OFFICIAL BULLETIN

January - June 2008
VOLUME 94 • NUMBERS 1-6
SPRING ISSUE

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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.

OFFICIAL BULLETIN

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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.

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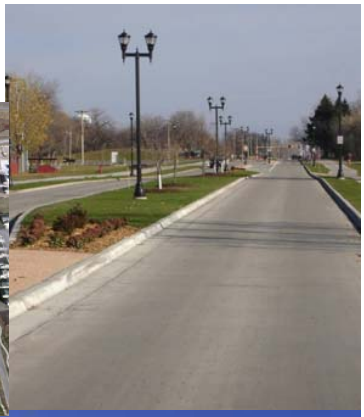

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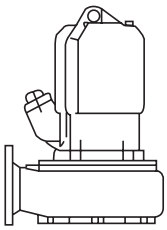

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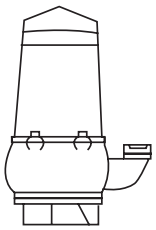

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Minutes of the Board of Trustees Meeting
North Dakota Section of AWWA

October 24, 2007

The fall meeting of the North Dakota Section of the American Water Works Association (NDAWWA) was held at the Holiday Inn of Fargo, N.D. on October 24, 2007. Present at the meeting were Chair David Johnson; Chair-elect Brett Jochim; Director Jack Long; Trustees Tim Paustian, Duane Friesz, Dean Sletten and Joe Ferguson; Secretary/Treasurer David Bruschwein; Assistant Secretary Brian Blotsky; and, Assistant Treasurer Greg Wavra. Others attending the meeting were Sue Anderson, Rick Gillund, Miranda Kleven, Joe Mantua, Hazel Sletten, Deon Stockert, Larry Thelen, Charles Vein and Eric Volk.

The meeting was called to order by Mr. Johnson at 7:30 a.m.

The Secretary's Report was presented by Mr. Bruschwein. Mr. Long moved that the corrected minutes of the May 23, 2007 board meeting be approved. Seconded by Mr. Ferguson. Motion carried.

Mr. Wavra presented the Treasurer's Report. As of October 22, 2007, the section had an income of $22,912.83 and expenses of $18,444.74. The section has $33,548.00 in the checking and money market accounts. The section also has scholarship endowments and a reserve account that total $80,653.83. Mr. Sletten moved to accept the Treasurer's Report. Seconded by Mr. Gillund. Motion carried.

Committee Reports

Education and Research Committee

Mr. Stockert reported that the Fred Clark Memorial Scholarship was discontinued. Minot State University-Bottineau no longer offers a water treatment curriculum. It was merged with the University Scholarship for a total of $1,000 awarded to the winner.

Mr. Stockert wanted to recognize the American Water Works Association/Water Environment Association (AWWA/WEA) student chapter for their student competition project that tied for first place at the Water Environment Federation Technical Exhibition and Conference (WEFTEC) which was held in San Diego, California.

Ms. Kleven suggested sending postcards to remind people of the upcoming Surface Water Treatment Workshop to be held in Moorhead.

Mr. Stockert also said they were looking for candidates to receive the Management Institute Scholarship.

Those in attendance were also reminded of the Student and Young Professionals Reception to be held at Buffalo Wild Wings at 7:00 p.m.

PR Committee

Ms. Sletten discussed adding a student section link to the section's website. Ms. Anderson was also going to take photographs of the conference to be added to the website at a later date.

Membership

Mr. Sletten reported that membership numbers are about the same since the last meeting. He was hoping that new members would be found at the Energy Conference.

Water for People (WFP)

Mr. Vein reported that $5,005 was raised last year. This is enough to become a country sponsor. The country of Bolivia was selected. He indicated that this year's money raised would probably be about the same. There were 29 golf sponsorships. It was also noted that Steve Werner resigned, and Collen Styles took over the position. Mr. Vein also noted that five new countries were added for a total of 10 countries.

Director's Report

Mr. Long referred to the Director's Report previously emailed listing the three candidates for Chair Elect. He also stated that he represented the section at the annual conference and exposition (ACE). Mr. Mantua stressed that attendance is up and that this year's ACE had one of the largest crowds since it was held in 2000. Mr. Long also wants to recognize Ken Ruby for his membership of 50 years with NDAWWA section.

Mr. Wavra explained the two-day training held in Denver for the Water and Wastewater Agency Response Network (WARN). He explained that there is going to be leadership training in Denver.

He also stated that, if the section gets a booth at the Energy Generation Conference, he would set out some brochures.

Mr. Wavra explained some of the topics presented at the summer training in Colorado Springs, which was attended by Mr. Wavra and Mr. Blotsky. He felt the training was very informative, and they learned a lot from it.

Mr. Johnson discussed the WFP memorandum of understanding. The memorandum basically states that, if the section is using the WFP logo, it has to be for official WFP business. Mr. Sletten motioned to adopt the memorandum of understanding. Seconded by Mr. Friesz. Motion carried.

Mr. Long discussed the regional meeting of section officers (RMSO) and the new regional alignment with states in the east. He stated that the new alignment was meant to reduce expenses and increase attendance. There were some fears that the N.D. section could get lost in the higher populated states to the east. Members also expressed that this may be a great opportunity to make new contacts and to learn from the other states.

Mr. Wavra stated that he had sent an application for a booth at the Energy Generation Conference to be held in Bismarck. The application required a $750 deposit. He stated that we should hear if our application was accepted within the next couple of weeks. The purpose of the booth is to solicit new membership from the industry, rather than focusing primarily on municipalities. It was stated that there is money in the budget for promotional materials.

Mr. Wavra stated that the projected 2008 budget stayed mostly the same as 2007. He said there may be a slight decrease due to the fact that the satellite conferences were moving to the web.

Mr. Long discussed that Lawrence Thomas was the only candidate for national treasurer. There is still more time for nominating candidates. Mr. Thomas did send a letter asking for the section's support. Board members felt that the section did not need to write a letter specifically addressing support for Mr. Thomas.

Mr. Bruschwein discussed the potential section training with help from the AWWA.

Mr. Long discussed helping individuals with the cost of going to ACE. He felt that the cost of the ACE should not deter individuals from seeking a director position.

Mr. Ferguson made a motion to adjourn the meeting. The motion was seconded by Mr. Long. The meeting adjourned at 9:00 a.m.

Respectfully submitted,
Brian Blotsky
Assistant Secretary/Treasurer

Minutes of the NDWPCC Joint Board Meeting

February 6, 2008

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); and North Dakota Section of the American Water Works Association (NDAWWA) was held on February 6, 2008, in the Cutty Sark Room of the Seven Seas Inn, Mandan, N.D. The meeting was called to order at 10:31 a.m. by NDWPCC President Terry Rust. Copies of the agenda, and several agenda items, were provided to those in attendance. The following board members and guests were present: Chuck Abel, Lisa Ansley, Sarah BaeHurst, Brian Blotsky, Mike Brisben, David Bruschwein, Joe Ferguson, Bill Gefroh, Rick Gillund, Steve Himmelspach, Brett Jochim, Dan Jonasson, Miranda Kleven, Jack Long, Katie Luther, Seth Lynne, Kevin Martin, Karla Olson, Tim Paustian, Skip Rapp, Rustin Roteliuk, Terry Rust, Darin Schaeffer, Dean Sletten, Hazel Sletten, Gregg Stewart, Larry Thelen, Eric Volk, Richard Wanner and Greg Wavra.

President Rust called for a motion to dispense with the reading of the minutes from the October 24, 2007 Joint Board Meeting and the October 26, 2007 Business Meeting at the Holiday Inn of Fargo, and approve the minutes as published in the *Official Bulletin* (OB). Rick Gillund so moved, Skip Rapp seconded. There was no further discussion, and the motion carried.

President Rust next called for the Treasurer's Report. Mike Brisben reported that the Conference's total equity equaled $53,913.29 for the last quarter of 2007 and, along with a reimbursement request from the operator expense reimbursement grant for $9,000.25, the Conference had a net worth of $62,913.54. Bill Gefroh moved to approve the report as presented. Miranda Kleven seconded. There was no further discussion, and the motion carried.

President Rust called for the first item of old business. Katie Luther provided those in attendance two handouts and updated the joint board members on the proposed rate increase for OB advertising. Ms. Luther indicated that, at current rates, the Conference was losing approximately $4,500 per year, and that the proposed increase would allow the Conference to break even. Mr. Rapp asked if there were any concerns about losing advertisers by doubling rates. Ms. Luther indicated that the OB staff has been more active in recruiting advertisers. Mr. Brisben added that the Conference had the support from board members who are also advertisers. Ms. Luther also stated that the new rates were still very reasonable and considerably less than other publications, such as *North Dakota Water*. Mr. Gefroh asked when prices were last raised. Mr. Brisben indicated that rates had been the same for many years. Mr. Rapp recommended that the number of copies mailed to larger systems be reduced or electronic copies be made available in order to reduce costs. Ms. Luther noted that the latest issues could be found on the Municipal Facilities website. President Rust commented that the OB was professionally done, and that could bring in new advertisers. Lisa Ansley commended Ms. Luther for her fine work and felt the new rates were a bargain. Lisa Ansley made a motion to accept the recommended rate increase. Miranda Kleven seconded. President Rust called for a vote. The motion carried.

Continuing with old business, Hazel Sletten and Ms. Kleven provided additional information on the Grand Forks proposal to host the annual conference in 2012 or 2013. Further discussion followed with Mr. Brisben indicating that proposals had been received from the Days Inn of Dickinson and the International Inn of Minot. Mr. Brisben expressed concern with convention center size for the Dickinson proposal. Mr. Rapp indicated a proposed 25,000-square-foot convention center is expected to be added to the Days Inn. The proposal of Dickinson as a host city could be revisited once the facility is complete. President Rust shared his concern that travel to Dickinson or Grand Forks might be a factor in conference attendance. Ms. Ansley asked when a decision was needed. Larry Thelen indicated that if the joint boards wished to keep the October "window" open, a decision should be made during the meeting. Mr. Thelen further discussed the conference history, and he noted that the second and third weeks of October are better for those involved with planning. Chuck Abel recommended that the Minot offer be accepted and that Ms. Sletten and Ms. Kleven continue to work with the Alerus Center and CanadInn in order to bring the annual convention to Grand Forks in 2013. Ms. Sletten and

Ms. Kleven agreed to work with the planning of the 2013 convention. Seth Lynne moved to meet in Minot in 2012. Chuck Abel seconded. There was no further discussion. The motion carried.

Mr. Brisben reported on the upcoming spring water and wastewater operator training sessions. Mr. Brisben listed the dates scheduled and thanked the divisions of Municipal Facilities and Water Quality, North Dakota Rural Water, Ulteig Engineers, Northern Water Works Supply and AE2S for thier presentations.

President Rust called for any other old business. Hearing none, President Rust moved to new business. Mr. Brisben reported on conference attendance in Fargo. A total of 346 people preregistered and 371 attended. A total of 620 people attended the various business luncheons. In addition 307 attended the breakfast buffet, 185 the evening buffet and 223 the annual banquet. President Rust commented on the student and young professional activities, and Mr. Lynne indicated that the social was well attended.

President Rust provided the luncheon schedules for the 2008 conference with the NDAWWA meeting Wednesday, October 8, 2008; NDWEA Thursday, October 9, 2008; and NDCAPWA and NDWPCC sharing the joint meeting on Friday, October 10, 2008. President Rust also noted that NDAWWA Chairman Brett Jochim would be welcoming those in attendance prior to the Wednesday business meeting.

Next, President Rust called on Greg Wavra to report on the Water and Wastewater Agency Response Network (WARN). Mr. Wavra noted that a presentation, as well as other information, were provided at the Fargo Conference. Mr. Wavra stated that the WARN committee had drafted a mutual aid package and had contacted the League of Cities, as well as small and large municipalities, in order to gain their support. Mr. Wavra indicated the North Dakota group had viewed a tabletop presentation prepared by Texas and that they were collaborating with South Dakota on a combined network capable of crossing state lines. Mr. Wavra noted that a member from NDAWWA had volunteered to be on a state-wide committee and asked for volunteers from NDWEA and NDCAPWA. Mr. Wavra noted he had attended a national forum in Denver in January 2008 and would be meeting with the Department of Emergency Services.

