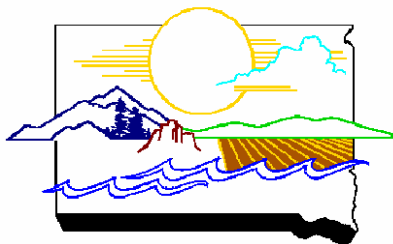


South Dakota Department of
Environment and Natural Resources

New Water System Planning Manual

June 2007



Protecting South Dakota's Tomorrow ... Today

Drinking Water Program
523 E. Capitol
Joe Foss Building
Pierre, SD 57501-3181
(605) 773-3754
<http://www.state.sd.us/denr>

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New Water System Planning Manual

Department of Environment and Natural Resources

Introduction

The 1996 Safe Drinking Water Act (SDWA) amendments include requirements for states to obtain authority to prevent new community and nontransient noncommunity water systems that lack technical, managerial, and financial capacity from operating beginning October 1, 1999. Legislation was passed and signed by the Governor in 1998 that provides the department with the authority to promulgate rules outlining the requirements new water systems must meet in order to demonstrate adequate capacity.

This New Water System Planning Manual is designed to help potential new water system applicants and the engineer who is preparing the information comply with all applicable requirements. It provides information on:

- The certificate of approval. This certificate is required before a new water system can begin operation;
- The information required to be submitted to the department for review, including the department authorized forms;
- The approval process, including capacity criteria; and
- The authority by which the department administers this new water system program.

If you need more assistance or information about applying for a certificate of approval, please contact the Drinking Water Program at (605) 773-3754.

New Water System Planning Manual

Certificate of Approval

Systems Required to Obtain a Certificate of Approval

All new community and nontransient noncommunity water systems that begin operation after October 1, 1999, are required to obtain a certificate of approval from the Department of Environment of Natural Resources (DENR) before beginning operation.

This includes water systems that do not meet the definition of community or nontransient noncommunity water system (NTNC) at start-up, but are designed to one day meet that definition. For example, a developer plats out 30 lots for homes in the development, but when the water system begins operation, there are only four homes hooked-up to the system. Obviously, the intent is for this water system to one day be large enough to qualify as a public water system; therefore, the developer must meet all the new water system requirements.

Any system that has infrastructure in place before October 1, 1999, and then becomes a new community or NTNC water system only by the addition of new users is not required to obtain a certificate of approval.

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

Nontransient noncommunity water system (NTNC) – a public water system that is not a community water system that regularly serves at least 25 of the same persons at such places as work places, offices, and schools for at least six months a year.

What is a Certificate of Approval?

A certificate of approval is issued by the secretary of DENR. It certifies that the new water system can begin operation. A new water system that begins operation after October 1, 1999, that has NOT been issued a certificate of approval can be subject to penalties.

The certificate of approval is issued after the applicant submits all required documentation that demonstrates the system has adequate technical, managerial, and financial capacity.

What is Capacity?

Capacity encompasses the technical, managerial, and financial capabilities of the water system to plan for, achieve, and maintain compliance with applicable drinking water standards given available water resources and the characteristics of the service population. Technical, managerial and financial capacity are three general, highly interrelated areas of overall water system capability. A water system cannot sustain overall capacity without maintaining adequate capacity in all three areas. Indicators of capacity within each area can be framed by key sets of issues and questions.

Technical Capacity – the physical and operational ability of a water system to meet SDWA requirements. Technical Capacity refers to the physical infrastructure of the water system, including the adequacy of the source water and the adequacy of treatment, storage, and distribution infrastructure. It also refers to the ability of system personnel to adequately operate and maintain the system and implement required technical knowledge.

Some key questions used to evaluate technical capacity are:

Source water adequacy

- Does the system have a reliable source of drinking water?
- Is the source adequately protected?

Infrastructure adequacy

- Can the system provide water that meets SDWA standards?
- What is the condition of the system's infrastructure, including well(s) or source water intakes, treatment, storage, and distribution?
- What is the life expectancy of the system's infrastructure?

Technical knowledge and implementation

- Is the system's operator certified?
- Does the operator have sufficient technical knowledge of applicable standards?
- Can the operator effectively implement this technical knowledge?
- Do the operators understand the system's technical and operational characteristics?
- Does the system have an effective operation and maintenance program?

Managerial Capacity – the ability of a water system to conduct its affairs in a manner enabling the system to achieve and maintain compliance with SDWA requirements. Managerial capacity refers to the system's institutional and administrative capabilities.

Some key questions used to evaluate managerial capacity are:

Ownership accountability

- Are the system owner(s) clearly identified?
- Can they be held accountable for the system?

Staffing and Organization

- Are the system operator(s) and manager(s) clearly identified?
- Is the system properly staffed and organized?
- Does the owner/manager understand the management aspects of regulatory requirements and system operations?
- Does the owner/manager have adequate expertise to manage water system operations?
- Do personnel have the necessary certifications?

Effective external linkages

- Does the system interact well with customers, regulators, and other entities?
- Is the system aware of available external resources, such as technical and financial assistance?

Financial Capacity – a water system's ability to acquire and manage sufficient financial resources to allow the system to achieve and maintain compliance with SDWA requirements.

Some key questions used to evaluate financial capacity are:

Revenue sufficiency

- Do revenues cover costs?
- Are water rates and charges adequate to cover the costs of water?

Credit worthiness

- Is the system financially healthy?
- Does it have access to financial capital through public or private sources?

Fiscal Management and Controls

- Are adequate books and records maintained?
- Are appropriate budgeting, accounting, and financial planning methods used?
- Does the system manage its revenues effectively?

Why is it Important to obtain a Certificate of Approval?

Obtaining a certificate of approval for a new water system is required by law. But more importantly, a certificate of approval shows that the water system went through the

planning process. Planning is critical for all new, as well as, existing water systems. With increasing drinking water requirements, running a water system like a business has become essential. A system that lacks capacity in any of the three areas will have problems complying with all the requirements of the new SDWA amendments. Since new water systems are now required to go through the planning process, this will help ensure that all new systems have adequate capacity and that the public will be provided with safe drinking water.

New Water System Planning Manual

Documentation Requirements for Demonstration of Capacity

General Requirements for a Certificate of Approval

To obtain a certificate of approval, the following documents must be completed and submitted to the department:

- A New Water System Application (including documentation that a valid water right permit has been obtained);
- A business plan, which includes: a facilities plan, a management plan, and a financial plan;
- Plans and specification;
- An operation and maintenance manual;
- A construction schedule; and
- A notice of completion.

The New Water System Application and notice of completion forms are included in this manual. Guidance for completing the business plan and submitting plans and specifications are also included in this manual.

New Water System Application

The New Water System Application, along with the Certification of Applicant form, must be submitted on the forms provided by the department and shall be signed by the developer or owner. If the owner is a corporation, all of the officers of the corporation must sign the application. All items on the application must be completed. Once the forms are completed, they must be notarized. The application and Certification of Applicant form are included in Appendix 1.

Business Plan

In order to be considered complete, the business plan must contain the following three parts: a facilities plan, a management plan, and a financial plan. A checklist has been developed to be used to ensure that all required items are covered. It can be found in Appendix 2 and must be attached to the business plan when it is submitted to the department for review.

Facilities Plan

The purpose of the facility plan is to assure that the project has been appropriately planned. It must demonstrate that the proposed system addresses the water supply

needs of the service area, and that it is the most appropriate alternative reasonably available. The facilities plan must cover the following items:

- 1) **General Information.** A description of the new water system and identification of the area to be served.
- 2) **Extent of the Water Supply System.** A description of the nature and extent of the area to be served and provisions for extending the water supply system to include additional areas. This shall include population and land use projections and forecasts of water usage.
- 3) **Assessment of Drinking Water Standards Compliance.** An assessment of current and reasonably foreseeable drinking water compliance based on monitoring data from the proposed water source.
- 4) **Alternate Plans.** A description of the alternatives considered (including interconnections with existing water systems) and the reasons for the approach selected to provide water service to the area. This description shall include the technical, managerial, financial, and operational reasons for the selected approach. Also, include the expected certification/classification of water operator required for operation of each alternative plan.
- 5) **Engineering Description.** A description of the facilities to be constructed, including the construction phases and future plans for expansion. This description shall include an estimate of the full cost of any required construction, operation, and maintenance.

The facilities plan must be completed by a person or persons qualified under SDCL chapter 36-18 pertaining to the registration and certification of engineers, architects, and land surveyors. The engineer must sign, date, and imprint the seal of registration on the plan.

Management Plan

The management plan must describe what is needed to provide for effective management and operation of the system and must cover the following items:

- 1) **Authority and Ownership.** Documentation that the applicant has the legal right and authority to take the measures necessary for the construction, operation and maintenance of the water system. It shall include evidence of ownership indicating the applicant is the owner of the system or, where the applicant is not the owner, legally enforceable management contracts or agreements;
- 2) **Operating Plan.** A plan that describes the tasks to be performed in managing and operating the system. The operating plan shall consist of administrative and management organizational charts, plans for staffing the system with certified operators, and an operation and maintenance manual (which is described in the next section).
- 3) **Credentials.** Documentation of credentials of the water system operator, cooperative agreements or service contracts.

Financial Plan

The financial plan shall describe the system's projected revenues, cash flow, income and debt for meeting the costs of construction and the costs of operation and maintenance for at least five years from the date the applicant expects to begin operation. A sample financial spreadsheet is included in Appendix 3. The applicant may use this template or submit something else as long as all required items are included.

Plans and Specifications

Two copies of complete plans and specifications must be submitted to the department for review and approval. If there is material alteration or deviation from the plans and specifications as approved, revised plans and specifications must be submitted for review and approval. One complete set of approved plans and specifications becomes the property of the department, and one complete approved set shall be returned to the applicant. The department's approval of plans and specifications becomes void two years after the date of approval if construction is not initiated prior to that time.

The plans and specifications must be prepared by a person or persons qualified under SDCL chapter 36-18 pertaining to the registration and certification of engineers, architects, and land surveyors. The engineer must sign, date and imprint the seal of registration on the plans and specifications.

All plans and specifications must be prepared according to the manual *Ten States Standards and Criteria for Design of Public Water Supply Facilities in South Dakota – a Supplement to the Recommended Standards for Water Works*.

Sample Results from the Water Source

Submit the sample results from the water source to the department as soon as possible. A certificate of approval will not be issued until the department evaluates the sample results. Appendix 4 contains a summary of the South Dakota State Drinking Water Regulations.

Operations and Maintenance Manual

An operations and maintenance manual must be submitted to the department before system start-up. One copy of the manual shall be kept on the water system premises and one manual shall be kept with all other water system records.

The operations and maintenance manual must be prepared by a person or persons qualified under SDCL chapter 36-18 pertaining to the registration and certification of engineers, architects, and land surveyors. The engineer must sign, date and imprint the seal of registration on the manual.

A checklist has been developed that must be used to ensure that all required items are covered. It can be found in Appendix 5, and must be attached to the operations and

maintenance manual when it is submitted to the department for review. The manual shall contain the following items:

- 1) A description of the facilities;
- 2) An explanation of startup and normal operation procedures;
- 3) A routine maintenance program;
- 4) Records and reporting system;
- 5) Sampling and analyses program;
- 6) Staffing and training requirements;
- 7) Identification of pollution sources at the water supply;
- 8) Safety program;
- 9) A plan for tracking unaccounted-for water;
- 10) Emergency plan and operating procedures; and
- 11) Manufacturer's manuals.

The operations and maintenance manual shall be reviewed and updated as necessary to reflect changes in the operation or maintenance of the water system.

Construction Schedule

After all the necessary approvals from the department are obtained (see Chapter 3 – The Approval Process), the applicant must submit a construction schedule to the department. The schedule must contain important milestones, such as when construction will begin and the estimated project completion date.

Notice of Completion

After construction of the water system is complete, the applicant shall submit to the secretary a notice of completion (Appendix 7) which certifies that the applicant has constructed the water system according to the approved plans and specifications. The engineer who designed the system must sign this form.

New Water System Planning Manual

The Approval Process

When should I apply for a certificate of approval?

