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Drinking Water Quality, Public Confidence, and Communications After Wildfires: Workshop Synthesis Report

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WORKSHOP SYNTHESIS REPORT

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REPORT

UCLA Luskin Center for Innovation

Informing effective and equitable environmental policy

The Luskin Center for Innovation conducts actionable research that unites UCLA scholars with civic leaders to solve environmental challenges and improve lives. Our research priorities include the human right to water, community-driven climate action, heat equity, clean energy, and zero-emission transportation. We envision a future where everyone has healthy, affordable, and resilient places to live, work, learn, and play.

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Cover photo: Workshop participants taking notes from fellow experts from a broad range of fields and institutions. Credit: Selin Filiz, Sustainable LA Grand Challenge

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We acknowledge the Gabrielino/Tongva peoples as the traditional land caretakers of Tovaangar (the Los Angeles basin and So. Channel Islands). As a land grant institution, we pay our respects to the Honuukvetam (Ancestors), 'Ahiihirom (Elders), and 'eyoohiinkem (our relatives/relations) past, present, and emerging.

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EXECUTIVE SUMMARY

Wildfires have broad impacts on the water supply systems that communities depend on—both their physical infrastructure and the public confidence in the drinking water they deliver. While wildfire impacts on headwater ecosystems have been long studied, in recent years, a newer issue has emerged: the direct impact of wildfire on water supply infrastructure and associated delivered water quality. The last decade in California, and more broadly across the Western U.S., has also seen notable progress and lessons learned in mitigating and restoring tap water quality following major wildfire events. Yet challenges remain as the frequency and severity of wildfires increase, and funding in related spaces stagnates or dwindles.

In the aftermath of a wildfire, water systems face two primary challenges that impact water quality. The first is physical: Fire can damage pipes, treatment facilities, and storage systems. It can also introduce contaminants into the distribution system that take time to identify and remove. The second is relational: In the wake of a fire, there is a need for people served by affected water systems to not use their tap water for a temporary period while systems are assessed. But complications arise once system services are restored. Residents may not believe their water is safe, as the information and the message they receive shape how they react following temporary use restrictions and restoration status. These factors can also impact their long-term confidence in the systems responsible for delivering safe water.

The physical dimension of this issue has received substantial attention since the January 2025 Los Angeles fires, as it did following previous major wildfires such as the 2017 Tubbs Fire in Northern California. The relational dimension, however, including issues of confidence, usage, and communications, has received far less attention. It plays a key role in shaping post-disaster community outcomes. Diminishing confidence in and disuse of tap water in the United States is not a new or fire-specific phenomenon. It is a well-documented and growing problem that predates any individual disaster, and one that is unequally distributed across income, racial, and other demographic lines.

Wildfires may not solely create concern about tap water. Instead, concern stemming from wildfires interacts with an existing baseline of concern. It can deepen doubts about tap water that some communities have long held while drawing previously unconcerned populations into uncertainty, or potentially vice versa with robust response and communications. There are clear consequences of tap water mistrust, which include lost household income spent on bottled water, downstream health impacts from substitution of sugar-sweetened beverages, environmental externalities, lost water system revenue, and further erosion of trust in the public institutions meant to serve communities. In fire-affected households, the burden is also psychological, with anxiety, stress, and depression frequently reported even after water quality has been restored.

This report describes findings from the third workshop of the Water Supply + Wildfire Research and Policy Coordination Network focused on these issues. The workshop was held on May 1, 2026, at the Los Angeles Cleantech Incubator (LACI) in downtown Los Angeles. Led by the UCLA Luskin Center for Innovation and UC Agriculture and Natural Resources (UC ANR) with support from UCLA's Climate and Wildfire Research Initiative, the workshop focused on drinking water quality, trust, and communications in the context of wildfire. The first two workshops in the series examined water systems' wildfire-fighting capacities and the financial dimensions of both everyday firefighting and potential wildfire fighting infrastructure and services. This third workshop focused less on water systems' role in fighting fires, although this was part of the discussion, and instead examined how communities receive, interpret, and respond to information about their drinking water quality during and after a major fire.

To address relevant questions, the workshop brought together 54 representatives from water systems, water industry associations, public health agencies, regulators, community-based organizations, academic researchers, journalists, technical assistance providers, and consultants from across California and beyond. The workshop's four sessions were organized around key questions that form the structure of much of this report: 1) addressing the status quo of public confidence in water quality communications; 2) assessing post-disaster drinking water trust and coping responses; 3) discussing best practices for post-disaster drinking water quality restoration; and 4) interrogating which information sources and modes of communication matter most for building tap water confidence during and following wildfires.

Workshop discussions highlighted that meaningful progress on post-fire drinking water confidence will require addressing institutional mistrust and negative experiences with drinking water that predate disaster experiences. Household-level distrust of tap water and water systems is rooted in a combination of documented water quality violations, personal and community experiences with contamination, aesthetic cues such as taste and discoloration, and broader mistrust of public institutions. Complicating matters further, many of the aesthetic and water quality issues residents experience originate in premise plumbing rather than from the water system distribution infrastructure, which means that residents often blame water systems for issues that the water system does not have the power to address. Effective post-fire communications, therefore, have to engage with this preexisting baseline of concern.

However, effectively engaging with communities during and after a wildfire is itself increasingly difficult. The information environment has become more fragmented and polarized, with algorithms underlying social media manipulating the messages that residents receive. Trust in public institutions of all kinds has declined. By the time a water system issues an official notice, residents have often already encountered competing accounts of the same event through social media channels—and once a narrative takes hold there, accurate information rarely displaces it. The January 2025 Los Angeles fires offer a recent example of how quickly misinformation and political polarization can shape public discourse around a wildfire event, including its water-related dimensions.

Reaching residents in this environment requires more than better messaging during a crisis. It requires understanding and building the trusted relationships through which information actually travels—relationships cultivated through ongoing engagement long before a disaster begins. Day-to-day water system communications typically involve press releases, customer notifications, billing, and regulatory reporting, and most customers engage very little with this material. As a result, many residents are not well acquainted with their water system, and the utility's communications feel like an unfamiliar voice when something urgent needs to be shared. If public officials want their messages to land in critical moments, the question becomes how to also work through alternate communications channels. Workshop participants pointed to community-based organizations, local journalists, faith leaders, and other intermediaries already embedded in residents' trusted networks. One of the most important structural shifts identified by participants was for water systems to establish and sustain ongoing relationships with these partners so that the relationships exist before a disaster occurs.

Alongside these communications challenges, post-fire drinking water restoration carries operational, regulatory, and legal tensions. While water systems operate under strict regulatory standards for delivering drinking water quality in line with the Safe Drinking Water Act in non-emergency times, how systems can and should be expected to perform during and shortly after disasters is less clear. While FEMA's Incident Command System (ICS) is a national standard for managing emergencies and is integrated into the National Incident Management System (NIMS), it is not specific to water systems and does not present clear guidance, much less firm standards and timelines for water system performance.

Technical procedures for water systems are relatively well-established and typically include rapid flushing paired with testing to verify that the system can return to normal operation. But executing that playbook under real-world conditions is harder than the science alone suggests, especially assuming the absence of resource constraints. In reality, sampling and testing capacity is stretched during major events, and testing and restoration strategies must balance cost, feasibility, and equity considerations. Utilities navigate a persistent tension between the pressure to enable timely rebuilding and re-habitation and the time and money required to confirm that restored water service is actually safe. This all occurs at a time when utilities may face fiscal shortfalls and workforce challenges if staff are impacted. Smaller water systems face all of these tensions in particularly acute form, with limited staff and less in-house expertise and capacity to navigate the testing, communications, and regulatory work that a major response requires.

Consequently, some of the major research and policy takeaways from the workshop were:

1. Water systems face significant challenges in improving public confidence in drinking water stemming from wildfires, including whether residents quickly pivot back to using it when it is safe.
2. Post-disaster communication operates through parallel formal and informal information systems, with residents typically receiving and acting on information from trusted social and community networks before official utility communications. Building confidence in drinking water, therefore, requires sustained investment in trusted intermediaries and communication partnerships before disasters occur.
3. More research is needed to fill the current gap in evidence regarding the persistence of public confidence impacts in drinking water following wildfires, along with the economic impacts of reliance on tap water alternatives.
4. While much progress has been made in the past decade in water system management following wildfires, systems still typically lack access to sufficient funding for ubiquitous testing and rapid restoration of services.
5. There remains considerable need for reconciliation between the strict regulatory framework of the Safe Drinking Water Act, guidelines such as those in FEMA's NIMS, residents' expectation of full service restoration, and the operational discretion and grace that systems need in real time following major disasters.

The remainder of this report describes the workshop discussion and takeaways in detail and focuses on how wildfires interact with—and exacerbate ongoing challenges in—the mechanics and regulatory oversight of drinking water quality delivery, public confidence in tap water quality, and the reality of both public agency communications efforts and the information sources that residents rely upon during and following disasters.

