

**2013 HOUSE ENERGY AND NATURAL RESOURCES**

**HCR 3021**

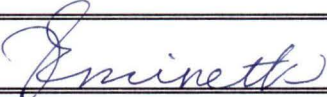
# 2013 HOUSE STANDING COMMITTEE MINUTES

House Energy and Natural Resources

Pioneer Room, State Capital

HB 3021  
February 8, 2013  
18574

Conference Committee



To study the feasibility and desirability of providing assistance to obtain rural water with arsenic and other harmful substances in the well water.

**Minutes:**

1 attachment

Rep. Porter: We will open the hearing on HCR 3021.

Rep. Amerman: What happened is in the 1930's people sprayed the grass hoppers with arsenic to get rid of them. Over time the arsenic steeped down into the aquifers and the ground water. In the 1990's they came out with a program with money that came to the states through the Health Dept. that they would pay 90% to hook up to rural water and the other 10% would come from the rural water district. The people could hook up at no cost so they didn't have to drink the water with the arsenic. There was another program in the early 2000's in which they could have hooked up at little cost it was limited and didn't cover what the first program did. There are a lot of people out there where Bobcat is that are buying farmsteads and then finding out that the water has arsenic in it. This bill will do a study to see how much of problem is out there and how we can help these people. It is very costly to sign up now about \$28,000 to \$35,000 to hook up to the water system on their own. There are about 1000 people involved in this.

Rep. Porter: As the rural water systems were developing; are these locations that choose not to sign up when it was offered. Or was the rural water system never offered to them?

Rep. Amerman: There are some small towns that thought their water was just fine so they didn't sign up and then the EPA said instead of 50 parts it was 10 parts that was safe and so they were drinking water that was unsafe.

Rep. Keiser: This is introduced as a concurrent resolution verses a study resolution why?

Rep. Amerman: I am not sure. I will leave it up to this committee to make this resolution.

Rep. Froseth: Up in my area they can't take any more customers because of the size of their lines and supply of water. Would the study bring this out?

Rep. Amerman: I don't know how many would apply if we would find some money to help out.

Rep. Brabandt: Is this a state wide issue

Rep. Amerman: It is more wide spread than I thought it was.

Eric Volk: Executive Director ND Rural Water Systems Associations; I am submitting testimony in support of HCR 3021 directing the Legislative Management to the feasibility and desirability of providing assistance to obtain rural water for households with arsenic and other harmful substances( attachment 1)

Rep. Porter: Are the pins on the google map where the arsenic levels are high?

Eric Volk: Yes

Rep. Porter: If you buy a well water kit from Menards and you test the well on your own does it give you an arsenic reading?

Eric Volk: I know there is simplified test for arsenic and I know you can send it to the Health Dept.

Rep. Porter: Have you as an association done a public awareness campaign to check their wells for the arsenic?

Eric Volk: That is a good idea we have not we worked hard to help these cities find a good source of water.

Rep. Porter: You have a monthly magazine that could be used as a means to get information to the public about the arsenic.

Rep. Hofstad: we know the State Water Commission knows where the arsenic high levels of arsenic are. The resolution asks us to provide assistance to provide rural water but we already do that. The emphasis should be on finding and identifying those families and farmsteads that have high levels of arsenic.

Eric Volk: I agree when we bring projects forward to the State Water Commission and put our ranking together; if the system did have some sort of health concern that concern moves to the top of the list.

Rep Porter: We would call that the Water Resource Trust Fund. We will close the hearing on HCR 3021.

# 2013 HOUSE STANDING COMMITTEE MINUTES

House Energy and Natural Resources

Pioneer Room, State Capital

HCR 3021  
February 14, 2013  
18950

Conference Committee

*Enrolled*

To study the feasibility and desirability of providing assistance to obtain rural water with arsenic and other harmful substances in the well water

**Minutes:**

Rep. Porter: We will open HCR 3021

Rep. Hofstad: Is he asking for a study under a resolution?

Rep. Porter: I had Kirby call the council and check the said they are the same thing. This is a study resolution. It would go to the Consent Calendar. There is a motion from Rep. Hofstad for a do pass HCR 3021 to be placed on the consent calendar and a second from Rep. Kelsh. Voice vote carries. Rep. Barbandt Carrier.

Date: 2-14-13  
 Roll Call Vote #: 1

**2013 HOUSE STANDING COMMITTEE  
 ROLL CALL VOTES  
 BILL/RESOLUTION NO. HCR 3021**

House Natural Resources Committee

Check here for Conference Committee

Legislative Council Amendment Number \_\_\_\_\_

Action Taken:  Do Pass  Do Not Pass  Amended  Adopt Amendment  
 Rerefer to Appropriations  Reconsider

Motion Made By Rep Hofstad Seconded By Rep Kelsh

Representatives	Yes	No	Representatives	Yes	No
Chairman Todd Porter	/		Rep. Bob Hunskor	/	
Vice Chairman Chuck Damschen	/		Rep. Scot Kelsh	/	
Rep. Jim Schmidt	/		Rep. Corey Mock	/	
Rep. Glen Froseth	/				
Rep. Curt Hofstad	/				
Rep. Dick Anderson	/				
Rep. Peter Silbernagel	/				
Rep. Mike Nathe	/				
Rep. Roger Brabandt	/				
Rep. George Keiser					

Total (Yes) 12 No 0

Absent 1

Floor Assignment Rep. Brabandt

If the vote is on an amendment, briefly indicate intent: Voice carries

Content calendar

**REPORT OF STANDING COMMITTEE**

**HCR 3021: Energy and Natural Resources Committee (Rep. Porter, Chairman)**  
recommends **DO PASS** and **BE PLACED ON THE CONSENT CALENDAR**  
(12 YEAS, 0 NAYS, 1 ABSENT AND NOT VOTING). HCR 3021 was placed on the  
Tenth order on the calendar.

**2013 SENATE NATURAL RESOURCES**

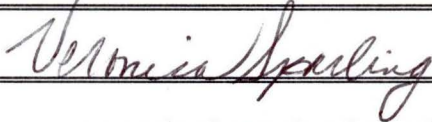
**HCR 3021**

# 2013 SENATE STANDING COMMITTEE MINUTES

Senate Natural Resources Committee  
Fort Lincoln Room, State Capitol

HCR 3021  
March 21, 2013  
Job Number 20307

Conference Committee



## Explanation or reason for introduction of bill/resolution:

A concurrent resolution directing the Legislative Management to study the feasibility and desirability of providing assistance to obtain rural water for households with arsenic and other harmful substances in the well water

## Minutes:

attachments

Chairman Lyson opened the hearing for HCR 3021.

Representative Bill Amerman, District 26, gave a history of the arsenic levels in the water in North Dakota aquifers. Farmers used arsenic to bait grasshoppers, and it ended up in the water supply. In the 1990's the EPA set the standard. If there were 50 parts per billion (ppb), it was considered unsafe. We had a state program that would pay 90% to hook up to a water district. The other 10 % was covered by the rural water district. The farmers whose water tested 30-40ppb didn't sign up. Then the EPA in early 2000's redefined the safe water levels at 10 parts per billion. Now the people with the 30-40 ppb water were not safe, and the hook-up was much more expensive. The bottom line is, we still have families who do not have safe drinking water available unless they buy an expensive reverse osmosis (RO) system.

Senator Laffen asked how expensive an RO system is.

Rep. Amerman said he understands that they are \$8,000.00 to \$9,000.00 plus the upkeep of the filters.

Eric Volk, Executive Director of ND Rural Water Systems Association, presented written testimony in favor of HCR 3021. He mentioned that a well drilled for an individual does not have to meet any set standards of safe levels of known contaminants. See attachment #1.

There was some discussion about the possibility of people just carrying safe drinking water to their homes and the convenience of doing such. The only use the arsenic-laden water is unsafe for is human consumption.

Opposition: None      Chairman Lyson closed the hearing for HCR 3021.

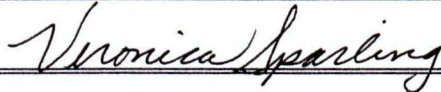


# 2013 SENATE STANDING COMMITTEE MINUTES

## Senate Natural Resources Committee Fort Lincoln Room, State Capitol

HCR 3021  
April 4, 2013  
Job Number 20888

Conference Committee



### Explanation or reason for introduction of bill/resolution:

A concurrent resolution directing the Legislative Management to study the feasibility and desirability of providing assistance to obtain rural water for households with arsenic and other harmful substances in the well water

### Minutes:

No attachments

Chairman Lyson opened the discussion of HCR 3021.

Senator Murphy mentioned this bill is about the arsenic in the water in ND. There is a band of natural occurring arsenic across the state from the NW to the SE corner of the state. It has been exacerbated by the use of chemicals used to kill the grasshoppers.

Senator Lyson: Is this bill necessary with the WAWS going through?

Senator Murphy said that WAWS covers only 1/5 of the arsenic sites.

Senator Unruh said there were many in favor of this resolution but there are so few it would affect and there should be a level of personal responsibility for testing their water.

Senator Murphy stated they know their drinking water is bad. It is trying to provide some assistance to help them get potable water. Because the feds have stopped funding, this is just asking for a study to see if it is feasible for the state to help them.

Senator Murphy: Do Pass

Senator Triplett: Second

There was some discussion about whether legislative management would like the word "study" changed to "shall consider studying".

Senator Triplett: Motion to amend by changing "study" to "shall consider studying".

Anine Lambert, the legislative intern, said that legislative management will take care of that.

Senate Natural Resources Committee

HCR 3021

April 4, 2013

Page 2

Senator Triplett withdrew the amendment.

