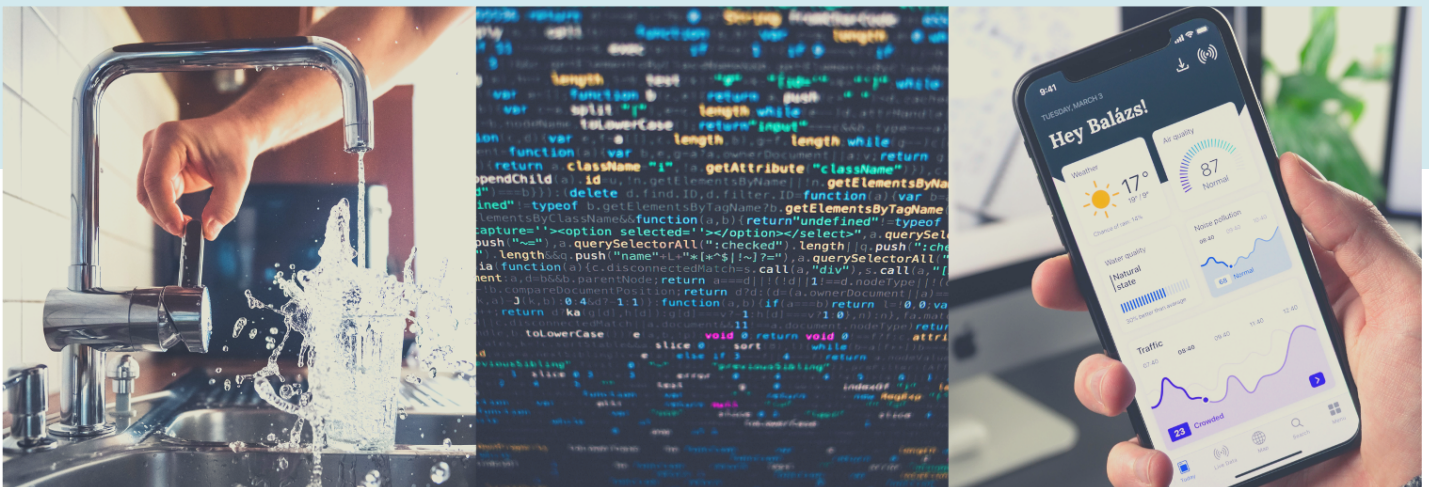




# RE-ENVISIONING WATER QUALITY REPORTS

A "PRICELESS" OPPORTUNITY

RECOMMENDATIONS FROM THE  
2020 WATER DATA PRIZE



## "IS MY WATER SAFE TO DRINK?"

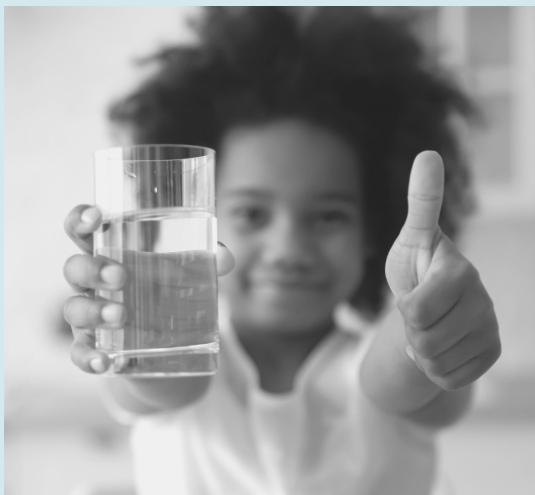
How does someone know whether their water is safe to drink? Who should they turn to for that information- the internet? A neighbor? Their landlord?

What about their water utility?

Each year, America's 50,000 water systems must provide their customers with federally-mandated information about drinking water quality, including details about regulated contaminants such as lead or arsenic found in the water.

Most utilities prepare these reports according to the minimum requirements, filled with complex scientific language and figures. The resulting reports are not easily understood by most people, and they are rarely translated into languages other than English. Millions of utility customers would struggle to even find their report.

**The Environmental Policy Innovation Center believes that every individual should be able to quickly and easily determine whether their water is safe to drink.** In partnership with utilities, regulators, and community advocates, EPIC is advancing new ways to share information about water quality, starting with a close look at mandated water quality reports, the Consumer Confidence Report (Water Quality Reports, CCR or CCRs).



