systems are covered under the 811 requirements. This change should make it very obvious what kind of systems are regulated under 811, even without reading the definitions.

Of the 200+ overall recommendations in the original comments from the Legislative Council, only these 11 were not followed. At the time I prepared the background memo, I thought, since the percentage of comments/suggestions not implemented was less than 5%, an individual explanation of why each comment was not implemented was unnecessary. I apologize for that oversight and will try and be more descriptive in future submittals.

I hope this explanation satisfies your needs. If it does not, please contact me directly (608/266-7093) and I will do my best to explain our actions.

Sincerely,

Don Swailes, Team Leader
Safe Drinking Water Surveillance Team

cc: E. Kluesner, AD/5
C. Turner, LS/5
E. Kavanaugh, LS/5
B. Wenzel, 319S, Capitol, Senate

JUL 19 2000

State of Wisconsin
Department of Natural Resources

NOTICE TO PRESIDING OFFICERS

OF PROPOSED RULEMAKING

Pursuant to s. 227.19, Stats., notice is hereby given that final draft rules are being submitted to the presiding officer of each house of the legislature. The rules being submitted are:

Natural Resources Board Order No. DG-3-00

Legislative Council Rules Clearinghouse Number 00-002

Subject of Rules Safe drinking water

Date of Transmittal to Presiding Officers July 18, 2000

Send a copy of any correspondence or notices pertaining to this rule to:

Carol Turner, Rules Coordinator
DNR Bureau of Legal Services
LC/5, 101 South Webster

266-1959

REPORT TO LEGISLATURE

NR 108, 114, 809 and 811, Wis. Adm. Code
Safe drinking water

Board Order No. DG-3-00
Clearinghouse Rule No. 00-002

Statement of Need

The U. S. Environmental Protection Agency is now promulgating new drinking water regulations mandated by the 1996 Amendments of the Safe Drinking Water Act and will continue to do so over the next several years. As the primacy agent for U.S. EPA in Wisconsin, the Department must adopt and implement regulations at least as stringent as those promulgated by US EPA. Changes in chs. NR 108 and 811 are primarily to ensure conformance of definitions between all codes addressing community water systems. Other changes correct old errors or provide greater clarity and/or flexibility in existing requirements.

Changes to ch. NR 114 are in response to Safe Drinking Water Act requirements that small nonmunicipal water systems be operated by a certified person. A new subchapter has been added to ch. NR 114 that specifically addresses small other-than-municipal community systems (mobile home parks, condo complexes, apartment complexes and some rural subdivisions that have their own well systems) and nontransient noncommunity water systems (school, commercial and industrial facilities with 25 or more permanent employes and served by a private well). The new subchapter requires these systems to be operated by a person who completes a training course, passes a written examination and obtains 6 hours of continuing education credits every 3 years.

Changes to ch. NR 809 are in response to new regulations as a result of the 1996 Amendments to the Safe Drinking Water Act. The new regulations include:

Consumer Confidence Regulation – This regulation establishes a requirement for all public community water systems to issue a water quality report annually. The regulation mandates some specific content of the reports and provides specific language for use if the system has experienced a maximum contaminant level violation. The regulation also contains provisions to allow small systems to notify all water consumers that the annual report is available, rather than mailing the report to each customer.

Disinfectant/Disinfectant by-products Regulation – This regulation is the first of 2 regulations that will eventually reduce the maximum contaminant level for total trihalomethanes from the current 100 parts per billion to 60 parts per billion. Under this first regulation the maximum contaminant level for total trihalomethanes will be reduced to 80 parts per billion and new standards for haloacetic acids, bromate and chlorite are established. Maximum residual disinfectant levels are also established for chlorine, chloramines and chlorine dioxide. In addition this regulation establishes new monitoring for disinfectant by-products and disinfectant by-product precursors. The most significant increased monitoring will occur in system that utilize a surface water source. Additionally, all groundwater systems that disinfect will experience some increase in monitoring under this regulation.

Interim Enhanced Surface Water Treatment Regulation – This regulation affects surface water systems and systems using groundwater under the direct influence of surface water. The rule is the second in a series of 3 increasingly stringent regulations aimed at improving treated surface water quality. This rule will strengthen microbial protection by establishing removal

requirements for *Cryptosporidium* through the filtration process, reducing allowable finished water turbidity levels, requiring monitoring of individual filter performance and by establishing disinfection profiling and benchmarking provisions. In Wisconsin approximately 20 surface water systems will be affected by this rule. Most of the systems have already taken actions to meet the new requirements.

Variance and Exemption Regulation – This regulation creates a new affordability-based small systems variance, which may be granted by a state to a public water system serving fewer than 3,300 persons, or, with the approval of U.S. EPA to a system serving 3,301 to 10,000 persons. Theoretically, this regulation would provide additional flexibility to allow variances and exemptions to small, economically disadvantaged systems.

Restricted Microbiological Analytical Methods and Direct Lab Reporting – The first change would require that all samples collected to establish compliance with the total coliform maximum contaminant level be analyzed using a single method. The reason for this change is that 2 years of voluntary proficiency testing by certified microbiological labs throughout the state indicate that this method consistency outperforms other U.S. EPA approved methods in detecting coliform bacteria. The second change which required direct reporting from microbiological to the department is not new in the drinking water program. It has been required in the private water subprogram for many years. Currently, all reporting requirements are placed on the regulated public water system. Under the current system, laboratories performing microbiological analyses, provide the results to the regulated water system, which then transcribes the results onto a department form and mails them to the department. Unfortunately, the current system results in transcription errors, delays in receiving time critical public health information and delays and confusion in follow up monitoring. Direct reporting would require laboratories to transmit results of compliance samples directly to the department and the facility concurrently. Additionally, for positive results, which indicate a potential public health threat, laboratories would also be required to transmit the results to the department and the facility within 24 hours of obtaining the result.

Modifications as a Result of Public Hearing

Section NR 114.32(1) was amended to read "To quality to take the examination for certification in any of the subclasses ... to clarify who may qualify as a water system operator.

Section NR 811.11(9)(b)1. was modified by inserting "well driller, pump installer" before "plumber" at the request of the Water Well Association.

Appearances at the Public Hearings and Their Position

February 14, 2000 – Stevens Point

In support – none
In opposition – none

As interest may appear:

Ken M. Blomberg, Exec. Director, Wis. Rural Water Association, 350 Water Way, Plover, WI 54467

February 15, 2000 – Oshkosh – no appearance slips filed
February 16, 2000 – Spooner – no appearance slips filed
February 17, 2000 – Waukesha – no appearance slips filed
February 18, 2000 – Madison – no appearance slips filed

Response to Legislative Council Rules Clearinghouse Report

All comments were accepted and changes to the proposed rules were made except where suggested wording or style might dilute rule stringency or could interfere with other rule components which were not included in the proposed revisions.

Final Regulatory Flexibility Analysis

Of all the new proposals, only the Operator Certification and the Consumer Confidence Reporting regulations will have an immediate effect on small businesses. The Consumer Confidence regulation requires some small businesses (mobile home parks, condo developments and apartment complexes) to provide all their customers with an annual water quality report. US EPA has estimated an average annual cost to all community water systems of $442 to develop and deliver the report. In general, the affected small businesses will probably be able to comply with this requirement for substantially less than the US EPA estimated average.

Operator certification will affect small businesses such as mobile home parks, condo developments and apartment complexes, but it will also affect some commercial facilities and industrial facilities. The annual cost of licensing for certified operators will be $15 and approximately 1/3 day each year will be required for mandated training (which should be provided free of cost). Assuming that travel time results in a lost day of work each year to attend training (average per hour cost of $50), operator certification would result in an annual system cost of approximately $215. Some systems would choose to hire a certified operator rather than train one of their staff and it is quite likely that the cost for that option will be substantially greater than $215/year.

Overall costs for small business that must implement both these rules should be in the vicinity of $650/year or approximately $55/month. It is likely this cost would ultimately be passed along to system consumers. Under a worst case scenario, that could be as much as $4.50/month per household for a mobile home park, condo or apartment resident (this assumes the minimum number of units to qualify as a community system).

In general, stringency of the rule revisions cannot be reduced further without violating federal law.

ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD REPEALING, RENUMBERING, AMENDING, REPEALING AND RECREATING, AND CREATING RULES

The Natural Resources Board proposes an order to repeal NR 809.26(1)(i), 809.40 and 809.41; to renumber NR 809.04(7) to (66), NR 809 subchs. III to V, 809.80(4) to (9), 811.10(3), 811.13(3m) to (6), 811.29(1)(h) and (i); to renumber and amend NR 809.26(1)(j); to amend NR 108.02(13)(a) and (b), 108.04(1), (2)(b) and (f), ch. NR 114(title) and (note), 114.01, 114.03(16), 114.05(1) and (2), 114.10(1) to (7), 114.12(2)(d), 114.14(1)(h), 809.01(1), 809.12(3)(a), (4)(a) and (b), (5)(a) and (13), 809.21(13), 809.23(1), 809.26(1)(e) and (3)(intro.), (a) and (b), 809.31(1)(d)1. and 2., (5)(c), (6)(a), 809.75(1)(intro.), 809.755(intro.), (2)(b)(intro.), (f) and (3)(a), 809.76(intro.), (1), (2) and (5), 809.77(intro.), NR 809 subch. VI (title), 809.81(5)(Lt), 811.01, 811.05(2)(a)(intro.) and 5., 811.08(5), 811.10(2)(intro.) and (a), 811.16(2)(d)2. and 3. and 811.33(2)(note); to repeal and recreate NR 114.07(5), 809.22 and 809.90; and to create NR 114.03(3m) and (note), (14m), 114.05(9), 114.11(4), 114.12(2)(e), NR 114 subch. III, 809.04(7), (19), (22), (23), (27), (31), (36), (43), (44), (69), (72) to (75), 809.31(5)(d), NR 809 subch. III, 809.75(4), 809.755(2)(c)8., 809.765, 809.775, 809.80(4) and (8), 809.83, 809.833, 809.835, 809.837, NR 809 subch. VII appendices A to C, 811.10(3) and 811.11(8) relating to plans and specifications submittals for reviewable projects, operator certification, safe drinking water and operation and design of community water systems.

DG-3-00

Analysis Prepared by Department of Natural Resources

Statutory authority: ss. 227.11(2)(a), 280.11(1), 281.17(3) and (8) and 281.41(1), Stats.
Statutes interpreted: ss. 280.11(1), 281.17(3) and (8) and 281.41(1), Stats.

Proposed revisions to Chapter NR 108, Requirements for Plans and Specifications Submittal for Reviewable Projects and Operations of Community Water Systems, Sewerage Systems and Industrial Wastewater Facilities, are submitted to the Natural Resources Board for approval of the proposed revisions. The major revision simply alters the definition of community water system to comport with Chapters NR 809 and NR 811. Other changes simply allow greater flexibility in plan submission.

These revisions should have no significant impact on regulated systems other than to allow greater flexibility in submitting plans.

Proposed revisions to Chapter NR 114, Certification Requirements for Waterworks, Wastewater Treatment Plant and Septage Servicing Operators, are submitted to the Natural Resources Board for approval of the proposed revisions. The major revisions conform with EPA guidance promulgated in response to a new operator certification requirement for small public systems established under the 1996 Amendments to the Safe Drinking Water Act (SDWA). Revisions include: requirement for certified operator for other than municipal and nontransient noncommunity water systems; requirements for examination, continuing education, and sub-classification by type of treatment; and, requirement for certified operator to be available during each shift the system is in operation.

These new requirements will increase training and knowledge, and therefore cost, required to operate other than municipal and nontransient noncommunity water systems. However, since these requirements will result in better knowledge of water system operation, regulatory requirements, and monitoring procedures, they should also result in better public health protection and better levels of regulatory compliance.

Proposed revisions to Chapter NR 809, Safe Drinking Water, are submitted to the Natural Resources Board for approval of the proposed revisions. The major revisions conform with 4 final regulations promulgated by the U.S. Environmental Protection Agency and one requirement promulgated in the 1996 Amendments

to the Safe Drinking Water Act (SDWA). Specific revisions paralleling federal requirements or regulations include: consumer confidence reporting requirements, interim enhanced surface water treatment requirements, disinfectant and disinfectant byproducts requirements, variance and exemption requirements, and requirements for certified operators at small public systems.

Together these new requirements and regulations will: increase monitoring and reporting for surface water systems and public water systems that disinfect, increase consumer awareness of local public drinking water quality, expand opportunities for small public systems to obtain a variance from meeting some maximum contaminant levels, and mandate training and certification of small non-municipal public water system operators.

Proposed revisions to Chapter NR 811, Requirements for the Operation and Design of Community Water Systems, are submitted to the Natural Resources Board for approval of the proposed revisions. The major revision to this chapter is a change in the definition of community water system to match the definition in Chapter NR 809 and Chapter NR 108. Other revisions allow greater flexibility, provide greater clarity or correct past errors in the code.

These revisions should not significantly impact any systems other than to make the code easier to understand and provide systems more flexibility in meeting the requirements of the code.

SECTION 1. NR 108.02(13)(a) and (b) are amended to read:

NR 108.02(13)(a) Any new community water system ~~intended to serve 15 or more living units or having source capacity greater than 70 gallons per minute.~~ or any water system intended to serve 7 or more homes, 10 or more apartments, 10 or more mobile homes or 10 or more condominium units.

(b) Any improvements, extensions or alterations which may affect the quality or quantity of water delivered by an existing community water system ~~intended to serve 15 or more living units or having source capacity greater than 70 gallons per minute.~~ or delivered by a water system serving 7 or more homes, 10 or more apartments, 10 or more mobile homes or 10 or more condominiums units except distribution systems not in streets or easements, or water systems where all of the living units are owned by a single owner and the owner provides information indicating that less than 25 year-round residents will be served.

SECTION 2. NR 108.04(1) is amended to read:

NR 108.04(1) PRELIMINARY PLANS. Prior to preparation of final plans and specifications for a water supply facility, an industrial wastewater facility or industrial pretreatment facility, a conceptual design report of the proposed system may be submitted. Upon request the department will provide written comments on the acceptability of the concept and advice regarding design requirements.

SECTION 3. NR 108.04(2)(b) and (f) are amended to read:

NR 108.04(2)(b) Three sets of final plans and specifications shall be submitted for all reviewable projects except water main and sanitary sewer extensions in which case only ~~2 sets need~~ 1 set needs to be submitted. Additional sets of plans and specifications may be required for sewerage improvements that are eligible for state or federal grants-in-aid. ~~One set of all approved plans and specifications will be affixed with the department's stamp of approval and returned to the owner.~~

(f) Plans shall be made on a high grade paper that will not crack when folded nor tear with reasonable usage. The maximum plan size should be 24" x 36"; and sheets in the same set of plans shall be numbered. The scale in feet to which the plans are drawn, the north point, the date and the name of the

designer and owner shall, in all cases, be indicated. Drawings obtained from the manufacturer or supplier containing proprietary names or symbols will not be accepted for approval. All plans shall be drawn to a suitable scale not smaller than one inch equaling 40 feet for detailed plans and, whenever practicable, not smaller than one inch equaling 100 feet for general plans. Reductions of full-scale plans with an appropriate scale for the reduced plans not smaller than one inch equaling 100 feet may be accepted by the department provided that the plans are clear and legible. Plans for modifications of or extensions to existing waterworks, sewerage systems, industrial wastewater facilities or industrial pretreatment facilities shall clearly indicate the connections or relations thereto, and, if not already on file with the department, shall include plans of the existing system or facility.

