THE NATIONAL ASSOCIATION OF CLEAN WATER AGENCIES
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CLEAN WATER

# ADVOCATE

THE NACWA MAGAZINE

## The Clean Water Act at 50

### Embracing a Bold Vision for the Future

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## For more than 50 years, the National Association of Clean Water Agencies (NACWA) has been the nation's recognized leader in legislative, regulatory, legal and communications advocacy on the full spectrum of clean water issues.

NACWA represents public wastewater and stormwater agencies of all sizes nationwide. Our unique and growing network strengthens the advocacy voice for the public clean water sector and helps advance policies to provide affordable and sustainable clean water for all. Our vision is to advance sustainable and responsible policy initiatives that help to shape a strong and sustainable clean water future.

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CLEAN WATER ADVOCATE

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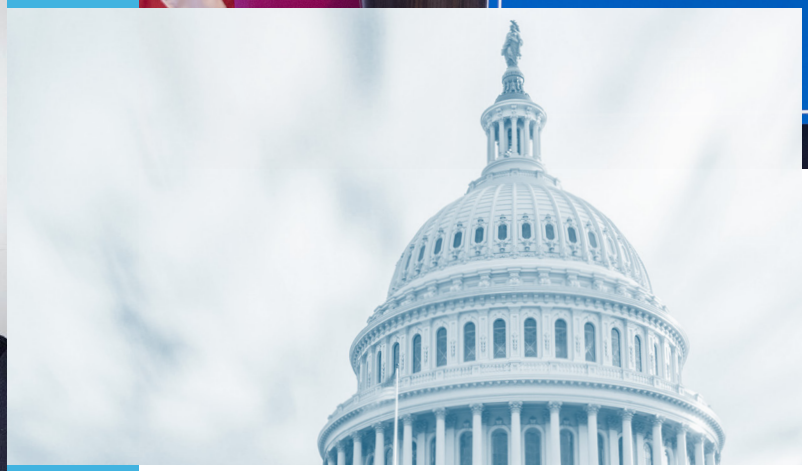
A MESSAGE FROM NACWA'S PRESIDENT

# Reunited. Resilient. Ready.

BY KISHIA L. POWELL | WASHINGTON, DC


> **We have proven and will continue to prove that NACWA and the water sector are ready for any challenges that lie ahead so long as we stand together.**



It is hard to believe how quickly my year as NACWA's President has passed, but perhaps this year has flown by because of all the challenges we have faced and the intensity of the work that NACWA Members and staff undertook to make the most out of a uniquely complex time.

Though challenging, this was also a year of reuniting and recommitment to our shared values and passion for advocacy on behalf of those we serve, and that has been exciting to see as NACWA's President as I traveled across the country. I believe we are at a critical juncture in our water sector that can best be categorized through the three Rs – ***Reunited, Resilient and Ready!***

My year as President was one of ***reunion*** as we once again began to meet in person, holding successful conferences and meetings in Miami, Charleston, Scottsdale, Washington, DC, Nashville, and Milwaukee. The crowds grew with each meeting, and it became readily apparent that the need to network in person and voice our shared priorities – to ***reunite*** – could not be replaced.

NACWA also continued to hold many virtual peer-to-peer discussions on vital national and regional issues throughout the year that ensured best practices were shared and strategic priorities advanced. As we have moved through the pandemic, these virtual dialogues have proven to be a powerful method to galvanize the membership and will be a permanent fixture at NACWA. I am proud to lead the Association in finding that appropriate balance between virtual and in-person gatherings and expanding NACWA's role in leadership development for the public utility workforce.

I am also proud that during my year as President we have witnessed unprecedented levels of federal funding for the water sector. These include the bipartisan infrastructure law (BIL), continued funding from the pandemic recovery legislation, and low-income household water assistance program (LIHWAP) funding.

These programs will make our sector more ***resilient***, but of equal if not greater importance is the use of these funds to address the long-neglected needs of our disadvantaged communities. NACWA's internal focus on diversity, equity & inclusion will be a strong legacy for the organization. Just as important – and a personal highlight of my year as President – was the formation of a permanent Environmental Justice (EJ) Committee at NACWA.

The establishment of this committee builds on the work of our colleagues around the country and others who have long focused on righting injustices in clean water management. This committee ensures a home for, and consistent focus on, the vital but often overlooked and unvoiced needs of our underserved and unserved communities. This, more than anything else, will help ensure that our communities are ***resilient***.

But the challenges do not end here! As I pass the Presidential baton to my friend Tom Sigmund, it is my belief that the organization and its growing membership are ***ready*** to face the challenges coming at us.

Workforce shortages and retirements of our most tenured and knowledgeable staff, unprecedented inflation, competition for contractors, and supply chain issues are all major headwinds. New challenges to resource recovery are a growing issue – whether it is water supply and reuse challenges as droughts linger longer, biosolids management practices under assault, PFAS and emerging contaminants, and stricter nutrient controls. With all these pressures, we have an opportunity to drive the US water sector's push to meet the global demand for decarbonization and move to a net zero energy operating environment.

All I can say is after weathering the pandemic, social justice and political unrest, and war and financial crises, we must remain diligent. Despite exhaustion we must summon the energy to serve. We have proven and will continue to prove that NACWA and the water sector are ***ready*** for any challenges that lie ahead so long as we stand together.

It is with great humility and in your service that I thank you all for your support over this past year; you have all made it a highlight for me, a crowning achievement in my career and a lot of fun too! Tom, the gavel is yours my friend.

Sincerely,

***Kishia L. Powell***

*NACWA President*
Chief Operating Officer and Executive Vice President
DC Water, Washington, DC

# History of the Clean Water Act

## To confront the future of water in America, we must first study the past.

BY ALBERT CHO | WASHINGTON, DC

**The burning of the Cuyahoga River was just one of the catalytic images that seared the importance of clean water into America's public consciousness, fueling an implacable demand for change.** The subsequent passage of the Clean Water Act set in motion a nation-wide transformation, and over the last fifty years, the Act has fundamentally improved lives in communities across the United States.

Billions of gallons of polluted water have been prevented from entering our rivers, and the number of water sources that meet clean water standards nationwide has doubled. Regulations around pollutant discharges and increased investment in treatment infrastructure have also helped. Our collective effort in restoring and maintaining the integrity of our nation's waterways has allowed towns and cities to flourish – to a point where we can now imagine a day when we can swim and fish America's rivers without a second thought.