*"When water systems make their reports more accessible and consumer-friendly, they turn them into tools of empowerment. This is a huge opportunity to ensure people have the information they need to make decisions about whether to drink from the tap. And with that kind of care and transparency comes trust."*

*- Joaquin Esquivel, Chair, California State Water Resources Control Board*

## THE 2020 WATER DATA PRIZE

EPIC created the Water Data Prize competition to inspire new approaches to sharing information about water quality that help all consumers make informed decisions about whether their water is safe to drink. With just a two-month window, more than 30 organizations and individuals in the water sector submitted entries to the Water Data Prize, and an esteemed panel of judges reviewed the submissions looking for simple and effective ways to communicate about health data to as many people as possible.

**The results were impressive.** EPIC awarded prizes to five submissions that each provided simple, easy to implement strategies and tools for water quality reports and related communications.



# RAFTELIS

*“Public health information can be difficult to explain clearly. We believe the most dramatic improvement we have made, which can be carried through any way a utility might choose to design and present its CCR, is in the language we chose, which is simple, accessible and active voice.”*

*- Raftelis*



TIP TOP TAP



WaDL

## KEY TAKEAWAYS



**1. Redesigning water quality reports can have a positive impact on goals around public health, water affordability and infrastructure investment.** Water quality reports can help utilities navigate conversations about access, affordability, and infrastructure investment and build trust with customers.

**2. Redesigning water quality reports is a feasible, near-term strategy with little cost.** EPA's water quality reporting regulations represent a floor, and utilities can build from these regulations and guidance with low-cost tools - i.e. legislative or regulatory action not required.

**3. Redesigning water quality reports provides a “priceless opportunity” for utilities to communicate and build trust with their constituents.** Water quality reports can be a starting point to establish trust - a byproduct of good communication.

**4. Redesigning water quality reports can make critical information accessible to all.** Sharing information in multiple languages, in multiple formats - including easily searchable, GIS tools - can ensure that every person has access to information about their drinking water.

## KEY TAKEAWAYS

**5. Redesigning water quality reports can have greater impact when intentionally woven together with other critical water communications.** Water quality reports, monthly water bills, and episodic crisis messaging should be linked a cohesive way to provide context and empower custom.

**6. Redesigning water quality reports provides an opportunity for federal, state, and local partnership.** Regulators can provide guidance to utilities via templates and workshops, offer “regulation-approved” plain language translated into multiple languages, and even establish a regulatory sandbox to spur new approaches.

## THE ROLE OF REGULATORY SANDBOXES

A regulatory sandbox creates a carve out from existing government rules around permitting, reporting, licensing or approvals—i.e. it intentionally breaks a regulatory barrier—in order to encourage testing of new products that benefit consumers. Just as important, a well-staffed agency operating the regulatory sandbox changes the nature of the relationship between the regulator and the regulated into a more open and adaptive relationship defined by outreach and collaboration as opposed to silos and formality.

For example, for the financial technology industry, sandboxes have allowed the introduction of products that help consumers cost-effectively manage their finances. Via the sandbox, controlled tests of a range of new products can happen in a safe and bounded environment outside of the standard finance industry regulatory framework.

A regulatory sandbox for drinking water reports would allow water utilities to test out new ways to share water test results, including information on unregulated contaminants; it would also help regulators identify approaches that are more accessible and useful to consumers.

## WHERE CAN WE GO FROM HERE

EPA has been directed by Congress to revise the regulation that governs federal requirements for CCRs – they are already beyond their deadline to do so. However, that regulation action or inaction shouldn't stop utilities or individual states from trying to find iterative ways to improve the content of CCR and make them more useful to consumers. **When we examine the winning entries, but also almost two dozen other entries, patterns emerged in what entrants submitted to us and that can be useful to any utilities' effort to adjust their CCR.** The following sections cover seven ways that utilities could adopt some of the findings from this prize competition, and we share examples of what doing so might look like in practice.