DENR recommends that you apply as soon as possible. It is going to take time to get the required documents approved. If more information is needed by the department during the review process, it could extend the amount of time to grant approval. We have set the following minimum guidelines for you to follow; however, the key phrase is: *the earlier, the better!* (see Appendix 6 for a flow-chart)

- Submit the New Water System Application and business plan no later than **90 days** before you anticipate beginning operation.
 - The department will conduct a completeness review of the application and business plan within 30 days of submission. The applicant will be notified in writing whether or not the application and business plan is complete.
 - If the application or business plan is incomplete, additional information will be required. The department will determine the adequacy of the applicant's response to the incomplete items within 15 days of receipt and notify the applicant in writing.
- Submit plans and specifications no later than **30 days** before the anticipated bid-letting and contract award date.
- Submit the operations and maintenance manual as soon as practicable before system start-up.

We also recommend a pre-application conference. This conference is not required, but is encouraged. Although this requires an investment of time, we feel a conference results in improved communication between the applicant and the department as well as an improved application.

What is the criteria DENR is using to assess the capacity of a new water system?

Criteria has been developed to assess the technical, managerial, and financial capacity of new community and nontransient noncommunity water systems. In order to be eligible for a certificate of approval, all documentation requirements described in Chapter 2 must be met along with the following:

Technical Capacity Criteria:

- 1) Finished water must be able to meet all required drinking water standards;
- 2) Personnel must be able to operate the system effectively (certified operator); and
- 3) Valid water right permit must be obtained.

Managerial Capacity Criteria:

- 1) The system owner(s) must be clearly identified;
- 2) The system must meet all of the state's operator certification requirements (or have a plan to do so if not yet a public water system);
- 3) A system must be in-place to effectively maintain all required records, distribution system histories/maps, and compliance information;
- 4) The operating plan must include;
 - A description of the facilities;
 - Administrative and management organizational charts;
 - Plans for staffing the system with a certified operator;
 - An explanation of startup and normal operation procedures;
 - A routine maintenance program;
 - Records and reporting system;
 - Sampling and analyses program;
 - Staffing and training requirements;
 - Identification of pollution sources at the water supply;
 - Safety program;
 - A plan for tracking unaccounted-for water must be developed and implemented;
 - Emergency plan and operating procedures; and
 - Manufacturer's manuals.

Financial Capacity Criteria

- 1) Revenues must be greater than costs;
- 2) The system must undertake periodic financial audits;
- 3) The water system must produce and utilize an annual budget;
- 4) The operating ratio must be greater than 1.0;
- 5) The coverage ratio must be greater than 1.0;
- 6) Rates should be less than $1\frac{1}{2}\%$ x MHHI (county's average annual median household income);
- 7) A capital improvement plan should be developed;
- 8) Customers must be metered; and
- 9) An emergency/replacement reserve must be created and funded.

When can I start construction?

Once the department has received the required information from the applicant, we will review the documents and forms. If you have demonstrated that your water system has adequate technical, managerial, and financial capacity, the department will notify you in writing that construction can begin. However, a pre-construction meeting may be required before construction can begin.

What if I cannot demonstrate adequate capacity?

The department will send a letter stating that the system does not have adequate capacity and what must be done to demonstrate capacity. If the system cannot or will not comply with the items stated in the letter, a certificate of approval will be denied. If you do not agree with the department's determination, you can:

- Submit a written request to challenge the department's decision within 30 days after receipt of the denial notice. The request must contain the reasons for the challenge and must be signed by the water system owner; and
- After a contested case hearing conducted pursuant to South Dakota Codified Law Chapter 1-26, a decision concerning the denial will be made by the secretary.

Will the department be conducting construction inspections?

Once the department has received the construction schedule from the applicant, DENR may visit the site to determine whether the system is being constructed according to plans and specifications and that all applicable requirements are being met.

Construction is complete, now what?

After construction is complete, the system must submit to the secretary a notice of completion (Appendix 7) certifying that the water system was constructed according to approved plans and specifications.

When can I begin operating the water system?

After the water system has demonstrated capacity and the department has received the notice of completion, the secretary will issue a certificate of approval and the system can be placed in service.

How long is the certificate of approval valid?

The certificate of approval will remain valid as long as the water system is operating according to the business plan, operation and maintenance manual, and plans and specifications. If modifications are made to the system that will alter any of these items, written notification shall be made to the department describing the modifications and the items should be updated accordingly. If modifications to the system are made without notifying the department or updating the business plan, operations and maintenance manual, and plans and specifications, the certificate of approval may be revoked.

The procedure for the revocation of a certificate of approval is as follows:

- 1) The secretary will issue a letter of intent to revoke the certificate of approval to the water system by certified mail with return receipt requested;
- 2) If the water system wishes to challenge the revocation, it may request a hearing before the secretary. This may be done by submitting a written request within 30 days

after receipt of the revocation notice. The request must contain the reasons for the challenge and must be signed by the water system owner; and

- 3) After a contested case hearing conducted pursuant to South Dakota Codified Law Chapter 1-26, a decision concerning the revocation will be made by the secretary.

Can a certificate of approval be transferred to a new owner?

Yes. In order to legally transfer a certificate of approval to a new owner, the following procedure must be followed:

- 1) The current owner must notify the secretary of DENR at least 30 days prior to the proposed transfer date;
- 2) The notice must include a written agreement between the existing owner and the new owner and state a specific date for transfer of the certificate of approval responsibility, coverage, and liability between them;
- 3) The new owner must complete the Certification of Applicant form, have it notarized, and submit it to the department along with the transfer notice; and
- 4) The notice must also include a certification that all water system records and the documentation required to obtain the certificate of approval will be transferred to the new owner before the transfer date. (*documentation includes: business plan, operations and maintenance manual, plans and specifications*)

If the secretary of DENR does not receive the above described transfer notice and Certification of Applicant form, the current owner will be held responsible for any violations of the process described in this manual.

New Water System Planning Manual

The Authority by which the Department Administers this Program

Statutes

SDCL 34A-3A-25 – Public water systems to meet requirements of Safe Drinking Water Act - Promulgation of rules - Violations.

Regulations

ARSD 74:04:09 - Capacity requirements for new community and new nontransient noncommunity water systems (effective November 18, 1998).

Appendices

- 1) New Water System Application and Certification of Applicant form
- 2) Business plan checklist
- 3) Sample financial spreadsheet
- 4) Summary of South Dakota Drinking Water Regulations
- 5) Operation and maintenance manual checklist
- 6) Flow-chart of Certificate of Approval process
- 7) Notice of completion

Appendix 1: New Water System Application



Department of Environment and Natural Resources

New Water System Application

This form is provided by the secretary of the South Dakota Department of Environment and Natural Resources in accordance with § 74:04:09:06 of the Administrative Rules of South Dakota. All new community and nontransient noncommunity water systems must submit this form in order to be considered for a Certificate of Approval. **Complete this form and send to:**

Drinking Water Program
523 E. Capitol – Joe Foss Building
Pierre, SD 57501-3181

| Applicant | | | Engineer | | |
|------------------|--------|------|------------|--------|------|
| Owner/Developer: | | | Name/Firm: | | |
| Address: | | | Address: | | |
| City: | State: | Zip: | City: | State: | Zip: |

| Contact Person | | | | | |
|----------------|--------|------|--------|--------|------|
| Name: | | | Phone: | | |
| Address: | | | | | |
| City: | State: | Zip: | City: | State: | Zip: |

| General Information: | |
|---|-------|
| County: | _____ |
| Legal Description (quarter, section, township, range): | _____ |
| Project Name: | _____ |
| Water Source: | _____ |
| Service Population: | _____ |

| | |
|---|--|
| Has a layout map showing the location of the new water system been attached to this form? | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| Have drinking water sample results from the water source been attached to this form? | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| Has documentation of a valid water right permit been attached? | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| Has the business plan been submitted? | Yes <input type="checkbox"/> No <input type="checkbox"/> |

| Certification | |
|---|---|
| Applicant | Notary Public |
| I certify that I have read this application and that the matters stated are true. | Subscribed and sworn to before me this _____ day of _____, _____. |
| Signature: _____ | Notary Public Signature (Stamp) |
| Date: _____ | |

Department of Environment and Natural Resources
Drinking Water Program
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181
Telephone: (605) 773-3754

STATE OF SOUTH DAKOTA
BEFORE THE SECRETARY OF
THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

IN THE MATTER OF THE)
APPLICATION OF _____)
_____) SS CERTIFICATION OF
(FACILITY NAME)) APPLICANT
STATE OF _____)
COUNTY OF _____)

I, _____, the applicant in the above matter after being duly sworn upon oath hereby certify the following information in regard to this application:

South Dakota Codified Laws Section 1-40-27 provides:

“The secretary may reject an application for any permit filed pursuant to Titles 34A or 45, including any application by any concentrated swine feeding operation for authorization to operate under a general permit, upon making a specific finding that:

- (1) *The applicant is unsuited or unqualified to perform the obligations of a permit holder based upon a finding that the applicant, any officer, director, partner or resident general manager of the facility for which application has been made:*
 - (a) *Has intentionally misrepresented a material fact in applying for a permit;*
 - (b) *Has been convicted of a felony or other crime involving moral turpitude;*
 - (c) *Has habitually and intentionally violated environmental laws of any state of the United States which have caused significant and material environmental damage;*
 - (d) *Has had any permit revoked under the environmental laws of any state or the United States; or*
 - (e) *Has otherwise demonstrated through clear and convincing evidence of previous actions that the applicant lacks the necessary good character and competency to reliably carryout the obligations imposed by law upon the permit holder; or*
- (2) *The application substantially duplicates an application by the same applicant denied within the past five years which denial has not been reversed by a court of competent jurisdiction. Nothing in this subdivision*

may be construed to prohibit an applicant from submitting a new application for a permit previously denied, if the new application represents a good faith attempt by the applicant to correct the deficiencies that served as the basis for the denial in the original application.

All applications filed pursuant to Titles 34A and 45 shall include a certification, sworn to under oath and signed by the applicant, that he is not disqualified by reason of this section from obtaining a permit. In the absence of evidence to the contrary, that certification shall constitute a prima facie showing of the suitability and qualification of the applicant. If at any point in the application review, recommendation or hearing process, the secretary finds the applicant has intentionally made any material misrepresentation of fact in regard to this certification, consideration of the application may be suspended and the application may be rejected as provided for under this section.

Applications rejected pursuant to this section constitute final agency action upon that application and may be appealed to circuit court as provided for under chapter 1-26."

Pursuant to SDCL 1-40-27, I certify that I have read the forgoing provision of state law, and that I am not disqualified by reason of that provision from obtaining the permit for which application has been made.

Dated this _____, day of _____, _____.

Applicant

Subscribed and sworn before me this _____ day of _____,
_____.

Notary Public

My commission expires: _____

(SEAL)

**PLEASE ATTACH SHEET DISCLOSING ALL FACTS PERTAINING TO
SDCL 1-40-27 (1) (a) through (e).
ALL VIOLATIONS MUST BE DISCLOSED, BUT WILL NOT
AUTOMATICALLY RESULT IN THE REJECTION OF AN APPLICATION.**

Appendix 2: Business Plan Checklist

Please include this checklist with your business plan.

| Information Included: | Yes | No | Page Number |
|---|-----|----|-------------|
| Facilities Plan | | | |
| Description of water system | Γ | Γ | _____ |
| Area to be served | Γ | Γ | _____ |
| Provisions for extending water supply | Γ | Γ | _____ |
| Population and land use projections | Γ | Γ | _____ |
| Forecast of water usage | Γ | Γ | _____ |
| Assessment of drinking water compliance | Γ | Γ | _____ |
| Alternate plans discussion | Γ | Γ | _____ |
| Engineering description | Γ | Γ | _____ |
| Management Plan | | | |
| Ownership authority | Γ | Γ | _____ |
| Evidence of ownership | Γ | Γ | _____ |
| Administrative and management organizational charts | Γ | Γ | _____ |
| Credentials | Γ | Γ | _____ |
| Financial Plan | | | |
| Cash flow | Γ | Γ | _____ |
| Income and debt | Γ | Γ | _____ |
| Operation and maintenance costs | Γ | Γ | _____ |
| Construction costs | Γ | Γ | _____ |
| Reserve(s) created | Γ | Γ | _____ |
| Five year projections | Γ | Γ | _____ |

