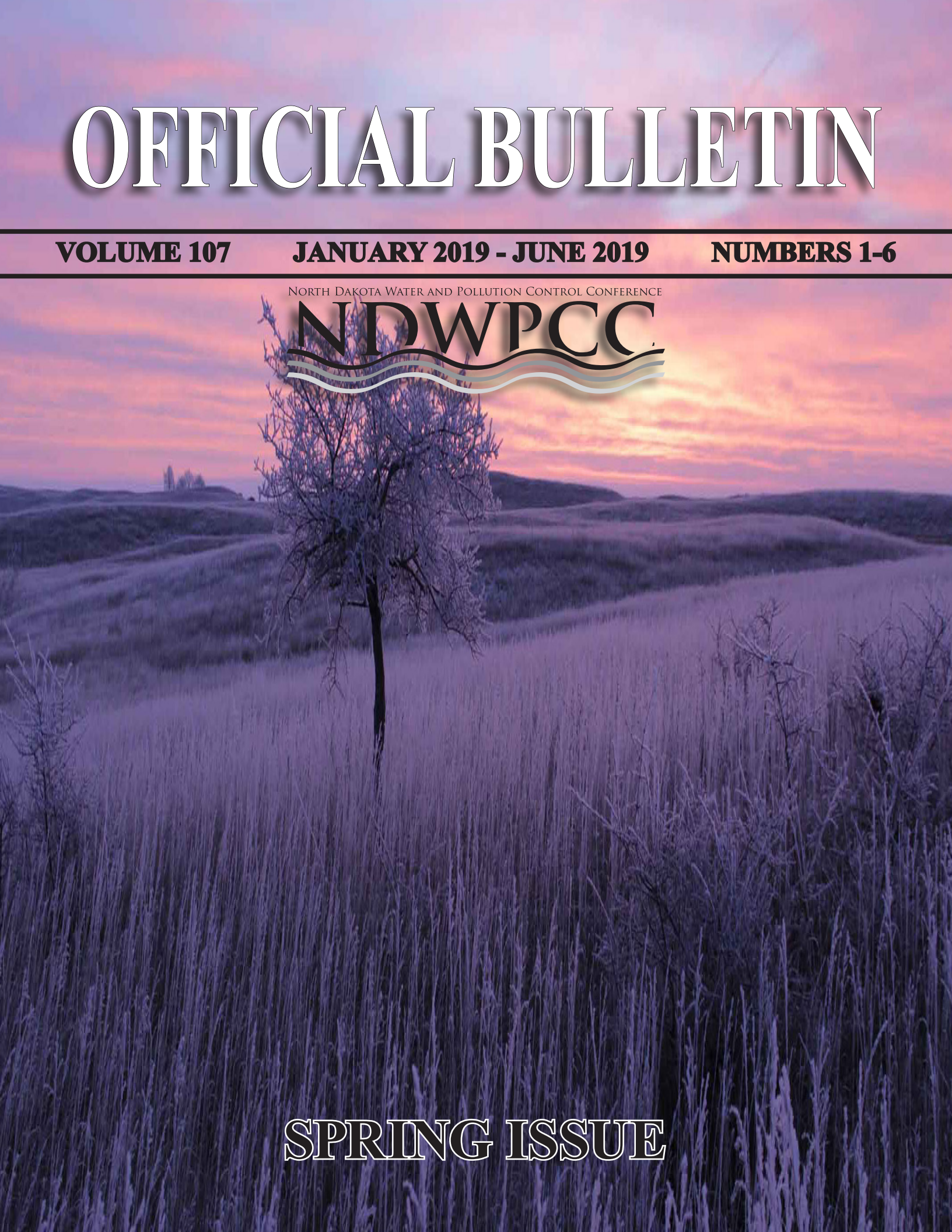
OFFICIAL BULLETIN

VOLUME 107 JANUARY 2019 - JUNE 2019 NUMBERS 1-6

North Dakota Water and Pollution Control Conference

NDWPCC



SPRING ISSUE

water | transportation | municipal | facilities

If you set the bar at competence,

how do you reach excellence?

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Editor
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Contributing Authors
Drinking Water Program Staff;
Operator Certification, Training and Facility Inspections Unit Staff;
and Conference Sections

OFFICIAL BULLETIN

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North Dakota Water and Pollution Control Conference

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Members of the conference are indebted to those members and others who have contributed articles and other materials for this publication.

If you are interested in submitting articles or pieces for publication, please contact Jake Schafer at jrschafer@nd.gov

INDEX TO ADVERTISERS

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On the cover: Photo Credit: Krista Lundgren/USFWS

The objectives of this Conference shall be: the advancement of the knowledge of design, construction, operation and management of water and wastewater systems; the promotion and encouragement, through annual meetings or otherwise, of an exchange of information and experience among its membership; the promotion and encouragement of the protection of public health and improved environment through the construction and efficient operation of water supply and wastewater treatment facilities; and the promotion of water and wastewater system operator education and certification programs.

Article II of the Constitution of the
North Dakota Water and Pollution Control Conference

To receive the *Official Bulletin* electronically or to no longer receive a paper copy, email Jake Schafer at jrschafer@nd.gov, or call 701-328-6375.

To access past issues of the *Official Bulletin* on the web, go to: http://www.ndhealth.gov/MF/ and click on "publications."

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NEWS RELEASE | **FOR IMMEDIATE RELEASE** | May 17, 2019

Clean Water State Revolving Fund loans awarded to two cities

BISMARCK, N.D. – The Clean Water State Revolving Fund (CWSRF) Program awarded loans to two cities in April.

- Kindred - $1,400,000 towards the rehabilitation and expansion of the wastewater stabilization ponds. The project will ensure the city achieves compliance with its North Dakota Pollutant Discharge Elimination System Permit.

- Walcott - $427,000 for a replacement lift station to ensure residents have continued wastewater service and to minimize risks if the aging station built in 1972 were to fail. The project also includes installation of a new control panel above ground for easy access and maintenance.

The U.S. Environmental Protection Agency provides part of the funding for the CWSRF Program, which offers below-market interest rate loans to political subdivisions for financing projects authorized under the Clean Water Act. CWSRF programs operate nationwide to provide the funding necessary to maintain and improve the infrastructure that protects our vital water resources.

For more information, contact Elizabeth Tokach-Duran, North Dakota Department of Environmental Quality, at 701-328-5256, or visit https://deq.nd.gov/MF/CWSRF/.

For more information, contact:
Elizabeth Tokach-Duran, Program Manager
Clean Water State Revolving Fund Program
918 East Divide Ave | Bismarck, ND 58501-1947
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NDWPCC JOINT BOARD OFFICERS MEETING MINUTES

January 22nd, 2019
Bismarck, ND

A meeting of the Joint Board of Directors of the North Dakota Water and Pollution Control Conference (NDWPCC); North Dakota Water Environment Association (NDWEA); North Dakota Chapter of the American Public Works Association (NDCAPWA); North Dakota Section of the American Water Works Association (NDAWWA); and the North Dakota Chapter of the American Stormwater and Erosion Control Association (NASECA-ND) was held on January 22nd , 2019, in the Heart Room of the Ramkota, Bismarck, ND. The following board members and guests were present: Brandon Buchholz, David Bruschwein, Tracy Eslinger, Sarah Waldron Feld, Marty Haroldson, Shawn Heinle, Josh Kadrmas, Alan Kemmet, Jim Lennington, Wei Lin, Matt Moltzan, Karla Olson, Michael Quamme, Jake Schafer, Gabe Schell, Scott Schneider, Luci Snowden, Dean Sletten, Greg Stack, Gregg Stewart, and Greg Wavra.

The meeting was called to order at 10:35 a.m.by NDWPCC President-Elect Wei Lin. Copies of the meeting agenda and January 1 through December 31, 2018, financial reports were provided to those in attendance.

The first order of business President-Elect Lin called for a motion to dispense with the reading of the minutes from the October 16th, 2018 minutes and approve the copy mailed to all board members. Tracy Eslinger so moved, Dean Sletten seconded, and the motion carried.

Next, President-Elect Lin called for the Treasurer's Report. Shawn Heinle read the 2018 NDWPCC year-end financial report, which showed a net loss of $2,583.85 and total assets of $150,002.94. President-Elect Lin asked for any discussion. Hearing none, President-Elect Lin called for a motion to approve the Treasurer's Report. Josh Kadrmas so moved, Jim Lennington seconded, and the motion carried.

Next, President-Elect Lin called for any old business. Dean Sletten reported the audit committee had reviewed the yearly finances and found no discrepancies. President-Elect Lin asked for a vote to accept the audit committee's report. Alan Kemmet so moved, Jim Lennington seconded, and motion carried. Then Shawn Heinle discussed the attendance at the 2018 Conference at the Alerus in Grand Forks. Mr. Heinle reported that there were 428 registrants with 373 pre-registered. Mr. Heinle then broke down the attendance for the various meals, which he then asked about the Tuesday buffet. The buffet has shown decreasing attendance with the last conference having the worst attendance to date. Mr. Heinle posed whether the conference should continue the buffet. There were many suggestions on what to do, including the following: Tracy Eslinger suggested discontinuing the buffet, but the conference provide vouchers to the hotel restaurant for those not attending one of the engineering firms' gatherings, as this seems to be the trend for Tuesday evenings. Luci Snowden suggested not offering the complete package, but the individual and each person would choose the meals they wished to purchase. Greg Wavra said this would not work for state employees, who need the complete package for accounting purposes. Mr. Heinle did indicate that individual meal selection will be available for the 2019 conference registration. The discussion was tabled until the next joint board meeting in May.

President-Elect Lin called for new business. First, Mr. Lin asked for volunteers to serve on the local arrangement committee for the 2019 Conference in Bismarck. Mike Berg, Alan Kemmet, Gabe Schell and Scott Schneider volunteered. Next, Shawn Heinle asked for presenters at the Spring trainings. Mr. Heinle indicated several openings needed to be filled for both the water and wastewater trainings. The dates will be as follows:

February 25th – 27th, 2019
March 4th – 6th, 2019
March 18th – 20th, 2019
March 25th – 27th, 2019
April 8th- 10th, 2019
April 15th-17th, 2019

Greg Wavra then spoke about a surface water training that will take place this summer in Minnesota. The training will focus on optimizing water treatment plants. It will be worth 12 continuing education credits. Mr. Wavra indicated a registration form will be sent out later this week. Next, Mr. Wavra also spoke on possible training on backflow prevention. The training would for inspectors and operators. The training would help to build and maintain a backflow prevention program. For more information contact Greg Wavra.