1. INTRODUCTION

Wildfires have broad impacts on the water supply systems that communities depend on—both their physical infrastructure and the public confidence in the drinking water they deliver. Given the role that headwater ecosystems in particular play in the quantity and quality of water supply that is ultimately delivered to communities through piped infrastructure, the impact of wildfires on headwaters has long been understood and studied. Hotter, faster, and bigger fires have altered upstream ecological processes and affect downstream water supply operations, motivating new ways of thinking about managing and remediating upstream environments. Historical research on burned areas in California provides insight into predicting and planning for post-fire water quality impacts downstream (Hohner et al., 2019).

While new dynamics continue to be studied, these topics are relatively well researched. However, in recent years, a newer issue has emerged: the direct impact of wildfire on water supply infrastructure and associated delivered water quality. In particular, the 2017–2018 Tubbs and Camp fires in California were "the first known wildfires where widespread drinking water chemical contamination was discovered in the water distribution network and not in the source water after the fire" (Proctor et al., 2020).

Since this issue emerged, the last decade in California, and more broadly across the Western U.S., has also seen notable progress and lessons learned in mitigating and restoring tap water quality following major wildfire events. Yet challenges remain as the frequency and severity of wildfires increase, and funding in related spaces stagnates or dwindles. These issues also have global relevance in Australia, some regions of Europe, Latin America, and the Middle East (Mitchell et al., 2025).

When a major fire starts in or reaches a populated community, it can directly damage pipes, treatment facilities, and storage tanks. Damage can introduce contaminants into the water distribution system, which takes time to identify, measure, and remove in order to make the water drinkable (potable) again. The way that drinking water quality becomes contaminated as a result of wildfires is reasonably well understood due to scientific advances in the last decade.

When a wildfire reaches into a built environment, it can introduce contaminants into water systems through the combustion of biomass and structures, the thermal degradation of plastic pipes in premise plumbing and small systems, and the introduction of contaminated water into depressurized mains (Whelton, 2025; Proctor et al., 2020). These contamination pathways and magnitudes continue to be an active area of research for scholars working in partnership with communities, water systems, and regulators (Metz et al., 2026; Zavodny & Whelton, 2026).

Distribution systems are pressurized to move water from sources to end-uses in buildings, hydrants, and other locations. If a system is compromised, it can depressurize parts of the system at open breaks in pipes or infrastructure. This can result in contaminants from the air and surface being siphoned into the system at the break, and infiltrating into the treated water already in the system. Microbial contaminants, as well as especially volatile and semi-volatile organic compounds (VOCs, SVOCs) and other substances that enter the system, instigate additional restoration actions. Alongside repairing or sealing off the damaged portions of the system, contamination events require water system managers to completely flush the pipes and test water quality at multiple sources before safely restoring services.

While many important questions remain in the mechanisms of how wildfires contaminate water quality, equally important questions have been less studied with respect to: how confidence in water quality is affected when fires occur, what additional technical and policy measures can be taken to restore safe drinking water in a timely fashion, and what technical and social communication strategies can realistically move the needle to improve confidence. The recent work of Newcomer et al. (2026) and Zavodny and Whelton (2026) fills some gaps in these spaces, but many open or contested questions remain.

The vast majority of drinking water delivered by water systems in the U.S. is safe, and quality has been improving (Keiser et al., 2026). Yet, distrust of tap water in the United States is not a new or fire-specific phenomenon. It is a large, well-documented, and growing problem that predates any individual disaster. Researchers estimated that in 2013–2014, approximately 13% of the U.S. population did not drink their tap water. The population not drinking tap water rose sharply following the Flint water crisis, which spanned mid-2014 to 2016, to about 61.4 million people (20% of the population) as of 2017–2018 (Rosinger et al., 2021). Lack of tap confidence and disuse is also distributed unequally. Bottled water consumption and distrust of tap water are highest among low-income, Black, and Latino households, and distrust is further heightened among immigrants from countries where tap water is unsafe to drink (Jaffee, 2024; Patel & Schmidt, 2017; Pierce & Gonzales, 2017).

The drivers of distrust are varied and often compounding. Causes include documented water quality violations, direct personal or community experiences with contamination, aesthetic cues such as taste or discoloration, and a more general mistrust of the public institutions responsible for delivering water. Even when tap water is safe, reports of water system testing can be written in technical language beyond the public's average literacy level, which does little to reassure an already skeptical public (Nicholas & Vedachalam, 2021).

This analysis has to acknowledge the difference between feasible and desirable goals and language used with respect to the public's interaction with drinking water following a wildfire event. Individual risk perception on potability and palatability varies widely (Burlingame, Dietrich, & Whelton, 2007; Spackman, 2023). There is also a difference among acceptance, use, trust, and confidence in drinking water quality, although these terms are often used synonymously in the academic literature. Securing public willingness to pay and active support for system infrastructure investments or certain policies is even more complex (Teodoro et al., 2022), and sets an even higher bar of expectations for water systems to meet.

In particular, the very commonly used term of "trust" itself is difficult to measure and even harder to move. Surveys can capture stated attitudes at a point in time, but the relationship between stated trust, actual behavior (whether someone drinks the tap water), and underlying confidence is not straightforward. Building an evidence base for what actually works and what does not work requires a sustained, longitudinal investment in research that is not always easy to fund.

Similar to other disasters, wildfire both reinforces and creates concerns about tap water safety, with implications varying across different socioeconomic and demographic statuses. Disasters act on an existing baseline of mistrust among some and magnify the doubts that other communities already hold while pulling new populations, who may never have questioned their water before, into uncertainty and fear. The result is that confidence in drinking water quality can be considerably worsened by wildfire in affected areas, often well beyond the burn and evacuation zones. Some heightened concern in the immediate aftermath is unavoidable, and arguably even desirable, because ensuring safety requires people to take notice of messaging when water is genuinely contaminated. But when that concern is untethered from actual risk magnitude, or persists long after water quality has been restored, it can create long-term harm. This report also notes the theoretical, if unlikely, potential for long-term improvements in public confidence if temporary impairment of drinking water quality is addressed via robust public response and communications.

Distrusting tap water—regardless of whether that distrust is caused by actual contamination or perceived risks—can create several consequences. People who do not trust their tap water tend to drink less of it and substitute more expensive bottled water or sugary beverages, which impacts both household budgets and health (Javidi and Pierce, 2019). Distrust also imposes environmental externalities, impacts water system revenue, and often further diminishes the institutions meant to serve communities (Teodoro et al., 2022). In the specific context of wildfire, the impact of tap water mistrust is also psychological. In a survey of households affected by the 2018 Camp Fire, 54 percent of respondents reported that at least one member of their household experienced anxiety, stress, or depression directly related to the water contamination issues (Odimayomi et al., 2021). Further, once confidence is lost, it is also slow and costly to rebuild.

Distrust in tap water is difficult to address, and in the context of wildfire, that difficulty is growing for reasons that extend well beyond water quality science or regulatory practice. Providing accurate, timely, and compelling public health information about drinking water is becoming more complex in an environment marked by growing distrust of public institutions, an increasingly fractured media landscape, and a widening gap between expectations for public-sector response and funding available for action.

In this environment, post-disaster information flows through two parallel communication systems: a formal system consisting of official notices and guidance from water utilities, public health agencies, and regulators, and an informal system of social media, local news, community organizations, and interpersonal networks. While formal communications remain the authoritative source of information on drinking water quality, residents often first encounter and act on information circulating through informal networks, where trust is shaped as much by relationships and lived experience as by technical accuracy.

Partly as a result of these dynamics, public opinion about the role of water in events like the Los Angeles fires has become highly polarized (Pierce, Hernandez, et al., 2026). Additionally, information often reaches people not from experts or authorities, but secondhand, through social media and other non-expert intermediaries interpreting official notices. Further, common regulatorily required communication tools such as “do not drink” and “do not use” advisories and “boil water” notices can be easily misunderstood, even though they have been in use for years. These dynamics shape whether messages about water quality post-disaster are delivered, believed, and acted upon.

As discussed in extensive previous research, the water system–wildfire relationship has been subject to intense scrutiny since the January 2025 Los Angeles fires, most notably around system capacity and performance in mitigating wildfires (Pierce, de Guzman, & Mullin, 2025). The third workshop, however, largely asked a different kind of question. Its focus was not only on the systems themselves and their regulators, but also on the people they serve: how communities perceive and respond to information about their water during and after a fire, and what shapes their confidence in using it. Researchers were motivated to understand for how long and how deeply confidence in drinking water quality is affected when fires occur, and the best strategies to move the needle on confidence in these settings. These questions have been understudied. We thus aimed to better understand and assess:

- Why tap water distrust carries consequences worth taking seriously for public health, household affordability, the environment, water system finances, mental and emotional well-being, and trust in public institutions more broadly.
- How wildfire acts on an already-fragile baseline of public trust in tap water, deepening distrust in some communities while introducing it to others.
- What actions are already being taken to build or restore confidence in drinking water.
- How accurate information can be communicated and made actionable in an environment defined by complex testing and notification protocols, a fractured media environment, misinformation, and polarization.