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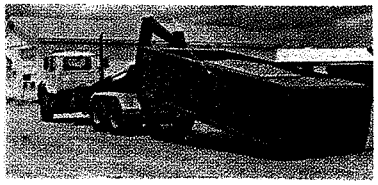

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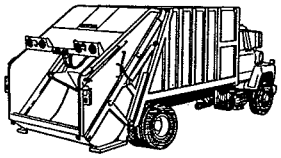

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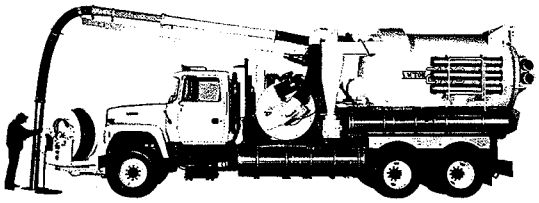

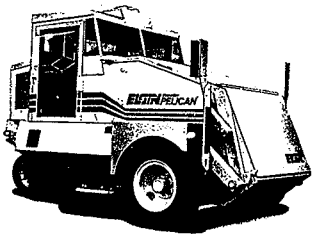

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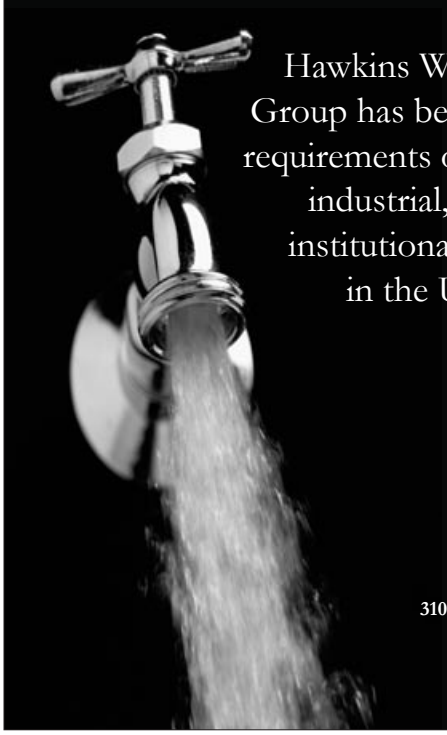

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Mr. Brisben requested that board members provide ideas on topics and presenters for the 2008 Conference, noting that he had several holdover topics from the 2007 Conference. President Rust continues to support the NDSU and UND student groups and encourages them to be more involved. President Rust also commented on Dr. Wei Lin and the NDSU student group's visit to China. Ms. Sletten noted there were two student projects on pretreatment modification for membranes and media comparison going on in Grand Forks. President Rust suggested a North Dakota video on excavation and line repair might be of interest.

Mr. Brisben noted that Keith Demke had contacted him about a pub-style trivia event after the Wednesday buffet in order to keep conference attendees around. Mr. Rapp commented that a casino night had been successful in the past. Ms. Ansley asked when the local arrangements committee would be meeting. Mr. Brisben indicated that he would like to meet sometime in April prior to the next joint board meeting. Ms. Ansley indicated that NDAWWA has some ideas for Wednesday night activities as well. Ms. Ansley suggested an ad hoc committee be formed to help coordinate conference activities.

President Rust called for any other new business. Mr. Gefroh questioned why the NDWPCC did not include the past-president on the Executive Committee. Ms. Ansley asked Mr. Gefroh whether the additional year's service would be for voting purposes or attendance at the joint board meetings. Mr. Gefroh felt that keeping the outgoing president on the committee would help with continuity, add experience and help in transition. Mr. Brisben noted a change in the by-laws would be needed in order to add another committee member. Jack Long suggested the joint boards make sure they want to amend the by-laws again and that the topic be revisited in May. President Rust tabled further discussion until the joint boards have the opportunity to consider Mr. Gefroh's recommendation.

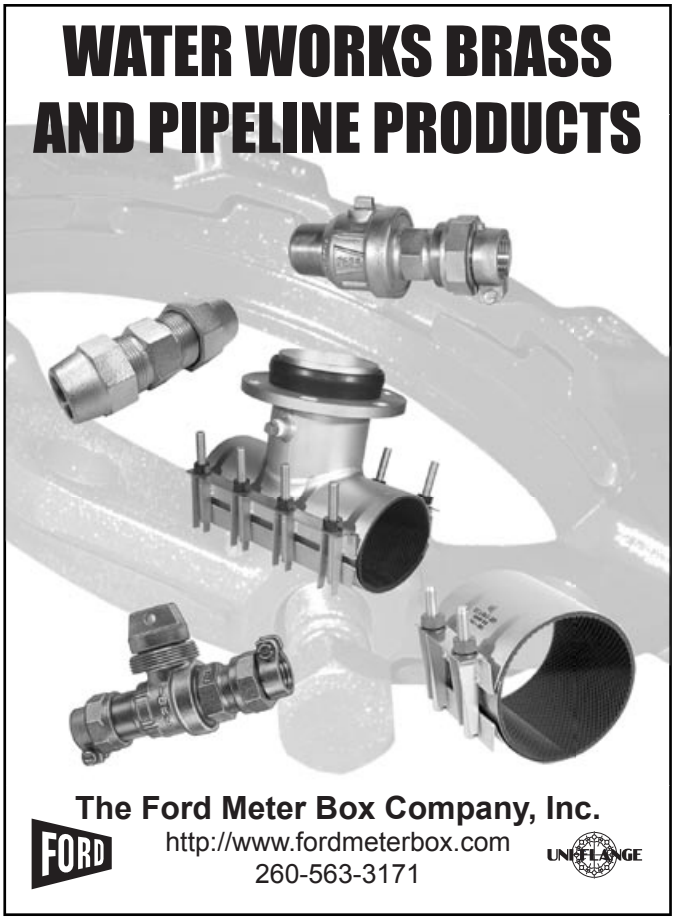
Continuing with new business, Mr. Gefroh inquired as to the voting body for conference scheduling and location. Mr. Thelen noted that these discussions regarding the annual conference were traditionally made by consensus of the joint boards arrived at during the winter and spring meetings. Ms. Ansley stated that the by-laws give the NDWPCC Executive Committee the authority and responsibility for scheduling the annual conference. Ms. Ansley also noted that input and discussion during the joint board

meetings generally results in a decision and a vote on the next location. Mr. Brisben noted that a change to include the Joint Boards would require another change to the by-laws and require a mailing to all NDWPCC members. Mr. Rapp asked if notification could be by email or through the OB. Mr. Brisben noted that such a change would also require a change to the by-laws. Mr. Brisben further commented that, unless those attending the joint board meetings were clearly divided, a vote by the NDWPCC Executive Committee would not be needed.

President Rust entertained a motion to adjourn. Lisa Ansley so moved. Karla Olson seconded. There was no further discussion, and the motion carried. The meeting adjourned at 11:25 a.m.

The NDAWWA can be thanked for the refreshments and noon luncheon.

Respectfully submitted,
Mike Brisben
Secretary/Treasurer



AWWA Management Institute Scheduled for September 2008
Advanced Management Institute Planned for October

The five-day Basic American Water Works Association (AWWA) Water Utility Management Institute will be presented in Salt Lake City, Utah, September 15-19, 2008. All sessions will be held at the Comfort Suites Hotel (near the airport) for AWWA members and water department personnel nationwide. This class brings together water company personnel from every region of the country (and Canada as well) in an atmosphere of learning and sharing important leadership principles. This affordable, top-notch training teaches practical, "real world" supervisory and management skills needed to be effective in today's workplace.

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- Day 1 - Foundations of Leadership
- Day 2 - The Leader's Role in Performance Management
- Day 3 – Managing Conflict
- Day 4 – Employee Selection
- Day 5 – The Leadership of Change

The Institute registration fee is $499.00.

An Advanced AWWA Water Utility Management Institute is scheduled at the same location the week of October 20-24, 2008. That schedule is as follows:

- Day 1 – Assessment Of Leadership Vision, Values and Strategy
- Day 2 – Teambuilding
- Day 3 – Employment Law for Managers
- Day 4 – Transformational Leadership and Vision Alignment
- Day 5 – Critical Thinking Skills for Problem Resolution and Innovation

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Minutes of the North Dakota Water Environment Association Executive Committee Meeting

February 6, 2008

The Executive Committee for the North Dakota Water Environment Association (NDWEA) met at the Seven Seas in Mandan, N.D. on February 6, 2008. Present were President Seth Lynne, Vice President Skip Rapp, Past President Richard Wanner, PWO Representative Terry Rust and Secretary/Treasurer Bill Gefroh. Also attending were Operations and Safety Committee member Steve Himmelspach and NDWEA member Karla Olson.

President Lynne called the meeting to order at 11:55 a.m. President Lynne entertained a motion to dispense with the reading of the minutes from the May 23, 2007 Executive Committee meeting and approve as published in the *Official Bulletin*. Terry Rust so moved. Richard Wanner seconded the motion, and the motion carried.

Bill Gefroh presented the Treasurer's Report, which reviewed in detail the receipts and expenses from October through December 2007. The NDWEA net worth, as recorded in the report, was $8,223.01, as compared to $10,109.97 last year at this time. President Lynne requested a motion to approve the report as presented. Richard Wanner so moved. Skip Rapp seconded the motion. There was no further discussion, and the motion carried. Bill Gefroh reported that the current NDWEA membership is at 142, compared to 107 this time last year.

Old Business: None

New Business:
Potential topics and speakers were discussed for the 2008 North Dakota Water and Pollution Control Conference (NDWPCC). A large number of topics were suggested such as: industrial pretreatment permitting with a panel discussion, odor control, sample collection, Casselton wastewater recycling project, emerging pollutants, Mandan fuel spill, disaster recovery at Northwood, Mandan biosolids, pumps, trenchless technology, pond-cleaning options, motivational speaking and water/wastewater infrastructure improvements in Iraq. Committee members will further investigate the topics, determine the availability and willingness of the suggested speakers, and report their findings at the next NDWEA meeting in May 2008.

The NDWEA will continue its support for the North Dakota Science Fair by providing awards and judges. A plaque and a $75 award will be presented to the best water quality project for both the junior and senior divisions. NDWEA may also provide travel expenses for a worthy project for one student (and his/her teacher) to compete nationally at the Stockholm Junior Water Prize competition in Orlando, Florida, June 19-21, 2008. NDWEA members were solicited by email to be judges for the 2008 science fair, and the names of the volunteers were forwarded to Frank Fish, the North Dakota Science Fair Awards Coordinator; and Marcus Friskop, North Dakota Science Fair Events Coordinator.

NDWEA Committee Members discussed the educational support for 2008. Terry Rust made a motion that NDWEA provide:

- $500 to the Gateway to Science in Bismarck
- $500 to the River Keepers in Fargo
- $100 to the Water Environment Research Foundation
- ~$300 for science fair plaques and awards
- ~$1200 to be used for transportation for a science fair student (and teacher) to compete for the national Stockholm Junior Water Prize
- $500 to the NDSU Student Chapter activity fund to be used for expenses incurred while attending the 2008 Water Environment Federation Technical Exhibition and Conference (WEFTEC) in Chicago, Illinois, to participate in the student design competition
- $2000 from WEF (Water Environment Federation) to NDWEA for the design competition award; to be transferred to the NDSU Student Chapter activity fund

Skip Rapp seconded the motion, and the motion carried.

NDWEA would like to present the Hatfield and Laboratory Analyst Excellence Award at the 2008 annual North Dakota Water and Pollution Control Conference (NDWPCC) banquet. The Hatfield and Laboratory Analyst Awards are WEF awards presented to an NDWEA member every three years. Individuals apply for the Laboratory Analyst Excellence Award. Mr. Gefroh was directed to solicit applications from the NDWEA membership for this award. The members on the awards committee will be requested to select an NDWEA member for the Hatfield award.

Information related to the Quarter Century Operator Club award will be available at the annual NDWPCC NDWEA tabletop display. Members who meet the criteria will be encouraged to apply to WEF for this award. The annual deadline for getting applications to WEF is July 1.

With no further business, the meeting adjourned at 2:05 p.m.

Respectfully submitted,
Bill Gefroh
NDWEA Secretary/Treasurer

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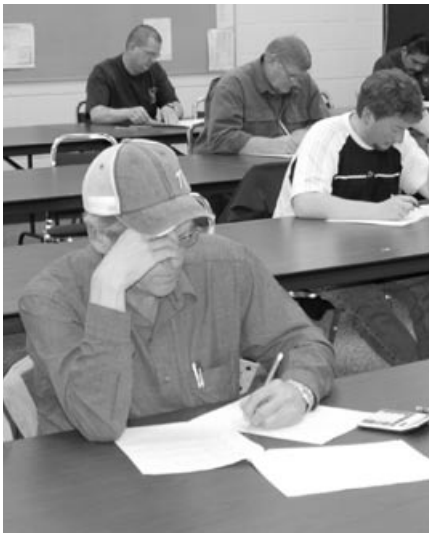
Operator Certification Exams Scheduled

The summer operator certification exam session will be held on Wednesday, July 30, 2008, at the Environmental Training Center located at 2369 East Main Avenue in Bismarck. Examination times will be from 8:00 a.m. to 4:00 p.m. To ensure adequate time for exams, testing must begin by 11:00 a.m. Please indicate time of arrival on exam application form. If you don't have a copy of the registration form, you can print one by visiting: http://www.ndhealth.gov/mf/forms/Operator_Certification_Application.pdf. Renewal fees must be paid prior to testing.