Roll Call Vote on the Do Pass motion: 5, 2, 0

Carrier: Senator Murphy

Date: 4-4-13  
Roll Call Vote #: \_\_\_\_\_

2013 SENATE STANDING COMMITTEE  
ROLL CALL VOTES  
BILL/RESOLUTION NO. 3021

Senate Natural Resources Committee

Check here for Conference Committee

Legislative Council Amendment Number \_\_\_\_\_

Action Taken:  Do Pass  Do Not Pass  Amended  Adopt Amendment  
 Rerefer to Appropriations  Reconsider

Motion Made By Triplet Seconded By \_\_\_\_\_

Senators	Yes	No	Senators	Yes	No
Senator Lyson			Senator Triplet		
Senator Burckhard			Senator Murphy		
Senator Hogue					
Senator Laffen					
Senator Unruh					

Total (Yes) \_\_\_\_\_ No \_\_\_\_\_

Absent \_\_\_\_\_

Floor Assignment \_\_\_\_\_

If the vote is on an amendment, briefly indicate intent:

*"shall consider studying" 1)*  
*Motion Withdrawn*

Date: 4-4-13  
Roll Call Vote #: 1

2013 SENATE STANDING COMMITTEE  
ROLL CALL VOTES  
BILL/RESOLUTION NO. 3021

Senate Natural Resources Committee

Check here for Conference Committee

Legislative Council Amendment Number \_\_\_\_\_

Action Taken:  Do Pass  Do Not Pass  Amended  Adopt Amendment  
 Rerefer to Appropriations  Reconsider

Motion Made By Murphy Seconded By Triplet

Senators	Yes	No	Senators	Yes	No
Senator Lyson	✓		Senator Triplet	✓	
Senator Burckhard	✓		Senator Murphy	✓	
Senator Hogue	✓				
Senator Laffen		✓			
Senator Unruh		✓			

Total (Yes) 5 No 2

Absent 0

Floor Assignment Murphy

If the vote is on an amendment, briefly indicate intent:

**REPORT OF STANDING COMMITTEE**

**HCR 3021: Natural Resources Committee (Sen. Lyson, Chairman) recommends DO PASS (5 YEAS, 2 NAYS, 0 ABSENT AND NOT VOTING). HCR 3021 was placed on the Fourteenth order on the calendar.**

**2013 TESTIMONY**

**HCR 3021**

1

**Testimony of Eric Volk, Executive Director**

**ND Rural Water Systems Association**

**House Concurrent Resolution 3021**

**House Energy and Natural Resources Committee – February 8, 2013**

Chairman Porter and members of the committee, my name is Eric Volk. I am the executive director of the North Dakota Rural Water Systems Association (NDRWSA) which serves a membership of more than 250 cities, 28 rural/regional water systems, and four tribal systems. The NDRWSA is committed to ensuring North Dakota's residents receive affordable drinking water of excellent quality and sufficient quantity. NDRWSA is committed to completing North Dakota's water infrastructure for economic growth and quality of life. Today I am submitting testimony in support of House Concurrent Resolution (HCR) 3021, directing the Legislative Management to study the feasibility and desirability of providing assistance to obtain rural water for households with arsenic and other harmful substances in the well water.

There are many areas across rural North Dakota where well water is contaminated by one or more harmful substances. In some cases, households ingest these dangerous substances everyday without even knowing it. Unlike public water systems, there are no state or federal regulations that are in place to protect private homeowners. Over the last 40 years, Rural/Regional water systems have worked hard to provide quality water to remedy these issues in most areas of the state. We hope that the directive of HCR 3021 will help identify any households across the state that have contaminants in their drinking water and to possibly provide a funding source for them to hook up to a safe and reliable source of water.

Attached with my testimony are several handouts I wish to discuss. The first is the list of the Environmental Protection Agency's (EPA) primary drinking water standards. These are legally enforceable standards that apply to public water systems. Primary standards protect public health by limiting the levels of contaminants in drinking water. Second, is a list of EPA's secondary drinking water regulations. These are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply. However, states may choose to adopt them as enforceable standards. Next, is a map that shows where high levels of Arsenic are prevalent in the state. There is a band of naturally occurring arsenic from the northwest corner to the southeast corner. Arsenic based pesticides (grasshopper control) have also contributed to elevated levels of arsenic in drinking water supplies. Lastly, is a map of the Rural/Regional water systems that provide water to municipal, rural and industrial users across the state.

With that said, the NDRWSA and its members support House Concurrent Resolution 3021. Thank you for giving me the opportunity to provide testimony on behalf of the members of the NDRWSA.





# National Primary Drinking Water Regulations

Contaminant	MCL or TT <sup>1</sup> (mg/L) <sup>2</sup>	Potential health effects from long-term <sup>3</sup> exposure above the MCL	Common sources of contaminant in drinking water	Public Health Goal (mg/L) <sup>2</sup>
<b>OC</b> Acrylamide	TT <sup>4</sup>	Nervous system or blood problems; increased risk of cancer	Added to water during sewage/wastewater treatment	zero
<b>OC</b> Alachlor	0.002	Eye, liver, kidney or spleen problems; anemia; increased risk of cancer	Runoff from herbicide used on row crops	zero
<b>R</b> Alpha/positron emitters	15 picocuries per Liter (pCi/L)	Increased risk of cancer	Erosion of natural deposits of certain minerals that are radioactive and may emit a form of radiation known as alpha radiation	zero
<b>IOC</b> Antimony	0.006	Increase in blood cholesterol; decrease in blood sugar	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder	0.006
<b>IOC</b> Arsenic	0.010	Skin damage or problems with circulatory systems, and may have increased risk of getting cancer	Erosion of natural deposits; runoff from orchards; runoff from glass & electronics production wastes	0
<b>IOC</b> Asbestos (fibers >10 micrometers)	7 million fibers per Liter (MFL)	Increased risk of developing benign intestinal polyps	Decay of asbestos cement in water mains; erosion of natural deposits	7 MFL
<b>OC</b> Atrazine	0.003	Cardiovascular system or reproductive problems	Runoff from herbicide used on row crops	0.003
<b>IOC</b> Barium	2	Increase in blood pressure	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits	2
<b>OC</b> Benzene	0.005	Anemia; decrease in blood platelets; increased risk of cancer	Discharge from factories; leaching from gas storage tanks and landfills	zero
<b>OC</b> Benzo(a)pyrene (PAHs)	0.0002	Reproductive difficulties; increased risk of cancer	Leaching from linings of water storage tanks and distribution lines	zero
<b>IOC</b> Beryllium	0.004	Intestinal lesions	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries	0.004
<b>R</b> Beta photon emitters	4 millirems per year	Increased risk of cancer	Decay of natural and man-made deposits of certain minerals that are radioactive and may emit forms of radiation known as photons and beta radiation	zero
<b>DBP</b> Bromate	0.010	Increased risk of cancer	Byproduct of drinking water disinfection	zero
<b>IOC</b> Cadmium	0.005	Kidney damage	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints	0.005
<b>OC</b> Carbofuran	0.04	Problems with blood, nervous system, or reproductive system	Leaching of soil fumigant used on rice and alfalfa	0.04
<b>OC</b> Carbon tetrachloride	0.005	Liver problems; increased risk of cancer	Discharge from chemical plants and other industrial activities	zero
<b>D</b> Chloramines (as Cl <sub>2</sub> )	MRDL=4.0 <sup>1</sup>	Eye/nose irritation; stomach discomfort; anemia	Water additive used to control microbes	MRDLG=4 <sup>1</sup>
<b>OC</b> Chlordane	0.002	Liver or nervous system problems; increased risk of cancer	Residue of banned termiticide	zero
<b>D</b> Chlorine (as Cl <sub>2</sub> )	MRDL=4.0 <sup>1</sup>	Eye/nose irritation; stomach discomfort	Water additive used to control microbes	MRDLG=4 <sup>1</sup>
<b>D</b> Chlorine dioxide (as ClO <sub>2</sub> )	MRDL=0.8 <sup>1</sup>	Anemia; infants, young children, and fetuses of pregnant women: nervous system effects	Water additive used to control microbes	MRDLG=0.8 <sup>1</sup>
<b>DBP</b> Chlorite	1.0	Anemia; infants, young children, and fetuses of pregnant women: nervous system effects	Byproduct of drinking water disinfection	0.8
<b>OC</b> Chlorobenzene	0.1	Liver or kidney problems	Discharge from chemical and agricultural chemical factories	0.1
<b>IOC</b> Chromium (total)	0.1	Allergic dermatitis	Discharge from steel and pulp mills; erosion of natural deposits	0.1
<b>IOC</b> Copper	TT <sup>5</sup> ; Action Level = 1.3	Short-term exposure: Gastrointestinal distress. Long-term exposure: Liver or kidney damage. People with Wilson's Disease should consult their personal doctor if the amount of copper in their water exceeds the action level	Corrosion of household plumbing systems; erosion of natural deposits	1.3
<b>M</b> <i>Cryptosporidium</i>	TT <sup>7</sup>	Short-term exposure: Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and animal fecal waste	zero