## HOW?

1. TRANSLATE COMPLEX INFORMATION USING SIMPLE GRAPHICS
2. USE PLAIN LANGUAGE
3. ELEVATE LOCAL WATER QUALITY CONCERNS
4. MAKE INFORMATION ACCESSIBLE
5. ENCOURAGE CUSTOMER ENGAGEMENT
6. INNOVATE WITH EMERGING OR ESTABLISHED TECHNOLOGIES
7. EASE IMPLEMENTATION THROUGH LOW COST FEATURES

# WITH DATA VISUALIZATION, TRANSLATION SERVICES, AND COMMUNITY INPUT, A WATER QUALITY REPORT CAN BE TRANSFORMED

## FROM...

Regulated Contaminant	MCL	MCLG	Level Detected	Range	Year Sampled	Violation Yes / No	Typical Source of Contaminant
Chromium (ppb)	100	100	0.62	0.48 to 0.62	2014	No	Discharge from steel and pulp mills; Erosion of natural deposits
Fluoride (ppm)	4	4	0.36	0.36	8/2017	No	Erosion of natural deposits. Discharge from fertilizer and aluminum factories.
HAAS Haloacetic Acids (ppb)	60	N/A	4	1.0 to 4.0	8/2017	No	Byproduct of drinking water disinfection
TTHM - Total Trihalomethanes (ppb)	80	N/A	47.9	20 to 47.9	8/2017	No	Byproduct of drinking water disinfection
Chlorine* (ppm)	MRDL	MRDLG	0.30	0.29 to 0.30	2017	No	Water additive used to control microbes
	4	4					
Radioactive Contaminant	MCL	MCLG	Level Detected	Range	Year Sampled	Violation Yes / No	Typical Source of Contaminant
Alpha emitters (pCi/L)	15	0	1.5	N/A	2014	No	Erosion of natural deposits
Combined Radium pCi/L (T)	5	0	0.4	N/A	8/2016	No	Erosion of natural deposits
Contaminant Subject to AL	Action Level	MCLG	90% of Samples ≤ This Level		Year Sampled	Number of Samples Above AL	Typical Source of Contaminant
Lead (ppb) **	15	0	6		2017	0	Corrosion of household plumbing systems; Erosion of natural deposits

## TO...

### Bacteria

Amount We Found: **ND**

Ideal Goal (MCLG): 0

Highest Level Allowed (MCL, TT or MRDL): 5%\*

Lowest Amount Detected: ND

Highest Amount Detected: ND

No Violation

### Chloramine (as Cl2) (mg/L)

Amount We Found: **2**

Ideal Goal (MCLG): 4

Highest Level Allowed (MCL, TT or MRDL): 4

Lowest Amount Detected: 1.7

Highest Amount Detected: 3

No Violation

### Fluoride (ppm)

Amount We Found: **2**

Ideal Goal (MCLG): 4

Highest Level Allowed (MCL, TT or MRDL): 4

Lowest Amount Detected: 2

Highest Amount Detected: 2

No Violation

### Lead (sample from customer kitchen tap) (ppb)

**How it gets in the water:**  
Corrosion of household plumbing

Instead of an MCL, EPA has established an Action Level for lead in water. The Action Level is not a sign of health risks from water; instead, it's an amount that if exceeded, the water provider must take action to provide more treatment, communicate with customers about it, and possibly replace service lines to homes where samples exceeded the Action Level.

No Violation

# TRANSLATE COMPLEX INFORMATION USING SIMPLE GRAPHICS & USE PLAIN LANGUAGE

“

*The report consists of 5 interactive and clickable modules. At the very top of the report, a high-level message and graphic aims to answer the question “is my water safe to drink.”*

*-Water Smart*

”

- ✓ 8th grade reading level
- ✓ High-level summary
- ✓ Bold text to illustrate main points
- ✓ Presents the data in clear & understandable way



**Your water meets all health standards!**

We test your water for 95 different health-related components to make sure your water is safe and complies with [state and federal public health regulations](#).