It would be all too easy to allow the successes of the Act to lull us into complacency – a perception that powerful laws will ensure we'll always have clean water. But while our rivers no longer smoulder with toxic flames, make no mistake: America still faces existential water challenges that imperil our national water security, our communities' health, and even our economic prosperity.

## A New Generation of Water Challenges

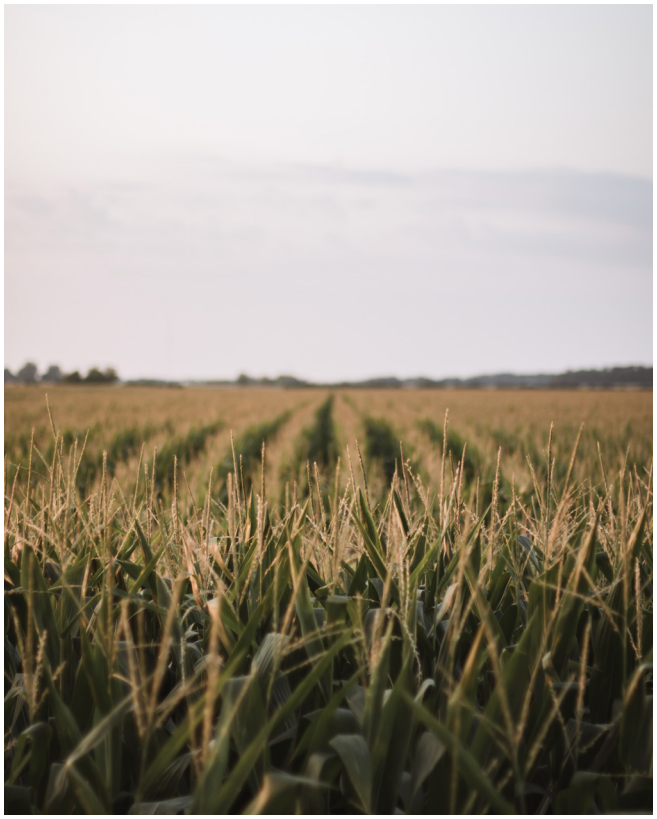
As Mark Twain once observed, 'history never repeats itself, but it often rhymes.' To confront the future of water in America, we must first study the past.

While America in 1970 had different water challenges than we face today, there are some fundamental similarities. Our water resources are still an essential public good whose future sustainability is hampered by complex institutions of governance and what economists would call pervasive market failures. That's why despite all the progress that has been made, coastal dead zones in the Gulf of Mexico are growing and more than half of the rivers in the US are still impaired.

If we are to realize the ambition of achieving water security, America's next generation framework for water management has to tackle two challenges: non-point source pollution and climate change.

With respect to non-point source pollution, according to the US Geological Survey, agricultural runoff is a principal source of water impairment today. A half million tons of pesticides, 12 million tons of nitrogen, and 4 million tons of phosphorus fertilizer are applied annually, much of which finds its way into our lakes, rivers and streams. Solving this problem can't revolve around blaming farmers, who are essential partners in food security and land management. But it will require finding a sustainable institutional framework that works for all.

Climate change is an intensifier of the water challenges we face today. Rising temperatures, extreme rain events, and more intermittent precipitation will all change ecosystem function in our watersheds, altering runoff patterns, increasing eutrophication (excessive nutrient load that harms aquatic life) and stressing natural adaptive capacity.



The Intergovernmental Panel on Climate Change finds that warming in the range of 1.5 degrees Celsius would have serious impacts on ecosystems – and much worse outcomes if warming reaches 2 degrees. McKinsey estimates that our current emissions trajectory corresponds to 3.5 degrees of warming, a level potentially catastrophic for ecosystem health.

If we do not address agricultural run-off and climate change, America could once again experience a crisis of water insecurity.

## Mastering New Transitions

The history of the Clean Water Act is proof that we can solve big, seemingly intractable water problems. If it teaches us anything, it's that we have the collective capacity to make big, essential changes if we create public awareness, leverage technology, and align incentives for participants across the water cycle.

First, public awareness about water can make a profound difference: after all, widespread fear and outrage tipped the scales to pass the Clean Water Act. Scary news stories raise the profile of water

issues, but we shouldn't have to rely on crises to encourage greater education and engagement.

Countries like Sweden and Singapore have made sustainable water management a mainstream part of their schooling system, but in the United States environmental education remains patchy. That's why efforts like the US Water Alliance's Value of Water Coalition, EarthEcho's Water Challenge, and the Stockholm Junior Water Prize are so important – but they are only the beginning. Efforts to improve water stewardship among youth need to reach across socioeconomic boundaries and become a part of the cultural fabric that unites Americans of all backgrounds.

Second, technology can accelerate progress by making threat mitigation affordable. Widespread implementation of biological treatment technologies successfully reduced pollution in America's rivers. Today, an equally powerful new generation of technologies can address the emergent challenges facing the water sector. Digital tools that enable optimization of complex processes at the system level can help reduce excess nutrient application, improve absorption through advanced drainage management, and increase infrastructure resilience to the unpredictable weather variability associated with climate change.

The City of South Bend, Indiana, for example, built an operational digital twin that optimized its existing infrastructure network with artificial intelligence, creating a smart system capable of predictably reacting to sudden extreme rainfall. A system of smart sensors directs flows to available sewer capacity in real-time, moving volumes to under-utilized parts of the network. The smart sewer system has made the city more resilient to climate change and reduced pollution – while delivering better results at lower cost than conventional approaches: 80% reduction in combined sewer overflows, with CAPEX savings of $437 million.

Examples like these demonstrate the pivotal role technology can play in increasing resilience. But change is always hard, and it's time for public stakeholders not just to allow, but to advocate for the adoption of these proven approaches.

Finally, it's essential to get the incentives right. The Clean Water Act raised the bar – and provided substantial public assistance in the form of grants to construct publicly owned treatment works. That made it possible – and palatable – to deliver disruptive improvements in a short period of time.

If we are going to tackle challenges associated with non-point source pollution and climate resilience, we will need to find ways to align interests of farmers and other water users, vulnerable communities, and the general public. To do so will require creativity in institutional design on par with the bright minds who conceived and delivered the Clean Water Act. I believe our country's water professionals are up to the task. Our water future depends on it.

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**Albert Cho** serves as Senior Vice President and Chief Strategy and External Affairs Officer at Xylem.