This report summarizes key themes and insights emerging from the workshop discussions, situates them within the broader water system-wildfire research and policy landscape, and identifies gaps where further research and policy development are needed. As with the Urban Water Supply + Fire Research and Policy Coordination Network’s prior work, this analysis recognizes that this field remains dynamic, and this report contributes to a rapidly evolving landscape of research, policy, and practice.

2. WORKSHOP OVERVIEW

This report synthesizes the takeaways from an in-person, full-day workshop entitled “Drinking Water Quality, Public Confidence, and Communications Related to Wildfires” that was held at the Los Angeles Cleantech Incubator at the downtown La Kretz Innovation Campus on May 1, 2026. This workshop is the third in a series of four gatherings conceptualized and hosted by the UCLA Luskin Center for Innovation and the California Institute for Water Resources at UC Agriculture and Natural Resources (UC ANR) (Figure 1).

These workshops were made possible as part of the Urban Water Supply + Fire Research and Policy Coordination Network funded by UCLA’s Sustainable LA Grand Challenge with support from UC ANR. The past and remaining workshops in this series are structured similarly and have a similar mix of participants, although invited participants are not identical across all workshops.

FIGURE 1

Workshop Series Topics and Timeline

01	02	03	04
WORKSHOP 1	**WORKSHOP 2**	**WORKSHOP 3**	**WORKSHOP 4**
Water Systems’ Wildfire Fighting Capacities and Expectations (August 18, 2025)	The Economics & Affordability of Water System Firefighting (January 23, 2026)	Drinking Water Quality, Trust, & Communications (May 1, 2026)	Water, Urban Vegetation, & Wildfire (September 2026)

On May 1, 2026, workshop had 54 participants (see Figure 2) representing water systems, consultants, nonprofit and community-based organizations, regulators, media, and researchers from across California and beyond. The organizers aimed to invite and capture wide representation and participation in the workshop from relevant experts and interested parties, but the researchers also acknowledge that the perspectives and insights contained in this report reflect the views of the authors and those of the workshop participants, as synthesized by the authors.

FIGURE 2

Workshop 3 Participating Entities

Arizona State University, Arizona Water Innovation Initiative	Better World Group	California American Water	California Council on Science and Technology	California Institute for Water Resources	California Municipal Utilities Association	California State Water Resources Control Board
Corona Environmental Consulting	County of Los Angeles Chief Sustainability Office	East Bay Municipal Utility District	Esperanza Community Housing	Golden State Water Company	Kearns & West	LAist
Las Virgenes Municipal Water District	Los Angeles Waterkeeper	Los Angeles Department of Water and Power	Metropolitan Water District	Moulton Niguel Water District	New York University	Office of Assembly-member Steve Bennett
Physicians for Social Responsibility - Los Angeles	Paradise Irrigation District	Rubio Cañon Land and Water Association	Stanford University	Stantec	UC Agriculture and Natural Resources	UCLA Civil & Environmental Engineering
UCLA Latino Policy & Politics Institute	UCLA Luskin Center for Innovation	UCLA Sustainable LA Grand Challenge	University of California, Irvine	University of California, Riverside	University of California, San Diego	University of North Carolina Charlotte
University of North Carolina Environmental Finance Center	WeTap.org					

The workshop employed Chatham House Rules to encourage frank conversation during the in-person discussions. Accordingly, no statements at the workshop are publicly attributed to individuals or organizations by name. Notwithstanding this approach, the organizing UCLA–UC ANR research team made every effort to accurately reflect participants' insights and remain as faithful as possible to their original statements.

Before the workshop, participants were sent a packet of background materials that included a draft agenda and objectives for the workshop process. The detailed day-of-workshop agenda is posted on the website of UCLA's Sustainable LA Grand Challenge. The workshop included four panels, which incorporated invited "lightning talks" shared by 15 other experts, many opportunities for open discussion, and a groupwide end-of-workshop reflection session.

Our working group committee of experts from UCLA, UC ANR, and Arizona State University facilitated the workshop. Jennifer Craer, the director of research development for UCLA's Sustainable LA Grand Challenge, opened the workshop with framing remarks. Gregory Pierce then provided an overview of the workshop structure, the Network's work to date, and the focus and tone of this workshop.

The bulk of the workshop was structured around four sessions facilitated by Edith de Guzman, Erik Porse, Gregory Pierce, and Faith Kearns. The sessions each consisted of two to three lightning talks from subject matter experts, followed by audience questions and facilitated discussion based on pre-written prompts posed to both panelists and the broader group. The focus of each session is detailed in Figure 3. These core sessions were organized and structured around several key questions, answers to which form the substance of much of this report.

FIGURE 3

Workshop Session Objectives

Session 1: Status Quo of Public Confidence in Water Quality Communications	Session 2: Post-Disaster Drinking Water Quality Trust & Coping Mechanisms	Session 3: Post-Disaster Drinking Water Quality Restoration Efforts & Challenges	Session 4: Which Sources Matter Most to Build Tap Water Trust?
• Establish why tap water trust matters for water systems and residents • Understand trends in tap trust over the last decade • Discuss strategies for general water utility communications and limitations	• Draw lessons learned from drinking water quality communication related to the January 2025 LA wildfires and other disasters • Understand resident reactions to water quality alerts • Discuss the cost and reliability of home water quality testing	• Discuss the optimal balance between testing and flushing considering field conditions and cost • Understand timelines for drinking water quality restoration • Examine whether running non-potable water through distribution systems makes sense in any scenario	• Establish the current political and media environment influencing communication • Understand which information sources and messengers are best received by the public • Explore objectives and ideal timelines for messaging

To close out the workshop, Edith de Guzman led a group reflection that encouraged participants to share their learnings and key takeaways. Faith Kearns then summarized key themes that emerged from the day. This report summarizes themes and insights from the workshop and workshop-related activities, and articulates remaining gaps in understanding. In addition to this report, the workshop yielded at least two other near-term outputs:

- The workshop facilitated conversations and advanced follow-on collaborations among individuals and entities working on the water supply–wildfire-fighting issue and tap water trust more broadly.
- It formed the basis for a blog post published in July 2026 with early insights from the workshop.

3. THE STATUS QUO OF PUBLIC CONFIDENCE IN WATER QUALITY COMMUNICATIONS

The opening panel of the workshop discussed the state of public confidence in drinking water in the United States today. It focused on what is known about the gap between actual water quality and public perceptions of it, what water systems and partners have done to close that gap, and where the persistent limitations lie. The discussion was framed around a basic inconsistency that recurs throughout the tap water use, confidence, and trust literature: Drinking water quality in the United States is safe for the vast majority of U.S. residents and has improved even in the last few decades (Keiser et al., 2026), yet public trust in tap water has not followed the same trajectory (Rosinger et al., 2021). This discrepancy is partly due to the difference in influence on confidence and trust between primary, health-related standards and secondary, largely aesthetic standards for drinking water systems. In short, secondary standards tend to influence perception and trust more than primary standards (Pierce & Lai, 2019). This is a multifaceted problem that begins long before any disaster and one that wildfire interacts with rather than creates.

3.1. Why does tap water use and confidence matter?

The discussion was first grounded in why public confidence in tap water is worth taking seriously. Access to safe, affordable drinking water is, at its core, a basic human right, and tap water is also the most convenient and least expensive way to deliver it. When households do not trust the water coming out of their faucets, there are several consequences.

The most immediate consequence is financial. Households that turn away from tap water typically substitute bottled water, which is much more expensive on a per-gallon basis. Environmental externalities, particularly from single-use plastic bottles, are also substantial. Panelists noted that the cost of bottled water and water jugs has risen sharply in recent years—especially since the start of the COVID-19 pandemic—and that for some households, spending on bottled water can exceed the cost of a water utility bill. Specifically, as of 2019 in Los Angeles, households purchasing bottled water pay 25 to 125 times the cost of tap water (Pierce, Gonzales, Roquemore and Ferdman, 2019). National estimates show that households that mistrust tap water rely on alternative sources to meet minimum drinking and cooking needs, such as individual bottled water, and spend over 9% of their out-of-pocket income on this replacement water. This is also an equity concern because heightened tap water mistrust has been documented among lower-income communities and communities of color (Pierce, Gonzalez, Roquemore, & Ferdman, 2019).

Health consequences are equally well documented. People who do not drink tap water can also substitute sugar-sweetened beverages, with implications for diet quality, obesity, and oral health (Pierce, Chow, & DeShazo, 2019). Additionally, discussions noted that households that adopt point-of-use filtration as a workaround do not always maintain those filters properly, which can introduce their own water quality problems.