*Water Smart*



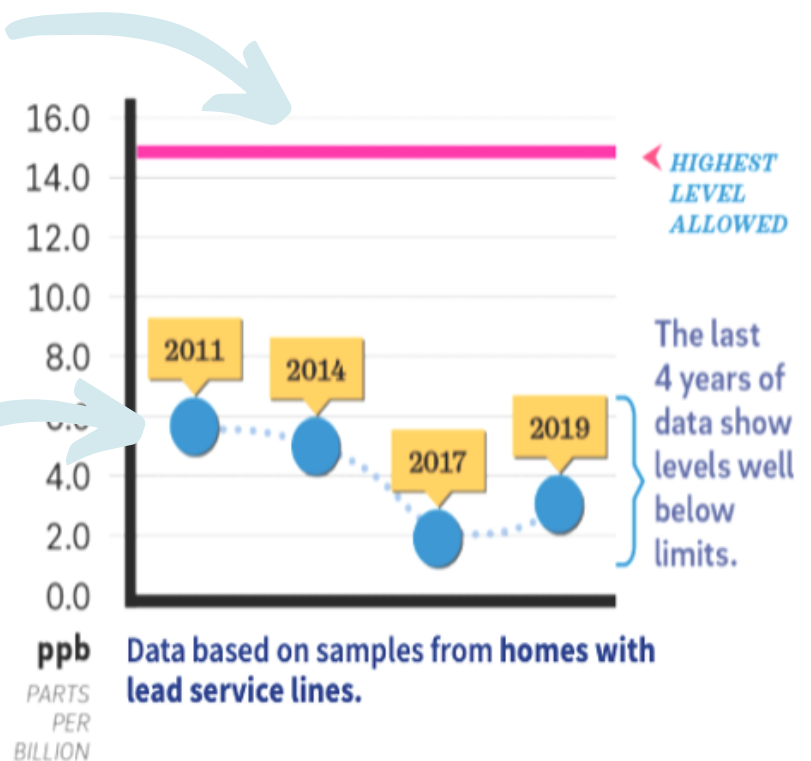
# ELEVATE LOCAL WATER QUALITY CONCERNS

“Lead in drinking water is one of our customers' biggest health concerns about water quality. We chose to highlight four years of lead sampling data under the Lead and Copper rule so that customers can see the trend. By clearly showing the action limits, customers can, at a glance, be assured that we're doing our job to keep them safe from lead.”

-Philadelphia Water Department

Even if customers aren't well versed in what the y-axis means, the exceedance line clearly communicates values are well below the threshold.

Showing data over time is a great way to contextualize the sampling and convey progress towards water quality goals.

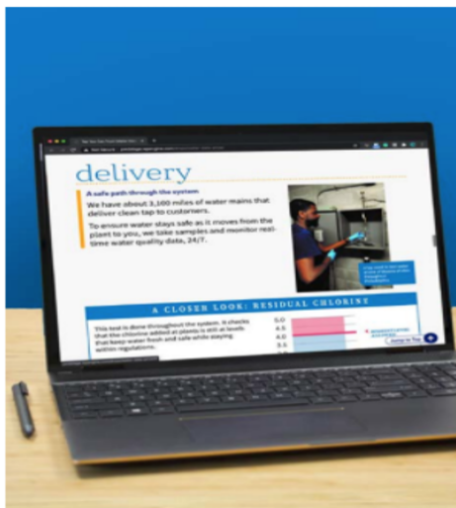


Philadelphia Water Department

# MAKE INFORMATION ACCESSIBLE

“Our goal is to make all of our science communications accessible to our residents both by making our information readily available in multiple formats and also making the information easy to interpret by a wide range of audience members.”

- Philadelphia Water Department



**Desktop:** The full screen allows for a “wowza” effect when viewing the layout.



**Mobile:** A growing number of Philadelphians use their phones for internet access.



**Print:** This version was designed to fit inside a water bill envelope. We mailed one to every customer.

Here is an example of *Philadelphia Water Department's* One Story, Multiple Formats Initiative. This breaks down the digital divide and allows customers to view information on their computer, phone or paper copy.