Plans and Specifications – Estimated Submittal Date: _____

Appendix 3: Sample Financial Spreadsheet

Applicant: _____
 Completed by: _____
 Date: _____

| 5 Year Projections | Year 1 Projected | Year 2 Projected | Year 3 Projected | Year 4 Projected | Year 5 Projected |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|
| Enter Year: | | | | | |
| 1. Beginning Cash on Hand | | | | | |
| 2. Cash Receipts: | | | | | |
| a. Unmetered Water Revenue | | | | | |
| b. Metered Water Revenue | | | | | |
| c. Other Water Revenue | | | | | |
| d. Total Water Revenues (2a thru 2c) | | | | | |
| e. Connection Fees | | | | | |
| f. Interest and Dividend Income | | | | | |
| g. Other Income | | | | | |
| h. Total Cash Revenues (2d thru 2g) | | | | | |
| i. Transfers in/Additional Rev Needed | | | | | |
| j. Loans, Grants or other Cash Injection please specify | | | | | |
| 3. Total Cash Receipts (2h thru 2j) | | | | | |
| 4. Total Cash Available (1+3) | | | | | |
| 5. Operating Expenses | | | | | |
| a. Salaries and wages | | | | | |
| b. Employee Pensions and Benefits | | | | | |
| c. Purchased Water | | | | | |
| d. Purchased Power | | | | | |
| e. Fuel for Power Production | | | | | |
| f. Chemicals | | | | | |
| g. Materials and Supplies | | | | | |
| h. Contractual Services - Engineering | | | | | |
| i. Contractual Services - Other | | | | | |
| j. Rental of Equipment/Real Property | | | | | |
| k. Transportation Expenses | | | | | |
| l. Laboratory | | | | | |
| m. Insurance | | | | | |
| n. Regulatory Commission Expenses | | | | | |
| o. Advertising | | | | | |
| p. Miscellaneous | | | | | |
| q. Total Cash O&M Expenses (5a thru 5p) | | | | | |
| r. Replacement Expenditures | | | | | |
| s. Total OM&R Expenditures (5q+5r) | | | | | |
| t. Loan Principal/Capital Lease Payments | | | | | |
| u. Loan Interest Payments | | | | | |
| v. Transfers Out | | | | | |
| w. Capital Purchases (specify): | | | | | |
| x. Other | | | | | |
| 6. Total Cash Paid Out (5s thru 5x) | | | | | |
| 7. Ending Cash Position (4 - 6) | | | | | |
| 8. Number of Customer Accounts | | | | | |
| 9. Average Annual User Charge/account (2d/8) | | | | | |
| 10. Coverage Ratio (2h-5s)/(5t+5u) | | | | | |
| 11. Operating Ratio (2d/5s) | | | | | |
| 12. End of Year Operating Cash (7 - 13) | | | | | |
| 13. End of Year Reserves: | | | | | |
| a. Debt Service Reserve | | | | | |
| b. Bond Retirement Reserve | | | | | |
| c. Capital Improvement Reserve | | | | | |
| d. Replacement Reserve | | | | | |
| Total Reserves (13a thru 13e) | | | | | |

Appendix 4: Summary of South Dakota Drinking Water Regulations

SUMMARY OF THE SOUTH DAKOTA DRINKING WATER STANDARDS-1/2006

The South Dakota Drinking Water Standards became effective in September, 1983 as part of South Dakota's responsibilities under the Federal Safe Drinking Water Act (SDWA). The SDWA was amended in 1996 to address more drinking water concerns. In South Dakota, the Drinking Water Program (DWP), Department of Environment and Natural Resources (DENR) is responsible for the enforcement of the standards. Suppliers of drinking water have important responsibilities under the standards. Water suppliers should have a good working knowledge of the standards for their system to be in compliance.

The standards apply to all **public water systems** (PWS). A PWS is any water system that serves 15 connections or 25 people per day for 60 days per year. There are several types of PWS. **Community PWS** are water systems that serve a residential population such as municipalities, rural water systems, mobile home courts, housing developments, etc. **Transient Non-Community PWS** are water systems that serve a transient or nonresidential population such as campgrounds, rest stops, resorts, etc. **Non-Transient Non-Community (NTNC) PWS** are water systems that serve the same nonresidents for at least six months per year such as day cares, factories, and schools.

The most important section of the standards concerns sampling of various contaminants of drinking water. Non-transient non-community water systems sample at the same frequency as community systems unless noted differently. The initial sampling needs of a PWS are listed below. The maximum contaminant levels (MCL) for each parameter are listed as an attachment to this pamphlet. Follow-up sampling will depend on the results of the initial sampling results.

1. **Total Coliform Bacteria**-Monthly. The number of samples depends on the population served. Samples are taken at designated/approved sampling sites in the distribution system.
2. **Inorganic Chemicals (Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Mercury, Nickel, Selenium, Thallium, and Fluoride)**-Every three years for groundwater systems. Annually for surface water supplies. Entry point sampling. Fluoride monitoring for community systems only. Waivers are available to reduce IOC sampling to every nine years.
3. **Asbestos**-One sample every nine years. Samples are taken at sites served by asbestos-cement pipe. Waivers are available to eliminate this sampling.
4. **Nitrite**-One sample every three years. Entry point sampling.
5. **Nitrate**-Entry point sampling.

| | Initial Monitoring | Subsequent Monitoring |
|---------------------------|---------------------------|------------------------------|
| Surface Water Entry Point | Quarterly | Annual |
| Groundwater Entry Point | Annual | Annual |

6. **Radiological Chemicals**-The initial sampling is a year of quarterly samples. Entry point sampling. Follow-up sampling (every three, six, or nine years) depends on the results of the average of the initial four quarterly samples. Community systems only.

| Monitoring Results | Frequency of Sampling |
|----------------------------------|-----------------------|
| > MCL | Quarterly |
| > ½ of MCL and < MCL | Every Three Years |
| > Detection Level and < ½ of MCL | Every Six Years |
| < Detection Level | Every Nine Years |

7. **Synthetic Organic Chemicals (SOC) including Pesticides**-Initial sampling is four quarterly samples. Entry point sampling. Repeat sampling is two quarterly samples every three years for systems serving more than 3300 people. Repeat sampling is one sample every three years for systems serving less than 3300 people. Waivers are available to eliminate this sampling.

8. **Stage 1 Disinfection By-Products (DBPs)**-DBP's are formed when water is disinfected. This is for any NTNC or community system that uses chlorine, chlorine dioxide, or chloramines.

| System Type | Population | Monitoring Frequency |
|--|------------|----------------------|
| Surface/GUDISW* | ≥10,000 | 4/plant/quarter |
| Surface/GUDISW* | 500-9,999 | 1/plant/quarter |
| Surface/GUDISW* | <500 | 1/plant/year** |
| Groundwater | ≥10,000 | 1/plant/quarter |
| Groundwater | <10,000 | 1/plant/year** |
| *Groundwater under Direct Influence of Surface Water | | |
| **Sample taken in month with warmest water temperature | | |

Also included under this rule is monitoring for-

- Bromate-Systems using ozone
- Chlorite-Systems using chlorine dioxide
- Chlorine
- Chloramines
- Chlorine dioxide-Systems using chlorine dioxide
- DBP precursors-Conventional filtration plants

The Stage 2 DBP Regulation will be implemented directly by EPA beginning in 2006 with water systems phased in by population.

9. **Turbidity/Disinfection Residuals**-Daily for all surface water and groundwater under the direct influence of surface water. Reports must be submitted to DENR on a monthly basis.

10. **Volatile Organic Chemicals (VOC)**-The initial sampling is a year of quarterly samples. Entry point sampling. Systems with no detections can be reduced to annual sampling. Groundwater systems can then be reduced to one sample every three years after three years of annual monitoring with no detections. Some unregulated VOCs are also monitored. Waivers are available to reduce this sampling to every six years.
11. **Lead and Copper**-Tap monitoring will be of first draw water (water that has remained motionless for at least six hours) and will take place at sites pre-approved by the State. These sites include high-risk homes such as those with lead service lines or new lead solder (applied since 1982).

The number of samples to be taken every six months (Jan-June and July-Dec compliance periods) is as follows:

| Lead and Copper Samples | | |
|--------------------------------|----------------------------|---------------------------|
| Population Served | Baseline Monitoring | Reduced Monitoring |
| > 100,000 | 100 | 50 |
| 10,001-100,00 | 60 | 30 |
| 3301-10,000 | 40 | 20 |
| 501-3300 | 20 | 10 |
| 101-500 | 10 | 5 |
| < 101 | 5 | 5 |

Systems in compliance with the lead/copper action levels may be able to reduce monitoring after two consecutive six-month monitoring periods.

Water systems exceeding the lead or copper action levels must treat their water to reduce corrosive effects and must monitor for water quality parameters.

Other Sampling Information

Waivers to reduce or eliminate sampling may be obtained for various parameters including asbestos, VOCs, IOCs, and SOCs. Waiver criteria are based on previous sampling, chemical use, and vulnerability of sources.

All compliance analyses must be performed by a state or EPA certified laboratory. The results of analyses performed by laboratories outside of South Dakota must be reported to the DWP. Monitoring requirements are sent every January to each water system to inform them of the required monitoring for the calendar year. It is up to the water system to then arrange to have the analyses performed with a certified laboratory.

Entry point sampling refers to samples being taken at a point where a source or sources enter the distribution system.

The Standards also require sampling for sodium and corrosivity; however, these parameters are analyzed every three years when the DWP performs a sanitary survey on a water system and takes a chemical sample.

A ***consecutive water system*** is a situation where a water system is served by another public water system. The original system supplying the water must analyze for the chemical parameters. The consecutive water system must be receiving at least 75% of its water from another PWS to be excused from all sampling except total coliform, asbestos, VOC, and lead/copper analyses as of this date. If a consecutive system uses *any* surface water, it must comply with all requirements of the Surface Water Treatment Rule.

When a water supply exceeds an MCL, repeat/confirmation samples may be necessary to confirm the analytical result. If the results are confirmed, these systems must take steps to get their water systems into compliance with the MCL and have to issue a public notice to its customers concerning the violation. The purpose of the public notice is to increase the public awareness of the problems water systems face and of the true cost of safe drinking water. A public notice must also be issued if the required monitoring is not performed. The Public Notification Handbook is available from the DWP and from our web site.

Sample results must be kept as part of a system's records. Total coliform records must be kept for five years, lead/copper records for twelve years, and other chemical results for ten years. Actual laboratory results may be kept or the results may be summarized in tabular form.

A key water supplier responsibility is to see that the proper number and type of samples are taken. Unfortunately, too many operators take sampling for granted. Sloppy practices will result in contaminated samples that are not representative of the actual water quality.

Operator Certification

As of July 1, 2000, the following systems must be managed and operated by a state certified water operator:

1. All community and NTNC water systems
2. Any transient non-community water system using surface water or disinfection equipment

Training courses are provided by the SD Rural Water Association, and exams are given 12-18 times per year across the state. There are experience and educational requirements to take certification exams. There is an operator certification web site at <http://www.state.sd.us/opercert>.

Capacity Development

New Water Systems

All new community and non-transient non-community water systems that are built after October 1, 1999 are required to obtain a certificate of approval from the department before beginning operation. The certificate of approval is issued after the applicant submits all required documentation that demonstrates the system has adequate technical, managerial, and financial capacity. A planning manual is available to help applicants through the process. This manual can be downloaded from the DWP web site or can be obtained by calling the DWP.

Existing Water Systems

The DWP is in the process of developing a program that will assist existing water system in acquiring and maintaining technical, managerial, and financial capacity. For more information, visit our web site or call our office.

December 23, 2004

Consumer Confidence Reports

Every community water system must issue a Consumer Confidence Report each year by July 1. This report must describe the quality of the water provided to consumers. The Consumer Confidence Report is the centerpiece of many provisions adopted in the 1996 Amendments to the Safe Drinking Water Act to give consumers more information on their drinking water and unprecedented opportunities to get involved in protecting it.

The final rule includes requirements that the reports must tell consumers:

- the lake, river, aquifer, or other source of the drinking water;
- a brief summary of the susceptibility to contamination of the local drinking water source, based on the source water assessments that states are completing over the next five years;
- how to get a copy of the water system's complete source water assessment;
- the level (or range of levels) of any contaminant found in local drinking water, as well as EPA's health-based standard (maximum contaminant level) for comparison;
- the likely source of that contaminant in the local drinking water supply;
- the potential health effects of any contaminant detected in violation of an EPA health standard, and an accounting of the system's actions to restore safe drinking water; information about how vulnerable populations can avoid Cryptosporidium.
- the water system's compliance with other drinking water-related rules;
- an educational statement for vulnerable populations about avoiding Cryptosporidium;
- educational information on nitrate, arsenic, or lead in areas where these contaminants are detected above 50% of EPA's standard; and
- phone numbers of additional sources of information, including the water system.