Please contact Craig Bartholomay at the North Dakota Department of Health at 701-328-6626 with any questions regarding operator certification and/or exams.



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Minutes of the Board of Trustees Meeting, North Dakota Section of AWWA

February 6, 2008

The winter meeting of the North Dakota Section of the American Water Works Association (AWWA) was held at the Seven Seas Inn of Mandan, N.D. on February 6, 2008. Present at the meeting were Chair Brett Jochim; Chair-elect Joe Ferguson; Director Jack Long; Trustees Duane Friesz, Tim Paustian, Dean Sletten, and Eric Volk; Secretary/Treasurer David Bruschwein; Assistant Secretary Brian Blotsky; and Assistant Treasure, Greg Wavra. Others attending the meeting were Sue Anderson, Miranda Kleven, Larry Thelen and Hazel Sletten.

The meeting was called to order by Mr. Jochim at 8:05 a.m.

The Secretary's Report was presented by Mr. Bruschwein. Mr. Long moved that the minutes of the October 24, 2007, Board Meeting be approved as published in the *Official Bulletin* (OB). Seconded by Mr. Sletten. Motion carried.

Mr. Wavra presented the Treasurer's Report. As of December 31, 2007, the section had an income of $32,120.18 and expenses of $21,037.63. The section has $40,162.46 in the checking and money market accounts. The section also has scholarship endowments and a reserve account that total $80,653.83. Mr. Sletten moved to accept the Treasurer's Report. Mr. Friesz seconded. Motion carried.

Committee Reports

Public Relations (PR) Committee

Ms. Hazel Sletten and Ms. Anderson discussed adding the PR committee to the list of committees that trustees rotate through to help keep PR an area of focus. They felt that there should be a more proactive approach in promoting events such as operator training, Drinking Water Week, water taste test, etc. It was felt that this would also increase memberships. Ms. Anderson, Mr. Bruschwein, Mr. Paustian, Mr. Thelen and Ms. Sletten volunteered to help with this.

Education and Research Committee

Ms. Kleven reported that Dustin Schultz and an operator from Southeast Water Users will judge at the science fair for AWWA in April. Ms. Kleven also discussed finishing the agenda for the surface water workshop to be held in Moorhead, Minn. from April 30 to May 2. Fliers will be sent out after the agenda is completed. Mr. Jochim suggested that the committee look at comments from the last workshop for ideas on improvement.

Water Utility Council

Ms. Kleven reported that Jason Sorenson and Nate Weisenburger will attend the AWWA Fly-In in Washington, DC. Mr. Jochim asked that they inform the delegation of AWWA's support for the state selling bonds to provide the required 20 percent match for the Drinking Water State Revolving Fund (DWSRF) program.

Water for People (WFP)

Mr. Bruschwein reported the WFP raffle raised $1,250 at the 2007 North Dakota Water and Pollution Control Conference (NDWPCC), golf sponsorship raised $3,000, $225 from mulligans, for a total of $4,475. This is in addition to the $1,000 that the section donated. This met the section's goal of obtaining $5,000 for WFP.

Membership

Mr. Sletten reported that membership is at 248, which is down from the previous year. He said that there were a few members that were in the process of renewing, which would bring this number up slightly. Mr. Wavra stated that the section was not able to obtain a booth at the Energy Conference. Discussions also focused on the success of the young professionals social in Fargo and how a similar event in other cities could increase membership. It was felt that a social off-site in Bismarck and Minot would compliment the young professionals social held in Fargo. Adding an AWWA flier to the conference registration also was discussed.

Director's Report

Mr. Long highlighted the mid-winter board meeting held in San Diego. Mr. Long stated that, financially, AWWA is doing a lot better. Reserves were expected to be at 50 percent of expenses for 2008. Health insurance is becoming a big issue because of the increasing costs. Also discussed was a $20,000 enticement allotment for small sections to hire staff. One of the problems with this is that the sections would need to compete for the allotments from year to year. New board member Gary Zimmerman unanimously

elected, and was also introduced. Gary has no water experience but has experience with Fortune 500 companies. Mr. Zimmerman's focus on the business side, will benefit the AWWA.

Mr. Thelen presented the 2008 budget. He noted that the proposed budget leaves a deficit. Mr. Long moved to approve the 2008 budget, and the motion was seconded by Mr. Sletten. It was noted that the income for satellite conferences was no longer coming in, due to their discontinuation. The board then voted to disapprove the motion. Mr. Thelen made slight changes to the budget. Mr. Long then moved to approve the 2008 budget with the corrections that Mr. Thelen made. Mr. Paustian seconded. Motion carried. Mr. Thelen indicated that he would email the revised budget.

Mr. Wavra explained how the Water and Wastewater Agency Response Network (WARN) Program is progressing. Ms. Anderson was appointed the AWWA committee member. There is an initial mutual aid agreement that has been drafted and is currently being reviewed. A state-wide committee should be formed by March.

Mr. Long reported that he presented Jack Hoffbuhr a bottle of wine from the section at his retirement. The section received a book with copies of all of Jack's "Waterscape" articles. The section also received the book "7 Measures of Success." Discussion then centered on other ways of honoring Jack's services. The idea of making a donation in Jack's name for WFP was brought up.

Chair Jochim appointed the following committees;

- Trustee Nominating - Mr. Sletten (chair), Mr. Jochim, and Mr. Friesz
- Fuller Award - Mr. Vein (chair), Mr. Gillund and Ms. Ansley
- Operator Meritorious - Mr. Ferguson (chair), Mr. Volk and Mr. Blotsky
- Director Nominating - Mr. Long, Mr. Vein and Mr. Bullinger (The new director is elected at the annual conference.)

Mr. Bruschwein reported the regional meeting of section officers (RMSO) will be held in Dearborn, Mich. this year on May 16 and 17. Mr. Ferguson, Mr. Friesz, Mr. Jochim and Mr. Paustian expressed an interest in attending.

Mr. Ferguson and Mr. Andrew Job were two applicants for the Management Institute Scholarship this year. Mr. Ferguson withdrew his application, and Mr. Job was awarded the scholarship.

The 2008 Annual Conference and Exposition (ACE) is in Atlanta. Mr. Ferguson will go as the section's incoming chair and use the complementary registration provided by the association. Mr. Vein will attend as the Section's Fuller award winner.

Mr. Ferguson moved to donate $1,000 to WFP, $250 to the AWWA Research Foundation, $1,000 to the Gateway to Science Center, and $750 to the Dakota Science Center (the same as last year). The motion was seconded by Mr. Long, and the motion passed.

Mr. Bruschwein reported that the City of Fargo has been an AWWA member for 50 years. The PR committee will post this on the section's website.

Mr. Long moved to make a $500 contribution to WFP under Jack Hoffbuhr's name. Mr. Ferguson seconded. Motion carried.

Discussions again focused on an off-site social to increase membership for the section. The board felt that including other organizations in the social would not increase the section's membership. It was felt that the section should spearhead the social.

The board considered having a motivational speaker at the annual conference. Members felt that many individuals left last year during the speaker's presentation. Discussions revolved around changing the time of the speaker to not having a speaker at all.

The board was reminded that ideas for topics and speakers should be discussed well ahead of the annual conference. Ms. Sletten said many of the topics at the ACE could be used at the annual conference. The section will again find the presenters for one of the afternoon sessions.

Mr. Paustian moved to adjourn. Mr. Friesz seconded.

The meeting was adjourned at 10:15 a.m.

Respectfully submitted,
Brian Blotsky
Assistant Secretary/Treasurer

Minutes of the North Dakota Water Environment Association Executive Committee Meeting

May 21, 2008

The Executive Committee for the North Dakota Water Environment Association (NDWEA) met at the Seven Seas in Mandan, N.D. on May 21, 2008. Present were President Seth Lynne, Vice President Skip Rapp, Past President Richard Wanner, PWO Representative Terry Rust and Secretary/Treasurer Bill Gefroh. Also attending were NDWEA members Gary Bracht and Karla Olson.

President Lynne called the meeting to order at 11:10 a.m. The minutes of the meeting held on February 6, 2008, were distributed via email to the NDWEA Executive Committee members. President Lynne requested a motion to dispense with the reading of the minutes and approve the minutes as distributed. Terry Rust so moved, and Richard Wanner seconded the motion. There was no discussion, and the motion carried.

Bill Gefroh presented the Treasurer's Report, which reviewed in detail all the receipts and expenses from January 2008 through April 2008. The NDWEA net worth as recorded in the report was $6,178.81 as compared to $9,037.28 last year at this time. President Lynne requested a motion to approve the report as presented. Terry Rust so moved, Skip Rapp seconded the motion, and the motion carried. Some of the decrease in net worth is because the recent operator-training share has not been deposited into the NDWEA's checking account. NDWEA has seen a dramatic increase in its student memberships and NDWEA pays half of these membership fees.

Bill Gefroh reported that the current NDWEA membership is at 139, compared to 122 this time last year. The NDWEA student membership is currently at 36, compared to 23 in 2007 and seven in 2006. As indicated in a recent email from Eric Dodds, "Engaging student and young professionals is one of the more common challenges facing other WEF Member Associations (based on presentations at WEFMAX events). We're fortunate that we have such an enthusiastic and active student group in North Dakota."

The NDWEA provided monetary support for the NDSU student chapter field trips on April 4 and 5, 2008 that were in Bismarck and Mandan. Eighteen student chapter members toured the Mandan water plant, wastewater plant and the Tesoro refinery; and the Bismarck water plant and wastewater plant. The North Dakota American Water Works Association, North Dakota Chapter of the American Public Works Association and NDWEA sponsored the event. NDWEA contributed $275 toward the student chapter tour. On March 13, 2008, Eric Dodds made a motion by email to the NDWEA Executive Committee members to approve $275 for the NDSU students to travel and tour the Bismarck/Mandan area facilities. Bill Gefroh seconded the motion, and the motion passed. NDWEA would like to thank Deon Stockert who arranged the tours, the facility tour guides and the speakers at the April 4 luncheon at the Bismarck Public Works Department. Mr. Stockert indicated that the NDSU student tours of the Bismarck/Mandan/Tesoro plants were a huge success; the students expressed they would like to make this trip every year.

Old Business:

Potential topics and speakers that were discussed for the 2008 North Dakota Water and Pollution Control Conference included:

- Industrial Pretreatment with Panel Discussion - Terry Rust - West Fargo; Gary Bracht and Jeff Roerick - North Dakota Department of Health (NDDH); and Bill Gefroh - Bismarck
- Sample Collection - Bill Gefroh
- Fargo Wastewater Reuse Project - Bruce Grubb - Fargo
- Emerging Pollutants - Mike Meyer - USGS
- ND WARN Program and Northwood case study - Greg Wavra - NDDH and Skip Rapp - Dickinson
- Mandan Fuel Spill - Scott Radig - NDDH and Jim Neubauer - Mandan
- Mandan Biosolids - Seth Lynne - Ulteig Engineers and Steve Himmelspach - Mandan
- Pump Hydraulics - Skip Rapp, Richard Wanner - Bismarck, and Mike Berg - Ulteig Engineers
- Trenchless Technologies - Jeff Janiksela - Infratec and Skip Rapp
- Pond Cleaning Options - Mitch Okerstrom - Fergus Power Pump; Seth Lynne and Karla Olson - Ulteig Engineers
- Water Infrastructure Improvements in Iraq - North Dakota National Guard

In 2008, NDWEA provided sponsorship for the North Dakota State Science and Engineering Fair

(NDSSEF). Two awards were given for outstanding projects related to water quality. The water projects awards were presented to Andrew Dosch from Fargo Oak Grove Jr. High School (junior division) and Ben Sun from Grand Forks Red River High School (senior division). The awards consisted of a plaque and a $75 cash prize for each recipient.

NDWEA judges selected Patrick Gulan to represent North Dakota at the Stockholm Junior Water Prize, the most prestigious youth award for a water-related science project. Mr. Gulan is from Hankinson High School. The title of his project is "An Investigation into the Water Quality of Regional Lakes." The national competition will be held in Orlando, Florida June 19-21, 2008. NDWEA will reimburse WEF for the transportation costs for Mr. Gulan and his teacher. Thanks to Wei Lin, Eric Dodds and members of the NDSU student chapter for judging at the NDSSEF.

In 2008, NDWEA would like to present the Hatfield and Lab Analyst Excellence Award. NDWEA members will be solicited to apply for the Lab Analyst Excellence Award. The awards committee members will select an NDWEA member for the Hatfield Award.

New Business:
The NDSU student chapter plans to compete at the design competition at the Water Environment Federation Technical Exhibition and Conference (WEFTEC) in 2008. This year WEFTEC will be held October 18–22 in Chicago, Ill. We wish them the best of luck.

With no further business, the meeting adjourned at 1:30 p.m.