Lastly, Michael Quamme indicated that according to the by-laws all voting is only done by the executive board and directors. The by-laws will need to be updated if others conference members can vote. Mr. Quamme also wished to double check the current board roster. Shawn Heinle said he would do so.

President-Elect Lin then called for a motion to adjourn. Motion made by Michael Quamme, seconded by Dean Sletten. Meeting adjourned.

The meeting adjourned at 11:30 a.m.

Respectfully submitted,

Shawn Heinle
Secretary/Treasurer

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Health | Environmental Quality

NEWS RELEASE | **FOR IMMEDIATE RELEASE** | May 1, 2019

New North Dakota Department of Environmental Quality Established

BISMARCK, N.D. – The North Dakota Department of Environmental Quality (NDDEQ) was officially established effective April 29. This is the first state agency created since 2009.

During the 2017 legislative session, lawmakers passed Senate Bill 2327, separating the Environmental Health Section from the North Dakota Department of Health (NDDoH) to create NDDEQ. The agency's mission remains the same: to conserve and protect the quality of North Dakota's air, land and water resources following science and the law.

"Preserving our natural resources is a top priority," said Governor Doug Burgum. "In the spirit of reinventing government, this new agency gives our environmental team the autonomy it needs to be more efficient, flexible and better able to implement federal regulations."

To create efficiency in state government, NDDoH and NDDEQ are continuing to share services such as human resources, payroll and accounting.

"The team has been working hard for the past two years to make the transition to NDDEQ," said Mylynn Tufte, State Health Officer. "We look forward to continuing to work together as Team ND to make a difference in the lives of North Dakotans."

NDDEQ Director Dave Glatt said, "We are grateful for the working relationship we have with the Department of Health and value this partnership as we strive to safeguard our state's environmental resources for current and future generations."

For more information about the NDDEQ, visit www.deq.nd.gov.

For more information, contact:

Melissa Miller, Communications Coordinator
Office of the Director
918 East Divide Ave | Bismarck, ND 58501-1947
PHONE: 701-328-5210 | EMAIL: mmiller@nd.gov

www.deq.nd.gov

# # #

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NDWPCC JOINT BOARD OFFICERS MEETING MINUTES

May 22nd, 2019

Bismarck, ND

A meeting of the Joint Board of Directors of the North Dakota Water and Pollution Control Conference (NDWPCC); North Dakota Water Environment Association (NDWEA); North Dakota Chapter of the American Public Works Association (NDCAPWA); North Dakota Section of the American Water Works Association (NDAWWA); and the North Dakota Chapter of the American Stormwater and Erosion Control Association (NASECA-ND) was held on May 22nd , 2019, in the Heart Room of the Ramkota, Bismarck, ND. The following board members and guests were present: Brandon Buchholz, Tracy Eslinger, Sarah Waldron Feld, Bill Gefroh, Dallas Grossman, Fred Goetz, Terry Halstengard, Marty Haroldson, Shawn Heinle, Jeff Hruby, Tom Knakmuhs, Jim Lennington, Wei Lin, Jennifer Malloy, Lance Meyer, Dennis Miranowski, Matt Moltzan, Karla Olson, Michael Quamme, Karl Rockeman, Jake Schafer, Gabe Schell, Scott Schneider, Dean Sletten, Gregg Stewart, Don Wald, and Greg Wavra.

The meeting was called to order at 10:31 a.m.by NDWPCC President Mike Berg. Copies of the meeting agenda and January 1st through May 20th, 2019 financial reports were provided to those in attendance.

The first order of business President Berg called for any additions to the agenda. Hearing none, President called for a motion to dispense with the reading of the minutes from the January 22nd, 2019 meeting and approve the copy mailed to all board members. Jeff Hruby so moved, Jacob Schafer seconded, and the motion carried.

Next, President Berg called for the Treasurer's Report. Shawn Heinle read the 2019 NDWPCC year-to-date financial report, which showed a net loss of $20,975.53 and total assets of $129,493.41. Treasurer Heinle explained there were two recent deposits, one for $6,100 and another for $26,413 that are not shown on this report. This will result in a net profit of $11,537.47. President Berg asked for any discussion. Hearing none, President Berg called for a motion to approve the Treasurer's Report. Michael Quamme so moved, Dean sletten seconded, and the motion carried.

Next, President Berg called for any old business. First, Secretary Heinle presented the results from the 59th Annual Water and Wastewater Trainings. Between the 6 sessions there was a total of 296 operators in attendance. Mr. Heinle said he presented the operators with a survey of topics they would like to see presented at future trainings. Jeff Hruby asked if the results can be emailed to the members in attendance, Mr. Heinle said he would do so. Mr. Heinle then discussed the exams that were taken. Secretary Heinle indicated that 217 exams were taken with a passage rate of 60%. Sarah Waldron Feld asked if this was average. Jake Schafer said it was lower than usual, with an average between 65-70% depending on the year. Mr. Heinle said there was an overflow exam the previous day and the passage rate was only 40%. He said that many of the operators are not prepared, some do not care, others have no idea what exams they are signed up to take, with the city auditor sending in the application. There was discussion on how best to address the low rate. Mr. Heinle suggested exam preparation exams at the upcoming conference. Don Wald asked about the application for exams still being based on experience, and how do we verify the information. Mr. Heinle indicated it still was, but short of calling every operator to somehow verify information, the Department trusts that the information submitted is correct.

Mr. Wald asked if the California State Training Manuals are still being used and how expensive they are to purchase. Mr. Heinle said there were still being used for the bases of the exams and cost $90 per manual. Greg Wavra indicated these manuals are eligible for the operator reimbursement funds. This led to a separate discussion on approaching legislation to add wastewater operators to the operator reimbursement program. Dean Sletten mentioned speaking with Eric Volk at North Dakota Rural Water System Association to approach the legislature on the issue. Eric was involved when the reimbursement was transitioned from federal to state backing. Terry Halstengard asked about stormwater operator certification. Gregg Stewart indicated the Century Code does not cover stormwater and that modification the Code to add stormwater would have to be done during the next legislative session.

Bill Gefroh then asked about tracking which questions the operators miss the most during exams. Mr. Heinle said the Department does not have a system in place that would allow the tracking of this information.

The next topic under old business was the need for candidates for two director and one associate director positions needing to be filled at the up coming conference meeting. Members are being asked to present possible nominations to be voted on at that time. President Berg asked for any other old business, hearing none moved on to new business.

First, Mr. Heinle spoke about the initial meeting of the local arrangement committee. Different tasks were assigned to each member of the committee. The committee will meet during the summer to finalize tasks for the conference. Next topic, Mr. Heinle asked conference members to start submitting presentation topics for the upcoming conference. Last, Mr. Heinle asked the conference board if he could purchase an external drive to back up the QuickBooks files on. A motion was made be Michael Quamme to spend up to $250 on the drive. Lance Meyer seconded, and the motion carried.

President Berg then called for a motion to adjourn. Motion made by Jake Schafer, seconded by Marty Haroldson. Meeting adjourned.

The meeting adjourned at 11:05 a.m.

Respectfully submitted,

Shawn Heinle
Secretary/Treasurer

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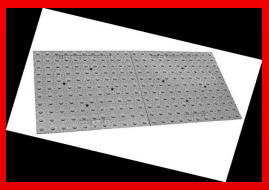
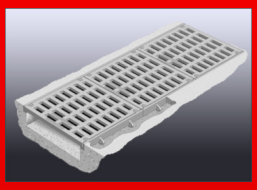


Trench Grating



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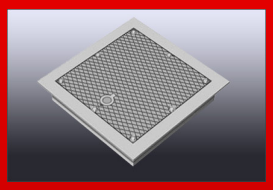

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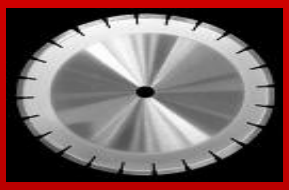

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Bismarck, ND

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Submission due dates:

- June 15th (spring)
- September 15th (conference)
- December 15th (winter)

Thank you all for your continued support of the North Dakota Water and Pollution Control Conference, and the NDWPCC Official Bulletin. For submissions of both advertisements and articles, please contact at me at Jrschafer@nd.gov. I look forward to working with you!

Jake Schafer
Editor - NDWPCC Official Bulletin

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Operators Pass Certification Examinations (March-April 2019)

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ALLEN, BRIAN	CARGILL SWEETENERS	Wastewater Treatment 04
ALLMUTH, DAVID	CROSBY CITY OF	Water Distribution 1A
ANDRYSIAK, RICHARD	MINOT CITY OF	Water Treatment 02
BENSON, AARON	GRAND FORKS CITY OF	Water Distribution 02
BEREND, BRIAN	CARGILL SWEETENERS	Wastewater Collection 02
		Wastewater Treatment 02
BERGERON, BEAU	WILLISTON CITY OF	Wastewater Collection 01
		Water Distribution 01
BITZAN, JOSEPHINE	FARGO CITY OF	Water Treatment 03
BROTHERTON, KRIS	MCKENZIE COUNTY WRD - SYSTEM 1 & 4	
		Water Distribution 01
BROUILLET, BRAD	GRAND FORKS CITY OF	Wastewater Collection 04
CASAVANT, JAYDEN	BURLINGTON CITY OF	Wastewater Collection 01
CHRISTIANSON, BROCK	PARSHALL CITY OF	Wastewater Collection 02
CLARYS, CURTIS	WILLISTON CITY OF	Wastewater Collection 03
CONDIT, JAMES	SOURIS CITY OF	Wastewater Treatment 1A
DAGENAIS, JOSH	WILLISTON CITY OF	Wastewater Treatment 1A
DEARINGER, KEVIN	WING CITY OF	Water Distribution 1A
DENNING, ZACH	BISMARCK CITY OF	Wastewater Collection 02
DIETZ, RANDY	BEACH CITY OF	Water Distribution 1A
		Wastewater Collection 1A
DINIUS, JAMES	BISMARCK CITY OF	Water Treatment 01
DITTUS, STEVEN	DAKOTA GASIFICATION CO	
		Water Distribution 01
DOLL, TRAVIS	BISMARCK CITY OF	Wastewater Collection 01
		Water Distribution 01
DUKART, JESSICA		Water Treatment 02
EATON, JOHN	AGASSIZ WATER USERS DISTRICT	
		Water Treatment 03
EDLAND, JEFF	GLENFIELD CITY OF	Water Distribution 1A
ENGEN, CHASE	WILLISTON CITY OF	Water Distribution 1A
ERHARDT, DILLON	MILTON R YOUNG STATION WELL - MPC	
		Wastewater Treatment 1A
ESTENSON, CORY	SOUTHEND R & R	Water Distribution 01
FALLER, JASON	WATFORD CITY CITY OF	Wastewater Collection 01
FIXEN, TYLER	WILLISTON CITY OF	Water Treatment 1A
FLEMMER, DILLON	CARRINGTON CITY OF	Wastewater Collection 01
		Wastewater Treatment 01
FOXLEY, NATHAN	WILDROSE CITY OF	Wastewater Collection 1A
		Water Distribution 1A
GORRES, JIM	NORTHWOOD CITY OF	Water Distribution 01
		Wastewater Collection 01
GYLTEN, STEVE	HATTON CITY OF	Wastewater Collection 01
		Water Distribution 01

