### WORF | Water Quality Research Foundation



# 2019 WQRF ANNUAL REPORT



### LETTER FROM THE PRESIDENT

Dear Friends and Contributors,

It has been an absolute pleasure this past year to serve as President of the Water Quality Research Foundation (WQRF) and oversee several key achievements to continue growth and impact for the water quality improvement industry. It has been a busy year for WQRF, including 8 Board of Directors (BOD) meetings, 13 various committee meetings, and 34 various research task force meetings – a total of 55 meetings or conference calls in 2019 managed and facilitated by our two staff members!

We started the year with a challenge from the Water Quality Association (WQA) Board of Directors in celebration of the Association's 70th anniversary. Their challenge was for WQRF to raise \$35,000 by April 30th, and WQA would match dollar for dollar for a total of \$70,000. We are so grateful to all our contributors that made this matching campaign successful.

The *Investing in Your Future* Campaign allowed WQRF to make plans for big projects that had been waiting to get funded for years. With this year being the last year for the Campaign, I'm proud to say that WQRF has funded 10 research projects since the campaign's inception in 2014, with plenty more in the pipeline for 2020 and beyond. In 2017, WQRF also started a grant program, which is a way to get unique and interesting projects funded that are aligned with WQRF's research agenda.

WQRF celebrated the key achievement of our research being published in a peer-reviewed scientific journal. The section of the report specifically on lead from the Cost-Benefit of POU Device]s study was published by the researchers in the peer-reviewed scientific journal, *Environmental Research*. This type of publication increases the credibility of the data and increases awareness of the industry's solutions.

The WQRF BOD approved funding for 2 new studies this year, the Contaminant Occurrence Study and the Sustainability Comparison Study: Centralized Treatment versus POU/POE for SDWA Compliance. The WQRF BOD also approved 3 new research concepts to begin developing request for proposals.

The Research Advisory Committee's research concept prioritization process invites and encourages all members of industry to participate and give input in the research funded by the WQRF. The process includes a solicitation of the WQA membership for research concepts and evaluation of those ideas vetted through specific criteria and surveys that involve members and contributors.

Sincerely,

Dennis A. Rupe

Dennis Rupert WQRF President



### 2019 WQRF DIRECTORS



**President** Dennis Rupert, CWS, CI Rupert's Culligan Hillsdale, MI



Mike Baird Aquamor, LLC Temecula, CA



Denise Urbans, CWS SHEDWATER LLC Glen Mills, PA



Vice President Richard Mest Master Water Conditioning Corp. Pottstown, PA



Secretary/Treasurer Chris Layton Chris Layton Water Consulting Santa Ana, CA



Frank Brigano, PhD Marmon Water, Inc. West Haven, CT



James Wakem, MWS, CI, CWR Atlantic Filter Corporation West Palm Beach, FL



Edward (Ned) Jones, CWS Gordon Brothers Inc. Salem, OH



Chris Wilker Canature WaterGroup U.S.A. Inc. White Bear Lake, MN

The increase in funding new research projects has allowed WQRF more opportunities to positively impact the industry. WQRF leverages many communication channels to keep the industry and contributors informed of

Communication Efforts	Amount
Contributor Newsletters	6
Contributor Calls	47
Press Releases	5
WQA Update features to Members	9
WQA Members direct outreach	8
WQA Radio Podcasts	4
Webinars	3
Videos	3
Trade Magazine Articles	3
New Research Summary Handouts	2

on-going and completed research. As you can see from the table on page 4, one of the ways WQRF communicates is through one-on-one calls with our contributors. This is an important channel for WQRF to give updates and receive feedback from the industry.

In 2019, all the completed research study summary handouts, previously tri-fold brochures called "toolkits", were re-designed in a digitalfriendly format to accommodate an easier way to display and share the information with the public. Please visit www.wqrf.org/study-resources to download these research handouts.

	Posts	Followers	Engagement	Traffic (Clicks)
Twitter	240	63	110	1,400
Facebook	290	114	396	1,300
LinkedIn*	40	21	10	9

\*LinkedIn page started 3<sup>rd</sup> quarter 2019.

### **BUSINESS OPERATIONS**

It takes a significant number of volunteers generous with their time, expertise and feedback to make WQRF run efficiently and effectively. In 2019, WQRF held 55 meetings and conference calls – that's an average of a meeting every working week! We are proud of the staff and volunteers that support WQRF and cannot thank them enough for their time and commitment to research!

