

# Nebraska Public Water Supply Program Summary Report 2007



**Nebraska Department of Health  
and Human Services**

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 2007 Annual Report**

**January 1 to December 31, 2007**

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

**June 30, 2008**

**Jack Daniel  
Administrator  
Office of Drinking Water and Environmental Health  
Division of Public Health  
Nebraska Department of Health and Human Services**

**301 Centennial Mall South  
P.O. Box 95026  
Lincoln, NE 68509-5026  
Phone: (402) 471-2541  
Fax: (402) 471-6436  
TDD: (402) 471-9570**

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

Available in alternate formats

## To Obtain a Copy of the 2007 Public Water System Report

As required by the federal Safe Drinking Water Act, the State of Nebraska has made the 2007 Public Water Systems report available to the public. Interested individuals can obtain a copy of the 2007 Annual Public Water Systems Report for Nebraska by accessing:

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

Telephone: 402-471-2541

Fax Number: 402-471-6436

E-Mail [joann.wagner@dhhs.ne.gov](mailto:joann.wagner@dhhs.ne.gov)

Address 301 Centennial Mall South  
P.O. Box 95026  
Lincoln, NE 68509

Contact Jo Ann Wagner, Editor  
402-471-0520

## 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, Puerto Rico, the United States Virgin Islands, American Samoa, Guam, the Northern Mariana Islands, the District of Columbia, and Indian Lands.

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 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. Data include, but are not limited to, public water system (PWS) inventory information; the incidence of Maximum Contaminant Level (MCL), 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 2007, 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 2007 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](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, local health departments, and media outlets.

## 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 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. 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** (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** 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** 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 are 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.

### ***Variances 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

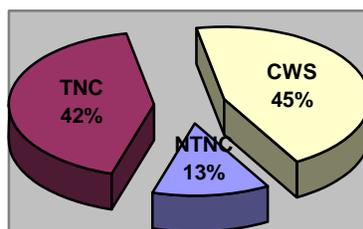
Nebraska public water systems can be broken down into categories based on the size of the population served.

Population	CWS	NTNC	TNC	Total Systems	Percentage*
25-100	80	100	429	609	45.4%
101-500	288	55	124	467	34.9%
501-1000	101	6	14	121	9.0%
1001-3300	89	10	1	100	7.5%
3301-10,000	26	3	0	29	2.2%
10,000-50,000	12	0	0	12	0.9%
>50,000	2	0	0	2	0.1%
TOTAL	598	174	568	1340	100%

CWS = Community ..... 598 systems  
 NTNC – Non-transient, non-community ..... 174 systems  
 TNC = Transient, non-community ..... 568 systems

\* Percentages have been rounded off.

System Types



## Public Water In Nebraska

The Division of Public Health of the Department of Health and Human Services, through its Public Water System Program, administered 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 1,340 public water systems in Nebraska. 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 29 systems purchase water from those five systems. In addition, seven systems utilize groundwater under the influence of surface water, and 21 additional systems purchase water from those seven systems. The remaining systems use ground water, including 86 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 2007. 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 2007

### ***Reorganization***

As a result of the passage of LB 296 in 2007, the Health and Human Services System was reorganized into the Department of Health and Human Services on July 1. The drinking water program is now located in the Division of Public Health, one of six new divisions in the Department.

### ***Security Grants***

The Department obtained \$345,000 in 2007 for water system security grant funding from the Drinking Water State Revolving Fund (DWSRF). In addition to the DWSRF funds, \$60,000.00 was obtained from the Centers for Disease Control grant to the Public Health Emergency Response Unit of the Department for water system security enhancements. Plans were made and a request submitted for continued funding from the DWSRF for water system security grants. The intent of these grants is to provide funds to PWSs serving a population of 10,000 or fewer people to improve the security and emergency response capability of public water systems. These security grant funds were allocated to 143 PWSs for various types of

security/emergency-response related projects. In order for funds to be allocated to a project, eligible PWSs must:

- Have a Public Water System Emergency Response Plan that has been approved by the Department; and
- Have someone from the system who has attended National Incident Management System (NIMS) training and received certification; and
- Provide a 10% match to improve the protection of PWS.

The maximum amount of the grants is \$5,000 per PWS. The PWS security grant may include, but is not limited to, installation of entry/intrusion alarm systems, hardened locks, fencing, lighting, disinfection equipment, backup power, etc. Grant allocations were made on a first come, first served basis.

