



# GO WITH THE FLOW

Atlantic Canada Water and Wastewater Association Newsletter

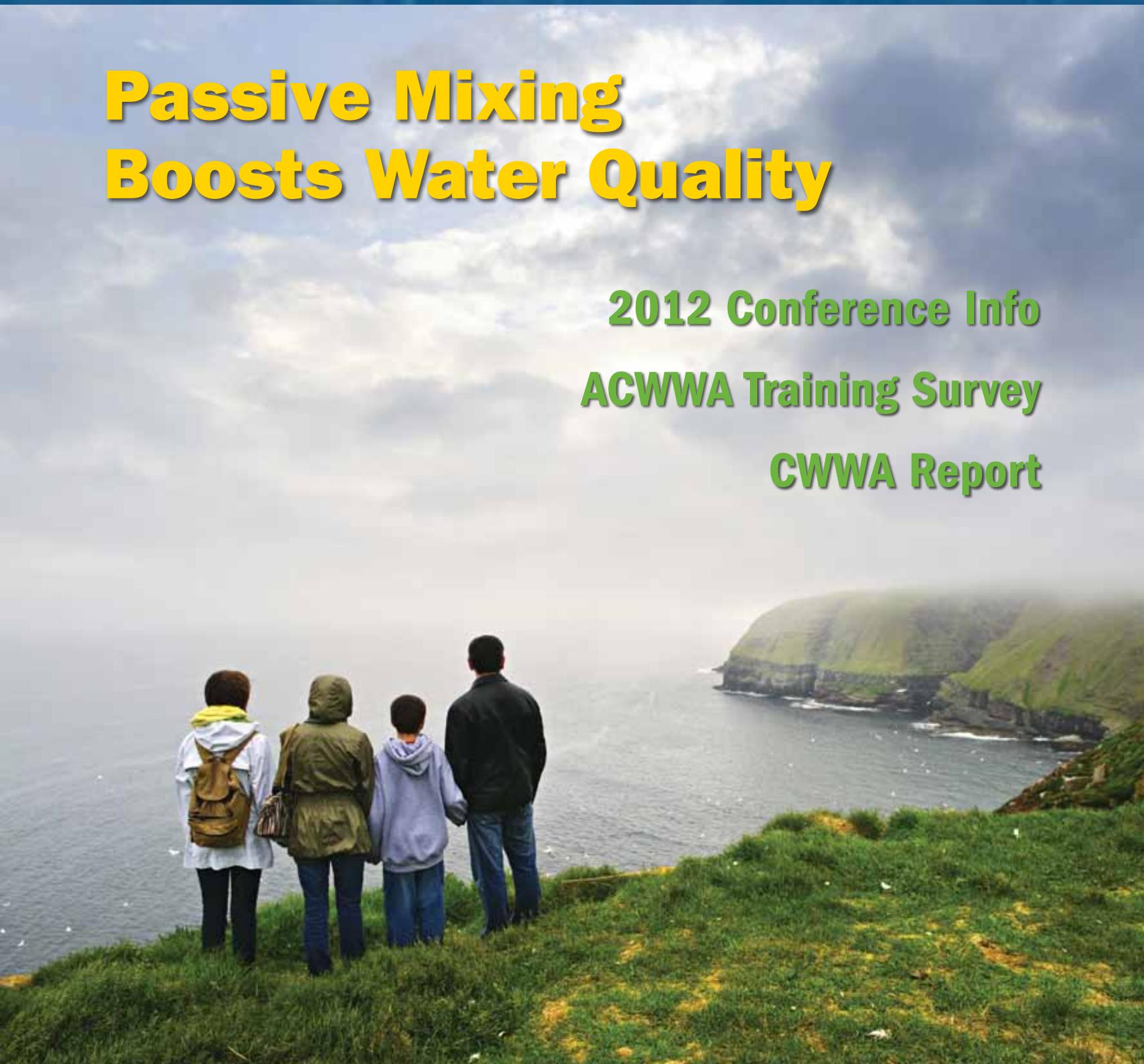
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## Passive Mixing Boosts Water Quality

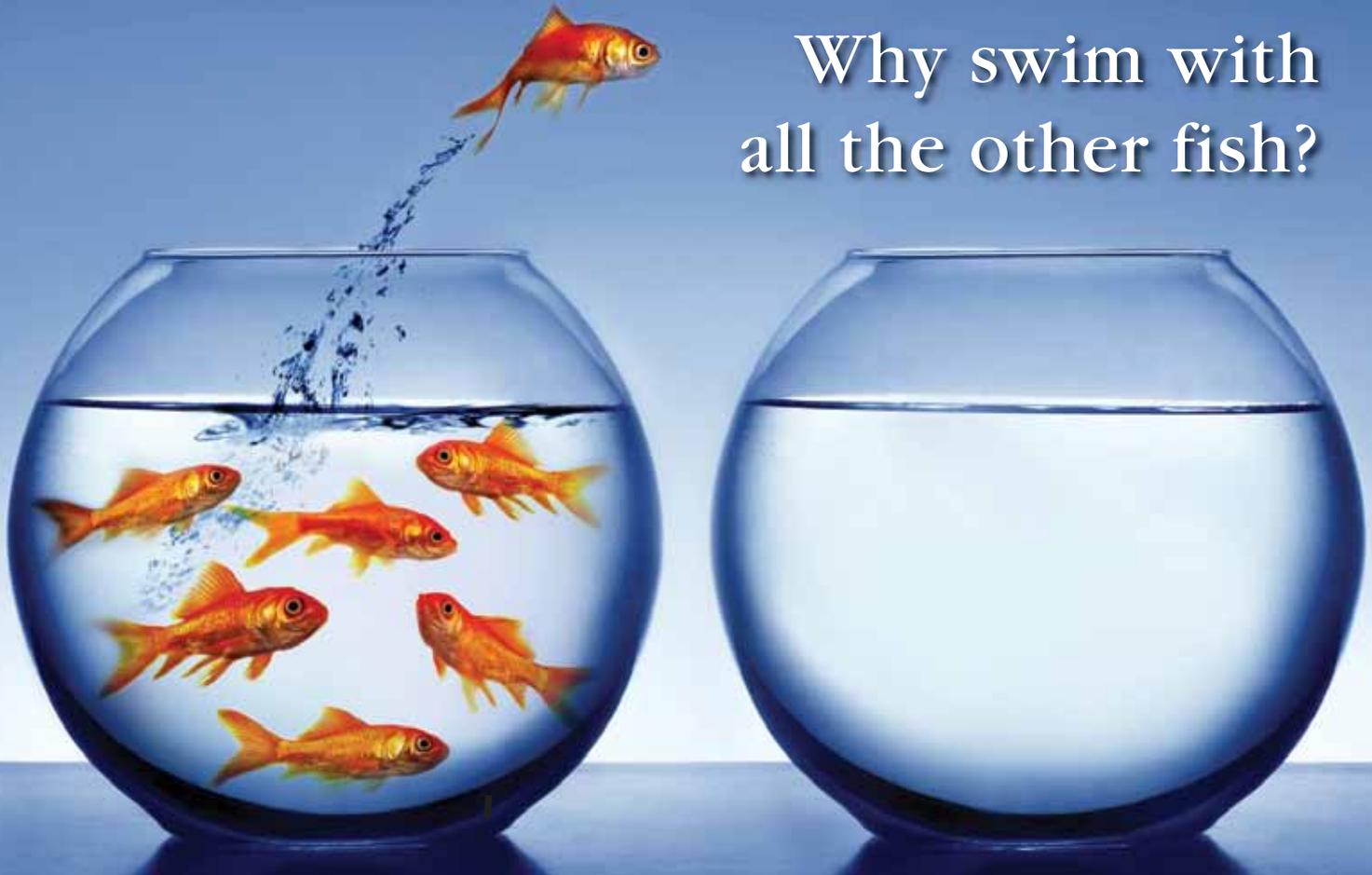
**2012 Conference Info**

**ACWWA Training Survey**

**CWWA Report**



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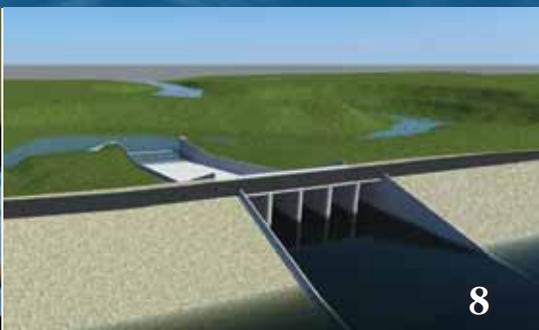
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# Chair's Corner



## Campbell Makes VP, and Recognizing Our Peers

by Jamie Hannam, MBA, P. Eng., Halifax Water

Welcome to the Spring 2012 edition of the *Go With the Flow* magazine, providing news about water and wastewater matters across Atlantic Canada. This informative magazine is one of the many benefits of membership with ACWWA. A big hand goes out to Amy McHarg for her production efforts.