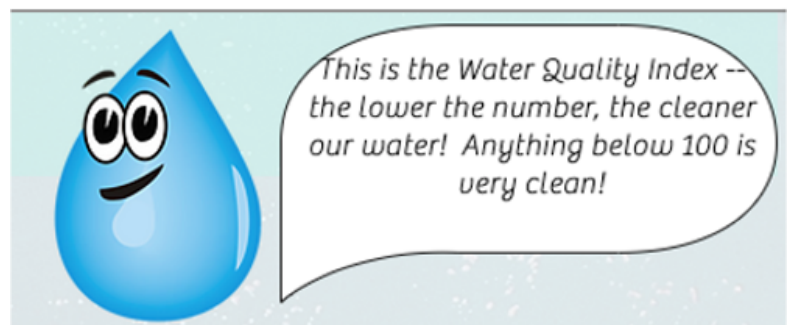
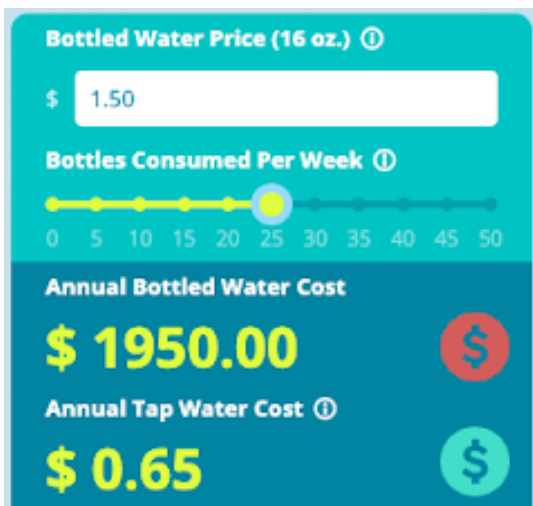
## ENCOURAGE CUSTOMER ENGAGEMENT

*Water quality reports can incorporate features that guide and inform customers as they read, inviting them to learn more. Also, while customers share some of the same questions - “Is my water safe to drink?” - many customers have specific questions or concerns. Creating a water quality report that allows for deeper engagement can help address those concerns and build trust.*

*Throughout this page, look for **Lab Notes...***

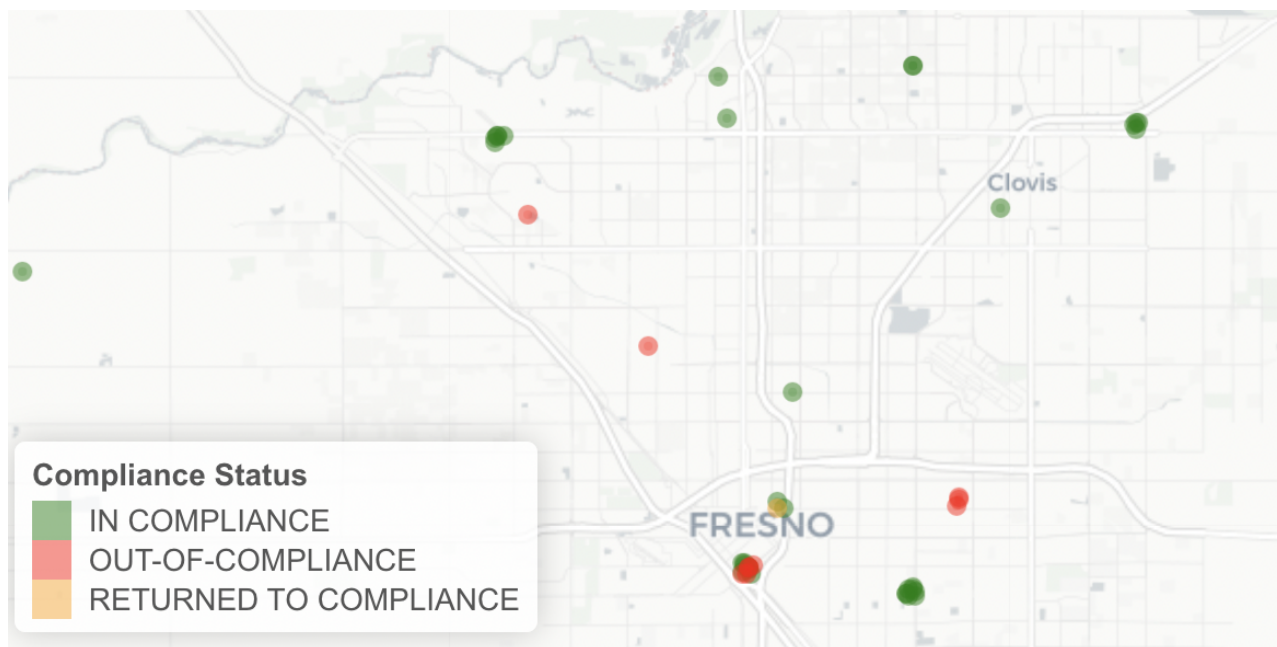
*These notes explain how we test your water, and what the results mean for you.*

For example, Philadelphia Water Department uses visual sticky notes, and Tip Top Tap uses an animated water drop to navigate customers through the website, and also a tool that allows customers to compare tap water to bottled water.