The Department published a revised and updated emergency response and recovery pamphlet, which gives guidance to public water systems, and to the public in general. (March, 2007). It is available at <http://www.dhhs.ne.gov/enh/PlanRecoverDisaster.pdf>.

Through an agreement with the Department, the Midwest Assistance Program presented eight workshops on emergency response planning in January 2007. Invitations to attend the workshops were sent to water system operators, county emergency management coordinators, district health department staff, and county sheriffs from all 93 counties in Nebraska. Review of the evaluations from each workshop indicates the three most valuable aspects identified by participants were:

- Descriptions of actual water system emergencies
- Table top scenario activities
- NIMS - ICS video and discussions
- 

All participants indicated that the training material provided at the workshops will help improve system operation. The most frequent suggestion for improving the workshops was to get more community stakeholders (in addition to operators) involved.

## What Nebraska's Public Water System Program Does

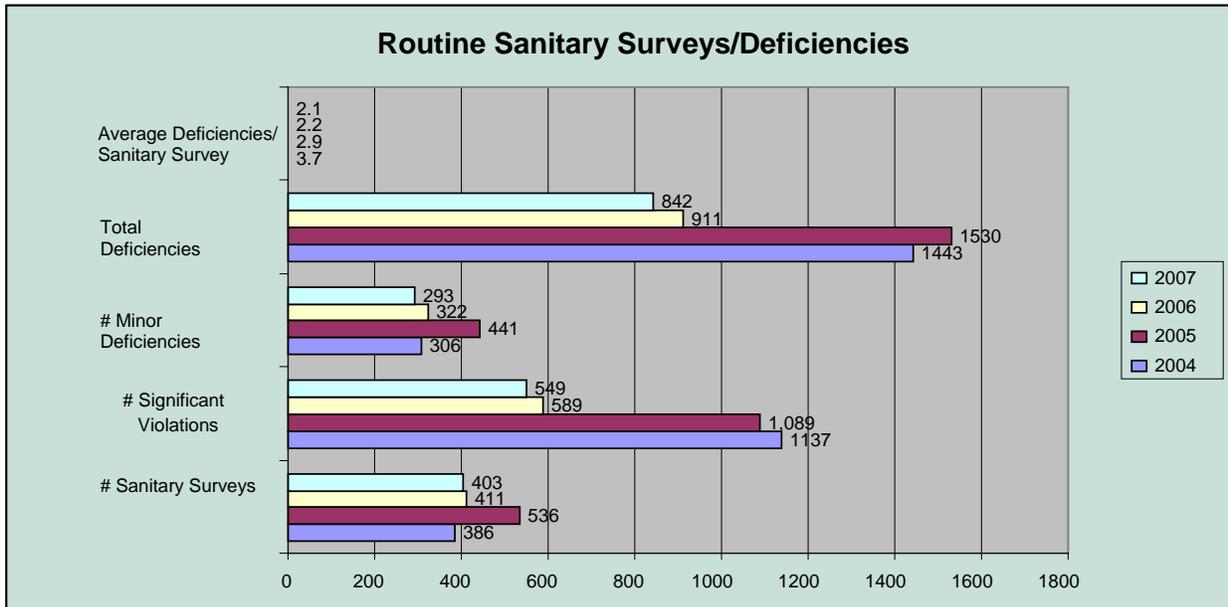


The Public Water System Program has 35 full time equivalent positions (FTEs). The Monitoring and Compliance Section has 13, the Engineering Section has eight, the Field Services and Training Section has 13, and portions of two other FTEs contribute to the administration of the program.

### ***Field Services and Training Section***

Public Water System Field Services Section personnel conduct sanitary surveys, train public water system operators, attend and/or present information at continuing education programs for water operators, assist public water systems during emergency situations and help public water systems to achieve or maintain adequate technical, financial, and managerial capacity. Field offices are located in North Platte, Grand Island, Norfolk, Omaha, and Lincoln to provide close contact and timely assistance to Nebraska's public water systems.

In 2007, field personnel conducted 403 sanitary surveys (201 community, 58 non-transient non-community, and 144 transient public water systems) and 61 follow-up surveys (33 community, 7 non-transient non-community, and 21 transient public water systems) in Nebraska. 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. Field personnel also check for the presence of a certified water operator, an emergency plan, and a cross-connection control program. When deficiencies are found, the system is notified of the needed improvements. A total of 842 deficiencies were found in 2007 (69 fewer deficiencies than the previous year, with 8 fewer sanitary surveys having been done). There was an average of 2.8 deficiencies found in community systems, an average of 2.1 deficiencies found in non-transient non-community water systems, and an average of 1.1 deficiencies in transient water systems. The Department sees the continued reduction in the total number of deficiencies compared to the total number of sanitary surveys each year as a sign that capacity development, the Department's effort to help systems improve their finances, management, infrastructure and operations, is working.