Trusting that we have all survived another winter, we start to get geared up for the busy season ahead. As we prepare our equipment, budgets and projects, don't forget the continued professional development of staff. ACWWA's education program continues to provide a full cross section of courses in water and wastewater. Please see the website or contact our Executive Director, Clara Shea, at [contact@acwwa.ca](mailto:contact@acwwa.ca) for details.

The conference committee in Charlottetown has been busy all winter. The conference—themed WaterWorks!—is set for Oct. 14–16 at the Delta Prince Edward. One of the spotlight events at the conference will be the honouring of the 2012 Award winners. At this time we need nominations of deserving water and wastewater professionals. Please review your staff, peers and business partners and submit nominations for the following:

- Bedell Award
- Fuller Award
- MacNab Award
- Project of the Year
- Silent Hero
- Volunteer of the Year

Hit [www.acwwa.ca](http://www.acwwa.ca) for details and nomination forms.

I am pleased to report that Reid Campbell, P. Eng. and director of water operations at Halifax Water, was recently elected as a Vice President of AWWA. Reid will use his broad experience working within many aspects of our industry in Atlantic Canada to support the exciting initiatives of AWWA as well as reinforce and enhance the strong relationship ACWWA has with our parent association. On behalf of the board and all members in Atlantic Canada, we wish him well.

Thank you to all ACWWA members for the continued opportunity to chair our association. If you have any comments or concerns please email me at [jamie.hannam@halifaxwater.ca](mailto:jamie.hannam@halifaxwater.ca).

Enjoy the Magazine!

## ACWWA Executive and Committee Officers

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# WEF Delegate's Update



## Lots Happening for WEF, Locally and Internationally

by Gary Chew

Well here we are in 2012 already, lots to do in WEF and the wastewater side of ACWWA. Had a very successful WEFTEC conference in Los Angeles; our Canadian Affairs council meeting was very productive with lots of discussion on things like the Canadian Stockholm Jr. Water prize, which we are a part of every year; and Young Professionals, which is a very important topic for all associations, as the YPs are our future. I know I am rapidly become an OF (Old fart) and will be looking for some younger people to get involved in WEF. That is a hint for all the wastewater YPs to come forward and get involved with WEF; it is a great resource for you to tap

into. Our YP dues are \$63 a year, which is a very small amount considering the information you get from WEF. So get involved and join now!

I'm really looking forward to our upcoming Charlottetown conference in November, and hoping that the Wastewater Top Ops will again be a part of the program. We will watch for that!

The strategic plan for the Water Environment Federation is being updated and will be released soon. I will tell you that the member associations like ACWWA are a very large part of the ongoing plan, and your voices are certainly heard on the WEF front. Member input is very important, so please make sure you voice your

concerns! If you have any suggestions for training or want to get involved, we want to hear from you. Also, make sure you go to [www.wef.org](http://www.wef.org) and have a look around; it is a great website.

Pay special attention to "Water's Worth It," WEF's new campaign to spread the word about the value of water (see the ad in this issue). WEF expects big things from this campaign, and we're all very excited about it.

I will be attending WEFMAX meetings in March and will be bringing you updates after that. So keep watching for the next newsletter. And thanks for being a water/wastewater professional—and part of ACWWA!

# AWWA Director's Report



## Notes From the Winter Board Meeting by Reid Campbell

The Puerto Rico Section did a fabulous job of hosting the AWWA winter board meeting in San Juan, Jan 21–22. San Juan is a beautiful and historic city.

The highlight of the meeting was the election of Jim Chaffee of Wisconsin as President-Elect. On the first ballot there was a tie for second place, requiring a runoff between John Donahue of Illinois and Don Broussard of the Southwest Section, to determine who would stand against Jim Chaffee on the final ballot.

Another highlight of the meeting was the selection of Dr. Steve Hrudey of the Western Canada Section to receive the A.P. Black Research Award this year at ACE12 in Dallas. This is AWWA's most prestigious award for the research community, and it is well deserved by Dr. Hrudey, who played a key role in the Walkerton Inquiry and was keynote speaker at our

2005 ACWWA conference.

The AWWA Board also approved the creation of the Silver Water Drop Award for 30 years' membership in AWWA. This was created to recognize longstanding members—regardless of age—who may not yet be eligible for life member status.

Readers of *Journal AWWA* might have noticed some changes with the January edition: the *Journal* is now carrying more academic technical articles. This was done to enhance the standing of the *Journal* as an academic publication. The print version will contain two-page summaries of academic articles; complete articles will be available in the online *Journal* edition only.

AWWA has also begun a project to redesign its website to meet modern standards for design, make it more visually appealing and to make content easier to

find. Look for the new website in about 12 months.

AWWA had reduced revenues in 2011, compared to budget and compared to 2010. This is due to a downward trend in membership being felt by associations all over. AWWA did have a financially successful year, however, thanks to careful cost control. AWWA now appears to have reversed its membership slide, thanks to a very focussed membership strategy.

Finally, at the recent AWWA Membership Summit, the Atlantic Canada Section was selected for an award for meeting the Presidential Challenge by exceeding 1 percent membership growth. Congratulations to Membership Chair John Eisnor and Clara Shea for their extraordinary recruiting efforts. Well done!

Make sure you make plans to attend ACE12 in Dallas, June 11–14.

# CWWA Director's Report

## CWWA Celebrates 25 Years by Roland P. Richard, P. Eng., FEC

The Canadian Water and Wastewater Association (CWWA) is the national body representing the common interests of Canada's municipal water and wastewater services, their private sector suppliers/partners and other stakeholders. It is recognized by the federal government and national bodies as the national voice of this public service sector.

CWWA promotes a harmonized and rational policy and regulatory framework across Canada for municipal water and wastewater services and the appreciation of these services by the general public.

CWWA was founded in 1986 with the support of the Federation of Canadian Municipalities, AWWA's Canadian Sections and WEF's Canadian Member Associations. CWWA is the means for all utilities to have a voice on federal issues and regulations.

2011 marked CWWA's 25th anniversary. To celebrate this amazing milestone, the Annual Dinner featured a look back on the accomplishments of the association since our creation, an honoring of past presidents, and a look to the future. As part of the 25th anniversary activities, the board of directors also hosted several board-owner consultation sessions. The input we heard from members and non-members was invaluable, and will

be used to improve member services. To help celebrate our 25th anniversary, CWWA launched a new Utility Excellence Award. The award honors selected projects that demonstrate excellence in either community outreach or implementation of new technologies. Awards were offered in both categories for small, medium and large utilities.

CWWA hosted its annual "Window on Ottawa" Conference and Annual General Meeting November 23-24, 2011. The conference was extremely successful, attracting nearly 200 delegates to the Window itself and the Specialty Workshop on Water Utilities Security. CWWA also introduced a new "Trade Show" element, which had seven booth exhibitors, and held a successful President's Reception and Exhibition. Delegates were impressed by the range of presentations offered, including a keynote address by Gord Hume. The address, called *Taking Back our Cities*, highlighted the challenges facing municipalities as infrastructure repairs, replacement and upgrades become a pressing priority and available funds dwindle. The presentation highlighted the need for taxation reform to ensure that municipalities can find sustainable funding solutions.

On January 12, CWWA President Dan Limacher advised members and association partners that the CWWA Board of Directors had made a change at the executive director position. Jennifer Jackson left the association effective January 11;

the board began immediately with the process of selecting its next executive director.

Duncan Ellison is supporting CWWA by providing interim executive director services until a new individual has been selected. Ellison served the CWWA for more than 16 years as executive director, retiring in 2010.