Operator	Employer	Certification Type/Grade
HADLEY, DUSTAN	MISSOURI WEST WATER SYSTEM	Water Distribution 02
HARILDSTAD, JEFFERY L	NORTHEAST RWD- NORTH VALLEY BRANCH	Water Treatment 01
HARRIS, BROCK	GARRISON CITY OF	Water Distribution 01
HART, SCOTT	WESTERN AREA WATER SUPPLY AUTHORITY	Water Distribution 02
HEAD, GARY	MCKENZIE COUNTY RW-SYSTEM 2	Water Distribution 1A
HEINERT, CODY	BISMARCK CITY OF	Wastewater Collection 03
HELD, WENDELL	ROLLA CITY OF	Water Distribution 1A
		Water Treatment 1A
HELFRICH, TYLER	MILTON R YOUNG STATION WELL - MPC	Wastewater Treatment 1A
HEREDIA-NIEVES, YOEL	DICKINSON CITY OF	Water Distribution 01
HERMAN, TOM	UPPER SOURIS WUA-SYSTEM I	Water Distribution 02
		Water Treatment 02
HOFER, TRENT	MAPLE RIVER HUTTERIAN ASSOCIATION	Water Distribution 1A
KALENZE, LINUS	MINOT AIR FORCE BASE	Wastewater Collection 02
KAUFMANN, RICHARD	MILNOR CITY OF	Wastewater Collection 01
KELLER, ERIC	MINOT CITY OF	Wastewater Collection 03
KJONAAS, RICH	CASSELTON CITY OF	Wastewater Treatment 01
KLEMISCH, CLINT	VALLEY CITY CITY OF	Wastewater Treatment 02
KOCH, BRETT	BEULAH CITY OF	Wastewater Treatment 1A
KOLNES, DAVID	MINOT AIR FORCE BASE	Wastewater Collection 1A
		Water Distribution 1A
KOPP, TIM	MINOT CITY OF	Water Treatment 03
KRAFT, CURT	GARRISON CITY OF	Water Distribution 01
KUMMER, CODY	WATFORD CITY CITY OF	Wastewater Treatment 01
LARSON, CURTIS	STANLEY CITY OF	Water Distribution 1A
		Wastewater Collection 1A
LEE, LONNY	JAMESTOWN CITY OF	Water Distribution 03
LEGO, SHELBY	WHITING OIL & GAS	Water Distribution 1A
LEWIS, EVAN	WILLISTON CITY OF	Water Treatment 1A
LEWIS, PORTER	WILLISTON CITY OF	Wastewater Treatment 1A
LUTZ, JEFFREY	GRAND FORKS CITY OF	Water Distribution 03
MACDONALD, KENNETH	POWERS LAKE CITY OF	Water Distribution 01
MARMON, SHANNON	MINOT CITY OF	Wastewater Treatment 03
MARTINSON, STEVE	GREATER RAMSEY WATER DISTRICT	Wastewater Treatment 01
MCNELIS, NICHOLAS	GRAND FORKS CITY OF	Water Treatment 04
MEHLHOFF, RANDY	POWERS LAKE CITY OF	Water Distribution 1A

Operator	Employer	Certification Type/Grade
MEIDINGER, JODDY	UPPER SOURIS WUA-SYSTEM I	
		Water Distribution 1A
		Water Treatment 1A
MIDDLETON, BILL	DICKINSON CITY OF	Wastewater Collection 01
MILLER, DAN	CARRINGTON CITY OF	Water Treatment 03
MONSON, BILL	GACKLE CITY OF	Water Distribution 1A
MONSON, RANDY	CHRISTINE CITY OF	Water Distribution 1A
MYHRA, PATRICK	CARGILL SWEETENERS	Wastewater Collection 01
		Wastewater Treatment 02
NEHRING, JUSTIN	NORTHWEST RURAL WATER DISTRICT	
		Water Distribution 02
NEWMAN, AARON	MINOT AIR FORCE BASE	Water Distribution 01
		Wastewater Collection 01
NUSTAD, TIM	FARGO CITY OF (WWT)	Wastewater Treatment 02
OBERG, ANN	MCLEAN-SHERIDAN WATER DISTRICT-SYSTEM 2	
		Water Treatment 03
OLMSTED, NATHAN	WYNDMERE CITY OF	Water Distribution 1A
OVERBY, DUWAYNE	BINFORD CITY OF	Water Distribution 1A
		Wastewater Treatment 1A
PAWLAK, CHASE	WATFORD CITY CITY OF	Water Distribution 1A
PEDERSON, ROBERT	MINOT CITY OF	Water Treatment 02
PIATZ, LEE	NAPOLEON CITY OF	Water Distribution 01
PILCH, EDWARD		Water Distribution 1A
ROBYN, MATTHEW	CARGILL SWEETENERS	Wastewater Treatment 01
		Wastewater Collection 01
ROSBOROUSH, TYLER	BEULAH CITY OF	Water Distribution 1A
ROWELL, JOE	JAMESTOWN CITY OF	Water Treatment 04
RUPPELIUS, BRAD	ROLLA CITY OF	Water Treatment 01
RUTSCHKE, NICHOLAS		
	BISMARCK CITY OF	Wastewater Treatment 04
SANDBERG, BRANDON		
	WILLISTON CITY OF	Wastewater Collection 02
SCHLOSSER, HUNTER	MISSOURI WEST WATER SYSTEM	
		Water Distribution 01
SCHMIDT, COLETON	MANDAN CITY OF	Water Treatment 01
SEELIG, TREVOR	LISBON CITY OF	Water Treatment 02
SEIFERT, JUSTIN	MINOT CITY OF	Water Treatment 03
SKURDAL, ROBERT	WILLISTON CITY OF	Water Treatment 1A
STIEG, BRAD	DICKINSON CITY OF	Wastewater Collection 03
STULZ, MIKE	FARGO CITY OF	Wastewater Collection 04
SUDA, DANIEL	GRAFTON CITY OF	Wastewater Collection 02
		Wastewater Treatment 1A
THOMAS, ADAM	WASHBURN CITY OF	Water Treatment 04
THOMAS, RICHARD	CARGILL SWEETENERS	Wastewater Collection 01
		Wastewater Treatment 01
TIFFANY, SCOTT	WEST FARGO CITY OF	Wastewater Collection 02
TUPA, BRANDON	GRAND FORKS CITY OF	Wastewater Collection 03
VEENKER, JAYSON	WESTERN AREA WATER SUPPLY AUTHORITY	
		Water Distribution 1A

Operator	Employer	Certification Type/Grade
WASYLOW, JUSTIN	GRAND FORKS CITY OF	Water Treatment 04
WATERS, DOUG	AMERICAN CRYSTAL SUGAR HILLSBORO	
		Wastewater Treatment 02
WEISZ, KEVIN	RIVERDALE CITY OF	Water Distribution 1A
		Water Treatment 01
WHITTINGTON, JERRY		
	SOUTHWEST WATER AUTHORITY	
		Water Distribution 03
WIELAND, PAUL	BISMARCK CITY OF	Water Distribution 04
		Wastewater Collection 04
WILLIAMS, IRA	BISMARCK CITY OF	Water Treatment 04
WILLSON, WYATT	WILLISTON CITY OF	Wastewater Collection 1A
WITT, MIKE	GRAND FORKS CITY OF	Water Distribution 04
WOESSNER, KELLY	PARSHALL CITY OF	Wastewater Collection 02
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Ghost Ponds in North Dakota

By Bob Markhouse

North Dakota is home to several ghost towns according to the website Ghosts of North Dakota.[1] Readers may be surprised to know that North Dakota is also home to what could be described as ghost ponds. Ghost ponds are waste stabilization ponds that no longer receive wastewater and are dry. Waste stabilization ponds can go dry for several reasons. This article looks at some of the reasons why waste stabilization ponds go dry and offers suggestions on how to maintain ghost ponds. The article covers wastewater systems with ghost ponds in the south-central inspection area.

Population

According to the Census Department, 277 cities in North Dakota lost population from 1950 to 2010. Another 47 cities had a population increase during the same time period.[2] Of the 277 cities that lost population, roughly 150 saw a population decrease of 50% or more. Ten cities saw a 90% drop in population. With such a large population decrease, it is not surprising that cities will have a large reduction in the quantity of wastewater flowing into the wastewater treatment system.

Water Efficiency

Water saving toilets, washing machines, dishwashers and fixtures have also reduced the quantity of wastewater entering into the collection system over the last few decades. “According to a 2011 study in the Journal of the American Water Works Association, by 2008 a typical single-family household used 32 fewer gallons of water every day than an identical household in 1978, largely due to more efficient plumbing.”[3] Consumers have benefited by using less water. The new water saving devices have resulted in a significant reduction in the quantity of wastewater flowing into wastewater treatment facilities.