Lower water consumption can translate directly into lost utility revenue, which constrains a water system's ability to invest in the infrastructure and outreach that would address the underlying concerns in the first place, creating a self-reinforcing cycle (Teodoro et al., 2022). And perhaps most importantly, when people have negative experiences with their water—whether the underlying quality issue is real or perceived—that experience tends to add to a broader mistrust of public institutions. If people feel they cannot trust the water coming out of their tap, the question of what institutions they can trust becomes an open one.

Panelists also noted that the distinction between "safe" and "clean" matters here: A system can be delivering water that is technically safe under federal standards but that residents do not consider clean—and acceptance, not just compliance, is what shapes behavior.

The discussion also touched on a related point: The goal of building tap water confidence is not to override people's judgments about their water, or to frame them as irrational, but to support informed confidence and decision-making. Ideally, households can make decisions about their drinking water—including the choice to use a filter or buy bottled water—based on accurate information about what is and is not in their water, not on misinformation, disinformation, or decisions that are driven by fear or other emotions.

3.2. What are trends in tap trust over the last decade following the Flint, Michigan, water crisis?

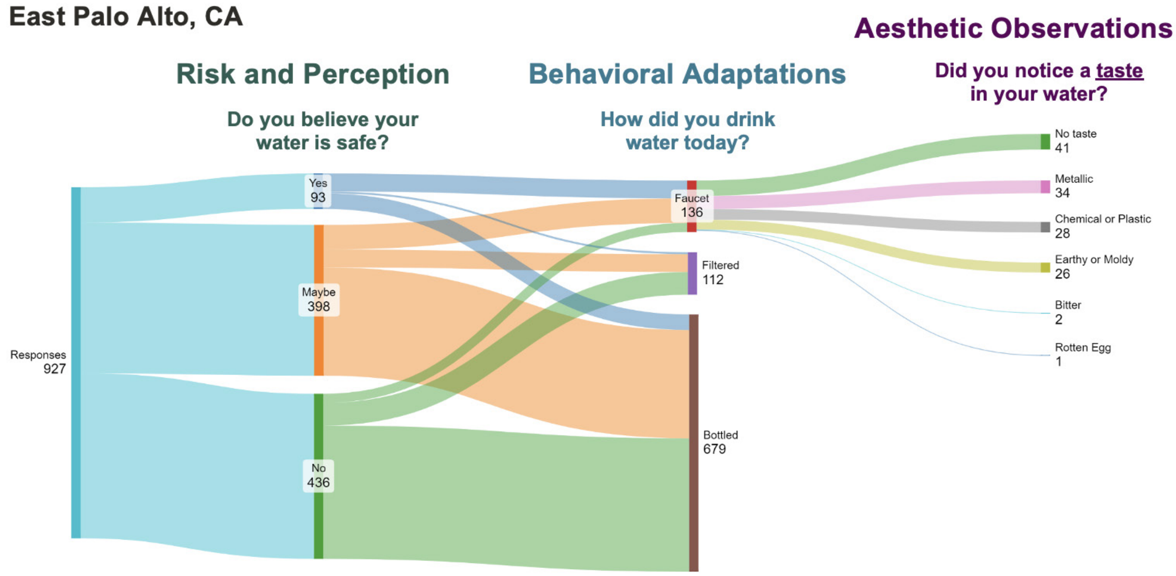
The post-Flint decade was characterized as one in which physical infrastructure investments have outpaced the institutional and social work needed to restore confidence. The Flint water scandal and crisis, which reached national prominence in 2015, fundamentally reshaped public awareness of tap water safety in the United States. The prevalence of adults declining to drink tap water rose by 40% and among children by 63% in the period following the Flint crisis, compared to the period just before (Rosinger et al., 2021). These trends have been sharper among Black and Hispanic households. The years since have seen significant federal and state investment in lead service line replacement, treatment upgrades, and water quality monitoring, but communication about what has actually been fixed has been weaker.

At the same time, this shift away from tap water is not a one-time event. Workshop panelists framed this as a confirmation of a deeper pattern: A high-visibility water crisis in one community can shift trust nationally, including in communities whose own water quality has not changed. This can be illustrated locally in the Los Angeles region, where, despite water being safer than the state and national average, distrust and disuse are among the highest in the nation (Pierce, Gonzalez, Roquemore, & Ferdman, 2019).

A panelist also pointed to research demonstrating that much of this mistrust is grounded in lived experience and is thus rational, rather than being a matter of misperception. There are many examples of this phenomenon (Wilson et al., 2023). For instance, a recent study of households in Detroit, Michigan, and East Palo Alto, California, found that in East Palo Alto, 62% had at least one secondary exceedance (see Figure 4)—meaning aesthetic or sensory issues such as taste, odor, or appearance were an issue, in contrast to primary or health-based standards. Secondary standards are not federally enforceable in the way primary contaminants are. Research continues to highlight that in many cases, distrust is not a perception problem disconnected from reality; rather, it is a rational response to genuine sensory experience, even where the water meets primary safety standards.

FIGURE 4

Perception of Drinking Water and Associated Behavioral Adaptations in East Palo Alto, CA



Source: Osman, K. (2026, May 1). Workshop 3: Drinking water quality, public confidence, and communications around wildfires [Conference session]. Los Angeles Cleantech Incubator, Los Angeles, CA, United States.

A particularly important framing point from this discussion was also found in evidence from Los Angeles. A recent study in the city found that a substantial share of validated water quality complaints—for Los Angeles Department of Water and Power (LADWP), about 75 percent—originate not in the distribution system but in premise plumbing, meaning the pipes and fixtures within the home itself (Pierce, Gonzalez, Roquemore, and Ferdman, 2019). Residents experiencing an aesthetic or quality issue often cannot determine its origin, and thus tend to attribute it to the utility infrastructure (Vasquez-Rodriguez & Pierce, 2024). This is a significant driver of the gap between water quality as measured at the system level and water quality as experienced at the tap. It also means that some of the most important interventions for building confidence happen at a household-specific scale that water utilities don't have insight or authority over. The researchers proposed potential means to address premise plumbing issues in a recent report with Los Angeles County (Vasquez-Rodriguez & Pierce, 2024).

3.3. What have water systems done to communicate drinking water quality above and beyond Consumer Confidence Reports? What are best practices for water system communications to be viewed as trustworthy?

Consumer Confidence Reports (CCRs) providing information on drinking water quality must be delivered annually by community water systems to their customers, as now more extensively mandated by the U.S. Environmental Protection Agency. Through concerted mandatory and voluntary efforts, the prevalence, accessibility, and communication sophistication of CCRs has improved significantly over the last several decades (Clements, 2025). Still, the reach and effectiveness of CCRs remains limited; many residents do not know they exist and continue to find the information within them too technical (Nicholas & Vedachalam, 2021). Panelists identified a number of strategies that water systems and their partners have used to communicate drinking water quality in ways that build understanding and may build confidence. The unifying theme across these strategies is that direct, relational, and locally grounded engagement consistently outperforms one-size-fits-all communication from the utility.

Direct customer engagement. One-on-one engagement was identified to typically be more effective than mass communication. LADWP's offering of a free water quality concern hotline—through which any customer concerned about their water can request free in-home testing—was offered as an example (also see Pierce, Gonzalez, Roquemore, & Ferdman, 2019), but is quite rarely provided by systems. The hotline gives utility staff an opportunity to speak directly with concerned residents, identify whether the issue is at the system- or premise-plumbing level, and troubleshoot. Trust built through these direct interactions then spreads through word of mouth, which was characterized as more powerful than any official messaging campaign. While highlighted as a model for building trust and providing households with reliable information about their water quality, a panelist noted that this program has received limited requests and that there are limitations to the utility's ability to scale it up to larger numbers.

Community-engaged science. When residents have direct involvement in water quality monitoring, both the data and the trust that comes with it can be stronger. An LADWP representative pointed to a recent LADWP partnership with community groups and the Housing Authority of the City of Los Angeles to conduct what was described as the largest residential lead sampling effort ever undertaken in the city, focused on community housing in Watts. Residents themselves were involved in the sampling process. Another example is the San Francisco Bay Area Disadvantaged Community and Tribal Involvement Program's Tap Water Testing program—which partnered with 15 local groups representing 15 disadvantaged communities and five Tribes to carry out tap testing and reporting back to concerned residents (Muller & Pierce, 2024). This kind of engagement can address two problems at once: It produces necessary data about a real concern, and it turns residents who may have some degree of distrust of utility or tap water into collaborative participants.

Trusted messengers. Across the workshop, discussions returned to the point that the most effective messengers are often not water systems themselves. People often trust voices that are not the water system, such as academics, environmental and community organizations, faith organizations, neighbors, and local leaders. These efforts also tend to reach audiences that may otherwise tune out official communications.