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# A Force for Good in Our Communities

BY JOHN C. ROBAK | CHICAGO, IL

**There has never been a more unique and exciting time in the water sector.**

Through the advocacy of organizations such as NACWA – and 50 years of its leadership in the clean water sector – we have come far and have identified how to meet the needs of the next generation.

Now, the historic Infrastructure Investment and Jobs Act is inserting the largest federal investment for communities in a half century to not only improve aging infrastructure but also to address climate, water quality, and environmental justice challenges. Since the Clean Water Act of the 1970s, utility managers and water professionals haven't seen such a pivotal moment to address the disruptive change that has been accelerated by the COVID-19 pandemic while also meeting society's and the water sectors' evolving needs.

Today, the public's expectation of utilities is to provide an essential 24/7 service in the face of significant fiscal challenges that are a result of historical inadequate rate structures, declining revenues, and large fixed costs to maintain and operate their assets. These fiscal challenges are coupled with workforce strains and the need for diversification and inclusion, pushing the importance of succession planning to a top priority.

These challenges also include the interrelated issues of economic sustainability, climate resiliency, rehabilitation of aging infrastructure, affordability, and equitable access to water for more just, safe, and affordable water service for all. Community organizations are taking notice and are active in engaging with utilities to better understand how these challenges are being addressed.

Those who see water comprehensively and with society-wide perspective will drive the change in this sector.

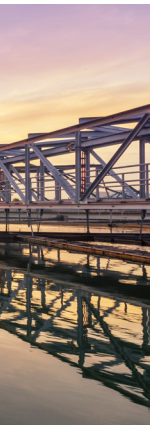
Of course, much of what water utilities have been doing to meet the needs of their communities will continue. Utilities will identify and protect source waters. They will treat and disinfect water properly. They will plan for growth and have facilities available when needed.

However, as the future of the water sector unfolds, what will impact our future is how utilities respond to the mega trends facing us today to both advance the sector and utilize the investment dollars for greater community benefit. Utilities have an opportunity to fully consider how to leverage the investment dollars to achieve multiple capital and community objectives. Some of these trends include:

- Evolution in our industry will integrate a combination of robotics, artificial intelligence, and communication technologies. This will bring a paradigm shift to our workforce and how staff operate our water and water reclamation facilities. It also will require new skills and knowledge.
- The rise of new regulations to address emerging contaminants and improved water quality needs and demands can't be ignored. The public will demand that their communities be protected from contaminants, including through lead service line replacements and addressing concerns from PFAS and other contaminants.

- Climate change requires sustainable solutions to create more resilient communities while being economically viable and supporting the public health of residents. Flood mitigation will continue to be a major part of the required solutions, not only at the treatment facilities, but within neighborhoods as well.
- Risk mitigation is at a heightened level. Clean water is essential for business and our economy. We rely on it for manufacturing, energy production, and transporting materials across the globe. In this unique time in the world, we have rapid disruptive change converging with water business risk impacting global companies with operations outside of the United States.

  Due to water scarcity and declining water quality, 75% of multinational companies have reported exposure to substantive water business risk, which has an adverse water impact on their business. However, this should be seen as an opportunity to mitigate risk through investment in water infrastructure in U.S. cities and create multiple outcomes through this investment. This includes cyber-risk mitigation efforts.
- The Future Water Workforce continues to evolve and the opportunity to attract and retain talent has only become more challenging during recent years. Utilities and consultants must be leaders in advancing diversity, equity, inclusion and belonging in the water workforce, influencing who is aware and has access to opportunities. Our communities are strengthened by greater inclusivity. Providing more opportunities to qualified minority, women-owned, and disadvantaged businesses helps everyone.
- Water can be a force for equity and opportunity. It can revitalize and strengthen communities, making them more inclusive and resilient. Investments in water infrastructure stimulate jobs, local economies and under-resourced communities and promote economic development. The implementation of water equity roadmaps in cities across the country will lead to more equitable and affordable water service for underserved communities while leveraging the diverse talents and coalition of water utilities, environmental groups, and community-based organizations.



> **Those who see water comprehensively and with society-wide perspective will drive the change in this sector.**

How we respond to the challenges of our times will be the legacy of the water sector's next generation. This will be achieved through the value-added process of translating scientific knowledge into counsel, tools, resources, energy, and labor to serve the needs of our communities. This will require all of us to imagine and visualize the needs of society and to appreciate anything is possible as technology advances to bring our vision to reality. Active public outreach and engagement will be critical to develop an understanding of our communities' needs and desires, while leveraging the outreach to become a partner with the community.

Water's moment is now and, as a sector, we have not only an opportunity but an obligation to act.

With the historic implementation of the Infrastructure Investment and Jobs Act, it is the water sector's time to lead. We can do this by implementing social equity-based solutions to provide clean, safe, affordable water service; maximize the community and economic benefits of the water infrastructure investment; and foster community resilience and engagement in the face of a changing climate.

We must not let this moment pass without bold leadership. We must lead transformational change not only to better our sector, but also for the betterment of local communities and the people who count on us every day. All of us have the opportunity to create a better future.

**John C. Robak** is the Chairman & Chief Executive Officer of Greeley and Hansen.

# *Upcoming Conferences & Events*

**NOVEMBER 16 - 18, 2022 | ST. PETE BEACH, FL**

National Clean Water Law & Enforcement Seminar

**FEBRUARY 2023 | LOCATION TBD**

Winter Conference

**APRIL 23 - 29, 2023 | WASHINGTON, DC**

Water Week 2023

**APRIL 25 - 26, 2023 | WASHINGTON, DC**

National Water Policy Fly-In

## Save the Date!

For more information about NACWA's events and meetings, visit **nacwa.org/events**.

# **The Next 50 Years:** How Clean Water Agencies Can Move from Net-Zero to Carbon-Negative to Create a Sustainable Future

BY MARGARET LAUB | CARLSBAD, CA

**In the 50 years since the passage of The Clean Water Act, clean water agencies are continuing to innovate and address the nation's environmental concerns in new ways.** One of those leading the way is the Victor Valley Wastewater Reclamation Authority (VVWRA) in Victorville, California. This forward-thinking agency implemented the state's first project to co-digest food waste and biosolids and upgrade the biogas to renewable natural gas (RNG) for utility pipeline injection.

This has allowed VVWRA to achieve not just net-zero emissions, but net negative emissions—in other words, its operations take more greenhouse gases from the atmosphere than they emit.

In the process, VVWRA has also increased its resilience, reduced capital funding requirements, and created alternative revenue streams.