Respectfully submitted,
Bill Gefroh
NDWEA Secretary/Treasurer

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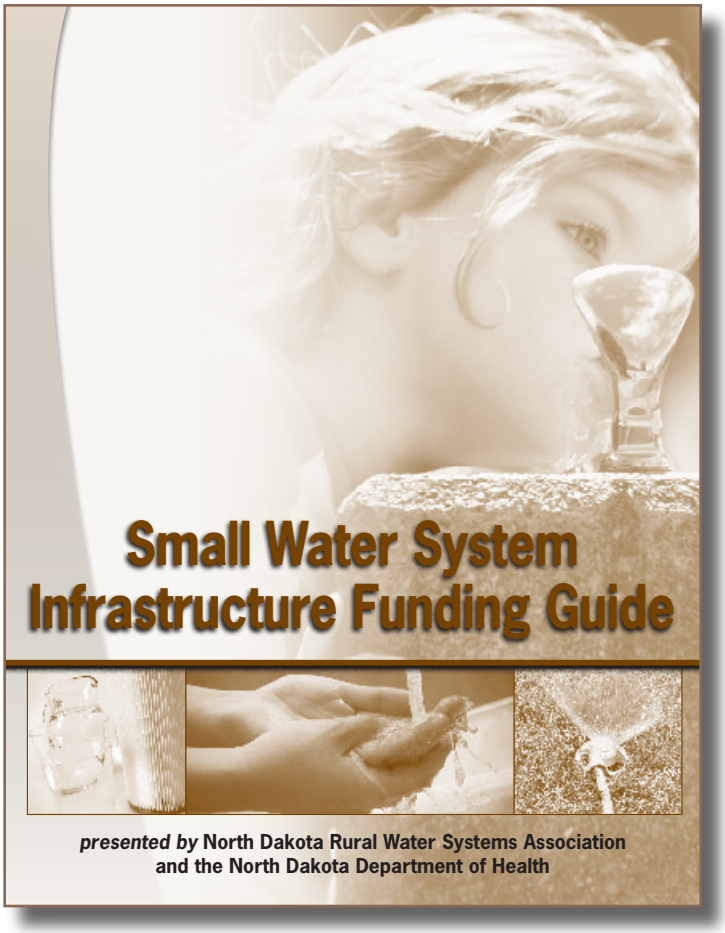
Small Water System Infrastructure Funding Guide Published



Providing safe, clean drinking water to the more than 250 million people served by approximately 54,000 community water systems in the United States is an important goal of federal, state and local officials. While our drinking water is among the safest in the world, many public water systems must make significant infrastructure improvements in the near future to continue supplying safe drinking water to their customers.

A 2003 Environmental Protection Agency survey of drinking water infrastructure identified a 20-year need of more than $276 billion to adequately make the needed improvements. Approximately $34 billion of this total is for small systems which serve up to 3,300 people.

Meeting the demands of repairing and replacing aging infrastructure is taking a toll on many small utilities. Many public water systems, particularly small systems, have difficulty obtaining affordable financing for infrastructure improvements. Capital costs for new construction and upgrades can be immense. Replacing obsolete service lines, upgrading or replacement of treatment facilities, or extending service to new areas requires careful planning and a thorough consideration of potential funding opportunities.

Recognizing that acquiring funding for needed infrastructure is time consuming and complex, the North Dakota Department of Health (NDDH), in conjunction with the North Dakota Rural Water Systems Association (NDRWSA), has compiled information in a booklet to help small systems meet the challenge of obtaining the necessary funding to complete their projects.

The booklet will help the reader understand the following:

- The various funding sources available.
- The rules, regulations, and application processes of funding sources.
- How to get on the project priority list for construction.
- Interest rates and special concerns for disadvantaged communities.
- How the various funding entities are working together to put affordable projects together for small and rural communities.

Every community water system should have received a copy of the Small Water System Infrastructure Funding Guide. Please contact either the NDDH or the NDRWSA with any questions. Extra copies are available for $10 from the NDRWSA.

North Dakota Rural Water Systems Association
2718 Gateway Avenue, Suite #201
Bismarck, ND 58503-0585
701-258-9249 or 800-349-6951
Fax: 701-258-5002
email: ndrw@ndrw.org
http://www.ndrw.org

North Dakota Department of Health
Division of Municipal Facilities
918 East Divide Avenue, 3rd Floor
Bismarck, ND 58501-1947
Phone: 701.328.5211
Fax: 701.328.5200
http://www.health.state.nd.us/MF/

Governor Hoeven Proclaims Drinking Water Week

North Dakotans Encouraged To Protect and Conserve the State's Waters

Governor John Hoeven has declared May 4-10, 2008, as Drinking Water Week in North Dakota. This annual event is dedicated to the belief that North Dakotans should have a safe and dependable supply of water, both now and in the future. Citizens are called upon to help protect the state's source waters from pollution.

Drinking Water Week recognizes the importance of water source protection and conservation, as well as the value, importance and fragility of the state's water resources.

Organizations involved in the promotion of Drinking Water Week include the North Dakota Department of Health, the North Dakota Section of the American Water Works Association, the North Dakota Water and Pollution Control Conference, the North Dakota Chapter of the American Public Works Association and the North Dakota Rural Water Systems Association.

Representatives at the signing of the Governor's Proclamation of Drinking Water Week were: Front row (l to r): Terry Rust, North Dakota Water and Pollution Control Conference; Governor John Hoeven; Joe LaFave, North Dakota Rural Water Systems Association . Back row (l to r): Terry Dwelle M.D., State Health Officer, North Dakota Department of Health; Kevin Bucholz, North Dakota Chapter of the American Public Works Association; and Brett Jochim, North Dakota Section of the American Water Works Association.

PROCLAMATION
DRINKING WATER WEEK
May 4-10, 2008

WHEREAS, the citizens of North Dakota recognize that our health, comfort and standards of living depend on an ample supply of safe, high-quality drinking water; and

WHEREAS, water greatly influences our everyday lives through its uses in public health, economic development, power production, agriculture, recreation, and business and industries; and

WHEREAS, many dedicated men and women have made significant contributions in developing, operating, and maintaining our public water systems; and

WHEREAS, what we do today to protect our drinking water will affect the prosperity and well-being of future generations; and

WHEREAS, the problems and challenges of meeting future water supply needs are many and growing in complexity; and

WHEREAS, North Dakotans are encouraged to recognize this precious resource and to help protect our source waters from pollution, to practice water conservation, to become involved in local water issues and to plan for its efficient use.

NOW, THEREFORE, as the Governor of the State of North Dakota, I do hereby proclaim May 4-10, 2008, as **DRINKING WATER WEEK** in the state of North Dakota.

John Hoeven
Governor

Governor Hoeven Proclaims Public Works Week

Governor John Hoeven has proclaimed May 18-24, 2008, as Public Works Week in North Dakota.

Public Works Week is observed annually to celebrate the contributions of public works professionals, including those who manage community water, sewer, public transportation, and refuse-removal systems, as well as those who are responsible for maintaining public buildings and grounds.

"We value our communities and the role public works professionals play in keeping them safe and functioning smoothly," Hoeven said. "Public works professionals maintain and improve the systems and services vital to a community's health, safety and comfort."

For more information about Public Works Week, contact Chuck Abel, executive secretary of the North Dakota Chapter of the American Public Works Association, at 701.328.5207.

Representatives at the signing of the Governor's Proclamation of Public Works Week were (l to r): Chuck Abel, Executive Secretary, North Dakota Chapter of the American Public Works Association; Governor John Hoeven; and Kevin Bucholz, President, North Dakota of the Chapter American Public Works Association.

PROCLAMATION
PUBLIC WORKS WEEK
May 18-24, 2008

WHEREAS, public works infrastructure, facilities and services are of vital importance to the health, safety and well-being of the people of North Dakota; and

WHEREAS, it is important for the citizens and civic leaders of this state to gain knowledge of and to maintain a progressive interest in the public works needs and programs of their respective communities; and

WHEREAS, public works professionals, engineers and administrators are responsible for and must design, build, operate and maintain the transportation, water supply, sewage and refuse disposal systems, public buildings, and other structures and facilities essential to serving our citizens; and

WHEREAS, North Dakota's public works professionals, engineers and administrators should be recognized for their dedication and contributions to the growth, development and stability of our state.

NOW, THEREFORE, as Governor of the State of North Dakota, I do hereby proclaim May 18-24, 2008, **PUBLIC WORKS WEEK** in the state of North Dakota.

John Hoeven
Governor

Fluoridation Facts

- Thousands of research studies and 60 years of experience have shown that water fluoridation is safe, effective and the best method of improving oral health in a community.

- Fluoride is naturally present in all water sources, even the ocean. Water fluoridation is the controlled adjustment of the natural fluoride concentration in a public water supply up to a level recommended for preventing tooth decay.

- Water fluoridation is recognized as one of the 10 major public health achievements of the 20th century by the Centers for Disease Control and Prevention (CDC).

- Although tooth decay is largely preventable, it remains the most common chronic disease of children aged 5 to 17 years. In the U.S., tooth decay affects:
  - 1 out of 4 elementary school children
  - 2 out of 3 adolescents
  - 9 out of 10 adults

- Both children and adults benefit from water fluoridation. Studies have demonstrated that people in communities with fluoridated water have 20 to 40 percent less tooth decay than those in communities without fluoridated water.

- In 2002, the CDC estimated that 66 percent of U.S. residents who receive their water from community water systems, or 170 million people, had access to fluoridated water. The Healthy People 2010 goal is to increase this to 75 percent. In North Dakota, 97.6 percent of the population has access to fluoridated water, resulting in better oral health, less dental pain, and fewer cavities for hundreds of thousands of people living in North Dakota.

- The cost to fluoridate water for the lifetime of one person is less than the cost to treat one cavity.

- Every dollar spent on fluoridation saves $38 in avoided dental bills.

- For North Dakota, the most benefit to oral health is achieved when waters are fluoridated to 1.2 milligrams per liter (mg/L).

- **Optimal fluoridation is achieved when the fluoride level in potable water is maintained in the control range of 1.0 to 1.7 mg/L or parts per million.**

- One part per million means one part of fluoride is diluted in a million parts of water which might be compared to:
  - 1 inch in 16 miles
  - 1 minute in 2 years
  - 1 cent in $10,000
  - the length of one pickup truck on a road from New York to California

- The benefits of fluoridation are quickly lost when fluoride levels drop below the optimal range. The U.S. Environmental Protection Agency (EPA) has set both the maximum contaminant level (MCL) and the maximum contaminant level goal (MCLG) for fluoride at 4 mg/L. In addition, the secondary maximum contaminant level goal (SMCLG) of 2 mg/L has been set for fluoride to minimize potential dental fluorosis (staining of the teeth).

- **Monitor water fluoride levels daily to ensure optimal fluoridation, and adjust feed rates as necessary.**

- **Send split samples monthly to the state health laboratory to verify accuracy in measuring fluoride levels.**

For questions on the Fluoridation Program in North Dakota or the health effects of fluoride, contact the Division of Municipal Facilities, 701-328-5258.

The following websites are good sources of information about fluoridation:
- American Dental Association: www.ada.org/public/topics/fluoride/index.asp
- Centers for Disease Control and Prevention: www.cdc.gov/OralHealth/topics/fluoridation.htm
- American Water Works Association: http://awwa.org/Advocacy/pressroom/fluoride.cfm

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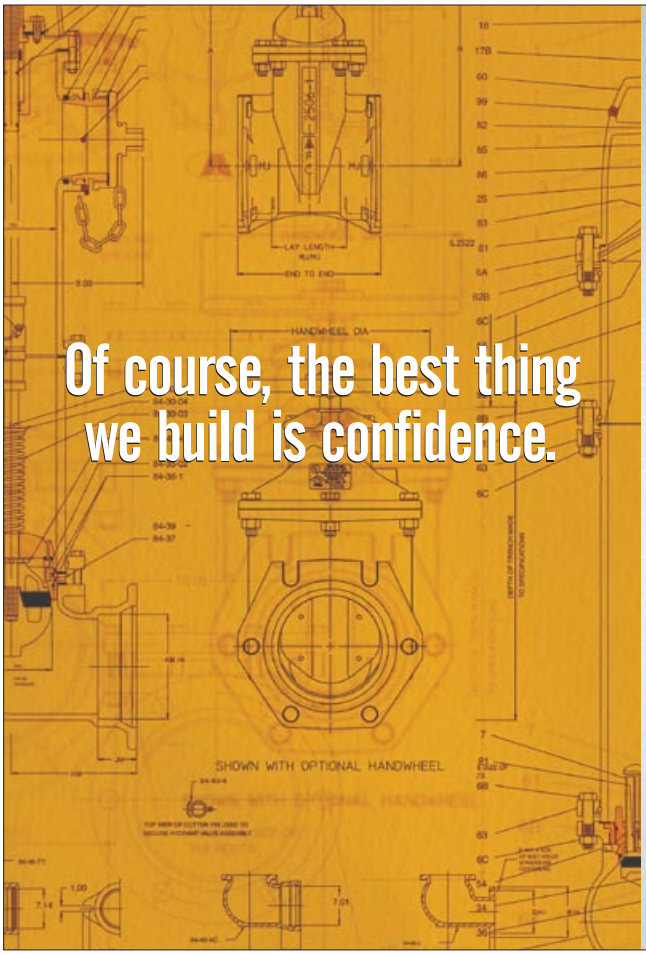