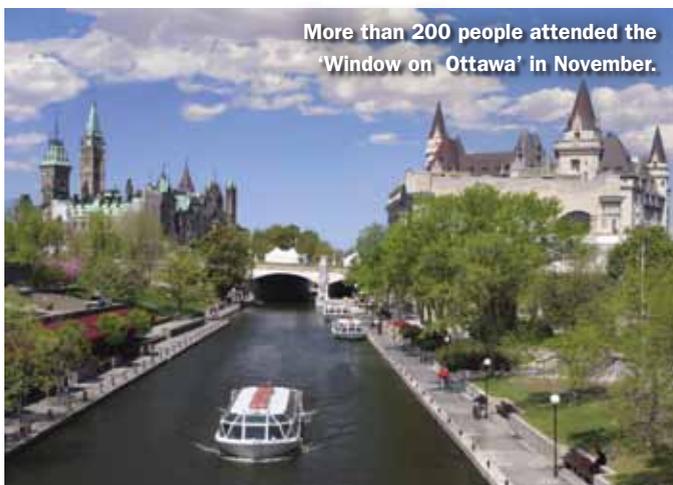
This year, CWWA is seeing several changes to our board of directors. The Atlantic Canada Region is very well represented, with Andrew MacKinnon, the new Board Member from the Town of Truro, representing Nova Scotia; Neil Thomas of Fredericton as the First Vice-President, representing New Brunswick; and myself as Second Vice-President, representing ACWWA.

CWWA continues to monitor and be involved in the federal policy and regulatory fronts.

Of note in the last few months:

- The Wastewater System Effluent Regulations being proposed by Environment Canada continue to be a key area of interest for CWWA.
- Environment Canada signed a promotional partnership agreement with the USEPA in the WaterSense Program.
- CWWA will continue to advance the spirit from the recent "One-Voice" workshop last year and follow-up discussions.
- Plans are ongoing for the next National Drinking Water Conference, scheduled for October in Kelowna, BC.

Should any other information be required on CWWA activities, please contact me: rrichard@gmsc.nb.ca.



2012 CANADIAN



WATER FORUM

**AWWA Annual Conference**

Dallas, Texas

Monday, June 11 | 5:30 p.m. - 7:30 p.m.

**Starlight Room**

603 Munger Avenue



Water For People–Canada  
De L'eau Pour Tous–Canada

The Forum is a friendly gathering place where you can reacquaint yourself with old friends and meet new ones. This year's cocktail party will be hosted at the Starlight Room in Dallas and is sponsored by the Canadian Affairs Committee and the five Canadian Sections. The ticket price includes hors d'oeuvres and two drinks and is a fundraiser for Water for People – Canada.

**CANADIAN WATER FORUM**

DATE: June 11, 2012

**TICKETS @ \$45.00 EACH US or Canadian**  
(indicate quantity requested)

LOCATION: **Starlight Room**  
603 Munger Avenue

**10 TICKETS @ \$450.00**  
*Purchasers of 10 or more tickets will receive recognition at the event as Patrons. Deadline is May 20th.*

PAYMENT METHOD:

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## WATER WORKS! Charlottetown, PE Oct. 14-17

**P**lans have begun for the 65th Annual ACWWA Conference, and you are encouraged to start making yours.

The conference will be held in Charlottetown, Oct. 14-17, at the Delta Prince Edward. Now is the time to plan ahead to stay longer and take in the many activities PEI and the 2011 Cultural Capital of Canada has to offer.

This year's theme is "Water Works!" The focus is on how, through best practices and sustainable solutions, all stakeholders will need to continue to adapt to make "water work" and do more with less.

The committee is exploring new ideas for the conference, and you will have lots of time to renew friendships and begin new ones as you take in the many social activities: the golf tournament, meet and greet, Down East Feast, Top Ops competition

## Hrudey Wins Black Award

**D**r. Steve E. Hrudey, Professor Emeritus at the University of Alberta, is the recipient of the 2012 AWWA A.P. Black Research Award. Hrudey will receive the award at the opening general session at ACE12 in Dallas, Texas. This award was established in 1967 in honour of Dr. A.P. Black to recognize outstanding research contributions to water science and water supply rendered over an appreciable period of time. Hrudey, who is well known to the drinking water community in Canada, in particular with respect to his involvement with the Walkerton inquiry and his book *Safe Drinking Water: Lessons Learned from Recent Outbreaks in Affluent Nations*, joins Dr. Peter Huck at the University of Waterloo as only the second Canadian to have received this award (the two were colleagues at U of A).

Congratulations, Steve!

and a great companion program. And don't forget about the Water For People silent auction and ABEA trade show.

We hope to see you in 2012!

Reserve your room now:

Delta Prince Edward  
18 Queen Street  
Charlottetown, PE C1A 4A1

Toll Free Reservations: (866) 894-1203

When booking by phone, please identify yourself as being with group RA0926.

For more information: [ACWWA2012@charlottetown.ca](mailto:ACWWA2012@charlottetown.ca)

## Nominations for 2012-2013 ACWWA Board Positions

**T**he ACWWA Board is inviting nominations for three positions. Two of the positions have three-year terms.

The positions are:

1. Second Vice Chair;
2. Government Relations Director (2012-2015);
3. Member Involvement Director (2012-2015).

Nominations should be provided in writing to the Section Office and will be forwarded to the Nominations Committee for consideration. The deadline for nominations is May 25.

Please contact the Section Office for the following:

- Policy on Nominations and Elections to the Board;
- Terms of References for the positions;
- ACWWA By-Laws.

For more information, contact Clara Shea, executive director, at [contact@acwwa.ca](mailto:contact@acwwa.ca) or (902) 434-6002. You may also visit ACWWA's webpage at [www.acwwa.ca](http://www.acwwa.ca).

### The ACWWA Education Committee is comprised of:

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If you have any questions or educational needs, please contact any member of the Education Committee.

## Membership Corner by John Eisnor, P.Eng., ACWWA Membership Director

**T**wenty eleven was a great year for membership in ACWWA. On the AWWA side of our association, we gained 118 new members. We also had a net year-end membership increase of 22.5 percent and a retention rate of 95 percent, which were the highest among all AWWA Sections. It should be noted that in 2011 the overall membership of AWWA declined 2 percent and the retention rate was 88.6 percent. This is proof of the strong membership base in Atlantic Canada and the relevancy of ACWWA to the water and wastewater industry.

AWWA hosted the annual Membership Matters Summit at its Denver headquarters Jan. 25-27. The theme of this year's summit was member engagement. This event was an excellent opportunity to learn about improving the membership program in Atlantic Canada, meeting and collaborating with members from other AWWA Sections and getting to know AWWA staff.

During the summit, the results from the 2011 Presidential Challenge were presented. The Presidential Challenge consisted of recruiting targeted utilities or service providers during 2011. If successful, a Section would receive a monetary reward, provided the Section achieved a net year-end membership growth of greater than 1 percent. Although ACWWA did not recruit any of our target utilities, we did exceed the 1 percent growth target and were awarded with a cheque for \$500.

The AWWA Membership Challenge for 2012 consists of three objectives: We will receive a cash incentive for having 16 or more student AWWA members at year's end; recruiting 11 or more new young professional AWWA members during 2012; and having more than 505 AWWA members at year's end (excluding life members). At the start of 2012, we have 518 members, of which 14 are student members, so we are off to a good start! I would encourage all members who know or work with young professionals or students to please encourage them to join. As usual, members who recruit new members may qualify for great rewards.

Due to changes to the AWWA Life Member category, all current AWWA Life Members will have to begin paying an annual membership fee. By now, all 27 Life Members with ACWWA should have received at least one invoice; however, the membership database indicates that none of our Life Members has renewed. I would encourage all Life Members to consider renewing their membership. If you have not received an invoice, please get in touch with the ACWWA office.

AWWA has announced a new member award: The Silver Water Drop will recognize the commitment of members who have shown their longtime commitment to the association, but who are not yet eligible for Life Membership status. The Silver Water Drop will be awarded on the basis of a 30-year cumulative membership in the association. Awardees will be recognized with a plaque and lapel pin.