SECTION 4. Chapter NR 114 (title) and (Note) are amended to read:

CHAPTER NR 114
CERTIFICATION REQUIREMENTS FOR WATERWORKS, WASTEWATER TREATMENT PLANT, ~~AND~~ SEPTAGE SERVICING AND WATER SYSTEM OPERATORS.

Note: Pursuant to s. ~~144.99~~ 281.98, Stats., any person who violates this chapter shall forfeit not less than $10 nor more than $5,000 for each violation. Each day of continued violation is a separate offense. ~~Chapter NR 114 as it existed on September 30, 1995 was repealed and a new chapter NR 114 was created effective October 1, 1995.~~

SECTION 5. NR 114.01 is amended to read:

NR 114.01 Purpose. The purpose of this subchapter is to establish rules for the certification of waterworks and wastewater treatment plant operators pursuant to s. ~~144.025 (2) (L)~~ 281.17 (3), Stats.

SECTION 6. NR 114.03(3m) and Note, 114.03(9m), (11m) and (14m) are created to read:

NR 114.03(3m) "Community water system" has the meaning given in s. NR 809.04(4).

Note: Section NR 809.04(4) defines "community water system" to mean "a public water system which serves at least 15 service connections used by year–round residents or regularly serves at least 25 year–round residents. Any public water system serving 7 or more homes, 10 or more mobile homes, 10 or more apartment units, or 10 or more condominium units shall be considered a community water system unless information is available to indicate that 25 year–round residents will not be served."

(9m) "Non-transient non-community water system" means a non-community water system that regularly serves at least 25 of the same persons over 6 months per year and is not a waterworks as defined in sub. (15). Examples of non-transient non-community water systems include but are not limited to those serving schools, day care centers and factories.

(11m) "Other than municipal community water system" means a community water system that is not a municipal water system and is not a waterworks as defined in sub. (15). Examples of other than municipal community water systems include but are not limited to those serving mobile home parks, apartments and condominiums.

(14m) "Water system" means an other than municipal community or a non-transient non-community water system as defined in subs. (11m) and (9m) respectively.

SECTION 7. NR 114.03(16) is amended to read:

NR 114.03(16) "WPDES permit" means a Wisconsin pollution elimination system permit issued under ch.~~147~~ 283, Stats.

SECTION 8. NR 114.05(1) and (2) are amended to read:

NR 114.05(1) Examinations and on–the–job experience shall be used to determine knowledge, skill and ability of the applicant to perform duties at a waterworks or wastewater treatment plant. A score of 75% or higher shall be a passing score on each written examination. An applicant desiring to be certified to perform duties at a waterworks or wastewater treatment plant shall submit a completed application to the department at least 28 days prior to the established date of a written examination on an application form provided by the department. Fees as outlined in s. NR 114.06 shall accompany the application. Applicants shall be notified of their eligibility for examination.

(2) Written examinations shall be conducted week days at least 2 times annually in ~~all~~ 6 locations specified by the department ~~districts~~, except as provided in sub. (3).

SECTION 9. NR 114.05(9) is created to read:

NR 114.05(9) An applicant who holds a valid water system certification under subch. III in subclasses Z, I, L or V may apply for and be granted certification in the same waterworks subclasses as listed in s. NR 114.10 without repeating the subclass examination.

SECTION 10. NR 114.07(5) is repealed and recreated to read:

NR 114.07(5)(a) A person who desires to renew a certificate shall submit evidence of having met the continuing education requirements of par. (b) on forms approved or provided by the department for approved training courses or other credit that they have successfully completed during the 3–year period. These may include, but are not limited to, courses sponsored by the department, or any university, or technical school, technical sessions at meetings of professional organizations, in–house training and correspondence courses. Failure to successfully complete and document the appropriate number of hours of continuing education training within the 3–year period shall result in rejection of a certificate renewal application.

(b) (intro.) Applicants shall meet the following continuing education requirements:

1. Wastewater certified operators at Grades T, 1 and 2 require 18 hours per 3 year renewal period.

2. Wastewater certified operators at Grades 3 and 4 require 24 hours per 3 year renewal period.

3. Waterworks certified operators at Grades T and 1 require 18 hours per 3 year renewal period, except the operator–in–charge of a surface water treatment plant will be required to submit 24 hours per 3 year renewal period.

(c) For both waterworks and wastewater treatment certified operators, not more than 6 hours of health and safety training may be used per 3 year renewal period.

SECTION 11. NR 114.10(1) to (7) are amended to read:

NR 114.10(1) Subclass G – Groundwater source. All waterworks utilizing a groundwater source.

(2) Subclass Z – Zeolite and resin treatment. All waterworks providing zeolite softening or specific contaminant removal by resins.

(3) Subclass I – Oxidation and filtration treatment. All waterworks providing iron removal by oxidation and filtration.

(4) Subclass L – Lime-soda ash treatment. All waterworks providing treatment by the lime–soda ash process for iron removal or softening, or both.

(5) Subclass S – Surface water source. All waterworks utilizing a surface water source.

(6) Subclass D – Distribution system. All waterworks containing a distribution system.

(7) Subclass V – Specialized treatment. All waterworks providing special treatment such as, but not limited to, air stripping, granular activated carbon or others.

SECTION 12. NR 114.11(4) is created to read:

NR 114.11(4) To qualify for certification in any of the subclasses established in s. NR 114.10, the person shall meet the requirements of either par. (a) or (b).

(a) The person shall possess a high school diploma or a general equivalency diploma.

(b) The person shall have a minimum of 2 years experience operating a waterworks prior to the effective date of this rule … [revisor insert date].

SECTION 13. NR 114.12(2)(d) is amended to read:

NR 114.12(2)(d) At subclass S waterworks, the system shall have a person certified at Grade T or 1 in Subclass S on duty at all times of operation. If the designated operator–in–charge of a subclass S waterworks is not on duty during the operation of the system, the waterworks shall have another operator certified at Grade T or 1 in subclass S on duty during the operation of the system. If an operator position becomes vacant at a subclass S waterworks, the department may allow a system to operate a shift without a certified operator on duty as long as the non–certified operator on duty is working under the general supervision of a certified operator and the waterworks is making a good faith effort to fill the vacant position. On duty for subclass S waterworks means having a certified operator onsite except where the department has approved an automated treatment plant surveillance system and an operation plan for offsite control as a reliable substitute for having a certified operator on–site. In the review of automated systems, the department shall consider applicable factors, such as history of plant operations, response time to alarms, offsite treatment adjustment capability, plant shutdown ability and demonstration of satisfactory operation and reliability of the automation system. ~~This requirement applies commencing one year from October 1, 1995.~~

SECTION 14. NR 114.12(2)(e) is created to read:

NR 114.12(2)(e) The operator–in–charge of the operation of a subclass of waterworks shall be available during each operating shift. The operator-in-charge may designate, on a temporary basis, such as vacation or short term illness, an operator of appropriate subclass, to be available during each operating shift.

SECTION 15. NR 114.14(1)(h) is amended to read:

NR 114.14(1)(h) By intentional or negligent action, caused or significantly contributed to a violation of any provision of ~~ch. 144 or 147~~ ch. 281 or 283, Stats., or any administrative codes, permits or orders adopted or issued under those chapters.

SECTION 16. NR 114 Subchapter III is created to read:

SUBCHAPTER III
CERTIFICATION OF WATER SYSTEM OPERATORS.

NR 114.26 Purpose. The purpose of this subchapter is to establish rules for the certification of water system operators pursuant to s. 281.17 (3), Stats.

NR 114.27 Applicability. The provisions of this subchapter are applicable to all owners and operators of water systems as defined in this subchapter.

NR 114.28 Definitions. In this subchapter:

(1) "Certificate" means a printed document issued by the department, pursuant to this subchapter, stating that the operator named therein has met the competency requirements for certification.

(2) "Certified operator" means a person who has met the requirements of this subchapter and has been issued a certificate by the department to work at a water system.

(3) "Classification" or "class" means a number assigned to a water system based on a rating system.

(4) "Community water system" has the meaning given in s. NR 809.04(4).

Note: S. NR 809.04(4) defines "community water system" to mean "a public water system which serves at least 15 service connections used by year–round residents or regularly serves at least 25 year–round residents. Any public water system serving 7 or more homes, 10 or more mobile homes, 10 or more apartment units, or 10 or more condominium units shall be considered a community water system unless information is available to indicate that 25 year–round residents will not be served."

(5) "Department" means the department of natural resources.

(6) "Direct responsible charge" means the responsibility to provide detailed on-site technical direction of the operation of a water system.

(7) "Operate" means to be in direct responsible charge of a subclass of operations at a water system.

(8) "Operator-in-charge" means the person designated by the owner of a water system to be in direct responsible charge of a subclass of operations of the water system. Not included in this definition are managers, engineers, directors or the equivalent, who are not actually involved in day-to-day operations of the system.

(9) "Owner" means the state, county, town, town sanitary district, city, village, metropolitan sewerage district, corporation, firm, company, institution, association, utility district, school district, joint sewerage commission or individual owning or operating any water system.

(10) "Subclass" means a letter assigned a plant or system based upon a particular type of process at the plant and the letter assigned to a person based on passing an examination for a specific operational process.

(11) "Water system" means an other than municipal community or a non-transient non-community public water system as defined in pars. (a) and (b):

(a) "Other than municipal community water system" means a community water system that is not a municipal water system and is not a waterworks as defined in sub. (11). Examples of other than municipal community water systems include, but are not limited to, those serving mobile home parks, apartments and condominiums.

(b) "Non-transient non-community water system" means a non-community water system that regularly serves at least 25 of the same persons over 6 months per year and is not a waterworks as defined in sub. (11). Examples of non-transient non-community water systems include, but are not limited to, those serving schools, day care centers and factories.

(12) "Waterworks" means a community water system owned by, or a private utility serving, a county, city, village, town, town sanitary district, utility district or a county–owned or state–owned public institution for congregate care or correction, which includes but is not limited to correctional institutions, correctional camp systems, county jails or houses of correction, mental health institutes, schools for the handicapped, hospitals, infirmaries and asylums.

NR 114.29 Classification of water systems. (1) The classification of each water system shall be class 1 and assigned one or more of the applicable subclasses listed in sub. (3) based on the operations performed at the system.

(2) Each water system shall be assigned a minimum of subclass O and additional subclasses for each treatment or process utilized and listed in sub. (3).

(3) The following subclasses are established for both water system classifications and operator certification:

(a) Subclass O - General water system operation. All water systems utilizing a groundwater source, surface water source, or purchased water from a waterworks. Any operator who holds a valid waterworks certification under subch. I in subclasses G, D or S may also operate this water system subclass.

(b) Subclass Z - Zeolite and resin treatment. All water systems providing zeolite softening or specific contaminant removal by resins. Any operator who holds a valid waterworks certification under subch. I in subclass Z may operate this water system subclass.

(c) Subclass I – Oxidation and filtration treatment. All water systems providing iron removal by oxidation and filtration. Any operator who holds a valid waterworks certification under subch. I in subclass I may also operate this water system subclass.

(d) Subclass L - Lime-soda ash treatment. All water systems providing treatment by the lime-soda ash process for iron removal or softening, or both. Any operator who holds a valid waterworks certification under subch. I in subclass L may operate this water system subclass.

(e) Subclass V – Specialized treatment. All water systems providing special treatment such as, but not limited to, air stripping, granular activated carbon or others. Any operator who holds a valid waterworks certification under subch. I in subclass V may also operate this water system subclass.

NR 114.30 General requirements. Every water system shall have a designated operator-in-charge. No person may be an operator-in-charge of a water system subclass unless that person holds a valid certificate for that subclass issued pursuant to this chapter.

NR 114.31 Requirements for water system owners. The owner of a water system shall designate to the department the operator-in-charge of the water system. The designated operator-in-charge shall meet the requirements stated in s. NR 114.32. A person may be designated as the operator–in–charge for more than one subclass. Owners shall notify the department of changes within 30 days.

NR 114.32 Requirements for water system operators. (1) To qualify for certification in any of the subclasses established in s. NR 114.29, the person shall meet the requirements of either par. (a) or (b).

(a) The person shall possess a high school diploma or a general equivalency diploma.

(b) The person shall have a minimum of 2 years experience operating a water system prior to the effective date of this rule … [revisor insert date].

(2) To qualify for certification in any of the subclasses established in s. NR 114.29, a person shall submit a completed application and successfully pass the examination for that subclass as stated in s. NR 114.33.

(3) The operator-in-charge of the operation of a water system subclass listed in s. NR 114.29 shall hold a valid certification for that subclass, except as noted in sub. (4).

(4) Upon the addition of a subclass treatment process to a water system, the operator-in-charge of the system shall have 12 months to pass the necessary examinations and meet the requirements specified under this section.

(5) The operator-in-charge of a water system shall be available during each operating shift.

(6) To continue certification under this subchapter, each certified water system operator shall renew his or her certificate every 3 years as specified in s. NR 114.36.

NR 114.33 Applications and examinations. (1) A person desiring to be certified to perform duties at a water system shall submit a completed application form to the department at least 28 days prior to the established date of a written examination. Fees as outlined in s. NR 114.34 shall accompany the application form. Applicants shall be notified of their eligibility for examination.

(2) Examinations shall be used to determine knowledge, skill and ability of the applicant to perform duties at a water system. A score of 75% or higher shall be a passing score on each written examination.

(3) Written examinations shall be conducted at least 2 times annually in 6 locations specified by the department.

(4) Examinations for water system operations may not be issued to applicants who have not properly registered or who fail to identify themselves on request.

(5) Examination papers may not be returned to an applicant. Examination results will be mailed to applicant within 60 days of the examination date.

(6) Applicants who fail to pass a written examination may apply to the department for reexamination at a subsequent scheduled examination.

(7) The department shall provide a list of reference materials and study guides pertaining to each water system subclass.

(8) An applicant who holds a valid waterworks certification under subch. I in subclasses Z, I, L or V may apply for and be granted certification in the same water system subclasses as listed in s. NR 114.29 without repeating the subclass examination.

NR 114.34 Fees. (1) Fees for certification shall be as follows:

(a) Each written examination $25.00
(b) Three year renewal (per certificate)..... $45.00

(c) Late renewal penalty (per certificate) $25.00
(d) Reciprocal certification (per certificate) $100.00

(2) Fees shall accompany a completed application form.