## First Phase: Digester Upgrades

Back in 2015, VVWRA wanted to use its biogas to provide its own heat and power needs. But as a 12 MGD facility with several out-of-service digesters, the agency had to find a way to increase feedstock and their digestion capacity to become energy neutral. And they had to finance the project creatively.

VVWRA partnered with Anaergia to arrange financing through a public-private partnership (P3), reducing risk for the agency while preserving public funds for other community needs. There was no cost to VVWRA or its ratepayers.

Using this P3 financing, VVWRA initially brought a mothballed digester back online, upgrading it with Anaergia's Omnivore® high-solids digestion technology. The enhancement allowed VVWRA to return the unit to service at significantly increased capacity (without the need for new digester construction), so they could receive and process

energy-dense food waste in addition to indigenous sludge. Anaergia also installed high-strength waste (HSW) receiving, enabling VVWRA to take in up to 20,000 gallons of food scraps per day.

As the facility's biogas production increased, Anaergia provided two 800-kW dual-fuel combined heat and power (CHP) modules, which began operation in 2016. The system was sized to use all the facility's biogas and meet 100% of VVWRA's heat and electricity needs. As a result, VVWRA realized significant utility cost savings and was less dependent on the power grid.

## Landfill Diversion Mandates Come into Play

In 2015, California passed legislation to reduce methane emissions, mandating the diversion of 75% of organic wastes from landfills by 2025. With VVWRA's success integrating HSW digestion at its plant, the agency demonstrated that water resource recovery facilities could be ideal outlets for converting this landfill-diverted food waste into renewable energy–and generate benefit for the agency.

The California State Water Resources Control Board would in fact confirm there is sufficient capacity within the state's existing wastewater digesters to process at least half of landfill-bound food waste. Jared Blumenfeld, California's Secretary for Environmental Protection, promoted this solution calling it, "a triple threat against climate change" that "can reduce organic waste in landfills while cutting greenhouse gas emissions and helping to clean wastewater."

Now with excess digestion capacity, VVWRA saw an opportunity: It might make economic sense to produce even more biogas. It worked with Anaergia on a cost-benefit analysis and determined that the best way to use increased biogas would be to upgrade it to RNG for injection into the regional gas utility pipeline. It would use conventional natural gas in its combined heat and power system and maximize the RNG sent to the gas grid to take advantage of federal and state renewable fuel credits.

The sale of RNG would more than offset the cost of natural gas purchases for CHP. And this approach would have the added benefit of generating carbon-negative fuel, an invaluable tool in achieving carbon-neutrality goals and mitigating climate change.

## How the P3 Works

The expanded P3 funded significantly increased liquids receiving, storage, and high-solids mixing in each digester. Anaergia also delivered conditioning, RNG upgrading, and the utility interconnection infrastructure. Though not needed for the project, ancillary capital improvements, such as dedicated digester feed lines, were provided to support overall facility operations and address capital improvement needs. The project tripled VVWRA co-digestion and associated biogas production.

Under the P3, Anaergia provided design, construction, and financing. Anaergia owns and operates the biogas utilization facility, located on a parcel leased by Anaergia from VVWRA. Anaergia receives all biogas produced at VVWRA and provides

the conditioning and upgrading to produce pipeline-quality RNG. The resulting carbon-negative RNG is 99% methane and delivered to the gas utility point of receipt for pipeline injection and sale. Anaergia manages the interconnection and offtake agreements, as well as the necessary registration with state and federal renewable fuel standard programs, which maximize renewable energy credits and RNG value.

VVWRA will continue to own and operate the newly upgraded digesters and ancillary upgrades. Given the well-established co-digestion program, VVWRA maintains responsibility for obtaining the organic feedstock, charging about $0.05 per gallon tipping fees for the HSW it receives. VVWRA continues to benefit from energy resilience and power grid independence with its CHP system using natural gas. In addition, VVWRA has added revenue streams: lease payments from Anaergia, additional tipping fees, and shares in revenues from the RNG sales.

The facility is now producing more than 340,000 Metric million British thermal units (mmbtu) of RNG per year.

One of the best things about the P3 financing is that it allowed the construction of the RNG infrastructure to be completed in just 15 months, and RNG has been injected into the gas utility pipeline since early 2022.

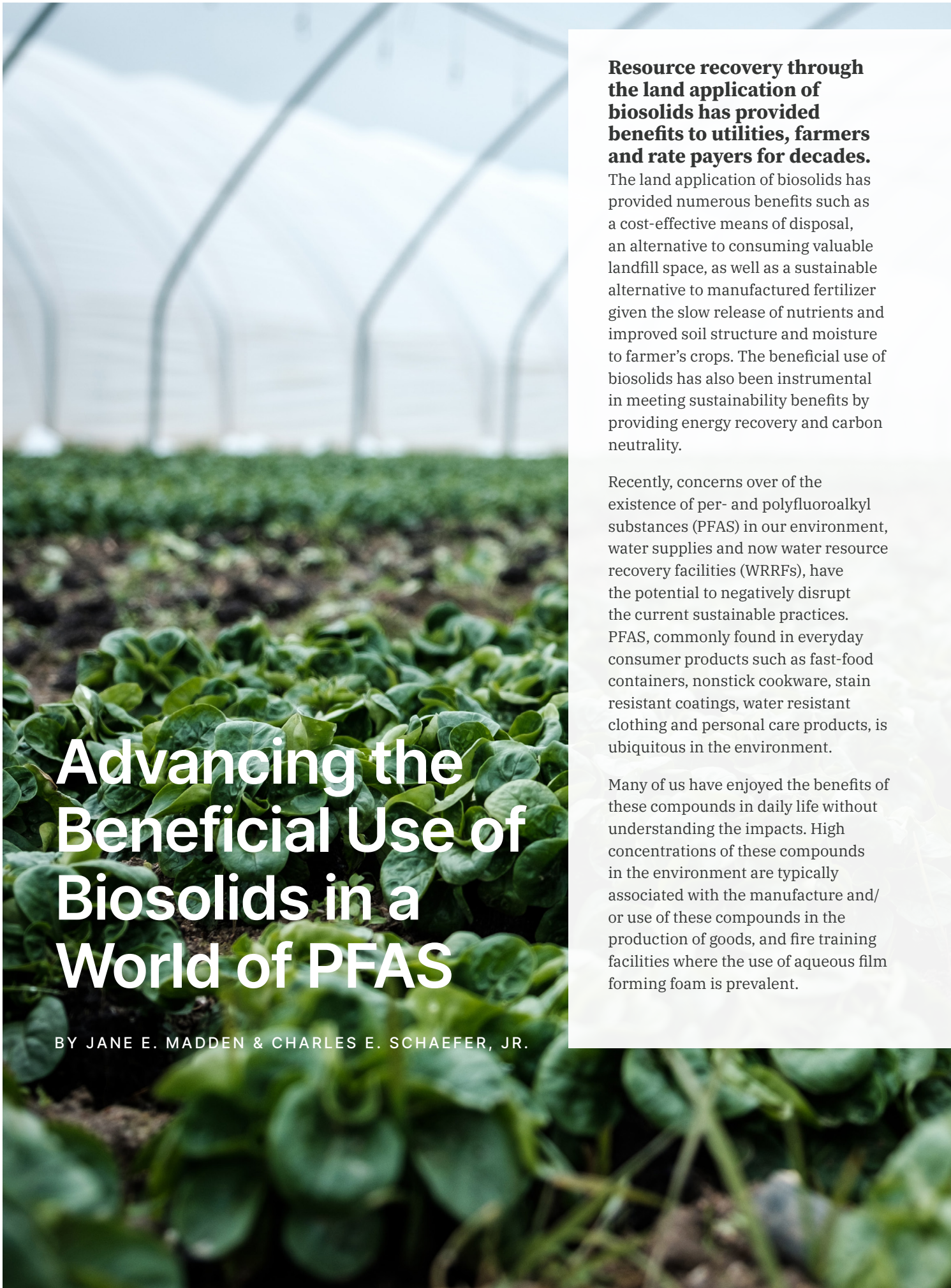
## Benefits for Ratepayers and the Environment

