

Nebraska Public Water Supply Program Summary Report 2010

Department of Health & Human Services

DHHS

N E B R A S K A

Nebraska Department of Health and Human Services
Division of Public Health
Office of Drinking Water and Environmental Health
Public Water Supply Program

Nebraska's Public Water System Program 2010 Annual Report

January 1 to December 31, 2010

Nebraska's fourteenth annual report
as required by the 1996 Amendments to
the federal Safe Drinking Water Act



June 30, 2011

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<http://www.dhhs.ne.gov/enh/pwsindex.htm>

Available in alternate formats

To Obtain a Copy of the 2010 Public Water System Report

As required by the federal Safe Drinking Water Act, the State of Nebraska has made the 2010 Annual Public Water Systems report available to the public. Interested individuals can obtain a copy by accessing:

The Department's Web site: <http://www.dhhs.ne.gov/enh/pwsindex.htm>

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Overview of the Federal Public Water Supervision Program

The United States Environmental Protection Agency (EPA) established the Public Water System Supervision (PWSS) Program under the authority of the 1974 Safe Drinking Water Act (SDWA). Under the SDWA and the 1986 Amendments, EPA sets national limits on contaminant levels in drinking water to ensure that the water is safe for human consumption. These limits are known as Maximum Contaminant Levels (MCLs) and Maximum Residual Disinfectant Levels (MRDLs). For some regulations, EPA establishes treatment techniques in lieu of an MCL to control unacceptable levels of contaminants in water.

EPA also regulates how often public water systems (PWSs) monitor their water for contaminants and how often they report the monitoring results to the states or EPA. Generally, the larger the population served by a water system, the more frequent the monitoring and reporting requirements. EPA requires PWSs to notify the public when they have violated these regulations. In addition, EPA requires some PWSs to monitor for unregulated contaminants to provide data for future regulatory development. Finally, EPA requires PWSs to notify their consumers when they have violated these regulations. The 1996 Amendments to the SDWA require consumer notification to include a clear and understandable explanation of the nature of the violation, its potential adverse health effects, steps that the PWS is undertaking to correct the violation, and the possibility of using alternative water supplies during the violation.

The SDWA applies to the 50 states, the District of Columbia, Indian Lands, Puerto Rico, the Virgin Islands, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands.

The SDWA allows states and territories to seek EPA approval to administer their own PWSS programs. The authority to run a PWSS program is called primacy. For a state to receive primacy, EPA must determine that the state meets certain requirements laid out in the SDWA and the federal regulations, including the adoption of drinking water regulations that are at least as stringent as the federal regulations and a demonstration that they can enforce the program requirements. Of the 56 states and territories, all but Wyoming and the District of Columbia have primacy. The EPA regional offices administer the PWSS programs within these two jurisdictions.

The 1986 SDWA amendments gave Indian Tribes the right to apply for and receive primacy. EPA currently administers PWSS Programs on all Indian lands except the Navaho Nation, which was granted primacy in late 2000.

Annual State Public Water System Report

Each quarter, primacy states submit data to the federal Safe Drinking Water Information System (SDWIS/FED) an automated database maintained by EPA. The data submitted include, but are not limited to, public water system (PWS) inventory information; the incidence of Maximum Contaminant Level, Maximum Residual Disinfectant Level, monitoring, and treatment technique violations; and information on enforcement activity related to these violations. Section 1414(c)(3) of the federal Safe Drinking Water Act requires states to provide EPA with an annual report of violations of the primary drinking water standards. This report provides the numbers of violations in each of six categories: MCLs, MRDLs, treatment techniques, variances and exemptions, significant monitoring violations, and significant consumer notification violations. The EPA regional offices report the information for Wyoming, the District of Columbia, and all Indian Lands except the Navaho Nation. EPA regional offices also report federal enforcement actions taken. Data retrieved from SDWIS/FED form the basis of this report.

The following report is a summary of the compliance of Nebraska's public water systems with the Safe Drinking Water Act during 2010, as required by the 1996 Amendments to the federal Safe Drinking Water Act. Other significant program activities that the program staff perform in assuring water is safe for human consumption are also included in this report.

The mission of the Public Water System Program of the Division of Public Health of the Nebraska Department of Health and Human Services (Department) is to protect the health and welfare of Nebraskans by assuring safe, adequate, and reliable drinking water.

People expect their drinking water will be safe when they turn on the faucet. Program staff work in many arenas to assure safe drinking water.

More information about systems with violations that occurred in 2010 is available from the Division of Public Health of the Nebraska Department of Health and Human Services, 301 Centennial Mall South, P.O. Box 95026, Lincoln, NE 68509, phone 402-471-2541 or at EPA's website:

http://www.epa.gov/enviro/html/sdwis/sdwis_ov.html

This report is also available on the Department's website at:

<http://www.dhhs.ne.gov/enh/pwsindex.htm>.

Notices of the report's availability will be provided to public libraries and local health departments.

Terms Used In This Report

Consumer Notification

Every Community Water System is required to deliver to its customers a brief annual water quality report. This report is to include some educational material and will provide information on the source water, the levels of any detected contaminants, and compliance with drinking water regulations.

Maximum Contaminant Level (MCL)

Under the federal Safe Drinking Water Act, EPA sets national limits on contaminant levels in drinking water to ensure that the water is safe for human consumption. These limits are known as Maximum Contaminant Levels (MCLs).

Maximum Residual Disinfectant Level (MRDL)

EPA sets national limits on residual disinfectant levels in drinking water to reduce the risk of exposure to disinfectant byproducts formed when the public water systems add chemical disinfectant(s) for either primary or residual treatment. These limits are known as Maximum Residual Disinfectant Levels (MRDLs).

Monitoring

A PWS is required to monitor and verify that the levels of contaminants present in the water do not exceed the MCL or MRDL. If a PWS fails to have its water tested as required or fails to report test results correctly to the Department, a monitoring violation occurs.

Public Water System (PWS)

A Public Water System is a system that provides water via piping or other constructed conveyances for human consumption to at least 15 service connections or serves an average of at least 25 people for at least 60 days each year. For this report when the acronym "PWS" is used, it means systems of all types unless specified in greater detail.

There are three types of public water systems:

1. **Community water systems (CWS)** (a) serve at least 15 service connections used by year-round residents of the area served by the system or (b) regularly serve at least 25 year-round residents. They include such entities as mobile home parks, rural water districts, and sanitary improvement districts, as well as municipalities.
2. **Non-transient non-community water systems (NTNC)** are not community water systems. They regularly serve at least 25 of the same individuals over six months of the year. Examples include a manufacturing company with its own well and a rural school with over 25 students.

