

Nebraska Public Water Supply Program Summary Report 2019

NEBRASKA

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DEPT. OF HEALTH AND HUMAN SERVICES

Nebraska Department of Health and Human Services
Division of Public Health

Nebraska's Public Water System Program 2019 Annual Report

January 1 to December 31, 2019

Nebraska's 24th Annual Report



June 29 2020

Nebraska Department of Health and Human Services
Drinking Water Division

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<http://dee.ne.gov/NDEQProg.nsf/OnWeb/PWS>

Available in alternate format

To Obtain a Copy of the 2019 Public Water System Report

As required by the federal Safe Drinking Water Act, the State of Nebraska has made the 2019 Annual Public Water Systems report available to the public. Interested individuals can obtain a copy by accessing the DHHS website at:

<http://dee.ne.gov/NDEQProg.nsf/OnWeb/PWS>

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Terms Used In This Report

Capacity Development

Capacity development is the process through which water systems acquire and maintain adequate technical, managerial, and financial capabilities to enable them to consistently provide safe drinking water.

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 to help understand the report, information on the source water for the public water system (PWS), the levels of any detected contaminants, and compliance or noncompliance information with drinking water regulations.

DHHS

Department of Health and Human Services

Groundwater Under the Direct Influence (GWUDI) Any water beneath the surface of the ground with (1) significant occurrence of insects or other macro-organisms, algae, or large-diameter pathogens such as *Giardia lamblia* or *Cryptosporidium*, or (2) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH, which closely correlate to climatological or surface water conditions.

Maximum Contaminant Level (MCL)

Under the federal Safe Drinking Water Act, the U.S. Environmental Protection Agency (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 a public water system adds 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 DHHS, a monitoring violation occurs.

NDEE

Nebraska Department of Environment and Energy.

Primacy State

Primary enforcement authority

Public Notice Violations

The Public Notification Rule requires all public water systems to notify their consumers any time a system violates a national primary drinking water regulation or has a situation posing risk to the public.

Public Water System (PWS)

A Public Water System is a system that provides water 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 in the area 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) regularly serve at least 25 of the same individuals over six months of the year. Examples include a manufacturing company with its own well or a rural school with over 25 students.
3. Transient non-community water systems (TNC) do not regularly serve at least 25 of the same individuals over six months per year. Examples of a transient non-community system would be a café, interstate rest area, or state park that has its own well.

Safe Drinking Water Act (SDWA)

See Attachment A

Safe Drinking Water Standards

See Attachment B

Sanitary Survey

Is an on-site review of the water source, facilities, equipment, operation and maintenance of a PWS for evaluating the system's adequacy and ability to reliably produce and distribute safe drinking water following regulatory requirements.

Significant Monitoring Violations

Occurs when no samples were taken or no results were reported during a compliance period.

Significant Consumer Notification Violations

Occurs if a community water system failed to provide its customers with the required annual water quality report.

Treatment Techniques

Equipment, procedures or other actions are required to control unacceptable levels of certain contaminants, such as viruses, some bacteria, and turbidity.

Variances and Exemptions

A primacy state can grant a PWS a variance from a regulation if the characteristics of the raw water sources reasonably available to the PWS do not allow the system to meet an MCL for a naturally occurring contaminant. To obtain a variance, the system must agree to install the best available technology, treatment technique(s), or other means for limiting drinking water contamination. Cost is a consideration in making this determination. DHHS 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.

DHHS can grant a PWS a temporary exemption to an MCL and/or treatment technique violation, if the system's noncompliance results from extenuating circumstances, such as financial hardship. The PWS must be 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 may be granted an exemption if no alternative source of drinking water is available to the new system. No PWS is eligible for an exemption if management or restructuring changes will result in compliance with the Safe Drinking Water Act (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 no 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://dee.ne.gov/NDEQProg.nsf/OnWeb/PWS>

Overview of the Federal Public Water System Supervision (PWSS) Program

The 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 contaminants in drinking water to ensure that it is safe for human consumption, referred to as, Maximum Contaminant Levels (MCLs) and Maximum

Residual Disinfectant Levels (MRDLs). For some regulations, the EPA requires treatment techniques (TTs) to control unacceptable levels of certain contaminants, such as viruses, some bacteria, and turbidity.

EPA also regulates how often a PWS monitors and reports levels of contaminants to the state primacy agency and to their agency. Generally, the larger the population served by a PWS, the more frequent the monitoring and reporting requirements. 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 the regulations of the SDWA. The 1996 Amendments to the SDWA require consumer notification to include a clear and understandable explanation 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 federal SDWA applies to all 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 program(s). 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 Navajo Nation, which was granted primacy in late 2000.

Annual State Public Water System Report

The mission of the Drinking Water Division is to protect the public health and welfare of Nebraskans by assuring safe, adequate, and reliable drinking water. People expect their water will be safe to drink when they turn on their faucet, program staff across the State work in many areas to assure this.

On July 18, 2017 the Nebraska Department of Health and Human Services (DHHS) and the Nebraska Department of Environmental Quality (now the Nebraska Department of Environment & Energy (NDEE)), entered into a Memorandum of Agreement (MOA), with the purpose of enhancing the protection of public health and the environment through improved customer service, and increased efficiency. The DHHS Drinking Water Division staff continue to administer the PWSS program under the supervision of NDEE.

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 MCL, MRDL, monitoring, and TT violations and other information on enforcement activity related to

these violations. In addition, section 1414(c)(3) of the federal SDWA 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, TTs, variances and exemptions, significant monitoring violations, and significant consumer notification violations. The following report is a summary of the compliance of Nebraska's PWSs with the SDWA as required by the 1996 Amendments to this federal act. Other significant program activities that the program staff perform in assuring water is safe for human consumption are also included in this report.

More information about systems with violations that occurred in 2019 is available from the Drinking Water Division, 1200 N Street, Suite 400, P.O. Box 98922, Lincoln, NE 68509-8922, phone: 402-471-6435 or on EPA's website at:

<https://www.epa.gov/enviro/sdwis-search>

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

<http://dee.ne.gov/NDEQProg.nsf/OnWeb/PWS>

Notices of the report's availability are also provided to public libraries and local health departments across the state.