Inflow and Infiltration

Cities will see reduced inflow and infiltration if they replace old clay sewer pipes with newer PVC pipes. Any system with very low inflow and infiltration is more likely to see one or more ponds become dry. On the other hand, cities that have high inflow and infiltration may be able to keep their ponds from becoming dry.

Geology

Geologic conditions under the pond can also have an impact on how much water is retained in the pond. Systems overlying areas with shallow water tables or non-permeable soils will see less seepage. The Missouri Coteau region of the state appears to have fewer dry ponds when compared to other parts of the south-central region. This Missouri Coteau region is noted for its pothole lakes and is sometimes referred to as “North Dakota’s Duck Factory”.[4] Wastewater stabilization ponds are designed to have a maximum seepage rate of 1/8 inch per day or 45.45 inches per year.[5]

Climate

Ghost ponds are more common in areas with low rainfalls and high evaporation as seen in the western part of North Dakota. Precipitation in the western part of the state can be less than 10 inches per year. Evaporation rates can vary from about 32 inches a year in Stutsman county to 38 inches a year in Bowman county.[6]

Changing climate is having an impact in the amount of precipitation, evaporation and temperature in North Dakota. In a 2017 an American Meteorological Society article points out that the boundary that divides the humid eastern U.S. and the dry western Plains is shifting to the east.[7] Less precipitation, more evaporation and higher temperatures may increase the number of ghost ponds in the state.

Future Growth

In a few cases, extra ponds were added in anticipation of large population growth due to the oil boom. The cells remain empty in anticipation of future growth.

Age and Income Levels

Changing age and income levels may contribute to a reduction in wastewater produced. There is some anecdotal evidence that older residents (65+) use less water per person than younger people based on discussions with water operators. Operators in small towns are often aware of which households use the least amount of water. Higher income levels may also result in higher water use and as a result increased wastewater flow. This author is not aware of any studies in North Dakota that support either claim.

Loss of Business or School

If a large business or school closes the city would see reduced wastewater flows. Students would be transported to another school and use the wastewater system that serves that school. Any workers that move out of the area would be using the wastewater system that serves that area and not the city wastewater system. The reverse is also true. The city of Lincoln has seen increased wastewater flows with the addition of a new elementary school in 2014. The school now serves 575 students and over 50 staff.

Evaporation Ponds

In a few cases, wastewater ponds were designed as evaporation ponds with zero discharges. An example of this is the city of Courtenay. The original system included an 8.7-acre primary cell and a 2-acre second cell. The population at the time the ponds were built in 1981 was roughly 110 people. By 2010, the population was listed as 45 and the second cell had been split into two smaller ponds. The original primary cell is now dry; however, it is still available to accept overflows from cell two if needed.

There is usually a transition period before a cell becomes a ghost pond. As the wastewater flows are reduced the final pond is often used intermittently. Cattails and other vegetation will often establish themselves on the edges of the pond and eventually the entire pond as wastewater flows are reduced. As the pond continues to dry there is a transition to native grasses. Keeping other vegetation like bushes and trees from taking over the pond can be difficult. Rip-rap around the pond can make it extremely difficult to cut or remove vegetation on the slopes of the dikes.

Cities are encouraged to keep any ghost pond free of trees and bushes to preserve the seal of the liner. Mowing or haying the pond floor and dikes is also a good idea if the city plans to use the pond in the future. The best method for preserving the pond is to keep at least two feet of water in the cell.

Currently wastewater treatment systems using stabilization ponds are required to have at least three cells. In the future, systems may wish to consider having four cells. The first two cells would be used in parallel. Should the city or system lose population the operator could switch to running the system in series.

The following pages show some of the ghost ponds that are in the southern central and western part of the state.

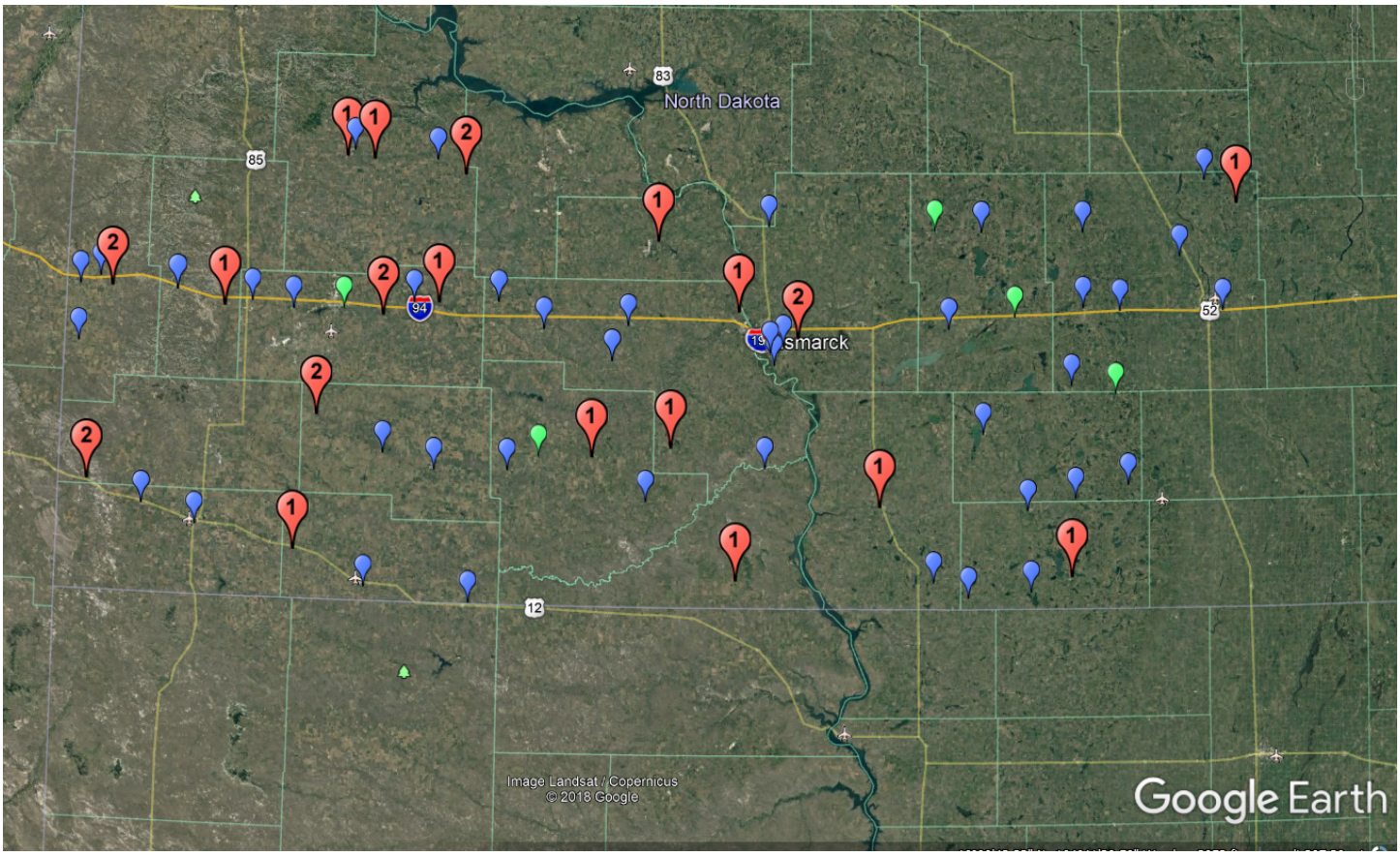

Figure 1 showing the location of waste stabilization ponds in the southwest and south-central part of North Dakota (south-central inspection area).[8]

Active Ponds – Ponds with adequate water levels

Transitional – Intermittent water in pond(s)

Dry – Number of ponds that are empty

References:

1. http://www.ghostsofnorthdakota.com/
2. The number of cities that saw a population increase or decrease is an estimate. Some cities did not exist in 1950 and some cities were abandoned by 2010. The census department has also changed how they classify cities or urban areas.
3. https://www.nrdc.org/experts/ed-osann/celebrating-25-years-water-efficiency
4. http://johnbluemle.com/tag/missouri-coteau/
5. CHAPTER 90 WASTE STABILIZATION PONDS (Lagoons)
6. North Dakota Hydrology Manual, Chapter 8. Evaporation, https://www.nrcs.usda.gov/wps/PA_NRCSConsumption/download?cid=stelprdb1269585&ext=pdf
7. Whither the 100th Meridian? The Once and Future Physical and Human Geography of America's Arid–Humid Divide. Part II: The Meridian Moves East, https://journals.ametsoc.org/doi/full/10.1175/EI-D-17-0012.1

8. Adams, Billings, Bowman, Burleigh, Dunn, Emmons, Golden Valley, Grant, Hettinger, Kidder, Logan, McIntosh, Morton, Oliver, Sioux, Slope, Stark, and Stutsman counties.

Marmarth: Second and third cells do not hold water. The population was 469 people in 1950, but only 136 in 2010.


Sentinel Butte: Second and third cells are dry. The population was 229 in 1950, but only 56 in 2010.


Gladstone: Second and third cells are dry. The population peaked in 1980 at 317 and was 239 in 2010.


Elgin: Third cell is in transition to a Ghost Pond. The population hit a high of 944 in 1960 and was 642 in 2010.

Tappen: Second cell is in transition to a Ghost Pond. Rip-rap and wet conditions prevent mowing the pond.

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Richardton: Two additional cells were built in anticipation of population growth. The fourth cell is dry. The area just to the left of the depth gauge allows the operator to drive a mower down into the pond. The slope is too steep to drive the mower back out of the pond. It must be winched out.