3. **Transient non-community water systems (TNC)** are non-community systems that do not regularly serve at least 25 of the same persons over six months per year. Examples of transient non-community systems are a café beside the highway which has its own well and the water systems at interstate rest areas and state parks.

Significant Monitoring Violations

For this report, significant monitoring violations are generally defined as any significant monitoring violation that has occurred during the calendar year of the report. A significant monitoring violation, with rare exceptions, occurs when no samples were taken or no results were reported during a compliance period.

Significant Consumer Notification Violations

For this report, a significant public notification violation occurred if a community water system completely failed to provide its customers with the required annual water quality report.

Treatment Techniques

For some regulations, the EPA establishes treatment techniques (TTs) in lieu of an MCL to control unacceptable levels of certain contaminants. For example, treatment techniques have been established for viruses, some bacteria, and turbidity. Treatment techniques include the use of aeration, settling, filtration or other physical process and/or the addition of any chemical or chemicals for the purpose of removing, deactivating, or adjusting the level of one or more contaminants present in the raw water supply source.

Variations and Exemptions

A primacy state can grant a PWS a variance from a primary drinking water regulation if the characteristics of the raw water sources reasonably available to the PWS do not allow the system to meet the MCL. To obtain a variance, the system must agree to install the best available technology, treatment technique(s), or other means of limiting drinking water contamination that EPA finds are available (taking costs into account), and the Department must find that the variance will not result in an unreasonable risk to public health. The variance will be reviewed not less than every 5 years to determine if the system remains eligible for the variance.

The Department can grant an exemption temporarily relieving a PWS of its obligation to comply with an MCL, treatment technique, or both if the system's noncompliance results from compelling factors (which may include economic factors) and the system was in operation on the effective date of the MCL or treatment technique requirement. A new PWS that was not in operation on the effective date of the MCL or treatment technique requirement by that date may be granted an exemption only if no reasonable alternative source of drinking water is available to the new system. Neither an old nor a new PWS is eligible for an exemption if management or restructuring changes can reasonably be made that will result in compliance with the SDWA or improvement of water quality, or if the exemption will result in an unreasonable risk to public

health. The state will require the PWS to comply with the MCL or treatment technique as expeditiously as practicable, but not later than three years after the otherwise applicable compliance date.

In short, a variance or an exemption may be issued, but unreasonable risk to public health is not allowed. For all the details regarding exemptions and variances, see Title 179 NAC 6, Variances and Exemptions (<http://www.dhhs.ne.gov/req/t179.htm>).

Nebraska's Public Water Systems

Population and Type of System

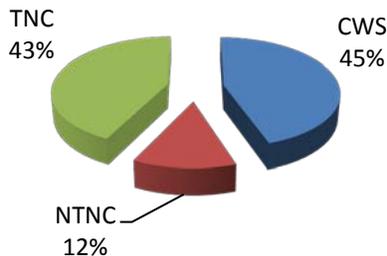
Nebraska public water systems can be broken down into categories based on the size of the population served.

Population	CWS	NTNC	TNC	Total Systems	Percentage*
<100	80	91	437	608	46.1%
101-500	282	56	115	453	34.3%
501-1000	101	5	12	118	8.9%
1001-3300	90	8	0	98	7.4%
3301-10,000	25	3	0	28	2.1%
10,001-50,000	12	0	0	12	0.9%
>50,000	2	0	0	2	0.2%
TOTAL	592	163	564	1319	100%

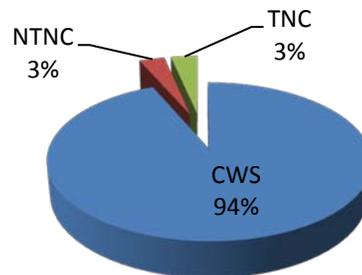
CWS = Community 592 systems
 NTNC – Non-transient, non-community 163 systems
 TNC = Transient, non-community 564 systems

* Percentages have been rounded off.

System Types



Population Served



As you can see, 45% of all public water systems are community water systems that serve 94% of the population. Forty-three percent of the systems are transient systems, but they serve only 3% of the population. And 12% of the systems are non-transient non-community water systems that serve 3% of the population.

Public Water In Nebraska

The Division of Public Health of the Department of Health and Human Services, through its Public Water System Program, administers the state's regulations governing public water systems (Title 179 NAC 2 through 22), promulgated under the state's SDWA pursuant to and in accordance with the federal SDWA. EPA promulgates rules and sets standards in accordance with the federal SDWA, which was originally passed in 1974 and later amended in 1986 and 1996.

These rules are generated by EPA in accordance with the federal SDWA and its amendments. The SDWA includes water quality standards, and requirements for sampling, treatment and public notification. The Act affects approximately 1,320 public water systems in Nebraska. (The number of public water systems varies as new ones open and existing ones close.) Public water systems provide water to approximately 80 percent of the people of Nebraska. Private domestic wells provide water for other Nebraskans.

Most of the water Nebraskans drink is groundwater. Only five public water systems in the state obtain their drinking water from surface water. Another 37 systems purchase water from those five systems. In addition, five systems utilize groundwater under the influence of surface water, and 20 additional systems purchase water from those five systems. The remaining systems use ground water, including 95 systems that purchase their water from another system.

The 1996 Amendments to the Safe Drinking Water Act require each state to publish a report each year that includes the violations which occurred in the state during 2010. Specific information about the systems that had violations is available from the Division of Public Health of the Nebraska Department of Health and Human Services, 301 Centennial Mall South, P.O. Box 95026, Lincoln, NE 68509, phone 402-471-2541.

New In 2010

Siting, Design and Construction of Public Water Systems

In an effort to keep up with the new water treatment technologies and design standards, the process of updating Title 179 NAC 2-007, *Siting, Design and Construction of Public Water Systems*, was initiated in early 2008. A public hearing was held on September 17, 2009. The regulations became effective April 4, 2010.

Highlights of the changes in 179 NAC 7 include the following:

- Approval of plans and specifications is not required for installation of service mains, installation of service meters, replacement of existing distribution mains with pipes of similar size (not to exceed one nominal size and not to exceed \$86,000 in project costs) and in a similar location, or minor repairs and maintenance and for non-community systems that use small water treatment units that meet specified requirements.

