. If a CPE is required, that the CPE is required and the date that it was triggered</p> <p>5. Copy of completed CPE report</p>	<p>By the 10th of the following month (or 14 days after the self-assessment was triggered only if the self-assessment was triggered during the last four days of the month).</p> <p>By the 10th of the following month.</p> <p>Within 120 days after the CPE was triggered.</p>
c. Disinfection Profiling (179 NAC 19-007.01 to 19-007.07)	<p>1. Results of optional monitoring which show TTHM levels <0.064 mg/L and HAA5 levels <0.048 mg/L (Only if your system wishes to forgo profiling) or that your system has begun disinfection profiling.</p>	<p>(i) For systems serving 500 - 9,999 by July 1, 2003;</p> <p>(ii) For systems serving fewer than 500 by January 1, 2004.</p>
d. Disinfection Benchmarking (179 NAC 19-008.01 to 19-008.05)	<p>1. A description of the proposed change in disinfection, your system's disinfection profile for <i>Giardia lamblia</i> (and, if necessary, viruses) and disinfection benchmark, and an analysis of how the proposed change will affect the current levels of disinfection.</p>	<p>Any time your system is considering a significant change to its disinfection practice.</p>

19-011.02 Required Recordkeeping: Systems must keep several types of records based on the requirements of 179 NAC 19, in addition to recordkeeping requirements under 179 NAC 13-008. The following table describes the necessary records, the length of time these records must be kept, and the requirement for which the records pertain. Systems are required to maintain records described in this table, if the system is subject

to the specific requirement shown in the first column.

Corresponding Requirement	Description of Necessary Records	Duration of Time Records Must Be Kept
a. Individual Filter Turbidity Requirements (179 NAC 19-010.01 to 19-010.05)	Results of individual filter monitoring	At least 3 years
b. Disinfection Profiling (179 NAC 19-007.01 to 19-007.07)	Results of profile (including raw data and analysis)	Indefinitely
c. Disinfection Benchmarking (179 NAC 19-008.01 to 19-008.05)	Benchmark (including raw data and analysis)	Indefinitely

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 20 - LABORATORY CERTIFICATION AND AGREEMENT REQUIREMENTS FOR TESTING DRINKING WATER

001. AUTHORITY. These regulations govern the certification of laboratories to be able to test drinking water compliance samples as set out in the Nebraska Safe Drinking Water Act, Nebraska Revised Statute (Neb. Rev. Stat) §§ 71-5301 to 71-5313 and 71-2618 to 71-2621.

002. DEFINITIONS. For purposes of this chapter, definitions in the Nebraska Safe Drinking Water Act and the following definitions are hereby adopted.

002.01 AGREEMENT. A binding contract between the Department of Health and Human Services (Department) and a laboratory that allows the certified, provisionally certified, or interim certified laboratory to perform compliance testing.

002.02 CERTIFICATE. The document issued by the Department indicating that the laboratory has fulfilled the requirements for certification and is authorized to perform analyses for water intended for human consumption.

002.03 COMPLETE APPLICATION. An initial application or renewal application which contains all of the required information, with attestation to its truth and completeness, signatures of the applicant(s), submitted with all required fees and documentation.

002.04 COMPLIANCE SAMPLES. Those water samples required under the Nebraska Safe Drinking Water Act and the regulations adopted thereunder to determine whether a public water system meets current drinking water standards.

002.05 DAY. A calendar day unless otherwise specified.

003. CERTIFICATION FOR LABORATORIES IN NEBRASKA. Applicants must submit a complete application provided by the Department and meet all requirements of the statutes and this chapter. All standards and documents referenced in this chapter can be obtained at Department of Health and Human Services, Public Health Environmental Laboratory, 3701 S. 14th Street, Lincoln NE 68502 or be viewed on the Department's website.

003.01 FIRST-TIME CERTIFICATION OR ADDITIONAL OR NEWLY REGULATED CONTAMINANTS. An applicant for first-time certification for microbiology, chemistry, radiochemistry, or additional or newly regulated contaminants must submit a complete application and the following information:

- (A) A copy of diploma(s) or transcript(s) for the personnel listed on the application;
- (B) A Quality Assurance Manual;
- (C) A completed checklist from the Environmental Protection Agency Manual for Certification of Laboratories Analyzing Drinking Water, Fifth Edition (January 2005) including Supplement 1 (June 2008) and

Supplement 2 (November 2012) depending on the methods and analytes being requested. A completed chemistry checklist form is required when chemistry methods certification is being requested, a completed microbiology checklist form is required when microbiological methods certification is being requested, and a completed radiochemistry checklist form is required when radiochemistry methods certification is being requested; and

(D) The most current proficiency testing results for each method and analyte, to the Department. The results must be sent directly from the proficiency testing provider. If the applicant is applying for a new certification for a method and analyte it must have a proficiency testing provider send a copy of proficiency testing results performed within the last 60 days for each method and analyte. If the applicant is applying for recertification, at least one acceptable proficiency testing result must be received for each method and analyte in every 12-month period.

003.02 UPGRADING CERTIFICATION. Through a written request, an applicant may seek upgrading of certification, when and if it can demonstrate to the Department that the deficiencies that produced provisionally certified status have been corrected.

003.03 CERTIFICATION. Based on the application for certification, proficiency testing sample results, on-site visit results for applicable laboratories, and on-site visit reports for reciprocity applicants, the Department will classify the applicant for each contaminant or group of contaminants according to this section.

003.03(A) CERTIFIED. An applicant that meets the requirements set out in this chapter.

003.03(B) PROVISIONALLY CERTIFIED. Has deficiencies but demonstrates its ability to consistently produce valid data within the acceptance limits set out in the regulations adopted under the Nebraska Safe Drinking Water Act. A provisionally certified laboratory may analyze drinking water samples for compliance purposes providing a valid agreement is in place, and its clients are notified of its downgraded status in writing, on any report.

003.03(C) NOT CERTIFIED. An applicant that does not meet the requirements set out in this chapter.

003.03(D) INTERIM CERTIFICATION. An applicant may be granted interim certification in certain circumstances when it wants to add an analyte or analytes to its certification involving a method for which it already has certification and it is impossible or unnecessary to perform an on-site audit. Interim certification status may be granted if the Department determines that the applicant has the appropriate instrumentation, is using the approved methods, has adequately trained personnel to perform the analyses, and has satisfactorily analyzed proficiency testing samples, if available, for the contaminants in question. The applicant's quality control data and proficiency testing data are to be reviewed by the Department before granting this type of certification is granted.

003.03(E) RECIPROCITY. Certified by reciprocity as set out in this chapter.

003.04 CERTIFICATION BY RECIPROCITY. An applicant for first-time certification for microbiology, chemistry, or radiochemistry or additional or newly regulated contaminants based on accreditation from a national accrediting body, another state that is Environmental Protection Agency certified or by the environmental Protection Agency or is state certified laboratory located outside of Nebraska must submit a complete application and the following:

- (A) A copy of the applicant's certification and accreditation certificate, clearly showing the name of the laboratory, the certification or accreditation entity, the methods, and analytes the certification covers, the beginning date and the expiration date of the certificate;
- (B) The most current proficiency testing results for each method and analyte, to the Department; The results must be sent directly from the proficiency testing provider; and
- (C) A copy of the applicant's latest on-site audit report from the certifying body.

004. APPROVED CERTIFICATION BODIES AND ACCREDITATION BODIES.

The Department will accept certification or accreditation from the following organizations for the purposes of certification in Nebraska:

- (A) An Environmental Protection Agency Certified Laboratory;
- (B) A state laboratory certified by the Environmental Protection Agency;
- (C) A laboratory certified by a state certification program; or
- (D) A laboratory accredited by the National Environmental Laboratory Accreditation Program.

005. CERTIFICATION STANDARDS FOR LABORATORIES IN NEBRASKA THAT ARE CERTIFIED BY THE DEPARTMENT.

To be certified and maintain certification by the Department, an applicant must meet the following requirements:

- (A) The regulatory performance criteria as explained in the Environmental Protection Agency Manual for the Certification of Laboratories Analyzing Drinking Water, Fifth Edition, (January 2005) including Supplement 1 (June 2008) and Supplement 2 (November 2012) and all other applicable regulatory requirements. The manual, Environmental Protection Agency 815-R-05-004, is incorporated herein by reference;
- (B) Use the methods set out in the regulations adopted under the Nebraska Safe Drinking Water Act;
- (C) Comply with a current laboratory quality assurance plan, as specified in the Environmental Protection Agency Manual for the Certification of Laboratories Analyzing Drinking Water, Fifth Edition, (January 2005) including Supplement 1 (June 2008) and Supplement 2 (November 2012);
- (D) Maintain current administrative and analytical standard operating procedures that follow the format set out in Guidance for the Preparation of Standard Operating Procedures (SOPs) for Quality Related Documents, April

2007, (Environmental Protection Agency QA/G-6), published by the United States Environmental Protection Agency Quality Assurance Division, Washington, DC 20460, which is incorporated herein by this reference; (E) Employ both a laboratory director and a quality assurance manager having the following qualifications:

(i) The laboratory director must be a qualified professional with the technical education and experience, and managerial capability commensurate with the size and type of the laboratory. The laboratory director is ultimately responsible for ensuring that all laboratory personnel have demonstrated proficiency for their assigned functions and that all data reported by the laboratory meet the required quality assurance criteria and regulatory requirements; and

(ii) The quality assurance manager must be independent from the laboratory management, if possible, and have direct access to the highest level of management and meet the following:

(1) Have a bachelor's degree in science or the equivalent work experience, training in quality assurance principles commensurate with the size and sophistication of the laboratory, and at least 1 year of experience in quality assurance; and

(2) Have a working knowledge of the statistics involved in quality control of laboratory analysis and a basic understanding of the methods which the laboratory employs;

(F) Document the laboratory has analyzed a proficiency testing sample with acceptable results for each test method for which certification is requested within the past 60 days prior to the date of application and every 12 months for each test method for which certification is maintained. Proficiency testing samples must be obtained from a proficiency testing provider approved by National Environmental Laboratory Accreditation Program. The proficiency testing provider must send results of the proficiency testing samples directly to the Department. If the results of a proficiency testing sample are unacceptable, the laboratory has 60 days to perform another test and obtain satisfactory results to maintain certification;

(G) Be able to provide documentation to the Department that the person(s) analyzing any proficiency testing sample(s) is a laboratory employee who routinely analyzes drinking water compliance samples;

(H) Accurately analyze the proficiency testing samples by each method for which the laboratory wishes to be certified;

(I) Analyze proficiency testing samples in the same manner, including the same number of times, that the laboratory tests compliance samples;

(J) For those laboratories that do compliance testing for a system(s) in which they may have a vested interest or by which they may be owned, agree to have a minimum of 10% of the minimum number of samples per month set out in the regulations adopted under the Nebraska Safe Drinking Water Act, or a minimum of 1 sample per week of drinking water compliance testing, whichever is more, analyzed by the Department Laboratory or a certified laboratory which maintains an agreement with the Department for the specific compliance testing and which is not owned by and does not have a vested interest in the testing results. Compliance samples must be collected and analyzed at regular time intervals throughout the month;

- (K) Submit results in an electronic format acceptable to the Department;
and
(L) Notify the Department in writing within 30 days of any change to the following:

- (i) The name and street address of the laboratory;
- (ii) The name of the laboratory director;
- (iii) The name of the laboratory quality assurance manager;
- (iv) Test methods used;
- (v) Quality assurance plan;
- (vi) Standard operating procedures; or
- (vii) The name of the primary analyst for certified methods.

006. EFFECTIVE DATE AND TERM OF CERTIFICATION. All certifications are valid for not more than 36 months and expire on December 31 of the third year, except certification based on reciprocity, which expire on the expiration date of the certifying body's certification. No reciprocity certification can exceed 36 months.

007. DISCIPLINARY ACTIONS.

007.01 GROUNDS FOR DOWNGRADING TO PROVISIONALLY CERTIFIED STATUS. A laboratory will be downgraded to provisionally certified status for a contaminant or group of contaminants for any of the following reasons:

- (A) Failure to analyze a proficiency testing sample at least every 12 months within the acceptance limits specified by the proficiency testing provider;
- (B) Failure of a certified laboratory to notify the Department within 30 days of major changes (e.g., in personnel, equipment, or laboratory location);
- (C) Failure to satisfy the Department that the laboratory is maintaining the required standard of quality, based upon an on-site evaluation; or
- (D) Failure to report compliance data to the public water system and to the Department of Environment and Energy, Drinking Water Monitoring and Compliance Program, in a timely manner as determined by it and set out in the regulations adopted under the Nebraska Safe Drinking Water Act. Data which may cause a system to exceed a maximum contaminant or action level must be reported to the public water system and to the Department of Environment and Energy, Drinking Water Monitoring and Compliance Program, immediately upon discovery.

007.02 GROUNDS FOR DENIAL, REVOCATION, SUSPENSION, OR REFUSAL TO RENEW. A laboratory certification may be denied, revoked, suspended, or refused renewal for any of the following reasons:

- (A) Violation of Neb. Rev. Stats. §§ 71-2619 to 2621, the Nebraska Safe Drinking Water Act, or this chapter;
- (B) Falsification of data or other deceptive practices;
- (C) Failure to maintain required staff;
- (D) Failure to comply with the reporting requirements;
- (E) Failure to use the analytical methodology for which the laboratory is

certified;

(F) Refusal or failure to participate in an on-site evaluation conducted by the Department or to provide information or documents requested by the Department;

(G) Failure to successfully analyze a proficiency testing sample or any other unknown test sample for a particular contaminant within the acceptance limits specified;

(H) Failure to demonstrate to the Department that the laboratory has corrected deviations identified during an on-site evaluation; or

(I) Failure to report compliance data to the public water system and to the Department of Environment and Energy, Drinking Water Monitoring and Compliance Program, in a timely manner as determined by it and set out in the regulations adopted under the Nebraska Safe Drinking Water Act. Data which may cause a system to exceed a maximum contaminant or action level must be reported to the public water system and to the Department of Environment and Energy, Drinking Water Monitoring and Compliance Program, immediately upon discovery.

007.03 REQUEST FOR HEARING. In the event of any disciplinary action, the decision of the Department will be final 30 days after the mailing of the notice unless the director or other designated representative of the laboratory, within such period, gives written notice to the Department of a desire for hearing. Hearings before the Department will be conducted in accordance with Chapter 84, Article 9 and 184 NAC 1.

008. RECORD KEEPING. The laboratory must ensure that records for on-site laboratory assessments and certification program reviews are maintained in an easily accessible central location for a period of 6 years to include the last 2 on-site audits. This includes records and correspondence used to determine compliance with the requirements in 179 NAC 20 and checklists, corrective action reports, final reports, certificates, proficiency testing study results, and related documents.

009. FEES. The fees for inspection of a laboratory are as follows:

- (A) Bacteriological examination \$150
- (B) Inorganic chemical analyses \$100
- (C) Heavy metal analyses \$200
- (D) Organic chemical analyses \$200
- (E) Radiochemical analyses \$200

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 21 - OPERATION AND MAINTENANCE OF TRANSIENT NON-COMMUNITY PUBLIC WATER SYSTEMS

21-001 SCOPE AND AUTHORITY: These regulations establish minimum requirements for the operation and maintenance of existing transient non-community (TNC) public water systems. The authority is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

21-002 COMPLIANCE DATE: These regulations are effective for the purpose of compliance beginning May 1, 2004. Until that date, operation and maintenance requirements for public water systems are found in 179 NAC 2-008.

21-003 DEFINITIONS

Department means the Department of Health and Human Services Regulation and Licensure.

Director means the Director of Regulation and Licensure or his/her authorized representative.

Encroachment means a potential source of contamination located less than a specified minimum horizontal separation distance from a public water supply source or any other likely hazards to the safety of the drinking water quality, pressure, or economies delivered by the system. Examples applicable to transient water systems include but are not limited to those potential sources of contamination and minimum horizontal separation distances identified in 178 NAC 12-003.01B.

21-004 GENERAL OPERATING REQUIREMENTS: All transient public water systems must:

1. Be operated and supervised by competent personnel possessing a minimum Grade V certificate of competency issued by the Director.
2. Assure an adequate supply of safe drinking water on a continuous basis during periods of operation.
3. Notify the Director of any situation with the water system which presents or may present an imminent and substantial hazard to health;
4. Maintain an emergency contact list that includes a list of individuals who may be called for help in times of disaster, their titles and their phone numbers. This list must be updated annually with a copy sent to the Department.
5. Ensure that there are no unprotected physical connections between the public water system and any pipes, pumps, hydrants, tanks, steam condensate returns, engine jackets, heat exchangers, or other system components whereby potentially unsafe water or contaminating materials may be discharged or drawn into the public water system unless first approved by the public water system and then by the Director.

21-005 GENERAL MAINTENANCE: All transient public water systems must adopt and carry out a preventive maintenance program incorporating the

following elements:

1. Secure all water system facilities in a manner that protects the supply from contamination and prevents unauthorized entry and vandalism.
2. Inspection, servicing, replacement, and record keeping of all mechanical equipment in accordance with manufacturer's recommendations for such maintenance. An operation and maintenance manual must be maintained and updated when facility equipment changes occur. The operation and maintenance manual must include specification of equipment and recommended maintenance practices of that equipment as specified by the manufacturers.
3. Prevention of rust and corrosion by application of paint, protective coatings, or cathodic protection or other treatment capable of prolonging the useful life of the system.
4. Take all available action as necessary to protect the system and its components from encroachments which are likely hazards to the safety of the drinking water quality, or which could have a substantial impact on the system pressure or economies delivered by the system. Such action includes the adoption of ordinances, regulations, contracts, or other enforceable instruments necessary to ensure adequate protection from encroachments.

21-006 WELLS AND PUMPING FACILITIES: All transient public water systems must:

1. Maintain a sanitary seal on each wellhead.
2. Seal cracks and crevices to prevent entry of vermin, flooding, or other contaminants.
3. Maintain well casing vents, and where applicable, air release/vacuum relief valves, in a down-turned position and screened with corrosion resistant materials which have openings no larger than 24 mesh.

21-007 DISTRIBUTION SYSTEMS: All transient public water systems must operate to maintain a minimum positive pressure of 20 psi throughout the distribution system except under extraordinary conditions such as unusual peak fire flow demand or major distribution system breaks.

21-008 POTABLE WATER STORAGE FACILITIES: All transient public water systems must:

1. Inspect, and clean if necessary, water storage facilities equipped for accessibility, no less than once every five years.
2. Secure the storage facility by use of locks on access manholes and hatches, and take other necessary precautions to prevent trespassing, vandalism, and sabotage.
3. Where applicable, provide and maintain corrosion resistant screen of an effective mesh size on water storage structure vents. Screen mesh size must be proper for the vent design. Replace when necessary with in-kind screen.
4. Where applicable, maintain water tightness as designed, of walls, floor, and roof to prevent the entrance of nonpotable water, birds, and other contaminant sources.

5. Where applicable, provide and maintain a corrosion resistant screen of effective mesh size and/or a self-closing flap valve installed near or at the termination of all overflow lines on water storage structures. Screen mesh size and flap valves must be proper for the overflow line design. Replace when necessary with in-kind screen and/or flap valve. The termination point of the overflow lines must be maintained so that overflow discharge does not create, or contribute to, an erosion problem.

21-009 TREATMENT: Transient public water systems that use ion exchange softeners are not subject to the following requirements. All other transient public water systems that use a process for removal of a primary or secondary contaminant, or apply chemicals for the purpose of conditioning, continuous disinfection, or adjustment of drinking water must do the following:

1. Maintain and record accurate measurement of chemical use no less often than five days per week.
2. Provide an ammonia solution for use in detecting chlorine leaks when gas chlorination is used,.
3. Store chemicals in accordance with manufacturer's recommendations for chemical compatibility.
4. Maintain color coding in accordance with the following color scheme, or utilize other identification to easily differentiate between pipes.

Water Lines

Raw	Olive Green
Settled or Clarified	Aqua
Finished or Potable	Dark Blue

Chemical Lines

Alum or Primary Coagulant	Orange
Ammonia	White
Carbon Slurry	Black
Caustic	Yellow with green band
Chlorine (gas and solution)	Yellow
Fluoride	Light blue with red band
Lime Slurry	Light green
Ozone	Yellow with orange band
Phosphate Compounds	Light green with red band
Polymers or Coagulant Aids	Orange with green band
Potassium Permanganate	Violet
Soda Ash	Light green with orange band
Sulfuric Acid	Yellow with red band
Sulfur Dioxide	Light green with yellow band

Waste Lines

Backwash Waste	Light brown
Sludge	Dark brown

Sewer (sanitary or other)	Dark gray
	<u>Other</u>
Compressed Air	Dark green
Gas	Red
Other Lines	Light gray

5. Where applicable, maintain operational records and filtration log used in conjunction with treatment processes used for removal or inactivation of regulated contaminants for a minimum of five years.
6. If disinfecting, provide approved methodology equipment for accurate measurement of disinfectant residual.
7. When treating to remove or inactivate regulated contaminants, provide proper test equipment to determine process control changes.
8. For systems that are required to disinfect on a continuous basis and have treatment facilities that are not staffed 24 hours per day, the system must provide a means by which a disinfectant is applied accurately on a continuous basis. This does not apply to systems under an Administrative Order that require chlorination for only six months.
9. Record accurate measurement of gallons of water pumped per minute (gpm) and the total time pumped or total gallons pumped of each treatment plant not less than once per week.
10. Provide functional operational controls for each filter used in conjunction with treatment processes consisting of removal of regulated contaminants.

21-010 RECORDS

1. All transient public water systems must maintain the following records where applicable, for a minimum of five years:
 - a. Written public health-oriented customer complaints related to water quality, quantity, pressure and system integrity.
 - b. Water main repair and replacement records, including results of special samples collected for microbiological water quality analysis, and disinfection method associated with repair and replacement.
 - c. Chemical use, where applicable.
 - d. Records of process control test results, test equipment quality assurance, and quality control.
2. Where applicable, all transient public water systems must maintain records pertaining to cleaning, inspection, repair, and protective coatings on water storage facilities for a minimum of 10 years.

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 22 - OPERATION AND MAINTENANCE OF COMMUNITY AND NON-TRANSIENT NON-COMMUNITY PUBLIC WATER SYSTEMS

22-001 SCOPE AND AUTHORITY: These regulations establish minimum requirements for the operation and maintenance of existing community and non-transient non-community (NTNC) public water systems. The authority is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313. These regulations are effective for the purpose of compliance on May 1, 2004.

22-002 COMPLIANCE DATE: These regulations are effective for the purpose of compliance beginning May 1, 2004. Until that date, operation and maintenance requirements for public water systems are found in 179 NAC 2-008.

22-003 DEFINITIONS

Department means the Department of Health and Human Services Regulation and Licensure.

Director means the Director of Regulation and Licensure or his/her authorized representative.

Encroachment means a potential source of contamination located less than a specified minimum horizontal separation distance from a public water supply source or any other likely hazards to the safety of the drinking water quality, pressure, or economies delivered by the system. Examples applicable to community water systems include but are not limited to those potential sources of contamination and minimum horizontal separation distances identified in Attachment 1 of 179 NAC 2-007. Examples applicable to NTNC water systems include but are not limited to those potential sources of contamination and minimum horizontal separation distances identified in 178 NAC 12-003.01B.

22-004 GENERAL OPERATING REQUIREMENTS: All community and NTNC public water systems must:

1. Be operated and supervised by competent personnel possessing a certificate of competency issued by the Director.
2. Assure an adequate supply of safe drinking water on a continuous basis.
3. Notify the Director of any situation with the water system which presents or may present an imminent and substantial hazard to health.
4. Flush and disinfect all newly constructed or serviced storage facilities, wells, and water mains not subject to the requirements of 179 NAC 2-007.02 or 2-007.04. Disinfection must be accomplished prior to placing the new or repaired portion of the system into service. Disinfection must be accomplished in accordance with the following methods which are incorporated herein by reference. They are available for viewing at the Department of Health and Human Services Regulation and Licensure, Public Health Assurance Division, 301 Centennial Mall South, Lincoln, NE

68509, or they can be obtained from the American Water Works Association, 6666 West Quincey Ave., Denver, CO 80235. Alternate methods may be approved by the Director after consultation.

a. Water wells

(1) Community - C654-97

(2) NTNC - C654-97 or requirements of 178 NAC 12-004.05A

b. Water Storage - C652-02

c. Mains - C651-99

5. Provide or have available personnel, tools, spare parts, work areas, and chemicals necessary to accomplish continuous operation of the system.