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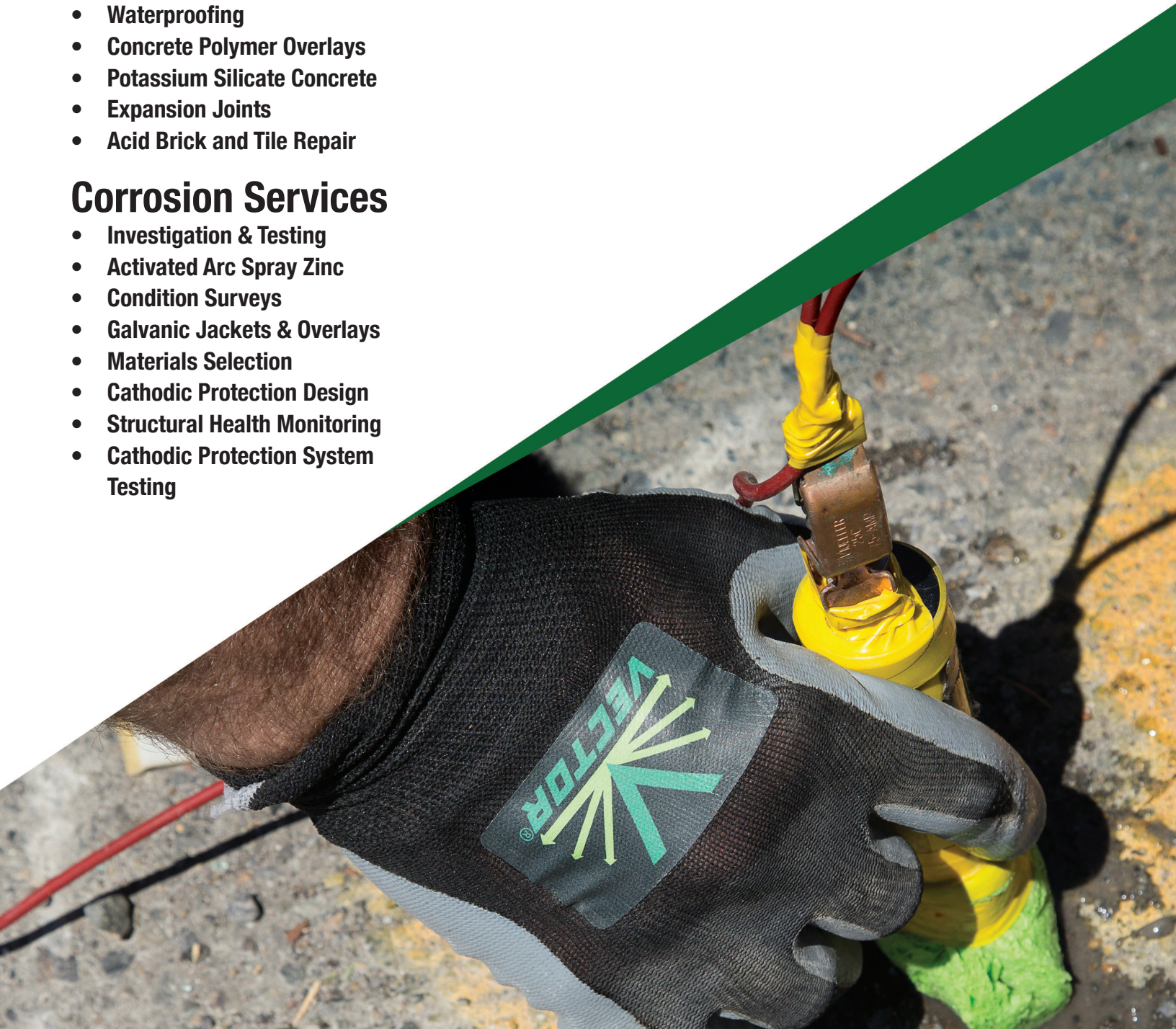

WQ1341 (Revised June 2019)

It's All In Your Water

Drinking Water Quality:
Testing and Interpreting Your Results

Public water systems in North Dakota cooperate with the North Dakota Department of Environmental Quality (NDDEQ) to ensure compliance with safe water guidelines set by the Environmental Protection Agency's (EPA) Safe Drinking Water Act. **These rules do not cover private wells.**

The owner of a private well is responsible for testing the water, interpreting the results and making necessary changes to the system. Although the EPA cannot force private well owners to comply with the EPA guidelines, the agency's maximum contaminant levels can serve as a reference for safe drinking water. An unacceptable water sample may be based on bacterial analysis, chemical characteristics of the water (such as chlorides, iron and hardness) or physical characteristics (such as odor, taste and color).

Reviewed by

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North Dakota State University
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This publication will answer the following questions:

- What should your water be tested for?
- What samples do I need?
- Where can I have my water tested?
- How do I interpret my results?
- How do I correct my problem?

The following chart provides a quick overview of acceptable levels for drinking water. A more detailed explanation is on Pages 4-6 of this publication.

A Quick Look at Safe Levels in Drinking Water

Coliform bacteria	**No coliform bacteria is acceptable**
pH	6.5 – 8.5
Nitrates	< 10 mg/l as NO3 –N < 45 mg/l as NO3
Total dissolved solids (TDS)	< 1,500 mg/l
Chloride	< 250 mg/l
Fluoride	0.7 – 1.2 mg/l
Calcium and magnesium	Calcium – limits not set by EPA Magnesium > 125 mg/l may show laxative effects
Iron and manganese	Iron < 0.3 mg/l Manganese < 0.05 mg/l
Sodium	< 100 mg/l
Sulfates	< 250 mg/l
Arsenic	< 10 ppb
Conductivity	0.4-0.85 millimoles per centimeter
Total hardness	< 270 mg/l
Turbidity	1 turbidity unit (TU). Note: > 5 TUs are detectable easily in a glass of water and usually are objectionable for aesthetic reasons.
Potassium	No maximum limit has been set
Color	< 10 color units

< means less than
> means greater than
mg/l means milligrams per liter

What Should My Water Be Tested For?

New wells or homes:

- Bacteria
- Routine water analysis, including:
  - Conductivity
  - Magnesium
  - Manganese (total)
  - Sodium absorption ratio (SAR)
  - pH
  - Sodium
  - Nitrates
  - Total dissolved solids (TDS)
  - Calcium
  - Iron (total)
  - Hardness

Existing wells: Annual testing

- Each year, general indicators, including:
  - Bacteria, pH, nitrate and total dissolved solids
  - Any constituents that were at or near the drinking water standard in previous years

Existing wells: Every five years or if you notice a change in water quality

- Comprehensive water analysis
- Routine water analysis, plus:
  - Potassium
  - Alkalinity
  - Chloride
  - Fluoride
  - Sulfate

Note: Keep copies of all results so you can track changes in your water quality through time.

How Do I Collect a Sample?

Sample collection methods are based on the type of analysis you desire.

Bacterial Analysis

A sterile container provided by the testing laboratory is required for a bacteria test. Check with the laboratory for sampling and timing instructions because samples must reach the lab within 36 hours. Do not to rinse containers because most contain preservatives.

Routine Water Analysis for Minerals and Chemicals

A "raw" water sample is preferred for a routine water analysis. If possible, bypass water treatment units, such as water softeners, reverse osmosis (RO) systems and iron removal systems, when collecting the sample. A second sample taken after the water has passed through the treatment equipment will help you determine if your equipment is functioning properly.

Give special attention to contaminants that have tested high in the past or when concerns arise from health issues. Use a clean plastic or glass container to collect a 1-quart sample. Containers previously used for bleach, soap or other substances will contaminate the water sample. Rinse the container and lid three times with the water that will be tested. Laboratories recommend samples reach them within two weeks.

Water Sampling in Active Oil Drilling Areas

If you are concerned about water quality due to present or future oil activity, a list of suggested tests is available in NDSU publication WQ-1614, "Baseline Water Quality in Areas of Oil Activity," or through the laboratories listed on pages 7 and 8 of this publication.

Where Do I Have My Water Tested?

A list of laboratories in North Dakota can be found on the last page of this publication, on the Internet at *www.ndsu.edu/waterquality*, at your local Extension office or at the North Dakota Department of Environmental Quality at 701-328-6140. To select a lab, consider convenience and services offered. Certified laboratories must pass proficiency testing by the EPA.

Now That I Have the Results, What Do These Numbers Mean?

Figures 1 and 2 are examples of water analyses reports. The report will contain a list of contaminants for which the water was tested and the measured concentration of each. The report also may highlight any problems.

The concentration is the amount of a given substance (weight) in a specific amount of water (volume). The most common concentration unit used is milligrams per liter (mg/l), which, in water, is approximately equal to one part per million (ppm).

Many compounds are measured in smaller concentrations, such as micrograms per liter or parts per billion (ppb). Some contaminants have units that are specific to the test and others are expressed as an index number and not in terms of concentration, and therefore have no units.

An online water quality interpretation tool has been developed to assist you in evaluating your drinking, livestock and irrigation water quality test reports. A link to the interpretive tool can be found at: *https://erams.com/wqtool*.

continued on page 4

Analytical Laboratory Report

Client: Client Name
Project: Analytical Laboratory Services
Date Collected: 1/5/14
Sample Identification: Kitchen tap

Collected by: KM
Project Number: CL000001
Time Collected: 7:35 a.m.
Lab Number: 01000

Analysis	Results	Units
Total coliform bacteria	50	#/100ml
Nitrate-nitrogen	4.55	mg/l
pH	7.50	
Iron	0.55	mg/l
Hardness as CaCo3	280	mg/l
Sulfate-sulfur	32.0	mg/l
Chloride	25.4	mg/l
Specific conductance	344	umhos/cc

The test results indicate this water sample does not meet EPA drinking water standards.

The following notes apply to this sample:
The total coliform bacteria exceeded the acceptable level of no bacteria.
The iron level exceeded the limit of 0.3 mg/l.

Submitted by: _____ Laboratory Manager

Figure 1.
Sample Analytical Laboratory Report

Your City Public Health Environmental Laboratory

John Doe
1234 West Drive
Great Town, ND 58000

Phone: 701-222-2222
Fax:

Order Number: 03-659
Sample Number: 03-1230

Receive Date: 4/11/2014
Receive Time: 9:30 AM

Owner: John Doe
Collection Site: North Well Crete Area
Collection Date: 4/10/2014
Collection Time: 2:30 PM

Collected by: John Doe
Source: Water

Analyte	Result	Analysis Date	Time	Analyst
Total Coliform	Absent	4/11/2014	1:45 PM	D. Johnson
E. coli	Absent	4/11/2014	1:45 PM	D. Johnson
Nitrate-Nitrate as N	<2.0 mg/L	4/11/2014	1:45 PM	D. Johnson

Interpretation of Results

A total coliform bacteria and E. coli bacteria result in "Absent" indicates that none of these bacterium were detected in the sample. The water may be considered safe for human consumption.

