

TITLE 179 PUBLIC WATER SYSTEMS

CHAPTER 3 MONITORING AND ANALYTICAL REQUIREMENTS

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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	Detection Limit (mg/L)
Antimony	0.006	Atomic Absorption; Furnace	0.003
		Atomic Absorption; Platform	0.0008 ⁵
		ICP-Mass Spectrometry	0.0004
Arsenic	0.010 ⁶	Hydride- Atomic Absorption	0.001
		Atomic Absorption; Furnace	0.001
		Atomic Absorption; Platform - Stabilized Temperature	0.0005 ⁷

		Atomic Absorption; Gaseous Hydride	0.001
		ICP-Mass Spectrometry	0.0014 ⁸
Asbestos	7 MFL ¹	Transmission Electron Microscopy	0.01 MFL
Barium	2	Atomic Absorption; furnace technique	0.002
		Atomic Absorption; direct aspiration	0.1
		Inductively Coupled Plasma	0.002, (0.001)
Beryllium	0.004	Atomic Absorption; Furnace	0.0002
		Atomic Absorption; Platform	0.00002 ⁵
		Inductively Coupled Plasma ²	0.0003
		ICP-Mass Spectrometry	0.0003
Cadmium	0.005	Atomic Absorption; furnace technique	0.0001
		Inductively Coupled Plasma	0.001
Chromium	0.1	Atomic Absorption; furnace technique	0.001
		Inductively Coupled Plasma	0.007 (0.001)
Cyanide	0.2	Distillation, Spectrophotometric ³	0.02
		Distillation, Automated, Spectrophotometric ³	0.005
		Distillation, Selective Electrode ^{3,4}	0.05
		Distillation, Amenable, Spectrophotometric ⁴	0.02
		UV, Distillation, Spectrophotometric ⁹	0.0005
		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 Technique	0.0002
Nickel	xl	Atomic Absorption; Furnace	0.001
		Atomic Absorption; Platform	0.0006 ⁵
		Inductively Coupled Plasma ²	0.005
		ICP-Mass Spectrometry	0.0005
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
		Capillary Ion Electrophoresis	0.076
Nitrite	1 (as N)	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 hydride	0.002
Thallium	0.002	Atomic Absorption; Furnace	0.001
		Atomic Absorption; Platform	0.0007 ⁵
		ICP-Mass Spectrometry	0.0003

¹ MFL = million fibers per liter >10 µm.

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

³ Screening method for total cyanides.

⁴ Measures "free" cyanides 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.

⁹Measures 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: Entry points which exceed the maximum contaminant levels as calculated in 179 NAC 3-005.09 must monitor quarterly beginning in the next quarter after the violation occurred.
8. 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	Preservative ¹	Container ²	Time ³
Antimony	HNO ₃	P or G	6 months
Arsenic	Conc HNO ₃ to pH<2	P or G	6 months
Asbestos	4°C	P or G	48 hours ⁴
Barium	HNO ₃	P or G	6 months
Beryllium	HNO ₃	P or G	6 months
Cadmium	HNO ₃	P or G	6 months
Chromium	HNO ₃	P or G	6 months
Cyanide	4°C, NaOH	P or G	14 days
Fluoride	None	P or G	1 month
Mercury	HNO ₃	P or G	28 days
Nickel	HNO ₃	P or G	6 months
Nitrate	4°C	P or G	48 hours ⁵
Nitrate-Nitrite ⁶	H ₂ SO ₄	P or G	28 days
Nitrite	4°C	P or G	48 hours
Selenium	HNO ₃	P or G	6 months
Thallium	HNO ₃	P or G	6 months

¹For 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.

²P = plastic, hard or soft; G = glass, hard or soft.

³In 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.

⁴Instructions 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

⁵If the sample is chlorinated, the holding time for an unacidified sample kept at 4°C is extended to 14 days.

⁶Nitrate-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:

<u>Contaminant</u>	<u>Acceptance Limit</u>
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.

3-007.02O 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

<u>Contaminant</u>	<u>Detection Limit</u>
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

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)