6. Maintain an emergency plan of operations for safeguarding the water supply, protecting the drinking water, and, if necessary, providing for an alternate drinking water supply in the event of natural or man-made disasters. The plan must include a list of individuals who may be called for help in times of disaster, their titles and their phone numbers. This list must be updated annually with a copy provided to the Department. The plan must state the basic domestic water needs and usage under normal conditions. Any special institutional, commercial or industrial users must be shown. Any special back-up or standby equipment or auxiliary power supply must be included as well as alternate sources of supply or bottled water sources. All available chemicals and equipment for the purpose of disinfection must be listed. The emergency plan must outline all emergency operations and must be updated at least every 3 years with copies provided to the Department of Health and Human Services Regulation and Licensure for inclusion in the state Drinking Water Emergency plan located in the Division of Public Health Assurance. The emergency plan must be placed at key locations, clearly marked and readily accessible to utility personnel.

7. Conduct an on-going program for the effective detection and elimination of cross-connections and the prevention of backflow. Such program is subject to review by the Director and must include and require:

a. That there be no unprotected physical connection between the public water system and any pipes, pumps, hydrants, tanks, steam condensate returns, engine jackets, heat exchangers, or other water supplies whereby potentially unsafe water or contaminating materials may be discharged or drawn into the public water system unless first approved by the public water system and then by the Director.

b. That the public water system must install or require installation of properly located backflow prevention assemblies, devices or methods appropriate to the potential hazards enumerated in Tables 1 and 2 when such hazards exist and where, in the opinion of the public water system, effective measures consistent with a potential risk have not been taken. Title 179 NAC 22-003 item 7.b. does not apply to lawn sprinkling systems, with the exception of those with provisions to inject toxic substances including lawn chemicals. A public water system that enacted provisions in its cross-connection control program requiring installation of dual check valves on residential service lines to protect

the public water system from low hazard cross-connections prior to [the effective date of these regulations] will be permitted to continue only if such installation was accomplished and maintenance of the devices is performed in accordance with the manufacturer's recommendations.

c. That there be no interconnection with the public water system and another potable water system unless first approved by the public water system and then by the Director.

TABLE 1

Cross-Connections Rated by Degree of Hazard for Commonly Encountered Equipment and Fixtures and Their Use

[For a more complete list, refer to the Manual of Cross-Connection Control referenced in 179 NAC 22-003 item 7.i.(1)]

Direct or Indirect Potable Water Connections	Hazard	
	High	Low
I. Subject to Back Pressure		
A. Pumps, tanks and lines handling:		
1. Sewage	X	
2. Toxic substances	X	
3. Nontoxic substances		X
B. Water connection to steam and steam boiler		
1. Boiler or steam connection to toxic substances	X	
2. Boiler or steam connection to nontoxic substances (boiler blowoff through air gap)		X
II. Not Subject to Back Pressure		
A. Sewer-connected water line (not subject to waste stoppages)	X	
B. Low inlets to receptacles containing:		
1. Toxic substances	X	
2. Nontoxic substances		X
C. Coils or jackets used as heat exchangers in compressors in lines carrying:		
1. Sewage	X	
2. Toxic substances	X	
3. Nontoxic substances		X
D. Flush valve toilets or urinals	X	
E. Toilet, urinal tanks and approved bathtubs		X
F. Bidets, sitz tanks, or spa, therapy and roman pools not otherwise isolated by design or backflow protectors	X	
G. Valved outlets or fixtures with hose attachments that may constitute a cross-connection to:		
1. Toxic substances	X	
2. Nontoxic substances		X
H. Aspirators that may constitute a cross-connection to:		
1. Toxic substances	X	
2. Nontoxic substances		X

TABLE 2

Permitted Backflow Assemblies, Devices and Methods

Assembly, Device or Method ¹	Degree of Hazard				Installation ^{2,3,4,6}
	Low		High		
	Back Siph- onage	Back Pres- sure	Back Siph- onage	Back Pres- sure	
Air Gap	X	X	X	X	<p>Must be a minimum of 1 inch but not less than</p> <p>2 times the diameter of the effective spout opening when not affected by side walls, and 3 times the diameter of the effective opening when affected by side walls. Side walls will be assumed to not affect air gaps when they are spaced horizontally a distance greater than 4</p> <p>times the effective opening from the spout opening.</p>
Atmospheric Vacuum Breaker	X		X		<p>Upright position. No valves downstream. Minimum of 6 inches or listed distance above all downstream piping & flood level rim of receptor⁵</p>
Double Check Valve Assembly	X	X			<p>Horizontal unless otherwise listed. Requires 1 foot below & sufficient side & head room for testing & maintenance with a maximum of 5 feet above the ground, work floor, or a permanently installed working platform with stairs or ladder affixed. Does not discharge</p> <p>water during normal operation.</p>
Pressure Vacuum Breaker Assembly	X		X		<p>Upright position. May have valves downstream. Minimum of 12 inches above all downstream piping & flood level rim of receptor. May discharge water.</p>
Reduced Pressure Principle Backflow Prevention	X	X	X	X	<p>Same as Double Check Valve Assembly above except may discharge water & wherever installed, provision for draining away at least 2 times the rated</p>

Assembly					gallons per minute of assembly must be made.	the
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Footnotes:

¹ For description of assemblies and devices, refer to the Cross-Connection Control Standards found in 179 NAC 22-003 item 7.i. Backflow preventers described herein and in the standards as "assemblies" must be installed as assemblies keeping the shutoff valves intact. Examples of sites having potential cross-connections are found in the manuals referenced in 179 NAC 22-003 item 7.i.

² Previous approval by the public water system is required for use of a pit or vault (normally prohibited due to possible flooding) or for parallel and bypass installations (normally prohibited without special design considerations and proper cross-connection controls).

³ Backflow preventers must not be located in any area containing fumes that are toxic, poisonous or corrosive; nor in any area in which they could be damaged by freezing, or by excessively high temperatures or pressures, vibration, physical impact or structural stress; nor knowingly be allowed to conduct highly corrosive or sandy waters without a special testing and maintenance program to assure proper & safe operation.

⁴ Refer to general and specific installation requirements as stated in the Cross-Connection Control Standards provided for in 179 NAC 22-003 item 7.i.(1) for conditions or situations not otherwise covered in these regulations.

⁵ Not to be subjected to operating pressure for more than 12 hours in any 24-hour period. Hose bibb vacuum breakers are permitted for some uses described in the Cross-Connection Control Standards listed in 179 NAC 22-003 item 7.i.(1). Where required under 179 NAC 22-003 item 7.b., hose bibbs must be protected with approved, anti-siphoning hose bibb vacuum breakers or a hose bibb with integral backflow protection. In hose bibb installations subject to freezing, such hose bibb vacuum breakers must be frost-proof and self-draining.

⁶ Fire protection systems as a minimum must be equipped with backflow prevention devices as described in AWWA Manual M-14, second edition. Backflow preventers under this regulation and connected to fire protection systems must be considered part of those systems. As such, they must not be installed, moved, removed, replaced, shut off or in any way altered unless in strict compliance with the rules and regulations promulgated by the State Fire Marshal.

d. That all backflow protection devices equipped with test ports be tested as often as required by the public water system but at least once each year by a Grade 6 certified water operator, with test results certified to the public water system as often as required by the public water system, but in no case more than 30 calendar days after the

test. Title 179 NAC 22-003 item 7.d. does not apply to lawn sprinkling systems, with the exception of those with provision to inject toxic substances including lawn chemicals.

e. That the public water system require its consumers to assess and report potential backflow hazards on their premises no less often than every five years and to take any steps necessary for protection of public health and safety as reasonably requested by the public water system.

f. That the public water system must maintain, or cause to be maintained, records of locations, types, tests and repairs of backflow preventers for a period of five years of said tests and repairs.

g. That backflow preventers required by this regulation must have been tested and approved or listed for the intended use by one of the following organizations:

(1) Foundation for Cross-Connection Control and Hydrologic Research, University of Southern California, University Park, Los Angeles, California 90089.

(2) American National Standards Institute, 1430 Broadway, New York, New York 10018.

(3) Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, Illinois 60062.

(4) National Sanitation Foundation, 2355 West Stadium Boulevard, P.O. Box 1468, Ann Arbor, Michigan 48106.

(5) International Association of Plumbing and Mechanical Officials, 5032 Alhambra Avenue, Los Angeles, California 90032.

h. That an on-going public information program must be conducted by the public water system to further the public water system customers' understanding and awareness of cross-connection hazards, the types of remedies available and the need to protect the public water system against backflow no less often than once per year.

i. That approval of Cross-Connection Control Programs (including as a minimum, backflow preventers, their installation, operation, testing, maintenance and repair) must be based on the following standards.

(1) Manual of Cross-Connection Control, published by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California, ninth edition, a copy of which is available for viewing at the Office of the Nebraska Department of Health and Human Services Regulation and Licensure, Public Health Assurance Division, 301 Centennial Mall South, Lincoln, NE 68509. Said manual may be obtained from the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California, KAP-200 University Park MC-2531, Los Angeles, CA 90089-2531.

(2) American Water Works Manual, M-14, second edition, a copy of which is available for viewing at the Office of the Nebraska Department of Health and Human Services Regulation and Licensure, Public Health Assurance Division, 301 Centennial Mall South, Lincoln, NE 68509. Said manual may be obtained from the American Water Works Association, 6666 West Quincey Ave.,

Denver, CO 80235.

22-005 GENERAL MAINTENANCE: All community and NTNC public water systems must adopt and carry out a preventive maintenance program incorporating the following elements:

1. Secure all water system facilities in a manner that protects the supply from contamination and prevents unauthorized entry and vandalism.
2. Inspection, servicing, replacement, and record keeping of all mechanical equipment in accordance with manufacturer's recommendations for such maintenance. An operation and maintenance manual must be maintained and updated when facility equipment changes occur. The operation and maintenance manual must include specification of equipment and recommended maintenance practices of that equipment as specified by the manufacturers.
3. Prevention of rust and corrosion by application of paint, protective coatings, cathodic protection, or other treatment capable of prolonging the useful life of the system.
4. Maintaining a system of records for the owner's annual review of the capability of the source of supply, treatment, storage, and distribution facilities to provide for future service demands both short-term and long-term (2 and 10 year plans);
5. Take all available action as necessary to protect the system and its components from encroachments which are likely hazards to the safety of the drinking water quality, or which could have a substantial impact on the system pressure or economies delivered by the system. Such action includes the adoption of ordinances, regulations, contracts, or other enforceable instruments necessary to ensure adequate protection from such encroachments. This may include issues such as zoning, water rights, condemnation, land purchases, easements, abandonment of old wells, and establishing lakes, lagoons, drainage ways, special use areas, and sanitary and water districts.
6. Have arrangements made for obtaining disinfection equipment to apply emergency disinfection within 24 hours of an incident that potentially impacts the microbiological quality of the drinking water.
7. If the system disinfects, have available equipment for accurate measurement of disinfectant residual.

22-006 WELLS AND PUMPING FACILITIES: All NTNC public water systems must comply with the first four of the following items. All community public water systems must comply with all the following items.

1. Maintain a sanitary seal on each wellhead.
2. Seal cracks and crevices to prevent entry of vermin, flooding, or other contaminants.
3. Maintain down-turned well casing vents, and where applicable, air

- release/vacuum relief valves, with 24-mesh corrosion resistant screens.
4. Tightly seal all penetrations into the upper terminus of the well casing.
 5. Maintain a means to pump each well to waste.
 6. Provide a labeled, dedicated electrical outlet, in each appropriate location for chemical feed equipment.
 7. Have a chemical tap available on the finished water discharge line located downstream from the check valve.
 8. For systems that are required to disinfect on a continuous basis and have treatment facilities that are not staffed 24 hours per day, the system must provide a means by which a disinfectant is applied accurately on a continuous basis. This does not apply to systems under an Administrative Order that require chlorination for only six months.
 9. Record accurate measurement of gallons of water pumped per minute (gpm) and the time pumped or total gallons pumped, for each well not less than once per week.
 10. Measure and record static water levels and pumping water levels, and calculate available drawdown in each active well at a frequency of no less than once every three months from October 1 through April 30 of each year, and at a frequency of no less than once per month from May 1 through September 30 of each year. Static and pumping levels must be expressed as the distance in feet from the measuring point at the upper terminus of the well to the water level in the well. Available drawdown must be expressed as the distance in feet between the static water level and the top of the well screen or pump intake whichever is located nearer to the static water level.
 11. Have a readily accessible auxiliary power source to provide a supply of safe drinking water for emergency use within 24 hours.
 12. Provide and maintain on the premises signage for emergencies and chemical hazards in accordance with 179 NAC 22 Attachment 1.
 13. Maintain clean well houses and pumping facilities for the purpose of producing safe drinking water with the emphasis on easy access to those system components requiring periodic attention.

22-007 DISTRIBUTION SYSTEMS: All community and NTNC public water systems must:

1. Operate to maintain a minimum positive pressure of 20 psi throughout the distribution system except under extraordinary conditions such as unusual peak fire flow demand or major distribution system breaks.
2. Maintain an up-to-date map of the distribution system showing locations, sizes and materials of underground lines and appurtenances.
3. Following a drop in system pressure to less than 20 psi, but maintaining a positive pressure, collect a minimum of two water samples at least 24 hours apart from each affected zone on the sample site plan. All samples must be collected within five working days of the recorded drop in system pressure and submitted for analysis to the Department Laboratory or to a laboratory that has entered into an agreement with the Department pursuant to 179 NAC 3-009. If any samples collected pursuant to the requirements of 179 NAC 22-006 item 3 show the presence of coliform organisms, disinfection procedures must be accomplished in accordance

with AWWA Standard C651-99. Alternate disinfection procedures may be used after consultation with and approval by the Director. If used, alternate disinfection procedures must continue until collection of water samples as prescribed in 179 NAC 22-006 item 3 show the complete absence of coliform organisms.

4. When system pressure is completely lost, collect a minimum of two sets of five samples from each affected zone on the sample site plan. Each set must be collected at least 24 hours apart. All samples must be collected within five working days of the recorded complete loss in system pressure and submitted for analysis to the Department Laboratory or a laboratory that has entered into an agreement with the Department pursuant to 179 NAC 3-009. If any samples collected pursuant to the requirements of 179 NAC 22-006 item 4 show the presence of coliform organisms, disinfection procedures must be accomplished in accordance with AWWA Standard C651-99. Alternate disinfection procedures may be used after consultation with and approval by the Director. If used, emergency disinfection procedures must continue until collection of water samples as prescribed in 179 NAC 22-006 item 4 show the complete absence of coliform organisms.

22-008 POTABLE WATER STORAGE FACILITIES: All community and NTNC public water systems must:

1. Inspect, and clean if necessary, water storage facilities equipped for accessibility, no less than once every five years.
2. Secure the storage facility by use of locks on access manholes and hatches, and take other necessary precautions to prevent trespassing, vandalism, and sabotage.
3. Provide and maintain corrosion resistant screen of an effective mesh size on water storage structure vents. Screen mesh size must be proper for the vent design. Replace when necessary with in-kind screen.
4. Maintain water tightness, as designed, of walls, floor, and roof to prevent the entrance of nonpotable water, birds, and other contaminant sources.
5. Provide and maintain a corrosion resistant screen of effective mesh size and/or a self-closing flap valve installed near or at the termination of all overflow lines on water storage structures. Screen mesh size and flap valves must be proper for the overflow line design. Replace when necessary with in-kind screen and/or flap valve. The termination point of the overflow lines must be maintained so that overflow discharge does not create, or contribute to, an erosion problem.

22-009 TREATMENT: All community and NTNC public water systems that use a process for removal of a primary or secondary contaminant, or apply chemicals for the purpose of conditioning, continuous disinfection, or adjustment of drinking water must:

1. Maintain and record accurate measurement of chemical use no less often than five days per week.
2. Provide an ammonia solution for use in detecting chlorine leaks when gas chlorination is used,.
3. Store chemicals in accordance with manufacturer's recommendations for chemical compatibility.
4. Maintain color coding in accordance with the following color scheme, or utilize other identification to easily differentiate between pipes.

Water Lines

Raw	Olive Green
Settled or Clarified	Aqua
Finished or Potable	Dark Blue

Chemical Lines

Alum or Primary Coagulant	Orange
Ammonia	White
Carbon Slurry	Black
Caustic	Yellow with green band
Chlorine (gas and solution)	Yellow
Fluoride	Light blue with red band
Lime Slurry	Light green
Ozone	Yellow with orange band
Phosphate Compounds	Light green with red band
Polymers or Coagulant Aids	Orange with green band
Potassium Permanganate	Violet
Soda Ash	Light green with orange band
Sulfuric Acid	Yellow with red band
Sulfur Dioxide	Light green with yellow band

Waste Lines

Backwash Waste	Light brown
Sludge	Dark brown
Sewer (sanitary or other)	Dark gray

Other

Compressed Air	Dark green
Gas	Red
Other Lines	Light gray

5. Where applicable, maintain operational records and filtration log used in conjunction with treatment processes used for removal or inactivation of regulated contaminants for a minimum of five years.

6. If disinfecting, provide approved methodology equipment for accurate measurement of disinfectant residual.
7. When treating to remove or inactivate regulated contaminants, provide proper test equipment to determine process control changes.
8. For systems that are required to disinfect on a continuous basis and have treatment facilities that are not staffed 24 hours per day, the system must provide a means by which a disinfectant is applied accurately on a continuous basis. This does not apply to systems under an Administrative Order that require chlorination for only six months.
9. Record accurate measurement of gallons of water pumped per minute (gpm) and the total time pumped or total gallons pumped of each treatment plant not less than once per week.
10. Provide functional operational controls for each filter used in conjunction with treatment processes consisting of removal of regulated contaminants.

22-010 RECORDS

1. All community and NTNC public water systems must maintain the following records for a minimum of five years:
 - a. Written public health-oriented customer complaints related to water quality, quantity, pressure and system integrity.
 - b. Water main repair and replacement records, including results of special samples collected for microbiological water quality analysis, and disinfection method associated with repair and replacement.
 - c. Chemical use, where applicable.
 - d. Records of process control test results, test equipment quality assurance, and quality control.
2. All community and NTNC public water systems must maintain records pertaining to cleaning, inspection, repair, and protective coatings on water storage facilities for a minimum of 20 years.

179 NAC 22 -- Attachment 1

This attachment prescribes the minimum hazardous material signage that water system facilities must place on entrances to chemical storage facilities as well as on bulk chemical storage containers and chemical day tanks.

I. Entrances to water system facilities and/ or rooms within water system facilities that store or use hazardous chemicals as part of the treatment process: Precautionary entrance labeling identifying the hazardous chemical: This labeling shall contain the following.

A. Common name of the chemical

B. A signal word such as "WARNING" or "DANGER" as described below.

1. Signs depicting "WARNING" must be yellow with black lettering to identify a potentially hazardous situation.

2. Signs depicting "DANGER" must have the word "DANGER" highlighted on a bright red background and be used for conditions that indicate an immediately hazardous situation.

C. Identification of the key hazard such as flammable or vapor harmful, etc.

D. A statement of precaution to avoid the hazards.

E. A color-coded diamond that readily distinguishes the degree of emergency health hazard (blue), fire hazard (red), reactivity hazard (yellow), and any other special hazards the chemical may represent. The following describes the appropriate labeling conditions.

FIRE HAZARD -----RED

0 --- WILL NOT BURN

1 --- WILL IGNITE IF PREHEATED

2 --- WILL IGNITE IF MODERATELY HEATED

3 --- WILL IGNITE AT MOST AMBIENT CONDITIONS

4 -- BURNS READILY AT AMBIENT CONDITIONS

HEALTH HAZARD -----BLUE

0 --- MINIMAL HAZARD

1 --- SLIGHTLY HAZARDOUS

2 --- HAZARDOUS

3 - EXTREME DANGER

4 - DEADLY

REACTIVITY HAZARD ---- YELLOW

0 - STABLE AND DOES NOT REACT WITH WATER

1 - UNSTABLE IF HEATED

2 - VIOLENT CHEMICAL CHANGE

3 - SHOCK AND HEAT MAY DETONATE

4 - READILY CAPABLE OF DETONATION AT NORMAL
TEMPERATURE AND PRESSURE

SPECIFIC HAZARDS - WHITE

OX --- OXIDIZER

ACID --- ACID

ALK --- ALKALINE

COR - CORROSIVE

W - REACTIVE WITH WATER



RADIOACTIVE

F. All the above information can be obtained from the chemical Material Safety Data Sheets (MSDS) for each chemical. The public water system must retain the most current copy of all MSDS(s) for all chemicals used in the treatment of potable water and have the MSDS located in an area so that they are available and accessible to all water operators and facility personnel.

G. All signage installed on entrances to water treatment facilities or rooms within the facilities must be located so that signage is readily visible to individuals entering the facility or rooms within the facility.

II. LABELING OF BULK TANK CHEMICAL STORAGE AND OR DAY-TANK CHEMICAL STORAGE

A. All bulk chemical storage tanks must be labeled as follows:

1. The common name of the chemical

2. The appropriate color-coded diamond with four quadrants designating the degree of emergency health hazard (blue), fire hazard (red), reactivity hazard (yellow), and any other special hazards as designated in the remaining quadrant (white). The coding for each hazard is described in 179 NAC 22 Attachment 1 item I.E.. The size of characters in this signage must be a minimum of 4 inches tall and placed so that the signage is visible from 200 feet away.

B. All day-tank chemical storage tanks are to be labeled in the same manner as described above with the signage characters a minimum of 3 inches in height and signage placed so it is visible a minimum of 100 feet away.

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 23 - INITIAL DISTRIBUTION SYSTEM EVALUATION (IDSE)

23-001 SCOPE AND AUTHORITY: These regulations establish monitoring and other requirements for identifying 179 NAC 24 compliance monitoring locations for determining compliance with maximum contaminant levels (MCLs) for total trihalomethanes (TTHMs) and haloacetic acids (five) (HAA5s). These regulations apply to community water systems that use a primary or residual disinfectant other than ultraviolet light or deliver water that has been treated with a primary or residual disinfectant other than ultraviolet light; and non-transient non-community water systems that serve at least 10,000 people and use a primary or residual disinfectant other than ultraviolet light or deliver water that has been treated with a primary or residual disinfectant other than ultraviolet light and systems that have not complied with the requirements of 40 CFR 141 Subpart U prior to the effective date of these regulations, that are identified by the Department after conducting compliance monitoring under 179 NAC 24 as requiring additional assessment. If a system began to comply with 40 CFR 141 Subpart U before the effective date of these regulations the system must complete the requirements under 179 NAC 23 upon its effective date. The statutory authority is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

23-002 DEFINITIONS

40/30 Certification means the certification a system provided to the Department saying the system met criteria specified in 40 CFR 141 Subpart U which exempted it from completing an initial distribution system evaluation.

Combined Distribution System means the interconnected distribution system consisting of the distribution systems of wholesale systems and of the consecutive systems that receive finished water.

Consecutive System means a public water system that receives some or all of its finished water from one or more wholesale systems. Delivery may be through a direct connection or through the distribution system of one or more consecutive systems.

Dual Sample Set means a set of two samples collected at the same time and same location, with one sample analyzed for TTHMs and the other sample analyzed for HAA5. Dual sample sets are collected for the purposes of conducting an IDSE under 179 NAC 23 and determining compliance with the TTHM and HAA5 maximum contaminant levels (MCLs) under 179 NAC 24.

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

Ground Water Under the Direct Influence of Surface Water (GWUDI) means 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* or *Cryptosporidium*, or significant and 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 Department. The Department 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.

Haloacetic Acids (five) (HAA5) means 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.

Locational Running Annual Average (LRAA) means the average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters.

Total Trihalomethanes (TTHMs) means the sum of the concentration in milligrams per liter of the trihalomethane compounds (trichloromethane [chloroform], dibromochloromethane, bromodichloromethane, and tribromomethane [bromoform]), rounded to two significant figures.

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

23-003 GENERAL REQUIREMENTS

23-003.01 Compliance Schedule

23-003.01A Systems (including those that are part of a combined distribution system) that have been notified by the Department to complete an IDSE must:

1. Submit a standard monitoring plan or system specific study plan within 3 months of notification by the Department of the requirement to comply.
 - a. If, within 12 months after the system submits a standard monitoring plan or a system specific study plan, the Department does not approve a system's plan or notify the system that it has not yet completed its review, the system may consider the submitted plan as approved. The plan must be implemented and standard monitoring or a system specific study must be completed no later than the time frame identified in 179 NAC 23-003.01A item 2.