WQRF Board, Committee, or Task Force	Meetings or Calls
Board of Directors	8
Development Committee	3
Finance Committee	4
Nominating Committee	1
Research Advisory Committee	5
2017 Grant Task Force	1
2018 Grant Task Force	4
2019 Grant Task Force	6
Benchmarking Study Task Force	5
Contaminant Occurrence Task Force	9
Emerging Contaminant Consumer Study Task Force	3
Predictive Modeling Task Force	2
Sustainability Comparison Task Force	4

### 2019 WQRF FINANCIALS\*

The year of 2019 was the last year for the *Investing in Your Future Capital* Campaign. Several Campaign Contributors have already shown their continued support by joining WQRF's *Loyal Leadership Circle*. The *Leadership Circle* is a group of committed Capital Campaign contributors who continue to give to WQRF's Annual Fund and also includes new contributors who give at the highest Annual Giving levels. It is through the generosity of contributors that WQRF proudly reports the financials for 2019.

Unrestricted Net Assets	\$1,432,479
Temporarily Restricted Net Assets	\$607,045
Board Designated + Restricted Net Assets	\$1,000,772
Research Project Contracts	(\$293,565)

\*unaudited at time of annual report printing.

#### 2019 ONGOING RESEARCH

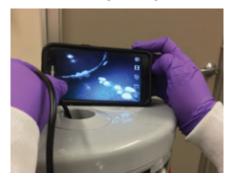
#### <u>Development of a Standardized Scaling Test Protocol for Evaluation of Scale Reduction</u> <u>Technologies and Devices (aka the Benchmarking Study)</u>

Principal Investigators: Marc Edwards, PhD and Christina Devine, MS from Virginia Tech.

**Study purpose:** To develop, validate and demonstrate a standardized scaling test protocol (SSTP, also referred to as "Protocol") that can evaluate the performance of a range of scale reduction technologies under standardized conditions that can be reproduced in any lab. The Virginia Tech Protocol relies on an innovative approach of using water temperature to drive the scaling potential of the challenge water, replicating conditions naturally found in scaling groundwater supplies. Lab scale testing applied and validated the Protocol with a number of commercially available scale reduction technologies and devices including cation exchange, media induced precipitation, 2 types of sacrificial medias, electrochemical deionization, electric field generators, and physical magnets. All brands and manufacturers of products tested will remain confidential, but the description of the technology category the product is classified in will be included.



**Industry impact:** Reliable and repeatable protocols are necessary to advance the science on any topic, including scale reduction technologies and devices. For scientific findings to be widely accepted, the test conditions must be consistent and controllable to ensure that results can be reproduced. If such a protocol could be designed against which to benchmark available scale reduction technologies, it could potentially



provide a ready resource for industry professionals and consumers to identify products that have been evaluated using the protocol or to aid in their assessment of performance claims scientifically.

**Expected completion:** Final report submitted and results will be presented by Marc Edwards and Christina Devine at the 2020 WQA Convention & Exposition in Orlando, FL.

#### **Contaminant Occurrence Study**

Principal Investigators: Carleigh Samson, Ph.D. and Chad Seidel Ph.D., P.E. from Corona Environmental Consulting

**Study purpose:** Conduct a state by state call for information in order to compile occurrence data to identify frequency, concentration, and populations affected by aesthetic contaminants, as well as occurrence of a selected list of regulated contaminants detected at levels below the enforceable Maximum Contaminant Level (MCL), but in excess of the Maximum Contaminant Level Goal (MCLG). The study also aims to develop and design a potential interactive tool that corresponds with occurrence data collected.



**Industry impact:** Currently, the available data on hardness is from the 1970s. This data collection effort will offer the industry the most up-to-date information on hardness, along with other aesthetic contaminants. This study will also benefit the POU/POE industry by 1) bringing to light the importance of the MCLG as a treatment goal to reduce health risks to target populations and the overall population as a whole, 2) providing impetus to potentially define and support product claims against the MCLG, and 3) identifying geographic areas that would most benefit from treatment with POU/POE devices to provide improved and sustainable water quality.

Expected completion: July 2020

#### Emerging Contaminant Removal and Microbial Growth in Membrane Filtration and Activated Carbon Point-Of-Use Systems

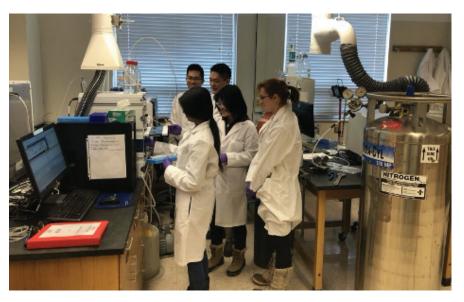
Principal Investigator: George Zhou, Ph.D. from Purdue University; 2018 WQRF Grant Recipient

**Study purpose:** Investigate removal efficiencies of RO and POU carbon for emerging contaminants: PFOS, PFBS, PFHxS, manganese, uranium, and assimilable organic carbon (AOC).