The Drink Philly Tap campaign in Philadelphia was offered as a leading example of the trusted-messenger model in practice. Just in the first year of the program in 2019, trained neighborhood ambassadors put in nearly 500 hours of outreach to connect thousands of residents with the message that Philadelphia tap water is safe and healthy to drink. Subsequent surveys showed a strong link between awareness of the city's water quality report and higher trust in the water department (Philadelphia Water Department, 2019; Philadelphia Water Department, 2025).

Creative reframing. This session also included a discussion of efforts to make tap water quality itself more accessible and appealing to the public (Spackman, 2023). A cited example was Chicago's effort to can its tap water and market it as "Chicagawa," which functions as both a public service announcement and a reframing exercise (Schulze, 2022). This effort has made tap water visible, branded, and shareable in a geographic-specific way that an annual water quality report may not be able to.

Accessible visuals. No matter the messenger, workshop participants noted that most members of the public do not understand contaminant concentrations expressed in milligrams per liter, parts per billion, or other technical units. Participants emphasized the importance of visuals, graphics, and comparative framings that translate technical results into something residents can interpret. Figure 5 provides such an example from response and outreach efforts UC ANR and UC Merced undertook to address water quality concern inquiries from the state's residents. Additionally, a study led by workshop participants is currently testing whether providing households with individualized, plain-language test results increases their trust in tap water.

FIGURE 5

Example of a One-Page Drinking Water Fact Sheet, University of California Agricultural and Natural Resources

UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

UCMERCED

DRINKING WATER FACTSHEET

GETTING YOUR WATER TESTED

Factsheet Drinking Water Series - #2

Find Your Water Provider

Public water systems provide water to homes and businesses, ranging from a few dozen to thousands of residents. If you live in urban or suburban areas, your drinking water likely comes from a public system and is treated before it reaches your home. Many residents who live outside of urban areas, however, get water from state small water systems or private, domestic wells. Residents who receive water from these sources may not have the resources to treat water to safe standards. Additionally, wells may be located near sources of pollution. To learn where your water comes from, use the QR code to find an interactive map developed by the **Community Water Center**. [1]

Water Provider

Contaminants

Contaminants in drinking water can affect the taste, odor, and color, and have human health effects. Drinking water quality standards protect the public from health impacts caused by contaminants. Common contaminants include:

Biological

Bacteria, parasites, and viruses (like E.coli and Giardia) originate from many pollutant sources, like water runoff containing manure from animals. Illnesses that can result include intestinal issues, infections, and respiratory problems.

Metals

Metals are naturally present in all waterbodies due to the geology of the local area, but higher concentrations of metals are commonly a result from human-caused pollution. [5]

Chemicals

Chemicals as a byproduct of industrial activity like agriculture or manufacturing, commonly leach into water sources.

Is My Water Safe?

Large water systems are required to regularly test water to ensure quality. If you live in an area served by a larger water supplier, you can find water quality test results from your provider. Follow the QR code here to see if your water quality complies with water quality standards. [2]

Water Quality Check Up

If you live outside of a water system boundary, the best way to know your drinking water quality is to get your water tested by an independent laboratory. You can drop off or mail a sample of your water at the laboratory and have your water tested for common contaminants. Household water quality tests can cost up to $200. Follow the QR code to the right to find a water quality testing lab near you. Many county environmental or health departments have programs for discounted water testing. **Check with your county first!**

Lab Locations

Indicators

In addition to directly testing for these contaminants, water quality can be monitored through **indicators** such as:

pH

neutral
acidic
alkaline

pH is a measure of acidity in water. A pH value less than 7.0 is more acidic water, while pH values greater than 7.0 indicate more alkaline, or basic, water.[6]

Turbidity

Turbidity is a measure of water clarity. Water with high turbidity appears cloudy due to small sediment and particles (solids) in the water. [4]

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FEWS LAB
Website: https://fews-us.org/
Email: cnaughton2@ucmerced.edu
Number: (209) 259-8651

GET IN TOUCH

Website: https://ciwr.ucanr.edu
Email: anrwater@ucanr.edu
Number: (530) 240-2612
UC ANR CIWR

Source: University of California Agriculture and Natural Resources & University of California, Merced. (2024). Getting your water tested [Fact sheet]. https://my.ucanr.edu/sites/ciwr/files/407595.pdf

3.4. What are some known limitations in this space?

The first workshop session closed by discussing the limitations water systems and their partners face in this space, many of which require the participation of actors far beyond water systems themselves to fully address. These challenges are discussed further in the remainder of the report in the context of the post-wildfire environment: growing misinformation and disinformation, growing institutional distrust, and the need to meet a diversity of audiences via different media and engagement channels, combined with a long-term lack of customer interest in and understanding of water system infrastructure outside moments of crisis.

4. POST-DISASTER DRINKING WATER QUALITY TRUST AND COPING RESPONSES

The second session of the workshop shifted the focus from the broader issue of tap water confidence, trust, and use to the topics of post-disaster drinking water quality communications and behaviors, especially tap-alternative water and beverage consumption, that stem from a wildfire event. The central question was how households actually experience, respond to, and cope with drinking water quality concerns during and directly following disaster events, and what utilities and their partners have or have not done to communicate with them effectively during those times.

4.1. How is real-time messaging on water quality during fires currently being carried out by water systems? What can be improved?

The current state of real-time messaging to affected residents during and immediately after wildfire events was characterized as variable and largely reactive. Most water systems lack pre-developed, scenario-tested protocols for the response phase of updating drinking water quality status through real-time communications, and many found themselves improvising under exactly the conditions where improvisation is hardest to do well.

The most fundamental communications gap is the absence of unified dissemination of technical information and accessible messaging across institutional actors whom people look to during disaster events. During a disaster, residents may receive little or conflicting information from a water utility, the local health department, emergency management, and elected officials. The session panel emphasized the importance of prearranged coordination so that messages reaching the public are aligned across these institutions to improve accuracy and credibility.

It is inherently difficult to present a unified voice in a context where 11 different community water systems were directly affected by the Palisades and Eaton fires, each with its own governance structure, customer base, and communications practices (Pierce, Callan, et al., 2025). Nine of those systems issued “do not drink,” “do not use,” or “boil water” advisories in the first four months after the fires, on staggered timelines that ran from January through May 2025 (California State Water Resources Control Board, 2025). No single entity was positioned to speak for the region’s water customers, leaving residents to piece together information.

In the Los Angeles fires, the County of Los Angeles hosted a web page to post water utility notifications regarding drinking water status. However, this information was often dated, it was not made clear which utilities served which areas of the county, and much of it was presented in regulatory language. This structural gap of asynchronous communications runs in two distinct directions: There is a need for high-level, regionally consistent information and also a need for hyperlocal trust at the level of community-based organizations (CBOs), and these two needs are not easily met by the same messenger.

Workshop participants underlined the need for a more robust single website platform, potentially integrated with the Watch Duty app, which would provide more user-friendly and as close to real-time information as possible to residents on the status of their drinking water quality depending on where they lived on an app they are likely already using for up-to-date fire information. Given that major fires occur across California, it was suggested that the state itself, likely the State Water Board, would be best equipped to host and maintain such an information portal.

Finally, there is often now an assumption that digital channels are wholly sufficient to deliver information. However, during and after a disaster, power can fail, and internet service can slow or go down, meaning push notifications and websites often cannot carry the load on their own (for instance, see Gupta et al., 2024). Positioning physical communication materials, including flyers and signage, at a time and place that reach displaced residents is a major challenge, but should be part of the supplementary preparedness layer of disaster communications planning to the extent possible.

Another practical recommendation emerged from this discussion. Partnerships between water systems and community-based organizations can provide a delivery mechanism for trusted information to those who may never access a government website. But for these relationships to function during a disaster, there needs to be someone on the water system's staff who is already embedded in the organizations' networks before the disaster hits. Pulling an operator or engineer into last-minute community engagement work, which was noted as a common pattern, produces neither good operations nor good engagement. This kind of relational infrastructure has to be built and maintained as a deliberate institutional commitment, not improvised under crisis conditions.