Miscellaneous Regulations

A one-time public notice on the health effects of lead (Pb) must be issued to each customer of a community PWS. This deals with the possible leaching of lead from solder and piping into the water. This requirement now affects only newly developed water systems. Established systems had to have issued the notice by June 19, 1988. Established systems must notify any new customers of the possible lead health effects.

There is also a comprehensive set of regulations concerning the use of surface water or groundwater under the direct influence of surface water. For information on these regulations, please contact the DWP.

Any system that uses a water source that delivers water at more than 18 gallons per minute is required to have a water right issued by this department. Further information concerning water rights can be obtained from the Water Rights Program at 605-773-3352.

The drinking water regulations are constantly changing. Water systems are notified by DWP when these regulations will affect their systems. However, systems must make preparations for future regulatory effects, especially for the costs of increased monitoring and possible water treatment equipment purchases.

Please note that this summary does not substitute for the actual regulations.

If there are any questions on drinking water, please contact the Drinking Water Program, Foss Building, 523 East Capitol, Pierre, SD 57501-3181 (Phone: 605-773-3754 Fax: 605-773-5286). The Drinking Water Program also has a homepage on the Internet. The Internet address is: <http://www.state.sd.us/denr/dw>

The DWP has personnel located in the following regional offices:

| | |
|---------------------------------|----------|
| Black Hills Regional Office | 394-2229 |
| Northeast Lakes Regional Office | 882-5111 |
| Vermillion Regional Office | 773-3577 |

2006 Edition of the Drinking Water Standards and Health Advisories



2006 Edition of the Drinking Water Standards and Health Advisories

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The *Drinking Water Standards and Health Advisories* Tables are revised periodically by EPA's Office of Water in order to update RfD and Cancer values so that they are consistent with the most current Agency assessments of chemical contaminants that may occur in drinking water and to introduce new Health Advisories. The following information should be kept in mind when using the 2006 Edition of the Tables:

Reference dose (RfD) values are updated to reflect the values in the Integrated Risk Information System (IRIS) and the Office of Pesticide Programs (OPP) Reregistration Eligibility Decisions (RED) Documents. The Drinking Water Equivalent Level (DWEL) has been adjusted accordingly. Thus, both the RfD and DWEL in the Tables differ from the values in the Health Advisory document when the IRIS or OPP RfD is more recent than the Health Advisory document value. RfD values from IRIS that differ from the values in the Health Advisory documents are presented in **BOLD** type. Values derived from the REDs are given in **BOLD** italics. For unregulated chemicals with a recent IRIS or OPP RfD, the lifetime Health Advisory is calculated from the DWEL using the relative source contribution value published in the Health Advisory document. For regulated chemicals, no lifetime value is provided in the Tables when the revised lifetime value would differ from the Maximum Contaminant Level Goal (MCLG).

The cancer group designation or cancer classification and 10^{-4} cancer risk values reflect those presently in IRIS or in the OPP RED. New IRIS cancer designations and 10^{-4} cancer risk values are presented in **BOLD** type and those derived from the REDs are in **BOLD** italics.

The IRIS Toxicological Reviews can be accessed at: <http://www.epa.gov/IRIS>. The OPP REDs can be accessed at: <http://cfpub.epa.gov/oppref/rereg/status.cfm?show=rereg>

In some cases there is a Health Advisory value for a contaminant but there is no reference to a Health Advisory document. These Health Advisory values can be found in the Drinking Water Criteria Document for the contaminant.

With a few exceptions, the RfDs, Health Advisory, and cancer risk values have been rounded to one significant figure following the convention adopted by IRIS.

The *Drinking Water Standards and Health Advisories* Tables may be reached from the Water Science home page at: <http://www.epa.gov/waterscience>. The Tables are accessed under the Health Advisories heading.

Copies the Tables may be ordered free of charge from

SAFE DRINKING WATER HOTLINE
1-800-426-4791
Monday thru Friday, 9:00 AM to 5:30 PM EST

DEFINITIONS

The following definitions for terms used in the Tables are not all-encompassing, and should not be construed to be “official” definitions. They are intended to assist the user in understanding terms found on the following pages.

Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow. It is the level of lead or copper which, if exceeded in over 10% of the homes tested, triggers treatment for corrosion control.

Cancer Classification: A descriptive weight-of-evidence judgment as to the likelihood that an agent is a human carcinogen and the conditions under which the carcinogenic effects may be expressed. Under the 2005 EPA *Guidelines for Carcinogen Risk Assessment*, descriptive terms for carcinogenicity replace the earlier alpha numeric Cancer Group designations (US EPA 1986 guidelines). The suggested descriptive terms are as follows:

- Carcinogenic to humans (**H**)
- Likely to be carcinogenic to humans (**L**)
- Likely to be carcinogenic above a specified dose but not likely to be carcinogenic below that dose because a key event in tumor formation does not occur below that dose (**L/N**)
- Suggestive evidence of carcinogenic potential (**S**)
- Inadequate information to assess carcinogenic potential (**I**)
- Not likely to be carcinogenic to humans (**N**)

The letter abbreviations provided parenthetically above are now used in the Tables in place of the prior alpha numeric identifiers for chemicals that have been evaluated under the new guidelines (the 2005 guidelines or the 1996 and 1999 draft guidelines).

Cancer Group: A qualitative weight-of-evidence judgement as to the likelihood that a chemical may be a carcinogen for humans. Each chemical was placed into one of the following five categories (US EPA 1986 guidelines). The Cancer Group designation are given in the Tables for chemicals that have not yet been evaluated under the new guidelines.

Group Category

- A** Human carcinogen
- B** Probable human carcinogen:
 - B1** indicates limited human evidence
 - B2** indicates sufficient evidence in animals and inadequate or no evidence in humans
- C** Possible human carcinogen
- D** Not classifiable as to human carcinogenicity
- E** Evidence of noncarcinogenicity for humans

10⁻⁴ Cancer Risk: The concentration of a chemical in drinking water corresponding to an excess estimated lifetime cancer risk of 1 in 10,000.

Drinking Water Advisory: A nonregulatory concentration of a contaminant in water that is likely to be without adverse effects on health and aesthetics.

DWEL: Drinking Water Equivalent Level. A lifetime exposure concentration protective of adverse, non-cancer health effects, that assumes all of the exposure to a contaminant is from drinking water.

HA: Health Advisory. An estimate of acceptable drinking water levels for a chemical substance based on health effects information; a Health Advisory is not a legally enforceable Federal standard, but serves as technical guidance to assist Federal, State, and local officials.

One-Day HA: The concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for up to one day of exposure. The One-Day HA is normally designed to protect a 10-kg child consuming 1 liter of water per day.

Ten-Day HA: The concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for up to ten days of exposure. The Ten-Day HA is also normally designed to protect a 10-kg child consuming 1 liter of water per day.

Lifetime HA: The concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for a lifetime of exposure. The Lifetime HA is based on exposure of a 70-kg adult consuming 2 liters of water per day. The Lifetime HA for Group C carcinogens includes an adjustment for possible carcinogenicity.

MCLG: Maximum Contaminant Level Goal. A non-enforceable health goal which is set at a level at which no known or anticipated adverse effect on the health of persons occurs and which allows an adequate margin of safety.

MCL: Maximum Contaminant Level. The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLG as feasible using the best available analytical and treatment technologies and taking cost into consideration. MCLs are enforceable standards.

RfD: Reference Dose. An estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.

SDWR: Secondary Drinking Water Regulations. Non-enforceable Federal guidelines regarding cosmetic effects (such as tooth or skin discoloration) or aesthetic effects (such as taste, odor, or color) of drinking water.

TT: Treatment Technique. A required process intended to reduce the level of a contaminant in drinking water.

ABBREVIATIONS

| | |
|--------------|----------------------------------|
| D | Draft |
| F | Final |
| NA | Not Applicable |
| NOAEL | No-Observed-Adverse-Effect Level |
| OPP | Office of Pesticide Programs |
| P | Proposed |
| Reg | Regulation |
| TT | Treatment Technique |

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| Chemicals | CASRN Number | Standards | | | Status HA Document | Health Advisories | | | | | | Cancer Descriptor ¹ |
|---------------------------------|--------------|----------------|-------------|-----------------|--------------------|-------------------|----------------|-----------------|-------------|------------------|--------------------------------------|--------------------------------|
| | | Status Reg. | MCLG (mg/L) | MCL (mg/L) | | 10-kg Child | | RfD (mg/kg/day) | DWEL (mg/L) | Life-time (mg/L) | mg/L at 10 ⁻⁴ Cancer Risk | |
| | | | | | | One-day (mg/L) | Ten-day (mg/L) | | | | | |
| ORGANICS | | | | | | | | | | | | |
| Acenaphthene | 83-32-9 | - | - | - | - | - | - | 0.06 | 2 | - | - | - |
| Acifluorfen (sodium) | 62476-59-9 | | - | - | F '88 | 2 | 2 | 0.01 | 0.4 | - | 0.1 | <i>L/N</i> |
| Acrylamide | 79-06-1 | F | zero | TT ² | F '87 | 1.5 | 0.3 | 0.0002 | 0.007 | - | 0.0008 | B2 |
| Acrylonitrile | 107-13-1 | | - | - | - | - | - | - | - | - | 0.006 | B1 |
| Alachlor | 15972-60-8 | F | zero | 0.002 | F '88 | 0.1 | 0.1 | 0.01 | 0.4 | - | 0.04 | B2 |
| Aldicarb ³ | 116-06-3 | F ⁴ | 0.001 | 0.003 | F '95 | 0.01 | 0.01 | 0.001 | 0.035 | 0.007 | - | D |
| Aldicarb sulfone ³ | 1646-88-4 | F ⁴ | 0.001 | 0.002 | F '95 | 0.01 | 0.01 | 0.001 | 0.035 | 0.007 | - | D |
| Aldicarb sulfoxide ³ | 1646-87-3 | F ⁴ | 0.001 | 0.004 | F '95 | 0.01 | 0.01 | 0.001 | 0.035 | 0.007 | - | D |
| Aldrin | 309-00-2 | - | - | - | F '92 | 0.0003 | 0.0003 | 0.00003 | 0.001 | - | 0.0002 | B2 |
| Ametryn | 834-12-8 | - | - | - | F '88 | 9 | 9 | 0.009 | 0.3 | 0.06 | - | D |
| Ammonium sulfamate | 7773-06-0 | - | - | - | F '88 | 20 | 20 | 0.2 | 8 | 2 | - | D |
| Anthracene (PAH) ⁵ | 120-12-7 | - | - | - | - | - | - | 0.3 | 10 | - | - | D |
| Atrazine | 1912-24-9 | F | 0.003 | 0.003 | F '88 | - | - | 0.02 | 0.7 | - | - | <i>N</i> |
| Baygon | 114-26-1 | - | - | - | F '88 | 0.04 | 0.04 | 0.004 | 0.1 | 0.003 | - | C |
| Bentazon | 25057-89-0 | - | - | - | F '99 | 0.3 | 0.3 | 0.03 | 1 | 0.2 | - | E |
| Benz[a]anthracene (PAH) | 56-55-3 | - | - | - | - | - | - | - | - | - | - | B2 |
| Benzene | 71-43-2 | F | zero | 0.005 | F '87 | 0.2 | 0.2 | 0.004 | 0.1 | - | 0.1 | H |
| Benzo[a]pyrene (PAH) | 50-32-8 | F | zero | 0.0002 | - | - | - | - | - | - | 0.0005 | B2 |
| Benzo[b]fluoranthene (PAH) | 205-99-2 | - | - | - | - | - | - | - | - | - | - | B2 |
| Benzo[g,h,i]perylene (PAH) | 191-24-2 | - | - | - | - | - | - | - | - | - | - | D |
| Benzo[k]fluoranthene (PAH) | 207-08-9 | - | - | - | - | - | - | - | - | - | - | B2 |
| bis-2-Chloroisopropyl ether | 39638-32-9 | - | - | - | F '89 | 4 | 4 | 0.04 | 1 | 0.3 | - | D |
| Bromacil | 314-40-9 | - | - | - | F '88 | 5 | 5 | 0.1 | 3.5 | 0.07 | - | C |
| Bromobenzene | 108-86-1 | - | - | - | D '86 | 4 | 4 | - | - | - | - | D |

¹ Chemicals evaluated under the 2005 Cancer Guidelines or the 1996 or 1999 drafts are demoted by an abbreviation for their weight-of-the-evidence descriptor (see page iii). If the agency has not completed a new assessment for the chemical, the 1986 Guidelines Group designation (see page iii) is given in the Cancer Descriptor column.