VVWRA's Victorville project stands as a model for any water resources recovery facility to emulate. With financing through public-private partnership, many facilities can secure capital improvements and maximize value derived from biogas—all with little risk, in a short period of time, and without significant impacting existing operations or facility footprints.

"This project is really a cutting-edge example of how to effectively manage waste as a valuable resource, with the added benefit of doing good for the environment," said Darren Poulson, VVWRA's General Manager. "It not only gives us energy resilience, independence from the power grid, and increased capacity to serve our community, it also gives us a source of revenue."

Best of all, these upgraded operations create revenue that reduces expenses for ratepayers and can fund future capital projects – all while doing good for the environment.

**Margaret Laub** is a Project Development Manager for Anaergia Inc, based in Carlsbad, California.



# Advancing the Beneficial Use of Biosolids in a World of PFAS

BY JANE E. MADDEN & CHARLES E. SCHAEFER, JR.

**Resource recovery through the land application of biosolids has provided benefits to utilities, farmers and rate payers for decades.**

The land application of biosolids has provided numerous benefits such as a cost-effective means of disposal, an alternative to consuming valuable landfill space, as well as a sustainable alternative to manufactured fertilizer given the slow release of nutrients and improved soil structure and moisture to farmer's crops. The beneficial use of biosolids has also been instrumental in meeting sustainability benefits by providing energy recovery and carbon neutrality.

Recently, concerns over of the existence of per- and polyfluoroalkyl substances (PFAS) in our environment, water supplies and now water resource recovery facilities (WRRFs), have the potential to negatively disrupt the current sustainable practices. PFAS, commonly found in everyday consumer products such as fast-food containers, nonstick cookware, stain resistant coatings, water resistant clothing and personal care products, is ubiquitous in the environment.

Many of us have enjoyed the benefits of these compounds in daily life without understanding the impacts. High concentrations of these compounds in the environment are typically associated with the manufacture and/or use of these compounds in the production of goods, and fire training facilities where the use of aqueous film forming foam is prevalent.

## PFAS in Biosolids

WRRFs are receivers of PFAS compounds from industrial facilities that produce or use PFAS in their processes, through leachate from landfills that contain PFAS-laden wastes, through residential and commercial wastewater with background levels of PFAS, and through contaminated groundwater or stormwater that enters the system. PFAS is not removed in the wastewater treatment process; some ends up in the wastewater effluent and some in the residuals. Common sludge treatment processes such as lime stabilization, digestion, thermal drying, and composting do not reduce PFAS in sludge.

In fact, research has shown some transformation of PFAS in land applied biosolids. Testing to date has found PFAS is present in most WRRF influent, but within a relatively narrow range of concentrations (98±28 ng/L). The studies show the most common PFAS compounds in sludge are perfluorooctane sulfonic acid (PFOS) (<10 to 1,100 ng/g dry weight) and perfluorooctanoic acid (PFOA) (1 to 240 ng/g dry weight).

As expected, the concentration of PFAS in biosolids is somewhat higher at WRRFs that serve industrial customers, as evidenced in CDM Smith's analysis of California's geotracker data of PFAS in WRRFs. While wastewater solids that are land applied as biosolids may leach low levels of PFAS into the environment, the impact of this release on human health and the environment requires further study.

## Regulations

In 2016, the US Environmental Protection Agency (EPA) published Drinking Water Health Advisories for PFOA and PFOS at a combined level of 70 parts per trillion (ppt) [in June 2022, EPA issued new interim lifetime health advisory levels for PFOA and PFOS of 4 parts per quadrillion (ppq or 0.004 ppt) and 20 ppq (or 0.02 ppt), respectively], yet at the federal level, regulations have not been promulgated for PFAS in biosolids. As of June 2022, there is no EPA approved method for sampling PFAS in biosolids.

Meanwhile, drinking water limits have been imposed on biosolids in some places due to the fear that PFAS may migrate to groundwater. Without federal regulations, many states have adopted their own regulations for water systems, typically at levels below the 70 ppt health advisory level set in 2016.