# INNOVATE WITH EMERGING OR ESTABLISHED TECHNOLOGIES

*Winners all applied technology in novel ways - from text messaging, interactive pdfs, geographic information systems, and best practices in web development. Each also consulted with behavioral scientists on using information to reduce water consumption and increase participation in utility conservation programs - but emphasized that the most effective tool is plain language and voice.*



*Water Data Lab*

Utilities can leverage real-time, distributed water quality sampling methods throughout their service area. This interactive map allows customers to evaluate the quality of water quality at different places they may frequent like daycare centers or offices.

# EASE IMPLEMENTATION THROUGH LOW COST FEATURES

“...Small agencies may lack resources to compile data and create reports. It may benefit these small agencies to download a pre-filled out template that can be used as a starting point for a more detailed CCR.”

- Water Data Lab

## SALYER HEIGHTS W.S., INC Consumer Confidence Report

PSID: 5304502 | SALYER, TRINITY CO.

For the period from 2017-01-01 to 2019-10-10.

View an interactive version of this report online at: [caccr.github.io/ccrs/5304502.html](https://caccr.github.io/ccrs/5304502.html)

### What does this report mean?

This report contains important information about drinking water quality in your water system.›

Este informe contiene información muy importante sobre su agua para beber. Favor de comunicarse SALYER HEIGHTS W.S., INC a [NA](#) para asistirlo en español.

这份报告含有关于您的饮用水的重要讯息。请用以下地址和电话联系 SALYER HEIGHTS W.S., INC 以获得中文的帮助: [NA](#).

### Status: RETURNED TO COMPLIANCE

Of the 7 chemicals tested for in your water system, **2 chemicals were detected**, and **0 average chemical findings exceeded their MCL, though exceedance alone does not constitute a violation (see the FAQ for more information).**

In the plot below, the Maximum Contaminant Level (MCL) is shown as a black horizontal dashed line. Each vertical bar is a contaminant that was detected. The higher the bar, the higher the average level of that contaminant over the period of record. Any contaminant at or above the black horizontal dashed line indicates contaminated water.

- ✓ Standard template that can be automated
- ✓ Multiple languages available
- ✓ Clearly states compliance status and data collected



## NEXT STEPS

The Environment Policy Innovation Center is working with water utilities, regulators and policymakers to advance a set of technical assistance tools and services to facilitate information sharing and ease the reporting burden on small utilities.

*Visit [www.waterdataprizem.com](http://www.waterdataprizem.com) to learn how you can get involved.*

# ACKNOWLEDGMENTS

## WINNING TEAMS

*Congratulations to the winning teams and all entries for the creativity, dedication and ingenuity.*

### RAFTELIS

Ashley Perry  
David George, Marketing Director  
Sam Villegas, Director of Strategic Communications Services  
Melissa Elliot  
Matt Wittern, Sr Consultant  
Joe Crea, Vice President  
Shahob Mousavi, Software Developer

### WATER SMART

Deborah Sherwin, Product Design  
Kelly Coplin, Senior Product Manager  
Ali Barsamian, Head of Marketing  
Erik Andersen, SVP Sales  
Avril Dalin, Marketing Specialist

### TIP TOP TAP

Justin Ziniel  
Michael Lutz

### PHILADELPHIA WATER DEPARTMENT

Gary Burlingame, Director of Lab Services  
Laura Copeland, Public Relations Manager  
Paul Fugazzotto, Asst. Deputy Commr for Comms  
Lauren Sell, Digital Projects Coordinator  
Jessica Gould, GIS Specialist  
Herbie Hickmott  
Nicola Horscroft, Water Quality Engineer  
Rita Kopansky, Lab Manager  
Justin Martin, Web Editor  
Rick Orlosky, Creative Director  
Brian Rademakers  
Scott Reston  
Karen Ingram  
Virginia Ingram  
Olivia Hecker  
Heidi Miller

### WATER DATA LAB

Rich Pauloo, Hydrogeologist

# ACKNOWLEDGMENTS

## JUDGES

*Thank you to the experts who reviewed and scored entries to the Water Data Prize.*

Margaret Bowman: Program Director, Spring Point Partners

Albert Cho: Chief Strategy & Digital Officer, Xylem Inc.