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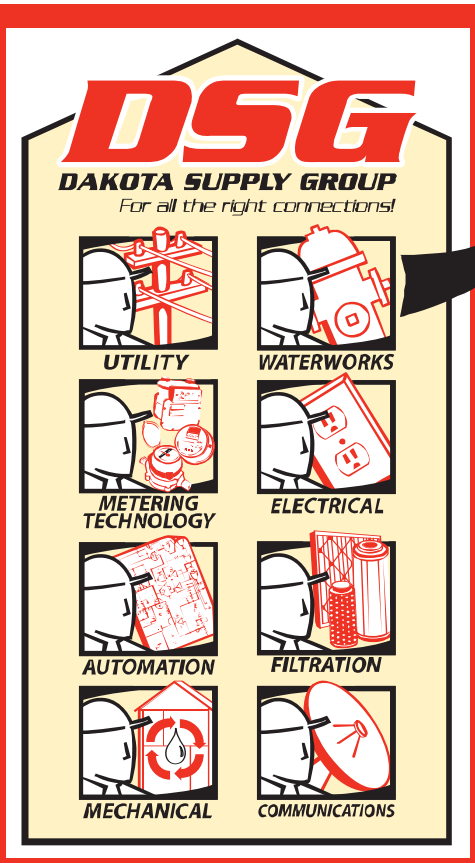

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HOBAS "Gravi-Force" Project Provides Lowest Cost

The city of Lincoln, Neb. has outgrown infrastructure systems for critical areas of the community but has developed a plan to assure that the city is well prepared to meet wastewater service needs when they occur.

"Gravi-Force"
HDR, an engineering and consulting firm with offices in Lincoln, designed a creative solution to construct a "gravi-force" main to achieve the full range of capacity with a single cost-effective project. A single gravity outfall sewer, along with the existing sewer, could meet existing flow capacity requirements. In the future, this new 36-inch gravity sewer main would be surcharged in keeping with the "gravi-force" concept. This would increase the capacity to the levels necessary to meet future requirements.

In addition, the "gravi-force" concept optimizes construction costs. The design is a gravity sewer system sized for near-term capacity that can be pressurized in the future to function as a force main. Scott Aurit of HDR said, "We can achieve a capacity sufficient for the area's requirements after build-out, when we operate it in the 'force main' mode."

There were restraints on the design slope of the sewer and therefore field control of grade was critical.

Only Pressure-Rated Options
The agency considered only pressure-rated products for the line, which would ultimately operate as a low-head force main system. The installation contractor, Roloff Construction Company of Omaha, Neb., chose HOBAS because of its overall economic advantages, the long 20-foot joint lengths and its simple gasket-sealed joint.

"On a direct bury project like this one, we needed a simple slip joint," said Monty Habrock, a first-time HOBAS PIPE installer and project superintendent with Roloff. "The air test held so well that we decided to plug the manholes and test up to 2,000 linear feet at a time, and it never dropped even a pound," Habrock added. The entire line was pressure tested to 6 psi for duration of two hours without a single leak or pressure drop. "HOBAS field service personnel contacted us several times during the job to offer assistance, and they visited our job site, but we never needed their help," admitted Habrock.

This splitter is one of two structures necessary for flow control.

The project was completed within the budget the city set for the first sewer project, thus the city received a 50-year solution for the cost of one project versus the planned two projects. HOBAS PIPE is available from 18-inch to 110-inch diameter for pressure and non-pressure applications. HOBAS PIPE USA (800) 856-7473.

The design used HOBAS Tbase manholes with pressure tight lids.

North Dakota Project Wins 2008 APWA National Award

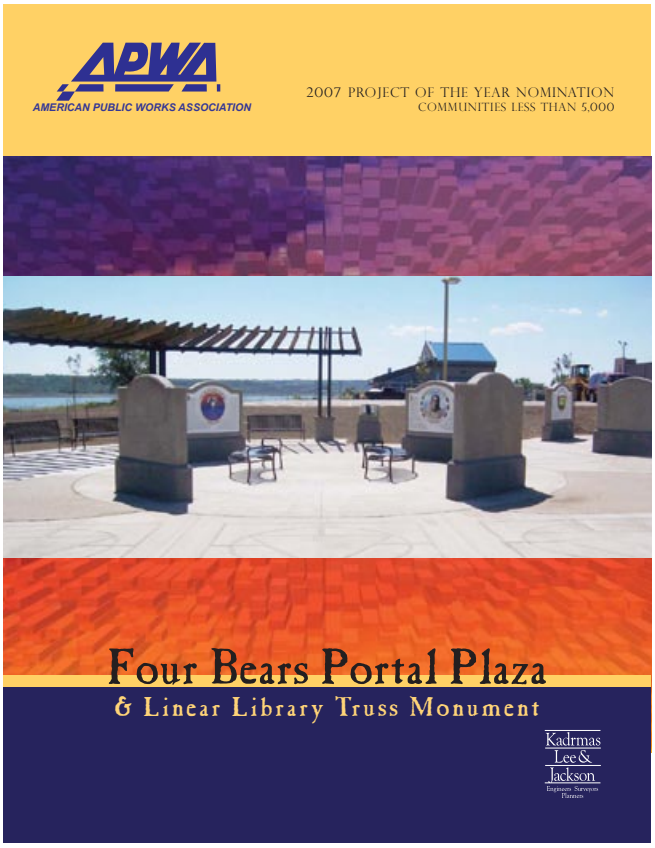
The Four Bears Portal Plaza & Linear Library Truss Monument has been selected as one of the American Public Works Association's (APWA) Public Works Projects of the Year for 2008. The project was eligible for this national award after winning in the small communities category in the North Dakota competition in 2007.

Four Bears Portal Plaza & Linear Library Truss Monument is 2008 APWA national award winner.

The plaza and monument are an extension of the Four Bears Bridge in New Town, N.D. The Four Bears Bridge is the longest bridge in North Dakota, spanning 4,500 feet across Lake Sakakawea. Kadrmas, Lee & Jackson, Inc. (KL&J) was selected by the North Dakota Department of Transportation (NDDOT) to coordinate the project. M-Squared designed the 22 display panels and Industrial Builders did the construction.

Because the original Four Bears Bridge was listed on the National Register of Historic Places, construction of the new bridge required preservation of the two entry portals of the 1934 bridge's steel through-truss superstructure. The Mandan, Hidatsa and Arikara Nation is represented symbolically by three interlocking circles in a triangular array, with each circle incorporating four cast-in-place concrete monuments displaying interpretive panels. The result is a beautiful plaza with cultural icon symbols, benches and shaded areas that harmonize with the new concrete bridge design and adjacent natural land forms. The high degree of craftsmanship required to construct the Portal Plaza is an intentional reflection of the local culture's tradition of artistry.

The award will be presented to the NDDOT, KL&J and Industrial Builders at the APWA annual awards recognition ceremony, held in conjunction with the 2008 International Public Works Congress and Exposition in New Orleans, Louisiana on August 18, 2008. The Four Bears Portal Plaza & Linear Library Truss Monument will be featured in the July issue of the *APWA Reporter.* Anyone interested can read the issue online at www.apwa.net and select "Reporter" on the website tool bar.



A view of the finished plaza and one of the 1934 entry portals.

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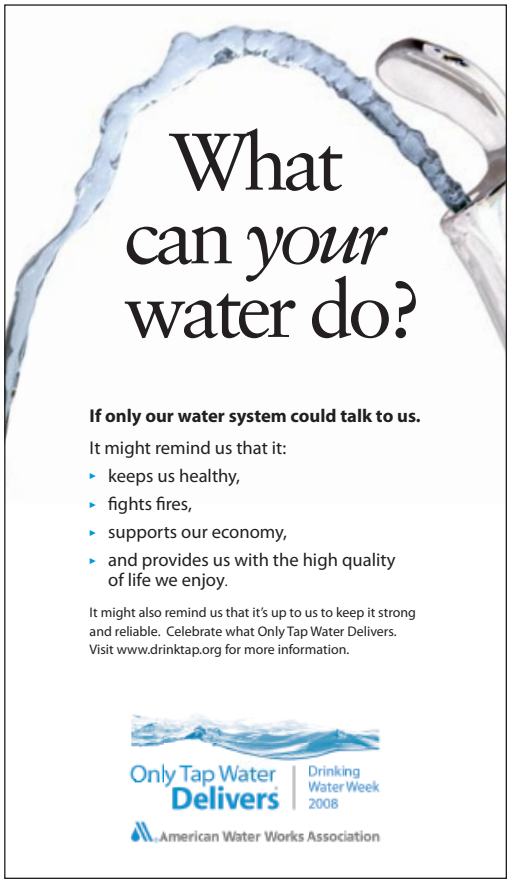
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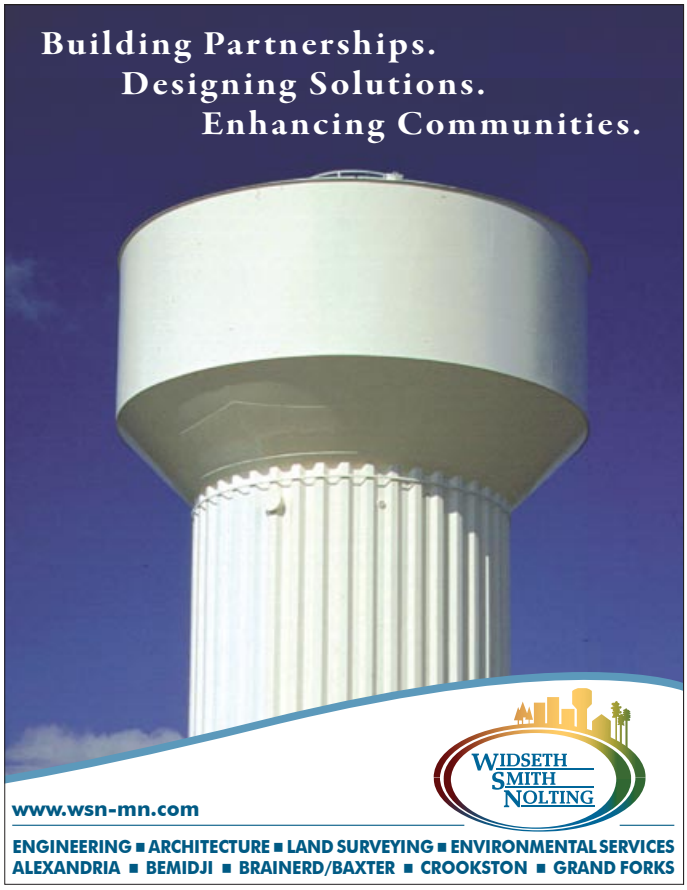
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Lead and Copper Rule: Corrosion Control Strategies

Brett Jochim and Laith Hintz, Advanced Engineering and Environmental Services, Inc. (AE2S)

Introduction

The Lead and Copper Rule (LCR) has undergone several revisions and updates since it was first published in 1991. While the overall goals of the rule have not changed (optimize lead and copper corrosion control treatment, monitor tap water levels, rule out source water as source of lead, and public education), new revisions published in 2007 make this a timely opportunity for a review of LCR and corrosion control fundamentals.

Lead and Copper, Water and Corrosion

There are two basic prerequisites for corrosion that are of concern for a water purveyor with respect to the LCR. First, water exhibiting a potentially corrosive nature must be supplied, and second, a source of lead or copper must be in contact with the water (assuming the source water contains no elevated levels of these contaminants). Sources of lead and copper can commonly be found in service lines and consumer plumbing. The types of corrosion associated with this scenario can include galvanic corrosion, pitting or non-uniform corrosion, crevice or localized corrosion, biological corrosion and physical corrosion. The degree of corrosion is a function of the interaction between the type of conduit material(s) and the water quality characteristics specific to the water flowing in the conduit. The thermodynamic basis and kinetic factors that affect the rate of corrosion can be identified in terms of various water-related properties and electrochemical reactions. These properties are classified into three basic categories: chemical characteristics (pH, alkalinity, etc.); physical characteristics (temperature and velocity); and biological characteristics (species and activity). Note that these characteristics are system-specific and can vary widely between systems.

Corrosion Control Treatment Alternatives

Because water quality and the resulting water corrosivity play such critical roles in promoting or inhibiting corrosion, optimal corrosion treatment techniques and strategies generally focus first on the modification of water quality parameters. The choice of modification depends on the specific characteristics of each individual water type; however, at least one of three water quality adjustments can usually be utilized. These water quality adjustments include pH/alkalinity adjustment, calcium adjustment and the addition of chemical corrosion inhibitors (phosphate- or silicate-based) as outlined in Table 1. The goal of these modifications is to inhibit lead and copper dissolution, which can be characterized by two general approaches.