A total coliform bacteria result of "Present" indicates that bacteria was detected in the sample. This water should not be consumed until corrective action is taken. If you need instructions on ways to correct this problem, call (701) 222-2222.

The maximum contaminate level for Nitrate-Nitrite as N in drinking water, as determined by the E.P.A., is 10 mg/L (or parts per million (ppm)). Water with Nitrate-Nitrite as N less than 10 mg/L is considered safe for human consumption. If the level is higher than 10 mg/L, the water should not be consumed until corrective action is taken. If you need instructions on ways to correct this problem, call (701) 222-2222.

Figure 2.
Sample Bacteriological Testing Report

Instructions on how to use the interpretive tool are on the website. After you enter the numbers from your water test report, the tool will provide guidelines for acceptable or unacceptable concentrations.

For more information:

- U.S. Environmental Protection Agency, Safe Drinking Water Act *water.epa.gov/drink*
- North Dakota Department of Environmental Quality *www.deq.nd.gov/WQ*

Interpreting a Bacteriological Test

All water has some form of bacteria in it. The presence of bacteria does not mean the water is unsafe to drink. Only disease-causing bacteria known as pathogens lead to disease. Your test results should include total coliform bacteria. Total coliform bacteria are a group of several kinds of bacteria commonly found in the environment, including soil, vegetation and untreated surface water. They also are found in the intestinal tract of warm-blooded animals, including humans.

A laboratory commonly will report the bacteriological test as positive or negative, indicating the presence or absence of total coliform bacteria. A negative total coliform bacteria result means the water is safe for human consumption from a bacteriological standpoint.

A positive total coliform test would indicate unsanitary conditions and the possible presence of disease-causing organisms. Further testing should include the subgroup fecal coliform and its subgroup, *Escherichia coli* (E. coli). A positive fecal coliform would indicate possible recent sewage or animal waste contamination.

E.coli outbreaks related to food contamination have received media attention. These outbreaks are caused by a specific strain of E. coli known as E. coli 0157:H7. A positive E. coli result does not necessarily mean this specific strain is present. However, it does indicate recent fecal contamination, which should be interpreted as an indication of a greater risk that pathogens are present.

Disease-causing microbes (pathogens) in these wastes can cause diarrhea, cramps, nausea, headaches or other symptoms. These pathogens may pose a special health risk for infants, young children and people with severely compromised immune systems.

Shock chlorination should be performed on a well that reports a positive E.coli or fecal coliform test. For instructions on chlorination, watch a video at *https://www.youtube.com/watch?v=MZJ6FxK6cwk*.

Repeat the bacteria test within seven days to confirm the effectiveness of the chlorination.

Interpreting a Mineral Analysis

Alkalinity

Alkalinity is a measure of the capacity of water to neutralize acids. The predominant chemicals present in natural waters are carbonates, bicarbonates and hydroxides. The bicarbonate ion is usually prevalent. However, the ratio of these ions is a function of pH, mineral composition, temperature and ionic strength. Water may have a low alkalinity rating but a relatively high pH or vice versa, so alkalinity alone is not of major importance as a measure of water quality.

Alkalinity is not considered detrimental to humans but generally is associated with high pH values, hardness and excessive dissolved solids. High-alkalinity waters also may have a distinctly flat, unpleasant taste. Treatment is an ion exchange via the addition of a tank media or reverse osmosis.

Arsenic

Arsenic is a semimetalic element that is odorless and tasteless. It enters drinking water supplies from natural deposits in the earth, or from agricultural and industrial practices.

According to the EPA, long-term exposure to arsenic in drinking water is linked to cancer of the bladder, lungs, skin, kidneys, nasal passages, liver and prostate. Noncancerous effects of ingesting arsenic include cardiovascular, pulmonary, immunological, neurological and endocrinal (for example, diabetes) problems.

Treatment depends on the level of contamination. Typical recommendations include the addition of an anion filter or tank media.

■ **Refer to the list of publications on page 8 for more information on filtration.**

Calcium and Magnesium

Calcium and magnesium are the main contributors to water hardness. When water is heated, calcium breaks down and precipitates out of the solution, forming scale. Maximum limits have not been established for calcium. Magnesium concentrations greater than 125 mg/l may have a laxative effect on some people. Treatment for calcium is softening (tank media) and reverse osmosis. Magnesium levels can be controlled through distillation.

Chloride

High concentrations of chloride ions can cause water to have an objectionable salty taste and corrode hot-water plumbing systems. High-chloride waters have a laxative effect for some people. An upper limit of 250 mg/l has been set for chloride ions, although noticing the taste at this level is difficult, and even higher concentrations do not appear to cause adverse health effects. An increase in the normal chloride content of water may indicate possible pollution from human sewage, animal manure or industrial wastes.

Color

Color may indicate dissolved organic material, inadequate treatment and high disinfectant demand, and may indicate the potential for the production of excessive amounts of disinfectant byproducts. Inorganic contaminants, such as metals, are also common causes of color. In general, the point of consumer complaint is variable, ranging from 5 to 30 color units, although most people find color objectionable in excess of 10 color units. Other contaminants that may be related to change in water color include aluminum, copper, foaming agents, iron, manganese and total dissolved solids. Treatment is reverse osmosis.

Conductivity

Conductivity is a measure of the conductance of an electric current in water. This is an easy measurement to make and relates closely to the total dissolved solids (mineral) content of water. The maximum contaminant level (MCL) is 0.4 to 0.85 micro Siemens per centimeter. Treatment with reverse osmosis is effective for drinking water purposes.

Fluoride

Fluoride concentrations of 0.7 to 1.2 mg/l in drinking water will protect against dental cavities. However, excessive levels (more than 1.5 mg/l) may cause discoloration, or mottling of the teeth. This occurs only in developing teeth before they push through. Elevated fluoride levels also may cause skeletal damage and bone disease. Because low levels of fluoride are common in groundwater, most municipalities add fluoride to the water.

Iron and Manganese

Iron in concentrations greater than 0.3 mg/l and manganese in concentrations greater than 0.05 mg/l may cause brown and black stains on laundry, plumbing fixtures and sinks. A metallic taste also may be present, and it may affect the taste of beverages made from the water. High concentrations of iron and manganese do not appear to present a health hazard. Treatment includes a water softener or iron filter for iron and reverse osmosis for manganese.

■ **Refer to the list of publications on page 8 for more information on softening, and iron and manganese removal.**

Nitrates

The results reported for nitrates can be confusing because they may be reported as nitrogen (N) or nitrate-nitrogen or as nitrate (NO_3). The following are the maximum levels for each:

- Nitrogen (N) or nitrate-nitrogen (NO_3-N) should not be higher than 10mg/L.
- Nitrate (NO_3) should not be higher than 45mg/L.

High nitrate levels may cause methemoglobanemia (infant cyanosis or "blue baby disease") in infants who drink water or formula made from water containing nitrate levels higher than recommended.

Adults can drink water with considerably higher concentrations than infants without adverse effects. Treatment of such water includes anionic ion exchange, reverse osmosis, distillation and/or deionization.

■ **Refer to the list of publications on page 8 for more information on softening.**

pH

pH is a measure of the free hydrogen ion and hydroxyl ions in the water. A pH of 7 is neutral. pH under 7 indicates acidity; higher than 7 indicates alkalinity. Because pH can be affected by chemicals in the water, pH is an important indicator of water that is changing chemically. Drinking water with a pH between 6.5 and 8.5 generally is considered satisfactory.

Acidic waters are corrosive to plumbing and faucets, particularly if the pH is below 6. Waters with a pH above 8.5 may have a bitter or sodalike taste. The pH of water can affect the treatment of water and should be considered if the water is used for field application of pesticides. Water with a pH of 7 to 8.5 requires more chlorine for the destruction of pathogens (disease organisms) than water that is slightly acidic.

Potassium

Potassium concentrations in water are generally very small. Although excessive amounts may have a laxative effect, the EPA has not established a maximum limit. Potassium (chloride) is used as a replacement for salt in water softeners when dietary sodium intake is a health issue.

Sodium

Sodium is a very active metal that does not occur naturally in a free state. It always is combined with other substances. In the human body, sodium helps maintain the water balance. Human intake of sodium is mainly influenced by the consumption of sodium as sodium chloride or table salt. The contribution of drinking water is normally small, compared with other sources.

The treatment for certain heart conditions, circulatory or kidney diseases, or cirrhosis of the liver may include sodium restriction. Diets for these people should be designed with the sodium content of their drinking water taken into account.

The National Academy of Sciences has suggested a standard for public water allowing no more than 100 mg/l of sodium. This would ensure that the water supply adds no more than 10 percent of the average person's total sodium intake.

The American Health Association recommends a more conservative standard of 20 mg/l to protect heart and kidney patients.

Softening by ion exchange or lime-soda ash increases the sodium content approximately 8 mg/l for each gr/gal (grain per gallon) of hardness removed. Treatment includes the use of potassium chloride instead of sodium chloride softener pellets (softener salt) or, alternatively, restricting drinking water from this source.

Sulfates

Water containing high levels of sulfates, particularly magnesium sulfate (Epson salts) and sodium sulfates (Glauber's salt) may have a laxative effect on people unaccustomed to the water. These effects vary among individuals and appear to last only until they become accustomed to using the water. High sulfate content also affects the taste of water and forms a hard scale in boilers and heat exchangers. The upper limit recommended for sulfates is 250 mg/l. Treatment includes reverse osmosis.

Total Dissolved Solids (TDS)

High concentrations of TDS may affect taste adversely and deteriorate plumbing and appliances. The EPA recommends that water containing more than 500 mg/l of dissolved solids not be used if other less mineralized supplies are available. However, water containing more than 500 mg/l of TDS is not dangerous to drink. Exclusive of most treated public water supplies, the Missouri River, a few freshwater lakes and scattered wells, very few water supplies in North Dakota contain less than the recommended 500mg/L concentration of total dissolved solids. Many households in the state use drinking water supplies with concentrations up to 2,000 mg/l and greater. Treatment for household use is reverse osmosis.