2. Complete standard monitoring or system specific study within 24 months of submitting a standard monitoring plan or system specific study plan to the Department.

3. Submit the IDSE report to the Department within three months of completing the standard monitoring or system specific study.

a. If, within three months after the system submits its IDSE report to the Department, the Department does not approve the system's IDSE report or notify the system that it has not yet completed its review, the system may consider the submitted report as approved and must implement 179 NAC 24 monitoring as required.

23-003.01B For the purpose of the time frames in 179 NAC 23-003.01A, the Department may determine that the combined distribution system does not include certain consecutive systems based on factors such as receiving water from a wholesale system only on an emergency basis or receiving only a small percentage and small volume of water from a wholesale system. The Department may also determine that the combined distribution system does not include certain wholesale systems based on factors such as delivering water to a consecutive system only on an emergency basis or delivering only a small percentage and small volume of water to a consecutive system.

23-003.02 A system must conduct standard monitoring that meets the requirements in 179 NAC 23-004, or a system specific study that meets the requirements in 179 NAC 23-005.

23-003.03 A system must use only the analytical methods specified in 179 NAC 16-004 or otherwise approved by the United States Environmental Protection Agency for monitoring under this chapter to demonstrate compliance with the requirements of this chapter.

23-003.04 IDSE results will not be used for the purpose of determining compliance with maximum contaminant levels (MCLs) in 179 NAC 2-002.04E1 and 2-002.04E2a(1).

23-004 STANDARD MONITORING

23-004.01 Standard Monitoring Plan: A system's standard monitoring plan must comply with 179 NAC 23-004.01A through 23-004.01D. The system must prepare and submit its standard monitoring plan to the Department according to the time frame in 179 NAC 23-003.01.

23-004.01A A system's standard monitoring plan must include a schematic of the system's distribution system (including distribution system entry points and their sources, and storage facilities), with notes indicating locations and dates of all projected standard monitoring, and all projected compliance monitoring.

23-004.01B A system's standard monitoring plan must include justification of standard monitoring location selection and a summary of data the system relied on to justify standard monitoring location selection.

23-004.01C A system's standard monitoring plan must specify the population served and system type: surface water/GWUDI, or ground water.

23-004.01D A system must retain a complete copy of its standard monitoring plan including any Department modification of the system's standard monitoring plan, for as long as the system is required to retain its IDSE.

23-004.02 Standard Monitoring

23-004.02A A system must monitor as indicated in the following table. A system must collect dual sample sets at each monitoring location. One sample in the dual sample set must be analyzed for TTHMs. The other sample in the dual sample set must be analyzed for HAA5. A system must conduct one monitoring period during the peak historical month for TTHM levels or HAA5 levels or the month of warmest water temperature. A system must review available compliance, study, or operational data to determine the peak historical month for TTHM or HAA5 levels or warmest water temperature.

Source water type	Population size category	Monitoring periods and frequency of sampling	Distribution system monitoring location			
			Total per monitoring period	Near entry points	Average residence time	High TTHM locations
Surface water and ground water under the direct influence of surface water	<500 consecutive systems	One (during peak historical month) ²	2	1		1
	<500 non-consecutive systems	One (during peak historical month) ²	2			1
	500-3,300 consecutive systems	Four (every 90 days)	2	1		1
	500-3,300 non-consecutive systems	Four (every 90 days)	2			1
	3,301 - 9,999	Four (every 90 days)	4		1	2

	10,000-49,999	Six (every 60 days)	8	1	2	3
	50,000-249,999	Six (every 60 days)	16	3	4	5
	250,000-999,999	Six (every 60 days)	24	4	6	8
	1,000,000-4,999,999	Six (every 60 days)	32	6	8	10
	≥5,000,000	Six (every 60 days)	40	8	10	12
Ground Water	<500 consecutive systems	One (during peak historical month) ²	2	1		1
	<500 non-consecutive systems	One (during peak historical month) ²	2			1
	500-9,999	Four (every 90 days)	2			1
	10,000-99,999	Four (every 90 days)	6	1	1	2
	100,000-499,999	Four (every 90 days)	8	1	1	3
	≥500,000	Four (every 90 days)	12	2	2	4

¹ A dual sample set (i.e., a TTHM and an HAA5 sample) must be taken at each monitoring location during each monitoring period.

² The peak historical month is the month with the highest TTHM or HAA5 levels or the warmest water temperature.

23-004.02B Systems must take samples at locations other than the existing 179 NAC 16 or 24 monitoring locations. Monitoring locations must be distributed throughout the distribution system.

23-004.02C If the number of entry points to the distribution system is fewer than the specified number of entry point monitoring locations, excess entry point samples must be replaced equally at high TTHM and HAA5 locations. If there is an odd extra location number, systems must take a sample at a high TTHM location. If the number of entry points to the distribution system is more than the specified number of entry point monitoring locations, the system must take samples at entry points to the distribution system having the highest annual water flows.

23-004.02D Standard monitoring may not be reduced.

23-004.03 IDSE Report: IDSE reports must include the elements required in 179 NAC 23-004.03A through 23-004.03D. IDSE reports must be

submitted to the Department according to the time frame in 179 NAC 23-003.01.

23-004.03A An IDSE report must include all TTHM and HAA5 analytical results from 179 NAC 16 or 24 compliance monitoring and all standard monitoring conducted during the period of the IDSE as individual analytical results and locational running annual averages (LRAAs) presented in a tabular or spreadsheet format acceptable to the Department. If changed from the standard monitoring plan submitted under 179 NAC 23-004.01, the report must also include a schematic of the distribution system, the population served, and system type: surface water/GWUDI, or ground water.

23-004.03B The IDSE report must include an explanation of any deviations from the system's approved standard monitoring plan.

23-004.03C A system must recommend and justify 179 NAC 24 compliance monitoring locations and timing based on the protocol in 179 NAC 23-008.

23-004.03D A system must retain a complete copy of its IDSE report submitted under 179 NAC 23-004 or 40 CFR 141 Subpart U for 10 years after the date that the report was submitted. If the Department modifies the 179 NAC 24 monitoring requirements that a system recommended in its IDSE report or if the Department approves alternative monitoring locations, the system must keep a copy of the Department's notification on file for 10 years after the date of the Department's notification. Systems must make the IDSE report and any Department notification available for review by the Department or the public.

23-005 SYSTEM SPECIFIC STUDIES

23-005.01 System Specific Study Plan: System specific study plans must be based on either existing monitoring results as required under 179 NAC 23-005.01A or modeling as required under 179 NAC 23-005.01B. Systems must prepare and submit system specific study plans to the Department according to the time frame in 179 NAC 23-003.01.

23-005.01A Existing monitoring results: Systems may comply by submitting monitoring results collected before they are required to begin monitoring under 179 NAC 23-003.01. The monitoring results and analysis must meet the following criteria:

1. Minimum requirements

- a. TTHM and HAA5 results must be based on samples collected and analyzed in accordance with 179 NAC 16-004. Samples must be collected no earlier than five years prior to the study plan submission date.

b. The monitoring locations and frequency must meet the conditions identified in the following table. Each location must be sampled once during the peak historical month for TTHM levels or HAA5 levels or the month of warmest water temperature for every 12 months of data submitted for that location. Monitoring results must include all 179 NAC 16 or 24 compliance monitoring results plus additional monitoring results as necessary to meet minimum sample requirements.

System Type	Population size category	Number of monitoring locations	Number of samples	
			TTHM	HAA5
Surface Water and GWUDI	<500	3	3	3
	500-3,300	3	9	9
	3,301-9,999	6	36	36
	10,000-49,999	12	72	72
	50,000-249,999	24	144	144
	250,000-999,999	36	216	216
	1,000,000-4,999,999	48	288	288
	≥5,000,000	60	360	360
Ground Water	<500	3	3	3
	500-9,999	3	9	9
	10,000-99,999	12	48	48
	100,000-499,999	18	72	72
	≥500,000	24	96	96

2. Reporting Monitoring Results: Systems must report the following information:

- a. Systems must report previously collected monitoring results and certify that the reported monitoring results include all compliance and non-compliance results generated during the time period beginning with the first reported result and ending with the most recent 179 NAC 16 or 24 results.
- b. Systems must certify that the samples were representative of the entire distribution system and that treatment and the distribution system have not changed significantly since the samples were collected.
- c. Study monitoring plans must include a schematic of the distribution system (including distribution system entry points and their sources, and storage facilities), with notes indicating the locations and dates of all completed or planned system specific study monitoring.

d. System specific study plans must specify the population served and system type: surface water/GWUDI or ground water.

e. Systems must retain a complete copy of the system specific study plan submitted under 179 NAC 23-005.01A or 40 CFR 141 Subpart U, including any Department modification of the system specific study plan, for as long as the system is required to retain its IDSE report under 179 NAC 23-005.02 item 5.

f. If a system submits previously collected data that fully meet the number of samples required under 179 NAC 23-005.01A item 1.b and the Department rejects some of the data, the system must either conduct additional monitoring to replace rejected data on a schedule the Department approves or conduct standard monitoring under 179 NAC 23-004.

23-005.01B Modeling: Systems may comply through analysis of an extended period simulation hydraulic model. The extended period simulation hydraulic model and analysis must meet the following criteria:

1. Minimum Requirements:

a. The model must simulate 24 hour variation in demand and show a consistently repeating 24 hour pattern of residence time.

b. The model must represent the following criteria:

(1) 75% of pipe volume;

(2) 50% of pipe length;

(3) All pressure zones;

(4) All 12-inch diameter and larger pipes;

(5) All 8-inch and larger pipes that connect pressure zones, influence zones from different sources, storage facilities, major demand areas, pumps, and control valves, or are known or expected to be significant conveyors of water;

(6) All 6-inch and larger pipes that connect remote areas of a distribution system to the main portion of the system;

(7) All storage facilities with standard operations represented in the model;

(8) All active pump stations with controls represented in the model; and

(9) All active control valves.

c. The model must be calibrated, or have calibration plans, for the current configuration of the distribution system during the period of high TTHM formation potential. All storage facilities must be evaluated as part of the calibration process. All required calibration must be completed no later than 12 months after plan submission.

2. Reporting Modeling: System specific study plans must include the following information:

a. Tabular or spreadsheet data demonstrating that the model meets requirements in 179 NAC 23-005.01B item 1.b.

b. A description of all calibration activities undertaken, and if calibration is complete, a graph of predicted tank levels versus measured tank levels for the storage facility with the highest residence time in each pressure zone, and a time series graph of the residence time at the longest residence time storage facility in the distribution system showing the predictions for the entire simulation period (i.e., from time zero until the time it takes for the model to reach a consistently repeating pattern of residence time).

c. Model output showing preliminary 24 hour average residence time predictions throughout the distribution system.

d. Timing and number of samples representative of the distribution system planned for at least one monitoring period of TTHM and HAA5 dual sample monitoring at a number of locations no less than would be required for the system under standard monitoring in 179 NAC 23-004 during the historical month of high TTHMs. These samples must be taken at locations other than existing 179 NAC 16 or 24 compliance monitoring locations.

e. Description of how all requirements will be completed no later than 12 months after the system submits its system specific study plan.

f. Schematic of the system's distribution system (including distribution system entry points and their sources, and storage facilities), with notes indicating the locations and dates of all completed system specific study monitoring (if calibration is complete) and all 179 NAC 16 or 24 compliance monitoring.

g. Population served and system type: surface water/GWUDI or ground water.

h. Systems must retain a complete copy of their system specific study plan submitted under 179 NAC 23-005.01B or 40 CFR 141 Subpart U including any Department modification of the system

specific study plan, for as long as the system is required to retain its IDSE report under 179 NAC 23-005.02 item 7.

3. If a system submits a model that does not fully meet the requirements under 179 NAC 23-005.01B, the system must correct the deficiencies and respond to Department inquiries concerning the model. If a system fails to correct deficiencies or respond to inquiries to the Department's satisfaction, the system must conduct standard monitoring under 179 NAC 23-004.

23-005.02 IDSE Report: The IDSE report must include the following elements. A system must submit its IDSE report according to the time frame in 179 NAC 23-003.01.

1. The IDSE report must include all TTHM and HAA5 analytical results from 179 NAC 16 or 24 compliance monitoring and all system specific study monitoring conducted during the period of the system specific study presented in a tabular or spreadsheet format acceptable to the Department. If changed from the system specific study plan submitted under 179 NAC 23-005.01, the IDSE report must also include a schematic of the distribution system, the population served, and system type: surface water/GWUDI or ground water.
2. If a system used the modeling provision under 179 NAC 23-005.01B, the system must include final information for the elements described in 179 NAC 23-005.01B item 2, and a 24-hour time series graph of residence time for each 179 NAC 24 compliance monitoring location selected.
3. A system must recommend and justify 179 NAC 24 compliance monitoring locations and timing based on the protocol in 179 NAC 23-008.
4. The IDSE report must include an explanation of any deviations from the system's approved system specific study plan.
5. The IDSE report must include the basis (analytical and modeling results) and justification used to select the recommended 179 NAC 24 monitoring locations.
6. A system may submit its IDSE report in lieu of a system specific study plan on the schedule identified in 179 NAC 23-003.01 for submission of the system specific study plan if the system believes that it has the necessary information by the time that the system specific study plan is due. If a system elects this approach, its IDSE report must also include all information required under 179 NAC 23-005.01
7. A system must retain a complete copy of its IDSE report submitted under 179 NAC 23-005 or 40 CFR 141 Subpart U for 10 years after the date the system submitted it. If the Department modifies the 179 NAC 24 monitoring requirements that the system recommended in its IDSE report or if the Department approves alternative monitoring locations,

the system must keep a copy of the Department’s notification on file for 10 years after the date of the Department’s notification. A system must make the IDSE report and any Department notification available for review by the Department or the public.

23-006 40/30 CERTIFICATION: Systems that submitted 40/30 certification to the Department under 40 CFR 141 Subpart U must retain a complete copy of their certification for 10 years after the date that they submitted their certification. Systems must make the certification, all data upon which the certification is based, and any Department notification available for review by the Department or the public.

23-007 VERY SMALL SYSTEM WAIVERS: Systems serving <500 people that received a small system waiver under 40 CFR 141 Subpart U prior to the effective date of these regulations do not have to comply with 179 NAC 23.

23-008 179 NAC 24 COMPLIANCE MONITORING LOCATION RECOMMENDATIONS

23-008.01 A system’s IDSE report must include its recommendations and justification for where and during what month(s) TTHM and HAA5 monitoring for 179 NAC 24 should be conducted. A system must base its recommendations on the criteria in 179 NAC 23-008.02 through 23-008.05.

23-008.02 A system must select the number of monitoring locations specified in the following table. A system must use these recommended locations and/or the sites listed in 179 NAC 24-004 as 179 NAC 24 routine compliance monitoring locations, unless the Department requires different or additional locations. A system should distribute locations throughout the distribution system to the extent possible.

Source water type	Population size category	Monitoring frequency ¹	Distribution system monitoring locations			Existing 179 NAC 16 compliance locations
			Total per monitoring period ²	Highest TTHM locations	Highest HAA5 locations	
Surface water and GWUDI	<500	per year	2 (1 TTHM, 1 HAA5)	1	1	
	500-3,300	per quarter	2 (1 TTHM, 1 HAA5)	1	1	
	3,301-9,999	per quarter	2 (1 TTHM, 1 HAA5)	1	1	
	10,000-49,999	per quarter	2 Dual	2	1	
	50,000-249,999	per quarter	4 Dual	3	3	
	250,000-999,999	per quarter	5 Dual	5	4	
	1,000,000-	per quarter	8 Dual	6	6	

	4,999,999 ≥5,000,000	per quarter	12 16 Dual 20 Dual	8	7
Ground water	<500	per year	2 (1 TTHM, 1 HAA5)	1	1
	500-9,999	per year	1 HAA5)	1	1
	10,000-99,999	per quarter	2 Dual	2	1
	100,000- 499,999	per quarter	4 Dual	3	2
	≥500,000	per quarter	6 Dual 8 Dual	3	3

¹ All systems must monitor during month of highest DBP concentrations

² Systems on quarterly monitoring must take dual sample sets every 90 days at each monitoring location, except for surface water and GWUDI systems serving 500-3,300. Ground water systems serving 500-9,999 on annual monitoring must take dual sample sets at each monitoring location. All other systems on annual monitoring and surface water and GWUDI systems serving 500-3,300 are required to take individual TTHM and HAA5 samples (instead of a dual sample set) at the locations with the highest TTHM and HAA5 concentrations, respectively. For systems serving fewer than 500 people, only one location with a dual sample set per monitoring period is needed if highest TTHM and HAA5 concentrations occur at the same location, and month.

23-008.03 Systems must recommend 179 NAC 24 compliance monitoring locations based on standard monitoring results, system specific study results, and 179 NAC 16 or 24 compliance monitoring results. Systems must follow the protocol in 179 NAC 23-008.03A through 23-008.03H. If required to monitor at more than eight locations, a system must repeat the protocol as necessary. If the system does not have existing 179 NAC 16 or 24 compliance monitoring results or if it does not have enough existing 179 NAC 16 or 24 compliance monitoring results, it must repeat the protocol, skipping the provisions of 179 NAC 23-008.03C and 23-008.03G as necessary, until it has identified the required total number of monitoring locations.

23-008.03A Location with the highest TTHM LRAA not previously selected as a 179 NAC 24 monitoring location.

23-008.03B Location with the highest HAA5 LRAA not previously selected as a 179 NAC 24 monitoring location.

23-008.03C Existing 179 NAC 16 average residence time compliance monitoring location (maximum residence time compliance monitoring location for ground water systems) with the highest HAA5 LRAA not previously selected as a 179 NAC 24 monitoring location.

23-008.03D Location with the highest TTHM LRAA not previously selected as a 179 NAC 24 monitoring location.

23-008.03E Location with the highest TTHM LRAA not previously selected as a 179 NAC 24 monitoring location.

23-008.03F Location with the highest HAA5 LRAA not previously selected as a 179 NAC 24 monitoring location.

23-008.03G Existing 179 NAC 16 average residence time compliance monitoring location (maximum residence time compliance monitoring location for ground water systems) with the highest TTHM LRAA not previously selected as a 179 NAC 24 monitoring location.

23-008.03H Location with the highest HAA5 LRAA not previously selected as a 179 NAC 24 monitoring location.

23-008.04 A system may recommend locations other than those specified in 179 NAC 23-008.03 if it includes a rationale for selecting other locations. If the Department approves the alternate locations, the system must monitor at these locations to determine compliance under 179 NAC 24.

23-008.05 A system's recommended schedule must include 179 NAC 24 monitoring during the peak historical month for TTHM and HAA5 concentration, unless the Department approves another month. Once a system has identified the peak historical month and if it is required to conduct routine monitoring at least quarterly, it must schedule 179 NAC 24 compliance monitoring at a regular frequency of every 90 days or fewer.

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 24 - STAGE 2 DISINFECTANTS AND DISINFECTION BYPRODUCTS (DBPs)

24-001 SCOPE AND AUTHORITY: These regulations establish monitoring and other requirements for achieving compliance with maximum contaminant levels (MCLs) based on locational running annual averages (LRAAs) for total trihalomethanes (TTHMs) and haloacetic acids (five) (HAA5), and for achieving compliance with maximum residual disinfectant levels for chlorine and chloramines for certain consecutive systems. This chapter applies to community and non-transient non-community public water systems that use a primary or residual disinfectant other than ultraviolet light or deliver water that has been treated with a primary or residual disinfectant other than ultraviolet light. The authority is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

24-002 DEFINITIONS

40/30 Certification means the certification a system provided to the Department saying the system met criteria specified in 40 CFR 141 Subpart U which exempted it from completing an initial distribution system evaluation.

Community Water System means 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.

Ground Water Under the Direct Influence of Surface Water (GWUDI) means 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* or *Cryptosporidium*, or significant and 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 Department. The Department 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.

Haloacetic Acids 5 (HAA5) means 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.

Locational Running Annual Average (LRAA) means the average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters.

Non-transient Non-community Water System means a public water system that is not a community water system and that regularly serves at least 25 of the same individuals over 6 months per year.

Public Water System means a system for the provision to the public of water for human consumption through pipes or, after August 5, 1998, other constructed conveyances, if such system has a least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least 60 days out of the year. Such term includes: any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system; and any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. Such term does not include any “special irrigation district.” A public water system is either a “community water system” or a “non-community water system.”

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

Total Trihalomethanes (TTHMs) means the sum of the concentration in milligrams per liter of the trihalomethane compounds [trichloromethane (chloroform), dibromochloromethane, bromodichloromethane, and tribromomethane (bromoform)], rounded to two significant figures.

24-003 GENERAL REQUIREMENTS

24-003.01 Schedule: Systems must comply with the requirements in this chapter on the schedule in the following table based on system type.

System type	Compliance date ¹
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Systems that are not part of a combined distribution system and systems that serve the largest population in the combined distribution system

(1) System serving $\geq 100,000$	Systems subject to 40 CFR 141 Subpart V prior to the effective date of these regulations are subject to 179 NAC 24 as of the effective date of these regulations.
(2) System serving 50,000-99,999	Systems subject to 40 CFR 141 Subpart V prior to the effective date of these regulations are subject to 179 NAC 24 as of the effective date of these regulations.
(3) System serving 10,000-49,999	October 1, 2013
(4) System serving $< 10,000$	October 1, 2013 if no <i>Cryptosporidium</i> monitoring is required under 179 NAC 25-004.01D or October 1, 2014 if <i>Cryptosporidium</i> monitoring is required under 179 NAC 25-004.01D or 25-004.01F
(5) Consecutive system or wholesale	At the same time as the system with

system

the earliest compliance date in the combined distribution system

¹ The Department may grant up to an additional 24 months for compliance with MCLs and operational evaluation levels if the system requires capital improvements to comply with an MCL.

24-003.01A Systems' monitoring frequency is specified in 179 NAC 24-004.01B.

24-003.01A1 If a system is required to conduct quarterly monitoring, it must begin monitoring in the first full calendar quarter that includes the compliance date in the table in 179 NAC 24-003.01.

24-003.01A2 If a system is required to conduct monitoring at a frequency that is less than quarterly, it must begin monitoring in the calendar month recommended in the initial distribution system evaluation (IDSE) report or the calendar month identified in the monitoring plan developed under 179 NAC 24-005 no later than 12 months after the compliance date in the table in 179 NAC 24-003.01.

24-003.01B If a system is required to conduct quarterly monitoring, it must make compliance calculations at the end of the fourth calendar quarter that follows the compliance date and at the end of each subsequent quarter (or earlier if the LRAA calculated based on fewer than four quarters of data would cause the MCL to be exceeded regardless of the monitoring results of subsequent quarters). If a system is required to conduct monitoring at a frequency that is less than quarterly, it must make compliance calculations beginning with the first compliance sample taken after the compliance date.

24-003.01C For the purpose of the schedule in 179 NAC 24-003.01 the Department may determine that the combined distribution system does not include certain consecutive systems based on factors such as receiving water from a wholesale system only on an emergency basis or receiving only a small percentage and small volume of water from a wholesale system. The Department may also determine that the combined distribution system does not include certain wholesale systems based on factors such as delivering water to a consecutive system only on an emergency basis or delivering only a small percentage and small volume of water to a consecutive system.

24-003.02 Monitoring and Compliance

24-003.02A Systems required to monitor quarterly: To comply with 179 NAC 24 MCLs in 179 NAC 2-002.04E2a, a system must calculate LRAAs for TTHMs and HAA5 using monitoring results collected under 179 NAC 24 and determine that each LRAA does not exceed the MCL. If a system fails to complete four consecutive quarters of monitoring, it must calculate compliance with the MCL based on the average of the

available data from the most recent four quarters. If a system takes more than one sample per quarter at a monitoring location, the system must average all samples taken in the quarter at that location to determine a quarterly average to be used in the LRAA calculation.

24-003.02B Systems required to monitor yearly or less frequently: To determine compliance with 179 NAC 24 MCLs in 179 NAC 2-002.04E2a, a system must determine that each sample taken is less than the MCL. If any sample exceeds the MCL, the system must comply with the requirements of 179 NAC 24-008. If no sample exceeds the MCL, the sample result for each monitoring location is considered the LRAA for that monitoring location.

24-003.03 Violation: A system is in violation of the monitoring requirements for each quarter that a monitoring result would be used in calculating an LRAA if the system fails to monitor.