On the WEF side of our association, we have 133 WEF members. In 2012, we would like to see this number grow. To help grow the WEF membership, the ACWWA Membership Team is looking for a WEF member to lead the growth of WEF in Atlantic Canada. Please contact John Eisnor if you are interested.

As always, the ACWWA Membership Team is looking for enthusiastic individuals who have a desire to make ACWWA the leading professional association in Atlantic Canada. In particular, we are looking for individuals representing Nova Scotia, Prince Edward Island and Newfoundland and Labrador, as well as representatives from various industry sectors. If you are interested in joining the committee, or would like to discuss membership in general, please contact John Eisnor at [john@halifaxwater.ca](mailto:john@halifaxwater.ca) or (902) 490-1930.

New ACWWA Members			
Name	Company	Membership	Recruiter
Daniel Alain	Vitalite Health Network	AWWA	Clara Shea
Lindsay Anderson	Dalhousie University	AWWA	
Shawn Burke	Hatch Mott MacDonald	AWWA	John Eisnor
Richard Daigle	City of Edmundston	AWWA	
Ramona Doyle	City of Charlottetown	AWWA	Craig Walker
Neil MacAskill		AWWA	
Jeff MacKinnon	GENIVAR	AWWA	John Eisnor
Matthew Mahoney	CBCL Ltd.	AWWA	Steph Gora
Monica McVicar		AWWA	
Krysta Montreuil	Halifax Water	AWWA	
Brett Pugh	CBCL Ltd.	WEF	
Stephen Pyke		WEF	
Edward Spalding		AWWA	



## Moncton Dam Construction Under Way

by Ensor Nicholson, P. Eng, City of Moncton; and Bruce Buchanan, P. Eng., R.V. Anderson Associates Limited

Gentlemen, start your engines! (to use a phrase from the racing industry). After almost ten years of planning and preparation, the Moncton Council awarded the construction of a second dam and water reservoir to Gulf Operators Ltd., of Saint John, NB, for a tendered price of \$32,423,654.

After several water shortages in the late 1990s, and with an expanding service area and population base, the City of Moncton realized that additional water storage was required.

The process for the second dam started in 2003, when R.V. Anderson Associates Ltd. of Moncton was selected to complete environmental studies for the project. In addition to the provincial EIA screening, a federal review of the environmental component was also required. Project approval was finally received in the spring of 2011.

To allow the construction of the dam and eventual filling of the reservoir, the 250-Ha site had to be cleared of trees. Contractors

were pre-qualified for this process, and in April the clearing tender was awarded to RD McLean Forestry, of Antigonish, NS. Because of environmental regulations restricting tree clearing between May and September, only two weeks remained in the cutting season, in which the contractor was able to clear approximately 30 Ha where the dam is to be constructed. RD McLean Forestry returned to the site in September to complete clearing the remainder of the reservoir area.

The tendering process for the dam also included a prequalifying process where 11 contractors from Atlantic Canada, Upper Canada and the United States were qualified to bid on the construction. When the tenders closed, only four had submitted tenders for the project.



The 2.5-km-long earthen dam structure, located 5 km upstream of the existing dam, will store an additional 10 million cubic meters of water for the 100,000 people residing in the Moncton/Dieppe/Riverview service area. The Dam will be 20 m in height, and 11 m wide at the top for a two-lane roadway. The submerged intake structure is connected to a 4-m inside-diameter, 200-m-long concrete conduit under the dam with two steel pipes inside to convey the water downstream. The dam includes a 32-m-wide and 170-m-long concrete spillway to bypass water during the spring freshet or during large weather events when the reservoir is already at capacity. A concrete bridge is also included, with provision for radial control gates to be installed in the future to further increase the capacity of the reservoir if required.

The construction for the dam commenced in September 2011 after the contractor's environmental management plans were approved by the provincial and federal governments. The entire project must be completed by the spring of 2014, per the infrastructure funding agreement.

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## ACWWA Awards Four Douglas Scholarships

ACWWA was pleased to recently award the 2011 Lloyd Douglas Scholarships to four deserving students, each representing one Atlantic province. The recipients were Nicholas LeBlanc (NB), Nathan MacNeill (PEI), Sarah Mapplebeck (NL) and Erin Mentink (NS). Thirty applications were submitted for review by the ACWWA Scholarship Committee, which included Bing Chen (Chair), Bruce Buchanan (NB), John A. Kelly (PEI), Andrew Niblock (NL), and Ray Rice (NS). This scholarship was established in 2010 in recognition of dedicated service rendered by longtime member and tireless ACWWA supporter Lloyd Douglas. The call for entries for the 2012 Scholarship will be sent out in September.

Nathan MacNeill is a student in Holland College's Environmental Applied Science Technology program, currently in year one of two. Prior to this, in 2003, he enrolled at University of

Prince Edward Island, graduating with a BSc in Biology in 2008. His goals are to find his place within a water and/or wastewater treatment career and to discover where it might lead from there.

Nicholas LeBlanc is a Civil Engineering student, with a minor in English Literature, enrolled in his fourth and final year at the University of New Brunswick in Fredericton. He has carried



**Nicholas LeBlanc; Nathan MacNeill; Erin Mentink; Sarah Mapplebeck**

out two significant research projects concerning the interrelationship between groundwater quality and sanitation practices, based largely upon an internship he completed this past summer in Malawi at Mzuzu University's Centre for Excellence in Water and Sanitation. Next year, he hopes to complete his bachelor of Education, before transitioning directly into a master's degree in Water and Environmental Engineering.

Erin Mentink is currently in her final year of the Environmental Engineering program at Dalhousie University. She has also obtained a BSc in biology with a focus in ecology from Mount Allison University. After graduation, Mentink will seek out employment in the Maritimes and anticipates the opportunities the water and wastewater industry has to offer.

Sarah Mapplebeck is a student at Memorial University in her fourth year of a bachelor's degree in Civil Engineering. She has spent three work terms (periods of outside employment through the school) with Hiltz & Seamone Co. Ltd, a consulting firm in the Annapolis Valley, NS. At Hiltz & Seamone Co., she gained invaluable experience in the field of municipal and environmental engineering. Over the course of these work terms, her focus was on Leadership in Energy and Environmental Design (LEED), including researching and aiding in the design of wastewater systems and sewage treatment plants. She is currently on a work term with Altime Engineering Ltd, a consulting firm in St. Albert, AB.

### ABEA Scholarships

The Atlantic Branch Equipment Association has announced the availability of four \$1,000 scholarships for sons or daughters of ACWWA/ABEA members entering their first year at a college or university. Preference will be given to those intending to pursue a career related to the water/wastewater industry and those choosing to study in Atlantic Canada; application deadline is April 30. For other eligibility criteria and information, visit [www.abea.biz/scholarship-program](http://www.abea.biz/scholarship-program).

## News From the Federal-Provincial-Territorial Committee on Drinking Water

The main responsibility of the Federal-Provincial-Territorial Committee on Drinking Water (CDW) is to establish the Guidelines for Canadian Drinking Water Quality. Provinces and territories use the guidelines as necessary to manage their drinking water quality programs; some Canadian jurisdictions have adopted the guidelines as regulated standards. The committee aims to establish five to seven guidelines per year based on a priority list that is reviewed on a regular basis.

The CDW also sponsors the Canadian National Drinking Water Conference, which has to date been organized by the Canadian Water and Wastewater Association. This biennial

conference is a well-established and -anticipated event that attracts hundreds of water professionals and researchers from across the country and around the world. The conference provides a unique opportunity for all stakeholders to meet and present or exchange views on current or emerging issues related to the provision of safe drinking water.

The CDW is made up of voting and non-voting members. There are 14 voting members, one for each jurisdiction in Canada (ten provinces, three territories, and the federal government). Voting members represent the authority responsible for

*(Continued on page 18)*

# ACWWA Training Survey



## Atlantic Canada Water & Wastewater Association Education Committee Training Needs Survey

The ACWWA Education Committee is conducting a Training Needs Assessment to determine the training needs of both its members and other stakeholders in the water and wastewater industry.

The Committee is soliciting feedback from municipalities to determine the training needs of their staff involved in the operation of their water and wastewater facilities. We would appreciate it if you could take the time to complete the following questionnaire.

### PART I – WORKSHOP/TRAINING SUGGESTIONS

Please check the courses of interest and add any suggestions in the space provided.

