NORTH Dakota | Environmental Quality
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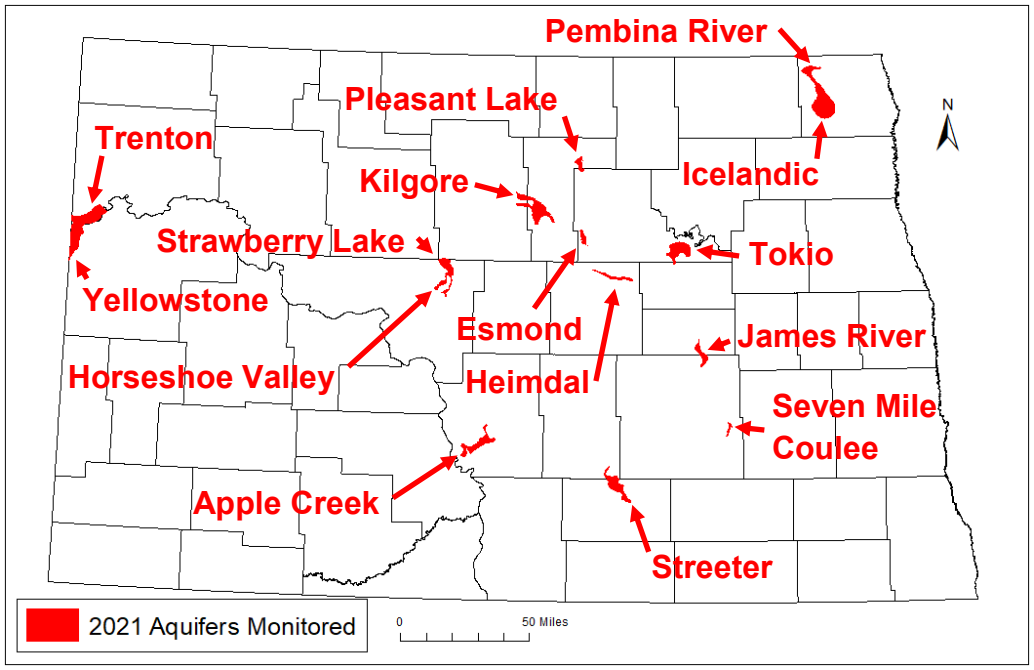
Agricultural Groundwater Monitoring Program

2021 Agricultural Chemical Detections Summary Report

For the Agricultural Groundwater Monitoring Program

Surficial Aquifers Monitored in 2021



2021 Overview

Sampling Summary

129 total wells were sampled across 15 aquifers.

Pesticides

Pesticides were detected in 8 of 129 wells sampled, with one well having two different pesticide analytes detected. All detected pesticide detections were below the Prevention Action Levels established for specific pesticides. Consequently, the regulatory portion of the Pesticide State Management Plan was not engaged.

Nitrate

The nitrate Maximum Contaminant Level was not exceeded in any of the 129 wells sampled.

About the Agricultural Groundwater Monitoring Program

The North Dakota Department of Environmental Quality monitors a network of wells in approximately 50 surficial (glacial drift) aquifers that are at elevated risk of contamination from the application of agricultural chemicals. The program was initiated in 1992 to monitor groundwater quality in vulnerable aquifers. Aquifers are sampled on a 5-year rotation. Groundwater is tested for 21 general chemistry parameters, eight trace metals, and 64 pesticides and pesticide degradates.

North Dakota Pesticide State Management Plan (PSMP)

The North Dakota Pesticide State Management Plan (PSMP) was established to prevent water degradation by pesticides while protecting the beneficial use of pesticides. The plan set two thresholds that activate the regulatory portion of the plan and trigger voluntary and involuntary actions to prevent further contamination if a pesticide is detected at concentrations above the thresholds. The lower threshold is the **Preventative Action Level** (PAL). This threshold is set at 25% of the pesticide's **Maximum Contaminant Level** (MCL) or lifetime **Health Advisory Level** (HAL) and exceedances may result in voluntary or involuntary preventative actions. The upper threshold is the pesticide's MCL or HAL and exceedances result in involuntary restrictive actions.

MCLs and HALs

Maximum Contaminant Levels are the maximum concentration of a contaminant allowed in public drinking water systems to limit the toxic and/or carcinogenic (cancer-causing) effects of that contaminant. Health Advisory Levels are non-enforceable guidelines that provide maximum concentrations of a contaminant that can be consumed over a period of days or a lifetime that above which exposure may have adverse health effects. Values for MCLs and HALs are set by the United States Environmental Protection Agency. Although private wells are not regulated by MCLs or HALs, they still provide good guidelines for drinking groundwater.