(3) The renewal fee is due on the expiration date of the certificate. Any renewal application postmarked after the expiration date shall also include a $25.00 late renewal penalty.

(4) Fees may not be refunded to an applicant who fails to pass a written certification examination, who fails to appear to take the examination or who fails to identify himself or herself on request.

(5) The department shall collect these fees pursuant to s. 281.17 (3), Stats., for uses including the administration of this chapter.

NR 114.35 Issuance of certificates. (1) Upon satisfactory fulfillment of the qualifications required by this subchapter, the department shall issue a certificate to a person indicating the water system subclasses for which the person has been certified.

(2) Certificates may be issued for reciprocal certification, without examination, in a comparable subclass to any person who holds a current certificate in any state, territory or possession of the United States, or any country, if in the judgment of the department, the person requesting reciprocal certification has met the equivalent of the provisions of this subchapter in examinations.

(3) All certificates shall expire 3 years from the date of issuance. Certificates may be updated to show additional subclasses after passing an examination, but the original expiration date shall remain on the certificate. Updating a certificate for any reason, except renewal of certification as described in s. NR 114.36 does not extend or change the expiration date. Certificates shall only be renewed subject to the requirements of s. NR 114.36.

NR 114.36 Renewal of certification. (1) A person who desires to renew a certificate shall submit a renewal application, the renewal fee and evidence of fulfilling the continuing education requirements of sub. (2).

(2) Certified water system operators require 6 hours of continuing education per 3-year renewal period. Evidence of these hours shall be submitted on forms approved or provided by the department for department required or approved training courses that they have successfully completed during the 3 year period. These may include, but are not limited to courses sponsored by the department, courses at any university or technical school, technical sessions at meetings of professional organizations, in-house training and correspondence courses.

(3) Failure to successfully complete and document the appropriate number of hours of continuing education training within the 3-year period shall result in rejection of a certificate renewal application.

(4) A person whose certification has expired may, within one year after expiration, be reinstated by submitting a renewal application, the renewal fee, the late penalty fee and evidence of the continuing education requirements of sub. (2). A person not renewing within the one-year period after expiration will have to apply to take the necessary examinations for a new certificate.

NR 114.37 Sanctions. (1) The department may, on its own motion, make investigations and conduct hearings and may, on its own motion or on a signed and verified written complaint, revoke, suspend or refuse to renew as provided in this section any operators certificate, or reprimand the operator if the department finds that the holder of the certificate has done any of the following:

(a) Made a material misstatement in the application for certification or any application for a renewal of certification.

(b) Demonstrated incompetence to operate the system.

(c) Failed to notify the department of a violation of a maximum contaminant level as required in ch. NR 809 or the construction requirements of ch. NR 811 by the operator-in-charge of a water system operation.

(d) Failed to provide public notification of a violation of ch. NR 809.

(e) Falsified any monitoring, operating or other records submitted to the department, or provided by the department.

(f) By intentional or negligent action, caused or significantly contributed to a violation of any provision of ch. 281 or 283, Stats., or any administrative codes, permits or orders adopted or issued under those chapters.

(g) Used deception or any form of dishonesty when writing examinations, or removing examination materials from the examination site.

(2) Notice of revocation of, suspension of or refusal to renew a certificate shall be served on the certified operator and shall state the reasons for revocation, suspension or refusal to renew.

(3) Revocation of, suspension of or refusal to renew a certificate shall take effect on the 10th day after the notice is served, unless the certified operator files a written answer with the department prior to the 10th day. If an answer is filed, the revocation, suspension of or refusal to renew is stayed and the department shall conduct a hearing on the matter within 30 days after receipt of the answer. At least 10 days prior to the date of the hearing, the department shall send a written notice to the operator indicating the date, time and location of the hearing. The final determination of the department, including the basis for the decision, shall be provided in writing to the operator. A suspended operator may not be the operator-in-charge of a facility for the duration of the suspension.

(4) Application may be made for taking the necessary examinations for a new certificate one year after the date of revocation or refusal to renew.

(5) Any order revoking or suspending a certificate is subject to judicial review as provided in ch. 227, Stats.

SECTION 17. NR 809.04(7) to (66) are renumbered NR 809.04(8) to (18), (20), (21), (24) to (26), (28) to (30), (32) to (35), (37) to (42), (45) to (68), (70), (71), (76), (78), (77), (79) and (80), respectively, and sub. (57), as renumbered, is amended to read:

NR 809.04(57)(a) "Public water system" or "system" means a system for the provision to the public of ~~piped~~ water for human consumption through pipes or other constructed conveyances, if ~~such~~ the system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. A public water system is either a "community water system" or a "non-community water system". ~~Such system includes:~~

(b) Systems include the following:

1. Any collection, treatment, storage, and distribution facilities under control of the operator of ~~such~~ the system and used primarily in connection with ~~such~~ the system, and

2. Any collection or pretreatment storage facilities not under ~~such~~ the systems control which are used primarily in connection with ~~such~~ the system.

(c) The term does not include any "special irrigation district."

Note: The definition of public water system as regulated by this chapter is broader and includes more water systems than those governed by the public service commission under its definition of a public utility in ch. 196, Stats.

SECTION 18. NR 809.04(7), (19), (22), (23), (27), (31), (36), (43), (44), (69), (72) to (75) are created to read:

NR 809.04(7) "Comprehensive performance evaluation" or "CPE" means a thorough review and analysis of a treatment plant's performance-based capabilities and associated administrative, operation and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance and emphasizes approaches that can be implemented without significant capital improvements. For purposes of compliance with this chapter, the comprehensive performance evaluation shall consist of least the following components: Assessment of plant performance; evaluation of major unit processes; identification and prioritization of performance limiting factors; assessment of the applicability of comprehensive technical assistance; and preparation of a CPE report.

(19) "Disinfection profile" means a summary of daily *Giardia lamblia* inactivation through the treatment plant. The procedure for developing a disinfection profile is contained in s. NR 809.775.

(22) "Enhanced coagulation" means the addition of sufficient coagulant for improved removal of disinfection byproduct precursors by conventional filtration treatment.

(23) "Enhanced softening" means the improved removal of disinfection byproduct precursors by precipitative softening.

(27) "Filter profile" means a graphical representation of individual filter performance, based on continuous turbidity measurements or total particle counts versus time for an entire filter run, from startup to backwash inclusively, that includes and assessment of filter performance while another filter is being backwashed.

(31) "GAC10" means granular activated carbon filter beds with an empty-bed contact time of 10 minutes based on average daily flow and a carbon reactivation frequency of every 180 days.

(36) "Haloacetic acids (five)" or "HAA5" means the sum of the concentrations in milligrams per liter of the haloacetic acid compounds (monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid and dibromoacetic acid), rounded to 2 significant figures after addition.

(43) "Maximum residual disinfectant level" or "MRDL" means a level of a disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects.

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

(69) "Special irrigation district" means an irrigation district in existence prior to May 18, 1994 that provides primarily agricultural service through a piped water system with only incidental residential or similar use where the system or the residential or similar users of the system are supplied with water that meets all maximum contaminant levels of subch. I.

(72) "Surface water systems" means public water systems using surface water or ground water under the direct influence of surface water as a source and that are subject to the requirements of 40 CFR 141, subpart H which contains the national primary drinking water regulations.

(73) "Supplier of water or "water supplier" means any person who owns or operates a public water system.

(74) "SUVA" means specific ultraviolet absorption at 254 nanometers (nm).

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

(75) "Total organic carbon" or "TOC" means total organic carbon in mg/L measured using heat, oxygen, ultraviolet irradiation, chemical oxidants or combinations of these oxidants that convert organic carbon to carbon dioxide, rounded to 2 significant figures.

SECTION 19. NR 809.09(1) is amended to read:

NR 809.09(1) Maximum contaminant level goals (MCLGs) are zero for the following contaminants:

Giardia lamblia
Cryptosporidium
Legionella
Total Coliforms
Fecal Coliforms
Escherichia coli
Lead

SECTION 20. NR 809.12(3)(a), (4)(a) and (b), (5)(a) and (13) are amended to read:

NR 809.12(3)(a) Groundwater sources shall be sampled at each entry point during each compliance period. Suppliers of water having surface water sources or combined surface water and groundwater sources shall take one sample annually at each entry point ~~beginning January 1, 1993~~.

(4)(a) Community water systems and non-transient non-community water systems served by groundwater systems shall be monitored annually ~~beginning January 1, 1993~~; systems served by surface water shall monitor quarterly ~~beginning January 1, 1993~~.

(b) Transient non-community water systems shall be monitored annually ~~beginning January 1, 1993~~.

(5)(a) All public water systems owners or operators shall take one sample at each entry point in the compliance period ~~beginning January 1, 1993 and ending December 31, 1995~~ specified by the department.

(13) Analyses under this section shall only be conducted by laboratories that have received certification under ch. NR 149 or approval by EPA. ~~Laboratories may conduct sample analyses for the parameters in s. NR 809.11 (2) (b) under provisional certification until January 1, 1996.~~

SECTION 21. NR 809.21(13) is amended to read:

NR 809.21(13) Analyses under this section shall only be conducted by laboratories that have received certification under ch. NR 149 or approval by EPA. ~~Laboratories may conduct sample analyses for the parameters in s. NR 809.20 under provisional certification until January 1, 1996~~.

SECTION 22. NR 809.22 is repealed and recreated to read:

NR 809.22 Total trihalomethane maximum contaminant level. The maximum contaminant level of 0.10 mg/L for total trihalomethanes, the sum of the concentrations of bromodichloromethane, dibromochloromethane, tribromomethane (bromoform), and trichloromethane (chloroform), applies to subpart H community water systems which serve a population of 10,000 people or more until December 16, 2001. This level applies to community water systems that use only ground water not under the direct influence of surface water and serve a population of 10,000 people or more until December 16, 2003. After December 16, 2003, this section is no longer applicable.

Note: Compliance with the maximum contaminant level for total trihalomethanes is calculated pursuant to s. NR 809.23.

SECTION 23. NR 809.23(1) is amended to read:

NR 809.23(1) The supplier of water for a community water system which serves a population of 10,000 or more individuals and which adds a disinfectant (oxidant) to the water shall analyze for total trihalomethanes (TTHMs) in accordance with this section. ~~For systems serving 75,000 or more individuals, sampling and analyses shall begin not later than March 31, 1981. For systems serving 10,000 to 74,999 individuals, sampling and analyses shall begin not later than March 31, 1983.~~ For the purpose of this section, the minimum number of samples required to be taken by the system shall be based on the number of plants used by the system except that multiple wells drawing raw water from a single aquifer may, with department approval, be considered one plant for determining the minimum number of samples. All samples required during an established monitoring period shall be collected within a 24-hour period.

SECTION 24. NR 809.26(1)(e) is amended to read:

NR 809.26(1)(e) Suppliers of water having community water systems or non-transient, non-community water systems shall monitor for the following contaminants <u>at the discretion of the department</u>:

Chloroform[1]
Bromoform[1]
Chlorodibromomethane[1]
Bromodichloromethane[1]
Bromobenzene
Bromomethane
Chloromethane
Chloroethane
o-Chlorotoluene
p-Chlorotoluene
Dibromomethane
m-Dichlorobenzene

1,1-Dichloropropene
1,1-Dichloroethane
1,3-Dichloropropane
2,2-Dichloropropane
1,3-Dichloropropene
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
1,2,3-Trichloropropane
1,2,4-Trimethylbenzene
1,2,3-Trichlorobenzene
n-Propylbenzene
n-Butylbenzene
Napthalene
Hexachlorobutadiene
1,3,5-Trimethylbenzene
p-Isopropyltoluene
Isopropylbenzene
Tert-butylbenzene
Sec-butylbenzene
Fluorotrichloromethane
Dichlorodifluoromethane
Bromochloromethane

SECTION 25. NR 809.26(1)(i) is repealed.

SECTION 26. NR 809.26(1)(j) is renumbered to (i) and amended to read:

NR 809.26(1)(i) Suppliers of water having a community water system or a non-transient, non-community water system shall repeat the monitoring required in this subsection ~~no less frequently than every 5 years~~ as specified by the department.

SECTION 27. NR 809.26(3)(intro.), (a), and (b) are amended to read:

NR 809.26(3)(intro.) Monitoring for sulfate and the contaminants listed in par. ~~(j)~~ (e) shall be conducted as follows:

(a) Suppliers of water for community and non-transient, non-community water systems shall take 4 consecutive quarterly samples at each entry point for the organic contaminants listed in par. ~~(j)~~ (e) and report the results to the department. ~~Monitoring shall be completed by December 31, 1995.~~

(b) Suppliers of water for community or non-transient, non-community water systems shall take one sample at each entry point for sulfate and report the results to the department. ~~Monitoring shall be completed by December 31, 1995~~.

SECTION 28. NR 809.31(1)(d) 1. and 2. are amended to read:

NR 809.31(1)(d)1. A non-community water system using only ground water and serving 1,000 persons per day or fewer shall monitor each calendar quarter that the system provides water to the public, except that the department may reduce the monitoring frequency, in writing, if a sanitary survey shows that the system is free of sanitary defects. In no case may the monitoring frequency be reduced to less than once per year. ~~The department may require monitoring to begin prior to June 29, 1994, but in no case may monitoring begin later than June 29, 1994.~~

2. ~~On or after December 31, 1990, a~~ A non-community water system using only ground water and serving on average more than 1,000 persons per day for any month shall monitor at the same frequency as a like-sized community water system, as specified in par. (b) 1., except that the department may reduce the monitoring frequency, in writing, for any month the average daily population served is less than 1,000 persons per day.

SECTION 29. NR 809.31(5)(c) is amended to read:

NR 809.31(5)(c) ~~Samples~~ Beginning January 1, 2001, samples collected ~~in compliance with requirements of~~ to determine compliance with s. NR 809.30(1) shall be analyzed ~~as prescribed in s. NR 809.725 (1), Table C~~ by the enzyme substrate test method.

SECTION 30. NR 809.31(5)(d) is created to read:

NR 809.31(5)(d) The department may approve, on a case-by-case basis, other methods as prescribed in s. NR 809.725 (1), Table C for use in determining compliance with s. NR 809.30(1).

SECTION 31. NR 809.31(6)(a) is amended to read:

NR 809.31(6)(a) Public water ~~systems which do not collect 5 or more routine samples/month shall undergo an initial sanitary survey by June 29, 1994 for community water systems and June 29, 1999 for non-community water systems. Thereafter,~~ systems shall undergo ~~another~~ a sanitary survey every 5 years, except that non-community water systems using only protected and disinfected ground water, as determined on a case-by-case basis by the department, shall undergo ~~subsequent~~ a sanitary ~~surveys~~ survey at least every 10 years after the initial sanitary survey. The department will review the results of each sanitary survey to determine whether the existing monitoring frequency is adequate and what additional measures, if any, the system needs to undertake to improve drinking water quality.

SECTION 32. NR 809.40 and 809.41 are repealed.