- Non-community water systems will only be allowed to use Title 178 NAC 12 for small capacity (< 100 gpm) wells that are not potentially under the direct influence of surface water.
- A public water system can enter into a 3-year program for distribution main projects. Under the program, a system could enter into an agreement with the Department, pay a set fee, and have a professional engineer submit a set of standard drawings and specifications for all distribution main projects, thereby not having to submit plans and specifications for each project.
- Changes to the submission of plans and specifications.
- The design standards have been updated to the 2007 version of the *10 States Standards*. Substantial conformance to the incorporated standards is required for approval.
- If construction is begun or completed on a project before plans and specifications are submitted and approved, there is an additional \$1000 plan review fee. In addition, the system may be subject to a fine.
- After approval of plans and specifications, a system has two years to begin construction. The system owner and/or engineer must request and the Department must approve an extension of this time period if construction is not begun.
- The regulations specify when plans and specifications are and are not required.
- If an engineer doesn't respond to Department comments on a project within 60 days, the Department will deny the project and a new set of plans and specifications, as well as a new plan review fee, must be submitted to the Department.

In 2010, eleven public water systems entered into an agreement with the Department for distribution main projects.

New Capacity Development Assessment

In 2010, in addition to training, the Capacity Development Coordinator, in conjunction with the Nebraska Rural Water Association, began a program of assessing community water systems for managerial and financial capacity. An initial assessment is completed prior to the system receiving funding from the Drinking Water State Revolving Loan Fund to provide a benchmark. Once the project has been completed and is in operation, a re-assessment is completed to show the difference. The assessments and re-assessments are presented at public board meetings to inform the board members of the strengths and weaknesses of the water system before and after the project that was funded by the Drinking Water State Revolving Loan Fund. Seventeen such assessments/re-assessments were completed and presented in 2010.

What Nebraska's Public Water System Program Does



The Public Water System Program has 34 full time equivalent positions (FTEs). The Monitoring and Compliance Section has 13, the Engineering Section has seven, the Field Services and Training Section has 13, and portions of two other FTEs contribute to the administration of the program.

Field Services and Training Section

The Public Water System Field Services and Training (FS&T) Section encompasses four separate but related areas of responsibility: 1) field services (inspections, operator assistance, etc.), 2) training, 3) capacity development, and 4) water system security. FS&T staff are composed of a supervisor, eight field representatives, a training coordinator, a capacity development coordinator, a water system security coordinator, and a staff assistant. FS&T staff conduct sanitary surveys, train public water system operators, attend and/or present information at continuing education programs for water operators, assist public water systems (PWSs) during emergency situations and help public water systems to achieve or maintain adequate technical, financial, and managerial capacity. There are eight distinct field areas with locations in North Platte, Grand Island, Norfolk, Omaha, Nelson and Lincoln to provide close contact and timely assistance to Nebraska's public water systems. The North Platte and Norfolk offices each serve two field areas.

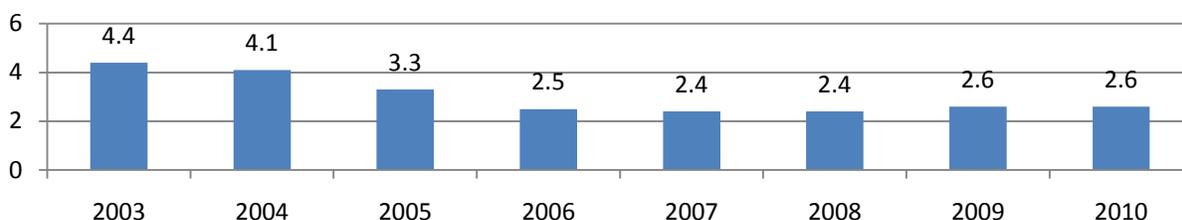
Routine sanitary surveys are conducted once every three years for community water systems (CWS) and non-transient non-community (NTNC) public water systems and once every five years for transient non-community (TNC) PWSs. A sanitary survey is an on-site review of the water source, facilities, equipment, operation and maintenance of a public water system for the purpose of evaluating the system's adequacy and ability to reliably produce and distribute safe drinking water within the confines of regulatory requirements. A few of the items for which field personnel check are the presence of a properly licensed water operator in responsible charge, an emergency plan, and a cross-connection control program.

In 2010, field personnel conducted 394 sanitary surveys (200 community, 54 non-transient non-community, and 140 transient public water systems) and 50 follow-up surveys (34 community, 6 non-transient non-community, and 10 transient public water systems). When deficiencies are found, the system is notified of the needed improvements. A total of 1,013 deficiencies were found in 2010 (16 fewer deficiencies than the previous year, with 9 fewer sanitary surveys having been done). This reflects an overall deficiency rate of 2.6 deficiencies

per sanitary survey in 2010. There was an average of 3.3 deficiencies found in community systems, an average of 1.9 deficiencies found in non-transient non-community water systems, and an average of 1.8 deficiencies in transient water systems. Overall, there was no significant change in deficiency numbers from 2009 to 2010. There was a slight increase in the average number of deficiencies found in community and transient water systems, but this was offset by the fewer number of deficiencies for non-transient systems.

It is interesting to note that 165 (41.9%) sanitary surveys were done where no deficiencies were found (54 CWS, 30 NTNC and 81 TNC). Taking this number into account, there were 229 surveys where deficiencies were identified for an average of 4.4 deficiencies per survey.

Average Number of Deficiencies Per Sanitary Survey



Field personnel conduct site inspections for the location of new wells, in addition to assisting engineering services personnel in conducting construction inspections of public water system projects (such as the drilling of wells, the construction of treatment plants, and the erection of water towers) during construction and upon completion. When needed, field services staff provide public health advice concerning emergency situations associated with natural disasters or contamination of a public water system. As needed or upon request, they go out to communities to help public water system personnel identify potential causes of problems in their systems. In all, field staff conducted 952 site visits in 2010.

The Public Water System Program, in-house as well as through technical assistance providers, maintains a number of hypochlorinators for loan to public water systems when bacterial contamination is a source of concern. This assistance to communities in need of temporary chlorination of their water supplies has been very helpful in ensuring the safety of drinking water. When a power outage or source failure is involved, program staff also help systems locate portable generators or tank transport units. In general, the program's response to emergencies is limited to consultation and advice regarding actions to be carried out by the owners of public water systems.

Field personnel conduct courses to train water operators. In addition to enhancing water operators' basic knowledge, these courses give the operators an opportunity to meet with state field staff to ask questions about what is expected of them as they do their jobs.

In 2010, field personnel conducted 10 water operator training classes, with a total of 149 attendees. An additional 4 persons took the correspondence course that is also offered for Grade 4 licensure. For Grade 6 licensure (backflow preventer testing and repair), 11 courses

were offered with a total of 83 attendees. For Grade 5 licensure (transient systems only), 46 exams were given and 40 individuals passed.

Water operators are licensed only after successfully passing an exam. Examinations are offered following each training course and can also be scheduled individually. The following table breaks down the number of licenses issued at each level.