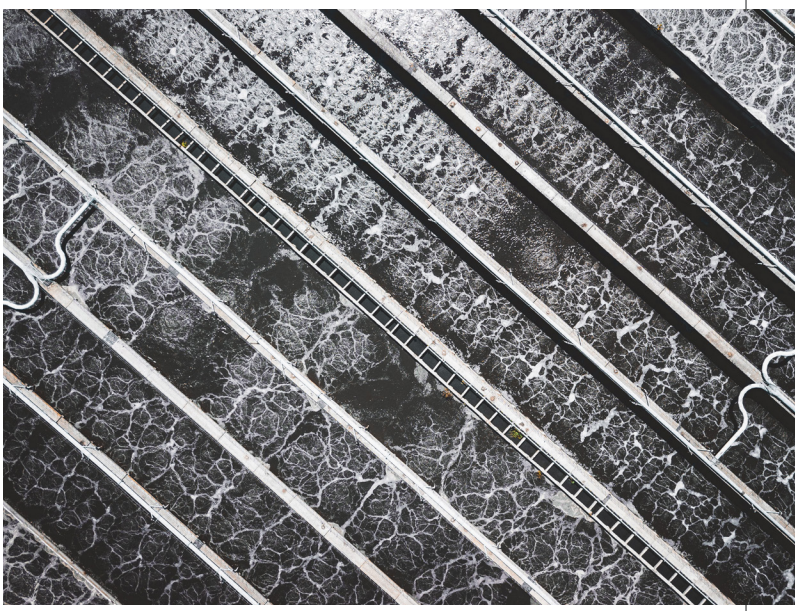
> **Existing and emerging sludge treatment technologies could meet the goal of reducing biosolids disposal costs and PFAS mitigation.**

Some states are now incorporating requirements in NPDES permits for WWRFs to measure and report PFAS in influent, effluent and biosolids, including California, Colorado, Massachusetts, and Michigan. This has or potentially will impact these areas' biosolids beneficial use programs. More concerningly, Maine recently passed legislation banning land application of biosolids, significantly impacting biosolids beneficial use programs in New England.

Regulators and the public need to understand the impact of these regulations as disposal options for biosolids (landfilling, land application, or incineration) are becoming limited as landfills reach capacity, incinerators are decommissioned, and land application is being banned.

## Solving the PFAS in Biosolids Challenge

Several treatment and mitigation options can be considered when addressing PFAS in biosolids. Existing and emerging sludge treatment technologies could meet the goal of reducing biosolids disposal costs and PFAS mitigation. These technologies include pyrolysis, gasification,



hydrothermal liquefaction (HTL), and supercritical water oxidation (SCWO). It is anticipated that future regulatory action will streamline the research and development of technologies to reduce PFAS from biosolids. Additionally, the following research is underway:

- on destruction technologies that remove PFAS from the environment;
- on PFAS fate and transport through WRRF and land application; and
- on understanding the exposure and health effects of PFAS at varying concentrations.

Organizations such as the Water Research Foundation (WRF), and several others, are investing in research to improve knowledge on PFAS and to provide guidance to regulators. For example, WRF research project 5031 seeks to quantify PFAS at WRRFs in the aqueous, scum, solid and gaseous phases. The project focuses on assessing the occurrence of a wide range of PFAS (32 quantifiable analytes and hundreds of semi-quantifiable precursors), and their fate in solid and liquid streams, through a literature review and a survey of PFAS occurrence in nearly 40 US WRRFs.

By identifying key elements or data gaps in PFAS occurrence and fate in WWTPs, the research will develop guidelines and mitigation/management strategies for PFAS. WRF 5031 will therefore provide initial guidance on process-based strategies to attenuate the mass flow of PFAS from WRRFs to the environment.

Additionally, WRF research project 5042 assessed PFAS release from finished biosolids, specifically examining release as a function of PFAS loading in the finished biosolids, the post-digestion processing of the biosolids, and biosolids characteristics (e.g., organic carbon content). Leaching tests in outdoor mesocosms were performed using finished biosolids collected from WRRFs that employ differing post-digestion treatment. The research team used these findings to identify the importance of precursor transformation on PFAS leaching from biosolids, and to provide estimates of the expected PFAS mass discharge from land applied biosolids. Ultimately utilities will need to continue to be active participants in research projects such as these to help solve the PFAS in biosolids predicament.

Since the use of PFAS in commerce is the ultimate reason they appear in biosolids, regulators and agencies should also focus their attention on PFAS source control. Source control can be achieved via the reduction of their use in commercial products and industry. Both of these can be accomplished through regulatory action.

Source control is undoubtedly the easiest, most efficient, and most cost-effective method to reduce PFAS in biosolids by mitigating their impact on the WRRF. The future of biosolids must maintain and increase resource recovery and the safe and sustainable land application of biosolids.

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**Jane E. Madden, PE, BCEE** is Water Reclamation Practice Leader for CDM Smith, and **Charles E. Schaefer, Jr. PhD** is the Discipline Leader - Environmental R&D and Treatability Studies for CDM Smith.

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Ask A Board Member

# What do you see as the ***biggest challenge*** and the ***biggest opportunity*** for the public clean water sector in the next 50 years?

**For many of us babyboomers, the 50-year anniversaries of NACWA (1970), Clean Water Services (1970), and the Clean Water Act (1972) have arrived as we are wrapping up our public service to the water sector.**

Fifty years from now, our Gen Z colleagues who are just beginning their careers will be at the same life stage. Just imagine what they will have to say as the 100-year anniversaries roll around! I anticipate the dramatic degree of change and tumult we're experiencing now — of climate, of technology, of social justice reckoning, of how we choose to work and live and access and use water — will seem minuscule in comparison to what is to come in the next half-century. For me, it is about making smart investments in technology, addressing historic and current inequities, taking care of what you own, and building a talented team.

It is also about developing the team into water entrepreneurs — who can visualize the trajectory for the future, develop strategies, and take actions — together as a multi-disciplinary team. Responding to complexity and turbulence, by looking in the rearview mirror, will not allow us to navigate forward out of the whirlwind ahead. My swan song opportunity is co-creating with the team — a scenario-based playbook, The Clean Water Services Way — so our talented team is confident to meet the substantial challenges ahead — with strong spirits and clear purpose.

**Diane Taniguchi-Dennis**

Chief Executive Officer
Clean Water Services
Hillsboro, OR

**I see several challenges and opportunities for the water sector in the next 50 years, including renewing aging infrastructure, preparing the next generation of workers, and protecting public health through environmental excellence.**

Protecting public health and the environment through properly planned infrastructure improvements will be a critical component to meeting the needs of our community. As infrastructure ages and becomes unreliable, the risk of failure increases and our ability to provide environmental and regulatory excellence diminishes. To ensure long-term success, we must engage and educate our stakeholders and community about the future needs of the utility.

Lessons from the COVID-19 pandemic were numerous, but one lesson further emphasized what water sector professionals have always known - water and wastewater professionals are among the nation's essential emergency responders. And, like many utilities, we are seeing a large number of retirements which means we must prepare the next generation of water professionals. The utility worker of tomorrow will probably not be the same as today. We need to develop our young professionals as well as look in unconventional places to fill vacancies. Both the organization and tomorrow's workers will need to be adaptable to changing technology and new ideas.