Field personnel conduct site inspections for the location of new wells in addition to assisting engineering services personnel in conducting 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.

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 assist in locating 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 increasing 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 2007, field personnel conducted 7 water operator training classes with a total of 118 attendees. An additional 31 persons took the correspondence course that is also offered for Grade 4 certification. For Grade 6 certification (backflow preventer testing and repair), 14 courses were offered with a total of 97 attendees. For Grade 5 certification (transient systems only), 53 exams were given and 53 individuals passed.

Water operators are certified 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 certifications issued at each level.

Grade	Number of Certificates Issued
1	5
2	0
3	14
4	105
5	55
6	106

A total of 180 workshops/seminars/conferences were offered in 2007 for the purpose of water operator continuing education. Of these, 43 focused primarily on backflow continuing education for Grade 6 operators.

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 2007. Coordinated by the program, a group informally known as the Water Operator Training Coalition convened periodically in 2007 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 2007, as in past years, the Coalition produced a calendar identifying dates and locations of continuing education opportunities for distribution to certified water operators.

The Capacity Development Coordinator has been overseeing the Department's 2% contracts with the various technical assistance providers – the 2% Team. The name comes from the 2% set-aside from the Drinking Water State Revolving Loan Fund). In addition, Capacity Development training has been provided across Nebraska to owners (board members) and operators of public water systems. 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 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.

In July 2007 the Water System Security Coordinator was temporarily reassigned to the Bio-Terrorism section and that reassignment became permanent effective January 1, 2008. A replacement has since been hired and is currently being trained.

The Department conducted five emergency response planning workshops, three of which were in coordination with local health departments (West Point, Norfolk, and Grand Island.) Two were conducted at the Nebraska Rural Water Association Conferences – one in Columbus, and one in Gering. The Department also contracted with Midwest Assistance Program to put on eight regional trainings across the state on emergency planning.

The Department received eighty-two emergency calls in 2007. Of these calls, two were because of lost power, two because of positive coliform samples and the remaining calls were related to fuel spills, fertilizer spills, wastewater releases, etc. The Department responded to three emergencies in 2007, including a tornado, wildfires, and an ice storm.



## ***Engineering Services Section***

The Engineering Services Section provides engineering plan review; inspection of newly constructed projects for issuance of final 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 and thus 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 costs are committed by the system owner. 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 2007, the Department received 175 sets of plans for review and approval, 138 of them for projects on public water systems. (The Department also reviews plans and specifications for public swimming pools.)

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 2007 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. Nebraska's PWS systems returned 564 surveys indicating approximately \$285 million in infrastructure needs. The ranking system developed by the Department was used to prioritize and establish the funding order for DWSRF projects. From that prioritization, the DWSRF closed two loans in 2007 that totaled \$1.03 million. High priority status projects, which are those that address water quality issues, accounted for all of the loans that were closed. The Annual Report on the State Fiscal Year (SFY) 2007 DWSRF Program was prepared by staff and submitted to the USEPA in the fall of 2007. The USEPA presented a favorable review of that report at the annual review meeting held during the week of February 11-13, 2008.

In the fall of 2007, 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 225 systems with infrastructure needs of \$267 million were identified for inclusion in the draft SFY 2009 IUP. On December 12 and 13, 2007, two public informational meetings were held in Tecumseh and Loup City to discuss and solicit any proposed changes to the next IUP.

During 2007, the Engineering Services Program conducted the 2007 EPA Needs Survey. A total of twenty-one (21) medium-size public water systems and two large systems were surveyed for their infrastructure needs over the next 20 years. In addition, the program assisted EPA's contractor in performing similar surveys in ten small systems.

An informational meeting for professional engineers who submit plans and specifications for drinking water projects to the Department was held in Lincoln on August 23, 2007. Topics presented included new and future regulations, federal and state funding/loan programs, research activities, and drinking water issues in Nebraska. Attendees at this meeting were provided with four continuing education units.