#### 1. Management Courses

The following courses are designed for people who manage and make decisions for water and wastewater facilities. The target audience would include utility managers, municipal politicians and municipal managers.

<input type="checkbox"/>	Planning and Budgeting
<input type="checkbox"/>	Due Diligence
<input type="checkbox"/>	Regulatory Framework
<input type="checkbox"/>	Standards
<input type="checkbox"/>	Planning and Budgeting
<input type="checkbox"/>	Developing a Consumer Confidence Report
<input type="checkbox"/>	Emergency Planning
Suggested Courses:	

#### 2. Technical Courses

The following courses are focused on the technical aspects of the water and wastewater industry. The target audience would include consultants, engineers, and operators.

<input type="checkbox"/>	CT Disinfection Concepts
<input type="checkbox"/>	Data Management and Analysis
<input type="checkbox"/>	Water Distribution System Design
<input type="checkbox"/>	Hydraulics
<input type="checkbox"/>	Water Chemistry Analysis
<input type="checkbox"/>	Water Design Guidelines
<input type="checkbox"/>	Facility Security
Suggested Courses:	

#### 3. Operational Courses

The following courses are designed to assist water and wastewater operators in the operation of their facilities.

<input type="checkbox"/>	Laboratory Procedures
<input type="checkbox"/>	Pump Operation and Maintenance
<input type="checkbox"/>	Chlorination
<input type="checkbox"/>	Cross Connection Control
<input type="checkbox"/>	Basic Mathematics
<input type="checkbox"/>	Chemical Feed Systems
<input type="checkbox"/>	Corrosion Control Methods
<input type="checkbox"/>	Water Metering
<input type="checkbox"/>	Valves
<input type="checkbox"/>	Hydrants
<input type="checkbox"/>	Operations and Maintenance
<input type="checkbox"/>	Basic Instrumentation
<input type="checkbox"/>	Basic SCADA and Control Systems
<input type="checkbox"/>	Leak Detection
<input type="checkbox"/>	Inflow and Infiltration
<input type="checkbox"/>	Lift Station Design and Maintenance
<input type="checkbox"/>	Pipeline Cleaning and Maintenance
Suggested Courses:	

#### 4. Preferred Locations

Please indicate your preferred location for training.


## PART II – BACKGROUND INFORMATION (OPTIONAL)

In order for the ACWWA Education Committee to better understand your needs, please answer the following questions:

What municipality do you work for?

What is your position?

What is your perception of the importance of drinking water in your community?

Do you feel there are barriers to getting yourself and/or your operational staff out to training? Please explain.

## PART III – POTENTIAL INSTRUCTORS

If your municipality has staff that would be interested in instructing a course, please provide the following information:

- Contact information;
- Topics they may be comfortable instructing;
- Locations they would be able to travel to instruct; and
- Whether they are bilingual.

Name	Contact Info	Topics	Locations	Bilingual

### Please Return Completed Survey to the ACWWA

Box 41002  
Dartmouth, NS  
B2Y 4P7

FAX – (902) 435-7796  
contact@acwwa.ca

# Library List



## ACWWA Library of Water and Wastewater Documents

The following water and wastewater documents are available for review by ACWWA members. The documents can be borrowed from the Section for a period not exceeding three weeks.

Please fax or email the office to request a loan of any current titles in the ACWWA Library. Please provide the title of the document, along with your membership number and mailing address.

### BOOKS

1. Good Practices for Preventing Microbiological Contamination of Water Mains
2. Chlorine Safety Pocket Guide
3. Plain Talk about Drinking Water
4. Water Distribution Operator Training Handbook
5. Water Treatment Operator Handbook
6. Avoiding Rate Shock: Making the Case for Water Rates
7. Operator Certification Study Guide: A Guide to Preparing for Water Treatment and Distribution Operator Certification Exams
8. Performance Benchmarking for Water Utilities
9. Water Quality: Principles and Practices of Water Supply Operators
10. Water Sources: Principles and Practices of Water Supply Operators
11. Recommended Practice for Backflow Prevention and Cross Connection Control M14
12. Basic Science Concepts and Applications for Wastewater Student Workbook
13. Water Treatment Student Handbook
14. Water Transmission and Distribution: Principles and Practices of Water Supply Operators
15. Basic Science Concepts and Applications
16. Water Quality Student Workbook
17. Basic Microbiology for Drinking Water Personnel
18. Air-Release, Air/Vacuum & Combination Air Valves M51
19. The Site Calculations Pocket Reference
20. AWWA Wastewater Operator Field Guide
21. Basic Chemistry for Water and Wastewater Operators
22. Principles and Practices of Water Supply Operations- Water Treatment
23. Basic Science Concepts and Applications for Wastewater
24. AWWA Water Operator Field Guide
25. Water Treatment Plant Operation Volume I
26. Water Treatment Plant Operation Volume II
27. Water Distribution System Operation and Maintenance
28. Operation of Wastewater Treatment Plants Volume I
29. Operation of Wastewater Treatment Plants Volume II
30. O&M Wastewater Collection Volume I
31. O&M Wastewater Collection Volume I
32. Installation, Field Testing, and Maintenance of Fire Hydrants M17
33. Distribution Valves M44
34. Math for Water Treatment Operators
35. Math for Distribution System Operators
36. Wastewater Operators Guide to Preparing for the Certification Examination
37. The Story of Drinking Water
38. Groundwater Manual of Water Supply Practices M21
39. Water Chlorination/Chloramination Practices and Principles M20
40. Safety Practices for Water Utilities Manual of Water Supply Practices M3
41. Small Water System Operation and Maintenance
42. ANSI/AWWA Standards for Small Water Systems
43. Water and Wastewater Calculations Manual
44. Water Quality Complaint Investigator's Field Guide
45. Splash Activity Book
46. Give Water a Hand Action Guide-A Youth Program for Environmental Action
47. Principles and Practices of Water Supply Operations – Water Treatment
48. AWWA Canadian Cross Connection Control Manual
49. Wastewater Collection System Operator Certification Studybook
51. NH<sub>3</sub> Treatment Processes for the Removal of Ammonia From Municipal Wastewater
52. Waterborne Pathogens M48
53. Unquenchable: America's Water Crisis and What to do about it
54. Water Efficiency – Best Management Practices
55. Water Efficiency – A Guidebook for Small & Medium-sized Municipalities in Canada
56. Water Audits and Loss Control Programs M36
57. Wastewater Operator Certification Study Guide
58. Technical Guide – Performance improvement for small & medium sized water utilities
59. Design of Municipal Wastewater Treatment Plants: Volume 1 Planning and Configuration of Wastewater Treatment Plants
60. Design of Municipal Wastewater Treatment Plants: Volume 2 Liquid Treatment Processes
61. Design of Municipal Wastewater Treatment Plants: Volume 3 Solids Processing and Management
62. The Truth About Pharmaceuticals & Personal Care Products in Your Water
63. Water Treatment Plant Residuals
64. Pump Selection and Troubleshooting Field Guide
65. Disinfection of Pipelines and Storage Facilities Field Guide
66. The Ultraviolet Disinfection Handbook
67. Maintenance Management for Water Utilities
68. Watershed Management for Drinking Water Protection
69. Wastewater Microbiology
70. The Chlorine Dioxide Handbook
71. Iron and Manganese Removal Handbook
72. Math for Wastewater Treatment Operators 1 & 2
73. Math for Wastewater Treatment Operators 3 & 4
74. Modeling Water Quality in Drinking Water Distribution Systems
75. Advanced Waste Treatment
76. Chemical Feed Field Guide
77. Pretreatment Field Guide
78. Filter Operations Field Guide
79. Safety Practices for Water Utilities M3
80. Information Technology in Water and Wastewater Utilities
81. Operational Control of Coagulation and Filtration Processes M37
82. Water Treatment Process Monitoring and Evaluation
83. Modeling Water Quality in Distribution Systems

### DVD'S

1. Whaddya Know about H2O?
2. Operator Math Made Easy
3. Satellite Teleconference – Innovative Operator Tools – Scada, AMR & GIS
4. Satellite Teleconference – Pipeline Repair
5. Safety First – Pipe Handling for Field Crews
6. Safety First – The Safety of Water Treatment Chemicals
7. Optimizing Filtration Operations
8. Liquid Assets
9. Filter Back Wash Recycling Rule
10. Helping Consumers Make Smart Choices about Home Treatment Devices – Facts & Filter
11. How Water Works An Interactive Tour

### VHS

1. How to Prepare for Operator certification
2. AWWA Satellite Teleconference - Excellence in Water Quality Distribution
3. AWWA Satellite Teleconference – The Basics of Waterborne Pathogens
4. AWWA Satellite Teleconference – Fire Hydrant Operations and Maintenance



# Water For People Update

## EVERYONE: Are you in? by Indra R. Prashad, P.Eng., President, Water For People-Canada

Everyone—a simple word that we use every day in casual conversation. Water For People has taken that word and given it a more complex meaning, one that asks us to take part in a more serious conversation.