² When acrylamide is used in drinking water systems, the combination (or product) of dose and monomer level shall not exceed that equivalent to a polyacrylamide polymer containing 0.05% monomer dosed at 1 mg/L.

³ The MCL value for any combination of two or more of these three chemicals should not exceed 0.007 mg/L because of a similar mode of action.

⁴ Administrative stay of the effective date.

⁵ PAH = Polycyclic aromatic hydrocarbon.

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| Chemicals | CASRN Number | Standards | | | Status HA Document | Health Advisories | | | | | | Cancer Descriptor |
|----------------------------|--------------|-------------|-------------|-------------------|--------------------|-------------------|----------------|-----------------|-------------|------------------|--------------------------------------|-------------------|
| | | Status Reg. | MCLG (mg/L) | MCL (mg/L) | | 10-kg Child | | RfD (mg/kg/day) | DWEL (mg/L) | Life-time (mg/L) | mg/L at 10 ⁻⁴ Cancer Risk | |
| | | | | | | One-day (mg/L) | Ten-day (mg/L) | | | | | |
| Bromochloromethane | 74-97-5 | - | - | - | F '89 | 50 | 1 | 0.01 | 0.5 | 0.09 | - | D |
| Bromodichloromethane (THM) | 75-27-4 | F | zero | 0.08 ¹ | - | 1 | 0.6 | 0.003 | 0.1 | - | 0.1 | L |
| Bromoform (THM) | 75-25-2 | F | zero | 0.08 ¹ | - | 5 | 0.2 | 0.03 | 1 | - | 0.8 | L |
| Bromomethane | 74-83-9 | - | - | - | D '89 | 0.1 | 0.1 | 0.001 | 0.05 | 0.01 | - | D |
| Butyl benzyl phthalate | 85-68-7 | - | - | - | - | - | - | 0.2 | 7 | - | - | C |
| Butylate | 2008-41-5 | - | - | - | F '89 | 2 | 2 | 0.05 | 2 | 0.4 | - | D |
| Carbaryl | 63-25-2 | - | - | - | F '88 | 1 | 1 | 0.01 | 0.4 | - | 4 | L |
| Carbofuran | 1563-66-2 | F | 0.04 | 0.04 | F '87 | - | - | 0.00006 | - | - | - | N |
| Carbon tetrachloride | 56-23-5 | F | zero | 0.005 | F '87 | 4 | 0.2 | 0.0007 | 0.03 | - | 0.03 | B2 |
| Carboxin | 5234-68-4 | - | - | - | F '88 | 1 | 1 | 0.1 | 3.5 | 0.7 | - | D |
| Chloramben | 133-90-4 | - | - | - | F '88 | 3 | 3 | 0.015 | 0.5 | 0.1 | - | D |
| Chlordane | 57-74-9 | F | zero | 0.002 | F '87 | 0.06 | 0.06 | 0.0005 | 0.02 | - | 0.01 | B2 |
| Chloroform (THM) | 67-66-3 | F | 0.07 | 0.08 ¹ | - | 4 | 4 | 0.01 | 0.35 | 0.07 | - | L/N |
| Chloromethane | 74-87-3 | - | - | - | F '89 | 9 | 0.4 | 0.004 | 0.1 | 0.03 | - | D |
| Chlorophenol (2-) | 95-57-8 | - | - | - | D '94 | 0.5 | 0.5 | 0.005 | 0.2 | 0.04 | - | D |
| Chlorothalonil | 1897-45-6 | - | - | - | F '88 | 0.2 | 0.2 | 0.015 | 0.5 | - | 0.15 | B2 |
| Chlorotoluene o- | 95-49-8 | - | - | - | F '89 | 2 | 2 | 0.02 | 0.7 | 0.1 | - | D |
| Chlorotoluene p- | 106-43-4 | - | - | - | F '89 | 2 | 2 | 0.02 | 0.7 | 0.1 | - | D |
| Chlorpyrifos | 2921-88-2 | - | - | - | F '92 | 0.03 | 0.03 | 0.0003 | 0.01 | 0.002 | - | D |
| Chrysene (PAH) | 218-01-9 | - | - | - | - | - | - | - | - | - | - | B2 |
| Cyanazine | 21725-46-2 | - | - | - | D '96 | 0.1 | 0.1 | 0.002 | 0.07 | 0.001 | - | |

¹ 1998 Final Rule for Disinfectants and Disinfection By-products: The total for trihalomethanes (THM) is 0.08 mg/L.

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| Chemicals | CASRN Number | Standards | | | Status HA Document | Health Advisories | | | | | | Cancer Descriptor |
|--|--------------|-------------|-------------|-------------------|--------------------|-------------------|----------------|-----------------|-------------|------------------|--------------------------------------|-------------------|
| | | Status Reg. | MCLG (mg/L) | MCL (mg/L) | | 10-kg Child | | RfD (mg/kg/day) | DWEL (mg/L) | Life-time (mg/L) | mg/L at 10 ⁻⁴ Cancer Risk | |
| | | | | | | One-day (mg/L) | Ten-day (mg/L) | | | | | |
| Cyanogen chloride ¹ | 506-77-4 | - | - | - | - | 0.05 | 0.05 | 0.05 | 2 | - | - | D |
| 2,4-D (2,4-dichlorophenoxyacetic acid) | 94-75-7 | F | 0.07 | 0.07 | F '87 | 1 | 0.3 | 0.005 | 0.2 | - | - | D |
| DCPA (Dacthal) | 1861-32-1 | - | - | - | F '88 | 80 | 80 | 0.01 | 0.35 | 0.07 | - | C |
| Dalapon (sodium salt) | 75-99-0 | F | 0.2 | 0.2 | F '89 | 3 | 3 | 0.03 | 0.9 | 0.2 | - | D |
| Di(2-ethylhexyl)adipate | 103-23-1 | F | 0.4 | 0.4 | - | 20 | 20 | 0.6 | 20 | 0.4 | 3 | C |
| Di(2-ethylhexyl)phthalate | 117-81-7 | F | zero | 0.006 | - | - | - | 0.02 | 0.7 | - | 0.3 | B2 |
| Diazinon | 333-41-5 | - | - | - | F '88 | 0.02 | 0.02 | 0.0002 | 0.007 | 0.001 | - | E |
| Dibromochloromethane (THM) | 124-48-1 | F | 0.06 | 0.08 ² | - | 0.6 | 0.6 | 0.02 | 0.7 | 0.06 | 0.08 | S |
| Dibromochloropropane (DBCP) | 96-12-8 | F | zero | 0.0002 | F '87 | 0.2 | 0.05 | - | - | - | 0.003 | B2 |
| Dibutyl phthalate | 84-74-2 | - | - | - | - | - | - | 0.1 | 4 | - | - | D |
| Dicamba | 1918-00-9 | - | - | - | F '88 | - | - | 0.5 | 18 | 4 | - | N |
| Dichloroacetic acid | 76-43-6 | F | zero | 0.06 ³ | - | 5 | 5 | 0.004 | 0.1 | - | 0.07 | L |
| Dichlorobenzene o- | 95-50-1 | F | 0.6 | 0.6 | F '87 | 9 | 9 | 0.09 | 3 | 0.6 | - | D |
| Dichlorobenzene — ⁴ | 541-73-1 | - | - | - | F '87 | 9 | 9 | 0.09 | 3 | 0.6 | - | D |
| Dichlorobenzene p- | 106-46-7 | F | 0.075 | 0.075 | F '87 | 11 | 11 | 0.1 | 4 | 0.075 | - | C |
| Dichlorodifluoromethane | 75-71-8 | - | - | - | F '89 | 40 | 40 | 0.2 | 5 | 1 | - | D |
| Dichloroethane (1,2-) | 107-06-2 | F | zero | 0.005 | F '87 | 0.7 | 0.7 | - | - | - | 0.04 | B2 |
| Dichloroethylene (1,1-) | 75-35-4 | F | 0.007 | 0.007 | F '87 | 2 | 1 | 0.05 | 2 | - | - | S |
| Dichloroethylene (cis-1,2-) | 156-59-2 | F | 0.07 | 0.07 | F '90 | 4 | 1 | 0.01 | 0.35 | 0.07 | - | D |
| Dichloroethylene (trans-1,2-) | 156-60-5 | F | 0.1 | 0.1 | F '87 | 20 | 1 | 0.02 | 0.7 | 0.1 | - | D |
| Dichloromethane | 75-09-2 | F | zero | 0.005 | D '93 | 10 | 2 | 0.06 | 2 | - | 0.5 | B2 |
| Dichlorophenol (2,4-) | 120-83-2 | - | - | - | D '94 | 0.03 | 0.03 | 0.003 | 0.1 | 0.02 | - | E |
| Dichloropropane (1,2-) | 78-87-5 | F | zero | 0.005 | F '87 | - | 0.09 | - | - | - | 0.06 | B2 |
| Dichloropropene (1,3-) | 542-75-6 | - | - | - | F '88 | 0.03 | 0.03 | 0.03 | 1 | - | 0.04 | L |
| Dieldrin | 60-57-1 | - | - | - | F '88 | 0.0005 | 0.0005 | 0.00005 | 0.002 | - | 0.0002 | B2 |
| Diethyl phthalate | 84-66-2 | - | - | - | - | - | - | 0.8 | 30 | - | - | D |

¹ Under review.

² 1998 Final Rule for Disinfectants and Disinfection By-products: The total for trihalomethanes is 0.08 mg/L.

³ 1998 Final Rule for Disinfectants and Disinfection By-products: The total for five haloacetic acids is 0.06 mg/L.

⁴ The values for m-dichlorobenzene are based on data for o-dichlorobenzene.

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| Chemicals | CASRN Number | Standards | | | Status HA Document | Health Advisories | | | | | | Cancer Descriptor |
|---|--------------|-------------|-------------|-----------------|--------------------|-------------------|----------------|-----------------|-------------|------------------|--------------------------------------|-------------------|
| | | Status Reg. | MCLG (mg/L) | MCL (mg/L) | | 10-kg Child | | RfD (mg/kg/day) | DWEL (mg/L) | Life-time (mg/L) | mg/L at 10 ⁻⁴ Cancer Risk | |
| | | | | | | One-day (mg/L) | Ten-day (mg/L) | | | | | |
| Diisopropyl methylphosphonate | 1445-75-6 | - | - | - | F '89 | 8 | 8 | 0.08 | 3 | 0.6 | - | D |
| Dimethrin | 70-38-2 | - | - | - | F '88 | 10 | 10 | 0.3 | 10 | 2 | - | D |
| Dimethyl methylphosphonate | 756-79-6 | - | - | - | F '92 | 2 | 2 | 0.2 | 7 | 0.1 | 0.7 | C |
| Dimethyl phthalate | 131-11-3 | - | - | - | - | - | - | - | - | - | - | D |
| Dinitrobenzene (1,3-) | 99-65-0 | - | - | - | F '91 | 0.04 | 0.04 | 0.0001 | 0.005 | 0.001 | - | D |
| Dinitrotoluene (2,4-) | 121-14-2 | - | - | - | F '92 | 0.50 | 0.50 | 0.002 | 0.1 | - | 0.005 | B2 |
| Dinitrotoluene (2,6-) | 606-20-2 | - | - | - | F '92 | 0.40 | 0.40 | 0.001 | 0.04 | - | 0.005 | B2 |
| Dinitrotoluene (2,6 & 2,4) ¹ | | - | - | - | F '92 | - | - | - | - | - | 0.005 | B2 |
| Dinoseb | 88-85-7 | F | 0.007 | 0.007 | F '88 | 0.3 | 0.3 | 0.001 | 0.035 | 0.007 | - | D |
| Dioxane p- | 123-91-1 | - | - | - | F '87 | 4 | 0.4 | - | - | - | 0.3 | B2 |
| Diphenamid | 957-51-7 | - | - | - | F '88 | 0.3 | 0.3 | 0.03 | 1 | 0.2 | - | D |
| Diquat | 85-00-7 | F | 0.02 | 0.02 | - | - | - | 0.005 | 0.02 | - | - | <i>E</i> |
| Disulfoton | 298-04-4 | - | - | - | F '88 | 0.01 | 0.01 | 0.0001 | 0.0035 | 0.0007 | - | <i>E</i> |
| Dithiane (1,4-) | 505-29-3 | - | - | - | F '92 | 0.4 | 0.4 | 0.01 | 0.4 | 0.08 | - | D |
| Diuron | 330-54-1 | - | - | - | F '88 | 1 | 1 | 0.003 | 0.1 | - | 0.2 | <i>L</i> |
| Endothall | 145-73-3 | F | 0.1 | 0.1 | F '88 | 0.8 | 0.8 | 0.007 | 0.25 | 0.05 | - | <i>N</i> |
| Endrin | 72-20-8 | F | 0.002 | 0.002 | F '87 | 0.02 | 0.005 | 0.0003 | 0.01 | 0.002 | - | D |
| Epichlorohydrin | 106-89-8 | F | zero | TT ² | F '87 | 0.1 | 0.1 | 0.002 | 0.07 | - | 0.3 | B2 |
| Ethylbenzene | 100-41-4 | F | 0.7 | 0.7 | F '87 | 30 | 3 | 0.1 | 3 | 0.7 | - | D |
| Ethylene dibromide (EDB) ³ | 106-93-4 | F | zero | 0.00005 | F '87 | 0.008 | 0.008 | 0.009 | 0.3 | - | 0.002 | <i>L</i> |
| Ethylene glycol | 107-21-1 | - | - | - | F '87 | 20 | 6 | 2 | 70 | 14 | - | D |
| Ethylene Thiourea (ETU) | 96-45-7 | - | - | - | F '88 | 0.3 | 0.3 | 0.00008 | 0.003 | - | 0.02 | B2 |
| Fenamiphos | 22224-92-6 | - | - | - | F '88 | 0.009 | 0.009 | 0.0001 | 0.0035 | 0.0007 | - | <i>E</i> |