Joaquin Esquivel: California State Water Resources Control Board

Leigh Greene: Director, Youngstown Office of Minority Health

Iris Gonzalez: Coalition Director, CEER Houston

Lynn Thorp: National Campaigns Director, Clean Water Action

Alan Roberson: Executive Director, Association of State Drinking Water Admins

Tiffani Ashley Bell: Founder & Executive, The Human Utility

Nathan Ohle: CEO, Rural Community Assistance Partnership

Stephanie Corso: CEO and Co-Founder, Rogue Water

Jordan Macha: Executive Director & Waterkeeper, Bayou City Waterkeeper

Martin Doyle: Professor, Duke University

Katie Henderson: Senior Program Manager, US Water Alliance

Mariel Beasley: Principal, Center for Advanced Hindsight;  
Co-Director, CommonCents Lab, Duke University



# ACKNOWLEDGMENTS

*Thank you to the policy experts who helped guide and inform the Water Data Prize.*

## INTERVIEWEES & WORKSHOP PARTICIPANTS

Newsha Ajami, Stanford University

Brenda Davy, Virginia Tech University

Jonathan Cruz, Moulton Niguel Water District

Aaron Dickinson, S. D. Bechtel, Jr. Foundation

Gregory Donworth, University of Pennsylvania

Marc Edwards, Virginia Tech University

Angie Gutierrez, S. D. Bechtel, Jr. Foundation

George Hawkins, Moonshot Missions

Cynthia Koehler, WaterNow Alliance

Nicole Lampe, Water Hub

Meredith Lee, West Big Data Innovation Hub

Joone Lopez, Moulton Niguel Water District

Jordan Macha, Bayou City Waterkeeper

Felicia Marcus, Stanford University

Mike Myatt, Water Foundation

Howard Neukrug, University of Pennsylvania

Erik Olson, Natural Resources Defense Council

Krystal Pleasant, University of Pennsylvania

Siddhartha Roy, Virginia Tech University

Pamela Russo, Robert Wood Johnson Foundation

Melanie Stansbury, New Mexico House of Representatives,  
28th District

Lynn Thorp, Clean Water Action



Released March, 2021.

Suggested citation:

Joya Banerjee, Sridhar Vedachalam, and Jessica Norriss. 2021.

“Re-Envisioning Water Quality Reports: A Priceless Opportunity” Environmental Policy Innovation Center, Washington D.C.

Report is open-access under [CC BY-NC 4.0](#)

Authors:

Joya Banerjee, JD  
Sridhar Vedachalam, PhD  
Jessica Norriss

For more information, email [sri@policyinnovation.org](mailto:sri@policyinnovation.org) or call 614.364.3414.

Report layout by Jessica Norriss.

The mission of the Environmental Policy Innovation Center is to build policies that deliver spectacular improvement in the speed and scale of conservation.

We believe that innovation and speed are central to broadening efforts to conserve wildlife, restore special natural places, and to deliver people and nature with the clean water they need to thrive. To achieve those goals, conservation programs must evolve to accommodate our modern understanding of human behavior and incentives, and the challenges posed by humanity’s expanding footprint.

Our work in water focuses on innovative financing, outcomes-based stream and wetland restoration, water quality partnerships, utility consolidation, and the role of data technology in improving consumer trust.

*Support for the Water Data Prize was provided by the Robert Wood Johnson Foundation, Spring Point Partners, S. D. Bechtel, Jr. Foundation, the Cynthia and George Mitchell Foundation, the Pisces Foundation, and Mazarine Ventures. The views expressed here do not necessarily reflect the views of the funders.*