Pesticides						Nitrate (as N)	
Analyte	Number of Wells with Detections	Wells with PAL Exceedances	Maximum Concentration Detected (µg/L)	MCL/ HAL* (µg/L)	Percent of MCL/ HAL	Wells With MCL (10 mg/L) Exceedances	Maximum Concentration Detected (mg/L)
Apple Creek Aquifer (2 Wells Sampled)							
No Pesticide Detections						0	0.03
Esmond Aquifer (9 Wells Sampled)							
No Pesticide Detections						0	8.56
Heimdal Aquifer (4 Wells Sampled)							
Picloram	2	0	0.40	500	0.1%	0	4.27
Horseshoe Valley Aquifer (3 Wells Sampled)							
No Pesticide Detections						0	< 0.03
Icelandic Aquifer (17 Wells Sampled)							
Metolachlor	1	0	3.36	700*	0.5%	0	0.11
Picloram	1	0	0.16	500	0.0%		
James River Aquifer (1 Well Sampled)							
No Pesticide Detections						0	< 0.03
Kilgore Aquifer (6 Wells Sampled)							
Picloram	1	0	0.40	500	0.1%	0	6.02
Pembina River Aquifer (5 Wells Sampled)							
No Pesticide Detections						0	6.58
Pleasant Lake Aquifer (17 Wells Sampled)							
Picloram	1	0	0.58	500	0.1%	0	4.54
Seven Mile Coulee Aquifer (4 Wells Sampled)							
2,4-D	1	0	0.10	70	0.1%	0	7.96
Picloram	1	0	0.28	500	0.1%		
Strawberry Lake Aquifer (9 Wells Sampled)							
No Pesticide Detections						0	2.28
Streeter Aquifer (26 Wells Sampled)							
Chlorothalonil	1	0	0.08	NE	-	0	7.55
Tokio Aquifer (3 Wells Sampled)							
No Pesticide Detections						0	1.74
Trenton Aquifer (12 Wells Sampled)							
No Pesticide Detections						0	7.58
Yellowstone Aquifer (11 Wells Sampled)							
No Pesticide Detections						0	4.50

MCL = Maximum Contaminant Level, HAL = Health Advisory Level, PAL = Prevention Action Level (25% of MCL/HAL), NE = Not Established, * = HAL value

µg/L = Micrograms per Liter, mg/L = Milligrams per Liter

Notes: One well may have multiple pesticide analytes detected that are listed individually. Pesticide detections are concentrations measured above the laboratory minimum reporting limit.

2021 Detected Pesticide Information

2,4-D

Trade Names: 2,4-D, Curtail

Type:	*Use:*	*MCL*: 70 µg/L	*Controls:*
	✓	*PAL:* 17.5 µg/L	

Applied to: Lawns, pasture, corn, soybeans, wheat, vegetables, other crops

Notes:

Chlorothalonil

Trade Names: Bravo, Echo, Daconil

Type:	*Use:*	*MCL/HAL*: NE	*Controls:*
	✓	*PAL:* NE	

Applied to: Corn, wheat, soybeans, vegetable and fruit crops, lawn and turf

Notes:

Metolachlor

Trade Names: Acuron, Bicep II, Brawl, Cinch ATZ, Dual II Magnum, Matador, Prefix, Sequence

Type:	*Use:*	*HAL*: 700 µg/L	*Controls:*
	✓	*PAL:* 175 µg/L	

Applied to: Applied pre-emergence to: corn, soybeans, vegetable and fruit crops, other crops

Notes:

Picloram

Trade Names: Tordon

Type:	*Use:*	*MCL*: 500 µg/L	*Controls:*
	!	*PAL:* 125 µg/L	

Applied to: Road ditches and other rights-of-way, pasture

Notes:

Key:

Pesticide Type		Use Restrictions		Controls			
	Fungicide	✓	Not Restricted in North Dakota		Broadleaf Weeds		Insects
	Herbicide	!	Restricted Use		Woody Plants		Mites
	Insecticide	NR	Not Registered		Grasses		Fungi
D	Degradate		Banned in the United States		Weeds (General)		

Listed trade names are not a comprehensive list. Listing of any trade names does not imply endorsement of the product.

Listed pesticide uses are non-exhaustive and largely based on historical use in North Dakota. This information is not to be used in place of advice from a licensed pesticide vendor. Use restrictions are subject to change.

Pesticide information data from the United States Environmental Protection Agency, United States Geological Survey, North Dakota Department of Agriculture, and the National Library of Medicine PubChem database.