Nebraska's Public Water Systems

Population and Type of System

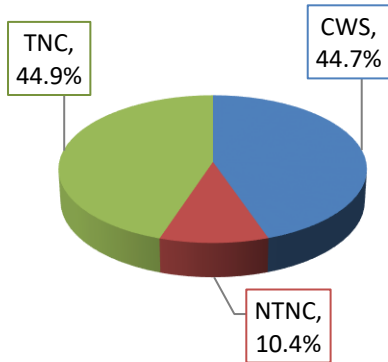
Nebraska PWSs can be broken down into categories based on the size of the population served and/or the type of population served.

Population	CWS	NTNC	TNC	Total Systems	Percentage*
< 101	105	75	511	691	51.6%
101-500	267	46	86	399	29.8%
501-1000	97	8	5	110	8.2%
1001-3300	88	8	0	96	7.2%
3301-10000	28	2	0	30	2.2%
10001-50000	11	0	0	11	0.8%
>50000	3	0	0	3	0.2%
TOTAL	599	139	602	1340	100.00%

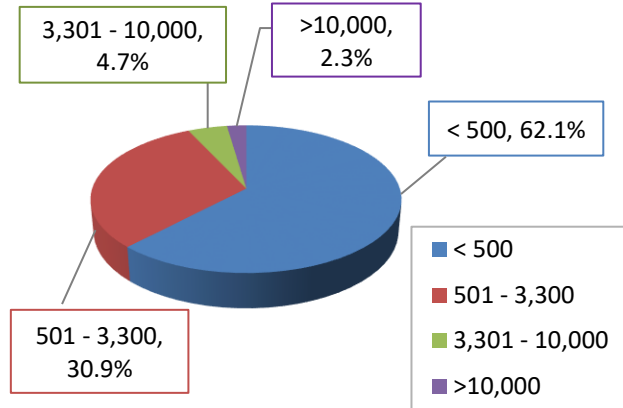
**Based on approximate population*

CWS = Community 599 systems
 NTNC = Non-transient, non-community 139 systems
 TNC = Transient, non-community 602 systems

Public Water System Types



Community Public Water Systems by Size of Population



Approximately 80% of all Nebraskans get their water from a community public water system. Private domestic wells provide water for the remaining 20% of the overall State population.

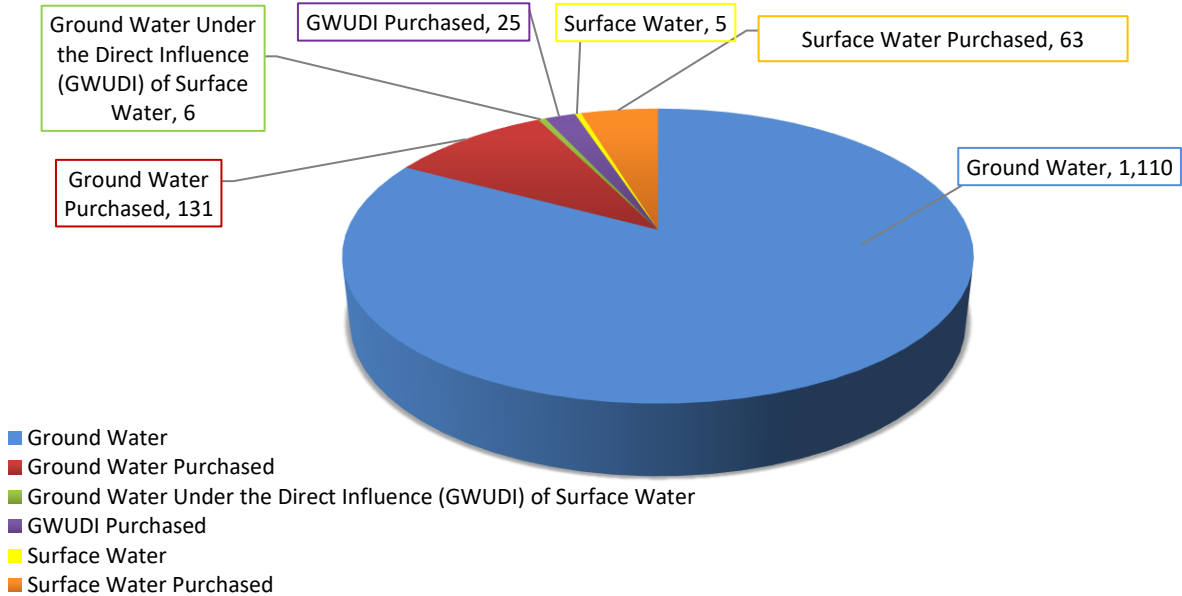
Over 60% of Nebraska's CWSs serve populations less than 500 people. Water systems with populations below 3,300 are considered to be "small systems" by the EPA. This makes Nebraska a predominantly small system state with 93.0% of all of the State's CWSs serving 3,300 or fewer people.

Public Water in Nebraska

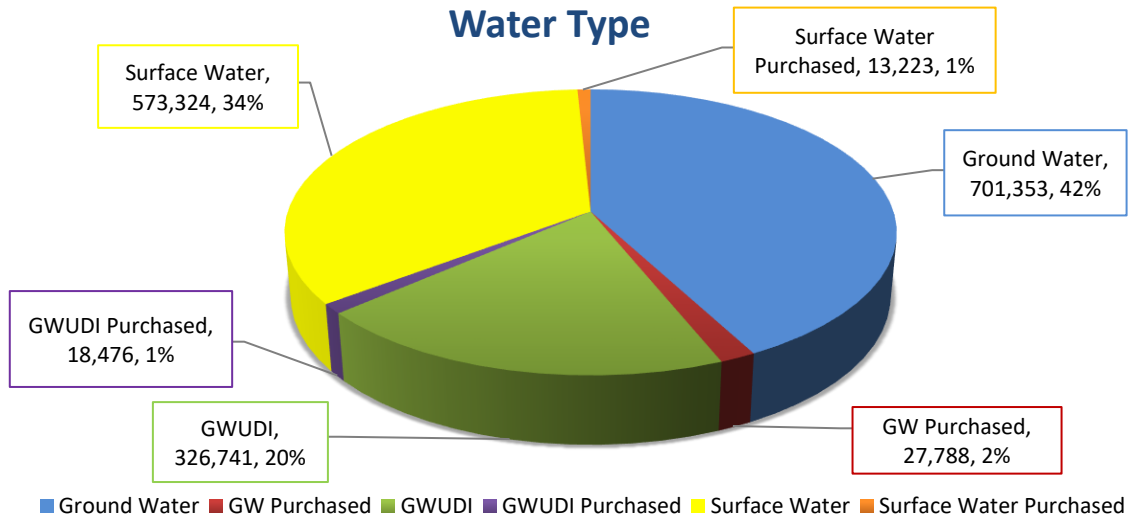
The Drinking Water Division at the Department of Health and Human Services administers the State's regulations governing PWSs, Title 179 NAC 2 through 26, promulgated under the State's SDWA pursuant to and in accordance with the federal SDWA. EPA promulgates rules and sets standards in accordance with the federal SDWA, originally passed in 1974 and later amended in 1986 and 1996.