Number of Water Operator Licenses Issued In 2010

Grade	Licenses Issued
1	1
2	4
3	18
4	114
5	40
6	67

Field personnel joined other professionals in educating children on the value of groundwater at the annual Children's Groundwater Festival in May.

The Drinking Water Program and other training providers offered continuing education opportunities for water operators in 2010. Coordinated by the program, a group informally known as the Water Operator Training Coalition convened periodically in 2010 to identify training needs and to avoid conflicts in the scheduling of training opportunities. Members include the Nebraska Rural Water Association, the League of Nebraska Municipalities, the Midwest Assistance Program, Central Community College, and the Nebraska Section of the American Water Works Association. In 2010, as in past years, the Coalition produced a calendar identifying dates and locations of continuing education opportunities for distribution to licensed water operators.

A total of 167 workshops/seminars/conferences were offered in Nebraska in 2010 for the purpose of water operator continuing education. Of these, 54 focused primarily on backflow continuing education for Grade 6 operators.

The Capacity Development Coordinator has been overseeing the Department's 2% contracts with the various technical assistance providers – the 2% Team -- which consists of the same members as the Water Operator Training Coalition. The name comes from the 2% set-aside from the Drinking Water State Revolving Loan Fund.

The Coordinator has provided Capacity Development training in two locations across Nebraska to owners (board members) to help them understand the importance of their role in system sustainability.

A concerted effort has been made to educate the water system operators regarding their role in developing and maintaining adequate capacity for their water systems. The Coordinator presented three one-hour capacity development sessions for operators, which included one conference presentation with the Nebraska League of Municipalities and two conference presentations with the Nebraska Rural Water Association. There were 24 asset management

table-top exercises held throughout the state, primarily for operators. Asset management is a tool for operators to use to help minimize the cost of operating and maintaining a water system while continuously delivering the required and desired customer service over both the short- and the long-term.

These training sessions involved 388 attendees representing 279 systems, along with 10 elected officials representing five systems.

The 2% Team provides continuing education for water operators, and also assists the Department in helping systems with capacity development. The agencies assisting the Department provide technical, managerial and financial assistance to public water systems. This includes assistance with the applications for funding from various sources, training manuals, and mentors from large systems to assist small systems, as well as several other activities. The Department has found capacity development to be a proactive approach to helping systems.

The Department conducted seven National Incident Management System (NIMS) training sessions, which included the IS100, IS200 and IS700 courses. The training sessions were day-long events which 69 water operators attended and became certified.

On a quarterly basis the Department conducts an unannounced drill with 12 FS&T staff through the automated notification system (MIR3). Of the four that were conducted, the Department averaged a 90% call-back rate from staff.

The Department conducted 13 tabletop exercises around the state in 2010. These exercises consisted of an emergency scenario with numerous injects. The participants were presented an emergency scenario and given a situation manual that included questions to be discussed. A total of 219 participants included water operators and local health department emergency response coordinators.

The Department continues to produce water operator ID badges. These badges are a project of the Department to have each water operator properly identified before an emergency event occurs. These badges have been recognized by the Nebraska Emergency Management Agency as an official badge for water operators to enter an emergency response area if the need arises.

The Department received 156 emergency calls in 2010. Of these calls, 20 were because of positive coliform samples, power loss, and swimming pool accidents. The remaining calls were related to fuel spills, fertilizer spills, wastewater releases, etc.



Engineering Services Section

The Engineering Services Section provides engineering plan review; issuance of construction permits; inspection of newly constructed projects for issuance of approval for placement into service; and technical assistance and advisory contacts with owners/operators of public water systems, consulting engineers, state, federal and local officials, organizations and the general public in matters relating to siting, design, construction, maintenance and operation of public water systems.

Water system plan review was incorporated into state law to increase assurance that water source development, treatment, storage and distribution facilities would be constructed or expanded in a manner contributing to the ability of the system to deliver safe drinking water. Emphasis is placed on encouraging long-term benefits from capital investment as opposed to temporary actions designed to eliminate an emergency situation. These engineering services are a significant factor in preventing the occurrence of contamination in the delivery of safe drinking water.

The Nebraska Safe Drinking Water Act and regulations adopted thereunder require that plans and specifications for all major construction related to public water systems be prepared by a registered professional engineer and be approved by the Department before construction can start. The law defines major construction as structural changes that affect the source of supply, treatment processes, or transmission of water to service areas, but it does not include the extension of service mains within an established service area. In 2010, the Department received 147 sets of plans and specifications for review and approval. Also in 2010, the engineering staff conducted 177 inspections of constructed water projects.

The program's engineering personnel provide technical assistance to owners/operators of public water systems in complying with the federal and state laws and regulations. They also assist state and federal agencies in eliminating environmental health hazards. Some of the additional major activities that staff members are currently participating in are the common pre-application review process for federal and state agencies' loan and grant programs for water and wastewater projects and Drinking Water State Revolving Fund (DWSRF) program activities. The DWSRF program is administered jointly by the Department and the Nebraska Department of Environmental Quality (NDEQ).

At the beginning of the 2010 calendar year, the Engineering Services Section reviewed the responses from the annual DWSRF needs survey sent out to all public water systems the preceding fall. Community interest and the number of returned DWSRF surveys soared with the enactment of the American Recovery and Reinvestment Act of 2009 (ARRA). The returned surveys indicated 312 eligible projects with approximately \$461 million in infrastructure needs. The ranking system developed by the Department was used to prioritize and establish the funding order for DWSRF projects. In addition to public health, the prioritization was also based

on readiness to proceed criteria, which was initially developed under the ARRA program. As a primary result, the DWSRF closed 15 loans in 2010 that totaled \$14.4 million. High priority status projects, which are those that address water quality issues, accounted for 9 of the 15 loans that were closed.

In the fall of 2010, the Engineering Services staff started drafting the next Intended Use Plan (IUP). A revised public water system needs survey form was mailed to all public water supply systems. A total of 301 projects with infrastructure needs of \$427 million were identified for inclusion in the draft SFY 2011 IUP.

An informational meeting for professional engineers who submit plans and specifications for drinking water projects to the Department was held in Lincoln on August 19, 2010. Topics presented included new and future regulations, federal and state funding/loan programs, and water treatment plant related issues in Nebraska. Attendees at this meeting were provided with four continuing education units.

The engineering services staff reviews and evaluates justifications provided by professional engineers for any well site encroaching on the State's setback distance. In addition, the engineering staff also works with NDEQ in evaluating encroachment issues that may be of concern to public drinking water wells.

In summary, the Engineering Services Section activities play a significant role in ensuring that public water systems in Nebraska provide safe drinking water to the public.