The Everyone Campaign asks us to imagine a time when everyone—every family, every school, every clinic has access to safe water. We would like you to imagine a time when organizations like Water For People are no longer needed. Ambitious? Absolutely.

Just take a look at one of the countries that has made this pledge with Water For People. The Rwandan Government committed in October 2010 to have safe water coverage for 265,000 people in 494 villages in the Rulindo District by the end of 2014 ([www.waterforpeople.org/everyone/rulindo-challenge.html](http://www.waterforpeople.org/everyone/rulindo-challenge.html)).

Water For People has developed a unique model within the nongovernmental organization (NGO) water and sanitation sector. We are not interested in providing “handouts”; we believe in giving a hand up. We don’t believe in 100 percent funding of projects; we believe that success is founded on empowering local communities and governments to build and sustain their own reliable safe water systems. We don’t have beneficiaries; we have partners.

Our commitment to sustainability is more than just words; we will stay and monitor all of our projects for at least 10 years—and we will not be satisfied with anything less.

We have developed a revolutionary tool to do just that: FLOW (Field Level Operations Watch). FLOW measures what is working, and what is not working. Data is collected and analyzed by a dedicated group—the World Water Corps—who volunteer their time at their own cost to travel to our program countries. Check our Water For People-Canada webpage and meet the Canadians who volunteer with the World Water Corps. And track our progress at [www.watermapmonitordev.appspot.com](http://www.watermapmonitordev.appspot.com).

The Everyone Campaign, the commitment to monitoring and sustainability, Water For People’s talented staff, the dedication of our local committees throughout North America and our World Water Corps team have made Water For People an

organization to watch in the NGO sector. We have attracted the attention of the Bill & Melinda Gates Foundation, which recently gave Water For People a \$5.6 million grant for the Sanitation as a Business Program; and Ned Breslin, Water For People’s dynamic CEO, was awarded the 2011 Skoll Award for Social Entrepreneurship.

All of this has happened because Water For People is changing the conversation about ending water and sanitation poverty, forever. For more information, go to Water For People-Canada’s webpage, [www.waterforpeople.org/about/offices/water-for-people-canada](http://www.waterforpeople.org/about/offices/water-for-people-canada), or contact Mike Chaulk [mikec@cbcl.ca](mailto:mikec@cbcl.ca) or (902) 421-7241.

Upcoming fundraising opportunities in Atlantic Canada include:

- Annual Well Tapped Fundraiser, Halifax: March 23, 2012
- Annual Softball Tournament, Halifax: June 2012
- Annual ACWWA Conference, Charlottetown: October 2012



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# Distribution

## Passive Mixing Systems Improve Storage Tank Water Quality

Modeling and field monitoring are helping utilities understand the complexities of water storage tank mixing and how to identify and correct mixing problems. **BY MICHAEL DUER**

**D**ECREASED WATER quality in storage tanks results from short-circuiting, incomplete mixing, low volume turnover, and high water age. As a result, utilities have problems with temperature stratification, loss of disinfectant residual, disinfection by-product (DBP) spikes, bacteria regrowth, biofilm growth, taste and odor, and nitrification (chloramines). Such problems can be eliminated and water quality can be improved by

optimizing turnover and achieving complete mixing with passive mixing systems.

### TURNOVER AND WATER AGE

Storage tanks stabilize pressure in distribution systems, provide equalizing storage for peak daily demands, and provide reserves for firefighting and emergencies. With typical daily demand patterns, water is exchanged in and out of a tank, usually filling at night and draining during the day. Storage tanks must



Experiments show that distributing the inlet through multiple inlet ports results in significantly faster mixing—up to 50 percent faster compared with a single inlet pipe.

also turnover their water to minimize water age.

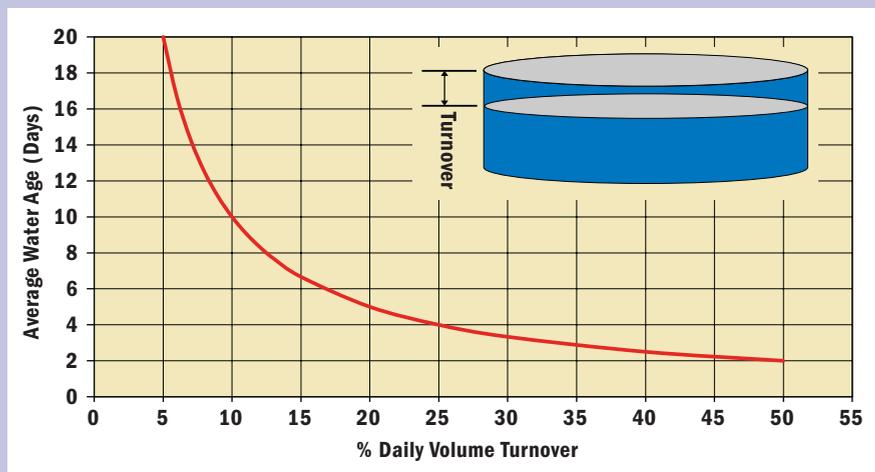
A tank's volume turnover determines the average age of water in the tank. Figure 1 illustrates average water age vs. daily tank turnover. Acceptable volume turnover depends on factors such as source water, treatment process, distribution system volume, and infrastructure condition. A common goal is a 20–30 percent daily volume turnover, resulting in water age of 3–5 days.

Water age, however, assumes complete mixing of a tank's contents. If a tank isn't mixed, and if the oldest water isn't drawn from the tank first, the tank will short-circuit and cause a localized increase in water age. For example, a tank may have a volume turnover of 20 percent/day, but if the water isn't mixed and short-circuits, the tank may contain water much older than 5 days—perhaps weeks or months old. This localized increase in water age causes water quality problems such as loss of residual, DBP spikes, bacteria regrowth, and other problems associated with high water age and elevated temperature. Experienced water operators have used various methods to increase tank turnover, such as changing pump on-off setpoints or ramping down pumps

PHOTOGRAPH: TIDEFLEX TECHNOLOGIES

**Figure 1. Average Water Age vs. Daily Tank Turnover**

Increasing tank turnover reduces water age.





This feature is an excerpt from *Opflow*, published August 2011 by American Water Works Association ([www.awwa.org](http://www.awwa.org)). Reprinted by permission.

Michael Duer is with Tideflex Technologies ([www.tideflex.com](http://www.tideflex.com)), Carnegie, Pa.

these circulation patterns, which often persist for hours after the fill cycle has ended. Complete mixing is achieved when a fill cycle lasts longer than the time required for complete mixing, which is calculated with the equation below.

$$\tau_m = K' \frac{V^{2/3}}{M^{1/2}}$$

Where

$\tau_m$  = mixing time

$K'$  = an experimental constant ( $\approx 10.2$ ) for a single inlet with no temperature difference between inlet and tank water

$V$  = tank volume

$M$  = inflow momentum (flow rate x velocity)

equipped with variable frequency drives. Distribution system operation and optimization are keys to improving water quality in storage tanks.