**D** Disinfectant  
**DBP** Disinfection Byproduct

**IOC** Inorganic Chemical  
**M** Microorganism

**OC** Organic Chemical  
**R** Radionuclides

Contaminant	MCL or TT <sup>1</sup> (mg/L) <sup>2</sup>	Potential health effects from long-term <sup>3</sup> exposure above the MCL	Common sources of contaminant in drinking water	Public Health Goal (mg/L) <sup>2</sup>
<b>IOC</b> Cyanide (as free cyanide)	0.2	Nerve damage or thyroid problems	Discharge from steel/metal factories; discharge from plastic and fertilizer factories	0.2
<b>OC</b> 2,4-D	0.07	Kidney, liver, or adrenal gland problems	Runoff from herbicide used on row crops	0.07
<b>OC</b> Dalapon	0.2	Minor kidney changes	Runoff from herbicide used on rights of way	0.2
<b>OC</b> 1,2-Dibromo-3-chloropropane (DBCP)	0.0002	Reproductive difficulties; increased risk of cancer	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards	zero
<b>OC</b> o-Dichlorobenzene	0.6	Liver, kidney, or circulatory system problems	Discharge from industrial chemical factories	0.6
<b>OC</b> p-Dichlorobenzene	0.075	Anemia; liver, kidney or spleen damage; changes in blood	Discharge from industrial chemical factories	0.075
<b>OC</b> 1,2-Dichloroethane	0.005	Increased risk of cancer	Discharge from industrial chemical factories	zero
<b>OC</b> 1,1-Dichloroethylene	0.007	Liver problems	Discharge from industrial chemical factories	0.007
<b>OC</b> cis-1,2-Dichloroethylene	0.07	Liver problems	Discharge from industrial chemical factories	0.07
<b>OC</b> trans-1,2-Dichloroethylene	0.1	Liver problems	Discharge from industrial chemical factories	0.1
<b>OC</b> Dichloromethane	0.005	Liver problems; increased risk of cancer	Discharge from drug and chemical factories	zero
<b>OC</b> 1,2-Dichloropropane	0.005	Increased risk of cancer	Discharge from industrial chemical factories	zero
<b>OC</b> Di(2-ethylhexyl) adipate	0.4	Weight loss, liver problems, or possible reproductive difficulties	Discharge from chemical factories	0.4
<b>OC</b> Di(2-ethylhexyl) phthalate	0.006	Reproductive difficulties; liver problems; increased risk of cancer	Discharge from rubber and chemical factories	zero
<b>OC</b> Dinoseb	0.007	Reproductive difficulties	Runoff from herbicide used on soybeans and vegetables	0.007
<b>OC</b> Dioxin (2,3,7,8-TCDD)	0.00000003	Reproductive difficulties; increased risk of cancer	Emissions from waste incineration and other combustion; discharge from chemical factories	zero
<b>OC</b> Diquat	0.02	Cataracts	Runoff from herbicide use	0.02
<b>OC</b> Endothall	0.1	Stomach and intestinal problems	Runoff from herbicide use	0.1
<b>OC</b> Endrin	0.002	Liver problems	Residue of banned insecticide	0.002
<b>OC</b> Epichlorohydrin	TT <sup>4</sup>	Increased cancer risk; stomach problems	Discharge from industrial chemical factories; an impurity of some water treatment chemicals	zero
<b>OC</b> Ethylbenzene	0.7	Liver or kidney problems	Discharge from petroleum refineries	0.7
<b>OC</b> Ethylene dibromide	0.00005	Problems with liver, stomach, reproductive system, or kidneys; increased risk of cancer	Discharge from petroleum refineries	zero
<b>M</b> Fecal coliform and <i>E. coli</i>	MCL <sup>5</sup>	Fecal coliforms and <i>E. coli</i> are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes may cause short term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems.	Human and animal fecal waste	zero <sup>6</sup>
<b>IOC</b> Fluoride	4.0	Bone disease (pain and tenderness of the bones); children may get mottled teeth	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories	4.0
<b>M</b> <i>Giardia lamblia</i>	TT <sup>7</sup>	Short-term exposure: Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and animal fecal waste	zero
<b>OC</b> Glyphosate	0.7	Kidney problems; reproductive difficulties	Runoff from herbicide use	0.7
<b>DBP</b> Haloacetic acids (HAA5)	0.060	Increased risk of cancer	Byproduct of drinking water disinfection	n/a <sup>9</sup>
<b>OC</b> Heptachlor	0.0004	Liver damage; increased risk of cancer	Residue of banned termiticide	zero
<b>OC</b> Heptachlor epoxide	0.0002	Liver damage; increased risk of cancer	Breakdown of heptachlor	zero
<b>M</b> Heterotrophic plate count (HPC)	TT <sup>7</sup>	HPC has no health effects; it is an analytic method used to measure the variety of bacteria that are common in water. The lower the concentration of bacteria in drinking water, the better maintained the water system is.	HPC measures a range of bacteria that are naturally present in the environment	n/a

<b>D</b> Disinfectant	<b>IOC</b> Inorganic Chemical	<b>OC</b> Organic Chemical
<b>DBP</b> Disinfection Byproduct	<b>M</b> Microorganism	<b>R</b> Radionuclides

Contaminant	MCL or TT <sup>1</sup> (mg/L) <sup>2</sup>	Potential health effects from long-term <sup>3</sup> exposure above the MCL	Common sources of contaminant in drinking water	Public Health Goal (mg/L) <sup>2</sup>
<b>OC</b> Hexachlorobenzene	0.001	Liver or kidney problems; reproductive difficulties; increased risk of cancer	Discharge from metal refineries and agricultural chemical factories	zero
<b>OC</b> Hexachlorocyclopentadiene	0.05	Kidney or stomach problems	Discharge from chemical factories	0.05
<b>IOC</b> Lead	TT5; Action Level=0.015	Infants and children: Delays in physical or mental development; children could show slight deficits in attention span and learning abilities; Adults: Kidney problems; high blood pressure	Corrosion of household plumbing systems; erosion of natural deposits	zero
<b>M</b> <i>Legionella</i>	TT7	Legionnaire's Disease, a type of pneumonia	Found naturally in water; multiplies in heating systems	zero
<b>OC</b> Lindane	0.0002	Liver or kidney problems	Runoff/leaching from insecticide used on cattle, lumber, gardens	0.0002
<b>IOC</b> Mercury (inorganic)	0.002	Kidney damage	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and croplands	0.002
<b>OC</b> Methoxychlor	0.04	Reproductive difficulties	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock	0.04
<b>IOC</b> Nitrate (measured as Nitrogen)	10	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits	10
<b>IOC</b> Nitrite (measured as Nitrogen)	1	Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits	1
<b>OC</b> Oxamyl (Vydate)	0.2	Slight nervous system effects	Runoff/leaching from insecticide used on apples, potatoes, and tomatoes	0.2
<b>OC</b> Pentachlorophenol	0.001	Liver or kidney problems; increased cancer risk	Discharge from wood-preserving factories	zero
<b>OC</b> Picloram	0.5	Liver problems	Herbicide runoff	0.5
<b>OC</b> Polychlorinated biphenyls (PCBs)	0.0005	Skin changes; thymus gland problems; immune deficiencies; reproductive or nervous system difficulties; increased risk of cancer	Runoff from landfills; discharge of waste chemicals	zero
<b>R</b> Radium 226 and Radium 228 (combined)	5 pCi/L	Increased risk of cancer	Erosion of natural deposits	zero
<b>IOC</b> Selenium	0.05	Hair or fingernail loss; numbness in fingers or toes; circulatory problems	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines	0.05
<b>OC</b> Simazine	0.004	Problems with blood	Herbicide runoff	0.004
<b>OC</b> Styrene	0.1	Liver, kidney, or circulatory system problems	Discharge from rubber and plastic factories; leaching from landfills	0.1
<b>OC</b> Tetrachloroethylene	0.005	Liver problems; increased risk of cancer	Discharge from factories and dry cleaners	zero
<b>IOC</b> Thallium	0.002	Hair loss; changes in blood; kidney, intestine, or liver problems	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories	0.0005
<b>OC</b> Toluene	1	Nervous system, kidney, or liver problems	Discharge from petroleum factories	1
<b>M</b> Total Coliforms	5.0 percent <sup>4</sup>	Coliforms are bacteria that indicate that other, potentially harmful bacteria may be present. See fecal coliforms and <i>E. coli</i>	Naturally present in the environment	zero
<b>DBP</b> Total Trihalomethanes (TTHMs)	0.080	Liver, kidney or central nervous system problems; increased risk of cancer	Byproduct of drinking water disinfection	n/a <sup>5</sup>
<b>OC</b> Toxaphene	0.003	Kidney, liver, or thyroid problems; increased risk of cancer	Runoff/leaching from insecticide used on cotton and cattle	zero
<b>OC</b> 2,4,5-TP (Silvex)	0.05	Liver problems	Residue of banned herbicide	0.05
<b>OC</b> 1,2,4-Trichlorobenzene	0.07	Changes in adrenal glands	Discharge from textile finishing factories	0.07
<b>OC</b> 1,1,1-Trichloroethane	0.2	Liver, nervous system, or circulatory problems	Discharge from metal degreasing sites and other factories	0.2
<b>OC</b> 1,1,2-Trichloroethane	0.005	Liver, kidney, or immune system problems	Discharge from industrial chemical factories	0.003
<b>OC</b> Trichloroethylene	0.005	Liver problems; increased risk of cancer	Discharge from metal degreasing sites and other factories	zero

LEGEND

- D** Disinfectant
- IOC** Inorganic Chemical
- OC** Organic Chemical
- DBP** Disinfection Byproduct
- M** Microorganism
- R** Radionuclides