SUMMARY REPORT FOR ENGINEERING SERVICES REVIEW AND INSPECTION ACTIVITIES

from January 1, 2010, to December 31, 2010

ACTIVITIES	NUMBER
Water Projects Received for Review and Approval	147
Water Projects Inspected (approximately)	177
Major Engineering Reports for Water System Improvements Evaluated	13
New Water Well Sites Evaluated	22
Common Pre-Applications for Water/Wastewater Projects for Federal and State Financial Assistance Reviewed	10
Operation and Maintenance Manuals for Drinking Water State Revolving Loan Funded Projects Reviewed	17
Three-Year Agreements for Distribution Main Projects	11

Monitoring and Compliance Section

The Monitoring and Compliance (M&C) Section of the Public Water System Program reviews the analytical results of public water systems' monitoring for contaminants in their drinking water. In this review of analytical results, M&C personnel determine compliance with

Maximum Contaminant Levels and issue appropriate enforcement actions when necessary. They determine PWS sample schedules and arrange for the appropriate sampling kits to be sent from the Division of Public Health's Environmental Laboratory.

Safe Drinking Water Information System

The Safe Drinking Water Information System (SDWIS) is now available to all field personnel in their offices and in the field, as well as to those who work in the drinking water program in the Lincoln office. This computer system was developed by EPA for states to report water quality data. It provides information on all public water system facilities, test results, violations, compliance assistance, enforcement, compliance schedules, water operator licensure, and PWS operating permits. SDWIS is used in over 40 states. It receives electronic sample data from the Department Laboratory and all laboratories that perform analyses for the Department.

Monitoring and MCL Violations in 2010

There were no waterborne diseases or deaths reported due to Nebraska public water systems in 2010.

A public water system is required to monitor and verify the presence or absence of contaminants. If a contaminant is present in the water, the system must monitor and verify that it does not exceed the maximum contaminant level. An MCL is the amount of a substance that is allowed to be in the water before the system must take corrective action to lower the level. Levels of substances below the MCL are not considered to be harmful to health. If a public water system fails to take the required water samples, a monitoring violation occurs.

A major monitoring violation occurs when no valid samples are obtained. Significant monitoring violations are defined as any major monitoring violation that has occurred during a specified reporting period, which differs for each contaminant.

In 2010, only **7 of 87** contaminants for which community public water systems monitor were found in quantities above the MCL. That means **80 contaminants** for which monitoring was conducted **were not found above the MCL in any community water system in Nebraska.**

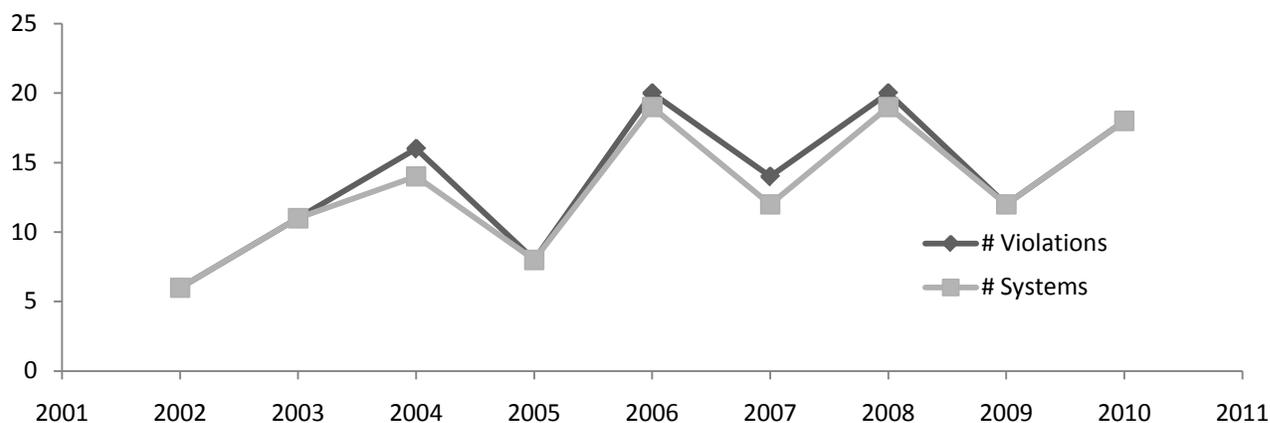
The following tables summarize the types of violations issued in calendar year 2010 and the number of public water systems that received violations. There were a total of 587 violations from 325 public water systems for MCL and monitoring. There was one treatment technique violation and there was one public notice violation.

Total Coliform Violations

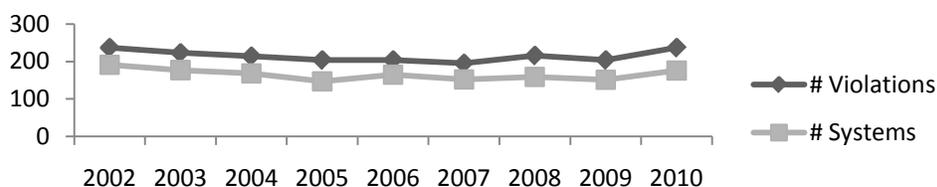
(All public water systems must monitor for total coliform bacteria)

Violation Type	Number of Violations	Number of Systems	Systems With Violations
Acute MCL	18	18	1.4%
Non-Acute MCL	237	176	13.3%
Major Monitoring	109	101	7.6%

Acute Coliform MCL Violations



Non-Acute Coliform MCL Violations



Several types of coliform bacteria are found in the environment and in the intestinal tract of humans and warm blooded animals. Total coliforms in themselves are not harmful. But where total coliform are found, other pathogens may also be found. Because of that association, EPA has used total coliform bacteria as an indicator organism for potential contamination. Testing for total coliform is inexpensive and results can be obtained in 24 hours.

Total coliform violations occur when the Maximum Contaminant Level has been exceeded. A non-acute violation occurs when only total coliform is involved. Public water supply systems must notify the public about the potential adverse health effects and take corrective action. An acute violation occurs when one or more samples indicate total coliform and *E. coli*, a fecal coliform bacteria. The water system must notify the public and issue a boil water advisory until the system has done additional testing and has found that the system again meets safe drinking water standards.