SECTION 33. NR 809 subchs. III to V are renumbered NR 809 subchs. IV to VI.

SECTION 34. NR 809 subch. III is created to read:

Subchapter III
Maximum Contaminant Levels, Maximum Residual Disinfectant Levels, Monitoring, Analytical Requirements and Control of Disinfection Byproducts and Disinfection Residuals

NR 809.561 Maximum contaminant levels (MCLs) for disinfection byproducts, maximum residual disinfectant levels (MRDLs) and best available treatment. (1) MAXIMUM CONTAMINANT LEVELS. When the MCLs for total trihalomethanes lapse as provided in s. NR 809.22(1), the maximum contaminant levels (MCLs) for disinfection byproducts shall be:

DISINFECTION BYPRODUCT	mg/ L
Total trihalomethanes (TTHM)	0.080
Haloacetic acids (five) (HAA5)	0.060
Bromate	0.010
Chlorite	1.0

(2) MAXIMUM RESIDUAL DISINFECTANT LEVELS. The maximum residual disinfectant levels (MRDLs) for disinfection byproducts shall be:

RESIDUAL DISINFECTANT LEVELS (mg/L)	
Chlorine	4.0 (as Cl_2)
Chloramines	4.0 (as Cl_2)
Chlorine dioxide	0.8 (as ClO_2)

(3) BEST AVAILABLE TREATMENT. The department, pursuant to 42 USC 300g-1 and related regulations applicable to public water systems, identifies the following as the best available treatment technology, treatment techniques or other means available for achieving compliance with the maximum contaminant levels for disinfection byproducts identified in sub. (1):

Disinfection byproduct	Best available treatment
TTHM	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant.
HAA5	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant.
Bromate	Control of ozone treatment process to reduce production of bromate.
Chlorite	Control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels..

NR 809.562 General requirements. (1) The following requirements establish criteria under which community water systems (CWSs) and nontransient, noncommunity water systems (NTNCWSs) which addi a chemical disinfectant to the water in any part of the drinking water treatment process shall modify their practices to meet MCLs and MRDLs in s. NR 809.561(1) and (2), respectively, and shall meet the treatment technique requirements for disinfection byproduct precursors in s. NR 809.561(3). Transient noncommunity water systems (TNCWSs) that use chlorine dioxide as a disinfectant or oxidant shall modify their practices to meet the MRDL for chlorine dioxide in s. NR 809.561(2) according to the criteria established as follows.

(2) MCLs have been established for TTHM and HAA5 and treatment technique requirements for disinfection byproduct precursors to limit the levels of known and unknown disinfection byproducts which may have adverse health effects. These disinfection byproducts may include chloroform, bromodichloromethane, dibromochloromethane, bromoform, dichloroacetic acid, and trichloroacetic acid.

(3) Unless otherwise noted, all public drinking water systems shall comply with the requirements of this subchapter as follows:

(a) All systems serving 10,000 or more persons that are CWSs or NTNCWSs and that are supplied by a surface water source or by a ground water source under the direct influence of surface water shall comply with this subchapter beginning December 16, 2001.

(b) Systems serving fewer than 10,000 persons that are CWSs or NTNCWSs and that are supplied by a surface water source or by a ground water source under the direct influence of surface water and all systems using only ground water not under the direct influence of surface water shall comply with this subchapter beginning December 16, 2003.

(c) Systems serving 10,000 or more persons that are transient NCWSs and use chlorine dioxide as a disinfectant or oxidant and are supplied by a surface water source or by a ground water source under the direct influence of surface water shall comply with any requirements for chlorine dioxide and chlorite in this subchapter beginning December 16, 2001.

(d) Systems that are transient NCWS and use chlorine dioxide as a disinfectant or oxidant and that serve fewer than 10,000 persons and are supplied by a surface water source or by a groundwater

source under the direct influence of surface water or that are systems using only groundwater not under the direct influence of surface water shall comply with any requirements for chlorine dioxide and chlorite in this subchapter beginning December 16, 2003.

(e) CWS and NTNCW systems installing GAC or membrane technology to comply with this subchapter may apply to the department for an extension of up to 24 months past the dates in par. (a) but not beyond December 16, 2003. In granting the extension, the department shall set a schedule for compliance and may specify any interim measures that the system shall take. Failure to meet the schedule or interim treatment requirements constitutes a violation of a national primary drinking water regulation.

(4) Each CWS and NTNCWS regulated under s. NR 809.561 shall be operated by qualified personnel who meet the requirements specified in ch. NR 114, subch. III and are included in a department register of qualified operators.

(5) Notwithstanding the MRDLs in s. NR 809.561(2), systems may increase in the distribution system residual disinfectant levels of chlorine or chloramines, but not chlorine dioxide, to a level and for a time necessary to protect public health, to address specific microbiological contamination problems caused by circumstances such as, but not limited to, distribution line breaks, storm run-off events, source water contamination events or cross-connection events.

(6) The owner or operator of a public water system shall provide public notification in compliance with s. NR 809.81 when the MCL or MRDL or disinfectant residual is exceeded.

(7)) CWS that detect TTHM above 0.080 mg/l, but below the MCL in s. NR 809.561(1), as an annual average, monitored and calculated under the provisions of s. NR 809.565, shall provide copies of health effects language prescribed in ss. NR 809.81 and 809.835 to the users of the CWS.

NR 809.563 Analytical requirements. (1) Systems shall use only the analytical methods specified in this section, or otherwise approved by the department or EPA for monitoring under this subchapter, to demonstrate compliance with the requirements of this subchapter. The methods specified in this section are effective for use in compliance monitoring as of February 16, 1999.

(2) The analytical methods required for testing under this subchapter are contained in s. NR 809.725(1), Table I.

(3) Systems shall measure disinfection byproducts by the methods, as modified by the footnotes, prescribed in Table 1. Samples shall be collected using the containers, preservative and holding times specified in s. NR 809.725 (1), Table G.

Table 1-Approved Methods for Disinfectant Byproduct Compliance Monitoring

Methodology[2]	EPA Meth.	Standard Method	Byproduct measured[1]			
			TTHM	HAA5	Chlorite[4]	Bromate

P&T/GC/EICD& PID	502.2		X			
P&T/GC/MS	524.25		X			
LLE/GC/ECD	551. 1		X			
LLE/GC/ECD		6251 B		X		
SPE/GC/ECD	552.2			X		
LLE/GC/ECD	552.2			X		
Amperometric Titration[3]		4500-ClO_2E			X	
IC	300.0				X	
IC	300.1				X	X

\1\ X indicates method is approved for measuring specified disinfection byproduct.
\2\ P&T = purge and trap; GC = gas chromatography; ElCD = electrolytic conductivity detector; PID = photoionization detector; MS = mass spectrometer;
LLE = liquid/liquid extraction; ECD = electron capture detector; SPE = solid phase extractor; IC = ion chromatography.
\3\ If TTHMs are the only analytes being measured in the sample, then a PID is not required.
\4\ Amperometric titration may be used for routine daily monitoring of chlorite at the entrance to the distribution system, as prescribed in .s. NR 809.565(4)(a)1. Ion chromatography shall be used for routine monthly monitoring of chlorite and additional monitoring of chlorite in the distribution system, as prescribed in s. NR 809.565(4)(a)2. and 3.

(4) Laboratories that are certified by the department or EPA shall conduct the analysis under this section for disinfection byproducts.

(a) To receive certification to conduct analyses for the contaminants in this subchapter, a laboratory shall carry out annual analyses of performance evaluation samples approved by the department or EPA.

(b) When analyzing performance evaluation samples, the laboratory shall achieve quantitative results within the acceptance limit on a minimum of 80% of the analytes included in each PE sample.

(c) The acceptance limit shall be the 95% confidence interval calculated around the mean of the PE study data between a maximum and minimum acceptance limit of +/-50% and +/-15% of the study mean.

(5) A person approved by the department or EPA shall measure residual disinfectant concentration.

(6) Systems shall measure residual disinfectant concentrations for free chlorine, combined chlorine (chloramines), and chlorine dioxide by the methods listed in Table 2. Systems may also measure residual disinfectant concentrations for chlorine, chloramines and chlorine dioxide by using *N,N*-diethly-p-phenylenediamine (DPD) colorimetric test kits.

Table 2- Standard Methods for measuring residual disinfectant concentrations.

Methodology	Standard Method	ASTM method	Residual Measured[1]			
			Free chlorine	Combined chlorine	Total chlorine	Chlorine dioxide

Amperometric Titration	4500-CL D	D 1253-86	X	X	X	
Low Level Amperometric Titration	4500-CL E				X	
DPD Ferrous Titrimetric	4500-CL F		X	X	X	
DPD Colorometric	4500-CL G		X	X	X	
Syringaldazin e (FACTS)	4500-CL H		X			
Iodometric Electrode	4500-CL I				X	
DPD	4500-ClO_2 D					X
Amperometric Method II	4500-ClO_2 E					X

\1\ X indicates method is approved for measuring specified disinfectant residual.

(7) Systems required to analyze for additional analytical methods parameters not included in subs. (3) and (6) shall have these parameters analyzed by a person approved by the department or EPA using the following methods:

(a) *Alkalinity.* For measuring alkalinity use the methods allowed in s. NR 809.725 Table E.

(b) *Bromide.* For measuring bromide use EPA Method 300.0 or EPA Method 300.1.

(c) *Total Organic Carbon (TOC).* For measuring total organic carbon, use Standard Method 5310 B (High-Temperature Combustion Method) or Standard Method 5310 C (Persulfate-Ultraviolet or Heated-Persulfate Oxidation Method) or Standard Method 5310 D (Wet-Oxidation Method).

1. TOC samples may not be filtered prior to analysis.

2. TOC samples shall either be analyzed or shall be acidified to achieve pH less than 2.0 by minimal addition of phosphoric or sulfuric acid as soon as practical after sampling, not to exceed 24 hours.

3. Acidified TOC samples shall be analyzed within 28 days.

(d) *Specific ultraviolet absorbance (SUVA).* SUVA is equal to the UV absorption at 254nm (UV_{254}) measured in m^{-1} divided by the dissolved organic carbon (DOC) concentration measured as mg/L.

1. In order to determine SUVA, it is necessary to separately measure UV_{254} and DOC.

2. When determining SUVA, systems shall use the methods stipulated in par. (e) to measure DOC and the method stipulated in par. (f) to measure UV_{254} SUVA shall be determined on water prior to the addition of disinfectants or oxidants, or both, by the system.

3. DOC and UV_{254} samples used to determine a SUVA value shall be taken at the same time and at the same location.

(e) *Dissolved organic carbon (DOC).* For measuring dissolved organic carbon, use Standard Method 5310 B (High-Temperature Combustion Method) or Standard Method 5310 C (Persulfate-

Ultraviolet or Heated-Persulfate Oxidation Method) or Standard Method 5310 D (Wet-Oxidation Method). Prior to analysis, DOC samples shall be filtered through a 0.45 μ.m pore-diameter filter. Water passed through the filter prior to filtration of the sample shall serve as the filtered blank. This filtered blank shall be analyzed using procedures identical to those used for analysis of the samples and shall meet the following criteria: DOC < 0.5 mg/L. DOC samples shall be filtered through the 0.45 μ.m pore-diameter filter prior to acidification. DOC samples shall either be analyzed or shall be acidified to achieve pH less than 2.0 by minimal addition of phosphoric or sulfuric acid as soon as practical after sampling, not to exceed 48 hours. Acidified DOC samples shall be analyzed within 28 days.

(f) *Ultraviolet absorption at 254 nm (UV_{254}).* For measuring ultaviolet absorbtion *at 254 nm,* use Method 5910 B (Ultraviolet Absorption Method). UV absorption shall be measured at 253.7 nm (may be rounded off to 254 nm). Prior to analysis, UV_{254} samples shall be filtered through a 0.45 μm pore-diameter filter. The pH of UV_{254} samples may not be adjusted. Samples shall be analyzed as soon as practical after sampling, not to exceed 48 hours.

(g) *pH.* For measuring pH, use any method allowed in s. NR 809.725 Table E.

NR 809.565 Monitoring requirements. (1) General requirements under this subchapter for analytical requirements, determining maximum contaminant levels, conducting monitoring and control of disinfection byproducts are as follows:

(a) Systems shall take all samples during normal operating conditions.

(b) Systems may consider multiple wells drawing water from a single aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required, on a case-by-case basis with department approval.

(c) Failure to monitor in accordance with the monitoring plan required under sub. (7) is a monitoring violation.

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

(e) Systems may use only data collected under the provisions of this subchapter or the information collection rule (ICR) or s. NR 809.775 to qualify for reduced monitoring.

(2) Systems shall monitor at the following frequency and locations for TTHMs and HAA5 disinfection byproducts:

(a) Systems serving at least 10,000 persons which are supplied by a surface water source or by a ground water source under the direct influence of surface water shall collect and have analyzed 4 water samples per quarter per treatment plant.

1. At least 25% of all samples collected each quarter at each treatment plant shall be at locations representing the maximum residence time in the system.

2. The remaining samples shall be taken in the distribution system at locations representing average residence time in the system and representative of the entire distribution system, taking into account the number of people served, different sources of water and different treatment methods.

(b) Systems serving from 500 to 9,999 persons which are supplied by a surface water source or by a ground water source under the direct influence of surface water shall collect and have analyzed one water sample per quarter per treatment plant. The samples shall be collected at locations representing the maximum residence time in the system.

(c) System serving fewer than 500 people which are supplied by a surface water source or by a ground water source under the direct influence of surface water shall collect one sample per treatment plant annually. The samples shall be collected during the month with the warmest water temperature at locations representing the maximum residence time in the system.

(d) Systems using chemical disinfection, using only groundwater not under the direct influence of surface water, and serving at least 10,000 people shall collect one sample per treatment plant per quarter. The sample or samples shall be collected at the location representing the maximum residence time, in the system.

(e) Systems using chemical disinfection, using only groundwater not under the influence of surface water, and serving fewer than 10,000 people shall collect one sample per treatment plant per plant annually. The samples shall be collected during the month with the warmest water temperature, at locations representing the maximum residence time, in the system.

(2m) If a sample or the average of samples, if more than one sample is taken, exceeds the MCL for TTHMs or HAA5 disinfection byproducts, the system shall collect quarterly samples until the system meets the requirements of reduced monitoring in sub. (3).

(3) Systems may reduce monitoring for TTHMs and HAA5s as follows, except as otherwise provided:

(a) Surface water systems or ground water systems under the direct influence of surface water with an annual average of TTHM of ≤0.040 mg/L and HAA5 ≤0.030 mg/L with an annual average TOC concentration of ≤ 4.0 mg/L, before any treatment may reduce monitoring to the following:

1. A system serving at least 10,000 people may reduce monitoring to one sample per quarter per treatment plant so long as the sample is taken at a location representing maximum residence time in the system.

2. A system serving from 500 to 9,999 people may reduce monitoring to one sample per year per treatment plant so long as the sample is taken at a location representing maximum residence time in the system during the month of warmest water temperature..