24-004 ROUTINE MONITORING

24-004.01 Monitoring

24-004.01A If a system submitted an IDSE report under 40 CFR 141 Subpart U or submits an IDSE report under 179 NAC 23, it must begin monitoring at the locations and months the system recommended in its IDSE following the schedule in 179 NAC 24-003.01, unless the Department requires other locations or additional locations after its review. If a system submitted a 40/30 certification under 40 CFR 141 Subpart U or it qualified for a very small system waiver under 40 CFR 141 Subpart U or it is a non-transient non-community water system serving <10,000 individuals, it must monitor at the location(s) and dates identified in its monitoring plan in 179 NAC 16-005.06, updated as required by 179 NAC 24-005.

24-004.01B A system must monitor at no fewer than the number of locations identified in the following table.

Source water type	Population size category	Monitoring Frequency¹	Distribution system monitoring location total per monitoring period²
Surface water and GWUDI	<500	per year	2 individual
	500-3,300	per quarter	2 individual
	3,301-9,999	per quarter	2 dual
	10,000-49,999	per quarter	4 dual
	50,000-249,999	per quarter	8 dual

	250,000-999,999	quarter per quarter	12 dual
	1,000,000-4,999,999	per quarter	16 dual
	≥5,000,000	per quarter	20 dual
Ground Water:	<500	per year	2 individual
	500-9,999	per year	2 dual
	10,000-99,999	per quarter	4 dual
	100,000-499,999	per quarter	6 dual
	≥500,000	per quarter	8 dual

¹ All systems must monitor during month of highest DBP concentrations.

² Systems on quarterly monitoring must take dual sample sets every 90 days at each monitoring location, except for surface water and GWUDI systems serving 500-3,300. Ground water systems serving 500-9,999 on annual monitoring must take dual sample sets at each monitoring location. All other systems on annual monitoring and surface water and GWUDI systems serving 500-3,300 are required to take individual TTHM and HAA5 samples (instead of a dual sample set) at the locations with the highest TTHM and HAA5 concentrations, respectively. For systems serving fewer than 500 people, only one location with a dual sample set per monitoring period is needed if highest TTHM and HAA5 concentrations occur at the same location and month.

24-004.01C If a system is an undisinfected system that begins using a disinfectant other than UV light, the system must consult with the Department to identify compliance monitoring locations for 179 NAC 24. The system must then develop a monitoring plan under 179 NAC 24-005 that includes those monitoring locations.

24-004.02 Monitoring Sites

24-004.02A Systems with existing data that have not conducted an IDSE must select compliance monitoring locations according to the recommendations in 179 NAC 23-008, and in consultation with the Department.

24-004.02B Systems with no existing data must select compliance monitoring locations (in consultation with the Department) by identifying sites in the distribution system with anticipated high DBP levels, using the following criteria and the protocol in 179 NAC 23-008.

1. Sites with anticipated high TTHM levels are:

a. Near the ends of the distribution system, at or before the last group of customers (particularly on smaller lines, far from major transmission lines),

- b. In mixing zones where water from different sources combine within the distribution system,
- c. In areas with low disinfectant residual, and
- d. Downstream of storage facilities, but at or before the last group of customers.

2. Sites with anticipated high HAA5 levels are:

- a. Near the ends of the distribution system, at or before the last group of customers (particularly on smaller lines, far from major transmission lines),
- b. In mixing zones where water from different sources combine within the distribution system,
- c. In areas with low but existing disinfectant residual, and
- d. Downstream of storage facilities, but at or before the last group of customers.

24-004.02C TTHM samples sites should not be located at a dead end where there are no customers or immediately prior to booster disinfection.

24-004.02D HAA5 sample sites should not be located at a dead end where there are no customers, immediately prior to booster disinfection, where no disinfectant residual exists or in areas with biofilm problems.

24-004.03 After compliance monitoring data has been collected for two years (over eight consecutive quarters), the Department will evaluate the compliance monitoring data. After evaluating the data, the Department may require the system to conduct an IDSE if the system had any monitoring violations or if any individual sample exceeded 0.040 mg/L for TTHMs or 0.030 mg/L for HAA5s to determine if there is the possibility of higher distribution system DBP concentrations in areas that have not previously been monitored.

24-004.04 Analytical Methods: A system must use an approved method listed in 179 NAC 16-004 for TTHM and HAA5 analyses required in this chapter. Analyses must be conducted by the Department Public Health Environmental Laboratory (certified by EPA) or a laboratory that has entered into an agreement with the Department Laboratory as specified in 179 NAC 20.

24-005 MONITORING PLAN

24-005.01 Developing and Implementing

24-005.01A A system must develop and implement a monitoring plan to be kept on file for Department and public review. The monitoring plan must contain the following elements and be complete no later than the date the system conducts its monitoring under this chapter.

1. Monitoring locations;
2. Monitoring dates;
3. Compliance calculation procedures; and
4. Monitoring plans for any other systems in the combined distribution system if the Department has reduced monitoring requirements.

24-005.01B If a system did not submit an IDSE report under the standard monitoring or system specific provisions of 40 CFR 141 Subpart U, and it does not have sufficient 179 NAC 16 monitoring locations to identify the required number of 179 NAC 24 compliance monitoring locations indicated in 179 NAC 23-008.02, the system must identify additional locations by alternating selection of locations representing high TTHM levels and high HAA5 levels until the required number of compliance monitoring locations have been identified. The system must also provide the rationale for identifying the locations as having high levels of TTHMs or HAA5s. If a system has more 179 NAC 16 monitoring locations than required for 179 NAC 24 compliance monitoring in 179 NAC 23-008.02, it must identify which locations it will use for 179 NAC 24 compliance monitoring by alternating selection of locations representing high TTHM levels and high HAA5 levels until the required number of 179 NAC 24 compliance monitoring locations have been identified.

24-005.02 If a system is a surface water or GWUDI system serving >3,300 people, the system must submit a copy of its monitoring plan to the Department prior to the date it conducts its initial monitoring under this chapter unless its IDSE report contains all the information required by 179 NAC 24-005. The Department may also require a system serving 3,300 or fewer people to submit a copy of its monitoring plan.

24-005.03 A system may revise its monitoring plan to reflect changes in treatment, distribution system operations and layout (including new service areas), or other factors that may affect TTHM or HAA5 formation, or for Department-approved reasons, after consultation with the Department regarding the need for changes and the appropriateness of changes. If a system changes monitoring locations, the system must replace existing compliance monitoring locations with the lowest LRAA with new locations that reflect the current distribution system locations with expected high TTHM or HAA5 levels. The Department may also require modifications in the monitoring plan. A surface water or GWUDI system serving >3,300 people must submit a copy of its modified monitoring plan to the Department prior to the date it is required to

comply with the revised monitoring plan.

24-006 REDUCED MONITORING

24-006.01 A system may reduce monitoring to the level specified in the following table any time the LRAA is <0.040 mg/L for TTHMs and <0.030 mg/L for HAA5 at all monitoring locations. A system may only use data collected under the provisions of this chapter or 179 NAC 16 to qualify for reduced monitoring. In addition, the source water annual average total organic carbon (TOC) level, before any treatment, must be <4.0 mg/L at each treatment plant treating surface water or ground water under the direct influence of surface water, based on monitoring conducted under either 179 NAC 16-005.02 item 1.c. or 16-005.04.

Source water type	Population size category	Monitoring frequency¹	Distribution system monitoring location per monitoring period
Surface water or GWUDI:	<500	-	Monitoring may not be reduced. 1 TTHM and 1 HAA5 sample: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement; 1 dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter. 2 dual sample sets: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during
	500-3,300	per year	
	3,301-9,999	per year	the quarter with the highest HAA5 single
	10,000-49,999	per quarter	measurement. 2 dual sample sets at the locations with the highest TTHM and highest HAA5 LRAAs.
	50,000-249,999	per quarter	4 dual sample sets - at the locations with the two highest TTHM and two highest HAA5 LRAAs.
	250,000-999,999	per quarter	6 dual sample sets - at the locations with the three highest TTHM and three highest HAA5 LRAAs.
	1,000,000-4,999,999	per quarter	8 dual sample sets - at the locations with the four highest TTHM and four highest HAA5

	≥5,000,000	per quarter	LRAAs. 10 dual sample sets - at the locations with the five highest TTHM and five highest HAA5 LRAAs.
Ground Water:	<500	every third year	1 TTHM and 1 HAA5 sample: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement; 1 dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter.
	500-9,999	per year	1 TTHM and 1 HAA5 sample: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement; 1 dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter.
	10,000-99,999	per year	2 dual sample sets: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement.
	100,000-499,999	per quarter	2 dual sample sets: at the locations with the highest TTHM and highest HAA5 LRAAs.
	≥500,000	per quarter	4 dual sample sets at the locations with the two highest TTHM and two highest HAA5 LRAAs.

¹ Systems on quarterly monitoring must take dual sample sets every 90 days.

24-006.02 A system may remain on reduced monitoring as long as the TTHM LRAA <0.040 mg/L and the HAA5 LRAA <0.030 mg/L at each monitoring location (for systems with quarterly reduced monitoring) or each TTHM sample <0.060 mg/L and each HAA5 sample <0.045 mg/L (for systems with annual or less frequent monitoring). In addition, the source water annual average TOC level, before any treatment, must be <4.0 mg/L at each treatment plant treating surface water or ground water under the direct influence of surface water, based on monitoring conducted under either 179 NAC 16-005.02 item 1.c or 179 NAC 16-005.04.

24-006.03 If the LRAA based on quarterly monitoring at any monitoring location exceeds either 0.040 mg/L for TTHM or 0.030 mg/L for HAA5 or if the annual (or less frequent) sample at any location exceeds either 0.060 mg/L for TTHM or 0.045 mg/L for HAA5, or if the source water annual average TOC level, before any treatment, is >4.0 mg/L at any treatment plant treating surface water or ground water under the direct influence of surface water, the system must resume routine monitoring under 179 NAC 24-004 or begin increased monitoring if 179 NAC 24-008 applies.

24-006.04 The Department may return a system to routine monitoring at the Department's discretion.

24-007 ADDITIONAL REQUIREMENTS FOR CONSECUTIVE SYSTEMS

24-007.01 If a consecutive system does not add a disinfectant but delivers water that has been treated with a primary or residual disinfectant other than ultraviolet light, the system must comply with analytical and monitoring requirements for chlorine and chloramines in 179 NAC 16-004.03 and 179 NAC 16-005.03 item 1 and the compliance requirements in 179 NAC 16-006.03 item 1 and report monitoring results under 179 NAC 16-007.03.

24-008 CONDITIONS REQUIRING INCREASED MONITORING

24-008.01 If a system is required to monitor at a particular location annually or less frequently than annually under 179 NAC 24-004 or 179 NAC 24-006, the system must increase monitoring to dual sample sets once per quarter (taken every 90 days) at all locations if a TTHM sample is >0.080 mg/L or an HAA5 sample is >0.060 mg/L at any location.

24-008.02 A system is in violation of the MCL when the LRAA exceeds the 179 NAC 24 MCLs in 179 NAC 2-002.04E2a, calculated based on four consecutive quarters of monitoring (or the LRAA calculated based on fewer than four quarters of data if the MCL would be exceeded regardless of the monitoring results of subsequent quarters). A system is in violation of the monitoring requirements for each quarter that a monitoring result would be used in calculating an LRAA if the system fails to monitor.

24-008.03 A system may return to routine monitoring once the system has conducted increased monitoring for at least four consecutive quarters and the LRAA for every monitoring location is ≤ 0.060 mg/L for TTHMs and ≤ 0.045 mg/L for HAA5s.

24-009 OPERATIONAL EVALUATION LEVELS

24-009.01 A system has exceeded the operational evaluation level at any monitoring location where the sum of the two previous quarters' TTHM results plus twice the current quarter's TTHM result, divided by 4 to determine an average, exceeds 0.080 mg/L, or where the sum of the two previous quarters' HAA5 results plus twice the current quarter's HAA5 result, divided by 4 to determine an average, exceeds 0.060 mg/L.

24-009.02 Operational Evaluations

24-009.02A If a system exceeds the operational evaluation level, the system must conduct an operational evaluation and submit a written report of the evaluation to the Department no later than 90 days after being notified of the analytical result that caused the system to exceed the operational evaluation level. The written report must be made available to the public upon request.

24-009.02B A system's operational evaluation must include an examination of system treatment and distribution operational practices, including storage tank operations, excess storage capacity, distribution system flushing, changes in source(s) or source water quality, and treatment changes or problems that may contribute to TTHM and HAA5 formation and what steps could be considered to minimize future exceedences.

24-009.02B1 A system may request and the Department may allow the system to limit the scope of its evaluation if the system is able to identify the cause of the operational evaluation level exceedance.

24-009.02B2 A system's request to limit the scope of the evaluation does not extend the schedule in 179 NAC 24-009.02A for submitting the written report. The Department must approve this limited scope of evaluation in writing and the system must keep that approval with the completed report.

24-010 REQUIREMENTS FOR REMAINING ON REDUCED TTHM AND HAA5 MONITORING BASED ON 179 NAC 16 RESULTS:

A system may remain on reduced monitoring after the dates identified in 179 NAC 24-003.01 for compliance with 179 NAC 24 only if the system qualified for a 40/30 certification under 40 CFR 141 Subpart U or has received a very small system waiver under 40 CFR 141 Subpart U, plus the system meets the reduced monitoring criteria in 179 NAC 24-006.01 and the system does not change or add monitoring locations from those used for compliance monitoring under 179 NAC 16. If a system's monitoring locations under this chapter differ from its monitoring locations under 179 NAC 16, the system may not remain on reduced monitoring after the dates identified in 179 NAC 24-003.01 for compliance with 179 NAC 24.

24-011 REQUIREMENTS FOR REMAINING ON INCREASED TTHM AND HAA5 MONITORING BASED ON 179 NAC 16 RESULTS:

If a system was on increased monitoring under 179 NAC 16-005.02 item 1, the system must remain on increased monitoring until it qualifies for a return to routine monitoring under 179 NAC 24-008.03. The system must conduct increased monitoring under 179 NAC 24-008 at the monitoring locations in the monitoring plan developed under 179 NAC 24-005 beginning at the date identified in 179 NAC 24-003.01 for compliance with this chapter and remain on increased monitoring until the system qualifies for a return to routine monitoring under 179 NAC 24-008.03.

24-012 REPORTING AND RECORDKEEPING REQUIREMENTS

24-012.01 Reporting

24-012.01A A system must report the following information for each monitoring location to the Department within 10 days of the end of any quarter in which monitoring is required:

1. Number of samples taken during the last quarter.
2. Date and results of each sample taken during the last quarter.
3. Arithmetic average of quarterly results for the last four quarters for each monitoring location (LRAA), beginning at the end of the fourth calendar quarter that follows the compliance date and at the end of each subsequent quarter. If the LRAA calculated based on fewer than four quarters of data would cause the MCL to be exceeded regardless of the monitoring results of subsequent quarters, the system must report this information to the Department as part of the first report due following the compliance date or anytime thereafter that this determination is made. If a system is required to conduct monitoring at a frequency that is less than quarterly, the system must make compliance calculations beginning with the first compliance sample taken after the compliance date, unless the system is required to conduct increased monitoring under 179 NAC 24-008.
4. Whether, based on 179 NAC 2-002.04E2a and this chapter, the MCL was violated at any monitoring location.
5. Any operational evaluation levels that were exceeded during the quarter, and if so, the location and date, and the calculated TTHM and HAA5 levels.

24-012.01B If a system is a surface water or GWUDI system seeking to qualify for or remain on reduced TTHM/HAA5 monitoring, the system must report the following source water TOC information for each treatment plant that treats surface water or ground water under the direct influence of surface water to the Department within 10 days of the end of any quarter in which monitoring is required:

1. The number of source water TOC samples taken each month during last quarter.
2. The date and result of each sample taken during last quarter.
3. The quarterly average of monthly samples taken during last quarter or the result of the quarterly sample.
4. The running annual average (RAA) of quarterly averages from the past four quarters.

5. Whether the RAA exceeded 4.0 mg/L.

24-012.01C The Department may choose to perform calculations and determine whether the MCL was exceeded or the system is eligible for reduced monitoring in lieu of having the system report that information.

24-012.02 Recordkeeping: A system must retain any monitoring plans for disinfection byproducts monitoring as long as it must keep 179 NAC 24 monitoring results (see 179 NAC 5-005).

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 25 - LONG TERM 2 (LT2) ENHANCED SURFACE WATER TREATMENT

25-001 SCOPE AND AUTHORITY: These regulations establish or extend treatment technique requirements in lieu of maximum contaminant levels for *Cryptosporidium*. These requirements are in addition to requirements for filtration and disinfection found in Title 179 NAC 13, 17, and 19.

These regulations apply to all public water systems supplied by a surface water source and all public water systems supplied by a ground water source under the direct influence of surface water. Systems that were subject to 40 CRF 141 Subpart W before the effective date of these regulations must continue to comply with the equivalent stage of these regulations upon their effective date. The authority is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

25-002 DEFINITIONS

Bag filters mean pressure-driven separation devices that remove particulate matter larger than one micrometer using an engineered porous filtration media. They are 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 means a water treatment process that uses a well to recover surface water that has naturally infiltrated into ground water through a river bed or bank(s). Infiltration is typically enhanced by the hydraulic gradient imposed by a nearby pumping water supply or other well(s).

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

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

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

Department means the Division of Public Health of the Department of Health and Human Services.

Director means the Director of Public Health of the Division of Public Health or his/her authorized representative.

EPA means the United States Environmental Protection Agency.

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

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

Ground Water Under the Direct Influence of Surface Water (GWUDI) means 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* or *Cryptosporidium*, or significant and 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 Director. The Director's 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 as described in 179 NAC 13 Attachment 2.

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

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

Minor Deficiency means any deficiency found during a sanitary survey that is not a significant deficiency.

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

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

Sanitary survey means an onsite review of the water source (identifying sources of contamination by using results of source water assessments where available), facilities, equipment, operation, maintenance, and monitoring compliance of a PWS to evaluate the adequacy of the PWS, its sources and operations, and the distribution of safe drinking water.

Significant deficiency means a defect in design, operation, or maintenance, or a failure or malfunction of the sources, treatment, storage, or distribution system found during a sanitary survey that the Department determines to be causing, or has the potential for causing the introduction of contamination into the water delivered to consumers.

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

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

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

25-003 GENERAL REQUIREMENTS

25-003.01 Applicability

1. Wholesale systems must comply with the requirements of this chapter based on the population of the largest system in the combined distribution system.
2. The requirements of this chapter for filtered systems apply to systems required by Title 179 to provide filtration treatment, whether or not the system is currently operating a filtration system.
3. The requirements of this chapter for unfiltered systems apply only to unfiltered systems that timely met and continue to meet the filtration avoidance criteria in 179 NAC 13, 17, and 19, as applicable.

25-003.02 Requirements: Systems that began any of the following activities under 40 CFR 141 Subpart W before [the effective date of these regulations] must continue to comply with these activities under 179 NAC 25. Systems subject to this chapter must comply with the following requirements:

1. Systems must conduct a round of source water monitoring for each plant that treats a surface water or GWUDI source. This monitoring may include sampling for *Cryptosporidium*, *E. coli*, and turbidity as described in 179 NAC 25-004 through 25-009, to determine what level, if any, of additional *Cryptosporidium* treatment they must provide.
2. Systems that plan to make a significant change to their disinfection practice must develop disinfection profiles and calculate disinfection

benchmarks, as described in 179 NAC 25-010 through 25-011.

3. Filtered systems must determine their Cryptosporidium treatment bin classification as described in 179 NAC 25-012 and provide additional treatment for Cryptosporidium if required, as described in 179 NAC 25-013. All unfiltered systems must provide treatment for Cryptosporidium as described in 179 NAC 25-014. Filtered and unfiltered systems must implement Cryptosporidium treatment according to the schedule in 179 NAC 25-015.

4. Systems with uncovered finished water storage facilities must comply with the requirements to cover the facility or treat the discharge from the facility as described in 179 NAC 25-016.

5. Systems required to provide additional treatment for Cryptosporidium must implement microbial toolbox options that are designed and operated as described in 179 NAC 25-017 through 25-022.

6. Systems must comply with the applicable recordkeeping and reporting requirements described in 179 NAC 25-023 through 25-024.

7. Systems must address deficiencies identified in sanitary surveys performed by the Department as described in 179 NAC 25-025.

25-004 SOURCE WATER MONITORING

25-004.01 Source Water Monitoring: Systems must conduct the following monitoring on the schedule in 179 NAC 25-004.02 unless they meet the monitoring exemption criteria in 179 NAC 25-004.03 or the Department has approved a different sampling schedule.

25-004.01A Filtered systems serving at least 10,000 people must sample their source water for Cryptosporidium, E. coli, and turbidity at least monthly for 24 months.

25-004.01B Unfiltered systems serving at least 10,000 people must sample their source water for Cryptosporidium at least monthly for 24 months.

25-004.01C Filtered Systems and E. coli monitoring

1. Filtered systems serving fewer than 10,000 people must sample their source water for E. coli at least once every two weeks for 12 months.

2. A filtered system serving fewer than 10,000 people may avoid E. coli monitoring if the system notifies the Department that it will monitor for Cryptosporidium as described in 179 NAC 25-004.01D. The system must notify the Department no later than 3 months prior to the date the system is otherwise required to start E. coli monitoring.

25-004.01D Filtered systems serving fewer than 10,000 people must sample their source water for *Cryptosporidium* at least twice per month for 12 months or at least monthly for 24 months if they meet one of the following, based on monitoring conducted under 179 NAC 25-004.01C or 40 CFR 141 Subpart W:

1. The annual mean *E. coli* concentration is greater than 100 *E. coli*/100 mL.
2. The system does not conduct *E. coli* monitoring as described in 179 NAC 25-004.01C.

25-004.01E For filtered systems serving fewer than 10,000 people, the Department may approve monitoring for an indicator other than *E. coli* under 179 NAC 25-004.01C. The Department also may approve an alternative to the *E. coli* concentration in 179 NAC 25-004.01D item 1 to trigger *Cryptosporidium* monitoring. This approval by the Department must be provided to the system in writing and must include the basis for the Department's determination that the alternative indicator and/or trigger level will provide a more accurate identification of whether a system will exceed the Bin 1 *Cryptosporidium* level in 179 NAC 25-012.

25-004.01F Unfiltered systems serving fewer than 10,000 people must sample their source water for *Cryptosporidium* at least twice per month for 12 months or at least monthly for 24 months.

25-004.01G Systems may sample more frequently than required under 179 NAC 25-004 if the sampling frequency is evenly spaced throughout the monitoring period.

25-004.02 Monitoring Schedule: Systems are required to begin source water monitoring no later than the month beginning with the date listed in this table or on a schedule approved by the Department:

SOURCE WATER MONITORING STARTING DATES TABLE

Systems that serve . . .	Must begin source water monitoring no later than the month beginning . . .
(1) At least 100,000 people	April 1, 2015
(2) From 50,000 to 99,999 people	October 1, 2015
(3) From 10,000 to 49,999 people	October 1, 2016
(4) Fewer than 10,000 and monitor for <i>E. coli</i> ^a	October 1, 2017
(5) Fewer than 10,000 and monitor for <i>Cryptosporidium</i> ^b	April 1, 2019

^a Applies only to filtered systems.

^b Applies to filtered systems that meet the conditions of 179 NAC 25-004.01D and unfiltered systems.

25-004.03 Monitoring Avoidance

25-004.03A Filtered systems are not required to conduct source water monitoring under this chapter if the system will provide a total of at least 5.5-log of treatment for Cryptosporidium, equivalent to meeting the treatment requirements of Bin 4 in 179 NAC 25-013.

25-004.03B Unfiltered systems are not required to conduct source water monitoring under this chapter if the system will provide a total of a least 3-log Cryptosporidium inactivation, equivalent to meeting the treatment requirements for unfiltered systems with a mean Cryptosporidium concentration of greater than 0.01 oocysts/L in 179 NAC 25-014.

25-004.03C If a system chooses to provide the level of treatment in 179 NAC 25-004.03A or 25-004.03B, as applicable, rather than start source water monitoring, the system must notify the Department in writing no later than the date the system is otherwise required to submit a sampling schedule for monitoring under 179 NAC 25-005. Alternatively, a system may choose to stop sampling at any point after it has initiated monitoring if it notifies the Department in writing that it will provide this level of treatment. Systems must install and operate technologies to provide this level of treatment by the applicable treatment compliance date in 179 NAC 25-015.