The engineering services staff also work 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, 2007, to December 31, 2007

<b>ACTIVITIES</b>	<b>NUMBER</b>
Water Projects Received for Review and Approval	138
Water Projects Inspected	120
Major Engineering Reports for Water System Improvements	

Evaluated	15
New Water Well Sites Evaluated	21
Common Pre-Applications for Water/Wastewater Projects for Federal and State Financial Assistance Reviewed	15
Operation and Maintenance Manuals for Drinking Water State Revolving Loan Funded Projects Reviewed	7

### ***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 (MCLs) and issue appropriate enforcement actions when necessary. They determine PWS sample schedules and arrange for the appropriate sampling kits to be sent from the Nebraska Department 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 provides information on all public water system facility information, test results, violations, compliance assistance, enforcement, compliance schedules, water operator certification, and PWS operating permits. SDWIS is used in over 35 states. It receives electronic sample data from the Department Laboratory and all laboratories that perform analyses for the Department.

### ***Monitoring and MCL Violations in 2007***

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 (MCL). 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 2007, only **6** of **87** contaminants for which community public water systems monitor were found in quantities above the MCL. That means **81 contaminants** for which monitoring was conducted **were not found above the MCL in any community water system in Nebraska.**

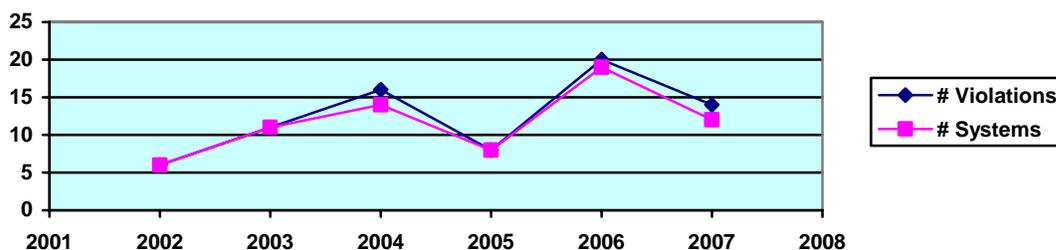
The following tables summarize the types of violations issued in calendar year 2007 and the number of public water systems that received violations. There were a total of 549 violations from 307 public water systems for MCL, monitoring, and treatment technique violations. There were also 84 public notice violations from 69 public water systems.

**Total Coliform Violations**

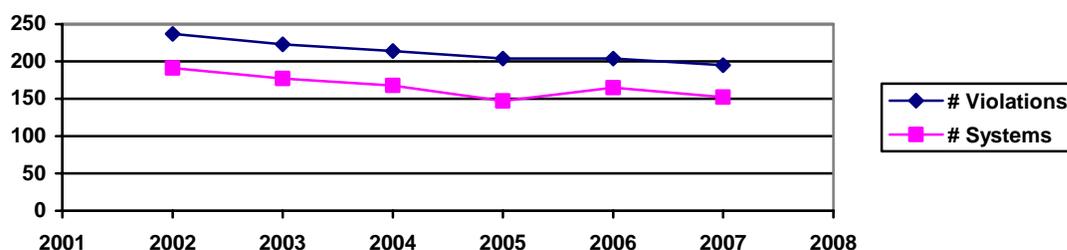
(All public water systems must monitor for total coliform)

Violation Type	Number of Violations	Number of Systems	Systems With Violations
Acute MCL	14	12	0.9%
Non-Acute MCL	195	152	11.3%
Major Monitoring	100	89	6.6%

**Acute MCL Violations**



**Non-Acute 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 the safe drinking water standards.

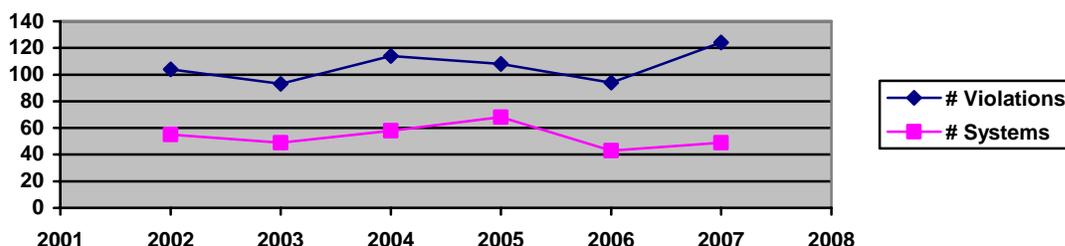
If a community water system is issued four total coliform violations in a twelve month period, or a non-community water system is issued three violations in a twelve month period, the system will be issued an Administrative Order requiring a minimum of six months disinfection.