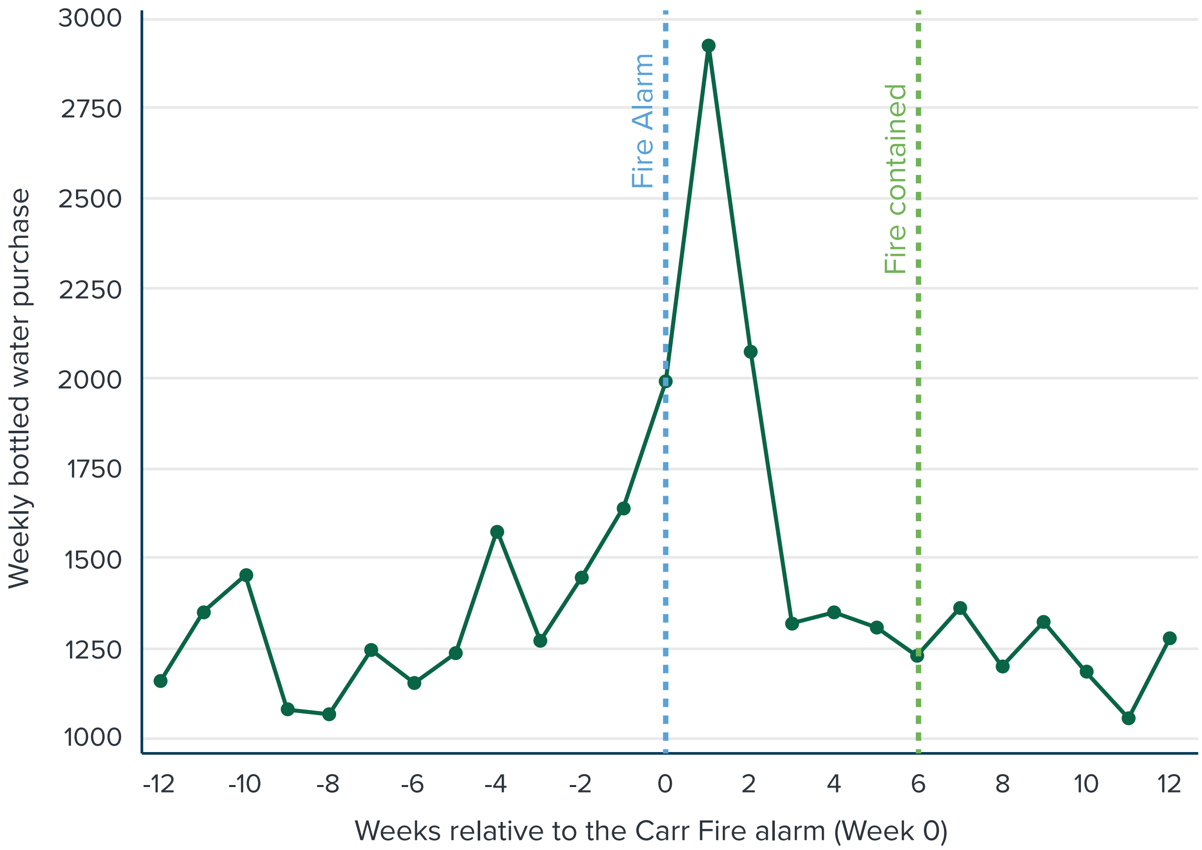
4.2. How do residents react to the challenges of drinking water quality during and after fire evacuations?

How households and communities respond to water system communications after a disaster is not currently well understood. Much of the empirical evidence comes from non-wildfire contexts, such as hurricane response, where households show sharp, short-term spikes in bottled water and emergency supply purchases (Mensah et al., 2026). Whether wildfires produce similar patterns and whether those patterns are temporary or persistent remain an open question.

Ongoing research by workshop participants using consumer purchase data is examining whether recent, major wildfire events across California produce sustained shifts in bottled water and beverage purchasing, and for how long (Figure 6). The answer to this question is important because if disasters produce only short-term consumption shifts, the implications for household spending, environmental waste, and, secondarily, utility revenue differ substantially from a scenario in which disasters produce permanent shifts away from tap water in affected populations.

FIGURE 6

Total Weekly Bottled Water Purchase Units for a Sample Store in a ZIP Code Affected by the Carr Fire



Note: Bottled water purchases increased sharply following the first fire alarm on July 23, 2018 (red dashed line), peaked during the active fire period, and began to decline in a few weeks before the fire was contained on September 1, 2018 (green dashed line).

Several broader points about household responses emerged which echoed across the day's discussions. One is that personal relationships shape whether messages land with people. Additionally, the information environment in which residents receive communications is itself complex, with information reaching people through friends and family, social media, community organizations, local news, and word of mouth in addition to formal utility and agency channels. The first message people see during a disaster is often not from an official channel, underlining how important it is to understand how to utilize trusted messengers to deliver information.

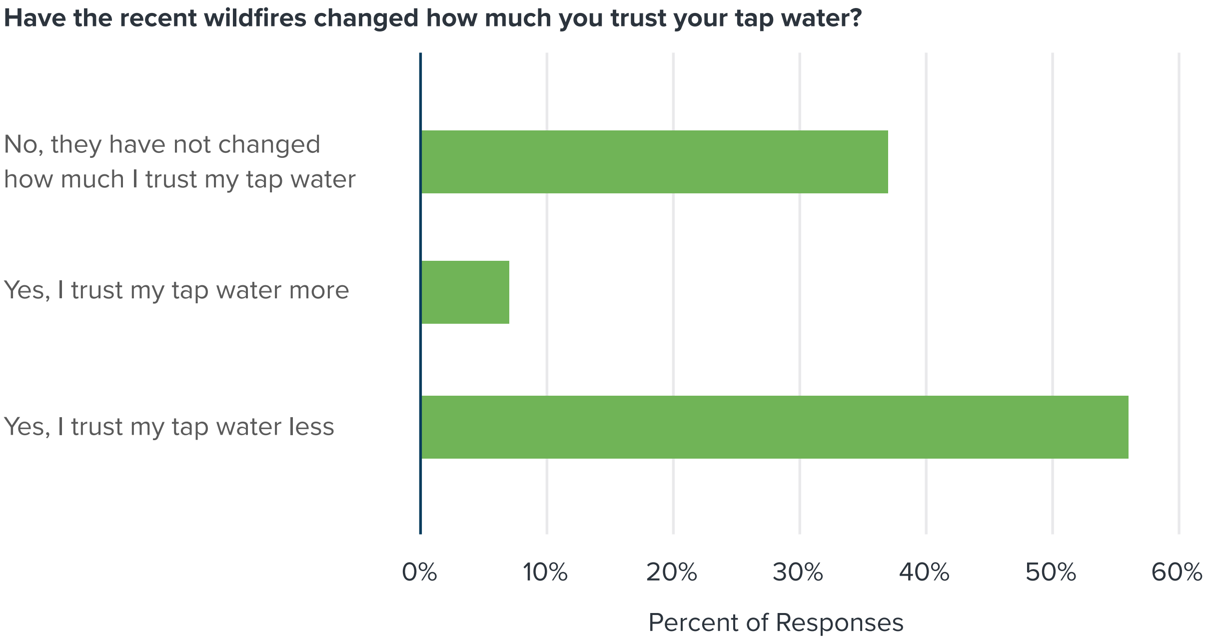
Further, the context in which households receive water-related communications during a wildfire is one of psychological distress. Research has documented increased rates of PTSD, depression, and generalized anxiety in affected populations after a fire (Belleville et al., 2019; To et al., 2021). Recent research on the January 2025 Los Angeles fires found that evacuating was significantly associated with higher odds of depression and PTSD even after controlling for pre-fire mental health status (Lee et al., 2025). The emotional state in which residents receive, process, and act upon water-related information is a context that any post-disaster communications strategy needs to account for.

4.3. What can we learn about post-fire drinking water quality concerns from the January 2025 wildfires in Los Angeles?

Ongoing research by workshop participants with community-based organizations and residents from diverse areas of Los Angeles via a small pilot survey (n~100) suggests persistent impacts on concern regarding the quality of drinking water more than 1 year after the fires, with 58% of respondents reporting that they now trust their tap water less due to the fires (See Figure 7 below). It is important to note that this level of enduring concern stands in sharp contrast to temporary spikes in concern regarding air quality that abate after the fires have passed.

FIGURE 7

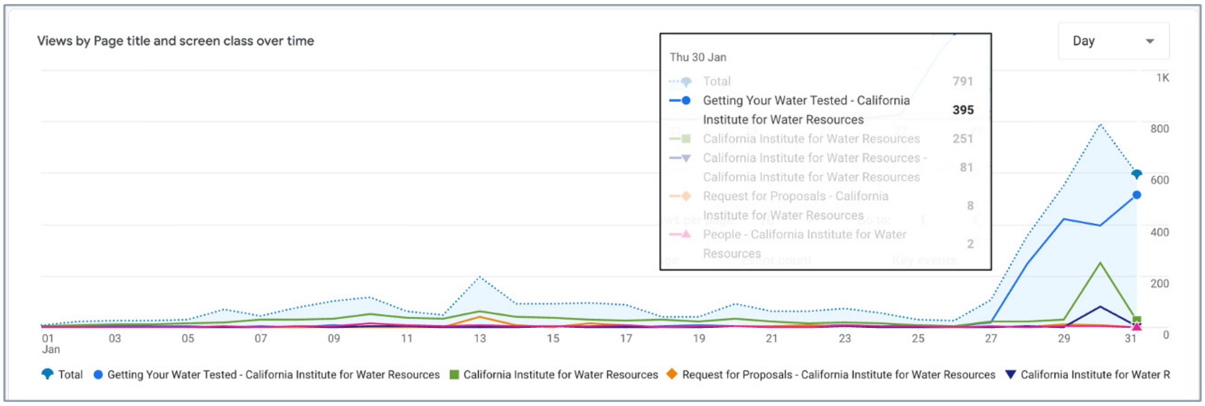
Tap Water Trust Before and After the Fires Among Pilot Study Participants