Contaminant	MCL or TT <sup>1</sup> (mg/L) <sup>2</sup>	Potential health effects from long-term <sup>3</sup> exposure above the MCL	Common sources of contaminant in drinking water	Public Health Goal (mg/L) <sup>2</sup>
<b>M</b> Turbidity	TT <sup>1</sup>	Turbidity is a measure of the cloudiness of water. It is used to indicate water quality and filtration effectiveness (e.g., whether disease-causing organisms are present). Higher turbidity levels are often associated with higher levels of disease-causing microorganisms such as viruses, parasites and some bacteria. These organisms can cause short term symptoms such as nausea, cramps, diarrhea, and associated headaches.	Soil runoff	n/a
<b>R</b> Uranium	30µg/L	Increased risk of cancer, kidney toxicity	Erosion of natural deposits	zero
<b>OC</b> Vinyl chloride	0.002	Increased risk of cancer	Leaching from PVC pipes; discharge from plastic factories	zero
<b>M</b> Viruses (enteric)	TT <sup>1</sup>	Short-term exposure: Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and animal fecal waste	zero
<b>OC</b> Xylenes (total)	10	Nervous system damage	Discharge from petroleum factories; discharge from chemical factories	10

LEGEND

- D** Disinfectant
- IOC** Inorganic Chemical
- OC** Organic Chemical
- DBP** Disinfection Byproduct
- M** Microorganism
- R** Radionuclides

## NOTES

### 1 Definitions

- Maximum Contaminant Level Goal (MCLG)—The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are non-enforceable public health goals.
  - Maximum Contaminant Level (MCL)—The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.
  - Maximum Residual Disinfectant Level Goal (MRDLG)—The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
  - Maximum Residual Disinfectant Level (MRDL)—The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
  - Treatment Technique (TT)—A required process intended to reduce the level of a contaminant in drinking water.
- 2 Units are in milligrams per liter (mg/L) unless otherwise noted. Milligrams per liter are equivalent to parts per million (ppm).
- 3 Health effects are from long-term exposure unless specified as short-term exposure.
- 4 Each water system must certify annually, in writing, to the state (using third-party or manufacturers certification) that when it uses acrylamide and/or epichlorohydrin to treat water, the combination (or product) of dose and monomer level does not exceed the levels specified, as follows: Acrylamide = 0.05 percent dosed at 1 mg/L (or equivalent); Epichlorohydrin = 0.01 percent dosed at 20 mg/L (or equivalent).
- 5 Lead and copper are regulated by a Treatment Technique that requires systems to control the corrosiveness of their water. If more than 10 percent of tap water samples exceed the action level, water systems must take additional steps. For copper, the action level is 1.3 mg/L, and for lead is 0.015 mg/L.
- 6 A routine sample that is fecal coliform-positive or *E. coli*-positive triggers repeat samples—if any repeat sample is total coliform-positive, the system has an acute MCL violation. A routine sample that is total coliform-positive and fecal coliform-negative or *E. coli*-negative triggers repeat samples—if any repeat sample is fecal coliform-positive or *E. coli*-positive, the system has an acute MCL violation. See also Total Coliforms.
- 7 EPA's surface water treatment rules require systems using surface water or ground water under the direct influence of surface water to (1) disinfect their water, and (2) filter their water or meet criteria for avoiding filtration so that the following contaminants are controlled at the following levels:
- *Cryptosporidium*: 99 percent removal for systems that filter. Unfiltered systems are required to include *Cryptosporidium* in their existing watershed control provisions.
  - *Giardia lamblia*: 99.9 percent removal/inactivation
  - Viruses: 99.99 percent removal/inactivation
  - *Legionella*: No limit, but EPA believes that if *Giardia* and viruses are removed/inactivated according to the treatment techniques in the surface water treatment rule, *Legionella* will also be controlled.
  - Turbidity: For systems that use conventional or direct filtration, at no time can turbidity (cloudiness of water) go higher than 1 nephelometric turbidity unit (NTU), and samples for turbidity must be less than or equal to 0.3 NTU in at least 95 percent of the samples in any month. Systems that use filtration other than conventional or direct filtration must follow state limits, which must include turbidity at no time exceeding 5 NTU.
  - HPC: No more than 500 bacterial colonies per milliliter
  - Long Term 1 Enhanced Surface Water Treatment: Surface water systems or ground water systems under the direct influence of surface water serving fewer than 10,000 people must comply with the applicable Long Term 1 Enhanced Surface Water Treatment Rule provisions (e.g. turbidity standards, individual filter monitoring, *Cryptosporidium* removal requirements, updated watershed control requirements for unfiltered systems).
  - Long Term 2 Enhanced Surface Water Treatment: This rule applies to all surface water systems or ground water systems under the direct influence of surface water. The rule targets additional *Cryptosporidium* treatment requirements for higher risk systems and includes provisions to reduce risks from uncovered finished water storage facilities and to ensure that the systems maintain microbial protection as they take steps to reduce the formation of disinfection byproducts. (Monitoring start dates are staggered by system size. The largest systems (serving at least 100,000 people) will begin monitoring in October 2006 and the smallest systems (serving fewer than 10,000 people) will not begin monitoring until October 2008. After completing monitoring and determining their treatment bin, systems generally have three years to comply with any additional treatment requirements.)
  - Filter Backwash Recycling: The Filter Backwash Recycling Rule requires systems that recycle to return specific recycle flows through all processes of the system's existing conventional or direct filtration system or at an alternate location approved by the state.
- 8 No more than 5.0 percent samples total coliform-positive in a month. (For water systems that collect fewer than 40 routine samples per month, no more than one sample can be total coliform-positive per month.) Every sample that has total coliform must be analyzed for either fecal coliforms or *E. coli*. If two consecutive TC-positive samples, and one is also positive for *E. coli* or fecal coliforms, system has an acute MCL violation.
- 9 Although there is no collective MCLG for this contaminant group, there are individual MCLGs for some of the individual contaminants:
- Haloacetic acids: dichloroacetic acid (zero); trichloroacetic acid (0.3 mg/L)
  - Trihalomethanes: bromodichloromethane (zero); bromoform (zero); dibromochloromethane (0.06 mg/L)

## National Secondary Drinking Water Regulation

National Secondary Drinking Water Regulations are non-enforceable guidelines regarding contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply. However, some states may choose to adopt them as enforceable standards.

Contaminant	Secondary Maximum Contaminant Level
Aluminum	0.05 to 0.2 mg/L
Chloride	250 mg/L
Color	15 (color units)
Copper	1.0 mg/L
Corrosivity	noncorrosive
Fluoride	2.0 mg/L
Foaming Agents	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Odor	3 threshold odor number
pH	6.5-8.5
Silver	0.10 mg/L
Sulfate	250 mg/L
Total Dissolved Solids	500 mg/L
Zinc	5 mg/L

### For More Information

EPA's Safe Drinking Water Web site:  
<http://www.epa.gov/safewater/>

EPA's Safe Drinking Water Hotline:  
(800) 426-4791

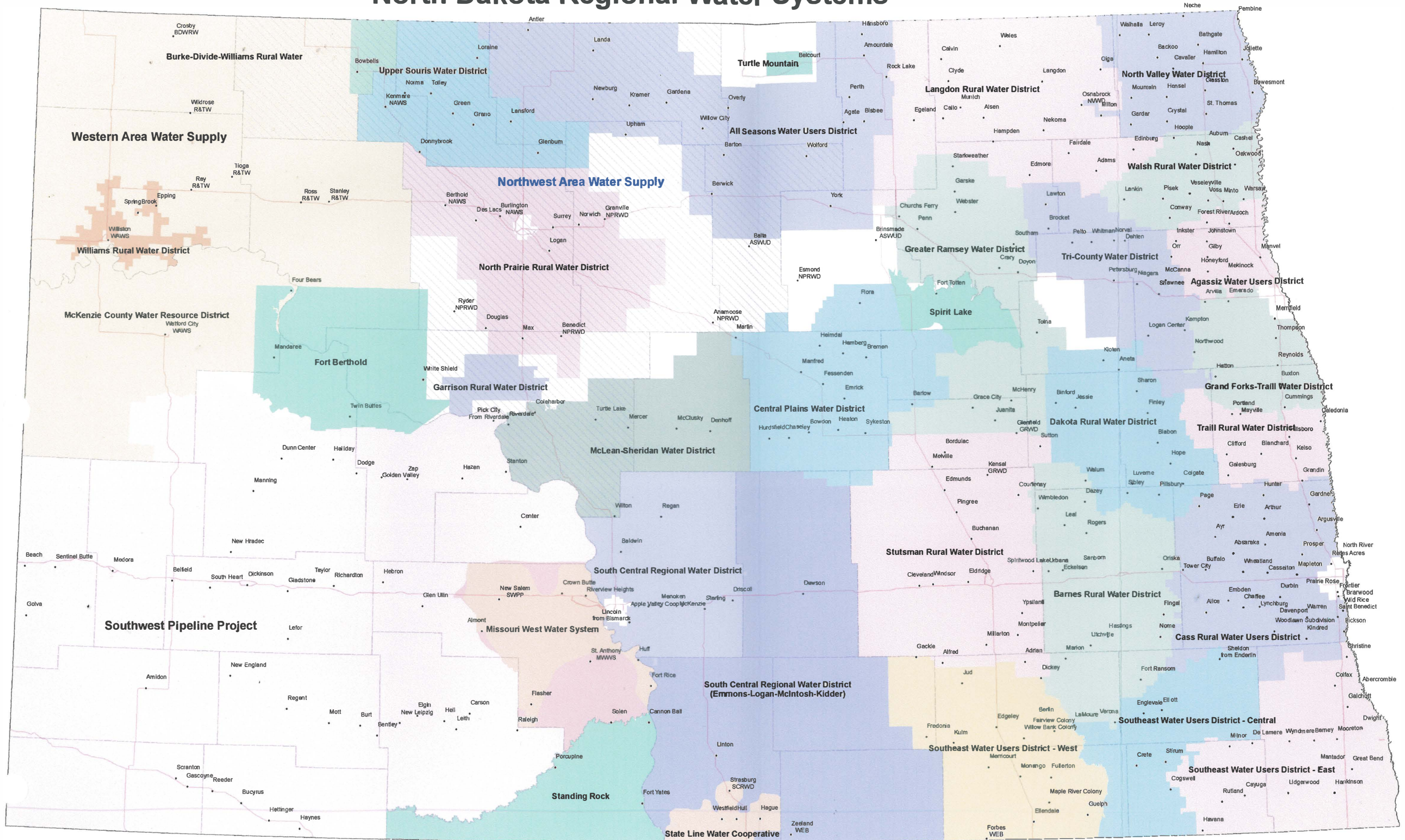
To order additional posters or other ground water and drinking water publications, please contact the National Service Center for Environmental Publications at :  
(800) 490-9198, or  
email: [nscep@bps-lmit.com](mailto:nscep@bps-lmit.com).