PWSs provide water to approximately 80% of the people of Nebraska. Private domestic wells provide water for the other 20% of Nebraskans. Most of the water Nebraskans drink is ground water and only 5 public water systems in the state obtain their drinking water from surface water. Another 64 systems purchase water from these 5 systems. In addition, 6 systems utilize ground water under the influence of surface water (GWUDI), and 27 additional systems purchase water from those 6 systems. The remaining 1,125 systems use ground water, and an additional 147 systems purchase their water from another ground water system.

Number of Systems by Source Water Type



Public Water System Population Served by Source Water Type



*Percentages rounded to nearest 1%

Nebraska's Drinking Water Division's Activities

The Drinking Water Division has 33 full time equivalent positions (FTEs). The Monitoring and Compliance Section has 11, the Engineering Section has 8, the Field Services and Training Section has 12, and 3 FTEs contribute to the administration of the program.

Drinking Water Field Services and Training Section

The 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 include a supervisor, eight field representatives, a training coordinator, a capacity development coordinator, and a staff assistant. FS&T staff conduct sanitary surveys, train public water system operators, attend and present information at continuing education programs for water operators, assist public water systems (PWSs) with Level 1 and Level 2 assessments, during emergency situations, and help public water systems to achieve or maintain adequate technical, financial, and managerial capacity. There are eight field areas with locations in North Platte, Grand Island, Norfolk, Blair, Nelson, Chadron and Lincoln to provide close contact and timely assistance to Nebraska's public water systems. The Norfolk office serves two field areas.

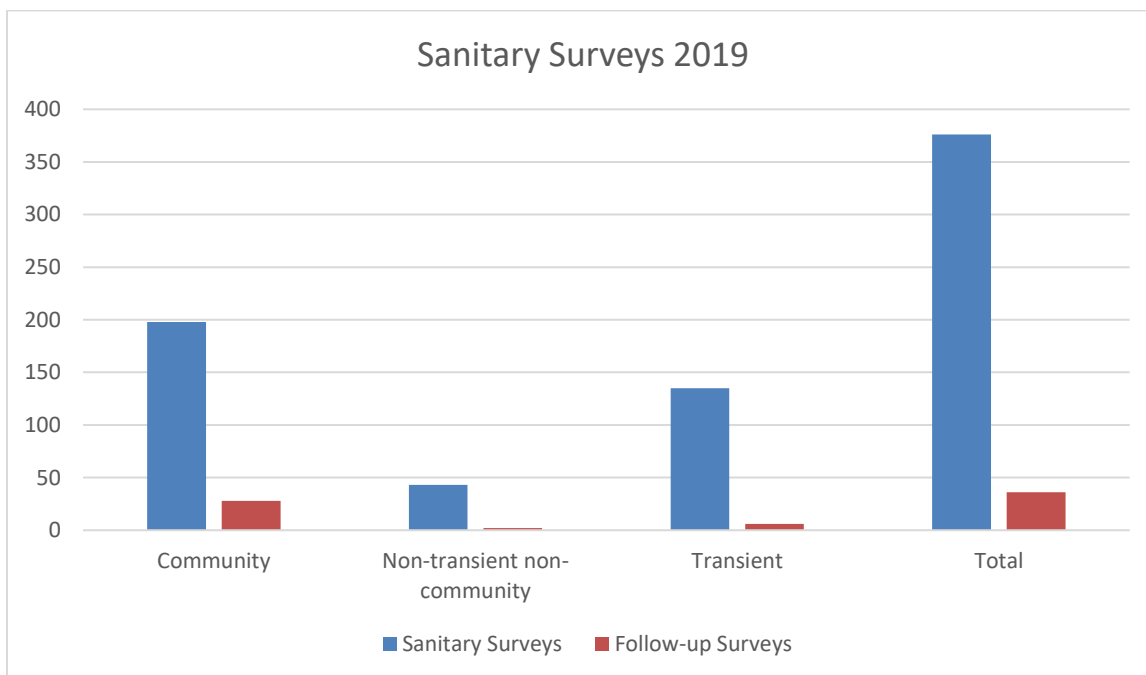
Field Services

Sanitary Surveys

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 helps to ensure that a water system is operating properly by working with their licensed water operator(s) to evaluate records, review their emergency plan and cross-connection control program, and inspect components of the water system.

In 2019, field personnel conducted 376 sanitary surveys (198 community, 43 non-transient non-community, and 135 transient public water systems) and 36 follow-up surveys (28 community, 2 non-transient non-community, and 6 transient public water systems). A total of 729 deficiencies were found in 2019. This reflects an overall deficiency rate of 1.9 deficiencies per sanitary survey in 2019. No deficiencies were found in 122 (32%) of the sanitary surveys completed in 2019. The average number of deficiencies found in Nebraska's public water systems remained stable from 2018 to 2019, highlighting the great work of water operators in our state

Outside of sanitary surveys, field staff conduct site inspections for the location of new public wells, assist 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). Field services staff provide necessary response to emergency situations associated with natural disasters, water service interruption, and/or contamination of a public water system



Level 1 & Level 2 Assessments

When public water systems have a confirmed presence of coliform bacteria, the Revised Total Coliform Rule (RTCR) requires that an assessment of the system be conducted. An assessment helps to identify the likely reason for the presence of coliform bacteria in the system. Any identified defects are required to be corrected.

A Level 1 assessment is triggered by the confirmed presence of total coliform bacteria in a public water system. The public water system is responsible for completing a Level 1 assessment. Then field staff are responsible for completing a review of this assessment.

A Level 2 assessment is triggered by either multiple Level 1 assessments within a running twelve-month period, or by the confirmed presence of *E. coli* bacteria in the system. A Level 2 assessment is conducted by field staff and provides a much more detailed evaluation of the public water system.