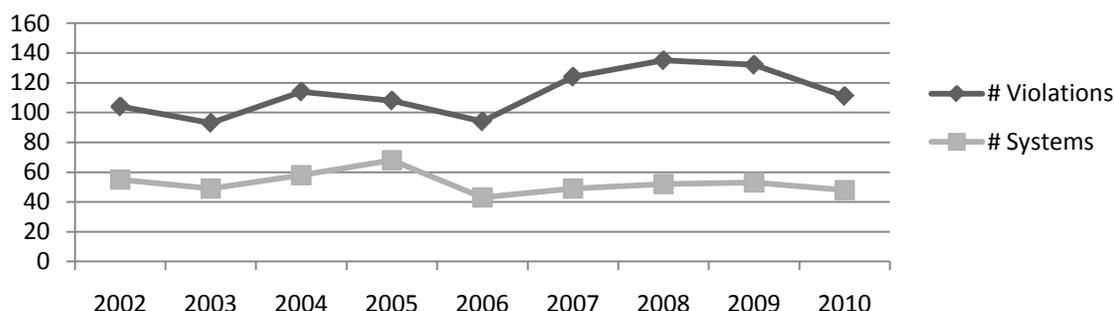
If a community water system is issued four total coliform violations in a twelve-month period, or a non-community water system is issued three violations in a twelve-month period, the system will be issued an Administrative Order requiring a minimum of six months disinfection.

Nitrate-Nitrite Violations

(This listing is separate from other inorganic contaminants because only community and non-transient non-community systems monitor for other inorganic contaminants, while **all** public water systems monitor for nitrate-nitrite.)

Violation	Number of Violations	Number of Systems	Systems With Violations
MCL – 10 mg/l	111	48	3.6%
Monitoring	11	10	0.8%

Acute Nitrate MCL Violations



Nitrate-nitrite violations are considered acute violations. Immediate adverse health effects can be experienced when nitrate is consumed by the vulnerable population of pregnant women, infants under six months of age, and nursing mothers. A system is issued an Administrative Order to correct a nitrate contamination problem if two nitrate-nitrite violations are issued in a nine-month period. The system is significantly not in compliance when it receives one violation.

The number of nitrate-nitrite MCL violations decreased while the number of monitoring violations increased slightly from the previous year.

Public Notification

Rule	Number of Violations	Number of Systems
Consumer Confidence Rule	1	1

Volatile Organic Chemical Violations

(Community and non-transient non-community systems monitor for VOCs)

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems With Violations
1,1-Dichloroethylene	0	0	0	0.0%
1,1,1-Trichloroethane	0	0	0	0.0%
1,1,2-Trichloroethane	0	0	0	0.0%
1,2-Dichloroethane	0	0	0	0.0%
1,2-Dichloropropane	0	0	0	0.0%
1,2,4-Trichlorobenzene	0	0	0	0.0%
Benzene	0	0	0	0.0%
Carbon tetrachloride	0	0	0	0.0%
cis-1,2-Dichloroethylene	0	0	0	0.0%
Dichloromethane	0	0	0	0.0%
Monochlorobenzene	0	0	0	0.0%
o-Dichlorobenzene	0	0	0	0.0%
para-Dichlorobenzene	0	0	0	0.0%
Styrene	0	0	0	0.0%
Tetrachloroethylene	0	0	0	0.0%
Toluene	0	0	0	0.0%
trans-1,2-Dichloroethylene	0	0	0	0.0%
Trichloroethylene	0	0	0	0.0%
Vinyl chloride	0	0	0	0.0%
Xylenes (total)	0	0	0	0.0%

Inorganic Chemical Violations

(Community and non-transient non-community systems monitor for inorganic chemicals)

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems with Violations
Antimony	0	0	0	0%
Asbestos	0	0	0	0%
Arsenic	26	1	12	1.6%
Barium	0	0	0	0%
Beryllium	0	0	0	0%
Cadmium	0	0	0	0%
Chromium total	0	0	0	0%
Cyanide (as free cyanide)	0	0	0	0%
Fluoride	0	0	0	0%
Mercury	0	0	0	0%
Nickel	0	0	0	0%

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems with Violations
Selenium	17	0	5	0.7%
Sodium	0	0	0	0%
Thallium	0	0	0	0%

Non-Volatile Synthetic Organic Chemical Contaminants

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems with Violations
2,3,7,8-TCDD (Dioxin)	0	0	0	0%
2,4-D	0	0	0	0%
2,4,5-TP	0	0	0	0%
Alachlor	0	0	0	0%
Atrazine	0	0	0	0%
Benzo[a]pyrene	0	0	0	0%
Carbofuran	0	0	0	0%
Chlordane	0	0	0	0%
Dalapon	0	0	0	0%
Di(2-ethylhexyl)adipate	0	0	0	0%
Di(2-ethylhexyl)phthalate	0	0	0	0%
Dibromochloropropane	0	0	0	0%
Dinoseb	0	0	0	0%
Diquat	0	0	0	0%
Endothall	0	0	0	0%
Endrin	0	0	0	0%
Ethylene dibromide	0	0	0	0%
Glyphosate	0	0	0	0%
Heptachlor	0	0	0	0%
Heptachlor epoxide	0	0	0	0%
Hexachlorobenzene	0	0	0	0%
Hexachlorocyclopentadiene	0	0	0	0%
Lindane	0	0	0	0%
Methoxychlor	0	0	0	0%
Oxamyl (Vydate)	0	0	0	0%
Pentachlorophenol	0	0	0	0%
Picloram	0	0	0	0%
Polychlorinated biphenyls	0	0	0	0%
Simazine	0	0	0	0%
Toxaphene	0	0	0	0%

Radionuclides (Only Community Water Systems Monitor for Radionuclides)

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems with Violations
Gross Alpha Including Radium, Excluding Radon and Uranium	0	0	0	0.0%
Combined Uranium	28	0	9	1.5%
Combined Radium (Radium - 226 and Radium -228)	4	0	1	0.2%

Disinfection Byproducts

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems
Total Trihalomethanes	14	1	6
Total Haloacidic Acids	0	1	1

Disinfection Byproducts Monitoring Plan

	# Violations	# Systems
Failure to have a plan	0	0

Disinfectant Residual

MRDL	Treatment Technique # Violations	TT # Systems	Monitoring # Violations	Monitoring # Systems
1	1	1	8	2

Lead and Copper Violations

Contaminant	Number of Monitoring Violations	Number of Systems	Systems with Violations
Lead and Copper	4	4	0.5%

Violations of Surface Water Treatment Rules

Type of Violation	Number of Violations	Number of Systems
Treatment Technique	1	1
Monitoring	1	1
Record Keeping	1	1

Ground Water Rule

Type of Violation	Number of Violations	Number of Systems
Treatment Technique	0	0
Monitoring/Reporting/Recordkeeping	0	0

Administrative Orders Issued in 2010

The Public Water System Program issues an administrative order when a public water system is significantly out of compliance. (Each contaminant has different parameters that indicate what constitutes “significantly out of compliance.”) Once an administrative order is issued, MCL violations continue to be issued, but no other formal enforcement is initiated while the administrative order for violating that particular maximum contaminant level is in effect. Failure to comply with the terms of an administrative order can result in action by the Department to revoke the system’s permit to operate.