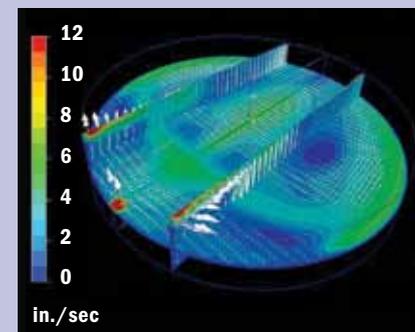
#### MIXING

A built-in energy source inherent to distribution systems—differential pressure—can effectively mix tanks with a properly designed passive mixing system, often with 10 percent volume turnover or less. Mixing in tanks occurs during fill cycles, resulting from momentum of flow being injected into tank water that's at zero velocity. The velocity difference between the inlet jet and tank water creates turbulence, which develops circulation patterns throughout the tank. Figure 2 is a computational fluid dynamics (CFD) model of a circular reservoir with a bottom inlet located near the wall of the tank. The colored contours and white vectors illustrate velocity magnitude and direction of circulation patterns that develop throughout the entire water volume. Circulation patterns develop in all tank styles—circular reservoirs, rectangular reservoirs, elevated tanks, and standpipes—but are specific to each tank's geometry and inlet port configuration.

During the fill cycle, new water is dispersed through the tank volume via

#### Figure 2. CFD Model of Circular Reservoir, Bottom Inlet

Circulation patterns are 3-D and develop through the entire tank volume.



However, the equation doesn't account for temperature differences between distribution system and tank water. Temperature differences change circulation patterns and can result in incomplete mixing, even though the equation predicts a mixing time. Also, CFD and scale modeling have shown that a single, fixed-diameter inlet pipe isn't nearly as efficient as multipoint mixing systems, because a single inlet concentrates all momentum in one location of the tank.

#### INLET-OUTLET PIPE SEPARATION

Separating inlet and outlet pipes has become more common and is mandated by some states. Conceptually, it's a good design goal. However, locating the outlet pipe as far apart as possible from the inlet pipe is often the incorrect location. The outlet pipe(s) should be located based on the tank's circulation patterns, which are determined by tank style and inlet.

Figure 3 is a CFD model of a circular reservoir with an inlet pipe through the sidewall. Conventional wisdom says to locate the outlet on the opposite side of the tank, 180° from the inlet pipe. However, that isn't the area that mixes

last. To prevent short-circuiting, this tank needs two outlet pipes—one in each semicircular low-velocity area. With a properly designed passive mixing system, however, the location of the outlet pipe isn't critical because the entire water volume will be mixed and homogenous.

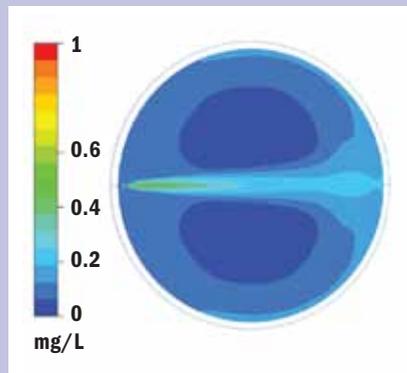
#### TEMPERATURE EFFECTS

The mixing inefficiency of a single, fixed-diameter inlet pipe can be a problem when tank and distribution system water temperatures differ. Summertime usually presents the greatest challenge, because inlet water is typically colder than tank water. Colder water is denser and negatively buoyant; therefore, it sinks. Figure 4 is a scale model of a 30-ft deep circular reservoir with colder water entering the tank through a bottom inlet pipe near the tank wall. Initially, the jet rises and hits the water surface, but water from the jet is denser, so it falls back to the tank floor and spreads horizontally. Because momentum is concentrated in one area, there's no vertical momentum to mix through the depth away from the inlet. In this case, the bottom half of the tank is mixed and water quality is adequate, but the top half isn't mixed; the water moves up and down like a piston and continually increases

# Distribution

**Figure 3. CFD Model of Circular Reservoir, Sidewall Inlet**

Dark blue zones on each side of the tank's centerline show the two areas that mix last.



in temperature and water age with each fill-and-draw cycle. Deep cycling this tank 50 percent won't correct the problem. The tank will short-circuit because freshwater is pulled from the bottom of the tank, leaving poor-quality water in the top of the tank. This problem can occur in all styles of storage tanks, but particularly in standpipes, because of their depth.

### PASSIVE MIXING SYSTEMS

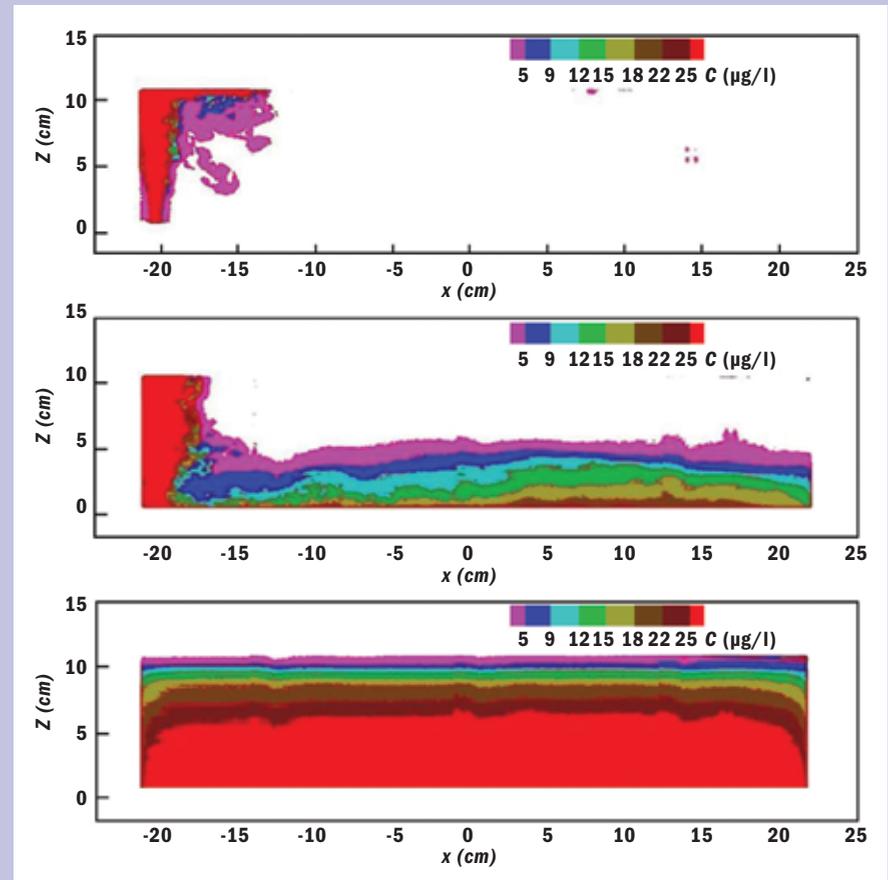
A research report from the Water Research Foundation, *Physical Modeling of Mixing in Water Storage Tanks*, and CFD scale modeling identify two important characteristics of passive mixing systems.

Multiport passive mixing systems (MPMSs) mix tanks up to 50 percent faster than a single inlet pipe, because MPMSs distribute inlet flow momentum through the tank instead of flow being concentrated in one area.

An MPMS can mix tank water during warmer summer months with colder, denser inlet water when a single inlet pipe would result in incomplete mixing and stratification. Figure 5 is a scale model of a six-port MPMS that achieved complete mixing. The same tank with a single inlet

**Figure 4. Scale Model of Circular Reservoir, One Inlet With Colder Water**

A single, fixed-diameter inlet pipe can lead to incomplete mixing when tank and distribution system water temperatures differ.



(Figure 4) resulted in incomplete mixing and stratification.

Properly designed passive mixing systems require knowledge of jet-induced mixing characteristics—as a function of tank style, flow, turnover, momentum, and density differences—to determine

the proper location, elevation, spacing, discharge angles, and jet velocity of inlet and outlet ports to achieve complete mixing.