Hypochlorinators

The Drinking Water Division maintains a number of hypochlorinators for temporary loan to public water systems when bacterial contamination is a source of concern. This equipment helps communities with temporary chlorination of their water supplies to ensure the safety of their drinking water. When a power outage or source failure is involved, program staff also help systems locate equipment and supplies which may be needed.

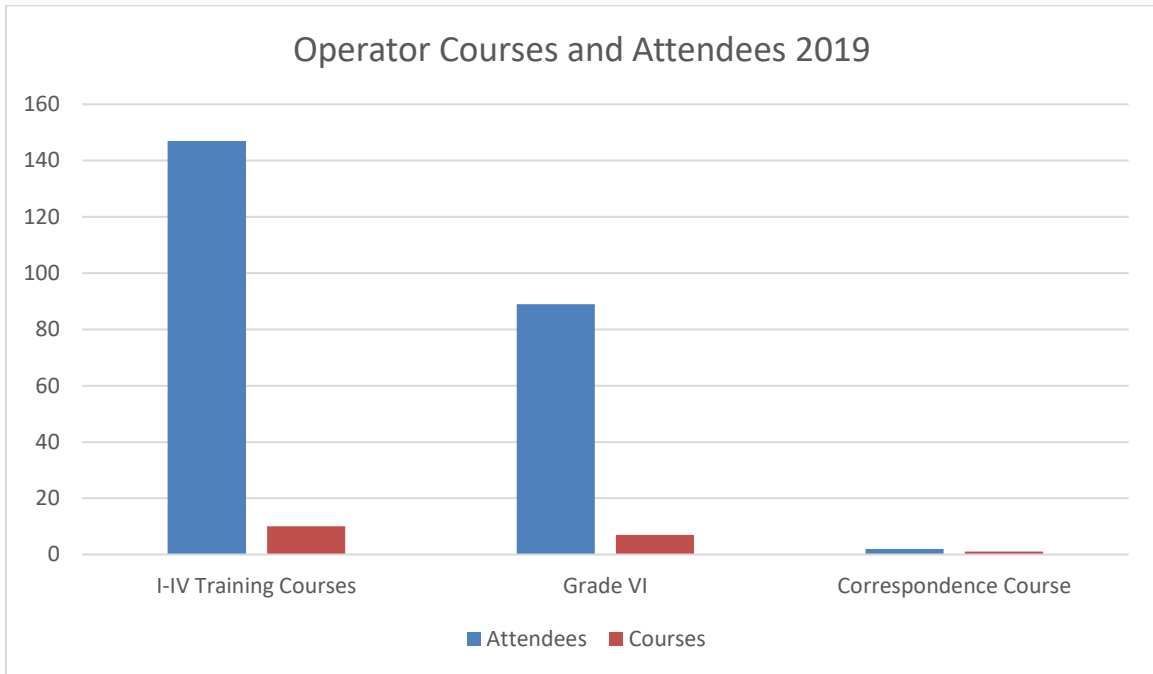
Natural Disasters Impacting PWS

The spring of 2019 brought historic flooding to the region. Forty-four water systems were impacted but with the hard work of local utility workers and the staff of the Drinking Water Division, 92% of those systems have returned to normal operations. There were 22 community water systems that were damaged and 16 of those have made all repairs. Two community water systems were inactivated due to the condemnation of homes. There were also 22 non-community water systems that were damaged. Nineteen of those have been repaired and have returned to normal operation. Three non-community systems were inactivated and have not reopened.

The Department partnered with EPA to help private homeowners get analysis kits for coliform and E.coli. Several drop-off sites were set up in areas that were the most impacted and the most accessible to the largest populations. Citizens could come to one of those sites, receive a sample kit, collect a drinking water sample from their residence, and return it to the drop-off site for transportation back to the State of Nebraska Public Health Laboratory for analysis. There were no costs to the citizens for the tests conducted. Having a reliable drinking water source is critical to help meet the goals of public health. And while the Drinking Water Division only regulated public water systems, we felt it was necessary to work with our private well owners in helping them determine if the water from their well was safe for consumption.

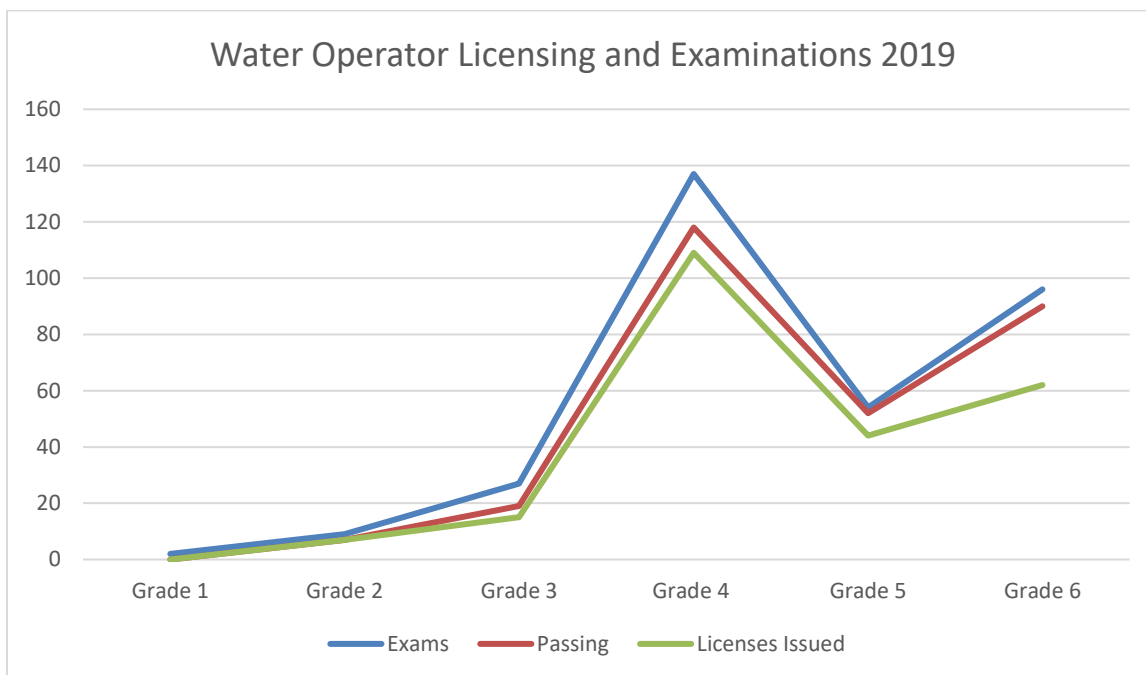
Training

In 2019, FS&T program personnel conducted 10 water operator training courses, Grades I through IV, with a total of 147 attendees. An additional 2 individuals completing the correspondence course that is also offered to prepare for the Grade IV licensure examination. For Grade VI licensure (backflow preventer testing and repair), 7 courses were offered with a total of 89 attendees. For Grade V operators (transient systems only), there are no classroom courses. Training is obtained through a self-study process. 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 initial licenses issued and examinations conducted at each grade level during 2019:

