

W A T E R R E S O U R C E S

# IMPACT

November 2015 | Volume 17 | Number 6



OPEN WATER  
DATA INITIATIVE

## AWRA

*Community, Conversation, Connections*

AMERICAN WATER RESOURCES ASSOCIATION

**DO SOMETHING  
TODAY THAT  
YOUR FUTURE  
SELF WILL  
THANK YOU FOR.**

# Renew Your AWRA Membership Today!

Now, it's as easy as one...two... (no three necessary!).

1. Grab your credit card.
2. Go to [www.awra.org](http://www.awra.org) (or scan the QR code below) and click on **RENEW TODAY**.  
(Your member ID# is on your *IMPACT* Shipping label, or contact [Christine@awra.org](mailto:Christine@awra.org) with questions.)

**Don't miss an issue of JAWRA or IMPACT.** Resolve to access our **Members Only Webinar Archives**, check out the **Career Center**, or join a **Members Only Technical Committee**. Commit to interacting with other professionals who, like you, are seeking a way around the stove-pipe tendencies of their job to create the most useful and forward-thinking solutions for water resources management.

In everything we do, AWRA works to bring together the leaders in water resource management, research and education. **Continue to be a part of everything we do. Renew today!**



**RENEW. PARTICIPATE.  
CHANGE WATER RESOURCES MANAGEMENT – FOREVER.**

# THE OPEN WATER DATA INITIATIVE

SANDRA FOX

Guest Associate Editor ~ [sfox@sjrwmd.com](mailto:sfox@sjrwmd.com)

In the face of climate change and unprecedented drought, improving access to data and enabling open exchange of water information is imperative. As geospatial information has undergone the transition from paper maps to digital data, and then from digital data to increasing availability as web services, the next major transition is to the "Open Water Web." This issue of *Water Resources IMPACT* brings together leaders in the Open Water Data Initiative – the OWDI – seeking to improve the Open Water Web. AWRA through its commitment to "Community, Conversation, Connections" is actively playing a role to support the OWDI.

### 3 "Community, Conversation, Connections" in Support of the Open Water Data Initiative ... Sandra Fox

#### FEATURE ARTICLES

### 5 Context of the Open Water Data Initiative ... Jerad D. Bales

Recognizing the many challenges created by the fragmented nature of the ever-increasing amount of water and water-related data, the Federal government's Open Water Data Initiative was conceived, and then formerly presented at AWRA's 2014 Annual Conference in Tysons Corner, Virginia.

### 7 The Open Water Data Initiative: Water Information for a Thirsty Nation ... Alan H. Rea, Edward P. Clark, Angela Adams, and William B. Samuels

Initial efforts of the Open Water Data Initiative have focused on three use cases covering flooding, drought, and contaminant spill response, with a goal of identifying critical water data resources and making them more accessible. Significant progress has been made in the past year, although much remains to be done.

### 11 Virtuous Data Management: Ensuring the Availability and Quality of Environmental Data ... Theodore A.D. Slaweck

The handling of data in a principled and exemplary manner – a "re-branding" of the overall data management approach as "Virtuous Data Management" – provides a roadmap to improved communications and understanding with managers and the general public.

### 14 Enabling the Free Flow of Water Data ... Daniel P. Ames and David G. Tarboton

The need for interoperability was anticipated in the U.S. Presidential Executive order on open data, "Making open and machine readable the new default for government information." Three important developments in open water standards and software are presented that will help us rise to this data challenge.

### 18 The National Water Availability and Use Science Program ... Sonya A. Jones, Ari M. Michelsen, Eric J. Evenson, and David Blodgett

The creation of a "national water availability and use assessment program" within the USGS is part of the SECURE Water Act, Omnibus Public Land Management Act of 2009. Among the goals of this program are to provide a more accurate assessment of the status of water resources in the U.S., and develop the basis for an improved ability to forecast the availability of water for future economic, energy production, and environmental uses.

### 21 OWDI Impacts: Testimonials From the Future ... John C. "Jack" Hampson, William B. Samuels, and John K. Dorman

What will stakeholders be saying in the future about how the OWDI has improved their work? Take a trip "back to the future" with the authors as they imagine how the OWDI will impact management of a toxic oil spill, flood risk/emergency management, and application development.

WATER RESOURCES

# IMPACT

VOLUME 17 • NUMBER 6 • NOVEMBER 2015

## Other features in this issue ...

### ▲ AWRA BUSINESS

- 10 Advertising Opportunities in *IMPACT*
- 17 Highlights of October 2015 *JAWRA Papers*
- 24 Scheduled Topics for Future Issues of *IMPACT* ~ 2016
- 28 AWRA Multi-Conference App is LIVE!
- 29 Richard A. Herbert Memorial Scholarship Opportunities for 2016-2017
- 29 Scheduled 2016 AWRA Meetings  
Mark Your Calendars!  
Spring ~ April 25-27  
Water - Energy - Environment  
Anchorage, Alaska  
Summer ~ July 11-13  
GIS and Water Resources IX  
Sacramento, California  
AWRA Annual Water Resources  
Conference ~ November 14-17  
Orlando, Florida
- 30 AWRA 2015 Executive Committee

### ▲ OPINION COLUMNS

- 23 *What's Up With Water ... Pope Francis, Greed, and Destruction of the Environment ... Eric J. Fitch*
- 25 *The New Economy of Water ... Private Capital Has the Potential to Make a Splash in the Colorado River Basin ... Tanner Ketellapper and Clay J. Landry*

(Opinions expressed by our columnists are their own and do not represent the opinion or position of AWRA.)