The first approach causes the conduit material and the water to interact in such a way that metal compounds are formed on the interior pipe surface, creating a film of less soluble material. The second approach results in a precipitate-forming tendency of the water, which deposits onto the pipe wall to create a protective coating. The difference in these two approaches is the mechanism by which the protective film is formed. In the first, the mechanism is the passivation of the pipe material itself through the formation of a less soluble metal compound, usually a metal carbonate or phosphate, which adheres to the pipe wall. In the second, insoluble compounds are formed by adjusting the water chemistry to cause the precipitation of a protective barrier compound onto the pipe wall. The success of this method is dependent on the ability to form a precipitate in the water column and the characteristics of the deposit on the pipe wall. The most effective corrosion control strategy may be some combination of these two mechanisms.

> The goal of these modifications is to inhibit lead and copper dissolution.

It is important to note that modifications to water quality parameters can have unintended consequences and must be carefully evaluated prior to any changes in treatment. Unintended consequences may include conflicting strategies for regulatory compliance (e.g., increase in pH lowers lead solubility, but has negative impacts on disinfectant inactivation and required contact time), disruption of existing system coatings, impacts to other treatment processes, excessive precipitation, and the need for increased operator attention.

Systems that continue to exceed the lead action levels after implementing optimal corrosion control treatment and/or source water treatment must replace those lead service lines contributing in excess of the

action level to the total tap water lead concentrations. Under the provisions of the LCR, public water systems must replace 7 percent of these service lines each year, or demonstrate that they do not contribute more than the action level of lead to drinking water at the tap. It must replace the entire line, unless it can show that it does not control the entire lead line. Further, it must offer to replace the owner's portions of the service line at the owner's expense.

Corrosion Control Alternative Evaluation Process
An optimum corrosion control strategy for a particular system can be determined based on the following evaluation process:

- Establish Goals: Identify and establish goals for the corrosion control strategy. While the primary goal is compliance with LCR and other drinking water standards, secondary goals are system specific and may include improving water quality, reducing customer complaints, minimizing disturbance to existing distribution system coatings, or developing compatible treatments for changing sources of supply or water quality.

- Review Available Data: Data may include existing LCR sampling data, flushing/sampling reports, customer complaints, informal surveys of area plumbers, inspection records of distribution system repairs or replacements, or findings from similar systems.

- Characterize Existing Water Quality: It is important to have an accurate and sufficient quantity of data, including pH, alkalinity, hardness, chlorine, chloride, sulfate, dissolved oxygen, hydrogen sulfide and total dissolved solids. Note that water treatment changes for LCR compliance will likely impact compliance with other regulations, and this should be carefully considered prior to any changes.

- Identify and Screen Available Options: The water quality data collected can be used to determine the stability of the water and precipitation potential. *The Revised Guidance Manual for Selecting Lead and Copper Control Strategies* – USEPA (EPA-816-R-03-001), March 2003, includes flow charts that can be used in conjunction with water

Table 1. Summary of Corrosion Control Strategies (LCR Guidance Manual, AWWA September 1992)

Control Mechanism	→	Passivation		Precipitation
Treatment Approach	→	pH/Alkalinity Adjustment	Corrosion Inhibitor	Calcium Adjustment
Key Water Quality Parameters	→	pH Alkalinity, TDS, Temperature	pH. Alkalinity, Metals, Hardness, Temperature	Calcium, pH, Alkalinity, TDS, Temperature
Appropriate Chemical Feed Systems	→	Lime Soda Ash Sodium Bicarbonate Caustic Soda Carbon Dioxide	Orthophosphate Silicate Polyphosphate Ortho-Polyphosphate	Lime Soda Ash Sodium Bicarbonate Caustic Soda Carbon Dioxide

quality data to identify potential corrosion control strategy options as shown in Figure 1.

- Evaluate with Goals and Constraints: Review available options with goals and constraints, and if multiple options still remain, consider secondary impacts, operability of the system and costs of implementation.

- Select Most Appropriate Strategy.

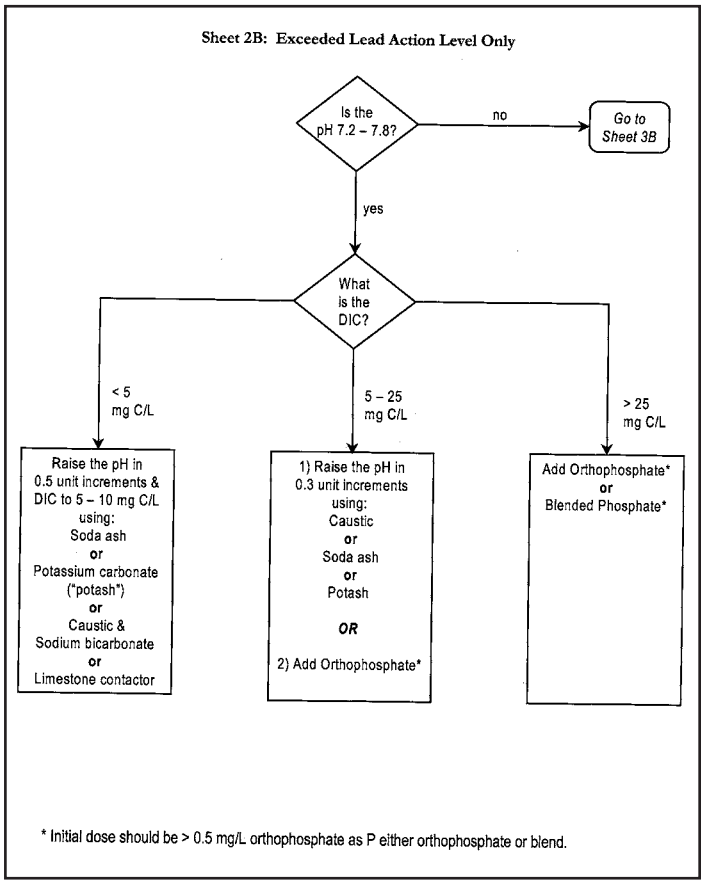

Figure 1: Example corrosion control strategy treatment recommendation flow chart (Revised Guidance Manual, EPA 2003).

For more information about LCR corrosion control strategies, contact Laith Hintz, Advanced Engineering and Environmental Services, Inc. (AE_2S) 701-221-0530.

References:

Lead and Copper Rule Guidance Manual, Vol. 2: Corrosion Control Treatment, AWWA, September 1992

Revised Guidance Manual for Selecting Lead and Copper Control Strategies, USEPA (EPA-816-R-03-001), March 2003

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48th Annual Water and Wastewater Operator Training Program

by Craig Bartholomay, North Dakota Department of Health

This past 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 48th Annual Water and Wastewater Operator Training Program.

There were six sessions offered with a total of 276 attendants. Water treatment and distribution classes were offered March 3-5, March 10-12, March 25-27, and March 31-April 2. Wastewater treatment and collection classes were offered April 14-16 and April 21-23.

TRAINING SESSIONS	NUMBER OF ATTENDANTS
Water Treatment and Distribution	
March 3, 4, 5	50
March 10, 11, 12	47
March 25, 26, 27	56
March 31, April 1, 2	56
Wastewater Treatment and Collection	
April 14, 15, 16	40
April 21, 22, 23	43
Total number of attendants:	292*
* Some operators attended more than one session	

The objectives for these classes are to: (1) fulfill the continuing education credit (CEC) requirement for certified operators, (2) hear presentations regarding regulations and preventing noncompliance, (3) learn general operation and maintenance topics, and (4) 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 occur the last day of each session. The department gave 174 examinations this year, with an 80 percent passage rate.

EXAMINATION SESSION	NUMBER OF EXAMINATIONS WRITTEN
March 5	33
March 12	24
March 27	23
April 2	37
April 16	22
April 23	35
Total number of examinations written:	174

The following is a breakdown of the certification examinations written during the 2008 operator training sessions:

	IA	I	II	III	IV	TOTALS
Water Treatment	8	15	13	8	3	47
Water Distribution	21	32	5	6	2	66
Wastewater Treatment	2	18	7	1	1	29
Wastewater Collection	5	17	9	0	1	32
TOTALS:	36	82	34	15	7	174

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Attendance Roster: 48th Annual Water and Wastewater Operator Training Sessions

Environmental Training Center, Bismarck - Training Credits Issued

Water Treatment and Distribution (12 Credits) March 3-5, 2008

Curtis Alkire	Antelope Valley Station
Darell Baisch	Bismarck
Frank Bosch Jr.	Strasburg
Gregory Boucher	Rugby
David Bruner	Antelope Valley Station
Terry Buechler	Dickinson
Darrell Bullhead Sr.	Standing Rock Sioux Tribe
Dwight Carpenter	Horace
Ross Carter	Sherwood
Danny Clark	Carson
Ronald Delisle	Bismarck
Terrence Desjarlais	Belcourt Public Utilities
Clifford Eppler	Walhalla
Rodney Fischer	Stanton
Donald G. Hagen	Woodworth
Dennis Halvorson	Cooperstown
Jon Hams	Hillsboro
Leslie Heuer	Cass Rural WD - Phase I
Larry Hofer	Maple River Hutterian Assoc.
Adam Hofmann	Dakota Gasification Co
Duane Holien	Cando
Dennis Hottman	Napoleon
Jeff Humble	Cavalier Air Force Station
James Kershaw	Bismarck
Chad Kjelland	Cass Rural WD - Phase I
Gregory Larson	R&T Water System
Jason Lee	Beach
Marlin Leidholm	McLean-Sheridan Rural Water
Paul A. Liebersbach	Nekoma
Greg A. Melchior	Dickinson
Bruce Meyers	Missouri River Correctional Center
Effie Miller	Williston
Larry J. Miller	Greater Ramsey WD
Myron Mutzenberger	Great River Energy - Stanton
Marshall Nielson	Belcourt Public Utilities
Darrick Nitschke	Oakes
Mark Noonan	Flasher
Christopher M. Olson	Casselton
Daniel Olson	Medina
Duwayne Overby	Binford
Chad Peterson	Oakes
Robbin Plesuk	Max
Brad Reisnour	Carrington
Scott E. Saxberg	Cooperstown
Patricia Schon	Nekoma
Randy L. Seelig	Lisbon
Trevor Seelig	Lisbon
Vernell Sievers	Taylor
Bruce R. Skiba	Bismarck
Fred Stern	Lakeshore Estates
Mark Vander Vorst	State Line Water Coop, Inc.
Alan Vormestrand	Upham
Allan Weiand	Wahpeton
Christy Weil	Zap
Gayle T. Whittlesey	Fort Union Trading Post NHS
Craig Wilhelm	Dakota Gasification Co
Matthew Wipf	Fairview Colony

Water Treatment and Distribution (12 Credits) March 10-12, 2008

Troy D. Backstrom	Minnewaukan
Thomas Bement	Bismarck
Douglas M. Bondley	University of Mary
Bradley Brandt	Glenburn
Robert W. Buchholz	Wyndmere
Darrell B. Bullhead Jr.	Standing Rock Sioux Tribe
Gerald Cain	Garrison
Theodore Chick	Antelope Valley Station
Gregg Christensen	Cass Rural WD - Phase I
Leon Degenstein	Harvey
Mark Elfman	Warwick
Randall Fricke	Bismarck
Duane Friesz	Mandan
Glen Fuhrman	Enderlin
Darlene Geller	Spirit Lake Water Resource Mgmt
Blaine Larson	Cooperstown

Glen R. Lueck	Inactive
Jim Mattheis	Leland Olds Station
Michael Mccollum	Cass Rural WD-Phase I
Adam McCormick	Grand Forks Air Force Base
Larry D. Meidinger	Ashley
Marvin P. Miller	Velva
Jeff Moberg	Tioga
Robert R. Moody	Antelope Valley Station
Tony Murphy	Belcourt Public Utilities
Leo Murr	Wahpeton
Roger A. Nelson	Cooperstown
Kenneth A. Nickerson	North Valley WUA-System II
Keith C. Orth	Lake Sakakawea State Park
Charles J. Ott	Inactive
Daniel Overmoe	Mayville
Tyler Peterson	Grand Forks Air Force Base
Teresa Roberts	T. Roosevelt Nat'l Park - South
Gregory Rolla	Bismarck
Michael Ryckman	South Central Regional Water
Esteban Salazar	Grand Forks Air Force Base
Eric Schantz	Mandan
Sheena Schmeets	Leeds
Ryan Smith	Milnor
Waylon Smith	Spirit Lake Water Resource Mgmt
Philip M. Thompson	T. Roosevelt Nat'l Park - South
Gary Trana	Johnson Corners Christian
Marc Troska	All Seasons WUA-System I
Mike Volanti	Rolla
Justin A. Walsh	Grand Forks Air Force Base
Albert Weisbeck	Leland Olds Station
Jaret Wirtz	McKenzie County RW