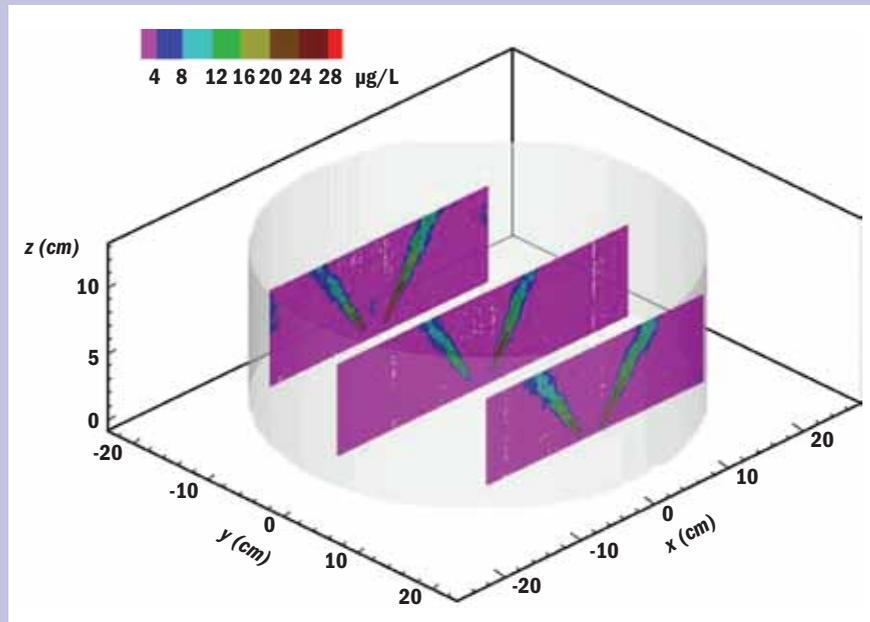
The photos below show MPMSs in various tank styles. The MPMS separates the inlet and outlet inside the tank



Water quality depends on both mixing and volume turnover.

### Figure 5. Scale Model of Six Inlet Ports

Unlike the tank shown in Figure 4, multiple ports can completely mix tanks when inlet water is colder than tank water.



with one manifold and two sets of nonmechanical check valves. CFD and scale modeling results for each tank style are used to properly design the system for complete mixing. Hydraulically, the tank operates the same with an MPMS and a common inlet–outlet pipe, but inlet water enters and mixes the tank through strategically located duckbill inlet nozzles and exits the tank through the outlet check valves. The duckbill nozzles are a variable orifice (progressively opening and closing with increased and decreased flow rates), so they maximize jet velocity at all flow rates, resulting in faster mixing. The MPMS is “green” because it uses the energy in the distribution system and doesn’t require maintenance.

#### ACTIVE MIXING

For tanks that have extremely low or no turnover, one way to mix a tank is to use an active mixing system that can operate 24 hours/day if necessary. A

recirculation pump in a valve vault and a passive mixing system in the tank are effective. The pump can be low flow and low head, because it can run 24 hours/day and uses pressure from the tank. From an inspection and maintenance standpoint, it’s handy for the mechanical components to be in the valve vault where they’re easily accessible. However, water quality depends on both mixing and volume turnover. Without volume turnover, continuous mixing only results in mixing continually aging water.

Another application using a pump is to force water back into the distribution system, instead of continuously recirculating it back into the tank. The forced drawdown will achieve volume turnover and mix the tank when the pump is kicked off and the tank refills.

With extensive CFD, scale modeling, and field monitoring, properly designed MPMSs have proven to be a “green,” no-maintenance, and effective method to improve storage tank water quality. 💧

#### CASE STUDY

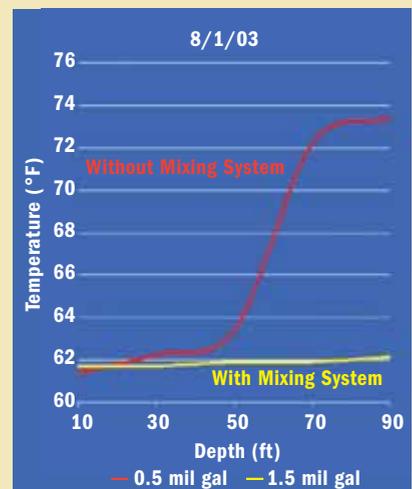
### STANDPIPE COMPARISON REVEALS MIXING BENEFITS

Clark Public Utilities, Vancouver, Wash., compared mixing characteristics of two adjacent standpipes, both 125 ft deep. A 26-ft-diameter (0.5-mil gal) tank had a common



inlet–outlet pipe at the bottom of the tank, and a multiport duckbill mixing system was installed in a 45-ft-diameter (1.5-mil gal) tank.

Temperature data loggers collected data through the depth of each tank every 30 minutes for more than 1 year. August data, shown in the accompanying chart, illustrate significant stratification, 12° top to bottom, in the tank without a mixing system. The mixing system eliminated stratification in the larger tank. The utility also reported that lower bulk water temperature decreased chlorine demand and bacteria regrowth potential.



# ACWWA News

*(Continued from page 9)*

drinking water quality in their jurisdiction, usually either the department of health or environment.

The CDW meets twice per year. The spring meeting is held in Ottawa and the fall meeting is hosted by a provincial-territorial member; the fall 2011 meeting was held in Halifax, NS.

For each guideline being considered, Health Canada prepares a draft guideline technical document that outlines current information on health effects associated with the contaminant, Canadian exposure to the contaminant, and treatment and analytical considerations.

Draft documents generally include a proposed guideline value and are peer-

reviewed by external experts; following peer review, documents are reviewed by the CDW and approved for public consultation. Documents are posted on the Health Canada website for the duration of the public consultation period. Revisions are made based on comments received during public consultation. Once comments are addressed,

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# SHAPING LIVES



the guideline technical document is approved through Federal-Provincial-Territorial processes and published on Health Canada's website, [www.hc-sc.gc.ca](http://www.hc-sc.gc.ca).

## 2011 HIGHLIGHTS

In 2011, the following guideline technical documents were posted on Health Canada's website:

- Fluoride (posted June 2011)
- Carbon Tetrachloride (posted July 2011)
- *N*-Nitrosodimethylamine (NDMA) (posted Aug. 2011)

Also last year, the following guideline technical documents were approved for posting on Health Canada's website (posting date to be determined):

- Protozoa (approved Nov. 2011)
- Bacteriological – HPC (approved Nov. 2011)

The following guideline technical documents were released for public consultation:

- *Escherichia coli* (Sept. 7 to Nov. 18, 2011)
- Total Coliforms (Sept. 7 to Nov. 18, 2011)
- Turbidity (Nov. 16, 2011 to Jan. 27, 2012)

The following guidelines and supporting documents were also approved to be released for public consultation (consultation period to be determined):

- Bacterial Waterborne Pathogens
- Ammonia
- Vinyl Chloride

## LOOKING AHEAD

CDW will host the 15th Canadian National Conference and 6th Policy Forum on Drinking Water in Kelowna, BC Oct. 21–24. The conference theme is assessing and managing risk. Plan to attend!

For more information, visit [www.hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/guide/index-eng.php](http://www.hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/guide/index-eng.php), or email Judy MacDonald at [macdonjx@gov.ns.ca](mailto:macdonjx@gov.ns.ca).

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Shown here is Isla, step-daughter of Jamal, one of our valued employees in Atlantic Canada



# Certification Corner



Excerpted from the January 2011 issue of *Opflow*, published by AWWA. For more information and references, visit [www.awwa.org](http://www.awwa.org).

## WATER

- Free chlorine residual values are based on a contact time of at least
  - 1 min.
  - 10 min.
  - 30 min.
  - 60 min.
- A filter has a surface area of 920 ft<sup>2</sup>. What's the filtration rate in gpm/ft<sup>2</sup> if the filter receives a flow of 4,875 gpm?
  - 2.4 gpm/ft<sup>2</sup>
  - 4.8 gpm/ft<sup>2</sup>
  - 5.3 gpm/ft<sup>2</sup>
  - 9.2 gpm/ft<sup>2</sup>
- If a pump discharges 10,350 gal in 3 hr and 45 min, how many gpm is the pump discharging?
  - 43 gpm
  - 44 gpm
  - 45 gpm
  - 46 gpm

## WASTEWATER

- What's the angle of the bars on a manually cleaned bar screen?
  - 25°
  - 30°
  - 33°
  - 45°
- What should be the color of an oxidation ditch that's working properly?
  - Light yellow to tan
  - Tan to light brown
  - Light brown to medium brown
  - Medium brown to dark brown
- When nitrification is required in the activated sludge process, the nitrification organisms are called
  - facultative bacteria.
  - obligate aerobes.
  - aerobes.
  - anaerobes.

## ANSWERS

Water: 1, b, 2, c, 3, d. Wastewater: 1, b, 2, d, 3, b

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