25-004.04 Plants Operating Only Part of the Year: Systems with surface water or ground water under the direct influence of surface water plants that operate for only part of the year must conduct source water monitoring in accordance with this chapter, but with the following modifications:

1. Systems must sample their source water only during the months that the plant operates unless the Department specifies another monitoring period based on plant operating practices.
2. Systems with plants that operate less than six months per year and that monitor for Cryptosporidium must collect at least six Cryptosporidium samples per year during each of two years of monitoring. Samples must be evenly spaced throughout the period the plant operates.

25-004.05 New Sources

25-004.05A A system that begins using a new source of surface water or GWUDI after the system is required to begin monitoring must monitor the new source on a schedule the Department approves. Source water monitoring must meet the requirements of this

chapter. The system must also meet the bin classification and Cryptosporidium treatment requirements of 179 NAC 25-012, 25-013, or 25-014, as applicable, for the new source on a schedule the Department approves.

25-004.05B The requirements of 179 NAC 25-004.05 apply to surface water and GWUDI systems that begin operation after the monitoring start date applicable to the system's size.

25-004.06 Failure to collect any required source water sample in accordance with the sampling schedule, sampling location, analytical method, approved laboratory, and reporting requirements is a monitoring violation.

25-005 SAMPLING SCHEDULES

25-005.01 Systems required to conduct source water monitoring must submit a sampling schedule that specifies the calendar dates when the system will collect each required sample.

25-005.01A Systems must submit sampling schedules to the Department no later than three months prior to the applicable date listed in 179 NAC 25-004.03 02 or 40 CFR 141 Subpart W.

25-005.01B If the Department does not respond to a system regarding its sampling schedule, the system must sample at the reported schedule.

25-005.02 Systems must collect samples within two days before or two days after the dates indicated in their sampling schedule (i.e., within a five-day period around the schedule date) unless one of the conditions of 179 NAC 25-005.02 item 1 or 2 applies.

1. If an extreme condition or situation exists that may pose danger to the sample collector, or that cannot be avoided and causes the system to be unable to sample in the scheduled five-day period, the system must sample as close to the scheduled date as is feasible unless the Department approves an alternative sampling date. The system must submit an explanation for the delayed sampling date to the Department concurrent with the shipment of the sample to the laboratory.

2. Other Possible Conditions

- a. If a system is unable to report a valid analytical result for a scheduled sampling date due to equipment failure, loss of or damage to the sample, failure to comply with the analytical method requirements, including the quality control requirements in 179 NAC 25-007, or the failure of an approved laboratory to analyze the sample, then the system must collect a replacement sample.

- b. The system must collect the replacement sample not later than 21 days after receiving information that an analytical result cannot

be reported for the scheduled date unless the system demonstrates that collecting a replacement sample within this time frame is not feasible or the Department approves an alternative resampling date. The system must submit an explanation for the delayed sampling date to the Department concurrent with the shipment of the sample to the laboratory.

25-005.03 Systems that fail to meet the criteria of 179 NAC 25-005.02 for any required source water sample must revise their sampling schedules to add dates for collecting all missed samples. Systems must submit the revised schedule to the Department for approval prior to when the system begins collecting the missed samples.

25-006 SAMPLING LOCATIONS

25-006.01 Systems required to conduct source water monitoring must collect samples for each plant that treats a surface water or GWUDI source. Where multiple plants draw water from the same influent, such as the same pipe or intake, the Department may approve one set of monitoring results to be used to satisfy the source water monitoring requirements for all plants.

25-006.02 Systems That Add Chemicals

25-006.02A Systems must collect source water samples prior to chemical treatment, such as coagulants, oxidants and disinfectants, unless the system meets the condition of 179 NAC 25-006.02B.

25-006.02B The Department may approve a system to collect a source water sample after chemical treatment. To grant this approval, the Department must determine that collecting a sample prior to chemical treatment is not feasible for the system and that the chemical treatment is unlikely to have a significant adverse effect on the analysis of the sample.

25-006.03 Systems that recycle filter backwash water must collect source water samples prior to the point of filter backwash water addition.

25-006.04 Bank Filtration

25-006.04A Systems that receive Cryptosporidium treatment credit for bank filtration under 179 NAC 17-005.02 or 179 NAC 19-009.03 as applicable, must collect source water samples in the surface water prior to bank filtration.

25-006.04B Systems that use bank filtration as pretreatment to a filtration plant must collect source water samples from the well (i.e., after bank filtration). Use of bank filtration during monitoring must be consistent with routine operational practice. Systems collecting samples after a bank filtration process may not receive treatment credit for the bank filtration under 179 NAC 25-019.03.

25-006.05 Multiple Sources: Systems with plants that use multiple water sources, including multiple surface water sources and blended surface water and ground water sources, must collect samples as specified in 179 NAC 25-006.05A or 25-006.05B. The use of multiple sources during monitoring must be consistent with routine operational practice.

25-006.05A If a sampling tap is available where the sources are combined prior to treatment, systems must collect samples from the tap.

25-006.05B If a sampling tap where the sources are combined prior to treatment is not available, systems must collect samples at each source near the intake on the same day and must follow either 179 NAC 25-006.05B1 or 25-005.05B2 for sample analysis.

25-006.05B1 Systems may composite samples from each source into one sample prior to analysis. The volume of sample from each source must be weighted according to the proportion of the source in the total plant flow at the time the sample is collected.

25-006.05B2 Systems may analyze samples from each source separately and calculate a weighted average of the analysis results for each sampling date. The weighted average must be calculated by multiplying the analysis result for each source by the fraction the source contributed to total plant flow at the time the sample was collected and then summing these values.

25-006.06 Additional Requirements: Systems must submit a description of their sampling location(s) to the Department at the same time as the required sampling schedule. This description must address the position of the sampling location in relation to the system's water source(s) and treatment processes, including pretreatment, points of chemical treatment, and filter backwash recycle. If the Department does not respond to a system regarding sampling location(s), the system must sample at the reported location(s).

25-007 ANALYTICAL METHODS

25-007.01 Cryptosporidium: Systems must analyze for Cryptosporidium using Method 1623: Cryptosporidium and Giardia in Water by Filtration/IMS/FA, 2005, United States Environmental Protection Agency, EPA-815-R-05-002 or Method 1622: Cryptosporidium in Water by Filtration/IMS/FA, 2005, United States Environmental Protection Agency, EPA-815-R-05-001, which are incorporated by reference or an equivalent method approved by EPA. A copy of these methods may be obtained online from <http://www.epa.gov/safewater/disinfection/lt2> or from the United States Environmental Protection Agency, Office of Ground Water and Drinking Water, 1201 Constitution Ave., NW, Washington, DC 20460 (Telephone: 800-426-4791). A copy may be inspected at the office of the Division of Public Health of the Department of Health and Human Services, 301 Centennial Mall South, Lincoln, NE 68509.

25-007.01A Systems must analyze at least a 10 liter (L) sample or a packed pellet volume of at least 2 milliliter (mL) as generated by the methods listed in 179 NAC 25-007.01. Systems unable to process a 10 L sample must analyze as much sample volume as can be filtered by two filters approved by EPA for the methods listed in 179 NAC 25-007.01, up to a packed pellet volume of at least 2 mL.

25-007.01B Procedure for Matrix Spike Samples

25-007.01B1 Matrix Spike (MS) samples, as required by the methods in 179 NAC 25-007.01, must be spiked and filtered by a laboratory approved for Cryptosporidium analysis under 179 NAC 25-008.

25-007.01B2 If the volume of the MS sample is greater than 10 L, the system may filter all but 10 L of the MS sample in the field, and ship the filtered sample and the remaining 10 L of source water to the laboratory. In this case, the laboratory must spike the remaining 10 L of water and filter it through the filter used to collect the balance of the sample in the field.

25-007.01C Flow cytometer-counted spiking suspensions must be used for MS samples and ongoing precision and recovery (OPR) samples.

25-007.02 E. coli: Systems must use methods for enumeration of E. coli in source water approved in 40 CFR 136.3(a) or equivalent methods approved by EPA. Available from American Public Health Association, 800 I Street, NW, Washington, DC 20001-3710.

25-007.02A The time from sample collection to initiation of analysis may not exceed 30 hours unless the system meets the condition of 179 NAC 25-007.02B.

25-007.02B The Department may approve on a case-by-case basis the holding of an E. coli sample for up to 48 hours between sample collection and initiation of analysis if the Department determines that analyzing an E. coli sample within 30 hours is not feasible. E. coli samples held between 30 to 48 hours must be analyzed by the Colilert reagent version of Standard Method 9223B as listed in 40 CFR 136.3(a).

25-007.02C Systems must maintain samples between 0° C and 10° C during storage and transit to the laboratory.

25-007.03 Turbidity: Systems must use methods for turbidity measurement approved in 179 NAC 13-007.01A.

25-008 APPROVED LABORATORIES

25-008.01 Cryptosporidium: Systems must have Cryptosporidium samples analyzed by a laboratory that is approved under EPA's Laboratory Quality

Assurance Evaluation Program for Analysis of Cryptosporidium in Water or a laboratory that has been certified for Cryptosporidium analysis by an equivalent Department laboratory certification program.

25-008.02 E. coli: Any laboratory certified by EPA, the National Environmental Laboratory Accreditation Conference or the Department for total coliform or fecal coliform analysis under 179 NAC 13-007 is approved for E. coli analysis under this chapter when the laboratory uses the same technique for E. coli that the laboratory uses for 179 NAC 13-007.

25-008.03 Turbidity: Measurements of turbidity must be made by

1. A Grade I, II, III, or IV licensed water operator, or
2. A person who has been trained to measure turbidity and has completed Attachment 1 which is incorporated herein by reference and has sent it to the Department.

25-009 REPORTING SOURCE WATER MONITORING RESULTS

25-009.01 All systems must report results from the required source water monitoring to the Department no later than 10 days after the end of the first month following the month when the sample is collected.

25-009.02 Systems must report the applicable information in 179 NAC 25-009.02A and 25-009.02B for required source water monitoring.

25-009.02A Systems must report the following data elements for each Cryptosporidium analysis:

Data element

1. PWS ID.
2. Facility ID.
3. Sample collection date.
4. Sample type (field or matrix spike).
5. Sample volume filtered (L) to the nearest $\frac{1}{4}$ L.
6. Was 100% of filtered volume examined.
7. Number of oocysts counted.

25-009.02A1 For matrix spike samples, systems must also report the sample volume spiked and estimated number of oocysts spiked. These data are not required for field samples.

25-009.02A2 For samples in which less than 10 L is filtered or less than 100% of the sample volume is examined, systems must also report the number of filters used and the packed pellet volume.

25-009.02A3 For samples in which less than 100% of sample volume is examined, systems must also report the volume of resuspended concentrate and volume of this resuspension processed through immunomagnetic separation.

25-009.02B Systems must report the following data elements for each E. coli analysis:

Data element

1. PWS ID
2. Facility ID
3. Sample collection date.
4. Analytical method number.
5. Method type.
6. Source type (flowing stream, lake/reservoir, GWUDI).
7. *E. coli*/100 mL.
8. Turbidity.¹

¹ Systems serving fewer than 10,000 people that are not required to monitor for turbidity are not required to report turbidity with their E. coli results.

25-010 REQUIREMENTS WHEN MAKING A SIGNIFICANT CHANGE IN DISINFECTION PRACTICE

25-010.01 Following the completion of source water monitoring, a system that plans to make a significant change to its disinfection practice, as defined in 179 NAC 25-010.02, must develop disinfection profiles and calculate disinfection benchmarks for *Giardia lamblia* and viruses as described in 179 NAC 25-011. Prior to changing the disinfection practice, the system must notify the Department and must include in this notice the following information:

25-010.01A A completed disinfection profile and disinfection benchmark for *Giardia lamblia* and viruses as described in 179 NAC 25-011.

25-010.01B A description of the proposed change in disinfection practice.

25-010.01C An analysis of how the proposed change will affect the current level of disinfection.

25-010.02 Significant changes to disinfection practice are defined as follows:

1. Changes to the point of disinfection;
2. Changes to the disinfectant(s) used in the treatment plant;
3. Changes to the disinfection process; or
4. Any other modification identified by the Department as a significant change to disinfection practice.

25-011 DEVELOPING THE DISINFECTION PROFILE AND BENCHMARK

25-011.01 Systems required to develop disinfection profiles must follow the requirements of 179 NAC 25-011. Systems must monitor at least weekly for a period of 12 consecutive months to determine the total log inactivation for *Giardia lamblia* and viruses. If systems monitor more frequently, the monitoring frequency must be evenly spaced. Systems that operate for fewer than 12 months per year must monitor weekly during the period of operation. Systems must determine log inactivation for *Giardia lamblia* through the entire plant, based on contact time (CT)99.9 values in Tables 13.1 through 13.8 of 179 NAC 13-007.02C5 as applicable. Systems must determine log inactivation for viruses through the entire treatment plant based on a protocol approved by the Department.

25-011.02 Systems with a single point of disinfectant application prior to the entrance to the distribution system must conduct the monitoring in 179 NAC 25-011.02A through 011.02D. Systems with more than one point of disinfectant application must conduct the monitoring in 179 NAC 25-011.02A through 25-011.02D for each disinfection segment. Systems must monitor the parameters necessary to determine the total inactivation ratio, using analytical methods in 179 NAC 13-007.01.

25-011.02A For systems using a disinfectant other than UV, the temperature of the disinfected water must be measured at each residual disinfectant concentration sampling point during peak hourly flow or at an alternative location approved by the Department.

25-011.02B For systems using chlorine, the pH of the disinfected water must be measured at each chlorine residual disinfectant concentration sampling point during peak hourly flow or at an alternative location approved by the Department.

25-011.02C The disinfectant contact time(s) (t) must be determined during peak hourly flow.

25-011.02D The residual disinfectant concentration(s) (C) of the water before or at the first customer and prior to each additional point of disinfectant application must be measured during peak hourly flow.

25-011.03 In lieu of conducting new monitoring under 179 NAC 25-011.02, systems may elect to meet the following requirements:

25-011.03A Systems that have at least one year of existing data that are substantially equivalent to data collected under the provisions of 179 NAC 25-011.02 may use these data to develop disinfection profiles as specified in this section if the system has neither made a significant change to its treatment practice nor changed sources since the data were collected. Systems may develop disinfection profiles using up to three years of existing data.

25-011.03B Systems may use disinfection profile(s) developed under 179 NAC 17-004 or 179 NAC 19-007.01 through 19-007.07 in lieu of developing a new profile if the system has neither made a significant change to its treatment practice nor changed sources since the profile was developed. Systems that have not developed a virus profile under 179 NAC 17-004 or 179 NAC 19-007.01 through 19-007.07 must develop a virus profile using the same monitoring data on which the *Giardia lamblia* profile is based.

25-011.04 Systems must calculate the total inactivation ratio for *Giardia lamblia* as specified in 179 NAC 25-011.04A through 25-011.04C.

25-011.04A Systems using only one point of disinfectant application may determine the total inactivation ratio for the disinfection segment based on either of the following methods:

1. Determine one inactivation ratio ($CT_{calc}/CT_{99.9}$) before or at the first customer during peak hourly flow.
2. Determine successive $CT_{calc}/CT_{99.9}$ values, representing sequential inactivation ratios, between the point of disinfectant application and a point before or at the first customer during peak hourly flow. The system must calculate the total inactivation ratio by determining ($CT_{calc}/CT_{99.9}$) for each sequence and then adding the ($CT_{calc}/CT_{99.9}$) values together to determine $[\sum(CT_{calc}/CT_{99.9})]$

25-011.04B Systems using more than one point of disinfectant application before the first customer must determine the CT value of each disinfection segment immediately prior to the next point of disinfectant application, or for the final segment, before or at the first customer, during peak hourly flow. The ($CT_{calc}/CT_{99.9}$) value of each segment and $[\sum(CT_{calc}/CT_{99.9})]$ must be calculated using the method in 179 NAC 25-011.04A item 2.

25-011.04C The system must determine the total logs of inactivation by multiplying the value calculated in 179 NAC 25-011.04A or 25-011.04B by 3.0.

25-011.04D Systems must calculate the log of inactivation for viruses using a protocol approved by the Department.

25-011.05 Systems must use the procedures specified in 179 NAC 25-011.05A and 25-011.05B to calculate a disinfection benchmark.

25-011.05A For each year of profiling data collected and calculated under 179 NAC 25-011.01 through 25-011.04, systems must determine the lowest mean monthly level of both *Giardia lamblia* and virus inactivation. Systems must determine the mean *Giardia lamblia* and virus inactivation for each calendar month for each year of profiling data by dividing the sum of daily or weekly *Giardia lamblia* and virus log inactivation by the number of values calculated for that month.

25-011.05B The disinfection benchmark is the lowest monthly mean value (for systems with one year of profiling data) or the mean of the lowest monthly mean values (for systems with more than one year of profiling data) of *Giardia lamblia* and virus log inactivation in each year of profiling data.

25-012 BIN CLASSIFICATION FOR FILTERED SYSTEMS

25-012.01 Following completion of required source water monitoring, filtered systems must calculate a *Cryptosporidium* bin concentration for each plant for which monitoring was required. Calculation of the bin concentration must use the *Cryptosporidium* results reported under 179 NAC 25-004.01 or 40 CFR 141 Subpart W and must follow the following procedures:

25-012.02 Procedures for Bin Classification

25-012.02A For systems that collect a total of at least 48 samples, the bin concentration is equal to the arithmetic mean of all sample concentrations.

25-012.02B For systems that collect a total of at least 24 samples, but not more than 47 samples, the bin concentration is equal to the highest arithmetic mean of all sample concentrations in any 12 consecutive months during which *Cryptosporidium* samples were collected.

25-012.02C For systems that serve fewer than 10,000 people and monitor for *Cryptosporidium* for only one year (i.e., collect 24 samples in 12 months), the bin concentration is equal to the arithmetic mean of all sample concentrations.

25-012.02D For systems with plants operating only part of the year that monitor fewer than 12 months per year under 179 NAC 25-004.04, the bin concentration is equal to the highest arithmetic mean of all sample concentrations during any year of *Cryptosporidium* monitoring.

25-012.02E If the monthly *Cryptosporidium* sampling frequency varies, systems must first calculate a monthly average for each month of monitoring. Systems must then use these monthly average concentrations, rather than individual sample concentrations, in the applicable calculation for bin classification in 179 NAC 25-012.02A through 25-012.02D.

25-012.03 Filtered systems must determine their bin classification from the following table and using the calculated *Cryptosporidium* bin concentration.

BIN CLASSIFICATION TABLE FOR FILTERED SYSTEMS

For systems that are:	With a <i>Cryptosporidium</i> bin concentration of . . .¹	The bin classification is . .
. . . required to monitor for <i>Cryptosporidium</i> under 179 NAC 25- 004 or systems that monitored <i>Cryptosporidium</i> under 40 CFR 141 Subpart W	<i>Cryptosporidium</i> <0.075 oocysts/L 0.075 oocysts/L ≤ <i>Cryptosporidium</i> <1.0 oocysts/L 1.0 oocysts/L ≤ <i>Cryptosporidium</i> <3.0 oocysts/L <i>Cryptosporidium</i> ≥3.0 oocysts/L	Bin 1 Bin 2 Bin 3 Bin 4
. . . serving fewer than 10,000 people and NOT required to monitor for <i>Cryptosporidium</i> under 179 NAC 25-004.01D or 40 CFR 141 Subpart W	NA	Bin 1

25-012.04 Bin Classification Report

25-012.04A Filtered systems must report their bin classification to the Department for approval no later than six months after the system is required to complete source water monitoring.

25-012.04B The bin classification report to the Department must include a summary of source water monitoring data and the calculation procedure used to determine bin classification.

25-012.05 Failure to comply with the conditions of 179 NAC 25-012.04 is a violation of the treatment technique requirement.

25-013 FILTERED SYSTEM ADDITIONAL CRYPTOSPORIDIUM TREATMENT REQUIREMENTS

25-013.01 Filtered systems must provide the level of additional treatment for *Cryptosporidium* specified in 179 NAC 25-013 based on their bin classification as determined under 179 NAC 25-012 or 40 CFR 141 Subpart W and according to the schedule in 179 NAC 25-015 or 40 CFR 141 Subpart W.

If the system bin classification is . . .	And the system uses the following filtration treatment in full compliance with 179 NAC 13, 17 and 19 (as applicable), then the additional <i>Cryptosporidium</i> treatment requirements are . . .			
	Conventional filtration treatment (including softening)	Direct filtration	Slow sand or diatomaceous earth filtration	Alternative filtration technologies
Bin 1	No additional treatment	No additional treatment	No additional treatment	No additional treatment
Bin 2	1-log treatment	1.5-log treatment	1-log treatment	(1)
Bin 3	2-log treatment	2.5-log treatment	2-log treatment	(2)
Bin 4	2.5-log treatment	3-log treatment	2.5-log treatment	(3)

- ¹ As determined by the Department such that the total *Cryptosporidium* removal and inactivation is at least 4.0-log.
- ² As determined by the Department such that the total *Cryptosporidium* removal and inactivation is at least 5.0-log.
- ³ As determined by the Department such that the total *Cryptosporidium* removal and inactivation is at least 5.5-log.

25-013.02 Required *Cryptosporidium* Treatment

25-013.02A Filtered systems must use one or more of the treatment and management options listed in 179 NAC 25-017, termed the microbial toolbox, to comply with the additional *Cryptosporidium* treatment required in 179 NAC 25-013.01.

25-013.02B Systems classified in Bin 3 and Bin 4 must achieve at least 1-log of the additional *Cryptosporidium* treatment required under 179 NAC 25-013.01 using either one or a combination of the following: bag filters, bank filtration, cartridge filters, chlorine dioxide, membranes, ozone, or UV, as described in 179 NAC 25-018 through 179 NAC 25-022.

25-013.03 Failure by a system in any month to achieve treatment credit by meeting criteria in 179 NAC 25-018 through 25-022 for microbial toolbox options that is at least equal to the level of treatment required in 179 NAC 25-013.01 is a violation of the treatment technique requirement.

25-013.04 If the Department determines during a sanitary survey or an equivalent source water assessment that after a system completed source water monitoring, significant changes occurred in the system's watershed that could lead to increased contamination of the source water by Cryptosporidium, the system must take actions specified by the Department to address the contamination. These actions may include additional source water monitoring and/or implementing microbial toolbox options listed in 179 NAC 25-017.

25-014 UNFILTERED SYSTEM CRYPTOSPORIDIUM TREATMENT REQUIREMENTS

25-014.01 Determination of Mean Cryptosporidium Level

25-014.01A Following completion of the source water monitoring, unfiltered systems must calculate the arithmetic mean of all Cryptosporidium sample concentrations. Systems must report this value to the Department for approval no later than six months after the month the system is required to complete source water monitoring.

25-014.01B If the monthly Cryptosporidium sampling frequency varies, systems must first calculate a monthly average for each month of monitoring. Systems must then use these monthly average concentrations, rather than individual sample concentrations, in the calculation of the mean Cryptosporidium level.

25-014.01C The report to the Department of the mean Cryptosporidium levels must include a summary of the source water monitoring data used for the calculation.

25-014.01D Failure to comply with the conditions of 179 NAC 25-014.01 is a violation of the treatment technique requirement.

25-014.02 Cryptosporidium Inactivation Requirements: Unfiltered systems must provide the level of inactivation for Cryptosporidium specified in this paragraph, based on their mean Cryptosporidium levels and according to the schedule for compliance.

25-014.02A Unfiltered systems with a mean Cryptosporidium level of 0.01 oocysts/L or less must provide at least 2-log Cryptosporidium inactivation.

25-014.02B Unfiltered systems with a mean Cryptosporidium level of greater than 0.01 oocysts/L must provide at least 3-log Cryptosporidium inactivation.

25-014.03 Inactivation Treatment Technology Requirements: Unfiltered systems must use chlorine dioxide, ozone, or UV to meet the Cryptosporidium inactivation requirements.

25-014.03A Systems that use chlorine dioxide or ozone and fail to achieve the required *Cryptosporidium* inactivation on more than one day in the calendar month are in violation of the treatment technique requirement.

25-014.03B Systems that use UV light and fail to achieve the required *Cryptosporidium* inactivation by meeting the criteria in 179 NAC 25-022.04C2 are in violation of the treatment technique requirement.