Water Treatment and Distribution (12 Credits) March 25-27

Kenneth A. Albrecht Jr.	Mandan
James M. Anderson	Hillsboro
Shane Berg	Minot Air Force Base
Gary Bratlie	Northwood
David L. Brose	Grand Forks
Francis Brunsell	Leland Olds Station
Kelly Cluchie	Cavalier
Clint Cogdill	Burlington
Ron Crowley	Leland Olds Station
Anton (Tony) J. Doll	Napoleon
Maureen A. Ellingson	Berlin
David Even	Gwinner
Paul Gilbert	Southeast WUD
Rick Gillund	Enderlin
Larry A. Gruenberg	Great River Energy - Stanton
Kevin Guthmiller	Carrington
Darrell J. Hager	Sheyenne
Gary Hager	Upper Souris WUA-System I
Brad D. Halldorson	Devils Lake
Roger Hammond	Devils Lake
Jim A. Hatzenbuehler	Antelope Valley Station
Wade Allen Hesch	Valley City
Erbie Hopwood	Sharon
Marshall Jacobson	North Central of Barnes
Dennis L. Johnson	Tolna
Gary D. Johnson	Sharon
Larry L. Keller	Fessenden
Kelly Laducer	Belcourt Public Utilities
Leon Little Owl	Fort Berthold Rural Water
Wanbli G.Lockwood	Fort Berthold Rural Water
Mason Mannie	Fargo
Shannon Marmon	Minot
Calvin G. Melby	R&T Water System
Kerry W. Miller	Stanton
Candy R. Montonye	McLean-Sheridan Rural Water
Dave Moyer	Mapleton
Steven H. Murray	McClusky
Mason D. Nelson	Valley City
Dale D. Neubauer	Fargo
Gary Neuberger	Beulah
Martin Peltier	Belcourt Public Utilities
Owen Price	Leland Olds Station
Scott E.Rask	Belfield
Jamie Rath	Mandan
K.J. Reinhart	Mcville
Mark A. Sagert	Cavalier
Daniel Schaefer	All Seasons WUA - System I
Travis Seifert	Minot
Sam Shutt	Minto
Marvin Strobel	Selfridge
Robert Thompson	Oakes
Travis Thompson	Enderlin
Kenneth D. Voltz	Galesburg
Tim Wangler	Sleepy Hollow Water Co.
Tina Whitehorn	Fort Berthold Rural Water
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Terry Armstrong	Devils Lake
Foster Beckstrand	Dazey
Alan J. Beyreis	Garrison
Edward Black Cloud	Standing Rock Sioux Tribe
Kevin Borner	Leland Olds Station
Brent Brinkman	Cass Rural WD-Phase I
Reggie Cavanaugh	Spirit Lake Water Resource Mgmt
Scott G. Cleveland	Grand Forks Air Force Base
Jerry Davis	Dakota Adventist Academy
Duane Dockter	Des Lacs NWR
Joni Drewlo	Larimore
Shane Fennell	Crosby
Keith Fiechtner	MPC-Milton R. Young-Station Well
Andrew Freidt	Minnkota Power Cooperative
John Fulsebakke	Bottineau
Brock Garaas	Bismarck
Alvin G. Haugen	Michigan
Dana Howard	M.R. & I. Water Project
Ronald Howitz	Buffalo
Kevin Jacobson	Valley City
Kelly Jemtrud	Velva
James Johnsrud	Watford City
Sherry Renee Keys	Valley City
James Klingbeil	Bottineau
Christopher Koval	Cargill Sweeteners
Bruce Kracht	Valley City
Michael Kramer	Fargo
Russell Leingang	Riverview Heights
Enos J. Lien	Fargo
Bruce Lovell	Sanborn
David Lupo	Southwest Water Authority
Gary Magstadt	Steele
Terry Morey	Dickinson
Joel R. Myhro	Devils Lake
Richard Odegard	Williston
Thomas P. Orth	Forman
Bill Perkins	Williston
Lawrence Peterson	Crosby
Ron Rittenbach	Hazelton
Douglas R. Saari	Mapleton
Gordon E. Schell	Mercer
Dean E. Schmidt	Mandan
Terry L. Schmidt	Fargo
Jamie Scott	Mandan
Dean Smith	R&T Water System
William (Bill) Solis	Fargo
Derrik Sonsalla	Parshall
Delvin Stemen	Burlington
Aaron D. Stephen	McVille
Larry Stute	RM Heskett Station (MDU)
James L. Thomas	Cando
David Vollan	RM Heskett Station (MDU)
Dennis Waldron	Wahpeton
Keith Winson	Maddock
Robert Young Bird Jr.	Fort Berthold Rural Water

Wastewater Treatment and Collection (12 Credits) April 14-16

Lonnie Arp	Grand Forks Air Force Base
Paul J. Bercier	Minot Air Force Base
Douglas M Bondley	University of Mary
Dean Breske	Valley City
Jim Buffington	Cargill Sweeteners
Dwight Carpenter	Horace
Duane Desilets	T. Roosevelt Nat'l Pk-North
Michael Emch	Dickinson
Bradley Glass	Bismarck
David Gross	Mandan
Chad Hanson	Minot
Charles D. Hanson	J.R. Simplot
Jerry Hanson	Northwood
Kurt Isakson	LaMoure
Del Kindelspire	LaMoure
Byron Kleven	Mayville
Craig Kopp	Cargill Malt
Jason Lee	Beach
Michael Lueder	Mandan
Dennis W. Mcgarry	Grand Forks Air Force Base
William M. Mcquiston	Williston
Richard L. Messerly	Fort Stevenson State Park
Jeff Moberg	Tioga
Dave Moyer	Mapleton
Troy Munyer	Rugby
Gary Neuberger	Beulah
Jason Newman	Valley City
Mark Noonan	Flasher
Tom O'Neill	Niagara
Daniel Overmoe	Mayville

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Dean E. Schmidt	Mandan
Jamie Scott	Mandan
Sam Shutt	Minto
Ryan Smith	Milnor
Chad Stern	Hebron
Ron Thurn	Wishek
Daniel J. Volk	Rugby
Brian Warren	Minot
Eric Westman	Sawyer

Wastewater Treatment and Collection (12 Credits) April 21-23

Robert T. Anderson	Minot Air Force Base
Shane Anderson	ADM Corn Processing
Sheldon L. Avery	Minot Air Force Base
Kevin R. Bachman	Minot Air Force Base
Michael Baumgardner	Fargo (WWT)
Kirby Bendixson	Williston
Shane Berg	Minot Air Force Base
Gary Bratlie	Northwood
Harold R. Bruce	Belcourt Public Utilities
Dale Carlson	Devils Lake
Scott G. Cleveland	Grand Forks Air Force Base
Kelly Cluchie	Cavalier
Dean Corcoran	Fargo (WWT)
Jeff Differding	Valley City
Dennis Dunn	Grand Forks
Janice Feickert	Berthold
David M. Garcia	Minot Air Force Base
Charles Gerving	Glen Ullin
Frank Golde	Cargill Malt
Richard Griffith	Garrison
Jon Hams	Hillsboro
John Hoyer	Fargo
Alan Johnson	J.R. Simplot
Justin Lee Johnson	Beulah
Travis Kane	Fargo (WWT)
Chris Klaus	Grand Forks Air Force Base
Tony Kub	Wahpeton
Noelyn Meckle	Ray
Thomas Mikelson	Grand Forks
Kenneth J. Miller	Dickinson
Frank Mosser	Maddock
Steven H. Murray	McClusky
Patrick Nelson	Oakes
Christopher M. Olson	Casselton
Gerald D. Ripplinger	Fargo (WWT)
Lee Roy M. Roller	Belfield
Duane Skramstad	Enderlin
Lane C. Slavick	Fargo (WWT)
Chad Solberg	ADM Corn Processing
Ken Stenberg	Williston
Marvin Strobel	Selfridge
Dennis Waldron	Wahpeton
Joshua Wendschlag	ADM Corn Processing
Quentin Yankton Sr.	Sioux Utilities (Fort Totten)

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Operators Pass Certification Examinations (March-April 2008)

Congratulations to these Operators!

NAME	CITY OR EMPLOYER	CERTIFICATE
Shane Anderson	ADM Corn Processing	Wastewater Collection 01, Wastewater Treatment 01
Justin Andre	Minot	Water Distribution 01
Terry Armstrong	Devils Lake	Water Distribution 01
Barry Arntz	Grand Forks	Water Distribution 02
Kevin R. Bachman	Minot Air Force Base	Water Distribution 01
Michael Baumgardner	Fargo (WWT)	Wastewater Collection 02
Kirby Bendixson	Williston	Wastewater Collection 01
Alan J. Beyreis	Garrison	Water Treatment 03
Frank Bosch, Jr.	Strasburg	Water Treatment 1A, Water Distribution 1A
Harold R. Bruce	Belcourt Public Utilities	Wastewater Treatment 01
Jason Busse	Langdon	Wastewater Collection 01, Water Distribution 01 Wastewater Treatment 01
Gerald Cain	Garrison	Water Treatment 02
Dale Carlson	Devils Lake	Wastewater Collection 02
Dwight Carpenter	Horace	Water Distribution 1A Wastewater Collection 1A
Lane Christianson	Langdon	Water Distribution 01, Wastewater Collection 01 Wastewater Treatment 01
Danny Clark	Carson	Water Distribution 1A
Scott G. Cleveland	Grand Forks Air Force Base	Water Distribution 01, Wastewater Collection 01 Wastewater Treatment 01
Dean Corcoran	Fargo (WWT)	Wastewater Collection 02
Jerry Davis	Dakota Adventist Academy	Water Distribution 1A
Keith Degenstein	Mohall	Water Distribution 1A
Anton (Tony) J. Doll	Napoleon	Water Treatment 01
Mark Elfman	Warwick	Water Distribution 1A, Water Treatment 1A
Reggie Engh	Minot	Water Distribution 02
David Even	Gwinner	Water Treatment 02
Gary Fahrnkopf	Devils Lake	Water Treatment 03
Janice Feickert	Berthold	Wastewater Treatment 1A
Brock Garaas	Bismarck	Water Distribution 04
Charles Gerving	Glen Ullin	Wastewater Collection 01, Wastewater Treatment 01
Paul Gilbert	Southeast Water Users Dist.	Water Treatment 02, Water Distribution 01
Bradley Glass	Bismarck	Wastewater Collection 04
Richard Griffith	Garrison	Wastewater Treatment 01
David Gross	Mandan	Wastewater Treatment 02
Donald G. Hagen	Woodworth	Water Distribution 1A
Dennis Halvorson	Cooperstown	Water Distribution 01
Roger Hammond	Devils Lake	Water Distribution 02
Jon Hams	Hillsboro	Wastewater Collection 01
Chad Hanson	Minot	Wastewater Treatment 02
Charles D. Hanson	J.R. Simplot	Wastewater Treatment 01
Larry Hofer	Maple River Hutterian Assoc.	Water Distribution 1A
Adam Hofmann	Dakota Gasification Co	Water Distribution 01, Water Treatment 02
Dana Howard	M.R. & I. Water Project	Water Distribution 02
Ronald Howitz	Buffalo	Wastewater Collection 1A, Water Distribution 1A
John Hoyer	Fargo	Wastewater Collection 02