Grade	Examinations	Passing	Number of Licenses Issued
I	2	0	0
II	9	7	7
III	27	19	15
IV	137	118	109
V	54	52	44
VI	96	90	62



The Drinking Water Division and other training providers offered continuing education opportunities for water operators in 2019. Coordinated by the program, a group informally known as the Water Operator Training Coalition, met to identify training needs and to assist with 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 2019, 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 133 workshops/seminars/conferences were offered in Nebraska in 2019 for the purpose of water operator continuing education. Of these, 53 focused primarily on backflow prevention continuing education for Grade VI operators.

Capacity Development

Capacity development is a proactive approach, through which water systems acquire and maintain adequate technical, managerial, and financial capabilities, enabling them to provide safe drinking water to Nebraskans. DHHS's activities to bolster water systems' capacity are overseen by the program's Capacity Development Coordinator.

Additional support is provided by the 2% Team, which consist of the same members as the Water Operator Training Coalition. The name comes from the 2% set-aside from the Drinking Water State Revolving Fund (DWSRF).

DWSRF 2% Set-Aside Funds

Funds from the 2% Set-Aside of the DWSRF are used to provide assistance to public water systems to develop, and maintain, technical, managerial, and financial capacity. DHHS

contracts with technical assistance providers to provide on-site technical assistance, capacity assessment, and board/council trainings.

On-Site Assistance: The Department, along with the 2% Team, prioritize water systems in need of assistance. Providers then work with water systems, providing assistance with applications for funding, capacity development training, manuals, and mentorship to assist water systems. Technical assistance providers made 319 in person or phone contact visits with systems in 2019.

Capacity Assessment: Assessments of a system's managerial and financial capacity are conducted at water systems that receive loans through the DWSRF. An assessment is completed before the funded project begins, and again after it is complete, to determine the impact of the project on the system's capacity.

Board/Council Training: Information sessions are held to advise board/council members about the legal and fiduciary responsibilities they have as owners of a public water system, and their role in maintaining an adequate, safe supply of water for their customers. A total of 72 board/council members, representing 15 community water systems, attended sessions in 2019.

Education and Outreach

The Capacity Development Coordinator worked with the Water Operator Training Coalition partners to provide capacity development training for water operators, with a focus on their role in developing and maintaining adequate capacity for their water systems. Included in this focus was emphasis on the importance of maintaining an up-to-date emergency response plan, and training all individuals who have a role in the plan. The Capacity Development Coordinator provided this training at 10 conferences and workshops in 2019.

Drinking Water Engineering Section

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 begins. The law defines major construction as structural changes that affect the source of the water 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.

Plan Reviews and Inspections

The Drinking Water Engineering Section provides engineering plan reviews; issuance of construction permits; inspection of newly constructed projects for issuance of approvals for placement into service; and, technical assistance and advice to owners/operators of PWSs, consulting engineers, state, federal and local officials, organizations, and the general public in matters relating to siting, design, construction, maintenance, and operation of PWSs.

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.

In 2019, DHHS received 172 sets of plans and specifications for the construction of water projects for review and approval. In addition, engineering staff conducted 129 inspections of water projects constructed.

Annual Audits

On April 4, 2010, state regulations – Title 179 NAC 7, *Siting, Design and Construction of Public Water Systems* -- became effective. As a result, public water systems can enter into a 3-year agreement to construct water distribution main projects without having to submit plans and specifications to DHHS for review and approval. These systems are subject to an annual audit by the Drinking Water Engineering Section as a condition of the agreement. In 2019, 13 annual audits were completed and as of December 31, 2019, a total of 23 public water systems have entered into 3-year agreements with the DHHS.

Drinking Water State Revolving Fund

The engineering staff also participates in the common pre-application review process for federal and state agencies' loan; grant programs for water and wastewater projects; and the Drinking Water State Revolving Fund (DWSRF) program activities. In late 2019, a Kaizen Process was completed to assess the performance of the DWSRF program with the goal of improving and streamlining processes.

The annual DWSRF infrastructure needs survey was sent out to all public water systems in 2018. The surveys indicated 378 eligible projects with just over \$1 billion in infrastructure needs. A ranking system developed by DHHS was used to prioritize and establish the funding order for infrastructure projects that could be funded by the DWSRF. The DWSRF provided 14 loans in 2019 for a total of \$20,326,631, with \$3,038,205 of that provided in forgiveness assistance.

Each year the Clean Water State Revolving Fund (CWSRF) and DWSRF publish an Intended Use Plan (IUP), which explains how the SRF programs will use capitalization grants received annually from the federal government, annual state matching funds, and current program funds to meet Nebraska's community needs and funding requirements for the State Fiscal Year (SFY), July 1st to June 30th. IUPs also include a priority funding list for CWSRF and DWSRF projects, listing and prioritizing projects that are submitted by the communities to the program. Every year, IUPs undergo a public hearing and comment period that are presented to the Environmental Quality Council (EQC) for review and approval.