## Secondary Maximum Contaminant Levels

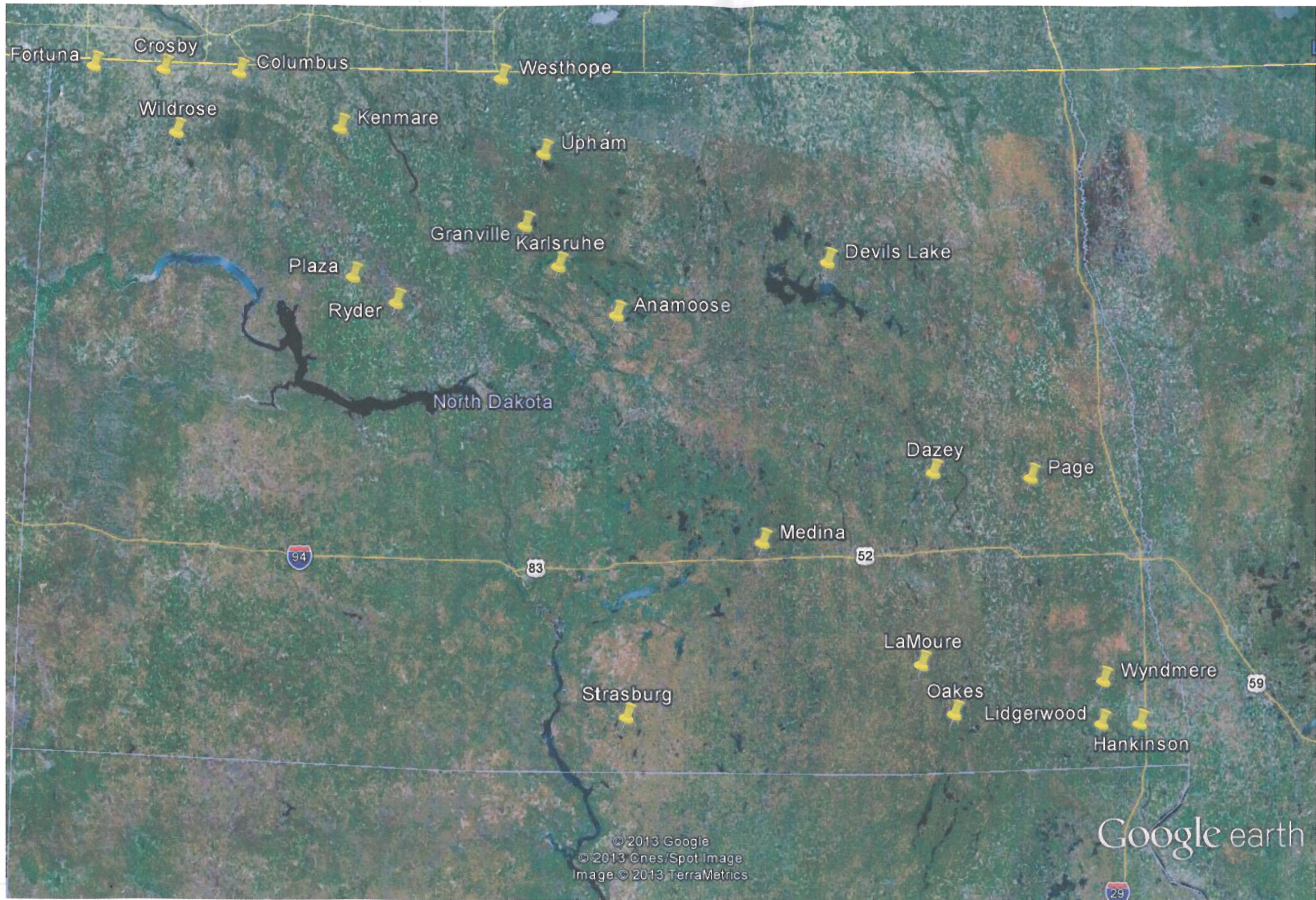
Contaminant	Secondary MCL	Noticeable Effects above the Secondary MCL
Aluminum	0.05 to 0.2 mg/L*	colored water
Chloride	250 mg/L	salty taste
Color	15 color units	visible tint
Copper	1.0 mg/L	metallic taste; blue-green staining
Corrosivity	Non-corrosive	metallic taste; corroded pipes/ fixtures staining
Fluoride	2.0 mg/L	tooth discoloration
Foaming agents	0.5 mg/L	frothy, cloudy; bitter taste; odor
Iron	0.3 mg/L	rusty color; sediment; metallic taste; reddish or orange staining
Manganese	0.05 mg/L	black to brown color; black staining; bitter metallic taste
Odor	3 TON (threshold odor number)	"rotten-egg", musty or chemical smell
pH	6.5 - 8.5	<i>low pH</i> : bitter metallic taste; corrosion <i>high pH</i> : slippery feel; soda taste; deposits
Silver	0.1 mg/L	skin discoloration; graying of the white part of the eye
Sulfate	250 mg/L	salty taste
Total Dissolved Solids (TDS)	500 mg/L	hardness; deposits; colored water; staining; salty taste
Zinc	5 mg/L	metallic taste

\* mg/L is milligrams of substance per liter of water

# North Dakota Regional Water Systems







© 2013 Google  
© 2013 Cnes/Spot Image  
Image © 2013 TerraMetrics

Google earth

Google earth

miles  
km



#1

**Testimony of Eric Volk, Executive Director**

**ND Rural Water Systems Association**

**House Concurrent Resolution 3021**

**Senate Natural Resources Committee – March 21, 2013**

Chairman Lyson and members of the committee, my name is Eric Volk. I am the executive director of the North Dakota Rural Water Systems Association (NDRWSA) which serves a membership of more than 250 cities, 28 rural/regional water systems, and four tribal systems. The NDRWSA is committed to ensuring all of North Dakota's residents receive affordable drinking water of excellent quality and sufficient quantity. NDRWSA is committed to completing North Dakota's water infrastructure for economic growth and quality of life. Today I am submitting testimony in support of House Concurrent Resolution (HCR) 3021, directing the Legislative Management to study the feasibility and desirability of providing assistance to obtain rural water for households with arsenic and other harmful substances in the well water.

There are many areas across rural North Dakota where well water is contaminated by one or more harmful substances. In some cases, households ingest these dangerous substances everyday without even knowing it. Unlike public water systems, there are no state or federal regulations that are in place to protect private homeowners. Over the last 40 years, Rural/Regional water systems have worked hard to provide quality water to remedy these issues in most areas of the state. We hope that the directive of HCR 3021 will help identify any households across the state that have contaminants in their drinking water and to possibly provide a funding source for them to hook up to a safe and reliable source of water.

Attached with my testimony are several handouts I wish to discuss. The first is the list of the Environmental Protection Agency's (EPA) primary drinking water standards. These are legally enforceable standards that apply to public water systems. Primary standards protect public health by limiting the levels of contaminants in drinking water. Second, is a list of EPA's secondary drinking water regulations. These are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply. However, states may choose to adopt them as enforceable standards. Next, is a map that shows where high levels of Arsenic are prevalent in the state. There is a band of naturally occurring arsenic from the northwest corner to the southeast corner. Arsenic based pesticides (grasshopper control) have also contributed to elevated levels of arsenic in drinking water supplies. Lastly, is a map of the Rural/Regional water systems that provide water to municipal, rural and industrial users across the state.

With that said, the NDRWSA and its members support House Concurrent Resolution 3021. Thank you for giving me the opportunity to provide testimony on behalf of the members of the NDRWSA.