**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
<b>MCL – 10 mg/l</b>	124	49	3.6%
<b>Monitoring</b>	33	33	2.5%

**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 and monitoring violations both increased from the previous year.

**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%

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems With Violations
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%
Styrene	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	13	0	7	1.7%
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%
Selenium	1	0	1	0.1%
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	1	1	0.2%
Uranium Mass	46	0	13	2.2%
Combined Radium (Radium - 226 and Radium -228)	0	0	0	0%

**Disinfection Byproducts**

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems
Total Trihalomethanes	6	0	2
Total Haloacetic Acids	0	0	0

**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
0	2	1	9	4

**Lead and Copper Violations**

Contaminant	Number of Monitoring Violations	Number of Systems	Systems with Violations
Lead and Copper	5	5	0.7%

**Surface Water Treatment Rule Violations**

Type of Violation	Number of Violations	Number of Systems
Treatment Technique	5	2
Monitoring	2	2

**Administrative Orders Issued in 2007**

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.

	Total Coliform MCL	Total Coliform Monitoring	Nitrate	Lead and Copper OCCT	Surface Water Treatment
Number of Orders	9	2	1	1	1
Population Affected	1,355	275	12,496	84	393

The number of administrative orders for Total Coliform MCL and Total Coliform Monitoring violations increased from 3 in 2006 to 11 in 2007. One administrative order was issued for each of the following: nitrate, lead and copper, and the Surface Water Treatment Rule.

### ***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 2007, the Department entered into bilateral compliance agreements with two non-community public water systems, one more than the previous year.

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

### ***Variances and Exemptions***

No variances or exemptions were issued in 2007. 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



A major reorganization of the Department of Health and Human Services was completed in 2007. As a part of that reorganization, the Nebraska Department of Health and Human Services Regulation and Licensure Environmental Laboratory became the Nebraska Department of Health and Human Services Public Health Environmental Laboratory (Laboratory) on July 1, 2007. The Laboratory was moved into the Division of Public Health.

The Laboratory performed a majority of the testing for public water systems in 2007. All radiological testing, except radon in water and some limited miscellaneous testing (endotoxin, dioxin, asbestos, TOC, bromate, and chlorite) were sent to contract laboratories, with most of those being performed at Energy Laboratory in Casper Wyoming. A few of the tests were also sent to Environmental Health Laboratories (EHL) in Indiana, Iowa Hygienic Laboratory in Iowa, and CH Diagnostic in Colorado. Energy Laboratory, EHL, and the Iowa Hygienic Laboratory are all NELAP National Environmental Laboratory Accreditation Conference certified to perform Drinking Water compliance testing. CH Diagnostic Laboratory performed microscopic particulate analysis, Giardia, and Cryptosporidium testing and is certified for that specialized testing.

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

Test Type	Number done in 2007	Number done in 2006	Number done in 2005
<i>Total Coliform/E.coli</i>	23,228	22,325	20,525
<b>Nitrate</b>	7,605	7,939	6,930
<b>Lead/Copper</b>	3,544	6,551	4,990
<b>VOC's (Volatile Organic Compounds)</b>	1,047	1,035	1,520
<b>Pesticides</b>	1,003	983	451
<b>Uranium (mass)</b>	476	950	636
<b>Arsenic</b>	824	1,615	1,028

The Laboratory added three new pieces of equipment this year:

- a Lightcycler and centrifuge for the BSL III Laboratory. They are used to perform PCR (polymerase chain reaction) testing on environmental samples to identify the presence of various bacteria species quickly.

- A new oven for the inorganic area to replace an oven that was old and could no longer be repaired.

The Laboratory completed the remodeling of an area to house a Biological Safety Level III Laboratory containment space. The Laboratory will be used for samples that may be related to a bioterrorism event. The samples tested may include such things as water, food, powders, crystals, chemicals, and any other suspicious substance. Microbiological and/or chemical composition can be determined depending on the nature of the substance received.

For more information call the 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 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 <sup>-8</sup>
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 <sub>2</sub> ).
Chloramines	4.0 (as Cl <sub>2</sub> ).
Chlorine dioxide	0.8 (as ClO <sub>2</sub> ).

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, 2007:

Reed Miller (Engineer), Kearney  
Leon Jons, M.D., (Physician), Crete  
Jim Sheldon (Consumer), Crofton  
Larry Cast (Consumer), Grand Island  
David Houghtelling (Certified operator of system serving 5,000 or fewer persons), Cambridge  
Jerome Obrist (Certified operator of a system serving over 5,000 persons), Lincoln  
Jane Morgan (Member of a governing board of a public water system) (Gordon)

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 2007 the Council met three times - in March, September, and December.