¹ Technical grade.

² When epichlorohydrin is used in drinking water systems, the combination (or product) of dose and monomer level shall not exceed that equivalent to an epichlorohydrin-based polymer containing 0.01% monomer dosed at 20 mg/L.

³ 1,2-dibromoethane.

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| Chemicals | CAS Number | Standards | | | Status HA Standards | Health Advisories | | | | | | Cancer Descriptor |
|----------------------------------|------------|----------------|----------------|---------------|---------------------------|-------------------|-------------------|--------------------|----------------|---------------------|--|----------------------|
| | | Status Reg. | MCLG (mg/L) | MCL (mg/L) | | 10-kg Child | | RfD (mg/kg/day) | DWEL (mg/L) | Life-time (mg/L) | mg/L at 10 ⁻⁴ Cancer Risk | |
| | | | | | | One-day (mg/L) | Ten-day (mg/L) | | | | | |
| Fluometuron | 2164-17-2 | - | - | - | F '88 | 2 | 2 | 0.01 | 0.5 | 0.09 | - | D |
| Fluorene (PAH) | 86-73-7 | - | - | - | - | - | - | 0.04 | 1 | - | - | D |
| Fonofos | 944-22-9 | - | - | - | F '88 | 0.02 | 0.02 | 0.002 | 0.07 | 0.01 | - | N |
| Formaldehyde | 50-00-0 | - | - | - | D '93 | 10 | 5 | 0.2 | 7 | 1 | - | B1 ¹ |
| Glyphosate | 1071-83-6 | F | 0.7 | 0.7 | F '88 | 20 | 20 | 2 | 70 | - | - | D |
| Heptachlor | 76-44-8 | F | zero | 0.0004 | F '87 | 0.01 | 0.01 | 0.0005 | 0.02 | - | 0.0008 | B2 |
| Heptachlor epoxide | 1024-57-3 | F | zero | 0.0002 | F '87 | 0.01 | - | 0.00001 | 0.0004 | - | 0.0004 | B2 |
| Hexachlorobenzene | 118-74-1 | F | zero | 0.001 | F '87 | 0.05 | 0.05 | 0.0008 | 0.03 | - | 0.002 | B2 |
| Hexachlorobutadiene ² | 87-68-3 | - | - | - | - | 0.3 | 0.3 | 0.0003 | 0.01 | - | 0.09 | L |
| Hexachlorocyclopentadiene | 77-47-4 | F | 0.05 | 0.05 | - | - | - | 0.006 | 0.2 | - | - | N |
| Hexachloroethane | 67-72-1 | - | - | - | F '91 | 5 | 5 | 0.001 | 0.04 | 0.001 | 0.3 | C |
| Hexane (n-) | 110-54-3 | - | - | - | F '87 | 10 | 4 | - | - | - | - | I |
| Hexazinone | 51235-04-2 | - | - | - | F '96 | 3 | 2 | 0.05 | 2 | 0.4 | - | D |
| HMX ³ | 2691-41-0 | - | - | - | F '88 | 5 | 5 | 0.05 | 2 | 0.4 | - | D |
| Indeno[1,2,3-c,d]pyrene (PAH) | 193-39-5 | - | - | - | - | - | - | - | - | - | - | B2 |
| Isophorone | 78-59-1 | - | - | - | F '92 | 15 | 15 | 0.2 | 7 | 0.1 | 4 | C |
| Isopropyl methylphosphonate | 1832-54-8 | - | - | - | F '92 | 30 | 30 | 0.1 | 3.5 | 0.7 | - | D |
| Isopropylbenzene (cumene) | 98-82-8 | - | - | - | D '87 | 11 | 11 | 0.1 | 4 | - | - | D |
| Lindane ⁴ | 58-89-9 | F | 0.0002 | 0.0002 | F '87 | 1 | 1 | 0.005 | 0.2 | - | - | S |
| Malathion | 121-75-5 | - | - | - | F '92 | 0.2 | 0.2 | 0.02 | 0.8 | 0.1 | - | D |
| Maleic hydrazide | 123-33-1 | - | - | - | F '88 | 10 | 10 | 0.5 | 20 | 4 | - | D |
| MCPA ⁵ | 94-74-6 | - | - | - | F '88 | 0.1 | 0.1 | 0.004 | 0.14 | 0.03 | - | N |
| Methomyl | 16752-77-5 | - | - | - | F '88 | 0.3 | 0.3 | 0.025 | 0.9 | 0.2 | - | E |
| Methoxychlor | 72-43-5 | F | 0.04 | 0.04 | F '87 | 0.05 | 0.05 | 0.005 | 0.2 | 0.04 | - | D |
| Methyl ethyl ketone | 78-93-3 | - | - | - | F '87 | 75 | 7.5 | 0.6 | 20 | 4 | - | D |
| Methyl parathion | 298-00-0 | - | - | - | F '88 | 0.3 | 0.3 | 0.0002 | 0.007 | 0.001 | - | N |

¹ Carcinogenicity based on inhalation exposure.

² Regulatory Determination Health Effects Support Document for Hexachlorobutadiene (http://www.epa.gov/safewater/ccl/pdfs/reg_determine1/support_cc1_hexachlorobutadiene_healtheffects.pdf).

³ HMX = octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.

⁴ Lindane = γ - hexachlorocyclohexane.

⁵ MCPA = 4(chloro-2-methoxyphenoxy)acetic acid.

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|--|--------------|-------------|-------------|-------------------|--------------------|-------------------|----------------|-----------------|-------------|------------------|--------------------------------------|-------------------|
| | | Status Reg. | MCLG (mg/L) | MCL (mg/L) | | 10-kg Child | | RfD (mg/kg/day) | DWEL (mg/L) | Life-time (mg/L) | mg/L at 10 ⁻⁴ Cancer Risk | |
| | | | | | | One-day (mg/L) | Ten-day (mg/L) | | | | | |
| Metolachlor | 51218-45-2 | - | - | - | F '88 | 2 | 2 | 0.1 | 3.5 | 0.7 | - | C |
| Metribuzin | 21087-64-9 | - | - | - | F '88 | 5 | 5 | 0.01 | 0.35 | 0.07 | - | D |
| Monochloroacetic acid | 79-11-8 | F | 0.03 | 0.06 ¹ | - | 0.2 | 0.2 | 0.01 | 0.35 | 0.07 | - | I |
| Monochlorobenzene | 108-90-7 | F | 0.1 | 0.1 | F '87 | 4 | 4 | 0.02 | 0.7 | 0.1 | - | D |
| Naphthalene | 91-20-3 | - | - | - | F '90 | 0.5 | 0.5 | 0.02 | 0.7 | 0.1 | - | I |
| Nitrocellulose ² | 9004-70-0 | - | - | - | F '88 | - | - | - | - | - | - | - |
| Nitroguanidine | 556-88-7 | - | - | - | F '90 | 10 | 10 | 0.1 | 3.5 | 0.7 | - | D |
| Nitrophenol p- | 100-02-7 | - | - | - | F '92 | 0.8 | 0.8 | 0.008 | 0.3 | 0.06 | - | D |
| Oxamyl (Vydate) | 23135-22-0 | F | 0.2 | 0.2 | F '05 | 0.01 | 0.01 | 0.001 | 0.035 | - | - | N |
| Paraquat | 1910-42-5 | - | - | - | F '88 | 0.1 | 0.1 | 0.0045 | 0.2 | 0.03 | - | C |
| Pentachlorophenol | 87-86-5 | F | zero | 0.001 | F '87 | 1 | 0.3 | 0.03 | 1 | - | 0.03 | B2 |
| Phenanthrene (PAH) | 85-01-8 | - | - | - | - | - | - | - | - | - | - | D |
| Phenol | 108-95-2 | - | - | - | D '92 | 6 | 6 | 0.3 | 11 | 2 | - | D |
| Picloram | 1918-02-1 | F | 0.5 | 0.5 | F '88 | 20 | 20 | 0.02 | 0.7 | - | - | D |
| Polychlorinated biphenyls (PCBs) | 1336-36-3 | F | zero | 0.0005 | D '93 | - | - | - | - | - | 0.01 | B2 |
| Prometon | 1610-18-0 | - | - | - | F '88 | 0.2 | 0.2 | 0.015 | 0.5 | 0.1 | - | D |
| Pronamide | 23950-58-5 | - | - | - | F '88 | 0.8 | 0.8 | 0.08 | 3 | - | 0.2 | B2 |
| Propachlor | 1918-16-7 | - | - | - | F '88 | 0.5 | 0.5 | 0.05 | 2 | - | 0.1 | L |
| Propazine | 139-40-2 | - | - | - | F '88 | - | - | 0.02 | 0.7 | 0.1 | - | N |
| Propham | 122-42-9 | - | - | - | F '88 | 5 | 5 | 0.02 | 0.6 | 0.1 | - | D |
| Pyrene (PAH) | 129-00-0 | - | - | - | - | - | - | 0.03 | - | - | - | D |
| RDX ³ | 121-82-4 | - | - | - | F '88 | 0.1 | 0.1 | 0.003 | 0.1 | 0.002 | 0.03 | C |
| Simazine | 122-34-9 | F | 0.004 | 0.004 | F '88 | - | - | 0.02 | 0.7 | - | - | N |
| Styrene | 100-42-5 | F | 0.1 | 0.1 | F '87 | 20 | 2 | 0.2 | 7 | 0.1 | - | C |
| 2,4,5-T (Trichlorophenoxy-acetic acid) | 93-76-5 | - | - | - | F '88 | 0.8 | 0.8 | 0.01 | 0.35 | 0.07 | - | D |

¹ 1998 Final Rule for Disinfectants and Disinfection By-products: the total for five haloacetic acids is 0.06mg/L.

² The Health Advisory Document for nitrocellulose does not include HA values and describes this compounds as relatively nontoxic.

³ RDX = hexahydro -1,3,5-trinitro-1,3,5-triazine.