Total Hardness

Hardness is the property that makes water form an insoluble curd with soap and primarily is due to the presence of calcium and magnesium. Very hard waters have no known adverse health effects and may be more palatable than soft waters. Hard water is primarily of concern because it requires more soap for effective cleaning; forms scum and curd; causes yellowing of fabrics; toughens vegetables cooked in the water; and forms scale in boilers, water heaters, pipes and cooking utensils. The hardness of high-quality water should not exceed 270 mg/l (15.5 grains per gallon) measured as calcium carbonate. Water softer than 30 to 50 mg/l may be corrosive to piping, depending on pH, alkalinity and dissolved oxygen. Water softeners will correct hard water of more than 270 mg/l.

■ **Refer to the list of publications on page 8 for more information on softening.**

Turbidity

Turbidity is a measure of suspended minerals, bacteria, plankton, and dissolved organic and inorganic substances. Turbidity often is associated with surface water sources. Treatment includes mixing with a substance such as alum that causes coagulation of the suspended materials, which then can be removed by sand filter filtration.

Certified Labs in North Dakota

The EPA certifies the North Dakota Department of Environmental Quality (NDDEQ) in certain parameters of drinking water testing and also authorizes the department to certify other labs in the state for specific tests. This certification is necessary only for public water sources. Private wells do not have to follow these guidelines and can use any lab.

The following chart lists laboratories in North Dakota that are certified in some aspect of testing drinking water. An asterisk following the test indicates the laboratory follows certain testing procedures required by the EPA.

Lab Information

Also available on: www.ndsu.edu/waterquality

***Certified by the N.D. Department of Environmental Quality or EPA**

Lab Name	Phone Number	Address	Bacteria and Nitrate	Chemistries
Astro Chem Lab Inc. *http://astrochemlab.com*	701-572-7355	4102 2nd Ave. W. P.O. Box 972 Williston, ND 58802	Bacteria only	Conductivity, residual sodium carbonate, sodium adsorption ratio (SAR), hardness, total dissolved solids (TDS), sodium chloride, calcium*, magnesium, sodium, iron*, potassium, chloride, carbonate, bicarbonate, sulfate, nitrate*, pH*
				***Others:** Alkalinity, filterable residue, copper, manganese, nickel, silver, zinc, barium, arsenic, cadmium, chromium, lead and selenium
Fargo Cass Public Health Environmental Laboratory	701-298-6986 701-298-6997	435 14th Ave. S. Fargo, ND 58103	Bacteria and Nitrate	**Complete Potable Water:** Coliform bacteria*, nitrates*, calcium, sodium*, potassium, iron, manganese*, magnesium, total hardness*
				Partial Water Chemistry: Calcium, sodium*, magnesium, potassium, manganese*, iron, total hardness*
				Complete Water Chemistry: pH*, conductivity, total dissolved solids, turbidity*, iron, calcium, sodium*, magnesium, potassium, manganese*, total hardness*, chloride*, fluoride*, nitrate*, sulfate, P&M alkalinity
				Irrigation Series: Calcium, magnesium*, sodium*, sodium absorption ratio (SAR), conductivity
				Trace Minerals: Lead*, arsenic*, copper*, etc.
				***Others:** Alkalinity, dissolved organic carbon, total organic carbon, UV 254, barium, beryllium, cadmium, chromium, nickel, zinc, antimony, selenium, thallium, mercury, bromide, orthophosphate, sulfate
First District Health Unit Laboratory *www.fdhu.org*	701-852-1376	801 11th Ave. S.W. P.O. Box 1268 Minot, ND 58702	Bacteria and Nitrate	**Chemical Analysis:** Conductivity, total dissolved solids, total hardness, iron, manganese, sodium, nitrate.
				Quantitative Tests: Calcium/magnesium, chloride, chlorine, sulfate, fluoride, potassium, iron, magnesium, nitrates, turbidity, total suspended solids
				Irrigation Water Quality: Specific conductance @ 25 F. total dissolved solids, hardness, iron, sodium, nitrates, pH
City of Grand Forks Environmental Laboratory	701-746-2595	503 4th St. S. Grand Forks, ND 58201	Bacteria only	Biology and wet chemistries are available to the public. For more information, contact Andy Job at the number listed.
Minnesota Valley Testing Laboratories Inc. (MVTL) *www.mvtl.com*	701-258-9720	2616 East Broadway Ave. Bismarck, ND 58501	Bacteria and Nitrate	**Routine Water Analysis:** Conductivity, sodium*, hardness, pH*, iron (total), calcium*, manganese (total)*, magnesium, nitrates*, sodium absorption ratio (SAR), total dissolved solids (TDS)
				Comprehensive Water Analysis: Routine water analysis plus potassium, alkalinity*, chloride, fluoride*, sulfate
				Stock Pond Series: Conductivity, sulfate, total dissolved solids (TDS), nitrate*
				Irrigation Series: Conductivity, sodium*, total dissolved solids (TDS), sodium absorption ratio (SAR), calcium, magnesium
				***Others:** Filterable residue, total organic carbon, aluminum, barium, beryllium, boron, cadmium, chromium, molybdenum, nickel, silver, vanadium, zinc, antimony, arsenic, lead, selenium, thallium, uranium, mercury, cyanide

continued

Lab Name	Phone Number	Address	Bacteria and Nitrate	Chemistries
North Dakota Department of Environmental Quality *Certified by EPA *www.deq.nd.gov/chemistry* Call for current pricing Call 701-328-6140 for a water sampling mailing kit	701-328-6140	Chemistry Division 2635 Main Ave. E. Bismarck ND 58501 or P.O. Box 5520 Bismarck, ND 58506	Nitrate only	**Partial Mineral Chemistry:** Bicarbonate, calcium, carbonate, conductivity, iron, magnesium, manganese, percent sodium, pH, potassium, sodium, sodium absorption ratio (SAR) **Complete Mineral Chemistry:** Partial mineral chemistry plus chloride, fluoride, sulfate Lead* and copper* Fluoride **Others:** Chloroacetic acid, bromoacetic acid, dichloroacetic acid, dibromoacetic acid, trichloroacetic acid, chloroform, bromoform, dibromochloromethane, dichlorobromomethane, nitrite, nitrate + nitrite, cyanide, fluoride, uranium, antimony, arsenic, barium, beryllium, cadmium, chromium, mercury, selenium, thallium, 2,4,5-TP (silvex), 2,4-D, alachlor, atazine, carbonfuran, chlordane, dibromochloropropane, ethylene dibromide, heptachlor, heptachlor epoxide, lindane, nethoxychlor, pentachlorophenol, polychlorinated biphenyls, toxaphene, banzo(a)pyrene, dalapon, di(2-ethylhexyl) adipate, di(2-ethylyhexyl)phthalate, dinoseb, diquat, endothall, endrin, glyphosate, hexachlorobenzene, hexachlorocyclopentadiene, oxamyl, picloram, simazine, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1-Dichloroethylene, 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,4-Dichlorobenzene, benzene, carbon tetrachloride, chlorobenzene, cis-1,2-dichloroethylene, dichloromethane, ethylbenzene, styrene, tetrachloroethylene, toluene, trans-1,2-dichloroethylene, trichloroethylene, vinyl chloride, xylenes (total)
Southwestern District Health Unit *http://swdhu.net/swdhu*	701-483-0171	2869 3rd Ave. W. Dickinson, ND 58601	Bacteria and Nitrate	No mineral or other chemistries

Related Publications at:

www.ag.ndsu.edu/publications/environment-natural-resources/household-water-supply

WQ1029	Filtration: Sediment, Activated Carbon and Mixed Media
WQ1030	It's All in Your Water: Iron and Manganese Removal
WQ1031	Water Softening (Ion Exchange)
WQ1352	What's Wrong With My Water? Choosing the Right Test
WQ1614	Baseline Water Quality in Areas of Oil Development

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This publication was authored by Roxanne Johnson, former water quality associate

For more information on this and other topics, see www.ag.ndsu.edu

500-9-07; 500-1-08; 500-1-09; 300-4-10; 800-10-10; 800-6-12; 1M-3-15; 200-6-19

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FROM American Water Works Association

Top 5 Myths about Benchmarking Your Utility's Performance

By Frank Roth, senior policy manager, Albuquerque/Bernalillo County Water Utility Authority

Water utilities that benchmark their performance gain valuable insight into where they stand in the marketplace and what strategies can improve their success. However, those who hesitate to participate in AWWA's Utility Benchmarking Program lose this valuable advantage. These benchmarking myths were compiled at the 2018 Utility Management Conference to help utilities better understand the process.

Myth #1 – Benchmarking doesn't apply to us because we're unique.
Because every utility is unique, AWWA's Utility Benchmarking Program applies well-defined, time-tested performance indicators specific to the water sector. Your utility's practices are compared with others of similar size, geographic location, or treatment processes. The Benchmarking Program uses metric data definitions and calculation methods refined over 15 years for more than 40 performance indicators covering water and wastewater utility business areas.

Myth #2 – The survey results are not specific enough for us to use.
Your utility's performance indicators are compared against aggregate data for participating utilities in the same service group. Your customized report highlights specific areas where performance can be improved, and practices or policies can be established or revised. In addition, benchmarking comparisons can be an effective way to demonstrate your performance to stakeholders such as customers, boards, city councils, and regulators.

Myth #3 – The survey takes too much time to complete.
You have approximately 12 weeks between January and April 1st to compile your responses. Start by determining which measures are most relevant for your utility, then regularly track and evaluate the results and link them to improvement strategies. The process also can be used to report on customer and environmental targets, communicate with stakeholders, compare with other utilities, and link to industry-wide frameworks such as Effective Utility Management (EUM)

Myth #4 – Our utility is slow to change.
Benchmarking data supports change because it clearly shows where there are inefficiencies and what revised performance targets are possible. You can develop specific improvement plans and use benchmarking to measure outcomes. Utility decision-makers can link AWWA performance metrics to internal strategic plans, asset management, levels of service, maintenance programs, regulatory achievement, and overall performance management. Many of these performance assessment programs can be found in the EUM and the AWWA's partnership programs for Safe Water and Clean Water.

Myth #5 – The survey is more useful for larger, resource-rich utilities.
All sizes of utilities from the U.S., its territories, and Canada participate in the survey. Results are aggregated so they can be generalized for all utilities, regardless of size. AWWA also analyzes outliers to determine if unusually high or low values were intended as reported. All data and information exchanges are based on useful, predictable, and common definitions of data and practices.