More broadly, as analyzed extensively in the working group's related research, the public conversation that followed the January 2025 Los Angeles wildfires was dominated by misconceptions about the responsibilities of water supply systems in fighting wildfires and misunderstandings about the causes and effects of water system depressurization (Pierce, de Guzman, & Mullin, 2025). Search inquiries of university websites help demonstrate the impacts of misinformation. For example, Figure 8 shows page views for web pages as part of UC ANR's California Institute for Water Resources, including a page with fact sheet materials on "Getting Your Water Tested." In January 2025, there was a spike in inquiries for this page in particular across all institute web pages. While the wildfire events happened in early January, the spike happened later in January. This could have resulted for multiple reasons. For instance, resumption of water services from utilities several weeks after the wildfire events could have instigated a spike in inquiries from interested residents. However, the timing of the spikes also correlates directly with inflammatory statements made by key members of the federal government regarding water availability and releases from Central Valley water sources. Thus, understanding if useful public information reaches the right audiences at the right times is challenging, muddled, and fraught in the current media environment.

FIGURE 8

California Institute for Water Resources Website View Statistics for the "Getting Your Water Tested" Web Page

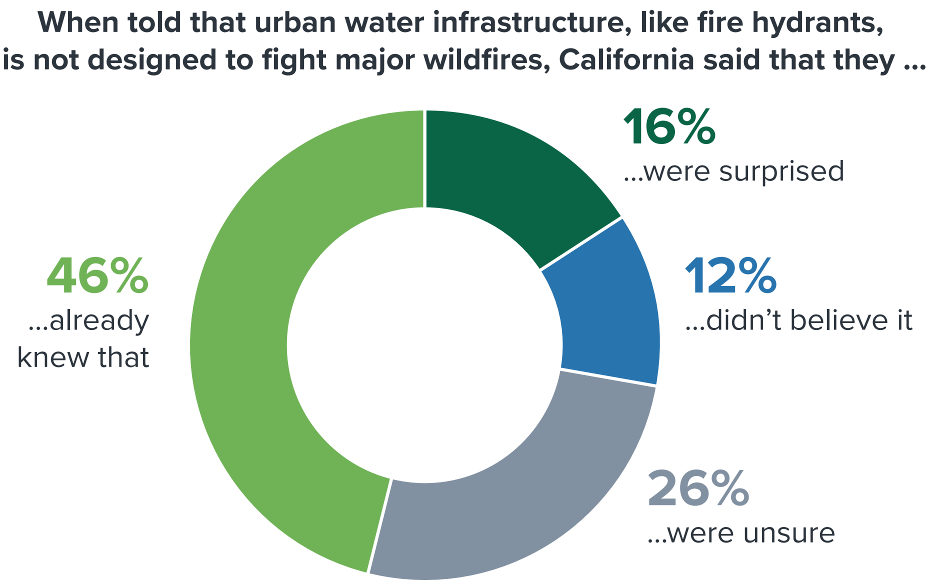


Source: Porse, E. (2026, May 1). Workshop 3: Drinking water quality, public confidence and communications around wildfires [Conference session]. Los Angeles Cleantech Incubator, Los Angeles, CA, United States.

This misinformation interacts with the widespread lack of understanding about how water systems work in wildfires. As shown in Figure 9, even almost a year after the January 2025 wildfires, less than half of the residents in California indicated that they knew that urban water infrastructure was not designed to fight major wildfires. Workshop discussion noted that even in normal times, most residents do not understand the structure of water supply and service in Los Angeles, and the picture is more complicated still in areas served by many small water systems with different customer bases. Renters tend to be especially disengaged because their water bills are embedded in rent, customer account access is limited, and they have less ability to switch providers or take direct action. The fires brought these longstanding water system literacy gaps to the surface at exactly the moment when accurate information and understanding mattered most.

FIGURE 9

Level of Resident Knowledge About Water Systems' Role in Fighting Wildfires



Source: Probolsky Research study of 1,000 likely primary election voters in California, November 2025

4.4. Are there examples or best practices from other types of disasters, such as flooding or earthquakes, regarding tap water trust building with residents?

The workshop also included other disaster types in the discussion. Several general practices and the example of impacts of flooding after Hurricane Helene in Asheville, NC (see the callout box below), however, emerged from the broader discussion of disaster communications work that apply to wildfire response as well as to flooding, earthquakes, and other events:

- **Proactively forming relationships and communication protocols.** Effective disaster communications depend on relationships and protocols built long before the disaster occurs. This includes relationships among institutional actors (utilities, health departments, emergency response agencies), with intermediaries (community-based organizations, local news outlets, trusted messengers), and with the public itself.
- **Production of unified messaging across institutional actors.** During a disaster, residents often receive overlapping and sometimes conflicting information from the water utility, the local health department, emergency management agencies, and elected officials. Inconsistencies between these sources can erode public trust. Coordination protocols that align messaging across institutional actors are key to increasing the accessibility and credibility of information reaching the public.

- **Utilization of mutual aid and peer learning networks among water systems.** Water systems responding to a wildfire or other disaster often find themselves reinventing communication strategies that other utilities have already had to develop through hard experience. Whelton et al. (2025) developed a playbook or concept of operations (CONOPS) in partnership with relevant utilities. Peer networks among utilities, such as the American Water Works Association, can further provide a mechanism for sharing technical, operational, and communications lessons and CONOPS across systems.

The oversight of water supply systems, or in the U.S. regulatory language "community water systems," is embedded in the federal Safe Drinking Water Act (SDWA). However, the SDWA is primarily, if not nearly exclusively, focused on drinking water quality standards, and has only been updated a few times since its passage in 1974.

With respect to disaster preparedness oversight, there have been some recent national developments. Namely, America's Water Infrastructure Act (AWIA) of 2018 was the most recent and one of the only major amendments of the SDWA, and was, in part, focused on disaster preparedness and performance. It imposed a new requirement that all community water systems serving at least 3,300 people assess the risks to, and the resilience of, their drinking water systems. It calls for a risk and resilience assessment (RRA) to be conducted and aligned with an emergency response plan (ERP) that incorporates the assessment's findings (Tewari et al., 2021).

There are, however, severe limitations to the current AWIA approach with respect to wildfire planning. First, the assessment requirements simply do not cover all relevant water supply systems, only large ones. Moreover, in their current form, these plans and assessments are too broad and weak to reasonably expect detailed concepts of operations or performance with respect to wildfire fighting (Sun et al., 2025).

Other national disaster planning guidelines are relevant to water systems. In particular, FEMA's Incident Command System (ICS) is a national standard for managing emergencies and is integrated into the National Incident Management System (NIMS), which presents an opportunity for water system coordination and integration with other actors in the emergency response ecosystem (Hemenway & Reeves, 2011). There are potentially major opportunities for water systems to adopt ICS to better coordinate with other emergency stakeholders. However, as of now, these standards are not specific to water systems and do not present clear guidance, much less firm standards and timelines, for water system performance, or a mandate for other emergency response actors to coordinate with water systems, an issue raised in the last workshop (Pierce, Gorman, et al., 2025).

As with drinking water quality standards, there is more development and potential standard development opportunity at the state level with respect to specific disaster hazards, often reactively to previous disasters. For instance, in the wake of the Uri freeze, Texas imposed new requirements on water systems to ensure emergency operations, including during extended power outages (Texas Water Code, 2021). We also discussed relevant statewide standard development in our second workshop report (Pierce et al., 2026).

CASE STUDY: THE CITY OF ASHEVILLE'S RESPONSE TO HURRICANE HELENE

Hurricane Helene struck western North Carolina on September 27, 2024, producing extreme rainfall, landslides, and flooding, which caused severe damage to infrastructure across the region. In Asheville, a city of roughly 160,000 water customers, the storm disrupted access to potable water service for 53 days and created a monthslong public communications challenge that offers a well-documented example of how utilities can manage drinking water concerns under extreme conditions.

The North Fork Water Treatment Plant supplies roughly 80 percent of Asheville's drinking water from a 350-acre reservoir in a 20,000-acre protected watershed. Helene washed out both of North Fork's primary transmission mains (24-inch and 36-inch) and the 36-inch bypass line, preventing the treatment plant from supplying water to the distribution system (Boyle, 2025b). In addition, landslides in the watershed caused turbidity in the reservoir to spike from its typical baseline of <1.0 NTU to over 50 NTU. North Fork's direct filtration system was not able to treat the high-turbidity waters, as these systems are intended for source waters with less than 5-10 NTU. Once the bypass line was reconnected on October 10, the Asheville Water Resources Department (AWRD) began distributing chlorinated, non-potable water to customers for firefighting and sanitation while efforts continued to restore source water quality in the reservoir (Boyle, 2024a). With this restoration of water flow and pressure, AWRD issued a "boil water" notice, which was in effect until November 18, 2024.