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| | | Status Reg. | MCLG (mg/L) | MCL (mg/L) | | 10-kg Child | | RfD (mg/kg/day) | DWEL (mg/L) | Life-time (mg/L) | mg/L at 10 ⁻⁴ Cancer Risk | |
| | | | | | | One-day (mg/L) | Ten-day (mg/L) | | | | | |
| 2,3,7,8-TCDD (Dioxin) | 1746-01-6 | F | zero | 3E-08 | F '87 | 1E-06 | 1E-07 | 1E-09 | 4E-08 | - | 2E-08 | B2 |
| Tebuthiuron | 34014-18-1 | - | - | - | F '88 | 3 | 3 | 0.07 | 2 | 0.5 | - | D |
| Terbacil | 5902-51-2 | - | - | - | F '88 | 0.3 | 0.3 | 0.01 | 0.4 | 0.09 | - | E |
| Terbufos | 13071-79-9 | - | - | - | F '88 | 0.005 | 0.005 | 0.00005 | 0.002 | 0.0004 | - | D |
| Tetrachloroethane (1,1,1,2-) | 630-20-6 | - | - | - | F '89 | 2 | 2 | 0.03 | 1 | 0.07 | 0.1 | C |
| Tetrachloroethane (1,1,2,2-) | 79-34-5 | - | - | - | F '89 | 0.04 | 0.04 | 0.00005 | 0.002 | 0.0003 | 0.02 | C |
| Tetrachloroethylene ¹ | 127-18-4 | F | zero | 0.005 | F '87 | 2 | 2 | 0.01 | 0.5 | 0.01 | - | - |
| Trichlorofluoromethane | 75-69-4 | - | - | - | F '89 | 7 | 7 | 0.3 | 10 | 2 | - | D |
| Toluene | 108-88-3 | F | 1 | 1 | D '93 | 20 | 2 | 0.08 | 3 | - | - | I |
| Toxaphene | 8001-35-2 | F | zero | 0.003 | F '96 | 0.004 | 0.004 | 0.0004 | 0.01 | - | 0.003 | B2 |
| 2,4,5-TP (Silvex) | 93-72-1 | F | 0.05 | 0.05 | F '88 | 0.2 | 0.2 | 0.008 | 0.3 | 0.05 | - | D |
| Trichloroacetic acid | 76-03-9 | F | 0.02 | 0.06 ² | - | 3 | 3 | 0.03 | 1 | 0.02 | - | S |
| Trichlorobenzene (1,2,4-) | 120-82-1 | F | 0.07 | 0.07 | F '89 | 0.1 | 0.1 | 0.01 | 0.35 | 0.07 | - | D |
| Trichlorobenzene (1,3,5-) | 108-70-3 | - | - | - | F '89 | 0.6 | 0.6 | 0.006 | 0.2 | 0.04 | - | D |
| Trichloroethane (1,1,1-) | 71-55-6 | F | 0.2 | 0.2 | F '87 | 100 | 40 | 0.035 | 1 | 0.2 | - | D |
| Trichloroethane (1,1,2-) | 79-00-5 | F | 0.003 | 0.005 | F '89 | 0.6 | 0.4 | 0.004 | 0.1 | 0.003 | 0.06 | C |
| Trichloroethylene ¹ | 79-01-6 | F | zero | 0.005 | F '87 | - | - | 0.007 | 0.2 | - | 0.3 | B2 |
| Trichlorophenol (2,4,6-) | 88-06-2 | - | - | - | D '94 | 0.03 | 0.03 | 0.0003 | 0.01 | - | 0.3 | B2 |
| Trichloropropane (1,2,3-) | 96-18-4 | - | - | - | F '89 | 0.6 | 0.6 | 0.006 | 0.2 | 0.04 | - | - |
| Trifluralin | 1582-09-8 | - | - | - | F '90 | 0.08 | 0.08 | 0.02 | 0.7 | 0.01 | 0.4 | C |
| Trimethylbenzene (1,2,4-) | 95-63-6 | - | - | - | D '87 | - | - | - | - | - | - | D |
| Trimethylbenzene (1,3,5-) | 108-67-8 | - | - | - | D '87 | 10 | - | - | - | - | - | D |
| Trinitroglycerol | 55-63-0 | - | - | - | F '87 | 0.005 | 0.005 | - | - | 0.005 | 0.2 | - |
| Trinitrotoluene (2,4,6-) | 118-96-7 | - | - | - | F '89 | 0.02 | 0.02 | 0.0005 | 0.02 | 0.002 | 0.1 | C |
| Vinyl chloride | 75-01-4 | F | zero | 0.002 | F '87 | 3 | 3 | 0.003 | 0.1 | - | 0.002 | H |
| Xylenes | 1330-20-7 | F | 10 | 10 | D '93 | 40 | 40 | 0.2 | 7 | - | - | I |

¹ Under review.

² 1998 Final Rule for Disinfectants and Disinfection By-products: The total for five haloacetic acids is 0.06 mg/L.

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| Chemicals | CASRN Number | Standards | | | Status HA Document | Health Advisories | | | | | | Cancer Descriptor |
|----------------------------------|--------------|-------------|--------------------|------------------|--------------------|-------------------|----------------|---------------------------|-------------|------------------|--------------------------------------|-------------------|
| | | Status Reg. | MCLG (mg/L) | MCL (mg/L) | | 10-kg Child | | RfD (mg/kg/day) | DWEL (mg/L) | Life-time (mg/L) | mg/L at 10 ⁻⁴ Cancer Risk | |
| | | | | | | One-day (mg/L) | Ten-day (mg/L) | | | | | |
| INORGANICS | | | | | | | | | | | | |
| Ammonia | 7664-41-7 | - | - | - | D '92 | - | - | - | - | 30 | - | D |
| Antimony | 7440-36-0 | F | 0.006 | 0.006 | F '92 | 0.01 | 0.01 | 0.0004 | 0.01 | 0.006 | - | D |
| Arsenic | 7440-38-2 | F | zero | 0.01 | D '95 | - | - | 0.0003 | 0.01 | - | 0.002 | A |
| Asbestos (fibers/l >10µm length) | 1332-21-4 | F | 7 MFL ¹ | 7 MFL | - | - | - | - | - | - | 700-MFL | A ² |
| Barium | 7440-39-3 | F | 2 | 2 | D '93 | 0.7 | 0.7 | 0.2 | 7 | - | - | N |
| Beryllium | 7440-41-7 | F | 0.004 | 0.004 | F '92 | 30 | 30 | 0.002 | 0.07 | - | - | - |
| Boron | 7440-42-8 | - | - | - | D '92 | 4 | 0.9 | 0.2 | 7 | 1 | - | I |
| Bromate | 7789-38-0 | F | zero | 0.01 | D '98 | 0.2 | - | 0.004 | 0.14 | - | 0.005 | B2 |
| Cadmium | 7440-43-9 | F | 0.005 | 0.005 | F '87 | 0.04 | 0.04 | 0.0005 | 0.02 | 0.005 | - | D |
| Chloramine ³ | 10599-90-3 | F | 4 ⁴ | 4 ⁴ | D '95 | - | - | 0.1 | 3.5 | 3.0 | - | - |
| Chlorine | 7782-50-5 | F | 4 ⁴ | 4 ⁴ | D '95 | 3 | 3 | 0.1 | 5 | 4 | - | D |
| Chlorine dioxide | 10049-04-4 | F | 0.8 ⁴ | 0.8 ⁴ | D '98 | 0.84 | 0.84 | 0.03 | 1 | 0.8 | - | D |
| Chlorite | 7758-19-2 | F | 0.8 | 1 | D '98 | 0.84 | 0.84 | 0.03 | 1 | 0.8 | - | D |
| Chromium (total) | 7440-47-3 | F | 0.1 | 0.1 | F '87 | 1 | 1 | 0.003 ⁵ | 0.1 | - | - | D |
| Copper (at tap) | 7440-50-8 | F | 1.3 | TT ⁶ | D '98 | - | - | - | - | - | - | D |
| Cyanide | 143-33-9 | F | 0.2 | 0.2 | F '87 | 0.2 | 0.2 | 0.02 ⁷ | 0.8 | 0.2 | - | D |
| Fluoride | 7681-49-4 | F | 4 | 4 | - | - | - | 0.06 ⁸ | - | - | - | - |
| Lead (at tap) | 7439-92-1 | F | zero | TT ⁶ | - | - | - | - | - | - | - | B2 |
| Manganese | 7439-96-5 | - | - | - | F'04 | 1 | 1 | 0.14 ⁹ | 1.6 | 0.3 | - | D |
| Mercury (inorganic) | 7487-94-7 | F | 0.002 | 0.002 | F '87 | 0.002 | 0.002 | 0.0003 | 0.01 | 0.002 | - | D |
| Molybdenum | 7439-98-7 | - | - | - | D '93 | 0.08 | 0.08 | 0.005 | 0.2 | 0.04 | - | D |
| Nickel | 7440-02-0 | F | - | - | F '95 | 1 | 1 | 0.02 | 0.7 | 0.1 | - | - |

¹ MFL = million fibers per liter.

² Carcinogenicity based on inhalation exposure.

³ Monochloramine; measured as free chlorine.

⁴ 1998 Final Rule for Disinfectants and Disinfection By-products: MRDLG=Maximum Residual Disinfection Level Goal; and MRDL=Maximum Residual Disinfection Level.

⁵ IRIS value for chromium VI.

⁶ Copper action level 1.3 mg/L; lead action level 0.015 mg/L.

⁷ This RfD is for hydrogen cyanide.

⁸ Based on dental fluorosis in children, a cosmetic effect. MCLG based on skeletal fluorosis.

⁹ Dietary manganese. The lifetime health advisory includes a 3 fold modifying factor to account for increased bioavailability from drinking water.

Drinking Water Standards and Health Advisories

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| Chemicals | CASRN Number | Standards | | | Status HA Document | Health Advisories | | | | | | Cancer Descriptor |
|---|--------------|-------------|-------------|--|--------------------|-------------------|-----------------|---------------------|-------------|------------------|--------------------------------------|-------------------|
| | | Status Reg. | MCLG (mg/L) | MCL (mg/L) | | 10-kg Child | | RfD (mg/kg/day) | DWEL (mg/L) | Life-time (mg/L) | mg/L at 10 ⁻⁴ Cancer Risk | |
| | | | | | | One-day (mg/L) | Ten-day (mg/L) | | | | | |
| Nitrate (as N) | 14797-55-8 | F | 10 | 10 | D '93 | 10 ¹ | 10 ¹ | 1.6 | - | - | - | - |
| Nitrite (as N) | 14797-65-0 | F | 1 | 1 | D '93 | 1 ¹ | 1 ¹ | 0.16 | - | - | - | - |
| Nitrate + Nitrite (both as N) | | F | 10 | 10 | D '93 | - | - | - | - | - | - | - |
| Selenium | 7782-49-2 | F | 0.05 | 0.05 | - | - | - | 0.005 | 0.2 | 0.05 | - | D |
| Silver | 7440-22-4 | - | - | - | F '92 | 0.2 | 0.2 | 0.005 ² | 0.2 | 0.1 | - | D |
| Strontium | 7440-24-6 | - | - | - | D '93 | 25 | 25 | 0.6 | 20 | 4 | - | D |
| Thallium | 7440-28-0 | F | 0.0005 | 0.002 | F '92 | 0.007 | 0.007 | 0.00007 | 0.002 | 0.0005 | - | - |
| White phosphorous | 7723-14-0 | - | - | - | F '90 | - | - | 0.00002 | 0.0005 | 0.0001 | - | D |
| Zinc | 7440-66-6 | - | - | - | D '93 | 6 | 6 | 0.3 | 10 | 2 | - | I |
| RADIONUCLIDES | | | | | | | | | | | | |
| Beta particle and photon activity (formerly man-made radionuclides) | | F | zero | 4 mrem/yr | - | - | - | - | - | - | 4 mrem/yr | A |
| Gross alpha particle activity | | F | zero | 15 pCi/L | - | - | - | - | - | - | 15 pCi/L | A |
| Combined Radium 226 & 228 | 7440-14-4 | F | zero | 5 pCi/L | - | - | - | - | - | - | - | A |
| Radon | 10043-92-2 | P | zero | 300 pCi/L AMCL ³ 4000 pCi/L | - | - | - | - | - | - | 150 pCi/L | A |
| Uranium | 7440-61-1 | F | zero | 30 µg/L | - | - | - | 0.0006 ⁴ | 0.02 | - | - | A |

¹ These values are calculated for a 4-kg infant and are protective for all age groups.

² Based on a cosmetic effect.

³ AMCL = Alternative Maximum Contaminant Level

⁴ Soluble uranium salts. Radionuclide Rule.