Administrative Orders

	Total Coliform MCL	Nitrate
Number of Orders	13	2
Population Affected	2,474	80

The number of administrative orders for total coliform MCL violations remained the same in 2010 as in 2009. Two administrative orders were issued for nitrates.

Bilateral Compliance Agreements

A bilateral compliance agreement is typically an agreement between the Department and a non-community public water system, such as a factory or school. This agreement allows a non-community public water system to operate with nitrate levels between 10.5 mg/l and 20 mg/l. The public water system must ensure that:

- Water above 10 mg/l will not be available to children under six months of age and pregnant or nursing women;
- A notice is continuously posted saying that the nitrate level in the water is above 10 mg/l and what the potential health effects of exposure are; and
- No adverse health effects will result from exposure to this water.

The non-community water system must submit an annual report to the Department which includes receipts for bottled water or other alternate sources of safe drinking water, copies of posted notices, and a statement that no known adverse health effects have occurred. In 2010, the Department entered into bilateral compliance agreements with three non-community public water systems, two more than the previous year.

Bilateral compliance agreements can also be utilized in situations dealing with community water systems.

Variations and Exemptions

No variations or exemptions were issued in 2010. When they are issued, they require the approval of the Advisory Council on Public Water Supply.

MCL Violations Other Than Total Coliform and Nitrate

All maximum contaminant level violations other than total coliform and nitrate are considered to be chronic in nature, i.e., the adverse health effects are evident only after exposure over a long period of time. These contaminants are listed at the end of this report. When a contaminant other than total coliform and nitrate is present in a water system, the public water system must monitor quarterly for that contaminant. If the level decreases, the monitoring frequency may be reduced. A public water system is issued an administrative order to correct a chronic contamination problem after a specified number of MCL violations are issued. If the contaminant is measured above the “unreasonable risk to health” level, an administrative order is issued immediately.

Laboratory Services



The DHHS Public Health Environmental Laboratory tested a total of 65,932 samples in 2010. Laboratory fees remained the same as last year. Rising prices for supplies, reagents and gases as well as state budget reductions made the year very challenging. All radiological testing, except radon in water, and some limited miscellaneous testing (endothall, dioxin, and asbestos) were sent to the lab's contract laboratory, Energy Laboratory in Casper, Wyoming. About 59.4% of the laboratory's tests are for public water systems across the state. About 36.3% of the laboratory tests in 2010 were for total coliform testing.

The following table shows a comparison of the larger volume test numbers for the last five years:

Number of Tests Done

Test Type	2010	2009	2008	2007	2006
<i>Total Coliform/E.coli</i>	23,952	24,428	24,612	23,228	22,325
Nitrate	7,337	7,817	7,236	7,605	7,939
Lead/Copper	3,072	5,789	4,510	3,544	6,551
VOC's (Volatile Organic Compounds)	969	1,200	1,333	1,047	1,035
Pesticides	921	915	527	1,003	983
Uranium (mass)	285	306	443	476	950
Arsenic	933	1,165	970	824	1,615

The laboratory is certified by the EPA to test drinking water compliance samples for public water systems. Region 7 staff performed a three-day on-site audit at the laboratory in November of 2010 and recertified the laboratory for the next three years. The laboratory's data

objective is to provide technically valid, legally defensible, quality data for all Nebraska drinking water as well as waste water samples that it analyzes. Exhaustive quality control measures are met to provide quality data to the lab's customers.

The laboratory finished converting to a new Laboratory Information System that was operational in March of 2010. Additional work is in progress on the use of a web portal that will allow Laboratory customers to track and view their own sample results as they are received at the Laboratory. Customers will be able to choose between several different ways of receiving their reports and invoices.

The laboratory is housed in a building that is near the end of a two-year air handling remodeling project. It has been a challenge for staff and customers alike to navigate the hallways and work areas during the construction phases. Completion of the project is planned for May of 2011.

The laboratory became members of the Environmental Response Laboratory Network and the Water Laboratory Alliance Network in 2010. Both of these organizations are actively working together with the EPA to develop an environmental laboratory network to provide laboratory support to EPA in case of any bioterrorism event. The laboratory participated in several exercises to test the specific network protocols that have been put in place over the last few years. The samples tested through these networks include such things as drinking water, wastewater, other environmental items, and any other suspicious substances. Microbiological and/or chemical composition can be determined depending on the nature of the substance received.

For more information call the Environmental Health Laboratory at (402) 471-2122.

ATTACHMENT A

Definition of a Public Water System in the Safe Drinking Water Act:

Public water system means a system for providing the public with water for human consumption through pipes, or after August 5, 1998, other constructed conveyances, if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least sixty days per year.

Public water system includes:

- any collection, treatment, storage, and distribution facilities under the control of the operator of such system and used primarily in connection with such system and
- any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. Public water system does not include a special irrigation district. A public water system is either a community water system or a non-community water system.

Service connection does not include a connection to a system that delivers water by a constructed conveyance other than a pipe if:

- (i) the water is used exclusively for purposes other than residential uses, consisting of drinking, bathing, cooking, and other similar uses,
- (ii) the department determines that alternative water to achieve the equivalent level of public health protection provided by the Nebraska Safe Drinking Water Act and rules and regulations under the act is provided for residential or similar uses for drinking and cooking, or
- (iii) the department determines that the water provided for residential or similar uses for drinking, cooking and bathing is centrally treated or treated at the point of entry by the provider, a pass-through entity, or the user to achieve the equivalent level of protection provided by the Nebraska Safe Drinking Water Act and the rules and regulations under the Act.

Special irrigation district means an irrigation district in existence prior to May 18, 1994, that provides primarily agricultural service through a piped water system with only incidental residential or similar users if the system or the residential or similar users of the system comply with exclusion provisions of subdivision (ii) or (iii) of this subdivision.

ATTACHMENT B

Safe Drinking Water Standards

The purpose of setting drinking water standards is to limit the level of contaminants that can be in water which the citizens of Nebraska consume so that they are protected from harm. Contaminants which might be found in water are grouped into three categories:

1. **Natural pathogens:** These are disease-causing microorganisms that can occur in source water or in the distribution system. They can be bacteria, protozoans, or viruses. These organisms can be transmitted by humans, and in many cases by animals. Exposure to them in even small amounts in drinking water can cause illness rapidly. Examples include *Cryptosporidium* and *giardia lamblia*.
2. **Organic, inorganic and radioactive chemicals:** These can be man-made, or they may occur naturally. Examples include carbon tetrachloride (organic -- carbon based), arsenic (inorganic -- compounds which are not carbon based), and radon (radioactive). Health effects from most of these substances occur after long-term exposure to low concentrations. These substances may come from a variety of sources, such as contamination of the aquifer or from naturally occurring elements.
3. **Treatment Process Chemicals and By-products:** Disinfectants and coagulants are chemicals used in treatment plants to purify drinking water. Some of the chemicals have health effects themselves and must be used carefully. With other substances, the treatment, such as chlorine, may produce chemical by-products, such as trihalomethanes, which may be harmful to health.