# National Primary Drinking Water Regulations

Contaminant	MCL or TT <sup>1</sup> (mg/L) <sup>2</sup>	Potential health effects from long-term <sup>3</sup> exposure above the MCL	Common sources of contaminant in drinking water	Public Health Goal (mg/L) <sup>2</sup>
<b>OC</b> Acrylamide	TT <sup>1</sup>	Nervous system or blood problems; increased risk of cancer	Added to water during sewage/wastewater treatment	zero
<b>OC</b> Alachlor	0.002	Eye, liver, kidney or spleen problems; anemia; increased risk of cancer	Runoff from herbicide used on row crops	zero
<b>R</b> Alpha/Photon emitters	15 picocuries per Liter (pCi/L)	Increased risk of cancer	Erosion of natural deposits of certain minerals that are radioactive and may emit a form of radiation known as alpha radiation	zero
<b>IOC</b> Antimony	0.006	Increase in blood cholesterol; decrease in blood sugar	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder	0.006
<b>IOC</b> Arsenic	0.010	Skin damage or problems with circulatory systems, and may have increased risk of getting cancer	Erosion of natural deposits; runoff from orchards; runoff from glass & electronics production wastes	0
<b>IOC</b> Asbestos (fibers >10 micrometers)	7 million fibers per Liter (MFL)	Increased risk of developing benign intestinal polyps	Decay of asbestos cement in water mains; erosion of natural deposits	7 MFL
<b>OC</b> Atrazine	0.003	Cardiovascular system or reproductive problems	Runoff from herbicide used on row crops	0.003
<b>IOC</b> Barium	2	Increase in blood pressure	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits	2
<b>OC</b> Benzene	0.005	Anemia; decrease in blood platelets; increased risk of cancer	Discharge from factories; leaching from gas storage tanks and landfills	zero
<b>OC</b> Benzo(a)pyrene (PAHs)	0.0002	Reproductive difficulties; increased risk of cancer	Leaching from linings of water storage tanks and distribution lines	zero
<b>IOC</b> Beryllium	0.004	Intestinal lesions	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries	0.004
<b>R</b> Beta photon emitters	4 millirems per year	Increased risk of cancer	Decay of natural and man-made deposits of certain minerals that are radioactive and may emit forms of radiation known as photons and beta radiation	zero
<b>DBP</b> Bromate	0.010	Increased risk of cancer	Byproduct of drinking water disinfection	zero
<b>IOC</b> Cadmium	0.005	Kidney damage	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints	0.005
<b>OC</b> Carbofuran	0.04	Problems with blood, nervous system, or reproductive system	Leaching of soil fumigant used on rice and alfalfa	0.04
<b>OC</b> Carbon tetrachloride	0.005	Liver problems; increased risk of cancer	Discharge from chemical plants and other industrial activities	zero
<b>D</b> Chloramines (as Cl <sub>2</sub> )	MRDL=4.0 <sup>4</sup>	Eye/nose irritation, stomach discomfort; anemia	Water additive used to control microbes	MRDLG=4 <sup>4</sup>
<b>OC</b> Chlordane	0.002	Liver or nervous system problems; increased risk of cancer	Residue of banned tenniticide	zero
<b>D</b> Chlorine (as Cl <sub>2</sub> )	MRDL=4.0 <sup>4</sup>	Eye/nose irritation; stomach discomfort	Water additive used to control microbes	MRDLG=4 <sup>4</sup>
<b>D</b> Chlorine dioxide (as ClO <sub>2</sub> )	MRDL=0.8 <sup>4</sup>	Anemia; infants, young children, and fetuses of pregnant women: nervous system effects	Water additive used to control microbes	MRDLG=0.8 <sup>4</sup>
<b>DBP</b> Chlorite	1.0	Anemia; infants, young children, and fetuses of pregnant women: nervous system effects	Byproduct of drinking water disinfection	0.8
<b>OC</b> Chlorobenzene	0.1	Liver or kidney problems	Discharge from chemical and agricultural chemical factories	0.1
<b>IOC</b> Chromium (total)	0.1	Allergic dermatitis	Discharge from steel and pulp mills; erosion of natural deposits	0.1
<b>IOC</b> Copper	TT <sup>1</sup> ; Action Level = 1.3	Short-term exposure: Gastrointestinal distress. Long-term exposure: Liver or kidney damage. People with Wilson's Disease should consult their personal doctor if the amount of copper in their water exceeds the action level	Corrosion of household plumbing systems; erosion of natural deposits	1.3
<b>M</b> <i>Cryptosporidium</i>	TT <sup>1</sup>	Short-term exposure: Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and animal fecal waste	zero

LEGEND

- D** Disinfectant
- IOC** Inorganic Chemical
- OC** Organic Chemical
- DBP** Disinfection Byproduct
- M** Microorganism
- R** Radionuclides

Contaminant	MCL or TT <sup>1</sup> (mg/L) <sup>2</sup>	Potential health effects from long-term <sup>3</sup> exposure above the MCL	Common sources of contaminant in drinking water	Public Health Goal (mg/L) <sup>2</sup>
<b>IOC</b> Cyanide (as free cyanide)	0.2	Nerve damage or thyroid problems	Discharge from steel/metal factories; discharge from plastic and fertilizer factories	0.2
<b>OC</b> 2,4-D	0.07	Kidney, liver, or adrenal gland problems	Runoff from herbicide used on row crops	0.07
<b>OC</b> Dalapon	0.2	Minor kidney changes	Runoff from herbicide used on rights of way	0.2
<b>OC</b> 1,2-Dibromo-3-chloropropane (DBCP)	0.0002	Reproductive difficulties; increased risk of cancer	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards	zero
<b>OC</b> o-Dichlorobenzene	0.6	Liver, kidney, or circulatory system problems	Discharge from industrial chemical factories	0.6
<b>OC</b> p-Dichlorobenzene	0.075	Anemia; liver, kidney or spleen damage, changes in blood	Discharge from industrial chemical factories	0.075
<b>OC</b> 1,2-Dichloroethane	0.005	Increased risk of cancer	Discharge from industrial chemical factories	zero
<b>OC</b> 1,1-Dichloroethylene	0.007	Liver problems	Discharge from industrial chemical factories	0.007
<b>OC</b> cis-1,2-Dichloroethylene	0.07	Liver problems	Discharge from industrial chemical factories	0.07
<b>OC</b> trans-1,2-Dichloroethylene	0.1	Liver problems	Discharge from industrial chemical factories	0.1
<b>OC</b> Dichloromethane	0.005	Liver problems; increased risk of cancer	Discharge from drug and chemical factories	zero
<b>OC</b> 1,2-Dichloropropane	0.005	Increased risk of cancer	Discharge from industrial chemical factories	zero
<b>OC</b> Di(2-ethylhexyl) adipate	0.4	Weight loss, liver problems, or possible reproductive difficulties	Discharge from chemical factories	0.4
<b>OC</b> Di(2-ethylhexyl) phthalate	0.006	Reproductive difficulties; liver problems; increased risk of cancer	Discharge from rubber and chemical factories	zero
<b>OC</b> Dinoseb	0.007	Reproductive difficulties	Runoff from herbicide used on soybeans and vegetables	0.007
<b>OC</b> Dioxin (2,3,7,8-TCDD)	0.00000003	Reproductive difficulties; increased risk of cancer	Emissions from waste incineration and other combustion; discharge from chemical factories	zero
<b>OC</b> Diquat	0.02	Cataracts	Runoff from herbicide use	0.02
<b>OC</b> Endothall	0.1	Stomach and intestinal problems	Runoff from herbicide use	0.1
<b>OC</b> Endrin	0.002	Liver problems	Residue of banned insecticide	0.002
<b>OC</b> Epichlorohydrin	TT <sup>4</sup>	Increased cancer risk; stomach problems	Discharge from industrial chemical factories; an impurity of some water treatment chemicals	zero
<b>OC</b> Ethylbenzene	0.7	Liver or kidney problems	Discharge from petroleum refineries	0.7
<b>OC</b> Ethylene dibromide	0.00005	Problems with liver, stomach, reproductive system, or kidneys; increased risk of cancer	Discharge from petroleum refineries	zero
<b>M</b> Fecal coliform and <i>E. coli</i>	MCL <sup>5</sup>	Fecal coliforms and <i>E. coli</i> are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes may cause short term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems.	Human and animal fecal waste	zero <sup>6</sup>
<b>IOC</b> Fluoride	4.0	Bone disease (pain and tenderness of the bones); children may get mottled teeth	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories	4.0
<b>M</b> <i>Giardia lamblia</i>	TT <sup>7</sup>	Short-term exposure: Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and animal fecal waste	zero
<b>OC</b> Glyphosate	0.7	Kidney problems; reproductive difficulties	Runoff from herbicide use	0.7
<b>DBP</b> Haloacetic acids (HAA5)	0.060	Increased risk of cancer	Byproduct of drinking water disinfection	n/a <sup>8</sup>
<b>OC</b> Heptachlor	0.0004	Liver damage; increased risk of cancer	Residue of banned termiticide	zero
<b>OC</b> Heptachlor epoxide	0.0002	Liver damage; increased risk of cancer	Breakdown of heptachlor	zero
<b>M</b> Heterotrophic plate count (HPC)	TT <sup>7</sup>	HPC has no health effects; it is an analytic method used to measure the variety of bacteria that are common in water. The lower the concentration of bacteria in drinking water, the better maintained the water system is.	HPC measures a range of bacteria that are naturally present in the environment	n/a