Secondary Drinking Water Regulations

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| Chemicals | CAS Number | Status | SDWR |
|------------------------------|------------|--------|--------------------------|
| Aluminum | 7429-90-5 | F | 0.05 to 0.2 mg/L |
| Chloride | 7647-14-5 | F | 250 mg/L |
| Color | NA | F | 15 color units |
| Copper | 7440-50-8 | F | 1.0 mg/L |
| Corrosivity | NA | F | non-corrosive |
| Fluoride | 7681-49-4 | F | 2.0 mg/L |
| Foaming agents | NA | F | 0.5 mg/L |
| Iron | 7439-89-6 | F | 0.3 mg/L |
| Manganese | 7439-96-5 | F | 0.05 mg/L |
| Odor | NA | F | 3 threshold odor numbers |
| pH | NA | F | 6.5 – 8.5 |
| Silver | 7440-22-4 | F | 0.1 mg/L |
| Sulfate | 7757-82-6 | F | 250 mg/L |
| Total dissolved solids (TDS) | NA | F | 500 mg/L |
| Zinc | 7440-66-6 | F | 5 mg/L |

Microbiology

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| | Status Reg. | Status HA Document | MCLG | MCL | Treatment Technique |
|---------------------------------|----------------|--------------------|------|-----|---|
| <i>Cryptosporidium</i> | F | F 01 | - | TT | Systems that filter must remove 99% of <i>Cryptosporidium</i> |
| <i>Giardia lamblia</i> | F | F 98 | - | TT | 99.9% killed/inactivated |
| <i>Legionella</i> | F ¹ | F 01 | zero | TT | No limit; EPA believes that if <i>Giardia</i> and viruses are inactivated, <i>Legionella</i> will also be controlled |
| Heterotrophic Plate Count (HPC) | F ¹ | - | NA | TT | No more than 500 bacterial colonies per milliliter. |
| Mycobacteria | - | F 99 | - | - | - |
| Total Coliforms | F | - | zero | 5% | No more than 5.0% samples total coliform-positive in a month. Every sample that has total coliforms must be analyzed for fecal coliforms; no fecal coliforms are allowed. |
| Turbidity | F | - | NA | TT | At no time can turbidity go above 5 NTU (nephelometric turbidity units) |
| Viruses | F ¹ | - | zero | TT | 99.99% killed/inactivated |

¹ Final for systems using surface water; also being considered for regulation under groundwater disinfection rule.

Drinking Water Advisory Table

Summer 2006

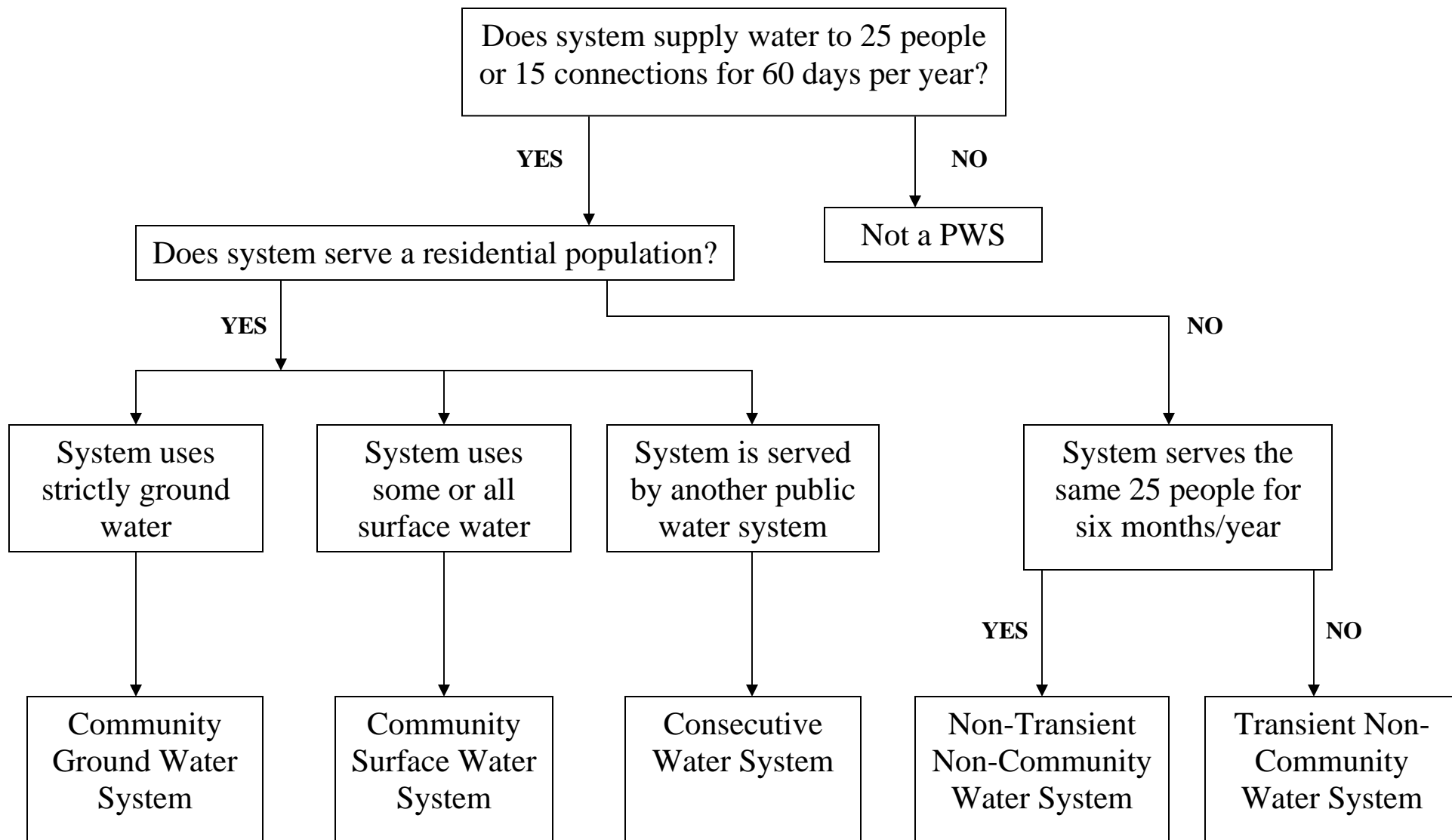
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| Chemicals | Status | Health-based Value | Taste Threshold | Odor Threshold |
|---|---------------|--|------------------------|-----------------------|
| Ammonia | D '92 | Not Available | 30 mg/L | |
| Methyl tertiary butyl ether (MtBE) | F '98 | Not Available | 40 µg/L | 20 µg/L |
| Sodium | F '03 | 20 mg/L (for individuals on a 500 mg/day restricted sodium diet). | 30-60 mg/L | |
| Sulfate | F '03 | 500 mg/L | 250 mg/L | |

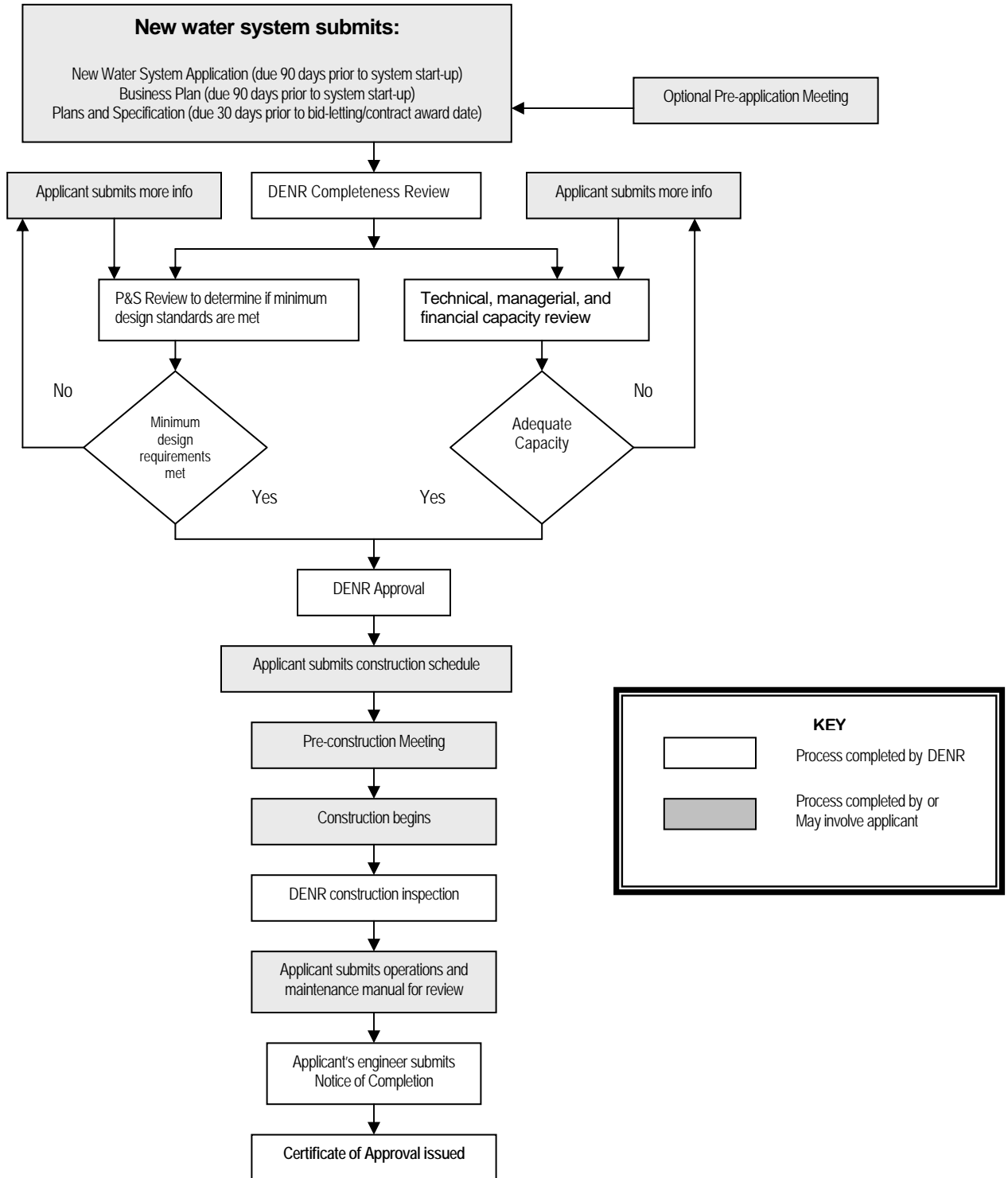
Taste Threshold: Concentration at which the majority of consumers do not notice an adverse taste in drinking water; it is recognized that some sensitive individuals may detect a chemical at levels below this threshold.

Odor Threshold: Concentration at which the majority of consumers do not notice an adverse odor in drinking water; it is recognized that some sensitive individuals may detect a chemical at levels below this threshold.

Public Water System Determination Flow Chart



Appendix 6: Flow-chart



Appendix 7: Notice of Completion



Department of Environment and Natural Resources

Notice of Completion of New Water System Construction

This form must be completed in order to receive a Certificate of Approval from the Department of Environment and Natural Resources. **Please return this form to:**

Drinking Water Program
Department of Environment and Natural Resources
523 E. Capitol – Joe Foss Building
Pierre, SD 57501-3181

Water System Information

Facility Name: _____
Owner's Name: _____
Address: _____
City: _____
State: _____
Zip: _____
Telephone: _____
Design Engineer: _____

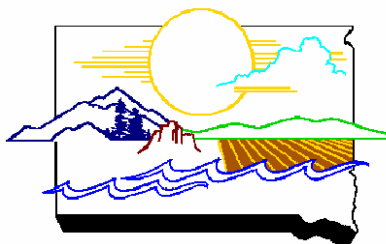
Certification

Construction of the new drinking water system for the above facility that had plans and specifications approved by DENR on _____ is completed.

I hereby certify that I am a licensed engineer in the state of South Dakota. To the best of my knowledge, information and belief, the above named facility was constructed in general conformance with the plans and specifications, and in my professional opinion, is in compliance with applicable laws, codes, and ordinances as of the date of construction (or this date).

Dated at _____, South Dakota this _____ day of _____, _____.

Design Engineer's Signature
(Seal)



Protecting South Dakota's Tomorrow ... Today

**State of South Dakota
Department of Environment and Natural Resources
Drinking Water Program
523 E. Capitol, Joe Foss Building
Pierre, SD 57501-3181**

Visit our webpage at <http://www.state.sd.us/denr>