Justin Lee Johnson	Beulah	Wastewater Collection 01, Wastewater Treatment 01
Travis Kane	Fargo (WWT)	Wastewater Collection 02
Chad Kjelland	Cass Rural Water Dist.-Phase I	Water Distribution 03
Craig Kopp	Cargill Malt	Wastewater Treatment 01
Christopher Koval	Cargill Sweeteners	Wastewater Collection 1A, Water Distribution 1A
Kelly Laducer	Belcourt Public Utilities	Water Treatment 01
Jason Lee	Beach	Water Distribution 01, Wastewater Treatment 01, Wastewater Collection 01
Russell Leingang	Riverview Heights	Water Distribution 1A
Enos J. Lien	Fargo	Water Distribution 04
Wanbli G. Lockwood	Fort Berthold Rural Water	Water Treatment 1A
David Lupo	Southwest Water Authority	Water Treatment 02
Shannon Marmon	Minot	Water Distribution 03
Noelyn Meckle	Ray	Wastewater Collection 1A
Kenneth J. Miller	Dickinson	Wastewater Treatment 01
Larry J. Miller	Greater Ramsey Water Dist.	Wastewater Treatment 01
Jeff Moberg	Tioga	Water Distribution 01, Wastewater Collection 01 Wastewater Treatment 01
Terry Morey	Dickinson	Water Distribution 01
Gerald Mostad	Minot	Water Treatment 04
Troy Munyer	Rugby	Wastewater Collection 02, Wastewater Treatment 02
Joel R. Myhro	Devils Lake	Water Treatment 03
Mark Noonan	Flasher	Water Distribution 01, Wastewater Collection 01
Christopher M. Olson	Casselton	Wastewater Collection 01
Thomas P. Orth	Forman	Water Distribution 01
Daniel Overmoe	Mayville	Water Treatment 02, Wastewater Treatment 03
Bill Perkins	Williston	Water Distribution 01
Julie A. Peterson	Robinson	Water Distribution 1A, Water Treatment 1A
Robbin Plesuk	Max	Water Distribution 1A
Jamie Rath	Mandan	Water Distribution 03
K.J. Reinhart	McVille	Water Treatment 02
Brad Reisnour	Carrington	Water Treatment 01
Philip K. Riely	Watford City	Wastewater Collection 02, Wastewater Treatment 01
Ron Rittenbach	Hazelton	Water Treatment 1A
Scott E. Saxberg	Cooperstown	Water Treatment 01, Water Distribution 01
Sheena Schmeets	Leeds	Wastewater Treatment 01, Water Treatment 02
Clinton W. Scott	Southwest Water Authority	Water Distribution 03
Trevor Seelig	Lisbon	Water Distribution 01
Travis Seifert	Minot	Water Distribution 03
Sam Shutt	Minto	Water Treatment 03, Wastewater Treatment 02 Wastewater Collection 02
Vernell Sievers	Taylor	Water Distribution 1A
Dean Smith	R & T Water System	Water Treatment 02
Chad Solberg	ADM Corn Processing	Wastewater Collection 01, Wastewater Treatment 01
William (Bill) Solis	Fargo	Water Distribution 03
Jason Sorenson	Minot	Water Treatment 04
Norman Standish	Fort Berthold Rural Water	Water Treatment 1A
Marvin Strobel	Selfridge	Water Distribution 1A, Wastewater Treatment 1A
Larry Stute	R.M. Heskett Station (MDU)	Water Distribution 1A
James L. Thomas	Cando	Water Treatment 01
Robert Thompson	Oakes	Wastewater Collection 01, Water Distribution 01
Jeff L. Trana	Devils Lake	Wastewater Treatment 02, Wastewater Collection 02

David Vollan	R.M. Heskett Station (MDU)	Water Distribution 1A
Dennis Waldron	Wahpeton	Wastewater Collection 01
Brian Warren	Minot	Wastewater Treatment 01
Tina Whitehorn	Fort Berthold Rural Water	Water Treatment 1A
Craig Wilhelm	Dakota Gasification Co	Water Treatment 02, Water Distribution 01
Matthew Wipf	Fairview Colony	Water Distribution 1A
Jaret Wirtz	Mckenzie County Rural Water	Water Distribution 1A, Water Treatment 1A
Quentin Yankton Sr.	Sioux Utilities (Fort Totten)	Wastewater Collection 01
Robert Young Bird Jr.	Fort Berthold Rural Water	Water Treatment 1A

100 Years of Safer Lives
A Giant Step for Public Health: Chlorination in Chicago and Jersey City

http://www.americanchemistry.com/100years/CityHistory.html

More than 100 years ago, when waterborne diseases like typhoid fever and cholera were common killers, a simple drink of water could be a risky proposition. But in 1908, when chlorine was introduced for the first time to a municipal water supply in the United States, American public health took a giant step forward. It was the first step in a journey that would lead to the widespread availability of clean drinking water.

Chicago's Union Stockyards

Chlorine was added to drinking water for the first time in the U.S. in Chicago's Union Stockyards in early September 1908. The animals had failed to gain weight when given the filtered water of "Bubbly Creek," a stream so polluted with meat waste that it bubbled with noxious gases. Given city water, the animals thrived, but the city had sued the stockyards for poaching the municipal water supply. With little choice but to return to creek water, the stockyards summoned George A. Johnson from the New York firm of Hering & Fuller to analyze that water.

Johnson concluded that, while filtration had cleared the water of visible particles, levels of invisible bacteria were high. When he added chlorine to the feed water, bacterial counts plummeted, with the surprising result that the quality of the livestock drinking water was reported to surpass that of city water.

Chlorinating Union Stockyard feed water solved the livestock drinking water problem. In later years, Johnson would use the example of the Union Stockyards to demonstrate that filtration alone, without disinfection, is insufficient for treating drinking water.

Jersey City, New Jersey

Like most American cities at the turn of the century, Jersey City was plagued by typhoid fever and cholera. Although death rates from these diseases had declined as cleaner water sources were secured over the previous several decades, a drink of water in Jersey City in the early 1900s still represented an unacceptable risk. In 1904, Jersey City had begun consuming water from the new Boonton Reservoir, 23 miles west of the city. The water ran untreated from the reservoir, through a series of steel pipes and masonry conduits, into the homes of 200,000 city residents.

> Jersey City records show that between 1906 and 1926, the typhoid fever death rate fell by more than 92 percent.

In those years, the Jersey City Evening Journal* chronicled a long legal battle between the city and a local water company over the quality of the municipal water supply. The city claimed the Jersey City Water Supply Company had failed to provide "pure and wholesome" water to its customers, as specified by its contract. The city was adamant that the water company provide expensive sewer treatment for

*In 1910 the *Evening Journal* became the Jersey Journal.

communities in the watershed or filter the water to improve its quality.

An astute advisor to the water company, Dr. John Leal, noted that bacteria levels in city water rose chiefly during periods of flooding and high water. He attributed intermittent poor water quality to polluted runoff from streets and "manured fields" rather than from the sewage outfall in the watershed, as the city contended. With guidance from Dr. Leal, the water company asked the court for an opportunity to suggest its own method of meeting the contract requirements.

Dr. Leal had a novel solution in mind. His earlier experiments with chlorine disinfectants led him to believe that he could rid city water of bacteria using very low concentrations of chlorine disinfectants. Working with George Warren Fuller of Hering & Fuller, a system was designed to chlorinate water as it left the Boonton Reservoir for the journey to Jersey City. On September 26, 1908, U.S. public health history was made as chlorine was added to the Jersey City water supply — it was the first time chlorinated water would arrive on a permanent basis in American homes.

In a national gathering of water professionals at the 1909 annual meeting of the American Water Works Association, the argument for chemical disinfection was elevated to a level of prominence. Here, beyond the realm of local politics, Leal and his associates from New York, George Warren Fuller and George A. Johnson, presented data that supported the effectiveness and low cost of chlorination. The men showed that small applications of chlorine could significantly reduce bacterial levels in drinking water. Johnson revealed the cost of chlorine treatment to be just 14 cents per million gallons, a mere $5.60 per day for Jersey City's 40 million gallon daily usage.

The following spring, the Boonton chlorination plant was approved by a "special master in chancery" of the court. The decision catalyzed the widespread acceptance of one of the most important public health measures ever implemented. By the 1920s, chlorination was well-established as the primary means of disinfecting drinking water and it had been adopted by most American cities.

Plummeting typhoid fever rates demonstrated the public health benefit of chlorine disinfectants and chlorine disinfection combined with filtration.

In his June 1909 report to the AWWA, Dr. Leal said he believed one of the most important uses of chlorination would be "in conjunction with filtration." His words were prophetic: in 1997, *Life* magazine declared, "The filtration of drinking water plus the use of chlorine is probably the most significant public health advance of the millennium."

One hundred years after its American debut in the feed troughs of Chicago's stockyards and in turn-of-the-century Jersey City tap water, chlorine disinfection continues to play an essential role safeguarding public health here and around the world.

Acknowledgement
The American Chemistry Council's Chlorine Chemistry Division acknowledges the kind assistance of the following individuals in the development of this article: Michael J. McGuire, Ph.D., PE, Malcolm Pirnie; Keith Wood, Watershed Superintendent, United Water Jersey City; and Bruce Brandt and John Beekman of The New Jersey Room of the Jersey City Free Public Library.

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Inspections: Southeast	Eric Bless	701-328-6627
Inspections: Southwest	Darin Billing	701-328-6624
Lead and Copper Rule	Katie Luther	701-328-5258
Surface Water Treatment Rule: Interim Enhanced, Long Term 1 Enhanced, Long Term 2 Enhanced	Greg Wavra	701-328-5224
Microscopic Particulate Analysis (MPA)	Gary Stefanovsky	701-328-5287
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Operator Certification	Craig Bartholomay	701-328-6626
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Operator Training	Mike Brisben	701-328-6622
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Primary and Secondary Inorganics	Lydia Fewless	701-328-5221
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Public Water System Updates (changes to source, treatment, contact, etc.)	Katie Luther	701-328-5258
Radionuclide Rule: Gross Alpha, Total Radium, Uranium	Lydia Fewless	701-328-5221
Total Coliform Rule	Jeni Walsh	701-328-5231
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Industrial Stormwater	Randy Kowalski Cory Lawson	701-328-5239 701-328-5244
Inspections	All Staff	701-328-5210
Lagoon Overflows/Releases/Spills	All Staff	701-328-5210
MS4 Stormwater	Randy Kowalski	701-328-5239
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Septic Pumper	Marty Haroldson	701-328-5234
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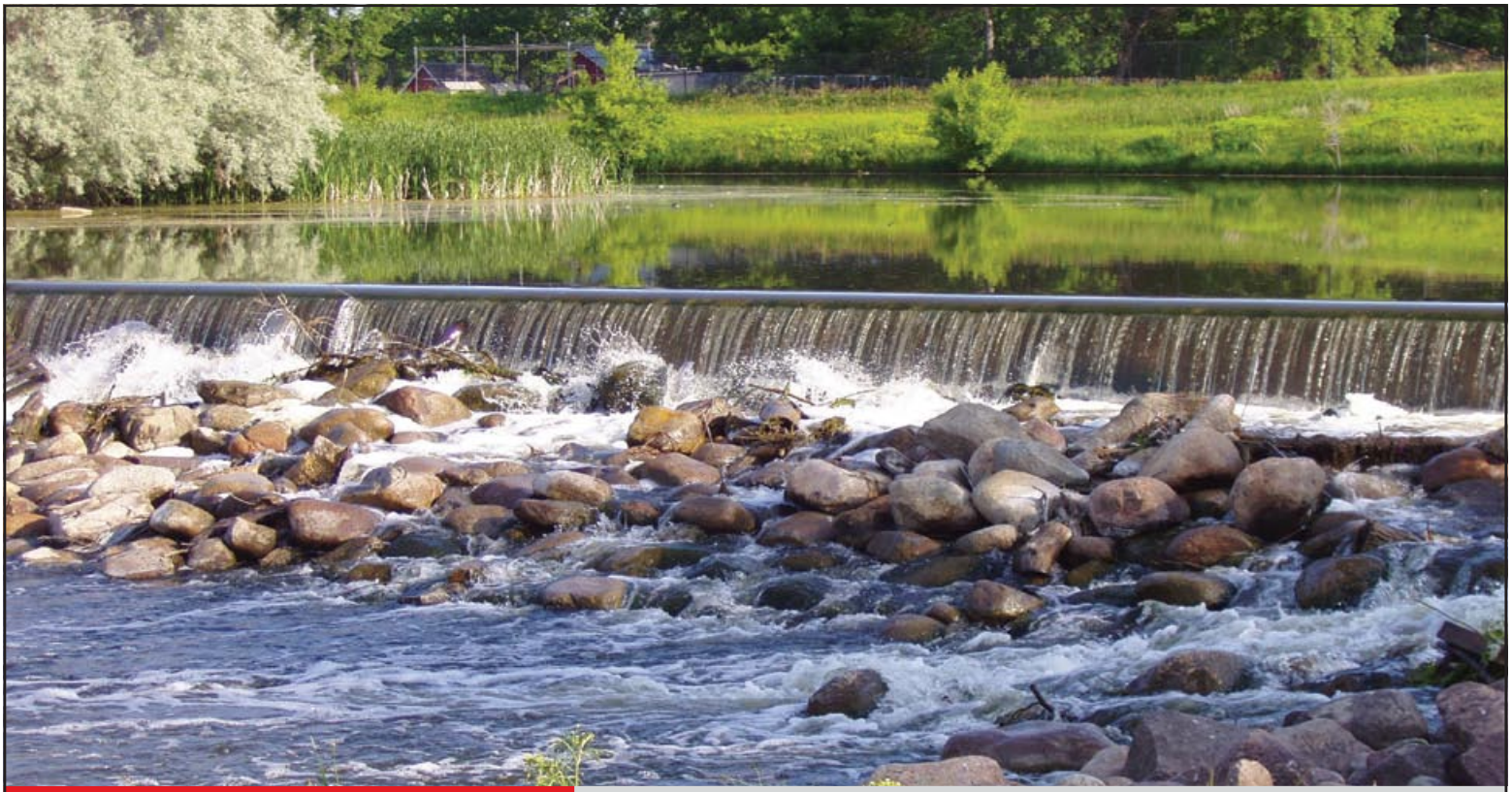

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