LEGEND

**D** Disinfectant

**DBP** Disinfection Byproduct

**IOC** Inorganic Chemical

**M** Microorganism

**OC** Organic Chemical

**R** Radionuclides

Contaminant	MCL or TT <sup>1</sup> (mg/L) <sup>2</sup>	Potential health effects from long-term <sup>3</sup> exposure above the MCL	Common sources of contaminant in drinking water	Public Health Goal (mg/L) <sup>2</sup>
<b>OC</b> Hexachlorobenzene	0.001	Liver or kidney problems; reproductive difficulties; increased risk of cancer	Discharge from metal refineries and agricultural chemical factories	zero
<b>OC</b> Hexachlorocyclopentadiene	0.05	Kidney or stomach problems	Discharge from chemical factories	0.05
<b>IOC</b> Lead	TT5; Action Level=0.015	Infants and children: Delays in physical or mental development; children could show slight deficits in attention span and learning abilities; Adults: Kidney problems; high blood pressure	Corrosion of household plumbing systems; erosion of natural deposits	zero
<b>M</b> <i>Legionella</i>	TT7	Legionnaire's Disease, a type of pneumonia	Found naturally in water; multiplies in heating systems	zero
<b>OC</b> Lindane	0.0002	Liver or kidney problems	Runoff/leaching from insecticide used on cattle, lumber, gardens	0.0002
<b>IOC</b> Mercury (inorganic)	0.002	Kidney damage	Erosion of natural deposits, discharge from refineries and factories; runoff from landfills and croplands	0.002
<b>OC</b> Methoxychlor	0.04	Reproductive difficulties	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock	0.04
<b>IOC</b> Nitrate (measured as Nitrogen)	10	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits	10
<b>IOC</b> Nitrite (measured as Nitrogen)	1	Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits	1
<b>OC</b> Oxamyl (Vydate)	0.2	Slight nervous system effects	Runoff/leaching from insecticide used on apples, potatoes, and tomatoes	0.2
<b>OC</b> Pentachlorophenol	0.001	Liver or kidney problems; increased cancer risk	Discharge from wood-preserving factories	zero
<b>OC</b> Picloram	0.5	Liver problems	Herbicide runoff	0.5
<b>OC</b> Polychlorinated biphenyls (PCBs)	0.0005	Skin changes, thymus gland problems, immune deficiencies, reproductive or nervous system difficulties, increased risk of cancer	Runoff from landfills, discharge of waste chemicals	zero
<b>R</b> Radium 226 and Radium 228 (combined)	5 pCi/L	Increased risk of cancer	Erosion of natural deposits	zero
<b>IOC</b> Selenium	0.05	Hair or fingernail loss; numbness in fingers or toes; circulatory problems	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines	0.05
<b>OC</b> Simazine	0.004	Problems with blood	Herbicide runoff	0.004
<b>OC</b> Styrene	0.1	Liver, kidney, or circulatory system problems	Discharge from rubber and plastic factories; leaching from landfills	0.1
<b>OC</b> Tetrachloroethylene	0.005	Liver problems; increased risk of cancer	Discharge from factories and dry cleaners	zero
<b>IOC</b> Thallium	0.002	Hair loss; changes in blood; kidney, intestine, or liver problems	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories	0.0005
<b>OC</b> Toluene	1	Nervous system, kidney, or liver problems	Discharge from petroleum factories	1
<b>M</b> Total Coliforms	5.0 percent <sup>4</sup>	Coliforms are bacteria that indicate that other, potentially harmful bacteria may be present. See fecal coliforms and <i>E. coli</i>	Naturally present in the environment	zero
<b>DBP</b> Total Trihalomethanes (TTHMs)	0.080	Liver, kidney or central nervous system problems; increased risk of cancer	Byproduct of drinking water disinfection	n/a <sup>5</sup>
<b>OC</b> Toxaphene	0.003	Kidney, liver, or thyroid problems; increased risk of cancer	Runoff/leaching from insecticide used on cotton and cattle	zero
<b>OC</b> 2,4,5-TP (Silvex)	0.05	Liver problems	Residue of banned herbicide	0.05
<b>OC</b> 1,2,4-Trichlorobenzene	0.07	Changes in adrenal glands	Discharge from textile finishing factories	0.07
<b>OC</b> 1,1,1-Trichloroethane	0.2	Liver, nervous system, or circulatory problems	Discharge from metal degreasing sites and other factories	0.2
<b>OC</b> 1,1,2-Trichloroethane	0.005	Liver, kidney, or immune system problems	Discharge from industrial chemical factories	0.003
<b>OC</b> Trichloroethylene	0.005	Liver problems; increased risk of cancer	Discharge from metal degreasing sites and other factories	zero

LEGEND

**D** Disinfectant

**IOC** Inorganic Chemical

**OC** Organic Chemical

**DBP** Disinfection Byproduct

**M** Microorganism

**R** Radionuclides

Contaminant	MCL or TT <sup>1</sup> (mg/L) <sup>2</sup>	Potential health effects from long-term <sup>3</sup> exposure above the MCL	Common sources of contaminant in drinking water	Public Health Goal (mg/L) <sup>2</sup>
<b>M</b> Turbidity	TT <sup>1</sup>	Turbidity is a measure of the cloudiness of water. It is used to indicate water quality and filtration effectiveness (e.g., whether disease-causing organisms are present). Higher turbidity levels are often associated with higher levels of disease-causing microorganisms such as viruses, parasites and some bacteria. These organisms can cause short term symptoms such as nausea, cramps, diarrhea, and associated headaches.	Soil runoff	n/a
<b>R</b> Uranium	30µg/L	Increased risk of cancer, kidney toxicity	Erosion of natural deposits	zero
<b>OC</b> Vinyl chloride	0.002	Increased risk of cancer	Leaching from PVC pipes; discharge from plastic factories	zero
<b>M</b> Viruses (enteric)	TT <sup>1</sup>	Short-term exposure: Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and animal fecal waste	zero
<b>OC</b> Xylenes (total)	10	Nervous system damage	Discharge from petroleum factories; discharge from chemical factories	10

LEGEND

**D** Disinfectant

**DBP** Disinfection Byproduct

**IOC** Inorganic Chemical

**M** Microorganism

**OC** Organic Chemical

**R** Radionuclides

## NOTES

### 1 Definitions

- Maximum Contaminant Level Goal (MCLG)—The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are non-enforceable public health goals.
  - Maximum Contaminant Level (MCL)—The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.
  - Maximum Residual Disinfectant Level Goal (MRDLG)—The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
  - Maximum Residual Disinfectant Level (MRDL)—The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
  - Treatment Technique (TT)—A required process intended to reduce the level of a contaminant in drinking water.
- 2 Units are in milligrams per liter (mg/L) unless otherwise noted. Milligrams per liter are equivalent to parts per million (ppm).
- 3 Health effects are from long-term exposure unless specified as short-term exposure.
- 4 Each water system must certify annually, in writing, to the state (using third-party or manufacturers certification) that when it uses acrylamide and/or epichlorohydrin to treat water, the combination (or product) of dose and monomer level does not exceed the levels specified, as follows: Acrylamide = 0.05 percent dosed at 1 mg/L (or equivalent); Epichlorohydrin = 0.01 percent dosed at 20 mg/L (or equivalent).
- 5 Lead and copper are regulated by a Treatment Technique that requires systems to control the corrosiveness of their water. If more than 10 percent of tap water samples exceed the action level, water systems must take additional steps. For copper, the action level is 1.3 mg/L, and for lead is 0.015 mg/L.
- 6 A routine sample that is fecal coliform-positive or *E. coli*-positive triggers repeat samples—if any repeat sample is total coliform-positive, the system has an acute MCL violation. A routine sample that is total coliform-positive and fecal coliform-negative or *E. coli*-negative triggers repeat samples—if any repeat sample is fecal coliform-positive or *E. coli*-positive, the system has an acute MCL violation. See also Total Coliforms.
- 7 EPA's surface water treatment rules require systems using surface water or ground water under the direct influence of surface water to (1) disinfect their water, and (2) filter their water or meet criteria for avoiding filtration so that the following contaminants are controlled at the following levels:
- *Cryptosporidium*: 99 percent removal for systems that filter. Unfiltered systems are required to include *Cryptosporidium* in their existing watershed control provisions.
  - *Giardia lamblia*: 99.9 percent removal/inactivation
  - Viruses: 99.99 percent removal/inactivation
  - *Legionella*: No limit, but EPA believes that if *Giardia* and viruses are removed/inactivated according to the treatment techniques in the surface water treatment rule, *Legionella* will also be controlled.
  - Turbidity: For systems that use conventional or direct filtration, at no time can turbidity (cloudiness of water) go higher than 1 nephelometric turbidity unit (NTU), and samples for turbidity must be less than or equal to 0.3 NTU in at least 95 percent of the samples in any month. Systems that use filtration other than conventional or direct filtration must follow state limits, which must include turbidity at no time exceeding 5 NTU.
  - HPC: No more than 500 bacterial colonies per milliliter
  - Long Term 1 Enhanced Surface Water Treatment; Surface water systems or ground water systems under the direct influence of surface water serving fewer than 10,000 people must comply with the applicable Long Term 1 Enhanced Surface Water Treatment Rule provisions (e.g. turbidity standards, individual filter monitoring, *Cryptosporidium* removal requirements, updated watershed control requirements for unfiltered systems).
  - Long Term 2 Enhanced Surface Water Treatment; This rule applies to all surface water systems or ground water systems under the direct influence of surface water. The rule targets additional *Cryptosporidium* treatment requirements for higher risk systems and includes provisions to reduce risks from uncovered finished water storage facilities and to ensure that the systems maintain microbial protection as they take steps to reduce the formation of disinfection byproducts. (Monitoring start dates are staggered by system size. The largest systems (serving at least 100,000 people) will begin monitoring in October 2006 and the smallest systems (serving fewer than 10,000 people) will not begin monitoring until October 2008. After completing monitoring and determining their treatment bin, systems generally have three years to comply with any additional treatment requirements.)
  - Filter Backwash Recycling: The Filter Backwash Recycling Rule requires systems that recycle to return specific recycle flows through all processes of the system's existing conventional or direct filtration system or at an alternate location approved by the state.
- 8 No more than 5.0 percent samples total coliform-positive in a month. (For water systems that collect fewer than 40 routine samples per month, no more than one sample can be total coliform-positive per month.) Every sample that has total coliform must be analyzed for either fecal coliforms or *E. coli*. If two consecutive TC-positive samples, and one is also positive for *E. coli* or fecal coliforms, system has an acute MCL violation.
- 9 Although there is no collective MCLG for this contaminant group, there are individual MCLGs for some of the individual contaminants:
- Haloacetic acids: dichloroacetic acid (zero); trichloroacetic acid (0.3 mg/L)
  - Trihalomethanes: bromodichloromethane (zero); bromoform (zero); dibromochloromethane (0.06 mg/L)