As we wrestle with the impact of emerging contaminants, the ability to measure, manage, and remove these contaminants will influence utilities for generations. As new contaminants are identified, public response and subsequent legislative action is outpacing regulatory guidance, testing methodologies, and treatment technologies. Working together, utilities will rise to the challenge and succeed.

**Greg Ramon**

Chief Executive Officer
Little Rock Water Reclamation Authority
Little Rock, AR

**The Clean Water Act (CWA) has served as a catalyst to address long standing water quality indignities across our states and territories – but it needs a complete overhaul.**

While great strides have been made, unfortunately, now the CWA is often used to force cities to spend large sums of local dollars, providing residents with marginal environmental improvements. The ratcheting down of regulations, without the commensurate Federal support and without regard to impact, forces cities like Buffalo to place an undue financial burden on its residents.

In Buffalo's case, with 30% of the population living below the poverty line, the promulgation of current CWA tenets requires the back-seating of environmental justice concerns of our underserved communities, who often don't have the means to recreate and kayak on waterways. The influx of Federal infrastructure dollars along with the aim of serving disadvantaged communities should afford cities the ability to focus on true public health and environmental solutions.

The price tag to correct yesterday's environmental wrongs is daunting and is being borne by the residents today. Cities need to be encouraged to exercise the flexibility provided through integrated planning to best prioritize sustainable solutions that address climate, water quality, and resiliency in communities that have historically been overburdened by environmental pollution.

**Oluwole A. (OJ) McFoy, P.E.**

General Manager
Buffalo Sewer Authority
Buffalo, NY

**In addition to the constantly changing universe of contaminants of concerns, I think the biggest challenge facing public clean water agencies is the erosion of public trust in all public agencies.**

Dedicated clean water professionals are the true environmentalists charged with protecting pubic health and the environment and recovering valuable resources every day. They deserve our trust and respect, but they often do not receive it.

**Barbara Biggs**

General Manager
Roxborough Water and Sanitation District
Littleton, CO

**The greatest challenge that public utilities will face in the foreseeable future is attracting, recruiting, and retaining talent.**

We are seeing intense competition for labor driving up salaries, but equally challenging is the cohesion of various approaches brought by different generations in the workplace. A younger generation may not place the same value on some of the benefits that we offer in comparison to private employers, such as work-life balance or pension plans, as previous generations did, nor value longevity with one employer. The greatest opportunity we have is to use the best technology available to become smart utilities.

Whether it is AI, smart metering, or real-time technologies for local and system-wide optimization, we can become the "utility of the future today" by becoming more efficient and effective in delivering customer-centered services to communities.

**Charlotte Katzenmoyer**

Chief Executive Officer
Capitol Region Water
Harrisburg, PA

CEO MESSAGE

# Good Things Come to Those Who Wait... and Envision a Better Future

BY ADAM KRANTZ | WASHINGTON, DC

**As the old saying goes, good things come to those who wait.** And, while we may not have waited patiently, that saying holds true for NACWA and our members as we finally gather in Seattle this summer for our first Utility Leadership Conference in three years.

The pandemic has caused many people to miss important celebrations and milestones in their own personal lives. In our Association life, that meant missing the opportunity to gather in person to celebrate NACWA's 50th Anniversary in 2020 in the city where we were founded. And while we did lots of virtual celebrating that year – including through our dynamic NACWA 50 Report and website (nacwa50report.org) that recognizes the amazing success of our sector over the last 50 years – it just didn't feel quite the same.

So this summer, we will finally be together to celebrate the 50th Anniversary of the Clean Water Act (CWA) and NACWA's 50th Anniversary (belatedly).

The CWA is one of the nation's most successful federal environmental statutes. And the public clean water sector has, in my view, played the most impactful role in that success. So, the Golden Anniversaries for both NACWA and the CWA are directly linked and should be rightfully acknowledged and celebrated together.

But even more than celebrating the past, I am most excited about looking ahead and envisioning a bright future for the water sector and NACWA. And that is what this edition of the *Clean Water Advocate* is all about – outlining ideas and a path forward for the future of clean water.

We must take the many lessons we have learned from the past five decades, including the challenges posed by the pandemic, and become more resilient, sustainable, equitable, and innovative. I believe that by committing ourselves to the next 50 years of public and environmental health, we honor those, including many in the water workforce, who have been directly impacted by the pandemic.

I could not be prouder of the way in which NACWA's members have responded to the pandemic thus far, reinforcing their role as critical front-line workers and emergency responders to keep our communities operating while also providing new services for public health through technologies like wastewater surveillance. And I could not be more excited about where the ingenuity and innovation of our members will lead us in the future.

We are extremely fortunate to have visionary and bold water sector leaders within NACWA's membership, some of whom have shared their thoughts in this magazine issue on what the next 50 years of clean water could and should look like.

We have waited for several years to celebrate these enormous accomplishments. You all have earned it! Let's remember the tasks and challenges that lie ahead – and I know we are up to them – but for now let's celebrate!