Now that these benchmarking myths have been busted, sign up today for AWWA's Utility Benchmarking Program.

59th ANNUAL WATER AND WASTEWATER OPERATOR TRAINING PROGRAM
by Craig Bartholomay
ND Department of Health

This past February, March, and April, the North Dakota Department of Health, the North Dakota Water and Pollution Control Conference, the North Dakota Section of the American Water Works Association, the North Dakota Chapter of the American Public Works Association, and the North Dakota Water Environment Association sponsored the 59th Annual Water and Wastewater Operator Training Program.

There were six sessions offered with a total of 296 attendants.* Water treatment and distribution classes were offered February 25-27, March 4-6, March 18-20, and March 26-28. Wastewater treatment and collection classes were offered April 8-10, and April 15-17.

TRAINING SESSIONS	NUMBER OF ATTENDANTS
Water Treatment and Distribution	
February 25, 26, 27	55
March 4, 5, 6	58
March 18, 19, 20	51
March 25, 26, 27	54
Wastewater Treatment and Collection	
April 8, 9, 10	45
April 15, 16, 17	33
Total number of attendants:	296
* Some operators attended more than one session	

The objectives for these classes are to fulfill the continuing education credit (CEC) requirement for certified operators, to hear presentations regarding regulations and how to avoid mistakes that can lead to noncompliance, to learn general operation and maintenance topics, and to give operators an opportunity to write a certification exam. The courses are not geared specifically to prepare operators for certification exams.

During the training classes, there were six operator examination sessions scheduled. These were reserved for the last day of each session. The Department administered 217 examinations this year, with a passage rate of 60%.

EXAMINATION SESSION	NUMBER OF EXAMINATIONS WRITTEN
February 27	37
March 6	39
March 20	34
March 27	34
April 10	34
April 17	39
Total number of examinations written:	217

The following is a breakdown of the certification examinations that were written during the 2019 operator training sessions:

EXAMINATION CLASSIFICATION	IA	I	II	III	IV	TOTALS
Water Treatment	9	18	12	12	6	57
Water Distribution	24	27	20	4	5	80
Wastewater Treatment	8	10	9	1	4	32
Wastewater Collection	6	19	11	9	3	48
TOTALS:	47	74	52	26	18	217

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NEWS RELEASE | **FOR IMMEDIATE RELEASE** | July 2, 2019

North Dakota 2018 Drinking Water Compliance Report Published

BISMARCK, N.D. – The North Dakota Department of Environmental Quality has released its 2018 Drinking Water Compliance Report on North Dakota's public water systems.

The state's public water systems maintain an excellent Safe Drinking Water Act (SDWA) compliance record with 98 percent meeting all health-based standards. All community water systems have undergone a sanitary survey within the past three years. In 2018, the department issued certificates of compliance to 271 public water systems.

"The purpose of the annual report is to improve consumer awareness of drinking water compliance issues," said Greg Wavra, administrator of the department's Drinking Water Program. "People served by systems with SDWA violations in 2018 should have been informed by their water suppliers."

All SDWA violations incurred in North Dakota in 2018 are included in the report. Also listed are violations recorded in 2019 based on 2018 monitoring data. "It's important to understand that the majority of violations referred to in the 2018 report have been resolved," Wavra said. "It is a significant challenge for public water systems and states to meet the ever-increasing number of requirements of the SDWA."

To obtain a copy of the 2018 Drinking Water Compliance Report, write to the North Dakota Department of Environmental Quality, Division of Municipal Facilities, 918 E. Divide Ave, Bismarck, ND 58501-1947, or call 701-328-5211. The report also can be viewed on the department's website at https://deq.nd.gov/MF/. Click on DWP Publications under Drinking Water Program.

For more information, contact:
Greg Wavra
Division of Municipal Facilities
918 East Divide Ave | Bismarck, ND 58501-1947
PHONE: 701-328-5211 | EMAIL: gwavra@nd.gov
www.deq.nd.gov

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M E M O R A N D U M

TO: City Officials, Water and Wastewater Operators, Rural Water System Managers, Street Department Personnel, Consulting Engineers, Commercial Suppliers, and Industrial Managers

FROM: Shawn Heinle, Secretary-Treasurer
North Dakota Water and Pollution Control Conference

RE: Annual NDWPCC Conference
October 8th, 9th, and 10th, 2019

DATE: June 26, 2019

This year will mark the 91st North Dakota Water and Pollution Control Conference. As the Secretary/Treasurer, I am sending this letter to invite you to join us this year at the Ramkota Hotel and Conference Center located in Bismarck, ND. Again, we will be using Eventbrite for the registrations. We have created several package choices. To register, go to www.eventbrite.com/e/north-dakota-water-and-pollution-control-conference-2019-tickets-56362037371 ,or search for 2019 North Dakota Water and Pollution Control Conference, Bismarck ND. Then choose from the registration choices, fill out the registration form and pay with a credit card. The following are the choices with description:

Complete Registration – Registration for individual conference attendance, membership, and meals.
Individual Registration – Registration for individual conference attendance and membership, but no meals.
Vendor – Includes table, registration for one company representative, and Wednesday noon luncheon ticket.
Helper – Registrant assisting a registered vendor. No meals included.
Tuesday Lunch – Individual meal.
Tuesday Buffet - Individual meal.
Wednesday Lunch - Individual meal.
Wednesday Banquet - Individual meal.
Thursday Lunch - Individual meal.
Poker Dealer – Vendors who wish to be poker dealers for the poker fundraiser will be put on a list to let registrants know which booths to visit to draw a poker card.
Sponsorship – Any sponsor willing to donate towards door prizes, social hour, hospitality night, and golf tournament awards. Levels range from $0-99, $100-249, and $250 plus.

I will send another letter in August with a preliminary agenda for the conference.

If you have any questions, call or email me at 701.328.6627, or swheinle@nd.gov.

Thanks,

Shawn

SH: ll
Enc.

Drinking Water Program Directory		
Program Administrator	Greg Wavra	701-328-5224
Acrylamide and Epichlorohydrin Rule	Jacob Stokes	701-328-6621
Arsenic Rule	Alexis Steinman	701-328-5258
Consumer Confidence Reports	LeeAnn Tillotson	701-328-5293
Disinfectant/Disinfection Byproducts Rule (TTHM, HAA5) Stage 1 and Stage 2 Rule	Tammy Lamphear	701-328-5295
Electronic Reporting Information System (ERIS)	Barrett Brown	701-328-5209
Filter and Backwash Recycle Rule	Jacob Stokes	701-328-6621
Fluoride Addition	Stacey Herreid	701-328-5287
Groundwater Rule	Jeni Walsh Jacob Stokes	701-328-5231 701-328-6621
Inspections: Northeast	Gregg Stewart	701-328-6621
Inspections: Northwest	Mike Trythall Rondal "Joe" Lydon	701-328-5269 701-328-5221
Inspections: Southeast	Jacob Schafer	701-328-6375
Inspections: South Central	Bob Markhouse	701-328-6623
Lead and Copper Rule	Alexis Steinman	701-328-5258
Surface Water Treatment Rule: Interim Enhanced, Long Term 1 Enhanced, Long Term 2 Enhanced	Stacey Herreid Mike Trythall	701-328-5287 701-328-5269
Microscopic Particulate Analysis (MPA)	Jacob Stokes	701-328-6621
Nitrate/Nitrite Program	Tammy Lamphear	701-328-5295
Operator Certification	Craig Bartholomay	701-328-6626
Operator Expense Reimbursement/Public Notice Rule	LeeAnn Tillotson	701-328-5293
Operator Training	Shawn Heinle	701-328-6627
Pesticides (SOCs)	Mike Trythall	701-328-5269
Primary and Secondary Inorganics	Jacob Stokes	701-328-6621
Public Water System Updates (changes to source, treatment, contact, etc.)	Tammy Lamphear	701-328-5295
Radionuclide Rule: Gross Alpha, Total Radium, Uranium	Stacey Herreid	701-328-5287
Total Coliform Rule	Jeni Walsh Josh Seerup	701-328-5231 701-328-5257
Unregulated Contaminant Monitoring	LeeAnn Tillotson	701-328-5293
Volatile Organic Chemicals (VOCs)	Mike Trythall	701-328-5269
Central Phone: 701-328-5211		**Fax: 701-328-5200**

North Dakota Pollutant Discharge Elimination System Program Directory		
Program Administrator	Marty Haroldson	701-328-5234
Animal Feeding Operations	Brady Espe Rachel Strommen Jermey Lang	701-328-5228 701-328-5244 701-328-5219
Biosolids	Sarah Waldron-Feld	701-328-5237
Construction Stormwater	Dallas Grosman Duane Sandvick Samantha Swanberg	701-328-5242 701-328-5260 701-328-5283
Dewatering and Hydrostatic Testing	Sarah Waldron-Feld	701-328-5237
Discharge Monitoring Reports (DMRs)	All Staff	701-328-5210
DMR Quality Assurance (QA) Study	Marty Haroldson	701-328-5234
Industrial Pretreatment	Jeff Roerick Duane Sandvick	701-328-5240 701-328-5260
Inspections	All Staff	701-328-5210
Lagoon Overflows/Releases/Spills	All Staff	701-328-5210
MS4 Stormwater	Dallas Grossman Duane Sandvick	701-328-5242 701-328-5260
Public Notices/NDPDES Permits	All Staff	701-328-5210
Septic Pumper	Sarah Waldron-Feld	701-328-5237
Wastewater Discharge Approvals	All Staff	701-328-5210
Central Phone: 701-328-5210		**Fax: 701-328-5200**

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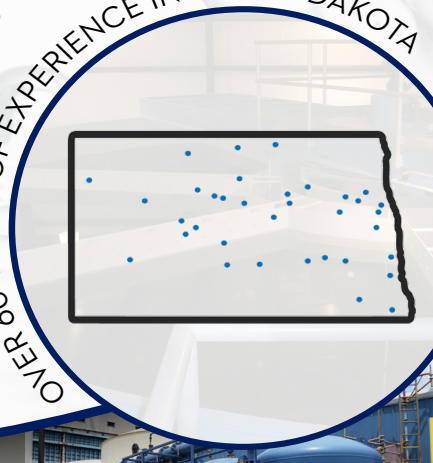

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