Other Engineering Activities

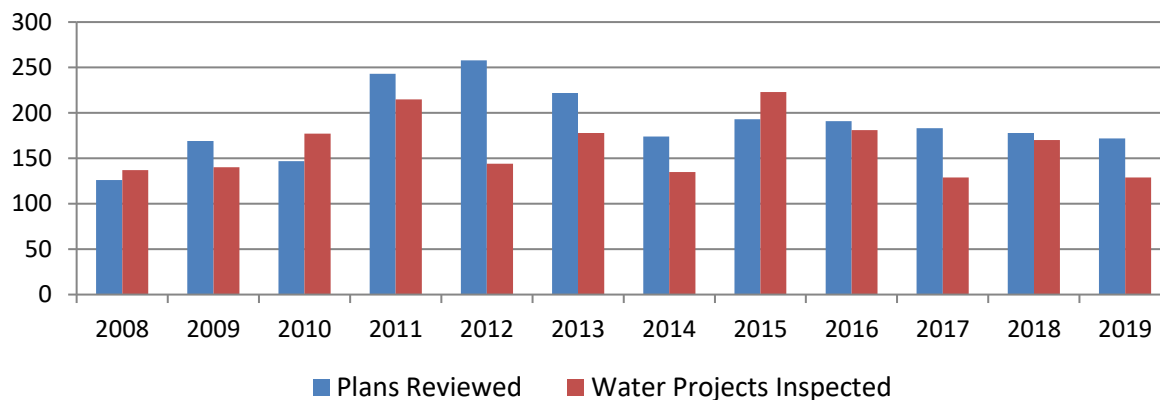
The Drinking Water Engineering Section staff also reviewed and evaluated justifications provided by professional engineers for any new well siting that does not meet the setback distances identified in Title 179 NAC 7. In 2019, a total of 5 new well site justifications were reviewed and approved. In addition, the engineering staff worked with NDEE and city officials to

evaluate encroachment issues that may be of concern to existing public drinking water wells. Six encroachment issue was evaluated and resolved.

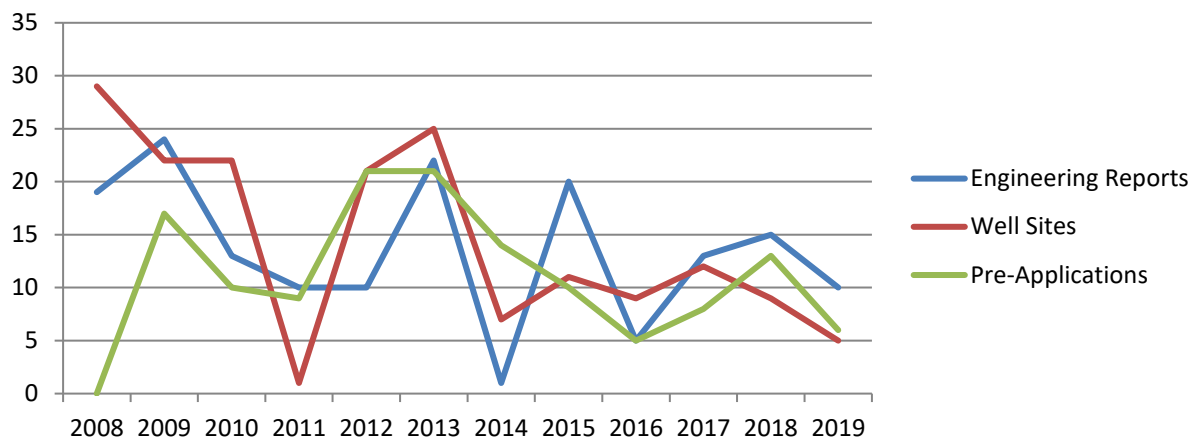
**SUMMARY OF THE DRINKING WATER ENGINEERING SECTION
ACTIVITIES *January 1, 2019 to December 31, 2019***

ACTIVITIES	NUMBER
Water Projects Received for Review and Approval	172
Water Projects Inspected	129
Engineering Reports for Water System Improvements Evaluated	10
New Water Well Sites Evaluated	5
Common Pre-Applications for Water/Wastewater Projects for Federal and State Financial Assistance Reviewed	6
Operation and Maintenance Manuals for Drinking Water State Revolving Loan Funded Projects Reviewed	2
Three-Year Agreements for Distribution Main Projects—Annual Audits Completed	13
Encroachment Issues	6

**Engineering Plans Reviewed/
Water Projects Inspected**



Engineering Evaluations



Monitoring and Compliance Section

The Monitoring and Compliance (M&C) Section of the Drinking Water Division establishes monitoring schedules and reviews analytical results for contaminants in drinking water. In this review of analytical results, M&C personnel determine compliance with MCLs and issue appropriate enforcement actions, when necessary, to help a PWS return to compliance.

Safe Drinking Water Information System

The Safe Drinking Water Information System (SDWIS) is a database developed by EPA for States to report water quality data test results, violations, compliance assistance, enforcement, compliance schedules, water operator licensure, and PWS operating permits. It receives electronic data from the State of Nebraska Environmental Health Laboratory and 4 contract laboratories (Midwest Lab, Hall County, American Ag, and Enviro Services) that perform water analyses for DHHS.

DHHS is preparing for transition to cloud-based software called SDWIS PRIME. This transition includes staff training, implementing routine quality assurance and quality control measures, and implementing standard data entry and reporting methods.

Monitoring and MCL Violations, and Assessments

A public water system is required to monitor for the presence of 83 different contaminants. If a contaminant is present in the water, the system must verify that it does not exceed the maximum contaminant level (MCL).

In 2019, only 9 of 83 contaminants for which community public water systems monitor were found in quantities above the MCL. That means 74 contaminants for which monitoring was conducted were not found above the MCL in **any** community water system in Nebraska.

Monitoring & Compliance enforces 9 different federal monitoring rules. Each rule contains a group of similar contaminants. Below is a list of the rules:

- 1- Revised Total Coliform Rule
- 2- Disinfections Byproducts
- 3- Groundwater
- 4- Lead & Copper
- 5- Inorganic Chemicals
- 6- Radionuclides
- 7- Synthetic Organic Chemicals
- 8- Surface Water Treatment
- 9- Volatile Organic Chemicals

A major monitoring violation occurs when a system fails to collect any samples during a compliance period. Significant monitoring violations are defined as any major monitoring violation that has occurred during a specified reporting period, which differs for each contaminant.

There were a total of 265 violations from 175 public water systems in 2019 for exceeding an MCL or failing to properly monitor. More detailed information on each of the monitoring rules follow the summary table below.

Revised Total Coliform Rule (RTCR)

The objective of the Revised Total Coliform Rule (RTCR) is to reduce potential pathways of entry for fecal contamination into distribution systems. The rule established a MCL for *E. coli*, a type of pathogenic coliform bacteria than can be associated with fecal contamination. All public water systems are required to monitor for the presence of coliform bacteria and routine monitoring is based on the system type and size. RTCR assessments and corrective actions are required based on these monitoring results. A system is required to issue a Public Notice (PN) if they fail to monitor for bacteria, if *E.coli* bacteria are found, or for failure to complete an assessment or corrective action.