**Industry impacts:** It is anticipated that this research will provide performance data on removal efficiencies of representative emerging contaminants, new knowledge on the effects of water quality on the performance of

POU systems, and mechanisms of microbial growth. As a result of this study, the industry will be able to develop cost-effective treatment devices to improve water quality and mitigate risks of emerging contaminants in drinking water.

**Expected completion:** December 2020



#### Development of a Predictive Model of US Drinking Water Emergencies

**Principal Investigators:** Yin Wang, Ph.D. (University of Wisconsin – Milwaukee) and Junhong Chen Ph.D. (University of Chicago/Argonne National Laboratory)

**Study purpose:** This study aims to develop: 1) a comprehensive database that documents drinking water crises that occurred in the US over the past 10 years, and 2) a predictive tool for future drinking water crises based on the historical data.

**Industry impact:** The data from this study will inform the industry on contaminants of primary concern for future water crises. Also, research and development (R&D) needs for POU/POE products will be identified through the assessment of currently available certified products that are proven to remove the contaminants recognized as being of primary concern. Overall, the study will help the industry to get better prepared for anticipated future drinking water emergencies.

#### **Expected completion:** December 2020

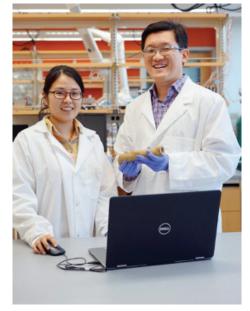
#### **RECENTLY COMPLETED PROJECTS**

Find the executive summaries and educational handouts on WQRF.ORG!

- 1. **Optimization of Water Softeners for Reduced Influent Chloride** found, on average, a 47% reduction in the concentration of chloride discharge when softeners were replaced with systems meeting 4,000 grains/lb. salt efficiency, and a 27% reduction was found by optimizing existing systems.
- 2. The **Cost-benefit of Point-of-Use Devices in Reduction of Health Risks from Drinking Water** found the calculated lifetime loss to the community from lead exposure is \$435M, whereas it would have cost \$11M to fund a 5-year community intervention strategy supplying POU activated carbon filters with lead adsorption capabilities, or \$26M for a 5-year POU RO intervention strategy.
- 3. *National Occurrence of Boil Water Notices from 2012-2014* found 14% of these notices were from *E. coli* contamination and 53% were from water main breaks or leaks.
- 4. **Counterfeit Refrigerator Filters Performance Study** verified that filters illegally using product certification and manufacturer logos were not able to remove the health contaminants claimed.
- 5. *The Household Point-of-Use Pathogen Survey* results show the proof of concept that household water treatment filters are effective for monitoring drinking water quality for large volumes of water over long periods of time.
- 6. *Emerging Scale Reduction Technologies Benchmarking Study* developed and validated a standardized scaling test protocol (SSTP) that will allow any lab to achieve reproducibility when evaluating the performance of any scale reduction device or technology.

### **PROJECTS IN THE PIPELINE FOR 2020**

1. **Emerging Contaminants Consumer Study** – This project will perform a US consumer study to determine: 1) which emerging contaminants are already known by consumers, and 2) how the messaging a POU/POE



product influences a consumer's decision to treat their water.

- 2. Case Studies of POU/POE use for Safe Drinking Water Act (SDWA) Compliance The purpose of this study is to: 1) compile a database and summary report of existing case studies which are currently using POU/POE systems for compliance to the SDWA (by small systems), and 2) publish a gap analysis of any future research needs to support the use of POU/POE treatment for compliance to SDWA. A funding approval is anticipated in 2020.
- 3. **2020 Grant Program** The research agenda categories for the Request for Proposals (RFP) are "Regulatory Affairs" and "Public Awareness". The RFP will be released in the first quarter of 2020.
- 4. **POE Systems Water Usage, Efficiencies and Discharges: Survey on Operating Systems** The objective of this study is to collect real-world data that would give a baseline of modern POE equipment in terms of water usage, discharges, and salt efficiencies. Task force work is anticipated to begin in 2020.

### WQRF RESEARCH ADVISORY COMMITTEE

### The Research Advisory Committee (RAC) reports directly to the WQRF Board of Directors. The charges of the Committee are to:

- 1. Review the potential project list to identify short and long-term projects which fit the research agenda
- 2. Nominate additional projects of interest for consideration
- 3. Provide ongoing input regarding industry trends and issues that impact potential research priorities
- 4. Make recommendations to the WQRF Board of Directors, as a Committee
  - a. Written recommendations submitted to the WQRF Board of Directors
  - b. Participation in key WQRF Board of Director meetings to act as the voice for Contributors

The RAC is seeking additional members for the Committee to provide fresh perspectives and help prioritize new research concepts submitted by the industry. Please contact staff liaison Kim Redden (KRedden@wqrf.org or 630-929-2512) to find out more.