25-014.04 Use of Two Disinfectants: Unfiltered systems must meet the combined *Cryptosporidium* inactivation requirements of this section and *Giardia lamblia* and virus inactivation requirements of 179 NAC 13-005.01 using a minimum of two disinfectants, and each of two disinfectants must separately achieve the total inactivation required for either *Cryptosporidium*, *Giardia lamblia*, or viruses.

25-015 SCHEDULE FOR COMPLIANCE WITH CRYPTOSPORIDIUM TREATMENT REQUIREMENTS

25-015.01 Following bin classification, filtered systems must provide the level of treatment for *Cryptosporidium* required under 179 NAC 25-013 according to the schedule in 179 NAC 25-015.03 or according to a schedule set by the Department.

25-015.02 Following determination of the mean *Cryptosporidium* level, unfiltered systems must provide the level of treatment for *Cryptosporidium* required under 179 NAC 25-014 according to the schedule in 179 NAC 25-015.03 or according to a schedule set by the Department.

25-015.03 *Cryptosporidium* Treatment Compliance Dates

Cryptosporidium Treatment Compliance Dates Table

Systems that serve . . .	Must comply with <i>Cryptosporidium</i> treatment requirements no later than . . . ^a
(1) At least 100,000 people	the effective date of these regulations
(2) From 50,000 to 99,999 people	the effective date of these regulations
(3) From 10,000 to 49,999 people	October 1, 2013
(4) Fewer than 10,000 people	October 1, 2014

^a The Department may allow up to an additional two years for complying with the treatment requirement for systems making capital improvements.

25-015.04 If the bin classification for a filtered system changes following source water monitoring, as determined under 179 NAC 25-012.04, the system must provide the level of treatment for *Cryptosporidium* required under 179 NAC 25-013 on a schedule the Department approves.

25-015.05 If the mean *Cryptosporidium* level for an unfiltered system changes following source water monitoring, and if the system must provide

a different level of *Cryptosporidium* treatment under 179 NAC 25-014 due to this change, the system must meet this treatment requirement on a schedule the Department approves.

25-016 REQUIREMENTS FOR UNCOVERED FINISHED WATER

STORAGE FACILITIES: Uncovered finished water storage facilities are not allowed.

25-016.01 Failure to comply with the requirements of 179 NAC 25-016 is a violation of the treatment technique requirement.

25-017 MICROBIAL TOOLBOX OPTIONS FOR MEETING CRYPTOSPORIDIUM TREATMENT REQUIREMENTS

25-017.01 Credits

25-017.01A Systems receive the treatment credits listed in the table in 179 NAC

25-017.02 by meeting the conditions for microbial toolbox options described in 179 NAC 25-018 through 179 NAC 25-022. Systems apply these treatment credits to meet the treatment requirements in 179 NAC 25-013 or 25-014, as applicable.

25-017.01B Unfiltered systems are eligible for treatment credits for the microbial toolbox options described in 179 NAC 25-022 only.

25-017.02 The following table summarizes options in the microbial toolbox:

Microbial Toolbox Summary Table: Options, Treatment Credits and Criteria

Toolbox Option	<i>Cryptosporidium</i> treatment credit with design and implementation criteria
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Source Protection and Management Toolbox Options

1. Watershed control program	0.5-log credit for Department-approved program comprising required elements, annual program status report to the Department, and regular watershed survey. Unfiltered systems are not eligible for credit. Specific criteria are in 179 NAC 25-018.01.
2. Alternative source/intake management	No prescribed credit. Systems may conduct simultaneous monitoring for treatment bin classification at alternative intake locations or under alternative intake management strategies. Specific criteria are in 179 NAC 25-018.02.

Toolbox Option	<i>Cryptosporidium</i> treatment credit with design and implementation criteria
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	turbidity or alternative Department-approved performance criteria. To be eligible, basins must be operated continuously with coagulant addition and all plant flow must pass through basins. Specific criteria are in 179 NAC 25-019.01.
4. Two-stage lime softening	0.5-log credit for two-stage softening where chemical addition and hardness precipitation occur in both stages. All plant flow must pass through both stages. Single-stage softening is credited as equivalent to conventional treatment. Specific criteria are in 179 NAC 25-019.02.
5. Bank filtration	0.5-log credit for 25-foot setback; 1.0-log credit for 50-foot setback; aquifer must be unconsolidated sand containing at least 10 percent fines; average turbidity in wells must be less than 1 NTU. Systems using wells followed by filtration when conducting source water monitoring must sample the well to determine bin classification and are not eligible for additional credit. Specific criteria are in 179 NAC 25-019.03.

Treatment Performance Toolbox Options

6. Combined filter performance	0.5-log credit for combined filter effluent turbidity less than or equal to 0.15 NTU in at least 95 percent of measurements each month. Specific criteria are in 179 NAC 25-020.01.
7. Individual filter performance	0.5-log credit (in addition to 0.5-log combined filter performance credit) if individual filter effluent turbidity is less than or equal to 0.15 NTU in at least 95 percent of samples each month in each filter and is never greater than 0.3 NTU in two consecutive measurements in any filter. Specific criteria are in 179 NAC 25-020.02.
8. Demonstration of performance	Credit awarded to unit process or treatment train based on a demonstration to the Department with a Department-approved protocol. Specific criteria are in 179 NAC 25-020.03.
Toolbox Option	<i>Cryptosporidium</i> treatment credit with design and implementation criteria

Additional Filtration Toolbox Options

9. Bag or	Up to 2-log credit based on the removal
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cartridge filters (individual filters)	efficiency demonstrated during challenge testing with a 1.0-log factor of safety. Specific criteria are in 179 NAC 25-021.01.
10. Bag or cartridge filters (in series)	Up to 2.5-log credit based on the removal efficiency demonstrated during challenge testing with a 0.5-log factor of safety. Specific criteria are in 179 NAC 25-021.01.
11. Membrane filtration	Log credit equivalent to removal efficiency demonstrated in challenge test for device if supported by direct integrity testing. Specific criteria are in 179 NAC 25-021.02.
12. Second stage filtration	0.5-log credit for second separate granular media filtration stage if treatment train includes coagulation prior to first filter. Specific criteria are in 179 NAC 25-021.03.
13. Slow sand filters	2.5-log credit as a secondary filtration step; 3.0-log credit as a primary filtration process. No prior chlorination for either option. Specific criteria are in 179 NAC 25-021.04.

Inactivation Toolbox Options

14. Chlorine dioxide	Log credit based on measured CT in relation to CT table. Specific criteria are in 179 NAC 25-022.02.
15. Ozone	Log credit based on measured CT in relation to CT table. Specific criteria are in 179 NAC 25-022.02.
16. UV	Log credit based on validated UV dose in relation to UV dose table; reactor validation testing required to establish UV dose and associated operating conditions. Specific criteria are in 179 NAC 25-022.04

25-018 SOURCE TOOLBOX COMPONENTS

25-018.01 Watershed Control Program: Systems receive a 0.5-log *Cryptosporidium* treatment credit for implementing a watershed control program that meets the requirements of 179 NAC 25-018.

25-018.01A Systems that intend to apply for the watershed control program credit must notify the Department of this intent no later than two years prior to the treatment compliance date applicable to the system.

25-018.01B Systems must submit to the Department a proposed watershed control plan no later than one year before the applicable treatment compliance date. The Department must approve the watershed control plan for the system to receive watershed control program treatment credit. The watershed control plan must include the following elements:

1. Identification of an “area of influence” outside of which the likelihood of Cryptosporidium or fecal contamination affecting the treatment plant intake is not significant. This is the area to be evaluated in future watershed surveys under 179 NAC 25-018.01E item 2.

2. Identification of both potential and actual sources of Cryptosporidium contamination and an assessment of the relative impact of these sources on the system’s source water quality.

3. An analysis of the effectiveness and feasibility of control measures that could reduce Cryptosporidium loading from sources of contamination to the system’s source water.

4. A statement of goals and specific actions the system will undertake to reduce source water Cryptosporidium levels. The plan must explain how the actions are expected to contribute to specific goals, identify watershed partners and their roles, identify resource requirements and commitments, and include a schedule for plan implementation with deadlines for completing specific actions identified in the plan.

25-018.01C Systems with existing watershed control programs (i.e., programs in place on January 5, 2006) are eligible to seek this credit. Their watershed control plans must meet the criteria in 179 NAC 25-018.01B and must specify ongoing and future actions that will reduce source water Cryptosporidium levels.

25-018.01D If the Department does not respond to a system regarding approval of a watershed control plan submitted under 179 NAC 25-018 and the system meets the other requirements of 179 NAC 25-018, the watershed control program will be considered approved and 0.5 log Cryptosporidium treatment credit will be awarded unless and until the Department subsequently withdraws such approval.

25-018.01E Systems must complete the following actions to maintain the 0.5-log credit:

1. Submit an annual watershed control program status report to the Department. The annual watershed control program status report must describe the system’s implementation of the approved plan and assess the adequacy of the plan to meet its goals. It must explain how the system is addressing any shortcomings in plan implementation, including those previously identified by the Department or as the result of the watershed survey conducted under 179 NAC 25-018.01E item 2. It must also describe any significant changes that have occurred in the watershed since the last watershed sanitary survey. If a system determines during implementation that making a significant change to its approved watershed control program is necessary, the system must notify the Department prior to making any such changes. If any change is

likely to reduce the level of source water protection, the system must also list in its notification the actions the system will take to mitigate this effect.

2. Undergo a watershed sanitary survey every three years for community water systems and every five years for non-community water systems and submit the survey report to the Department. The survey must be conducted according to Department guidelines and by persons the Department approves.

a. The watershed sanitary survey must meet the following criteria: encompass the region identified in the Department-approved watershed control plan as the area of influence; assess the implementation of actions to reduce source water *Cryptosporidium* levels; and identify any significant new sources of *Cryptosporidium*.

b. If the Department determines that significant changes may have occurred in the watershed since the previous watershed sanitary survey, systems must undergo another watershed sanitary survey by a date the Department requires, which may be earlier than the regular date in 179 NAC 25-018.01E item 2.

3. The system must make the watershed control plan, annual status reports, and watershed sanitary survey reports available to the public upon request. These documents must be in a plain language style and include criteria by which to evaluate the success of the program in achieving plan goals. The Department may approve systems to withhold from the public portions of the annual status report, watershed control plan, and watershed sanitary survey based on water supply security considerations.

25-018.01F If the Department determines that a system is not carrying out the approved watershed control plan, the Department may withdraw the watershed control program treatment credit.

25-018.02 Alternative Source

25-018.02A A system may conduct source water monitoring that reflects a different intake location (either in the same source or for an alternate source) or a different procedure for the timing or level of withdrawal from the source (alternative source monitoring). If the Department approves, a system may determine its bin classification under 179 NAC 25-012 based on the alternative source monitoring results.

25-018.02B If systems conduct alternative source monitoring under 179 NAC 25-018.02A, systems must also monitor their current plant intake concurrently as described in 179 NAC 25-004.

25-018.02C Alternative source monitoring under 179 NAC 25-018.02A must meet the requirements for source monitoring to determine bin

classification, as described in 179 NAC 25-004 through 25-009. Systems must report the alternative source monitoring results to the Department, along with supporting information documenting the operating conditions under which the samples were collected.

25-018.02D If a system determines its bin classification using alternative source monitoring results that reflect a different intake location or a different procedure for managing the timing or level of withdrawal from the source, the system must relocate the intake or permanently adopt the withdrawal procedure, as applicable, no later than the applicable treatment compliance date in 179 NAC 25-015.

25-019 PRE-FILTRATION TREATMENT TOOLBOX COMPONENTS

25-019.01 Presedimentation: Systems receive 0.5-log *Cryptosporidium* treatment credit for a presedimentation basin during any month the process meets the following criteria:

1. The presedimentation basin must be in continuous operation and must treat the entire plant flow taken from a surface water or GWUDI source.
2. The system must continuously add a coagulant to the presedimentation basin.
3. The presedimentation basin must achieve the following performance criteria:
 - a. Demonstrates at least 0.5-log mean reduction of influent turbidity. This reduction must be determined using daily turbidity measurements in the presedimentation process influent and effluent and must be calculated as follows: $\log_{10}(\text{monthly mean of daily influent turbidity}) - \log_{10}(\text{monthly mean of daily effluent turbidity})$.
 - b. Complies with Department-approved performance criteria that demonstrate at least 0.5-log mean removal of micron-sized particulate material through the presedimentation process.

25-019.02 Two-Stage Lime Softening:

Systems receive an additional 0.5-log *Cryptosporidium* treatment credit for a two-stage lime softening plant if chemical addition and hardness precipitation occur in two separate and sequential softening stages prior to filtration. Both softening stages must treat the entire plant flow taken from a surface water or GWUDI source.

25-019.03 Bank Filtration: Systems receive *Cryptosporidium* treatment credit for bank filtration that serves as pretreatment to a filtration plant by meeting the criteria in 179 NAC 25-019.03.

25-019.03A Wells with a ground water flow path of at least 25 feet receive 0.5-log treatment credit; wells with a ground water flow path of at least 50 feet receive 1.0-log treatment credit. The ground water flow path must be determined as specified in 179 NAC 25-019.03D.

25-019.03B Only wells in granular aquifers are eligible for treatment credit. Granular aquifers are those comprised of sand, clay, silt, rock fragments, pebbles or larger particles, and minor cement. A system must characterize the aquifer at the well site to determine aquifer properties. Systems must extract a core from the aquifer and demonstrate that in at least 90% of the core length, grains less than 1.0 mm in diameter constitute at least 10% of the core material.

25-019.03C Only horizontal and vertical wells are eligible for treatment credit.

25-019.03D For vertical wells, the ground water flow path is the measured distance from the edge of the surface water body under high flow conditions (determined by the 100 year floodplain elevation boundary or by the floodway, as defined in Federal Emergency Management Agency flood hazard maps) to the well screen. For horizontal wells, the ground water flow path is the measured distance from the bed of the river under normal flow conditions to the closest horizontal well lateral screen.

25-019.03E Systems must monitor each wellhead for turbidity at least once every four hours while the bank filtration process is in operation. If monthly average turbidity levels, based on daily maximum values in the well, exceed 1 NTU, the system must report this result to the Department and conduct an assessment within 30 days to determine the cause of the high turbidity levels in the well. If the Department determines that microbial removal has been compromised, the Department may revoke treatment credit until the system implements corrective actions approved by the Department to remediate the problem.

25-019.03F Springs and infiltration galleries are not eligible for treatment credit under 179 NAC 25-019.03, but are eligible for credit under 179 NAC 25-020.03.

25-019.03G Bank Filtration Demonstration of Performance: The Department may approve Cryptosporidium treatment credit for bank filtration based on a demonstration of performance study that meets the criteria in 179 NAC 25-019.03G. This treatment credit may be greater than 1.0-log and may be awarded to bank filtration that does not meet the criteria in 179 NAC 25-019.03A to 25-019.03E.

25-019.03G1 The study must follow a Department-approved protocol and must involve the collection of data on the removal of Cryptosporidium or a surrogate for Cryptosporidium and related hydrogeologic and water quality parameters during the full range of

operating conditions.

25-019.03G2 The study must include sampling both from the production well(s) and from monitoring wells that are screened and located along the shortest flow path between the surface water source and the production well(s).

25-020 TREATMENT PERFORMANCE TOOLBOX COMPONENTS

25-020.01 Combined Filter Performance: Systems using conventional filtration treatment or direct filtration treatment receive an additional 0.5-log *Cryptosporidium* treatment credit during any month the system meets the criteria in this paragraph. Combined filter effluent (CFE) turbidity must be less than or equal to 0.15 NTU in at least 95% of the measurements. Turbidity must be measured as described in 179 NAC 13-007.01 and 13-007.03.

25-020.02 Individual Filter Performance: Systems using conventional filtration treatment or direct filtration treatment receive 0.5-log *Cryptosporidium* treatment credit, which can be in addition to the 0.5-log credit under 179 NAC 25-020.01, during any month the system meets the criteria in this paragraph. Compliance with these criteria must be based on individual filter turbidity monitoring as described in 179 NAC 17-006 or 19-010, as applicable.

25-020.02A The filtered water turbidity for each individual filter must be less than or equal to 0.15 NTU in at least 95% of the measurements recorded each month.

25-020.02B No individual filter may have a measured turbidity greater than 0.3 NTU in two consecutive measurements taken 15 minutes apart.

25-020.02C Any system that has received treatment credit for individual filter performance and fails to meet the requirements of 179 NAC 25-020.02A or 25-020.02B during any month does not receive a treatment technique violation under 179 NAC 25-013.03 if the Department determines the following:

1. The failure was due to unusual and short-term circumstances that could not reasonably be prevented through optimizing treatment plant design, operation, and maintenance.
2. The system has experienced no more than two such failures in any calendar year.

25-020.03 Demonstration of Performance:

The Department may approve *Cryptosporidium* treatment credit for drinking water treatment processes based on a demonstration of performance study that meets the criteria in this paragraph. This treatment credit may be greater than or less than the prescribed treatment credits in

179 NAC 25-013 or 25-019 through 25-022 and may be awarded to treatment processes that do not meet the criteria for the prescribed credits.

25-020.03A Systems cannot receive the prescribed treatment credit for any toolbox option in 179 NAC 25-019 through 25-022 if that toolbox option is included in a demonstration of performance study for which treatment credit is awarded under this paragraph.

25-020.03B The demonstration of performance study must follow a Department-approved protocol and must demonstrate the level of *Cryptosporidium* reduction the treatment process will achieve under the full range of expected operating conditions for the system.

25-020.03C Approval by the Department must be in writing and may include monitoring and treatment performance criteria that the system must demonstrate and report on an ongoing basis to remain eligible for the treatment credit. The Department may designate such criteria where necessary to verify that the conditions under which the demonstration of performance credit was approved are maintained during routine operation.

25-021 ADDITIONAL FILTRATION TOOLBOX COMPONENTS

25-021.01 Bag and Cartridge Filters: Systems receive *Cryptosporidium* treatment credit of up to 2.0-log for individual bag or cartridge filters and up to 2.5-log for bag or cartridge filters operated in series by meeting the following criteria. To be eligible for this credit, systems must report the results of challenge testing that meets the requirements of 179 NAC 25-021.01 items 2 through 9 to the Department. The filters must treat the entire plant flow taken from a surface water or ground water under the direct influence of surface water source.

1. The *Cryptosporidium* treatment credit awarded to bag or cartridge filters must be based on the removal efficiency demonstrated during challenge testing that is conducted according to the criteria in 179 NAC 25-021.01 items 2 through 9. A factor of safety equal to 1-log for individual bag or cartridge filters and 0.5-log for bag or cartridge filters in series must be applied to challenge testing results to determine removal credit. Systems may use results from challenge testing conducted prior to January 5, 2006 if the prior testing was consistent with the criteria specified in 179 NAC 25-021.01 items 2 through 9.
2. Challenge testing must be performed on full-scale bag or cartridge filters, and the associated filter housing or pressure vessel, that are identical in material and construction to the filters and housings the system will use for removal of *Cryptosporidium*. Bag or cartridge filters must be challenge tested in the same configuration that the system will use, either as individual filters or as a series configuration of filters.
3. Challenge testing must be conducted using *Cryptosporidium* or a surrogate that is removed no more efficiently than *Cryptosporidium*.

The microorganism or surrogate used during challenge testing is referred to as the challenge particulate. The concentration of the challenge particulate must be determined using a method capable of discreetly quantifying the specific microorganism or surrogate used in the test; gross measurements such as turbidity may not be used.

4. The maximum feed water concentration that can be used during a challenge test must be based on the detection limit of the challenge particulate in the filtrate (i.e., filtrate detection limit) and must be calculated using the following equation:

$$\text{Maximum Feed Concentration} = 1 \times 10^4 \times (\text{Filtrate Detection Limit})$$

5. Challenge testing must be conducted at the maximum design flow rate for the filter as specified by the manufacturer.

6. Each filter evaluated must be tested for a duration sufficient to reach 100% of the terminal pressure drop, which establishes the maximum pressure drop under which the filter may be used to comply with the requirements of this chapter.

7. Removal efficiency of a filter must be determined from the results of the challenge test and expressed in terms of log removal values using the following equation:

$$\text{LRV} = \text{LOG}_{10}(C_f) - \text{LOG}_{10}(C_p)$$

Where:

LRV = log removal value demonstrated during challenge testing; C_f = the feed concentration measured during the challenge test; and C_p = the filtrate concentration measured during the challenge test. In applying this equation, the same units must be used for the feed and filtrate concentrations. If the challenge particulate is not detected in the filtrate, then the term C_p must be set equal to the detection limit.

8. Each filter tested must be challenged with the challenge particulate during three periods over the filtration cycle: within two hours of start-up of a new filter; when the pressure drop is between 45% and 55% of the terminal pressure drop; and at the end of the cycle after the pressure drop has reached 100% of the terminal pressure drop. An LRV must be calculated for each of these challenge periods for each filter tested. The LRV for the filter ($\text{LRV}_{\text{filter}}$) must be assigned the value of the minimum LRV observed during the three challenge periods for that filter.

9. If fewer than 20 filters are tested, the overall removal efficiency for the filter product line must be set equal to the lowest $\text{LRV}_{\text{filter}}$ among

the filters tested. If 20 or more filters are tested, the overall removal efficiency for the filter product line must be set equal to the 10th percentile of the set of LRV_{filter} values for the various filters tested. The percentile is defined by $[i/(n+1)]$ where i is the rank of n individual data points ordered lowest to highest. If necessary, the 10th percentile may be calculated using linear interpolation.

10. If a previously tested filter is modified in a manner that could change the removal efficiency of the filter product line, challenge testing to demonstrate the removal efficiency of the modified filter must be conducted and submitted to the Department.

25-021.02 Membrane Filtration

25-021.02A Systems receive *Cryptosporidium* treatment credit for membrane filtration that meets the criteria of this paragraph. Membrane cartridge filters that meet the definition of membrane filtration in 179 NAC 25-002 are eligible for this credit. The level of treatment credit a system receives is equal to the lower of the values determined under item 1 or 2 below:

1. The removal efficiency demonstrated during challenge testing conducted under the conditions in 179 NAC 25-021.02B.
2. The maximum removal efficiency that can be verified through direct integrity testing used with the membrane filtration process under the conditions in 179 NAC 25-021.02C.

25-021.02B Challenge Testing: The membrane used by the system must undergo challenge testing to evaluate removal efficiency, and the system must report the results of challenge testing to the Department. Challenge testing must be conducted according to the following criteria. Systems may use data from challenge testing conducted prior to January 5, 2006 if the prior testing was consistent with the following criteria.

1. Challenge testing must be conducted on either a full-scale membrane module, identical in material and construction to the membrane modules used in the system's treatment facility, or a smaller-scale membrane module, identical in material and similar in construction to the full-scale module. A module is defined as the smallest component of a membrane unit in which a specific membrane surface area is housed in a device with a filtrate outlet structure.
2. Challenge testing must be conducted using *Cryptosporidium* oocysts or a surrogate that is removed no more efficiently than *Cryptosporidium* oocysts. The organism or surrogate used during challenge testing is referred to as the challenge particulate. The concentration of the challenge particulate, in both the feed and filtrate water, must be determined using a method capable of discretely quantifying the specific challenge particulate used in the

test; gross measurements such as turbidity may not be used.

3. The maximum feed water concentration that can be used during a challenge test is based on the detection limit of the challenge particulate in the filtrate and must be determined according to the following equation:

$$\text{Maximum Feed Concentration} = 3.16 \times 10^6 \times (\text{Filtrate Detection Limit})$$

4. Challenge testing must be conducted under representative hydraulic conditions at the maximum design flux and maximum design process recovery specified by the manufacturer for the membrane module. Flux is defined as the throughput of a pressure driven membrane process expressed as flow per unit of membrane area. Recovery is defined as the volumetric percent of feed water that is converted to filtrate over the course of an operating cycle uninterrupted by events such as chemical cleaning or a solids removal process (i.e., backwashing).

5. Removal efficiency of a membrane module must be calculated from the challenge test results and expressed as a log removal value according to the following equation:

$$\text{LRV} = \text{LOG}_{10}(C_f) - \text{LOG}_{10}(C_p)$$

Where:

LRV = log removal value demonstrated during the challenge test; C_f = the feed concentration measured during the challenge test; and C_p = the filtrate concentration measured during the challenge test. Equivalent units must be used for the feed and filtrate concentrations. If the challenge particulate is not detected in the filtrate, the term C_p is set equal to the detection limit for the purpose of calculating the LRV. An LRV must be calculated for each membrane module evaluated during the challenge test.