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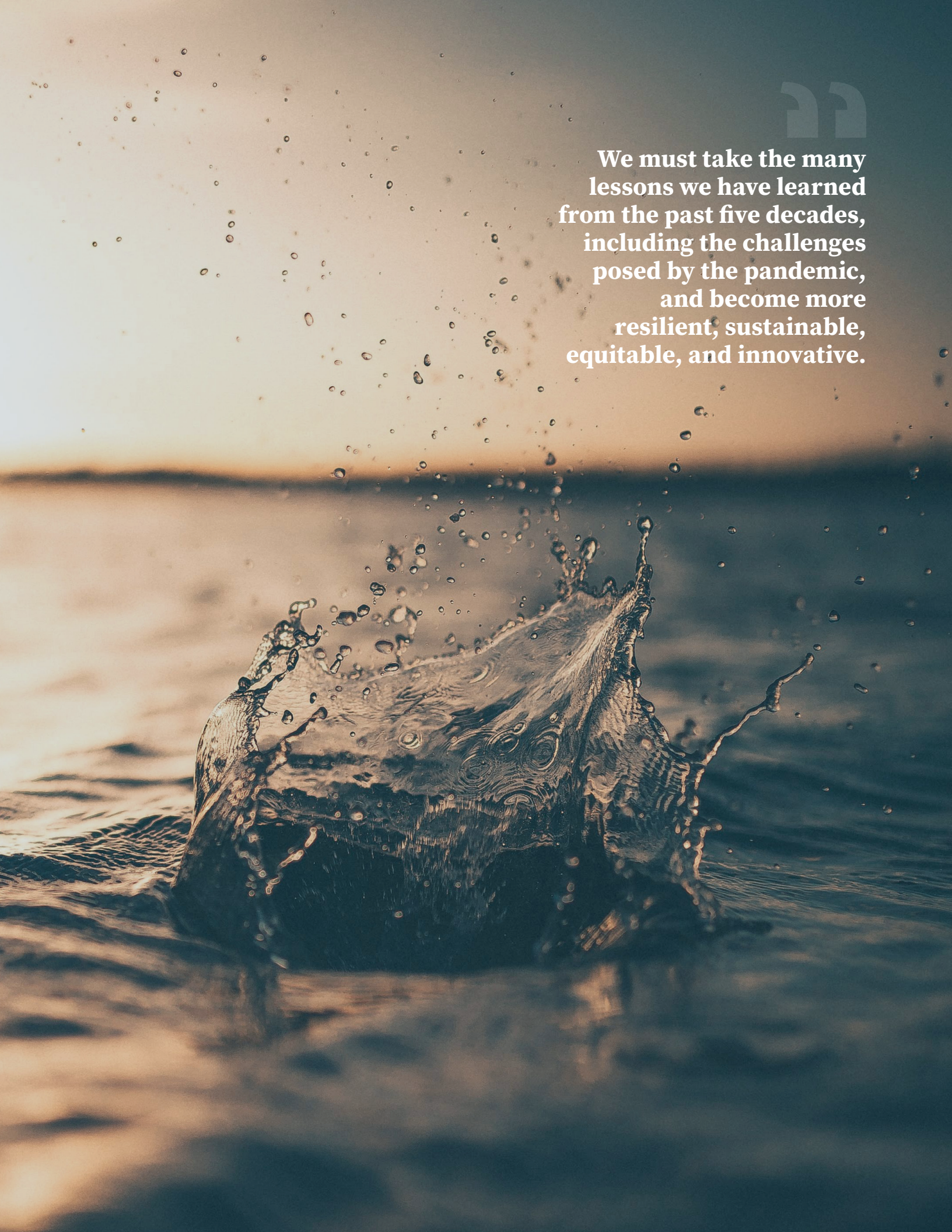
**Adam Krantz** is the Chief Executive Officer of NACWA in Washington, DC.



**We must take the many lessons we have learned from the past five decades, including the challenges posed by the pandemic, and become more resilient, sustainable, equitable, and innovative.**


NACWA AWARDS

# Congratulations to Our 2022 Award Winners

This year, NACWA is proud to acknowledge hundreds of our utility members with recognition from one of our three national award programs – *National Environmental Achievement*, *Excellence in Management Recognition* and *Peak Performance*. Through each of these programs, NACWA celebrates its members' commitment to excellence, innovation, and service to their communities and the environment.

**National Environmental Achievement** AWARDS

**Peak Performance** AWARDS

**Excellence in Management** RECOGNITION PROGRAM

Congratulations to this year's awardees! A complete listing of all of our award winners is available at nacwa.org/awards.

### GREAT LAKES WATER AUTHORITY, MI

**Winning this broad cross-section of NACWA awards has created an incredible sense of pride among our GLWA team members and our member partner communities. It is also tangible validation of the excellent work that we are doing in stewardship of the people we serve, the Great Lakes, and the overall environment in southeast Michigan.**

— Suzanne Coffey, Chief Executive Officer

### ALEXANDRIA RENEW ENTERPRISES, VA

**Recognition through NACWA's award programs elevates AlexRenew's healthier waterways mission to a national audience. These programs recognize and inspire our team of water resource recovery professionals as leaders in the water sector.**

— Karen Pallansch, Chief Executive Officer

### TOHO WATER AUTHORITY, FL

**Toho's Promise is that Our Customers, Our Community, Our Employees Trust that Toho Cares. We strive for performance excellence as one way to fulfill this Promise. I can't think of a better way to demonstrate our results than being recognized by NACWA on a national stage among an esteemed group of peers.**

— Todd Swingle, Executive Director

You can learn more about NACWA's national awards programs by visiting **nacwa.org/awards**.

### HANOVER SEWERAGE AUTHORITY, NJ

**Our path to our Gold and then Platinum Awards began with a goal to operate our plant as efficiently as possible to reduce effluent violations. This was quickly modified to a goal of eliminating violations. This took the commitment, skills and efforts of our whole staff. We were not looking for recognition. We just wanted to have the best record possible.**

**When we joined AMSA and received our first Peak Performance Award this was an opportunity to recognize the work of our staff and the continued support of our Board for the goal of 100% compliance. We have been able to continue this level of performance for more than 33 years.**

**Our staff, who are aware of the records of other facilities, are justifiably proud of what we have achieved. Every year (paused for COVID) we hold an event with our staff, Board and elected officials to recognize continued success.**

**In recent years we have been recognized for Excellence in Management. We reached the Platinum level in 2021. While we believed we were well managed, the application process and reviewing the work of other agencies pointed us to areas we could improve and expand to new areas. This award is particularly important to our management team since it heads our agency to a sustainable future while maintaining our operational performance. We believe that we are the smallest utility to ever receive an EIM award.**

— Mike Wynne, Executive Director

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# Join NACWA and have an active role in shaping the policies that will directly impact your utility.

For more than fifty years NACWA has advocated on your behalf, consistently offering an unmatched return on investment. Our most valuable resource is the collective impact of our members.

**Now is the time to add your voice.**

NACWA

*For more information on membership, contact Kelly Brocato, Sr. Director of Membership at kbrocato@nacwa.org or visit nacwa.org/membership.*

## Influence

As emerging issues arise and the landscape of clean water evolves, we are all tasked with the challenge of staying proactive and primed for the uncertainty of the future. You have the power to influence the decisions and policies that will affect your utility both now and for years to come.

## Voice

As the only national association that solely represents public clean water agencies, NACWA is the collective voice of utilities from across the country. We advocate on your behalf to ensure regulators and lawmakers hear each utility's perspective. Our members help shape national policy to benefit every community, including yours.

## Connection

When you join NACWA, you are immediately connected with an unparalleled nationwide network of small, mid-size and large public utility executives to collaborate and share innovative strategies, common challenges and successful solutions.

## Resources

NACWA members have access to the latest legislative, regulatory, legal, and communications expertise and analysis. We keep you informed of the significant shifts and developments in the sector, through online resources, interactive meetings and webinars presented by clean water thought-leaders and experts.