#### Thank you to WQRF's Research Advisory Committee (2014-2019):

Doug Anderson	Culligan International Company
Michael Beck	Pentair Water Purification
Stephen Ver Strat	Amway
George Lutich	Paragon Water Systems
Michael Baird	Aquamor, LLC
Chuck Driessen, MWS	Driessen Water, Inc.
Chris Wilker	EcoWater Systems LLC
John Packard, MWS, CI	Culligan Water Conditioning
Christopher Layton	Chris Layton Water Consulting
Randall Easton	US Water Culligan Group

#### THANK YOU TO OUR WQRF CAMPAIGN PARTNERS FOR SUPPORTING A STRONGER FUTURE FOR OUR INDUSTRY!



## WORF Water Quality Research Foundation

The Leadership Circle is a group of committed Capital Campaign contributors who continue to give to WQRF's Annual Fund and also includes new contributors who give at the highest Annual Giving levels.



**LEADING DONORS:** 

AMWAY • AQUA-MAN WATER CONDITIONING • FRANK BRIGANO • THE GOOD WATER COMPANY • RANGE WATER CONDITIONING

### THANK YOU TO OUR 2019 SPONSORS

#### Thank you to SEAS Capital Partners & AMWAY for sponsoring the 2019 5K Run for Research!







Thank you to our 2019 Midyear Leadership Conference Sponsors:

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- Fern Expo

- Freeman Water Treatment
- Hatch Global Consulting
- Jones Day
- KDF Fluid Treatment
- Kinetico Incorporated
- Master Water Conditioning
- McGowan Water Conditioning
- Nestle Waters North America
- NSF International
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- Turbidex
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- Water-Right
- WQA Gold Seal
- Water Quality Products Magazine

Kinetico

water systems

#### Thank you to our Annual Giving Contributors:

Annual Giving is a one-time gift received during the calendar year not associated with a specific fundraising campaign or sponsorship.

- Abundant Flow Water Systems
- Amway
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- Aqua-Man Water Conditioning\*\*
- Arctic Home Living
- Atlantic Filter Corporation\*
- Ayers Well Drilling, Ltd.
- B.W.C. Best Water Choice
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- Brigano, Frank\*
- Brotman, Mark
- Cargill Salt\*
- Chester Paul Company
- Chris Layton Water Consulting
- Crystal Clear Water Systems
- Culligan of the Rio Grande Valley

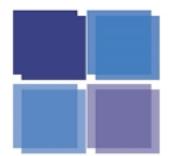
- Culligan Reno
- Culligan Water Conditioning/ Minnetonka\*
- Culligan Water Conditioning/ Sioux Falls\*
- Culligan, The Good Water Company\*\*
- E.D.S. Pumps & Water Treatment Ltd.
- Environmental Testing & Research Lab
- Epic Life Inc, DBA Epic Water Filters
- Gordon & Gayle Miller Foundation\*
- Gordon Brothers Inc.\*
- Hall's Culligan Water (Wichita Water Conditioning Inc.)\*
- Hatch Global Consulting Services
- Hellenbrand, Inc.\*
- Home Water Solutions

- Keurig Green Mountain
- KX Technologies LLC
- Lorenzen, Jack\*
- Meredith's Culligan Water
- Omnipure Filter Company, Inc.
- Peacock Water Conditioning
- Precision Installation Products, Inc.
- Range Water Conditioning\*\*
- Rupert, Dennis & Renee
- Steelhead, Inc.
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- Turbidex\*
- Urbans Aqua\*
- US Water Company, LLC\*
- Vetter's Culligan
- Water Quality Association\*

\*\* Leading Donor

#### \* Loyal Leadership Circle

WQRF is incredibly grateful to the generosity of WQA's Matching Campaign in celebration of the 70th anniversary of the founding associations. WQA generously donated \$35,000 which were matched by contributor gifts for a total of \$70,000! Thank you to the following contributors to the matching campaign: Amway, Cargill Salt, Chris Layton Water Consulting, Culligan Water Sioux Falls, Frank Brigano, The Good Water Company, Gordon & Gayle Miller Foundation, Gordon Brothers Inc., Jack Lorenzen, KX Technologies, Mark Brotman, Sterling Water Inc., US Water Company, and Wichita Water Conditioning!



# Double Your Impact

WQA I WQRF 2019 FUNDRAISER

WQRF Water Quality Research Foundation



2/18/2020