A Level 1 Assessment is triggered when total coliform is found in the system. The public water system conducts the Level 1 Assessment and it is reviewed by the Drinking Water Division. Identified deficiencies noted in the Assessment are required to be corrected in a timely manner.

A Level 2 Assessment is triggered when a system incurs more than one Level 1 Assessment in a running 12-month period, or if a system has a confirmed *E. coli* bacteria presence within their system. The Level 2 Assessment is conducted by the Drinking Water Division with a representative of the public water system. Level 2 paperwork is completed and identified deficiencies are noted and the system is responsible for correcting deficiencies in a timely manner.

Significant deficiencies must be corrected within 120 days and minor deficiencies must be corrected within 12 months.

RTCR Assessments 2019

Type of RTCR Assessment	Number of Assessments Triggered	Number of Systems	% of Systems with Assessments
Level 1, Multiple TC +	132	132	9.8%
Level 2, 2 nd Level 1 triggered	96	63	4.7%
Level 2, <i>E. coli</i> MCL triggered	14	14	1.0%

RTCR Violations 2019

Type of RTCR Violation	Number of Violations Issued	Number of Systems	% of Systems with Violations
Treatment Technique, Level 1 requirements not met	0	0	0%
Treatment Technique, Level 2 requirements not met	0	0	0%
MCL – <i>E. coli</i> +	13	13	1.0%
Monitoring, Additional Routine, Major Routine	162	121	9.0%

Nitrate-Nitrite Rule

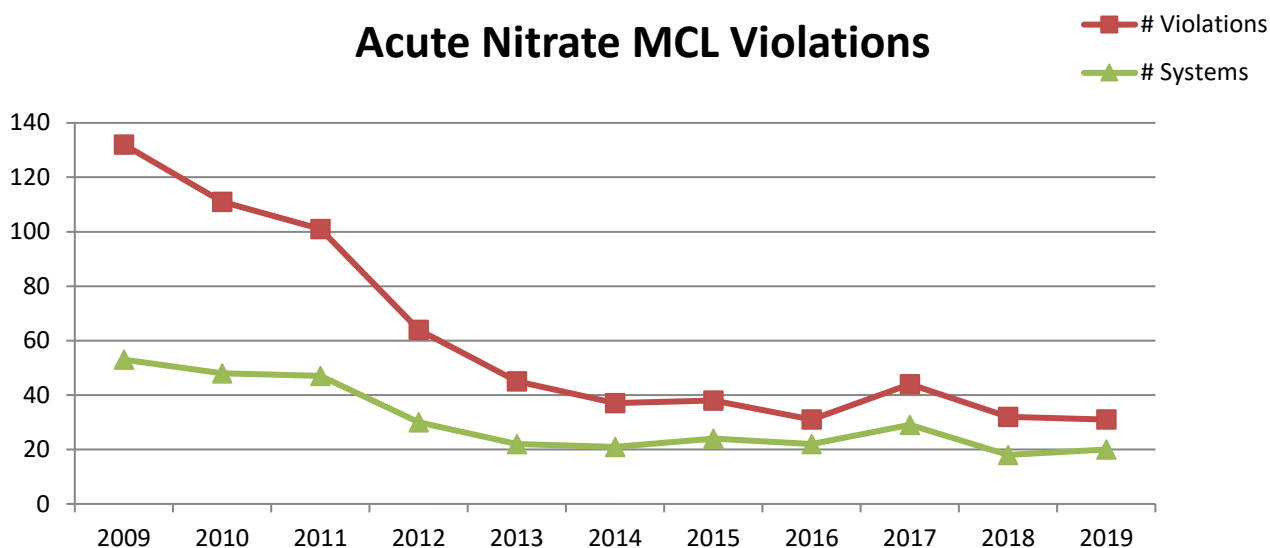
All public water systems monitor for nitrate-nitrite. Adverse health effects can be experienced when high levels of nitrate or nitrite, above their respective MCLs, are consumed by pregnant women, infants under six months of age, and nursing mothers. A system is out of compliance when it receives one monitoring or MCL violation. A system is issued an Administrative Order to correct a nitrate contamination problem if two nitrate-nitrite violations are issued within a consecutive three-quarter period.

A summary of the 2019 nitrate-nitrite violations is presented below along with historic data. Nitrate MCL violations have decreased significantly in Nebraska since 2009.

Nitrate-Nitrate Violations 2019

Violation	Number of Violations	Number of Systems	% of Systems with Violations
MCL – 10 mg/l	31	20	1.5%
Monitoring	17	16	1.1%

Acute Nitrate MCL Violations



Public Notification Rule 2019

Public Notification is required if a PWS receives a MCL, Monitoring, or acute violation. There were no systems in violation of the PN Rule.

Rule	Number of Violations	Number of Systems
Public Notification Rule	9	7

Consumer Confidence Rule 2019

The CCR Rule requires all community water systems to prepare and distribute a brief annual water quality report summarizing information regarding source water, detected contaminants, compliance, and educational information. There were no systems in violation of the CCR Rule.

Rule	Number of Violations	Number of Systems
Consumer Confidence Rule	0	0

MCL Violations for Chronic Contaminants

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 chronic contaminant is detected, the PWS must monitor quarterly for that contaminant. If the level decreases below the MCL, the monitoring frequency may be reduced. A public water system is issued an AO to correct a chronic contamination issue after 3 quarterly MCL violations are issued in a rolling 12 month period. An AO is issued immediately if detected levels pose a health risk.

Below are a list of tables that outline the type of contaminants and the number of violations issued for each.

Volatil Organic Chemical (VOC) Violations 2019

(Only Community and Non-transient, non-community systems monitor for VOCs.)

VOC 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%
Aldrin	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%
Dicamba	0	0	0	0.0%

Volatil Organic Chemical (VOC) Violations Continued

VOC Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems with Violations
Dichloromethane	0	0	0	0.0%
Metribuzin	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%
Tetrachloro-ethylene	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 (IOC) Contaminant Violations 2019

(Only 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 MCL Violations
Antimony	0	0	0	0%
Asbestos	0	0	0	0%
Arsenic	8	8	6	0.4%
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	0	0	0	0%
Sodium	0	0	0	0%
Thallium	0	0	0	0%

Non-Volatile Synthetic Organic Chemical (SOC) Contaminants 2019

(Only Community and Non-transient, non-community systems monitor for Non-Volatile Synthetic Organic Chemicals.)