3. A system serving less than 500 people may not reduce monitoring to less than one sample during the month of warmest water temperature per treatment plant per year.

(b) Systems using only groundwater not under the direct influence of surface water using chemical disinfection with an annual average of TTHM of ≤0.040 mg/L and HAA5 ≤0.030 mg/L may reduce sampling to the following:

1. Systems serving at least 10,000 people may reduce monitoring to one sample per year per treatment plant during the month of warmest water temperature at a location representing maximum residence time in the system.

2. Systems serving fewer than 10,000 people may reduce monitoring to one sample per treatment plant per 3 year monitoring cycle during the month of warmest water temperature at a location representing

maximum residence time in the system. The reduced monitoring will begin on January 1 following the quarter in which the system first qualifies for reduced monitoring.

(c) Systems on a reduced monitoring schedule may remain on that reduced schedule as long as the average of all samples taken in the year, for systems which shall monitor quarterly, or the result of the sample, for systems which shall monitor no more frequently than annually, is no more than 0.060 mg/L and 0.045 mg/L for TTHMs and HAA5, respectively. Systems that do not meet these levels shall resume monitoring at the frequency identified in sub. (2) in the quarter immediately following the quarter in which the system exceeds 0.060 mg/L and 0.045 mg/L for TTHMs and HAA5, respectively.

(d) The department may return a system to routine monitoring at the department's discretion.

(4) Systems shall monitor at the following frequency and locations for chlorite and bromate disinfection byproducts:

(a) *Chlorite.* Community and nontransient noncommunity water systems using chlorine dioxide, for disinfection or oxidation, shall conduct monitoring for chlorite as follows:

1. 'Routine daily monitoring.' Systems shall take daily samples at the entrance to the distribution system. For any daily sample that exceeds the chlorite MCL, the system shall take additional samples in the distribution system the following day at the locations required by subd. 3. in addition to the sample required at the entrance to the distribution system.

2. 'Routine monthly monitoring.' Systems shall take a 3-sample set each month in the distribution system. The system shall take one sample at each of the following locations: near the first customer, at a location representative of average residence time, and at a location reflecting maximum residence time in the distribution system. Any additional routine sampling shall be conducted in the same manner, as 3-sample sets, at the specified locations. The system may use the results of additional monitoring conducted under subd. 3. to meet the requirement for monitoring in this subdivision.

3. 'Additional monitoring.' On each day following a routine sample monitoring result that exceeds the chlorite MCL at the entrance to the distribution system, the system shall take 3 chlorite distribution system samples at the following locations: as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible, reflecting maximum residence time in the distribution system.

4. 'Reduced monitoring.' Chlorite monitoring at the entrance to the distribution system required by subd. 1. may not be reduced. Chlorite monitoring in the distribution system required by subd. 2 may be reduced to one 3-sample set per quarter after one year of monitoring where no individual chlorite sample taken in the distribution system under subd. 2. has exceeded the chlorite MCL and the system has not been required to conduct monitoring under subd. 3. The system may remain on the reduced monitoring schedule until either any of the 3 individual chlorite samples taken quarterly in the distribution system under subd. 2. exceeds the chlorite MCL or the system is required to conduct monitoring under subd. 3., at which time the system shall revert to routine monitoring.

(b) *Bromate.* 1. 'Routine monitoring.' Community and nontransient noncommunity systems using ozone, for disinfection or oxidation, shall take one sample per month for each treatment plant in the system using ozone. Systems shall take samples monthly at the entrance to the distribution system while the ozonation system is operating under normal conditions.

2. 'Reduced monitoring.' Systems required to analyze for bromate may reduce monitoring from monthly to once per quarter, if the system demonstrates that the average source water bromide concentration is less than 0.05 mg/L based upon representative monthly bromide measurements for one year. The system may remain on reduced bromate monitoring until the running annual average source

water bromide concentration, computed quarterly, is 0.05 mg/L or greater based upon representative monthly measurements. If the running annual average source water bromide concentration is equal to or greater than 0.05 mg/L, the system shall resume routine monitoring required by subd. 1.

(5) Systems shall monitor at the following frequency and locations for disinfectant residuals:

(a) *Chlorine and chloramines.* Systems shall perform routine monitoring by measuring the residual disinfectant level at the same points in the distribution system and at the same time as total coliforms are sampled, as specified in s. NR 809.31. Surface water systems may use the results of residual disinfectant concentration sampling conducted under s. NR 809.78(1)(f) for unfiltered systems or s. NR 809.78(2)(c) for systems that filter, in lieu of taking separate samples. Monitoring may not be reduced.

(b) *Chlorine dioxide.* 1. 'Routine monitoring.' Community, nontransient noncommunity, and transient noncommunity water systems that use chlorine dioxide for disinfection or oxidation shall take daily samples at the entrance to the distribution system. For any daily sample that exceeds the MRDL, the system shall take samples in the distribution system the following day at the locations required by subd. 2., in addition to the sample required at the entrance to the distribution system.

2. 'Additional monitoring.' On each day following a routine sample monitoring result that exceeds the MRDL, the system shall take 3 chlorine dioxide distribution system samples. If chlorine dioxide or chloramines are used to maintain a disinfectant residual in the distribution system, or if chlorine is used to maintain a disinfectant residual in the distribution system and there are no disinfection addition points after the entrance to the distribution system, i.e., no booster chlorination, the system shall take 3 samples as close to the first customer as possible, at intervals of at least 6 hours. If chlorine is used to maintain a disinfectant residual in the distribution system and there are one or more disinfection addition points after the entrance to the distribution system, i.e., booster chlorination, the system shall take one sample at each of the following locations: as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible, reflecting maximum residence time in the distribution system.

3. 'Reduced monitoring.' Chlorine dioxide monitoring may not be reduced.

(6) Systems shall monitor at the following frequency and locations for disinfection byproduct precursors (DBPP):

(a) *Routine monitoring.* 1. Systems which use conventional filtration treatment and are supplied by a surface water source or by a ground water source under the direct influence of surface water shall monitor each treatment plant for TOC no later than the point of combined filter effluent turbidity monitoring and representative of the treated water.

2. All systems required to monitor under subd. 1. shall also monitor for TOC in the source water prior to any treatment at the same time as monitoring for TOC in the treated water

Note: These samples, source water and treated water, are referred to as paired samples.

3. At the same time as the source water sample is taken, all systems shall monitor for alkalinity in the source water prior to any treatment. Systems shall take one paired sample and one source water alkalinity sample per month per plant at a time representative of normal operating conditions and influent water quality.

(b) *Reduced monitoring.* Systems which use conventional filtration treatment and are supplied by a surface water source or by a ground water source under the direct influence of surface water and which have an average treated water TOC of less than 2.0 mg/L for 2 consecutive years, or less than1.0 mg/L for one year, may reduce monitoring for both TOC and alkalinity to one paired sample and one source water

alkalinity sample per plant per quarter. The system shall revert to routine monitoring in the month following the quarter when the annual average treated water TOC ≥ 2.0 mg/L.

(7) Systems required to analyze for bromate may reduce bromate monitoring from monthly to once per quarter, if the system demonstrates that the average source water bromide concentration is less than 0.05 mg/L based upon representative monthly measurements for one year. The system shall continue bromide monitoring to remain on reduced bromate monitoring.

(8) Each system required to monitor under this subchapter shall develop and implement a monitoring plan, and shall maintain the plan and make it available for inspection by the department and the general public no later than 30 days following the applicable compliance dates in s. NR 809.562(3).

(a) Systems which are supplied by a surface water source or by a ground water source under the direct influence of surface water and which serve more than 3300 people shall submit a copy of the monitoring plan to the department no later than the date of the first report required under s. NR 809.567. The department may also require any other public water system to submit a monitoring plan. After review, the department may require changes in any plan elements.

(b) The plan shall include at least the following elements:

1. Specific locations and schedules for collecting samples for any parameters included in this subchapter.

2. How the system will calculate compliance with MCLs, MRDLs and treatment techniques.

3. If approved for monitoring as a consecutive system, or if providing water to a consecutive system, under s. NR 809.73, the sampling plan shall reflect the entire distribution system.

NR 809.566 Compliance requirements. (1) GENERAL REQUIREMENTS. The general requirements for compliance with this subchapter are as follows:

(a) Where compliance is based on a running annual average of monthly or quarterly samples or an annual averages and the system fails to monitor for TTHM, HAA5 or bromate, this failure to monitor shall be treated as a monitoring violation for the entire period covered by the annual average.

(b) Where compliance is based on a running annual average of monthly or quarterly samples or averages and the system's failure to monitor makes it impossible to determine compliance with MRDLs for chlorine and chloramines, failure to monitor shall be treated as a monitoring violation for the entire period covered by the annual average.

(c) All samples taken and analyzed under the provisions of this subchapter shall be included in determining compliance, even if that number is greater than the minimum required.

(d) If, during the first year of monitoring under s. NR 809.565, any individual quarter's average will cause the running annual average of that system to exceed the MCL, the system is out of compliance at the end of that quarter.

(2) DISINFECTION BYPRODUCTS. (a) *TTHMS and HAA5.* Compliance for TTHMs and HAA5s shall be based one of the following:

1. For systems monitoring quarterly, compliance with MCLs in s. NR 809.561(1) shall be based on a running annual arithmetic average, computed quarterly, of quarterly arithmetic averages of all samples collected by the system as prescribed by s. NR 809.565(2) to (3). If the running annual arithmetic average

of quarterly averages covering any consecutive 4-quarter period exceeds the MCL, the system is in violation of the MCL and shall notify the public pursuant to s. NR 809.81, in addition to reporting to the department pursuant to s. NR 809.567. If a public water system fails to complete 4 consecutive quarters' monitoring, compliance with the MCL for the last 4-quarter compliance period shall be based on an average of the available data.

2. For systems monitoring less frequently than quarterly, compliance with MCLs in s. NR 809.561(1) shall be based on an average of samples taken that year under the provisions of s. NR 809.565(2) to (3). If the average of these samples exceeds the MCL; the system shall increase monitoring to once per quarter per treatment plant. Systems on a reduced monitoring schedule whose annual average exceeds the MCL shall revert to routine monitoring immediately. These systems may not be considered in violation of the MCL until they have completed one year of routine monitoring and that year's annual average exceeds the MCL.

(b) *Bromate.* Compliance for bromate shall be based on a running annual arithmetic average, computed quarterly, of monthly samples or, for months in which the system takes more than one sample, the average of all samples taken during the month, collected by the system as prescribed by s. NR 809.565(4)(b). If the average of samples covering any consecutive 4-quarter period exceeds the MCL, the system is in violation of the MCL and shall notify the public pursuant to s. NR 809.81, in addition to reporting to the department pursuant to s. NR 809.567. If a public water system fails to complete 12 consecutive months monitoring, compliance with the MCL for the last 4-quarter compliance period shall be based on an average of the available data.

(c) *Chlorite.* Compliance for chlorite shall be based on an arithmetic average of each 3 sample set taken in the distribution system as prescribed by ss. NR 809.565(4)(a)2. and 3. If the arithmetic average of any 3 sample set exceeds the MCL, the system is in violation of the MCL and shall notify the public pursuant to s. NR 809.81, in addition to reporting to the department pursuant to s. NR 809.567.

(3) DISINFECTANT RESIDUALS. (a) *Chlorine and chloramines.* 1. Compliance shall be based on a running annual arithmetic average, computed quarterly, of monthly averages of all samples collected by the system under s. NR 809.565(5)(a). If the average of quarterly averages covering any consecutive 4-quarter period exceeds the MRDL, the system is in violation of the MRDL and shall notify the public pursuant to s. NR 809.81, in addition to reporting to the department pursuant to s. NR 809.567.

2. In cases where systems switch between the use of chlorine and chloramines for residual disinfection during the year, compliance shall be determined by including together all monitoring results of both chlorine and chloramines in calculating compliance. Reports submitted pursuant to s. NR 809.567 shall clearly indicate which residual disinfectant was analyzed for each sample.

(b) *Chlorine dioxide.* Compliance shall be based on consecutive daily samples collected by the system under s. NR 809.565(5)(b).

1. A system has an acute violation of the MRDL for chlorine dioxide when any daily sample taken at the entrance to the distribution system exceeds the MRDL and on the following day one or more of the 3 samples taken in the distribution system exceeds the MRDL. If both exceedances occur, the system is in violation of the MRDL and shall take immediate corrective.action to lower the level of chlorine dioxide below the MRDL and shall notify the public pursuant to the procedures for acute health risks in s. NR 809.81(1)(a)3. Failure to take samples in the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system shall also be considered an MRDL violation and the system shall notify the public of the violation in accordance with the provisions for acute violations under s. NR 809.81(1)(a)3.

2. A system has a nonacute violations for chlorine dioxide when any 2 consecutive daily samples taken at the entrance to the distribution system exceed the MRDL and all distribution system samples taken are

below the MRDL. A system with a nonacute violation shall take corrective action to lower the level of chlorine dioxide below the MRDL at the point of sampling and shall notify the public pursuant to the procedures for nonacute health risks in s. NR 809.81(1)(a)1. and 2. Failure to monitor at the entrance to the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system is also an MRDL violation and the system shall notify the public of the violation in accordance with the provisions for nonacute violations under s. NR 809.81(1)(a)1. and 2.

(4) DISINFECTION BYPRODUCT PRECURSORS (DBPP). (a) Compliance with disinfection byproduct precursors shall be determined as specified in s. NR 809.569(1). Systems may begin monitoring to determine whether Step 1 TOC removals can be met 12 months prior to the compliance date for the system. This monitoring is not required and failure to monitor during this period is not a violation. However, any system that does not monitor during this period, and then determines in the first 12 months after the compliance date that it is not able to meet the Step 1 requirements in s. NR 809.569(1)(b) and shall therefore apply for alternate minimum TOC removal (Step 2) requirements, is not eligible for retroactive approval of alternate minimum TOC removal (Step 2) requirements as allowed pursuant to s. NR 809.569(1)(c) and is in violation. Systems may apply for alternate minimum TOC removal (Step 2) requirements any time after the compliance date.

NR 809.567 Reporting and recordkeeping requirements. (1) REPORTING REQUIREMENTS. Systems required to sample quarterly or more frequently shall report to the department within 10 days after the end of each quarter in which samples were collected, not withstanding the provisions of s. NR 809.563. Systems required to sample less frequently than quarterly shall report to the department within 10 days after the end of each monitoring period in which samples were collected.