Between 1975 and 1980, EPA established standards for 23 different contaminants. With the passage of the Safe Drinking Water Act in 1974, EPA specified a maximum contaminant level (MCL) and a monitoring or sampling frequency for each contaminant. Minimum treatment requirements were established for contaminants that could not be monitored in a practical way.

In the 1980s, reports of drinking water contamination by substances such as industrial solvents and pathogenic organisms aroused concern about the adequacy of the program. The 1986 Amendments to the Safe Drinking Water Act required EPA to address 87 new contaminants within three years, to be followed by regulation of 25 more contaminants every three years thereafter. To date, all but seven of the 1986 regulations have been finalized. Public water systems must test for the following contaminants.

Inorganic Chemicals. All the following maximum contaminant levels (MCLs) for inorganic chemical contaminants apply to community water systems. All the following MCLs for inorganic chemicals, except the MCL for fluoride, apply to nontransient noncommunity water systems. Only the MCLs for nitrate, nitrite, and total nitrate and nitrite apply to transient, noncommunity systems.

<u>Inorganic Contaminants</u>	<u>MCL (mg/l)</u>
Antimony	0.006
Asbestos (fibers >10 μ m)	7 million fibers/liter
Arsenic	0.05
Barium	2
Beryllium	0.004
Cadmium	0.005
Chromium total	0.10
Cyanide (as free cyanide)	0.2
Fluoride*	4.0
Mercury	0.002
Nickel	0.1
Nitrate (as Nitrogen)	10
Nitrite (as Nitrogen)	1
Total Nitrate and Nitrite (as Nitrogen)	10
Selenium	0.05
Sodium	500.0
Thallium	0.002

*Community water systems experiencing fluoride levels above 2.0 milligrams per liter must notify the public.

Synthetic Organic Chemicals The following maximum contaminant levels for organic chemical contaminants apply to community and nontransient, noncommunity water systems.

<u>Volatile Organic Chemical Contaminants</u>	<u>MCL (mg/l)</u>
1,1-Dichloroethylene	0.007
1,1,1-Trichloroethane	0.2
1,1,2-Trichloroethane	0.005
1,2-Dichloroethane	0.005
1,2-Dichloropropane	0.005
1,2,4-Trichlorobenzene	0.07
Benzene	0.005
Carbon tetrachloride	0.005
cis-1,2-Dichloroethylene	0.07
Dichloromethane	0.005
Ethylbenzene	0.7
Monochlorobenzene	0.1
o-Dichlorobenzene	0.6
para-Dichlorobenzene	0.075
Styrene	0.1
Tetrachloroethylene	0.005
Toluene	1
trans-1,2-Dichloroethylene	0.1
Trichloroethylene	0.005
Vinyl chloride	0.002
Xylenes (total)	10

<u>Non-Volatile Synthetic Organic Chemical Contaminants</u>	<u>MCL (mg/l)</u>
2,3,7,8-TCDD (Dioxin)	3 x 10 ⁻⁸
2,4-D	0.07
2,4,5-TP	0.05
Alachlor	0.002
Atrazine	0.003
Benzo[a]pyrene	0.0002
Carbofuran	0.04
Chlordane	0.002
Dalapon	0.2
Di(2-ethylhexyl)adipate	0.4(22)
Di(2-ethylhexyl)phthalate	0.006
Dibromochloropropane	0.0002
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin	0.002
Ethylene dibromide	0.00005
Glyphosate	0.7
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane	0.0002
Methoxychlor	0.04
Oxamyl (Vydate)	0.2
Pentachlorophenol	0.001
Picloram	0.5
Polychlorinated biphenyls	0.0005
Simazine	0.004
Toxaphene	0.003

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

The MCL is zero, based on the presence or absence of total coliforms and/or *E. coli* in a sample, rather than coliform density.

Radionuclides

Combined radium-226 and radium-228 - 5 pCi per liter.

Gross alpha particle activity including radium-226 but excluding radon and uranium - 15 pCi per liter.

Uranium – 30 µg/L

Disinfection Byproducts

Byproduct	MCL (mg/L)
Total Trihalomethanes (TTHMs)	0.080
Haloacetic acids (five) HAA5	0.060
Bromate	0.010
Chlorite	1.0

Maximum Residual Disinfectant Levels (MRDLs)

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

Lead and Copper

Before and after a PWS evaluates corrosion control treatment, it must test for:

- pH
- conductivity
- calcium
- alkalinity
- water temperature
- orthophosphate (when an inhibitor containing an orthophosphate compound is used)
- silicate (when an inhibitor containing a silicate compound is used)

Contaminants which public water systems test for, but which are not regulated, include:

Inorganic Chemical

Sulfate

Volatile Organic Chemicals:

Chloromethane	Bromomethane
Chlorodibromomethane	1,2,3-Trichloropropane
1,1,1,2-Tetrachloroethane	Chlorobenzene
Chloroethane	m-Dichlorobenzene
2,2-Dichloropropane	1,1-Dichloropropene
o-Chlorotoluene	1,1-Dichloroethane
p-Chlorotoluene	1,1,2,2-Tetrachloroethane
Bromobenzene	1,3-Dichloropropane
1,3-Dichloropropene	

Pesticides and Other Synthetic Organic Chemicals:

Aldrin	3-Hydroxycarbofuran
Butachlor	Methomyl
Carbaryl	Metolachlor
Dicamba	Metribuzin
Dieldrin	Propachlor

ATTACHMENT C

Advisory Council on Public Water Supply

Members as of December 31, 2010:

Reed Miller (engineer), Kearney
Leon Jons, M.D., (physician), Crete
David Overhue (consumer), Columbus
Linda Meyer (consumer), Grand Island
David Houghtelling (licensed operator of system serving 5,000 or fewer persons), Cambridge
Jerome Obrist (licensed operator of a system serving over 5,000 persons), Lincoln
Steven Kelley (member of a governing board of a public water system) (Beatrice)

Members of the Advisory Council are appointed by the Governor for three-year terms. They can be reappointed until they have served three consecutive three-year terms. In 2010, the Council met three times.