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 (Lasso)	0	0	0	0%
Atrazine	0	0	0	0%
Benzo[a]pyrene	0	0	0	0%
Butachlor	0	0	0	0%

Carbaryl	0	0	0	0%
Carbofuran	0	0	0	0%

Non-Volatile Synthetic Organic Chemical (SOC) Contaminants Continued

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems	Systems with Violations
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%
Dieldrin	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%
Methomyl	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%
Propachlor	0	0	0	0%
Simazine	0	0	0	0%
Toxaphene	0	0	0	0%

Radionuclide Violations 2019

(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 Radon and Uranium	0	0	0	0%
Uranium Mass Combined Uranium	5	0	2	0.15%
Combined Radium (Radium - 226 and Radium -228)	1	0	1	0.07%

Disinfection Byproduct Violations 2019

(Only water systems that disinfect their water, monitor for Disinfection Byproducts and Disinfectant Residuals.)

Contaminant	Number of MCL Violations	Number of Monitoring Violations	Number of Systems
Total Trihalomethanes	1	0	1
Total Haloacetic Acids	0	0	0

Disinfection Byproducts Stage 1 Monitoring

Violation	# Violations	# Systems
Qualified Operator Failure	0	0

Disinfection Byproducts Monitoring

	# Violations	# Systems
Monitoring	1	1

Disinfectant Residual

MRDL	Treatment Technique # Violations	Treatment Technique # Systems	Monitoring # Violations	Monitoring # Systems
0	1	1	1	1

Lead and Copper Rule 2019

(Only Community and Non-transient, non-community water systems monitor for Lead and Copper.)

Contaminant	Number of Monitoring Violations	Number of Systems	Systems with Violations
Lead and Copper	2	2	0.15%

Surface Water Treatment Rule 2019

Type of Violation	Number of Violations	Number of Systems
Treatment Technique	3	2
Monitoring	0	0
Record Keeping	0	0

Ground Water Rule 2019

(All water systems who use ground water as their source water have to monitor for the Ground Water Rule.)

Type of Violation	Number of Violations	Number of Systems
Sanitary Survey – Failure to Address Deficiency	0	0
Sanitary Survey – Failure to Consult	0	0
Treatment Technique	0	0
Monitoring/Reporting/Recordkeeping	0	0

(You may want to add a statement, above these tables, explaining why some systems don't monitor for all contaminants.)

Administrative Orders 2019

The Drinking Water Division issues an Administrative Order (AO) 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 AO is issued, MCL violations continue to be issued until the System returns to compliance. Failure to comply with the terms of an AO can result in administrative action or revoking the system’s permit to operate.

	Total Coliform Monitoring	Nitrate	Arsenic	DBP
Number of Orders	0	0	0	1
Population Affected	0	0	0	2405

Variations and Exemptions

No variations or exemptions were issued in 2019.

MCL Violations other than Total Coliform/RTCR and Nitrate

Population Affected by Various Contaminants

Contaminant	Population
Arsenic	25,254
Uranium Mass	139
Nitrate/Nitrite	3,579

Nebraska Public Health Environmental Laboratory (NPHEL)

The Nebraska Public Health Environmental Laboratory tested about 62,000 samples in CY2019. This represents about a 1% decrease in tests from the previous year so, overall, pretty consistent. Approximately 61% of the laboratory's tests are for public water systems across the state. Around 23% of the lab's testing was performed for the Nebraska Department of Environment and Energy, primarily in their Water Quality Division. About 2% of the tests were directly for the Nebraska Drinking Water program. Private customers accounted for nearly 12% of the load which is an increase of 3.75%. Total coliform accounts for about 39% of the laboratory tests. Total coliform testing has a very short holding time of 30 hours from collection to incubation. Ongoing US Postal Service issues continue to cause a struggle for clients to get their samples to the lab on time. Of all the Colilert and Colilert Quantitray samples done in 2019, 1.86% of them were rejected due to excessive age upon receipt.

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

Number of Tests Done

Test Type	2019	2018	2017	2016
Total Coliform/E.coli	24,088	22,579	24,109	25,000
Nitrate	8,033	7824	8,069	8,070
Lead/Copper	6,055	4536	4,809	5,753
VOCs (Volatile Organic Compounds)	968	977	1,079	1,091
Pesticides	745	713	498	761
Uranium (mass)	506	646	566	553
Arsenic	775	1089	1,414	1,454
Chloride	2,381	2439	2,558	3,001
Total Suspended Solids	2560	2446	2,725	3,095

Number of Tests by Analytical Area

	% of Total
Organics and Radon	6.2
Inorganics	33.8
Metals/Minerals	17.7
Bacteriological	39.2
Air	0.7
Routine Contract Lab	1.3

The laboratory continued with its progress in upgrading laboratory equipment. Items purchased were replacements for a Gas Chromatograph/Mass Spectrometer for VOC analysis, (3) new Gas Chromatographs, a mercury analyzer, a high pressure microwave for digestions, and an automated solid phase extraction system.

The lab underwent its tri-annual laboratory audit by EPA Region VII in February and performed excellent.

After months and months of preparing, the lab upgraded its LIMS to a new version of software. This required training of all staff on the new platform and a re-write of many SOPs.

Lab fees remained the same as they have since 2013 and will hold throughout 2020. Paying lab invoices by credit card, debit card and electronic check continues to be popular with clients.

The Drinking Water Laboratory Certification Office currently certifies five labs for coliform and two labs for nitrate testing.

For more information call NPHEL at (402) 471-2122.

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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 DHHS 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 DHHS 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 Byproducts:** 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 byproducts, 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 Non-transient, non-community water systems. Only the MCLs for nitrate, nitrite, and total nitrate and nitrite apply to transient, non-community systems.

Inorganic Contaminants

	<u>MCL (mg/l)</u>
Antimony	0.006
Asbestos (fibers >10 µm)	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 non-transient, non-community water systems.

Volatile Organic Chemical Contaminants

	<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)	3×10^{-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, 2019.

Glenn Dostal (engineer), Omaha
James Persson (physician), Omaha
Ivan Van Dyke, (consumer), Norfolk
Robert Johnson, (consumer), Hastings
Paul Markowski (licensed operator of system serving 5,000 or fewer persons), Ord
Christopher Fox (licensed operator of a system serving over 5,000 persons), Omaha
Mike Stanzel (member of a governing board of a public water system), Valley

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 2019, the Council met once.