6. The removal efficiency of a membrane filtration process demonstrated during challenge testing must be expressed as a log removal value (LRVC-Test). If fewer than 20 modules are tested, then LRVC-Test is equal to the lowest of the representative LRVs among the modules tested. If 20 or more modules are tested, then LRVC-Test is equal to the 10th percentile of the representative LRVs among the modules tested. The percentile is defined by $[i/(n+1)]$ where i is the rank of n individual data points ordered lowest to highest. If necessary, the 10th percentile may be calculated using linear interpolation.

7. The challenge test must establish a quality control release value (QCRV) for a non-destructive performance test that demonstrates

the *Cryptosporidium* removal capability of the membrane filtration module. This performance test must be applied to each production membrane module used by the system that was not directly challenge tested in order to verify *Cryptosporidium* removal capability. Production modules that do not meet the established QCRV are not eligible for the treatment credit demonstrated during the challenge test.

8. If a previously tested membrane is modified in a manner that could change the removal efficiency of the membrane or the applicability of the non-destructive performance test and associated QCRV, additional challenge testing to demonstrate the removal efficiency of, and determine a new QCRV for, the modified membrane must be conducted and submitted to the Department.

25-021.02C Direct Integrity Testing: Systems must conduct direct integrity testing in a manner that demonstrates a removal efficiency equal to or greater than the removal credit awarded to the membrane filtration process and meets the following requirements. A direct integrity test is defined as a physical test applied to a membrane unit in order to identify and isolate integrity breaches (i.e., one or more leaks that could result in contamination of the filtrate).

1. The direct integrity test must be independently applied to each membrane unit in service. A membrane unit is defined as a group of membrane modules that share common valving that allows the unit to be isolated from the rest of the system for the purpose of integrity testing or other maintenance.

2. The direct integrity method must have a resolution of three micrometers or less, where resolution is defined as the size of the smallest integrity breach that contributes to a response from the direct integrity test.

3. The direct integrity test must have a sensitivity sufficient to verify the log treatment credit awarded to the membrane filtration process by the Department, where sensitivity is defined as the maximum log removal value that can be reliably verified by a direct integrity test. Sensitivity must be determined using the approach in either a. or b. below as applicable to the type of direct integrity test the system uses.

a. For direct integrity tests that use an applied pressure or vacuum, the direct integrity test sensitivity must be calculated according to the following equation:

$$LRV_{DIT} = \text{LOG}_{10} [Q_p / (\text{VCF} \times Q_{\text{breach}})]$$

Where:

LRV_{DIT} = the sensitivity of the direct integrity test; Q_p = total design filtrate flow from the membrane unit; Q_{breach}

= flow of water from an integrity breach associated with the smallest integrity test response that can be reliably measured, and VCF = volumetric concentration factor. The volumetric concentration factor is the ratio of the suspended solids concentration on the high pressure side of the membrane relative to that in the feed water.

b. For direct integrity tests that use a particulate or molecular marker, the direct integrity test sensitivity must be calculated according to the following equation:

$$LRV_{DIT} = \text{LOG}_{10}(C_f) - \text{LOG}_{10}(C_p)$$

Where

LRV_{DIT} = the sensitivity of the direct integrity test; C_f = the typical feed concentration of the marker used in the test; and C_p = the filtrate concentration of the marker from an integral membrane unit.

4. Systems must establish a control limit within the sensitivity limits of the direct integrity test that is indicative of an integral membrane unit capable of meeting the removal credit awarded by the Department.

5. If the result of a direct integrity test exceeds the control limit established under 179 NAC 25-021.02C item 4, the system must remove the membrane unit from service. Systems must conduct a direct integrity test to verify any repairs, and may return the membrane unit to service only if the direct integrity test is within the established control limit.

6. Systems must conduct direct integrity testing on each membrane unit at a frequency of not less than once each day that the membrane unit is in operation. The Department may approve less frequent testing, based on demonstrated process reliability, the use of multiple barriers effective for *Cryptosporidium* or reliable process safeguards.

25-021.02D Indirect Integrity Monitoring: Systems must conduct continuous indirect integrity monitoring on each membrane unit according to the following criteria. Indirect integrity monitoring is defined as monitoring some aspect of filtrate water quality that is indicative of the removal of particulate matter. A system that implements continuous direct integrity testing of membrane units in accordance with the criteria in 179 NAC 25-021.02C items 1 through 5 is not subject to the requirements for continuous indirect integrity monitoring. Systems must submit a monthly report to the Department summarizing all continuous indirect integrity monitoring results triggering direct integrity testing and the corrective action that was taken in each case.

1. Unless the Department approves an alternative parameter, continuous indirect integrity monitoring must include continuous filtrate turbidity monitoring.
2. Continuous monitoring must be conducted at a frequency of no less than once every 15 minutes.
3. Continuous monitoring must be separately conducted on each membrane unit.
4. If indirect integrity monitoring includes turbidity and if the filtrate turbidity readings are above 0.15 NTU for a period greater than 15 minutes (i.e., two consecutive 15-minute readings above 0.15 NTU) direct integrity testing must immediately be performed on the associated membrane unit as specified in 179 NAC 25-021.02C items 1 through 5.
5. If indirect integrity monitoring includes a Department-approved alternative parameter and if the alternative parameter exceeds a Department-approved control limit for a period greater than 15 minutes, direct integrity testing must immediately be performed on the associated membrane units as specified in 179 NAC 25-021.02C items 1 through 5.

25-021.03 Second Stage Filtration: Systems receive 0.5-log *Cryptosporidium* treatment credit for a separate second stage of filtration that consists of sand, dual media, granular activated carbon (GAC), or other fine grain media following granular media filtration if the Department approves. To be eligible for this credit, the first stage of filtration must be preceded by a coagulation step and both filtration stages must treat the entire plant flow taken from a surface water or GWUDI source. A cap, such as GAC, on a single stage of filtration is not eligible for this credit. The Department must approve the treatment credit based on an assessment of the design characteristics of the filtration process.

25-021.04 Slow Sand Filtration (as secondary filter): Systems are eligible to receive 2.5-log *Cryptosporidium* treatment credit for a slow sand filtration process that follows a separate stage of filtration if both filtration stages treat entire plant flow taken from a surface water or GWUDI source and no disinfectant residual is present in the influent water to the slow sand filtration process. The Department must approve the treatment credit based on an assessment of the design characteristics of the filtration process. This paragraph does not apply to treatment credit awarded to slow sand filtration used as a primary filtration process.

25-022 INACTIVATION TOOLBOX COMPONENTS

25-022.01 Calculation of CT Values

25-022.01A CT is the product of the disinfectant contact time (T, in minutes) and disinfectant concentration (C, in milligrams per

liter). Systems with treatment credit for chlorine dioxide or ozone under 179 NAC 25-022.02 or 25-022.03 must calculate CT at least once each day, with both C and T measured during peak hourly flow as specified in 179 NAC 13-007.01 through 13-007.02.

25-022.01B Systems with several disinfection segments in sequence may calculate CT for each segment, where a disinfection segment is defined as a treatment unit process with a measurable disinfectant residual level and a liquid volume. Under this approach, systems must add the Cryptosporidium CT values in each segment to determine the total CT for the treatment plant.

25-022.02 CT Values for Chlorine Dioxide and Ozone

25-022.02A Systems receive the Cryptosporidium treatment credit listed in this table by meeting the corresponding chlorine dioxide CT value for the applicable water temperature, as described in 179 NAC 25-022.01.

CT Values (Mg-Min/L) for Cryptosporidium Inactivation by Chlorine Dioxide¹

Log credit	Water Temperature, °C										
	<=0.5	1	2	3	5	7	10	15	20	25	30
1. 0.25	159	153	140	128	107	90	69	45	29	19	12
2. 0.5	319	305	279	256	214	180	138	89	58	38	24
3. 1.0	637	610	558	511	429	360	277	179	116	75	49
4. 1.5	956	915	838	767	643	539	415	268	174	113	73
5. 2.0	1275	1220	1117	1023	858	719	553	357	232	150	98
6. 2.5	1594	1525	1396	1278	1072	899	691	447	289	188	122
7. 3.0	1912	1830	1675	1534	1286	1079	830	536	347	226	147

¹ Systems may use this equation to determine log credit between the indicated values: $\text{Log credit} = [0.001506 \times (1.09116)^{\text{Temp}}] \times \text{CT}$

25-022.02B Systems receive the Cryptosporidium treatment credit listed in this table by meeting the corresponding ozone CT values for the applicable water temperature, as described in 179 NAC 25-022.01.

CT Values (Mg-Min/L) for Cryptosporidium Inactivation by Ozone¹

Log credit	Water Temperature, °C										
	<=0.5	1	2	3	5	7	10	15	20	25	30
1. 0.25	6.0	5.8	5.2	4.8	4.0	3.3	2.5	1.6	1.0	0.6	0.39
2. 0.5	12	12	10	9.5	7.9	6.5	4.9	3.1	2.0	1.2	0.78
3. 1.0	24	23	21	19	16	13	9.9	6.2	3.9	2.5	1.6

4. 1.5	36	35	31	29	24	20	15	9.3	5.9	3.7	2.4
5. 2.0	48	46	42	38	32	26	20	12	7.8	4.9	3.1
6. 2.5	60	58	52	48	40	33	25	16	9.8	6.2	3.9
7. 3.0	72	69	63	57	47	39	30	19	12	7.4	4.7

¹ Systems may use this equation to determine log credit between the indicated values: $\text{Log credit} = [0.0397 \times (1.09757)^{\text{Temp}}] \times \text{CT}$

25-022.03 Site-Specific Study: The Department may approve alternative chlorine dioxide or ozone CT values to those listed in 179 NAC 25-022.02 on a site-specific basis. The Department will base this approval on a site-specific study a system conducts that follows a Department-approved protocol.

25-022.04 Ultraviolet Light: Systems receive Cryptosporidium, Giardia lamblia, and virus treatment credits for ultraviolet (UV) light reactors by achieving the corresponding UV dose values shown in 179 NAC 25-022.04A. Systems must validate and monitor UV reactors as described in 179 NAC 25-022.04B and 25-022.04C to demonstrate that they are achieving a particular UV dose value for treatment credit.

25-022.04A UV Dose Table: The treatment credits listed in this table are for UV light at a wavelength of 254 nm as produced by a low pressure mercury vapor lamp. To receive treatment credit for other lamp types, systems must demonstrate an equivalent germicidal dose through reactor validation testing, as described in 179 NAC 25-022.04B. The UV dose values in this table are applicable only to post-filter applications of UV in filtered systems and to unfiltered systems.

UV Dose Table for Cryptosporidium, Giardia lamblia, and Virus Inactivation Credit

Log Credit	Cryptosporidium UV dose (mJ/cm²)	Giardia lamblia UV dose (mJ/cm²)	Virus UV dose (mJ/cm²)
1. 0.5	1.6	1.5	39
2. 1.0	2.5	2.1	58
3. 1.5	3.9	3.0	79
4. 2.0	5.8	5.2	100
5. 2.5	8.5	7.7	121
6. 3.0	12	11	143
7. 3.5	15	15	163
8. 4.0	22	22	186

25-022.04B Reactor Validation Testing: Systems must use UV reactors that have undergone validation testing to determine the operating conditions under which the reactor delivers the UV dose required in 179 NAC 25-022.04A (i.e., validated operating conditions). These operating conditions must include flow rate, UV intensity as measured by a UV sensor, and UV lamp status.

25-022.04B1 When determining validated operating conditions, systems must account for the following factors: UV absorbance of the water; lamp fouling and aging; measurement uncertainty of on-line sensors; UV dose distributions arising from the velocity profiles through the reactor; failure of UV lamps or other critical system components; and inlet and outlet piping or channel configurations of the UV reactor.

25-022.04B2 Validation testing must include the following: Full scale testing of a reactor that conforms uniformly to the UV reactors used by the system and inactivation of a test microorganism whose dose response characteristics have been quantified with a low pressure mercury vapor lamp.

25-022.04B3 The Department may approve an alternative approach to validation testing.

25-022.04C Reactor Monitoring:

25-022.04C1 Systems must monitor their UV reactors to determine if the reactors are operating within validated conditions, as determined under 179 NAC 25-022.04B. This monitoring must include UV intensity as measured by a UV sensor, flow rate, lamp status, and other parameters the Department designates based on UV reactor operation. Systems must verify the calibration of UV sensors and must recalibrate sensors in accordance with a protocol the Department approves.

25-022.04C2 To receive treatment credit for UV light, systems must treat at least 95% of the water delivered to the public during each month by UV reactors operating within validated conditions for the required UV dose, as described in 179 NAC 25-022.04A and 022-04B. Systems must demonstrate compliance with this condition by the monitoring required under 179 NAC 25-022.04C1.

25-023 REPORTING REQUIREMENTS

25-023.01 Systems must report sampling schedules and source water monitoring results unless they notify the Department that they will not conduct source water monitoring due to meeting monitoring avoidance criteria.

25-023.02 Filtered systems must report their Cryptosporidium bin classification as described in 179 NAC 25-012.

25-023.03 Unfiltered systems must report their mean source water Cryptosporidium level as described in 179 NAC 25-014.

25-023.04 Systems must report disinfection profiles and benchmarks to the Department as described in 179 NAC 25-010 through 25-011 prior to making a significant change in disinfection practice.

25-023.05 Systems must report to the Department in accordance with the following table for any microbial toolbox options used to comply with treatment requirements under 179 NAC 25-013 or 25-014. Alternatively, the Department may approve a system to certify operation within required parameters for treatment credit rather than reporting monthly operational data for toolbox options.

Microbial Toolbox Reporting Requirements

Toolbox Option	Systems must submit the following information	On the following schedule
1. Watershed control program (WCP)	(i) Notice of intention to develop a new or continue an existing watershed control program (ii) Watershed control plan (iii) Annual watershed control program status report (iv) Watershed sanitary survey report	(i) No later than two years before the applicable treatment compliance date in 179 NAC 25-015. (ii) No later than one year before the applicable treatment compliance date in 179 NAC 25-015. (iii) Every 12 months, beginning one year after the applicable treatment compliance date in 179 NAC 25-015. (iv) For community water systems, every three years beginning three years after the applicable treatment compliance date in 179 NAC 25-015. For non-community water systems, every five years beginning five years after the applicable treatment compliance date in 179 NAC 25-015.
2. Alternative source/intake management	Verification that system has relocated the intake or adopted the intake withdrawal procedure reflected in monitoring results	No later than the applicable treatment compliance date in 179 NAC 25-015.
3. Presedimentation	Monthly verification of the following: (i) Continuous basin operation	Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on

	<p>(ii) Treatment of 100% of the flow</p> <p>(iii) Continuous addition of a coagulant</p> <p>(iv) At least 0.5-log mean reduction of influent turbidity or compliance with alternative Department-approved performance criteria.</p>	the applicable treatment compliance date in 179 NAC 25-015.
4. Two-stage lime softening	<p>Monthly verification of the following:</p> <p>(i) Chemical addition and hardness precipitation occurred in two separate and sequential softening stages prior</p>	<p>Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment</p>
	<p>to filtration</p> <p>(ii) Both stages treated 100% of the plant flow</p>	<p>compliance date in 179 NAC 25-015.</p>
5. Bank filtration	<p>(i) Initial demonstration of the following: (a) Unconsolidated, predominantly sandy aquifer (b) Setback distance of at least 25 ft. (0.5-log credit) or 50 ft. (1.0-log credit).</p> <p>(ii) If monthly average of daily maximum turbidity is greater than 1 NTU, then system must report result and submit an assessment of the cause.</p>	<p>No later than the applicable treatment compliance date in 179 NAC 25-015.</p> <p>Report within 30 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 179 NAC 25-015.</p>
6. Combined filter performance	<p>Monthly verification of combined filter effluent (CFE) turbidity levels less than or equal to 0.15 NTU in at least 95% of the 4 hour CFE measurements taken each</p>	<p>Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date</p>

	month	in 179 NAC 25-015.
7. Individual filter performance	<p>Monthly verification of the following:</p> <p>(i) Individual filter effluent (IFE) turbidity levels less than or equal to 0.15 NTU in at least 95% of samples each month in each filter (ii) No individual filter greater than 0.3 NTU in two consecutive readings 15 minutes apart</p>	<p>Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 179 NAC 25-015.</p>
8. Demonstration of performance	<p>(i) Results from testing following a Department approved protocol</p> <p>(ii) As required by the Department, monthly verification of operation within conditions of Department approval for demonstration of performance credit</p>	<p>No later than the applicable treatment compliance date in 179 NAC 25-015. Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 179 NAC 25-015.</p>
9. Bag filters and cartridge filters.	<p>(i) Demonstration that the following criteria are met: (a) Process meets the definition of bag or cartridge filtration; (b) Removal efficiency established through challenge testing that meets criteria in 179 NAC 25.</p> <p>(ii) Monthly verification that 100% of plant flow was filtered.</p>	<p>No later than the applicable treatment compliance date in 179 NAC 25-015.</p> <p>Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 179 NAC 25-015.</p>
10. Membrane filtration	<p>(i) Results of verification testing demonstrating the following: (a) Removal efficiency established through challenge testing</p>	<p>No later than the applicable treatment compliance date in 179 NAC 25-015.</p>

	that meets criteria in 179 NAC 25; (b) Integrity test method and parameters, including resolution, sensitivity, test frequency, control limits, and	
	associated baseline. (ii) Monthly report summarizing the following: (a) All direct integrity tests above the control limit; (b) If applicable, any turbidity or alternative Department-approved indirect integrity monitoring results triggering direct integrity testing and the corrective action that was taken.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 179 NAC 25-015.
11. Second stage filtration	Monthly verification that 100% of flow was filtered through both stages and that first stage was preceded by coagulation step.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 179 NAC 25-015.
12. Slow sand filtration (as secondary filter)	Monthly verification that both a slow sand filter and a preceding separate stage of filtration treated 100% of flow from surface water or GWUDI sources.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 179 NAC 25-015.
13. Chlorine dioxide	Summary of CT values for each day as described in 179 NAC 25-023.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 179 NAC 25-015.
14. Ozone	Summary of CT values for each day as described in 179 NAC 25-023.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 179 NAC 25-015.
15. UV		

	<p>(i) Validation test results demonstrating operating conditions that achieve required UV dose.</p> <p>(ii) Monthly report summarizing the percentage of water entering the distribution system that was not treated by UV reactors operating within validated conditions for the required dose as specified in 179 NAC 25-023.04.</p>	<p>No later than the applicable treatment compliance date in 179 NAC 25-015.</p> <p>Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 179 NAC 25-015.</p>
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25-024 RECORDKEEPING REQUIREMENTS

25-024.01 Systems must keep results from source water monitoring until three years after bin classification for filtered systems or determination of the mean Cryptosporidium level for unfiltered systems for the particular round of monitoring.

25-024.02 Systems must keep any notification to the Department that they will not conduct source water monitoring due to meeting the criteria of 179 NAC 25-004.03 or 40 CFR 141 Subpart W for three years.

25-024.03 Systems must keep the results of treatment monitoring associated with microbial toolbox options under 179 NAC 25-018 through 179 NAC 25-022 and with uncovered finished water reservoirs under 179 NAC 25-016, as applicable, for three years.

25-025 REQUIREMENTS TO RESPOND TO DEFICIENCIES IDENTIFIED IN SANITARY SURVEYS PERFORMED BY THE DEPARTMENT

25-025.01 For sanitary surveys performed by the Department where deficiencies are identified, the Department will provide a “Deficiency Compliance Schedule” to the system. Systems must respond in writing to deficiencies identified in compliance schedules no later than 30 calendar days after receipt of the compliance schedule, indicating how and on what schedule the system will address deficiencies noted in the survey, if not on the same time frame as the deficiency compliance schedule. Any deviation from the Department-provided compliance schedule is subject to review and approval by the Department.

25-025.02 Systems must correct deficiencies identified in sanitary survey reports according to the schedule approved by the Department if such deficiencies are within the control of the system.

179 NAC 25 ATTACHMENT 1

Sampling Training For Individuals Other Than Licensed Operators

PWS System or Community Name: _____

Name of individuals taking samples: _____

Parameter(s) sampled routinely by the above individual:

Trainer and Title: _____

Training material used: _____

Handouts given to the above individual:

I certify that on _____ I personally provided the necessary sampling
(Date)

training to assure quality data and approve the above individual as qualified to perform the above sampling tasks.

X _____

(Signature of Trainer) (License Number)

I certify that I did receive said training and I understand how to properly sample the above parameters.

X _____

(Signature of Approved Sampling Individual)

When the above-named trained person no longer takes the samples the individual has been

trained to take, I will inform the Nebraska Department of Health and Human Services, Drinking

Water Program Field Services Program Manager at (402) 471-0521 within seven days.

Acknowledged by System Owner or Operator in Charge:

X _____ Date: _____

(Signature)

(Keep a copy for your records and submit original within seven days to DHHS,
Division of Public

Health, Public Water Program at P. O. Box 95026, Lincoln, NE 68526-5026)

TITLE 179 - PUBLIC WATER SYSTEMS

CHAPTER 26 - REVISED TOTAL COLIFORM RULE

26-001 SCOPE AND AUTHORITY: The provisions of these regulations include both maximum contaminant level and treatment technique requirements. They apply to all public water systems. Systems must comply with the provisions of this chapter beginning April 1, 2016 unless otherwise specified in this chapter. Failure to comply with the applicable requirements of this chapter is a violation of the Nebraska Safe Drinking Water Act. The authority is found in Neb. Rev. Stat. §§71-5301 to 71-5313.

26-002 DEFINITIONS

Clean Compliance History means, for the purposes of 179 NAC 26, a record of no maximum contaminant level (MCL) violations under 179 NAC 2-002.04C; no monitoring violations under 179 NAC 3-004 or 179 NAC 26; and no coliform treatment technique trigger exceedances or treatment technique violations under 179 NAC 26.

Code of Federal Regulations (CFR) means the Code of Federal Regulations as it existed on the effective date of these regulations, and any CFR citations mentioned in these regulations are hereby incorporated by reference. Copies of the CFR as it existed on the effective date of these regulations can be obtained on the DHHS website at http://dhhs.ne.gov/publichealth/Pages/enh_pwsindex.aspx or by requesting via email a copy from the Department at: DHHS.drinkgwater@nebraska.gov or by calling 402-471-2541.

Department means the Division of Public Health of the Department of Health and Human Services.

Level 1 Assessment means an evaluation to identify the possible presence of sanitary defects, defects in distribution system coliform monitoring practices, and (when possible) the likely reason that the system triggered the assessment. It is 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 system must conduct the assessment consistent with any Department directives that tailor specific assessment elements with respect to the size and type of the system and the size, type, and characteristics of the distribution system.

Level 2 Assessment means an evaluation to identify the possible presence of sanitary defects, defects in distribution system coliform monitoring practices, and (when possible) the likely reason that the system triggered the assessment. A Level 2 assessment 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 Department, 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 Department directives that tailor specific assessment elements with respect to the size and type of the system and the size, type and characteristics of the distribution system. The system must comply with any expedited actions or additional actions required by the Department in the case of an E. coli MCL violation.

Sanitary Defect means a defect that could provide a pathway of entry for microbial contamination into the distribution system or that is indicative of a failure or imminent failure in a barrier that is already in place.

Seasonal System means 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.

26-003 ANALYTICAL METHODS AND LABORATORY CERTIFICATION

26-003.01 Analytical Methodology Systems must comply with the analytical methodology specified in 40 CFR 141.852(a).

26-003.02 Laboratory Certification: Systems must have all compliance samples required under this chapter analyzed by a laboratory certified by the EPA or the Department Laboratory to analyze drinking water samples and the laboratory must have entered into an agreement with the Department Laboratory to perform such analyses. The laboratory used by the system must be certified for each method [and associated contaminant(s)] used for compliance monitoring analyses under this rule.

26-003.03 Standards Incorporated By Reference: The standards in 40 CFR 141.852(c) or their equivalent as determined by the U.S. Environmental Protection Agency must be used.

26-004 GENERAL MONITORING REQUIREMENTS FOR ALL PUBLIC WATER SYSTEMS

26-004.01 Sample Siting Plans.

26-004.01A Systems must develop a written sample siting plan that identifies sampling sites and a sample collection schedule that are representative of water throughout the distribution system not later

than March 31, 2016. These plans are subject to Department review and revision. Systems must collect total coliform samples according to the written sample siting plan. Monitoring required by 179 NAC 26-005 through 26-009 may take place at a customer's premises, dedicated sampling station, or other designated compliance sampling location. Routine and repeat sample sites and any sampling points necessary to meet the requirements of 179 NAC 8 must be reflected in the sampling plan.