### ▲ PRESIDENT'S MESSAGE

- 26 Parting Thoughts ... *John C. Tracy*

### ▲ WATER RESOURCES PUZZLER . . . . .27 Answers . . . . . 28

### ▲ ADVERTISERS

- Dynamic Solutions International, LLC . . . . .4
- GoldSim Technology Group, LLC . . . . . 28



# AWRA

Community  
Conversation  
Connections

**A Bi-Monthly Publication of the  
AMERICAN WATER RESOURCES ASSOCIATION**

**AMERICAN WATER RESOURCES ASSOCIATION**  
4 West Federal Street • P.O. Box 1626  
Middleburg, VA 20118-1626  
(540) 687-8390 / Fax: (540) 687-8395  
E-Mail: [info@awra.org](mailto:info@awra.org) • Homepage: [www.awra.org](http://www.awra.org)

**EDITOR-IN-CHIEF**

**ERIC J. FITCH**

Associate Professor of Environmental Science and Leadership  
Chair, Department of Biology and Environmental Science  
Director, Environmental Science Program  
Marietta College ~ 215 Fifth St. ~ Marietta, Ohio 45750  
(740) 376-4997 ~ Fax: (740) 376-4753  
E-Mail: [IMPACT-editor@awra.org](mailto:IMPACT-editor@awra.org)

**TO PLACE AN AD IN THIS PUBLICATION CONTACT**

**CHRISTINE MCCREHIN**

**DIRECTOR OF MEMBERSHIP AND MARKETING**

**(540) 687-8390 / Fax: (540) 687-8395**

E-Mail: [christine@awra.org](mailto:christine@awra.org)

*Water Resources IMPACT* is owned and published bi-monthly by the American Water Resources Association, 4 West Federal St., P.O. Box 1626, Middleburg, Virginia 20118-1626, USA. The yearly subscription rate is \$80.00 domestic and \$95.00 for international subscribers. For the International Priority Shipping Option, add \$50.00 to the international subscription rate. Single copies of *IMPACT* are available for \$15.00/each (domestic) and \$20.00/each (international). For bulk purchases, contact the AWRA Headquarters (HQ) office.

CLAIMS FOR MISSING ISSUES should be sent to the AWRA office in Middleburg, Virginia. No claim allowed for (1) insufficient notice of address change; (2) issues lost in the mail unless claimed within (a) 90 days for U.S.A., or (b) 180 days for other countries, from last day of month of publication; or (3) such reasons as "missing from files."

*IMPACT* is a magazine of ideas. Authors, Associate Editors, and the Editor-in-Chief work together to create a publication that will inform and will provoke conversation. The views and conclusions expressed by individual authors and published in *Water Resources IMPACT* should not be interpreted as necessarily representing the official policies, either expressed or implied, of the American Water Resources Association.

Mention of any trademark or proprietary product in works published in the *Water Resources IMPACT* does not constitute a guarantee or warranty of the product by the American Water Resources Association and does not imply its approval to the exclusion of other products that may also be suitable.

Contact the AWRA HQ office if you have any questions pertaining to your membership status. For information on advertising rates and deadlines, contact Christine McCrehin at the e-mail address or phone number given above.

**POSTMASTER:** Send address changes to *Water Resources IMPACT*, American Water Resources Association, 4 West Federal St., P.O. Box 1626, Middleburg, VA 20118-1626. Copyright © 2015 by the American Water Resources Association.

• VOL. 17 • NO. 6 • NOVEMBER 2015 •  
ISSN 1522-3175

**ASSOCIATE EDITORS**

**JOE BERG**

([jberg@biohabitats.com](mailto:jberg@biohabitats.com))  
Biohabitats, Inc. ~ Baltimore, Maryland

**LISA BEUTLER**

([Lisa.Beutler@mwhglobal.com](mailto:Lisa.Beutler@mwhglobal.com))  
MWH ~ Sacramento, California

**MAE A. DAVENPORT**

([mdaven@umn.edu](mailto:mdaven@umn.edu))  
University of Minnesota ~ St. Paul, Minnesota

**JONATHAN E. JONES**

([jonjones@wrightwater.com](mailto:jonjones@wrightwater.com))  
Wright Water Engineers ~ Denver, Colorado

**CLAY J. LANDRY**

([landry@waterexchange.com](mailto:landry@waterexchange.com))  
WestWater Research ~ Boise, Idaho

**RICHARD H. MCCUEN**

([rhmccuen@eng.umd.edu](mailto:rhmccuen@eng.umd.edu))  
University of Maryland ~ College Park, Maryland

**E. TIM SMITH**

([etsmithsiri@aol.com](mailto:etsmithsiri@aol.com))  
Sustainable Water Resources Roundtable

**COPY EDITOR**

**RICHARD A. ENGBERG**

([dick@awra.org](mailto:dick@awra.org))  
American Water Resources Association  
Middleburg, Virginia

**SUBSCRIPTION RATES  
WATER RESOURCES IMPACT**

DOMESTIC .....\$80.00  
FOREIGN .....\$95.00  
FOREIGN AIRMAIL OPTION.....\$50.00  
SINGLE COPIES AVAILABLE  
DOMESTIC .....\$15.00  
INTERNATIONAL.....\$20.00

**CONTACT THE AWRA HQ OFFICE FOR  
ADDITIONAL INFORMATION OR TO SUBSCRIBE**

**Have Questions About IMPACT?  
Contact AWRA HQ**

Phone • (540) 687-8390 / Fax 13 • (540) 687-8395  
By E-Mail • [info@awra.org](mailto:info@awra.org)  
Check Out Our Home Page At [www.awra.org](http://www.awra.org)

**Cover Photos: Background photo from istock.com. See  
pgs. 3, 9, and 14 for additional information on other  
photos used.**



**AWRA . . . Community,  
Conversation,  
Connections**