(2) DISINFECTION BYPRODUCTS. Systems monitoring for disinfection byproducts shall report the information specified in the following:

(a) Systems monitoring TTHM and HAA5 under the requirements of s. NR 809.565(2) on a quarterly or more frequent basis shall report all of the following:

1. The number of samples taken during the last quarter.

2. The location, date and result of each sample taken during the last quarter.

3. The arithmetic average of all samples taken in the last quarter.

4. The annual arithmetic average of the quarterly arithmetic averages for the last 4 quarters.

5. Whether the MCL was exceeded.

(b) Systems monitoring TTHMs and HAA5 under the requirements of s. NR 809.565(2) less frequently than quarterly but at least annually shall report all of the following:

1. The number of samples taken during the last year.

2. The location, date and result of each sample taken during the last quarter.

3. The arithmetic average of all samples taken over the last year.

4. Whether the MCL was exceeded.

(c) Systems monitoring TTHMs and HAA5 under the requirements of s. NR 809.565(2) less frequently than annually shall report all of the following:

1. The location, date and result of the last sample taken.

2. Whether the MCL was exceeded.

(d) Systems monitoring chlorite under the requirements of s. NR 809.565(4)(a) shall report all of the following:

1. The number of samples taken each month for the last 3 months.

2. The location, date and result of each sample taken during the last quarter.

3. For each month in the reporting period, the arithmetic average of all samples taken in the month.

4. Whether the MCL was exceeded, and in which month it was exceeded.

(e) Systems monitoring bromate under the requirements of s. NR 809.565(4)(b) shall report all of the following:

1. The number of samples taken during the last quarter.

2. The location, date and result of each sample taken during the last quarter.

3. The arithmetic average of the monthly arithmetic averages of all samples taken in the last year.

4. Whether the MCL was exceeded.

(3) DISINFECTANTS. Systems monitoring for disinfectants shall report the information specified in the following:

(a) Systems monitoring chlorine or chloramines under the requirements of s. NR 809.565(5)(a) shall report all of the following:

1. The number of samples taken during each month of the last quarter.

2. The monthly arithmetic average of all samples taken in each month for the last 12 months.

3. The arithmetic average of all monthly averages for the last 12 months.

4. Whether the MRDL was exceeded.

(b) For systems monitoring chlorine dioxide under the requirements of s. NR 809.565(5)(b) shall report the following information:

1. The dates, results and locations of samples taken during the last quarter.

2. Whether the MRDL was exceeded.

3. Whether the MRDL was exceeded in any 2 consecutive daily samples and whether the resulting violation was acute or nonacute.

(4) DISINFECTION BYPRODUCT PRECURSORS, ENHANCED COAGULATION OR ENHANCED SOFTENING SYSTEMS. Systems containing disinfection byproduct precursors or using enhanced coagulation or enhanced softening, shall report the information specified in the following:

(a) For systems monitoring monthly or quarterly for TOC under the requirements of s. NR 809.565(6) and required to meet the enhanced coagulation or enhanced softening requirements in s. NR 809.569(1)(b) or (c) shall report all of the following:

1. The number of paired samples of source water and treated water, both prior to continuous disinfection, taken during the last quarter.

2. The location, date and result of each paired sample and associated alkalinity taken during the last quarter.

3. For each month in the reporting period that paired samples were taken, the arithmetic average of the percent reduction of TOC for each paired sample and the required TOC percent removal.

4. Calculations for determining compliance with the TOC percent removal requirements, as provided in s. NR 809.569(3).

5. Whether the system is in compliance with the enhanced coagulation or enhanced softening percent removal requirements in s. NR 809.569(1) for the last 4 quarters.

(b) For systems monitoring monthly or quarterly for TOC under the requirements of s. NR 809.565(6) and meeting one or more of the alternative compliance criteria in s. NR 809.569(2)(b) or (c) shall report all of the following:

1. The alternative compliance criterion that the system is using.

2. The number of paired samples taken during the last quarter.

3. The location, date and result of each paired sample and associated alkalinity taken during the last quarter.

4. The running annual arithmetic average based on monthly averages or quarterly samples of source water TOC for systems meeting a criterion in s. NR 809.569(2)(b)1and 3 or of treated water TOC for systems meeting the criterion in s. NR 809.569(2)(b)2.

5. The running annual arithmetic average based on monthly averages or quarterly samples of source water SUVA for systems meeting the criterion in s. NR 809.569(2)(b)6 or of treated water SUVA for systems meeting the criterion in s. NR 809.569(2)(b)7.

6. The running annual average of source water alkalinity for systems meeting the criterion in NR 809.569(2)(b)3 and 4 and of treated water alkalinity for systems meeting the criterion in s. NR 809.569(2)(c)1.

7. The running annual average for both TTHM and HAA5 for systems meeting the criterion in s. NR 809.569(2)(b)3, 4, and 5.

8. The running annual average of the amount of magnesium hardness removal (as CaCO mg/L) for systems meeting the criterion in s. NR 809.567(2)(c)2.

9. Whether the system is in compliance with the particular alternative compliance criterion in s. NR 809.569(2)(b) and (c).

NR 809.569 Treatment technique for control of disinfection byproduct (DBP) precursors. For systems using conventional treatment which are supplied by a surface water source or by a ground

water source under the direct influence of surface water, the department identifies enhanced coagulation or enhanced softening as treatment techniques to control the level of disinfection byproduct precursors in drinking water and distribution systems. Treatment technique requirements for DBP precursors shall comply with the following:

(1) ENHANCED COAGULATION AND ENHANCED SOFTENING PERFORMANCE REQUIREMENTS. (a) Systems using enhanced coagulation or enhanced softening shall achieve the percent reduction of TOC specified in par. (b) between the source water and the combined filter effluent, unless the department approves a system's request for alternate minimum TOC removal (Step 2) requirements under par. (c).

(b) Required Step 1 TOC reductions, indicated in the following table, are based upon specified source water parameters measured in accordance with s. NR 809.563(7). Systems practicing softening are required to meet the Step 1 TOC reductions in the far-right column, source water alkalinity >120 mg/L, for the specified source water TOC:

Step 1 Required Removal of TOC by Enhanced Coagulation and Enhanced Softening for Surface Water Systems Using Conventional Treatment [1,2]

Source water TOC, mg/l	Source water alkalinity, mg/L as CaO_3		
	0 - 60 %	≤ 60 - 120 %	> 120[3] %
>2.0-4.0	35.0	25.0	15.0
>4.0-8.0	45.0	35.0	25.0
>8.0	50.0	40.0	30.0

\1\ Systems meeting at least one of the conditions in sub. (2)(b)1. to 7 are not required to operate with enhanced coagulation.

\2\ Softening systems meeting one of the alternative compliance criteria in sub. (2)(c) are not required to operate with enhanced softening.

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

(c) Systems using conventional treatment which are supplied by a surface water source or by a ground water source under the direct influence of surface water which cannot achieve the Step 1 TOC removals required by par. (b) due to water quality parameters or operational constraints shall apply to the department, within 3 months of failure to achieve the TOC removals required by par. (b), for approval of alternative minimum TOC (Step 2) removal requirements submitted by the system. If the department approves the alternative minimum TOC removal (Step 2) requirements, the department may make those requirements retroactive for the purposes of determining compliance. Until the department approves the alternate minimum TOC removal (Step 2) requirements, the system shall meet the Step 1 TOC removals contained in par. (b).

(d) Applications made to the department by enhanced coagulation systems for approval of alternative minimum TOC removal (Step 2) requirements under par. (c) shall include, as a minimum, results of bench- or pilot-scale testing conducted under subd. 1 and used to determine the alternate enhanced coagulation level.

1. Alternate enhanced coagulation level shall be determined to be coagulation at a coagulant dose and pH as determined by the method described in this subdivision and subds. 2. to 5. such that an incremental addition of 10 mg/L of alum (as aluminum), or equivalent amount of ferric salt, results in a TOC removal of ≤ 0.3 mg/ L. The percent removal of TOC at this point on the "TOC removal versus coagulant dose" curve shall be determined to be the minimum TOC removal required for the system. Once approved by the department, this minimum requirement supersedes the minimum TOC removal required by the table in par. (b). This requirement will be effective until the department approves a new value based

on the results of a new bench- and pilot-scale test. Failure to achieve department-set alternative minimum TOC removal levels is a violation of this chapter and the federal national primary drinking water regulations.

2. Bench- or pilot-scale testing of enhanced coagulation shall be conducted by using representative water samples and adding 10 mg/L increments of alum (as aluminum), or equivalent amounts of ferric salt, until the pH is reduced to a level less than or equal to the enhanced coagulation Step 2 target pH shown in the following table:

Enhanced Coagulation Step 2 Target pH	
Alkalinity (mg/L as CaCO)	Target pH
0-60	5.5
>60-120	6.3
>120-240	7.0
>240	7.5

3. For waters with alkalinity of less than 60 mg/L for which addition of small amounts of alum or equivalent addition of iron coagulant drives the pH below 5.5 before significant TOC removal occurs, the system shall add necessary chemicals to maintain the pH between 5.3 and 5.7 in samples until the TOC removal of 0.3 mg/L per 10 mg/L alum added (as aluminum), or equivalent addition of iron coagulant, is reached.

4. The system may operate at any coagulant dose or pH necessary, consistent with other NPDWRs, to achieve the minimum TOC percent removal approved under par. (c).

5. If the TOC removal is consistently less than 0.3 mg/L of TOC per 10 mg/L of incremental alum dose (as aluminum) at all dosages of alum, or equivalent addition of iron coagulant, the water is deemed to contain TOC not amenable to enhanced coagulation. The system may then apply to the department for a waiver of enhanced coagulation requirements.

(2) CONVENTIONAL FILTRATION TREATMENT. (a) Systems using conventional filtration treatment which are supplied by a surface water source or by a ground water source under the direct influence of surface water shall operate with enhanced coagulation or enhanced softening to achieve the TOC percent removal levels specified in sub. (1) unless the system meets at least one of the alternative compliance criteria listed in par. (b) or (c).

(b) Systems using conventional filtration treatment which are supplied by a surface water source or by a ground water source under the direct influence of surface water may use the alternative compliance criteria in subds. 1. to 6. to comply with this section in lieu of complying with sub. (1). Systems shall still comply with monitoring requirements in s. NR 809.565(6).

1. The system's source water TOC level, measured according to s. NR 809.563(7)(c), is less than 2.0 mg/L, calculated quarterly as a running annual average.

2. The system's treated water TOC level, measured according to s. NR 809.563(7)(c), is less than 2.0 mg/L, calculated quarterly as a running annual average.

3. The system's source water TOC level, measured as required by s. NR 809.563(7)(c), is less than 4.0 mg/L, calculated quarterly as a running annual average; the source water alkalinity, measured according to s. NR 809.563(7)(a), is greater than 60 mg/L (as CaCO), calculated quarterly as a running annual average; and either the TTHM and HAA5 running annual averages are no greater than 0.040 mg/L and 0.030 mg/L, respectively; or prior to the effective date for compliance in s. NR 809.562(3), the system has made a clear and irrevocable financial commitment not later than the effective date for compliance in s.

NR 809.562(3) to use of technologies that will limit the levels of TTHMs and HAA5 to no more than 0.040 mg/L and 0.030 mg/L, respectively.

4. Systems shall submit evidence of a clear and irrevocable financial commitment, in addition to a schedule containing milestones and periodic progress reports for installation and operation of appropriate technologies, to the department for approval not later than the effective date for compliance in s. NR 809.562(3).

a. These technologies shall be installed and operating not later than June 16, 2005.

b. Failure to install and operate these technologies by the date in the approved schedule will constitute a violation of this chapter and the national primary drinking water regulations.

5. The TTHM and HAA5 running annual averages are no greater than 0.040 mg/L and 0.030 mg/L, respectively, and the system uses only chlorine for primary disinfection and maintenance of a residual in the distribution system.

6. The system's source water SUVA, prior to any treatment and measured monthly according to s. NR 809.563(7)(d), is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average.

7. The system's finished water SUVA, measured monthly according to s. NR 809.563(7)(d), is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average.

(c) Systems practicing enhanced softening that cannot achieve the TOC removals required by sub. (1)(b) may use the alternative compliance criteria in subds. 1. and 2. in lieu of complying with Sub. (1)(b). Systems shall still comply with monitoring requirements in s. NR 809.565(6).

1. Softening that results in lowering the treated water alkalinity to less than 60 mg/L (as CaCO), measured monthly according to s. NR 809.563(7)(a) and calculated quarterly as a running annual average.

2. Softening that results in removing at least 10 mg/L of magnesium hardness (as CaCO), measured monthly and calculated quarterly as an annual running average.

(3) COMPLIANCE CALCULATIONS. (a)Systems which are supplied by a surface water source or by a ground water source under the direct influence of surface water, other than those identified in sub. (2)(b) or (c) shall comply with requirements contained in sub. (1)(b). Systems shall calculate compliance quarterly, beginning after the system has collected 12 months of data, by determining an annual average using the following method:

1. Determine actual monthly TOC percent removal, by using the following equation: (treated water TOC/source water TOC)) x 100 = percent TOC removal.

2. Determine the required monthly TOC percent removal from either the table in sub. (1)(b) or from sub. (1)(c).

3. Divide the value in subd. 1. by the value in subd. 2.

4. Add together the results of subd. 3. for the last 12 months and divide by 12.

5. If the value calculated in subd. 4. is less than 1.00, the system is not in compliance with the TOC percent removal requirements.

(b) Systems may use the provisions in subds. 1. to 5. in lieu of the calculations in par. (a)1. to 5. to determine compliance with TOC percent removal requirements.

1. In any month that the system's treated or source water TOC level, measured according to s. NR 809.563(7)(c), is less than 2.0 mg/L, the system may assign a monthly value of 1.0, in lieu of the value calculated in par. (a)3. when calculating compliance under the provisions of par. (a).

2. In any month that a system practicing softening removes at least 10 mg/L of magnesium hardness (as $CaCO_3$), the system may assign a monthly value of 1.0 in lieu of the value calculated in par. (a)3. when calculating compliance under the provisions of par. (a).

3. In any month that the system's source water SUVA, prior to any treatment and measured according to s. NR 809.563(7)(d), is ≤2.0 L/mg-m, the system may assign a monthly value of 1.0, in lieu of the value calculated in par. (a)3. when calculating compliance under the provisions of par. (a).

4. In any month that the system's finished water SUVA, measured according to s. NR 809.563(7)(d), is ≤ 2.0 L/mg-m, the system may assign a monthly value of 1.0 in lieu of the value calculated in par. (a)3. when calculating compliance under the provisions of par. (a).

5. In any month that a system practicing enhanced softening lowers alkalinity below 60 mg/L as $CaCO_3$, the system may assign a monthly value of 1.0, in lieu of the value calculated in par. (a)3. when calculating compliance under the provisions of par. (a).

(c) Systems which are supplied by a surface water source or by a ground water source under the direct influence of surface water and which are using conventional treatment may also comply with the requirements by meeting the criteria in sub. (2)(b) or (c).