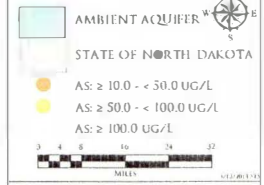
## Secondary Maximum Contaminant Levels

Contaminant	Secondary MCL	Noticeable Effects above the Secondary MCL
Aluminum	0.05 to 0.2 mg/L*	colored water
Chloride	250 mg/L	salty taste
Color	15 color units	visible tint
Copper	1.0 mg/L	metallic taste; blue-green staining
Corrosivity	Non-corrosive	metallic taste; corroded pipes/ fixtures staining
Fluoride	2.0 mg/L	tooth discoloration
Foaming agents	0.5 mg/L	frothy, cloudy; bitter taste; odor
Iron	0.3 mg/L	rusty color; sediment; metallic taste; reddish or orange staining
Manganese	0.05 mg/L	black to brown color; black staining; bitter metallic taste
Odor	3 TON (threshold odor number)	"rotten-egg", musty or chemical smell
pH	6.5 - 8.5	<i>low pH</i> : bitter metallic taste; corrosion <i>high pH</i> : slippery feel; soda taste; deposits
Silver	0.1 mg/L	skin discoloration; graying of the white part of the eye
Sulfate	250 mg/L	salty taste
Total Dissolved Solids (TDS)	500 mg/L	hardness; deposits; colored water; staining; salty taste
Zinc	5 mg/L	metallic taste

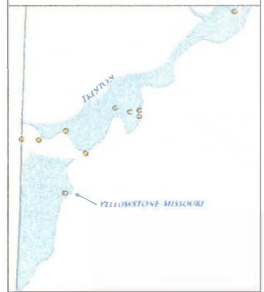
\* mg/L is milligrams of substance per liter of water

# 2002 - 2012 ARSENIC DATA

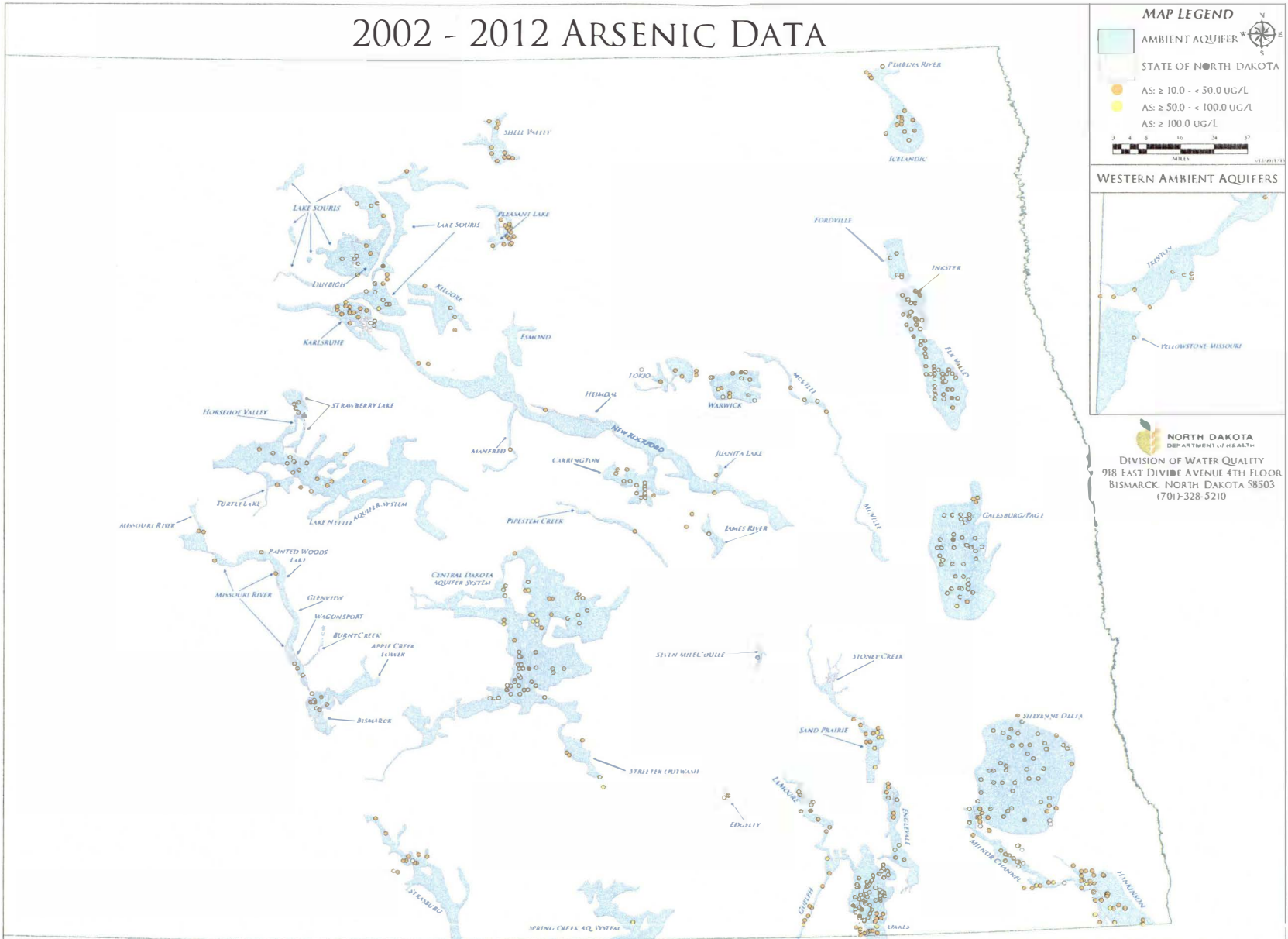
## MAP LEGEND



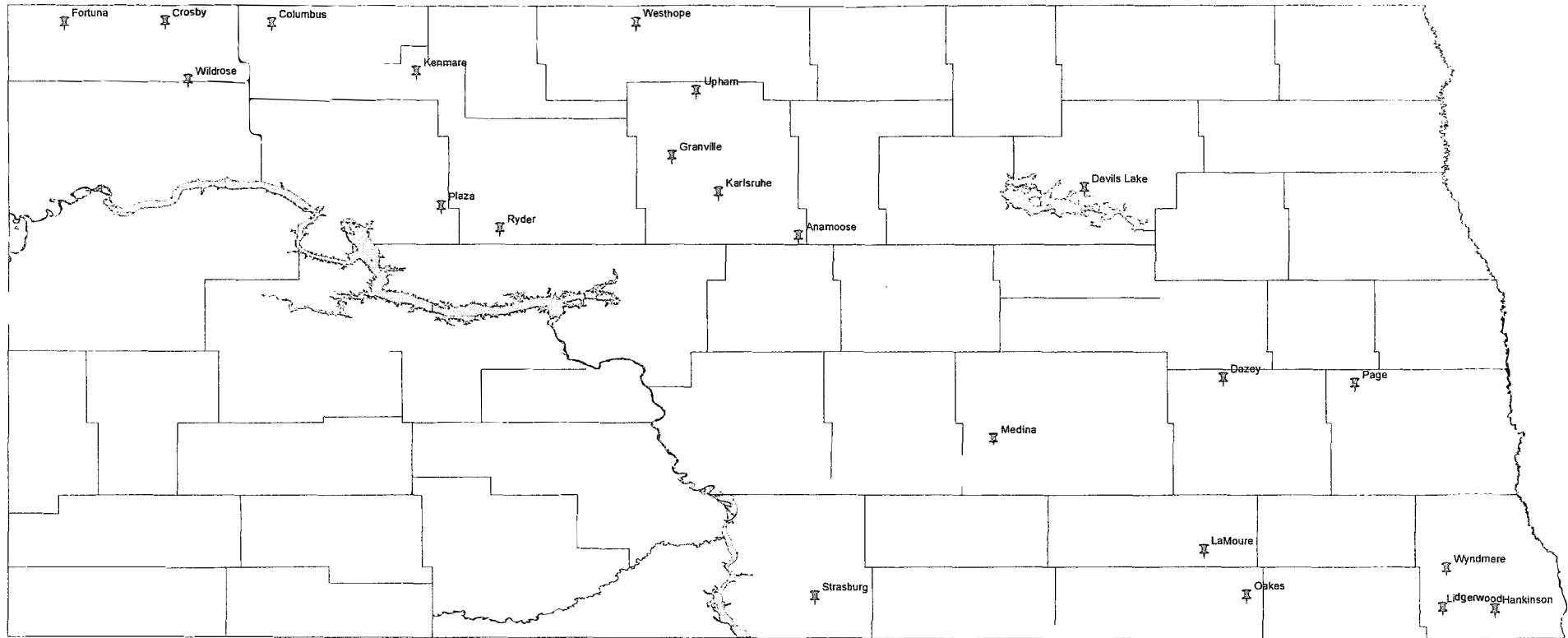
## WESTERN AMBIENT AQUIFERS



**NORTH DAKOTA**  
 DEPARTMENT OF HEALTH  
 DIVISION OF WATER QUALITY  
 918 EAST DIVIDE AVENUE 4TH FLOOR  
 BISMARCK, NORTH DAKOTA 58503  
 (701)-328-5210



# Arsenic Sites



## Legend

- ☒ Arsenic Sites
- DL2004
- missouri
- CNTY\_BND
- Surficial Aquifers



# North Dakota Regional Water Systems

Non District Water Systems  
 State Line Water Cooperative  
 Missouri West Water System  
 McKenzie County Water Resource District  
 No Service Designated  
 Cities Served