26-004.01B 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.

26-004.01C 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 26-010.01.

26-004.01D A system may conduct more compliance monitoring than is required by this chapter 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 26-010.01 items 1.a. and 1.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.

26-004.01E Systems must identify repeat monitoring locations in the sample siting plan. Unless the provisions of 26-004.01E(1) or 26-004.01E(2) 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 Department may allow an alternative sampling location in lieu of the requirement to collect at least one repeat sample upstream or downstream of the original sampling site. Except as provided for in 26-004.01E(2), systems required to conduct triggered source water monitoring under 179 NAC 8-005.01 must take ground water source sample(s) in addition to repeat samples required under this chapter.

26-004.01E(1) Systems may propose repeat monitoring locations to the Department that the system believes to be representative of a pathway for contamination of the distribution system. A system may elect to specify either alternative fixed locations or criteria for selecting repeat sampling sites on a situational basis in a standard operating procedure (SOP) in its 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 a distribution system area based on specific situations. The Department may modify the SOP or require alternative monitoring locations as needed.

26-004.01E(2) Ground water systems serving 1,000 or fewer people may propose repeat sampling locations to the Department 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 Department approval, take one of its repeat samples at the monitoring locations required for triggered source water monitoring under 179 NAC 8-005.01 if the system demonstrates to the Department's satisfaction that the sample siting plan remains representative of water quality in the distribution system. If approved by the Department, the system may use that sample result to meet the monitoring requirements in both 179 NAC 8-005.01 and this section.

26-004.01E(2)(a) 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 179 NAC 8-005.01C. 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 179 NAC 8-005.01C by the number of repeat samples taken at that location that were not E. coli-positive.

26-004.01E(2)(b) If a system takes more than one repeat sample at the monitoring location required for triggered source water monitoring under 179 NAC 8-005.01, and more than one repeat sample is E. coli-positive, the system has violated the E. coli MCL and must also comply with 179 NAC 8-006.01A.

26-004.01E(2)(c) 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 179 NAC 8-005.01C.

26-004.01F The Department may review, revise, and approve, as appropriate, repeat sampling proposed by systems under 26-004.01E(1) and 26-004.01E(2). The system must demonstrate that the sample siting plan remains representative of the water quality in the distribution system. The Department may determine that monitoring at the entry point to the distribution system (especially for undisinfecting ground water systems) is effective to differentiate between potential source water and distribution system problems.

26-004.02 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 26-009 are not considered special purpose samples, and must be used to determine whether the coliform treatment technique trigger has been exceeded.

26-004.03 Invalidation of Total Coliform Samples. A total coliform-positive sample invalidated under this 26-004.03 does not count toward meeting the minimum monitoring requirements of this chapter.

26-004.03A The Department may invalidate a total coliform-positive sample only if the conditions of item 1, 2 or 3 below are met.

1. The laboratory establishes that improper sample analysis caused the total coliform-positive result.
2. The Department, on the basis of the results of repeat samples collected as required under 26-009.01, determines that the total coliform-positive sample resulted from a domestic or other non-distribution system plumbing problem. The Department will not 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 samples 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 Department will not invalidate a total coliform-positive sample on the basis of repeat samples if all the repeat samples are total coliform-negative, or if the system has only one service connection).
3. The Department has substantial grounds to believe that a total coliform-positive result is due to a circumstance or condition that does not reflect water quality in the distribution system. In this case, the system must still collect all repeat samples required under 26-009.01 and use them to determine whether a coliform treatment technique trigger in 26-010 has been exceeded. To invalidate a total coliform-positive sample under 26-004.03, the decision and supporting rationale must be documented in writing, and approved and signed by the supervisor of the Department official who recommended the decision. The Department will 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 Department may not invalidate a total coliform-positive sample solely on the grounds that all repeat samples are total coliform-negative.

26-004.03B 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 Department may waive the 24-hour time limit on a case-by-case basis. Alternatively, the Department may implement criteria for waiving the 24-hour sampling time limit to use in lieu of case-by-case extensions.

26-005 ROUTINE MONITORING REQUIREMENTS FOR NON-COMMUNITY WATER SYSTEMS SERVING 1,000 OR FEWER PEOPLE USING ONLY GROUNDWATER

26-005.01 General

26-005.01A 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 179 NAC 3-002) and serving 1,000 or fewer people.

26-005.01B 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 26-009.

26-005.01C Once all monitoring required by this section and 26-009 for a calendar month has been completed, systems must determine whether any coliform treatment technique triggers specified in 26-010 have been exceeded. If any trigger has been exceeded, systems must complete assessments as required by 26-010.

26-005.01D For the purpose of determining eligibility for remaining on or qualifying for quarterly monitoring under the provisions of 26-005.06 item 4 and 26-005.07 item 2, respectively, for transient non-community water systems, the Department may elect to not count monitoring violations under 26-011.03A 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 Department may not use this provision under 26-005.08. This authority does not affect the provisions of 26-011.03A and 26-012.01D.

26-005.02 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 26-005.03 through 26-005.08 and 26-005.10. Seasonal systems must meet the monitoring requirements of 26-005.09.

26-005.03 Transition to 179 NAC 26

26-005.03A Systems, including seasonal systems, must continue to monitor according to the total coliform monitoring schedules under 179 NAC 3-004 that were in effect on March 31, 2016, unless any of the conditions for increased monitoring in 26-005.06 are triggered on or after April 1, 2016, or unless otherwise directed by the Department.

26-005.03B Beginning April 1, 2016, the Department will 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 Department has performed the special monitoring evaluation during each sanitary survey, the Department 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 Department 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.

26-005.04 Annual Site Visits: Beginning no later than calendar year 2017, systems on annual monitoring, including seasonal systems, must have an initial and recurring annual site visit by the Department that is equivalent to a Level 2 assessment or an annual voluntary Level 2 assessment that meets the criteria in 26-010.02 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.

26-005.05 Criteria for Annual Monitoring: Beginning April 1, 2016, the Department 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 items 1 through 3 below, except for a system that has been on increased monitoring under the provisions of 26-005.06. A system on increased monitoring under 26-005.06 must meet the provisions of 26-005.07 to go to quarterly monitoring and must meet the provisions of 26-005.08 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 Department 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 26-010.02 for the Department annual site visit.

26-005.06 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 26-005.06 items 1 through 4 must begin monthly monitoring the month following the event. A system on annual monitoring that experiences the event identified in item 5 below must begin quarterly monitoring the quarter following the event. The system must continue monthly or quarterly monitoring until the requirements in 26-005.07 for quarterly monitoring or 26-005.08 for annual monitoring are met. A system on monthly monitoring for reasons other than those identified in items 1 through 4 below is not considered to be on increased monitoring for the purposes of 26-005.07 and 26-005.08.

1. The system triggers a Level 2 assessment or two Level 1 assessments under the provisions of 26-010 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 179 NAC 26 monitoring violations or one 179 NAC 26 monitoring violation and one Level 1 assessment under the provisions of 26-010 in a rolling 12-month period for a system on quarterly monitoring.

5. The system has one 179 NAC 26 monitoring violation for a system on annual monitoring.

26-005.07 Requirements for Returning to Quarterly Monitoring: The Department may reduce the monitoring frequency for a system on monthly monitoring triggered under 26-005.06 to quarterly monitoring if the system meets the criteria in 26-005.07 items 1 and 2.

1. Within the last 12 months, the system must have a completed sanitary survey or a site visit by the Department or a voluntary Level 2 assessment by a party approved by the Department, 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.

26-005.08 Requirements for Systems on Increased Monitoring to Qualify for Annual Monitoring: The Department may reduce the monitoring frequency for a system on increased monitoring under 26-005.06 if the system meets the criteria in 26-005.07 plus the criteria in items 1 and 2 below.

1. An annual site visit by the Department and correction of all identified sanitary defects. The system may substitute a voluntary Level 2 assessment by a party approved by the Department for the Department 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 items a through e below.
 - a. Cross connection control, as approved by the Department.
 - b. A water operator licensed by the Department or regular visits by a Nebraska licensed water operator working as a circuit rider.
 - c. Continuous disinfection entering the distribution system and a residual in the distribution system in accordance with criteria specified by the Department.
 - d. Demonstration of maintenance of at least a 4-log removal or inactivation of viruses as provided for under 179 NAC 8-006.02C.
 - e. Other equivalent enhancements to water system barriers as approved by the Department.

26-005.09 Seasonal Systems

26-005.09A Beginning April 1, 2016, all seasonal systems must demonstrate completion of a Department-approved start-up procedure, which may include a requirement for startup sampling prior to serving water to the public.

26-005.09B A seasonal system must monitor every month that it is in operation unless it meets the criteria in 26-005.09B items 1 through 3 to be eligible for monitoring less frequently than monthly beginning April 1, 2016, except as provided under 26-005.03.

1. 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.
2. To be eligible for quarterly monitoring, the system must meet the criteria in 26-005.07.

3. To be eligible for annual monitoring, the system must meet the criteria under 26-005.08.

26-005.09C The Department may exempt any seasonal system from some or all of the 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 Department.

26-005.10 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 Department may waive this requirement if the conditions of 26-005.10A, 26-005.10B, or 26-005.10C 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 26-010.01.

26-005.10A The Department may waive the requirement to collect three routine samples the next month in which the system provides water to the public if the Department, or an individual approved by the Department, 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 Department to determine whether additional monitoring and/or any corrective action is needed. The Department cannot approve an employee of the system to perform this site visit, even if the employee is an individual approved by the Department to perform sanitary surveys.

26-005.10B The Department may waive the requirement to collect three routine samples the next month in which the system provides water to the public if the Department 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 Department 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 Department 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.

26-005.10C The Department 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 Department determines that the system has corrected the contamination problem before the system takes the set of repeat samples required in 26-009, and all repeat samples were total coliform-negative, the Department may waive the requirement for additional routine monitoring the next month.

26-006 ROUTINE MONITORING REQUIREMENTS FOR COMMUNITY WATER SYSTEMS SERVING 1,000 OR FEWER PEOPLE USING ONLY GROUNDWATER

26-006.01 General

26-006.01A 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 179 NAC 3-002) and serving 1,000 or fewer people.

26-006.01B 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 26-009.

26-006.01C Once all monitoring required by this section and 26-009 for a calendar month has been completed, systems must determine whether any coliform treatment technique triggers specified in 26-010 have been exceeded. If any trigger has been exceeded, systems must complete assessments as required by 26-010.

26-006.02 Monitoring Frequency for Total Coliforms: The monitoring frequency for total coliforms is one sample per month, except as provided for under 26-006.03 through 26-006.06.

26-006.03 Transition to 179 NAC 26

26-006.03A All systems must continue to monitor according to the total coliform monitoring schedules under 179 NAC 3-004 that were in effect on March 31, 2016, unless any of the conditions in 26-006.05 are triggered on or after April 1, 2016, or unless otherwise directed by the Department.

26-006.03B Beginning April 1, 2016, the Department 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 Department has performed the special monitoring evaluation during each sanitary survey, the Department 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 the section. The Department will 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.

26-006.04 Criteria for Reduced Monitoring: The Department may reduce the monitoring frequency from monthly monitoring to no less than quarterly monitoring if the system is in compliance with Title 179 NAC 10 and demonstrates that it meets the criteria in items 1 through 3 below. A system that loses its licensed operator must return to monthly monitoring the month following that loss.

1. The system has a clean compliance history for a minimum of 12 months.
2. 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.
3. The system meets at least one of the following criteria:
 - a. An annual site visit by the Department that is equivalent to a Level 2 assessment or an annual Level 2 assessment by a party approved by the Department 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).
 - b. Cross connection control, as approved by the Department.
 - c. Continuous disinfection entering the distribution system and a residual in the distribution system in accordance with criteria specified by the Department.
 - d. Demonstration of maintenance of at least a 4-log removal or inactivation of viruses as provided for under 179 NAC 8-006.02C.
 - e. Other equivalent enhancements to the water system barriers as approved by the Department.

26-006.05 Return to Routine Monthly Monitoring Requirements: Systems on quarterly monitoring that experience any of the events in items 1 through 4 below must begin monthly monitoring the month following the event. The system must continue monthly monitoring until it meets the reduced monitoring requirements in 26-006.04.

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 179 NAC 26 monitoring violations in a rolling 12-month period.

26-006.06 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 Department may waive this requirement if the conditions of 26-006.06A, 26-006.06B, or 26-006.06C 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.

26-006.06A The Department may waive the requirement to collect three routine samples the next month in which the system provides water to the public if the Department, or an individual approved by the Department, 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 Department to determine whether additional monitoring and/or any corrective action is needed. The Department cannot approve an employee of the system to perform this site visit, even if the employee is an individual approved by the Department to perform sanitary surveys.

26-006.06B The Department may waive the requirement to collect three routine samples the next month in which the system provides water to the public if the Department 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 Department 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 Department 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.

26-006.06C The Department 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 Department determines that the system has corrected the contamination problem before the system takes the set of repeat samples required in 26-009, and all repeat samples were total coliform-negative, the Department may waive the requirement for additional routine monitoring the next month.

26-007 ROUTINE MONITORING REQUIREMENTS FOR SURFACE WATER OR GROUND WATER UNDER THE INFLUENCE OF SURFACE WATER PUBLIC WATER SYSTEMS SERVING 1,000 OR FEWER PEOPLE

26-007.01 General

26-007.01A The provisions of this section apply to surface water and ground water under the direct influence of surface water public water systems serving 1,000 or fewer people.

26-007.01B 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 26-009.

26-007.01C Once all monitoring required by this section and 26-009 for a calendar month has been completed, systems must determine whether any coliform treatment technique triggers specified in 26-010 have been exceeded. If any trigger has been exceeded, systems must complete assessments as required by 26-010.

26-007.01D Seasonal Systems

26-007.01D1 Beginning April 1, 2016, all seasonal systems must demonstrate completion of a Department-approved start-up procedure, which may include a requirement for start-up sampling prior to serving water to the public.

26-007.01D2 The Department may exempt any seasonal system from some or all of the requirements for seasonal systems if the entire distribution system remains pressurized during the entire period that the system is not operating.

26-007.02 Routine Monitoring Frequency for Total Coliforms: Surface water and ground water under the direct influence systems (including consecutive systems) must monitor monthly. Systems may not reduce monitoring.

26-007.03 Unfiltered Surface Water and Ground Water Under the Direct Influence Systems: A surface water or ground water under the direct influence of surface water system that does not practice filtration in compliance with 179 NAC 13, 17, 19, and 25 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 179 NAC 13-007.02B, 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 Department 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 26-010 has been exceeded.

26-008 ROUTINE MONITORING REQUIREMENTS FOR PUBLIC WATER SYSTEMS SERVING MORE THAN 1,000 PEOPLE

26-008.01 General

26-008.01A The provisions of this section apply to public water systems serving more than 1,000 persons.

26-008.01B 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 26-009.

26-008.01C Once all monitoring required by this section and 26-009 for a calendar month has been completed, systems must determine whether any coliform treatment technique triggers specified in 26-010 have been exceeded. If any trigger has been exceeded, systems must complete assessments as required by 26-010.

26-008.01D Seasonal Systems

26-008.01D1 Beginning April 1, 2016, all seasonal systems must demonstrate completion of a Department-approved start-up procedure, which may include a requirement for start-up sampling prior to serving water to the public.

26-008.01D2 The Department may exempt any seasonal system from some or all of the requirements for seasonal systems if the entire distribution system remains pressurized during the entire period that the system is not operating.

26-008.02 Monitoring Frequency for Total Coliforms: The monitoring frequency for total coliforms is based on the population served by the system, as follows:

TOTAL COLIFORM MONITORING FREQUENCY FOR PUBLIC WATER SYSTEMS SERVING MORE THAN 1,000 PEOPLE

Population Served	Minimum Number of Samples per Month
1,001 to 2,500	2
2,501 to 3,300	3
3,301 to 4,100	4
4,101 to 4,900	5
4,901 to 5,800	6
5,801 to 6,700	7
6,701 to 7,600	8
7,601 to 8,500	9
8,501 to 12,900	10
12,901 to 17,200	15
17,201 to 21,500	20
21,501 to 25,000	25
25,001 to 33,000	30
33,001 to 41,000	40

41,001 to 50,000	50
50,001 to 59,000	60
59,001 to 70,000	70
70,001 to 83,000	80
83,001 to 96,000	90
96,001 to 130,000	100
130,001 to 220,000	120
220,001 to 320,000	150
320,001 to 450,000	180
450,001 to 600,000	210
600,001 to 780,000	240
780,001 to 970,000	270
970,001 to 1,230,000	300
1,230,001 to 1,520,000	330
1,520,001 to 1,850,000	360
1,850,001 to 2,270,000	390
2,270,001 to 3,020,000	420
3,020,001 to 3,960,000	450
3,960,001 or more	480

26-008.03 Unfiltered Surface Water and Ground Water Under the Direct Influence of Surface Water Systems: A surface water or ground water under the direct influence of surface water system that does not practice filtration in compliance with 179 NAC 13, 17, 19 and 25 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 179 NAC 13-007.02B, 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 Department 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 26-010 has been exceeded.

26-008.04 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 26-008.02. In months when 1,000 or fewer people are served, the Department may reduce the monitoring frequency, in writing, to a frequency allowed under 26-005 for a similarly situated system that always serves 1,000 or fewer people, taking into account the provisions in 26-005.05 through 26-006.

26-009 REPEAT MONITORING AND E. COLI REQUIREMENTS

26-009.01 Repeat Monitoring

26-009.01A If a sample taken under 26-005 through 26-008 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 Department 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 Department may implement criteria for the system to use in lieu of case-by-case extensions. In the case of an extension, the Department must specify how much time the system has to collect the repeat samples. The Department cannot waive the requirement for a system to collect repeat samples in 26-009.01A through 26-009.01C.

26-009.01B The system must collect all repeat samples on the same day, except that the Department 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.

26-009.01C The system must collect an additional set of repeat samples in the manner specified in 26-009.01A through 26-009.01C 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 Department extends the limit as provided in 26-009.01A. 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 26-010.01 has been exceeded as a result of a repeat sample being total coliform-positive and notifies the Department. If a trigger identified in 26-010 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.

26-009.01D 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.

26-009.01E Results of all routine and repeat samples taken under 26-005 through 26-009 not invalidated by the Department must be used to determine whether a coliform treatment technique trigger specified in 26-010 has been exceeded.

26-009.02 *Escherichia coli* (*E. coli*) Testing

26-009.02A 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 Department 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 Department office is closed and the Department does not have either an after-hours phone line or an alternative notification procedure, in which case the system must notify the Department before the end of the next business day.

26-009.02B The Department 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 Department as specified in 26-009.02A and the provisions of 179 NAC 2-002.04C3 apply.

26-010 COLIFORM TREATMENT TECHNIQUE TRIGGERS AND ASSESSMENT REQUIREMENTS FOR PROTECTION AGAINST POTENTIAL FECAL CONTAMINATION

26-010.01 Treatment Technique Triggers: Systems must conduct assessments in accordance with 26-010.02 after exceeding treatment technique triggers in items 1 and 2 below.

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 26-011.01.
- b. A second Level 1 trigger as defined in 26-010.01 item 1, within a rolling 12-month period, unless the Department has determined a likely reason that the samples that caused the first Level 1 treatment technique trigger were total coliform-positive and has established that the system has corrected the problem.
- c. For systems with approved annual monitoring, a Level 1 trigger in two consecutive years.

26-010.02 Requirements for Assessments

26-010.02A 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

Department.

26-010.02B 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 Department directives that tailor specific assessment elements with respect to the size and type of the system and the size, type, and characteristics of the distribution system.

26-010.02C Level 1 Assessments: A system must conduct a Level 1 assessment consistent with Department requirements if the system exceeds one of the treatment technique triggers in 26-010.01 item 1.

1. The system must complete a Level 1 assessment as soon as practical after any trigger in 26-010.01 item 1. 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 Department within 30 days after the system learns that it has exceeded a trigger.
2. If the Department 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 Department will consult with the system. If the Department requires revisions after consultation, the system must submit a revised assessment form to the Department on an agreed-upon schedule not to exceed 30 days from the date of the consultation.
3. Upon completion and submission of the assessment form by the system, the Department 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 Department for correcting the problem.

26-010.02D Level 2 Assessments: A system must ensure that a Level 2 assessment consistent with Department requirements is conducted if the system exceeds one of the treatment technique triggers in 26-010.01 item 2. The system must comply with any expedited actions or additional actions required by the Department in the case of an E. coli MCL violation.

26-010.02D1 The system must ensure that a Level 2 assessment is completed by the Department or by a party approved by the Department as soon as practical after any trigger in 26-010.01 item 2. The system must submit a completed Level 2 assessment form to the Department 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.

26-010.02D2 The system may conduct Level 2 assessments if the system has staff or management with the license or qualifications specified by the Department unless otherwise directed by the Department.

26-010.02D3 If the Department reviews the completed Level 2 assessment and determines that the assessment is not sufficient (including any proposed timetable for any corrective actions not already completed), the Department will consult with the system. If the Department requires revisions after consultation, the system must submit a revised assessment form to the Department on an agreed-upon schedule not to exceed 30 days.

26-010.02D4 Upon completion and submission of the assessment form by the system, the Department will determine if the system has 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 Department for correcting the problem.

26-010.03 Corrective Action: Systems must correct sanitary defects found through either Level 1 or 2 assessments conducted under 26-010.02. 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 Department in consultation with the system. The system must notify the Department when each scheduled corrective action is completed.

26-010.04 Consultation: At any time during the assessment or corrective action phase, either the water system or the Department may request a consultation with the other party to determine the appropriate actions to be taken. The system may consult with the Department on all relevant information that may impact on its ability to comply with a requirement of this chapter, including the method of accomplishment, an appropriate timeframe, and other relevant information.

26-011 VIOLATIONS

26-011.01 E. coli MCL Violation: A system is in violation of the MCL for E. coli when any of the following four conditions 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.

26-011.02 Treatment Technique Violation

26-011.02A A treatment technique violation occurs when a system exceeds a treatment technique trigger specified in 26-010.01 and then fails to conduct the required assessment or corrective actions within the timeframe specified in 26-010.02 and 26-010.03.

26-011.02B A treatment technique violation occurs when a seasonal system fails to complete a Department-approved start-up procedure prior to serving water to the public.

26-011.03 Monitoring Violations

26-011.03A Failure to take every required routine or additional routine sample in a compliance period is a monitoring violation.

26-011.03B Failure to analyze for E. coli following a total coliform-positive routine sample is a monitoring violation.

26-011.04 Reporting Violations

26-011.04A 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.

26-011.04B Failure to notify the Department following an E. coli-positive sample as required by 26-009.02A in a timely manner is a reporting violation.

26-011.04C Failure to submit certification of completion of a Department-approved start-up procedure by a seasonal system is a reporting violation.

26-012 REPORTING AND RECORDKEEPING

26-012.01 Reporting

26-012.01A E. coli

26-012.01A1 A system must notify the Department 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 Department office is closed and the Department does not have either an after-hours phone line or an alternative notification procedure, in which case the system must notify the Department before the end of the next business day, and notify the public in accordance with 179 NAC 4.

26-012.01A2 A system must notify the Department 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 Department office is closed and the Department does not have either an after-hours phone line or an alternative notification procedure, in which case the system must notify the Department before the end of the next business day.

26-012.01B A system that has violated the treatment technique for coliforms in 26-010 must report the violation to the Department no later than the end of the next business day after it learns of the violation, and notify the public in accordance with 179 NAC 4.

26-012.01C A system required to conduct an assessment under the provisions of 26-010 must submit the assessment report within 30 days. The system must notify the Department in accordance with 26-010.03 when each scheduled corrective action is completed for corrections not completed by the time of submission of the assessment form.

26-012.01D A system that has failed to comply with a coliform monitoring requirement must report the monitoring violation to the Department within 10 days after the system discovers the violation, and notify the public in accordance with 179 NAC 4.

26-012.01E A seasonal system must certify, prior to serving water to the public, that it has complied with the Department-approved start-up procedure.

26-012.02 Recordkeeping

26-012.02A 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 26-010 for Department 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.

26-012.02B The system must maintain a record of any repeat sample taken that meets Department criteria for an extension of the 24-hour period for collecting repeat samples as provided for under 26-009.01A.