SECTION 35. NR 809.725(1), Tables E, F and G, not including footnotes, are amended to read:

TABLE E
SDWA Approved Methodology for Physical Parameters, Residual Chlorine, Sodium, Corrosivity, and Secondary Contaminants

Parameter and Method	EPA[2]	Standard Methods[3]	ASTM[4]	USGS[5]	Other
Alkalinity-Titrimetric		2320B	D1067-92(B)	I-1030-85	-
Aluminum - Total[6], Digestion, followed by:					
Atomic absorption (AA); direct aspiration		3111D			-
Atomic absorption (AA); graphite furnace		3113 B		-	-
Inductively-coupled plasma (ICP)	200.7	3120 B	-	-	-
Inductively-coupled plasma; mass spectrometry (ICP/MS)	200.8	-	-	-	-
Atomic absorption (AA); platform furnace	200.9	-	-	-	-
Calcium					
EDTA titrimetric		3500-Ca D	D511-93(A)	-	-
AA; direct aspiration	-	3111 B	D511-93(B)	-	-
ICP	200.7	3120 B	-	-	-
Chloride					

Potentiometric	-	4500-Cl- D	-	-	-
Ion Chromatography	300.0[1]	4110	D4327-91	-	-
Chlorine dioxide residual					
Amperometric	-	4500-ClO_2 C or E	-	-	-
DPD	-	4500-ClO_2 D	-	-	-
Color					
Colorimetric, Pt-Co	-	2120 B	-	-	-
Combined chlorine					
Amperometric titration		4500-Cl D			
DPD Ferrous titrimetric	-	4500-Cl F		-	-
DPD Colorimetric	-	4500-Cl G		-	-
Corrosivity					
Langelier Index	-	2330	-	-	-
Aggressive Index	-	-	-	-	C400-77[7]
Foaming Agents (MBAS)					
Colorimetric		5540 C	-	-	-
Free chlorine residual[11]					
Colorimetric or ferrous titrimetric DPD	-	4500-Cl G or F		-	-
Amperometric		4500-Cl D	D 1253-86	-	-
Syringaldazine		4500-Cl H		-	-
Total Chlorine					
Amperometric titration	-	4500-Cl D	D 1253-86	-	-
Amperometric titration (low level)	-	4500-Cl E		-	-
DPD Ferrous titrimetric	-	4500-Cl F		-	-
DPD Colorimetric	-	4500-Cl G		-	-
Iodometric Electrode	-	4500-Cl I		-	-
Iron - Total[6], Digestion, followed by:					
AA; direct aspiration		3111 B			
AA; graphite furnace	200.9	3111 B	-	-	-
ICP	200.7	3120 B	-	-	-
Manganese - Total[6], Digestion, followed by:					
AA; direct aspiration		3111 B			
AA; graphite furnace	200.9	3113 B	-	-	-
ICP	200.7	3113 B	-	-	-

Inductively-coupled plasma; mass spectrometry	200.8	-	-	-	-
(ICP/MS)	-	-	-	-	-
Odor - Threshold Odor		2150 B	-	-	-
Orthophosphate, Unfiltered, no digestion or hydrolysis					
Colorimetric, automated, ascorbic acid	365.1[1]	4500-P F	-	-	-
Colorimetric, ascorbic acid		4500-P E	D515-88(A)	-	-
Colorimetric, phosphomolybdate; automated segment flow automated discrete	-	-	-	I-1601-85 I-2601-90 I-2598-85	-
Ion chromatography	300.0A[1]	4110	D4327-91	-	-
Ozone					
Indigo Method	-	4500-O_3B	-	-	
pH					
Electrometric	-	4500-H^+-B	D1293-84	-	-
Silica					
Colorimetric, molybdate blue	-	-	-	I-1700-85	-
Automated-segmented flow:	-	-	-	I-2700-85	-
Colorimetric		-	D859-88	-	-
Molybodosilicate	-	4500-Si D	-	-	-
Heteropoly blue	-	4500-Si E	-	-	-
Automated method for molybdate-reactive silica	-	4500-Si F	-	-	-
ICP	200.7	3120 B	-	-	-
Sodium - Total[6], Digestion, followed by:					
AA; direct aspiration	-	3111 B	-	-	-
ICP	200.7	-	-	-	-
Silver - Total[6], Digestion, followed by:					
AA; direct aspiration	-	3111 B	-	I-3720-85	-
AA; graphite furnace	-	3113 B	-	-	-
AA; platform furnace	200.9	-	-	-	-
ICP	200.7	3120 B	-	-	-
ICP/MS	200.8	-	-	-	-
Sulfate					-
Spectrophotometric	375.2[1]	-	4500-SO_4-F		-
Gravimetric	-	-	4500-SO_4-C, D		-

Ion chromatography	300.0[1]	D4327-91	4110		-
Temperature, Thermometric	-	2550 B	-	-	-
Total Filterable Residue (TDS), gravimetric	-	2540 C	-	-	-
Zinc - Total[6], Digestion followed by:					
AA; direct aspiration	-	3111 B	-	-	-
ICP	200.7	3120 B	-	-	-
ICP/MS	200.8	-	-	-	-

TABLE F
Sample Preservation Requirements and Holding Times for Inorganic Parameters

Parameter	Preservation[1]	Container[2]	Holding Time[3]
Asbestos	**Cool, 4C**	**P or G**	
METALS			
Aluminum	HNO_3	P or G	6 months
Antimony	HNO_3	P or G	6 months
Arsenic	HNO_3	P or G	6 months
Barium	HNO_3	P or G	6 months
Beryllium	HNO_3	P or G	6 months
Cadmium	HNO_3	P or G	6 months
Copper	HNO_3	P or G	6 months
Chromium	HNO_3	P or G	6 months
Iron	HNO_3	P or G	6 months
Lead	HNO_3	P or G	6 months
Manganese	HNO_3	P or G	6 months
Mercury	HNO_3	P or G	28 days
Nickel	HNO_3	P or G	6 months
Selenium	HNO_3	P or G	6 months
Silver	HNO_3	P or G	6 months
Thallium	HNO_3	P or G	6 months
Zinc	HNO_3	P or G	6 months
GENERAL CHEMISTRY PARAMETERS			
Bromate	50 mg/L Ethylenediamine (EDA)	P or G	28 days
Chloride	None	P or G	28 days

Chlorite	50 mg/L EDA, Cool to 4C for EPA Method 300.1 Cool to 4°C for EPA Method 300	P or G	14 days(300.1) Immediately (300)
Color	Cool, 4°C	P or G	48 hours
Cyanide	Cool, 4°C+NaOH to pH>12 NaOH to pH>12 0.6 g Ascorbic acid[5]	P or G	14 days
Fluoride	None	P or G	28 days
Foaming Agents	Cool,4°CC	P or G	48 hours
Nitrate (as N)			
Chlorinated	Cool, 4°C	P or G	14 days
Non-Chlorinated	Cool, 4°C	P or G	14 days
Nitrite (as N)	Cool, 4°C OR Conc. H_2SO_4 to pH<2	P or G	48 hours
Nitrate + Nitrite	Cool, 4°C OR Conc. H_2SO_4 to pH<2	P or G	14 days
Odor	Cool, 4°C	G	48 hours
pH	None	P or G	Analyze Immediately
Solids (TDS)	Cool, 4°C	P or G	7 days
Sulfate	Cool, 4°C	P or G	28 days
Turbidity	Cool, 4°C	P or G	48 hours

TABLE G

Sample Preservation Requirements and Holding Times for Organic Parameters

			HOLDING TIME	
Parameter/Method	**Preservation**	**Container**	**Sample**	**Extract**
502.1,502.2,503.1	Sodium Thiosulfate (3 mg) or Ascorbic Acid (25 mg), Cool, 4°C, HCl pHt2	40 mL, G[1]	14 days	-
504	Sodium Thiosulfate (3 mg), Cool, 4°C, HCl pHt2	40 mL, G[1]	28 days	Analyze immediately
505	Sodium Thiosulfate (3 mg), Cool, 4°C	40 mL, G[1]	14 days (Heptachlor=7 days)	Analyze immediately
506	Sodium Thiosulfate (60 mg), Cool, 4°C, dark	1L, Amber G[2]	14 days	4°C, dark, 14 days
507	Sodium Thiosulfate (80 mg),	1L, Amber G[2]	14 days (see	4°C, dark, 14

	Cool, 4°C		method for exceptions)	days
508	Sodium Thiosulfate (80 mg), Cool, 4°C	1L, G[2]	7 days (see method for exceptions)	4°C, dark 14 days
508A	Cool, 4°C	1L, G[2]	14 days	30 days
515.1	Sodium Thiosulfate (80 mg), Cool, 4°C	1L, Amber G[2]	14 days	4°C, dark, 28 days
524.1, 524.2	Ascorbic Acid (25 mg), HCl pHt2,Cool, 4°C,	40 mL, G[1]	14 days	-
525.1	Sodium Sulfite (40-50 mg) or Sodium Arsenite (40-50 mg) Cool, 4°C, HCl pHt2	1L, G[1]	7 days	30 days
531.1	Monochloroacetic acid pHt3, Sodium Thiosulfate (80 mg), Cool, 4°C	60 mL, G[1]	Freeze -10°C, 28 days	-
547	Sodium Thiosulfate (100 mg/L), Cool, 4°C	60 mL, G[1]	14 days (18 mo. frozen)	-
548	Cool, 4°C	60 mL, G[1]	7 days	1 day
549	Sodium Thiosulfate (100 mg/L), H2SO4 pHt2, Cool, 4°C, dark	1L, High Density Amber PVC or Silanized Amber Glass	7 days	21 days
550, 550.1	Sodium Thiosulfate (100 mg/L), Cool, 4°C, HCl pHt2	1L, Amber G[2]	7 days	4°C, dark, 40 days
551.1	Ammonium cholride Sodium sulfite (100 mg/L), Cool, 4°C, HCl pHt4.5-5.0	60 mL[2]	4°C, 14 days	-10°C, 14 days
552.2	Ammonium chloride (10 mg/L), Cool 4°C	100 mL, Amber G[2]	14 days 4°C	7 days 4°,14 days -10°C
1613	Sodium Thiosulfate (80 mg), Cool, 4°C, dark	1L, Amber G[2]	-	40 days

SECTION 36. NR 809.725(1) is amended to add:

TABLE I
SDWA Approved Methodology for Disinfectant Byproducts and Disinfectant Residuals

Parameter	Reference (method number)		
	EPA[1,2]	Standard Methods[3]	ASTM[4]
Disinfectant Byproducts			
TTHM	502.2, 524.2, 551.1		-
HAA5	552.2	6251 B	
Chlorite	300.0, 300.1	4500-ClO_2	
Bromate	300.1		
Disinfectant Residuals			
Free Chlorine		4500-CL D, 4500-CL F,4500-CL G, 4500-CL H	D 1253-86
Combined Chlorine		4500-CL D,4500-CL F, 4500-CL G	
Total Chlorine		4500-CL D, 4500-CL E, 4500-CL F, 4500-CL G, 4500-CL I	D 1253-86
Chlorine Dioxide		4500-CLO_2 D, 4500-CLO_2 E	

[1] EPA Method 552.1 is in Methods for the Determination of Organic Compounds in Drinking Water-Supplement II, USEPA, August 1992, EPA/600/R-92/129 (available through National Information Technical Service (NTIS), PB92-207703).EPA Methods 502.2, 524.2, 551.1, and 552.2 are in Methods for the Determination of Organic Compounds in Drinking Water-Supplement III, USEPA, August 1995, EPA/600/R-95/131. (available through NTIS, PB95-261616).

[2] EPA Method 300.0 is in Methods for the Determination of Inorganic Substances in Environmental Samples, USEPA, August 1993, EPA/600/R-93/100. (available through NTIS, PB94-121811). EPA Method 300.1is titled USEPA Method 300.1, Determination of Inorganic Anions in Drinking Water by Ion Chromatography, Revision 1.0, USEPA, 1997, EPA/600/R-98/118 (available through NTIS, PB98-169196); also available from: Chemical Exposure Research Branch, Microbiological & Chemical Exposure Assessment Research Division, National Exposure Research Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH 45268,Fax Number: 513-569-7757, Phone number: 513-569-7586.

[3] Standard Methods 4500-Cl D, 4500-Cl E, 4500-Cl F, 4500-Cl G, 4500-Cl H, 4500-Cl I, 4500-ClO_2D, 4500-ClO_2 E, 6251 B, and 5910 B shall be followed in accordance with Standard Methods for the Examination of Water and Wastewater, 19th Edition, American Public Health Association, 1995; copies may be obtained from the American Public Health Association, 1015 Fifteenth Street, NW, Washington, DC 20005. Standard Methods 5310 B, 5310 C, and 5310 D shall be followed in accordance with the Supplement to the 19th Edition of Standard Methods for the Examination of Water and Wastewater, American Public Health Association, 1996; copies may be obtained from the American Public Health Association, 1015 Fifteenth Street, NW, Washington, DC 20005

[4] ASTM Method D 1253-86 shall be followed in accordance with the Annual Book of ASTM Standards, Volume 11.01, American Society for Testing and Materials, 1996 edition; copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohoken, PA 19428.

SECTION 37. NR 809.75(1)(intro.) is amended to read:

NR 809.75(1)(intro.) These regulations establish criteria under which filtration is required as a treatment technique for public water systems supplied by a surface water source or a groundwater source under the direct influence of surface water. Direct influence shall be determined for individual sources by the department. The department determination of direct influence may be based on site-specific measurements of water quality characteristics such as those stated in s. NR 809.04~~(20)~~(24) or documentation of well construction characteristics and geology with field evaluation. These regulations

also establish requirements for treatment techniques in lieu of maximum contaminant levels for *Giardia lamblia,* viruses, heterotrophic plate count bacteria, *Legionella, Cryptosporidium* and turbidity. Treatment technique requirements apply to every public water system which utilizes surface water or ground water under the direct influence of surface water and the requirements consist of installing and properly operating water treatment processes which reliably achieve:

SECTION 38. NR 809.75(4) is created to read:

NR 809.75(4) (intro.) After December 17, 2001, systems serving at least 10,000 people shall install and operate water treatment processes that will reliably achieve all of the following:

(a) At least 99% (2-log) removal of *Cryptosporidium* between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer for filtered systems, or *Cryptosporidium* control under the watershed control system for unfiltered systems.

(b) Compliance with the profiling and benchmark requirements under the requirements in s. NR 809.775

SECTION 39. NR 809.755(intro.) is amended to read:

NR 809.755 Criteria for avoiding filtration. (intro.) A public water system that uses ground water under the direct influence of surface water as a water supply source shall meet all of the conditions of subs. (1) and (2), and is subject to sub. (3), ~~on or after December 30, 1991,~~ unless the department has determined, in writing, that filtration is required. If the department determines in writing, before December 30, 1991, that filtration is required, the system owner shall install filtration and shall meet the criteria for filtered systems specified in ss. NR 809.77 and 809.78 ~~by June 29, 1993~~. Within 18 months of the failure of a public water system using a ground water source under the direct influence of surface water to meet any one of the requirements of subs. (1) and (2) ~~or after June 29, 1993, whichever is later~~, the system owner shall install filtration and shall meet the criteria for filtered systems specified in ss. NR 809.77 and 809.78.

SECTION 40. NR 809.755(2)(b)(intro.) is amended to read:

NR 809.755(2)(b)(intro.) The public water system shall maintain a department approved well head protection program which minimizes the potential for contamination by *Cryptosporidium, Giardia lamblia* cysts and viruses in the source water. The department shall determine whether the well head protection program is adequate to meet this goal. At a minimum, the program shall:

SECTION 41. NR 809.755(2)(c)8. is created to read:

NR 809.755(2)(c)8. A review of the adequacy of the watershed control program to limit potential contamination by *Cryptosporidium* including: comprehensiveness of the watershed review, the effectiveness of the system's program to monitor and control detrimental activities occurring in the watershed, and the extent to which the water system has maximized land ownership or controlled land use, or both, within the watershed.

SECTION 42. NR 809.755(2)(f) and (3)(a) are amended to read:

NR 809.755(2)(f) The public water system shall comply with the requirements for trihalomethanes in s. NR 809.23 until December 31, 2001. After December 31, 2001, the system shall comply with the requirements for total trihalomethanes, haloacetic acids (five), bromate, chlorite, chlorine, chloramines and chlorine dioxide in s. NR 809.xx.

(3)(a) A system that fails to meet any one of the criteria in subs. (1) and (2), and which the department has determined in writing that filtration is required, ~~and fails to install filtration by June 29, 1993,~~ is in violation of a treatment technique requirement.

SECTION 43. NR 809.76(intro.), (1), (2) and (5) are amended to read:

NR 809.76 Filtration requirements. (intro.) Public water systems that use a surface water source shall provide filtration which complies with the requirements of sub. (1), (2), (3), (4) or (5) and meets the disinfection criteria for filtered systems specified in s. NR 809.77 (2) ~~by June 29, 1993~~. Public water systems that use a ground water source under the direct influence of surface water shall provide filtration which complies with the specifications of sub. (1), (2), (3), (4) or (5) and meets the disinfection criteria for filtered systems specified in s. NR 809.77 ~~by June 29, 1993 or~~ within 18 months of the date that a source is determined to be under the direct influence of surface water, whichever is later. Failure to meet any requirement of this section ~~after the dates specified~~ in this paragraph is a treatment technique violation.

(1) CONVENTIONAL FILTRATION TREATMENT. (a) For systems using conventional filtration, the turbidity level of representative samples of a system's filtered water shall be less than or equal to 0.5 NTU in at least 95% of the measurements taken each month, measured as specified in s. NR 809.725 (1), Table E. ~~The department may approve a turbidity limit up to 1 NTU if the water supplier provides the department with documentation which reliably indicates the system achieves at least 99.9% removal or inactivation of *Giardia lamblia* cysts at a turbidity level above 0.5 NTU at least 95% of the time that the system delivers water to the public.~~ Beginning January 1, 2002 , the turbidity level of filtered water of a system serving at least 10,000 people and using conventional filtration shall be less than or equal to 0.3 NTU in at least 95% of the measurements taken each month, measured as specified in s. NR 809.725(1), Table E.

(b) The turbidity level of representative samples of a system's filtered water may not exceed 5 NTU, measured as specified in s. NR 809.725 (1) Table E. Beginning January 1, 2002 , the turbidity level of filtered water of a system serving at least 10,000 people and using conventional filtration shall at no time exceed 1 NTU, measured as specified in s. NR 809.725(1) Table E.

(c) To determine compliance with par. (a), turbidity measurements shall be performed on representative samples of filtered water at least every 4 hours that the system serves water to the public.

(d) In lieu of the requirements of par. (c), turbidity measurements from a continuous reading and recording turbidity monitoring device shall be recorded at predetermined 4 hour intervals to determine compliance with par. (a). The highest turbidity measurement recorded at any time during the day shall be reported under s. NR 809.80 (6) (a) 1.

(e) A system that uses lime softening may acidify representative samples prior to analysis if using an approved protocol.

(2) DIRECT FILTRATION. (a) For systems using direct filtration, the turbidity level of representative samples of a system's filtered water shall be less than or equal to 0.5 NTU in at least 95% of the measurements taken each month, measured as specified in s. NR 809.725 (1), Table E. The department may approve a turbidity limit up to 1 NTU if the water supplier provides the department with documentation which reliably indicates the system achieves at least 99.9% removal or inactivation of *Giardia lamblia* cysts at a turbidity level above 0.5 NTU at least 95% of the time that the system delivers water to the public. Beginning January 1, 2002 , the turbidity level of filtered water of a system serving at least 10,000 people and using direct filtration shall be less than or equal to 0.3 NTU in at least 95% of the measurements taken each month, measured as specified in s. NR 809.725(1), Table E.

(b) The turbidity level of representative samples of a system's filtered water may not exceed 5 NTU, measured as specified in s. NR 809.725 (1), Table E. Beginning January 1, 2002, the turbidity level of filtered water of a system serving at least 10,000 people and using direct filtration shall at no time exceed 1 NTU, measured as specified in s. NR 809.725(1), Table E.

(5) OTHER FILTRATION TECHNOLOGIES. A public water system supplier may use a filtration technology not listed in subs. (1) to (4) if the supplier demonstrates to the department, using pilot studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of s. NR 809.78, consistently achieves 99.9% removal or inactivation of *Giardia lamblia* cysts and 99.99% removal or inactivation of viruses, and 99% removal of *Cryptosporidium* oocysts, and the department approves the use of the filtration technology. ~~For a system that makes this demonstration, the requirements of sub. (3) apply.~~ For each approval, the department will set turbidity performance requirements that the system shall meet at least 95% of the time at a level that consistently achieves 99.9% removal or inactivation of *Giardia lamblia* cysts, 99.9% removal or inactivation of viruses, and 99% removal of *Cryptosporidium* oocysts. The department may set other performance requirements to assure the integrity of the technology.

SECTION 44. NR 809.765 is created to read:

NR 809.765 Filtration sampling requirements. (1) Monitoring requirements for systems using filtration treatment. In addition to monitoring required by s. NR 809.76, a public water system serving at least 10,000 people and using conventional or direct filtration shall conduct continuous monitoring of turbidity for each individual filter using a method approved in s. NR 809.725(1) and shall calibrate turbidimeters using the procedure specified by the manufacturer. Systems shall record the results of individual filter monitoring every 15 minutes.

(2) If there is a failure in the continuous monitoring equipment, the system shall conduct grab sampling every 4 hours in lieu of continuous monitoring, until the turbidimeter is repaired and back on-line. A system has a maximum of 5 working days after failure to repair the equipment or is in violation.

SECTION 45. NR 809.77(intro.) is amended to read:

NR 809.77 Disinfection requirements. (intro.) A system that uses ground water under the direct influence of surface water and does not provide filtration treatment shall provide disinfection treatment specified in sub. (1) ~~on or after December 30, 1991, or~~ within 18 months after the department determines that the ground water source is under the influence of surface water~~, whichever is later~~. A system that filters and uses surface water or ground water under the direct influence of surface water as a source shall provide the disinfection treatment specified in sub. (2) ~~on or after June 29, 1993~~, or when filtration is installed~~, whichever is later~~. Failure to meet any requirement of this section ~~after June 29, 1993~~ is a treatment technique violation.

SECTION 46. NR 809.775 is created to read:

NR 809.775 Disinfection profiling and benchmarking. (1) DETERMINATION OF SYSTEMS REQUIRED TO PROFILE. A public water system serving at least 10,000 people shall determine its TTHM annual average using the procedure in par. (a) and its HAA5 annual average using the procedure in par. (b). The annual average is the arithmetic average of the quarterly averages of 4 consecutive quarters of monitoring.

(a) The TTHM annual average shall be the annual average during the same period as is used for the HAA5 annual average.

1. Those systems that collected disinfection byproduct data under the provisions of the information collection rule shall use the results of the samples collected during the last 4 quarters of required monitoring under the information collection rule.

2. Those systems that use "grandfathered" HAA5 occurrence data that meet the provisions of par. (b)2. shall use TTHM data collected at the same time under the provisions of ss. NR 809.22 and 809.23.

3. Those systems that use HAA5 occurrence data that meet the provisions of par. (b)3.a. shall use TTHM data collected at the same time under the provisions of ss. NR 809.22 and 809.23.

(b) The HAA5 annual average shall be the annual average during the same period as is used for the TTHM annual average.

1. Those systems that collected data under the provisions of the information collection rule shall use the results of the samples collected during the last 4 quarters of required monitoring under the information collection rule.

2. Those systems that have collected 4 quarters of HAA5 occurrence data that meets the routine monitoring sample number and location requirements for TTHM in ss. NR 809.22 and 809.23 and handling and analytical method requirements of the information collection rule may use those data to determine whether the requirements of this section apply.

3. Those systems that have not collected 4 quarters of HAA5 occurrence data that meets the provisions of either subd. 1. or 2. by March 16, 1999 shall either:

a. Conduct monitoring for HAA5 that meets the routine monitoring sample number and location requirements for TTHM in ss. NR 809.22 and 809.23 and handling and analytical method requirements of the information collection rule to determine the HAA5 annual average and whether the requirements of sub. (2) apply. This monitoring shall be completed so that the applicability determination can be made no later than March 31, 2000, or

b. Comply with all other provisions of this section as if the HAA5 monitoring had been conducted and the results required compliance with sub. (2).

(c) The system may request that the department approve a more representative annual data set than the data set determined under par. (a) or (b) for the purpose of determining applicability of the requirements of this section.

(d) The department may require that a system use a more representative annual data set than the data set determined under par. (a) or (b) for the purpose of determining applicability of the requirements of this section.

(e) The system shall submit data to the department on the schedule in subds. 1 to 5.

1. Those systems that collected TTHM and HAA5 data under the provisions of the information collection rule, as required by pars. (a)1. and (b)1., shall submit the results of the samples collected during the last 12 months of required monitoring under the information collection rule not later than December 31, 1999.

2. Those systems that have collected 4 consecutive quarters of HAA5 occurrence data that meets the routine monitoring sample number and location for TTHM in ss. NR 809.22 and 809.23 and handling and analytical method requirements of the information collection rule, as allowed by pars. (a)2 and (b)2., shall submit those data to the department not later than April 16, 1999. Until the department has approved the data, the system shall conduct monitoring for HAA5 using the monitoring requirements specified under subd. 3.

3. Those systems that conduct monitoring for HAA5 using the monitoring requirements specified by pars. (a)3 and (b)3.a., shall submit TTHM and HAA5 data not later than March 31, 2000.

4. Those systems that elect to comply with all other provisions of this section as if the HAA5 monitoring had been conducted and the results required compliance with this section, as allowed under par. (b)3.b., shall notify the department in writing of their election not later than December 31, 1999.

5. If the system elects to request that the department approve a more representative annual data set than the data set determined under par. (b)1., the system shall submit this request in writing not later than December 31, 1999.

(f) Any system having either a TTHM annual average ≥0.064 mg/L or an HAA5 annual average ≥0.048 mg/L during the period identified in pars. (a) and (b) shall comply with sub. (2).

Note: The information collection rule refers to 40 CFR Ch. 1, part 141, Subpart M, ss. 141.140 through 141.144.

(2) DISINFECTION PROFILING. (a) Any system that meets the criteria in sub. (1)(f) shall develop a disinfection profile of its disinfection practice for a period of up to 3 years.

(b) The system shall monitor daily for a period of 12 consecutive calendar months to determine the total logs of inactivation for each day of operation, based on the CT99.9 values in s. NR 809.78(1)(c)6, Tables 1-8 as appropriate, through the entire treatment plant. This system shall begin this monitoring not later than April 1, 2000. As a minimum, the system with a single point of disinfectant application prior to entrance to the distribution system shall conduct the monitoring in subds. 1. to 4. A system with more than one point of disinfectant application shall conduct the monitoring in subds. 1. to 4. for each disinfection segment. The system shall monitor the parameters necessary to determine the total inactivation ratio, using analytical methods in s. NR 809.725, as follows:

1. The temperature of the disinfected water shall be measured once per day at each residual disinfectant concentration sampling point during peak hourly flow.

2. If the system uses chlorine, the pH of the disinfected water shall be measured once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.

3. The disinfectant contact times ("T") shall be determined for each day during peak hourly flow.

4. The residual disinfectant concentrations ("C") of the water before or at the first customer and prior to each additional point of disinfection shall be measured each day during peak hourly flow.

(c) In lieu of the monitoring conducted under the provisions of par. (b) to develop the disinfection profile, the system may elect to meet the requirements of subd. 1. In addition to the monitoring conducted under the provisions of par. (b) to develop the disinfection profile, the system may elect to meet the requirements of subd. 2.

1. A public water system that has 3 years of existing operational data may submit those data, a profile generated using those data, and a request that the department approve use of those data in lieu of monitoring under the provisions of par. (b) not later than March 31, 2000. The department shall determine whether these operational data are substantially equivalent to data collected under the provisions of par. (b). These data shall also be representative of *Giardia lamblia* inactivation through the entire treatment plant and not just of certain treatment segments. Until the department approves this request, the system is required to conduct monitoring under the provisions of par. (b).

2. In addition to the disinfection profile generated under par. (b), a public water system that has existing operational data may use those data to develop a disinfection profile for additional years. Systems may use these additional yearly disinfection profiles to develop a benchmark under sub. (3). The department shall determine whether these operational data are substantially equivalent to data collected under par. (b). These data shall also be representative of inactivation through the entire treatment plant and not just of certain treatment segments.

(d) The system shall calculate the total inactivation ratio as follows:

1. If the system uses only one point of disinfectant application, the system may determine the total inactivation ratio for the disinfection segment based on either of the methods in subd. 1.a. or b.

a. Determine one inactivation ratio ($CTcalc/CT_{99.9}$) before or at the first customer during peak hourly flow.

b. Determine successive $CTcalc/CT_{99.9}$ values, representing sequential inactivation ratios, between the point of disinfectant application and a point before or at the first customer during peak hourly flow. Under this alternative, the system shall calculate the total inactivation ratio by determining ($CTcalc/CT_{99.9}$) for each sequence and then adding the ($CTcalc/CT_{99.9}$) values together to determine (Σ ($CTcalc/CT_{99.9}$)).

2. If the system uses more than one point of disinfectant application before the first customer, the system shall determine the CT value of each disinfection segment immediately prior to the next point of disinfectant application, or for the final segment, before or at the first customer, during peak hourly flow. The ($CTcalc/CT_{99.9}$) value of each segment and ($\Sigma(CTcalc/CT_{99.9})$) shall be calculated using the method in subd. 1.

3. The system shall determine the total logs of inactivation by multiplying the value calculated in subd. 1. or 2. by 3.0.

(e) A system that uses either chloramines or ozone for primary disinfection shall also calculate the logs of inactivation for viruses using a method approved by the department.

(f) The system shall retain disinfection profile data in graphic form, as a spreadsheet, or in some other format acceptable to the department for review as part of sanitary surveys conducted by the department.