AWRD's communications during this period were notable for several practices that promoted transparency and maintained public engagement during a prolonged recovery period. Assistant City Manager Ben Woody and AWRD's Public Information Office Clay Chandler participated in regular community briefings in which they described recovery efforts and explained concepts like turbidity and coagulation in accessible terms. In addition, AWRD used drone footage to share images and videos to illustrate the extent of damage to the system and progress of restoration. These visual updates enhanced transparency by allowing residents to see the condition of the reservoirs and distribution system infrastructure rather than relying solely on written descriptions. The goal was to provide clear and transparent information in real time. The department also used multiple communication platforms due to widespread power and internet outages. These included emergency alert systems, social media posts, website updates, and physical flyers distributed at community recovery locations.

Helene was a hydrologic disaster rather than a wildfire, but the post-event drinking water challenge it produced—distribution-system depressurization, source water contamination, prolonged non-potable service, and the need to communicate complex information to a public operating under degraded infrastructure conditions—closely parallels what wildfire-affected systems increasingly face. The recovery also surfaced a hard truth that wildfire-affected utilities should take seriously: A year after Helene, Chandler described Asheville's water system as "very, very vulnerable," noting that it would not take another event of Helene's intensity to put treatment and filtration at risk again (Skipper, 2025). The communications challenges following a major disaster are not a one-time problem to be solved during the immediate response. For water systems facing similar risks, this suggests that preparation for disaster communications planning needs to start well before the acute response phase.

4.5. Are there credible options for DIY, at-home drinking water quality sampling and testing? What do residents need to know regarding such testing?

Testing drinking quality equivalent to SDWA standards is complex, as Figure 10 below illustrates. Compared to U.S. air quality standards, the number of contaminants requiring testing, as well as the technical nature of the best practice sampling and testing procedure, presents major obstacles to the democratization of testing for community groups or individual residents. This also contributes to considerable cost in undertaking such testing, presenting another barrier.

FIGURE 10

Comparative Overview of Key Air and Water Quality Monitoring and Management Parameters

Air	Water
Main regulatory statute The Clean Air Act	**Main regulatory statute** The Safe Drinking Water Act
Number of contaminants < 10	**Number of contaminants** ~ 100
Community-driven testing technology Sensor based, well established	**Community-driven testing technology** At-home test kits (DIY) Sensor technology under development
Primary potential for community sampling errors With ambient conditions	**Primary potential for community sampling errors** With human sampler
Potentially responsible party Multiple sources: industrial, vehicular, natural etc.	**Potentially responsible party** Public water system or private property owner
Estimated # of people with unhealthy air quality [1] 21 million for $PM_{2.5}$ 115 million for O_3	**Estimated # of people with unsafe drinking water quality [2]** 21 million
Spatial governance challenges Fewer, but larger and more capable management entities at a regional scale; less approachable	**Spatial governance challenges** More accessible service providers at a local scale, but less capable; more approachable
Control over exposure No source alternatives, limited mitigation opportunities (e.g., air purifiers)	**Control over exposure** Controllable with filters and tap alternatives

Note: Unhealthy air quality refers to the U.S. EPA 'Nonattainment' classification for regions that do not meet the National Ambient Air Quality Standards (NAAQS) for specific pollutants deemed harmful to public health and the environment. https://www3.epa.gov/airquality/greenbook/knsum.html; https://www3.epa.gov/airquality/greenbook/jnsum.html

Unsafe drinking water quality refers to findings from a 2018 study published in the Proceedings of the National Academy of Sciences. It describes the number of individuals (as of 2015) who relied on water systems that failed to comply with health-based drinking water quality standards. https://www.pnas.org/doi/full/10.1073/pnas.1719805115

There was also an important distinction drawn between drinking water quality testing done by water systems and at-home resident testing. In non-disaster contexts, testing performed by water systems typically measures water quality at treatment facilities or at very limited points in the distribution system (Pierce, Gonzalez, Roquemore, & Ferdman, 2019). At-home testing measures water at the tap, after it has potentially picked up contaminants from premise plumbing. Both kinds of information are useful, but they answer different questions, and it was emphasized that residents should understand which question their test is answering.

Following the Marshall fire, the Louisville, Colorado, water system undertook completion of a water system recovery sampling campaign, wherein over 800 water samples were collected, with nearly 100,000 individual analyses, representing the largest post-fire water sampling campaign to date. This extensive sampling effort and mitigation of impacted areas performed by Louisville allowed for standing structures to be cleared in a timely manner so water use could resume and provided confidence that fire-related contamination was evacuated from the distribution system. This effort's sampling before and after flushing also confirmed that flushing was highly effective at removing fire-related contamination from infrastructure, including the water mains and plumbing inside buildings impacted by the fire. When fire-related contaminants were detected, the system's repeated flushing efforts removed contamination, and water service was then safely restored throughout the fire-impacted areas (Corona Environmental Consulting, 2025). At the same time, the scale and complexity of this effort for 800 tap points also illustrates the limitations of universal at-home testing in the absence of entitlement funding.

Home water quality testing following a wildfire is often of core interest to, if not perceived as a necessity by, individual residents but can also be a source of confusion and wasted resources. The workshop discussion, in line with previous research, offered a nuanced answer regarding options and their feasibility. There are a few credible at-home water testing options available on the market, but they are not DIY, as only ELAP-certified laboratory processing yields credible results (D'Andrea & Kumpel, 2025). The question of what to test for is harder than the question of which test to use, and the most credible means are very expensive—hundreds, if not thousands, of dollars—in the context of wildfire-related contaminants.

One fundamental challenge is that residents typically do not know which contaminants are relevant for their specific situation. A standard off-the-shelf test may screen for some contaminants but not others, and the contaminants of concern after a wildfire—particularly volatile and semi-volatile organic compounds and contaminants associated with premise plumbing degradation—are not the ones a generic or even advanced commercial kit is designed to detect. Very few firms, with SimpleLab being the most prominent, make this process relatively simple and streamlined for a generally interested or concerned resident looking to have their water tested.

Perhaps the most important point from this part of the discussion was that encouraging residents to conduct at-home testing without context may be less helpful than no testing at all. For example, a resident who pays for and receives a test result without guidance showing trace levels of a contaminant they have never heard of will frequently conclude that their water is unsafe regardless of whether the level detected is actually a health concern.

This was discussed at the workshop as a space where water system guidance that goes well beyond the resources of water systems' direct testing capacity or budget could be particularly helpful, given that the water systems are in a position to advise residents on what contaminants are most relevant in a given context and which testing approaches are credible. This kind of relational engagement was also characterized as an opportunity to build trust within the water system-customer relationship.

5. POST-DISASTER DRINKING WATER QUALITY RESTORATION EFFORTS AND CHALLENGES

The third workshop panel focused on several operational and technical questions regarding how water systems restore drinking water quality after a wildfire, which in turn reinforces public confidence and supportive communications. The discussion explored the optimal balance between system testing and flushing in the field, the adequacy of certified laboratory capacity during major fire events, the appropriate role of non-potable water in distribution systems, and reasonable timelines for full drinking water quality restoration following events. The process is rarely simple when systems are heavily affected by fire, as Figure 11 shows.

FIGURE 11

Simplified Post-Fire Steps for Water Systems to Restore Safe Drinking Water Service

Source: Los Angeles Department of Water and Power, (2025, January). *Water Quality Restoration for Pacific Palisades.*

This discussion was grounded in and reflected on roughly a decade of rapid response and progress on drinking water quality restoration practices, protocols, and policy, much of which is synthesized in a recent study by Zavodny and Whelton (2026). This experience included reflections in the room from experience with the Tubbs (2017), Camp (2018), and Woolsey (2018) fires in California, as well as out of state (Colorado, Hawaii, Oregon), and of course including the 2025 Palisades and Eaton fires.

It is worth noting that the existing regulatory framework already provides meaningful structure for post-fire water quality restoration. The State Water Resources Control Board's Division of Drinking Water (DDW) regulates all public drinking water systems in California and has issued post-wildfire guidance and return-to-service certification requirements for affected utilities. After the January 2025 Los Angeles fires, the division issued a formal order to each of the nine impacted public water systems requiring benzene contamination screening throughout fire-impacted areas, public notification of a drinking water advisory, and remediation of any contamination. Advisories remained in effect until division staff confirmed that contaminant levels met all state and federal regulatory requirements, through comprehensive sampling and field verification.

In terms of further improving oversight and system processes going forward, several recurring tensions framed the conversation: the gap between ideal practice and the resources actually available to water systems during a disaster response; the difficulty of reconciling the strict regulatory framework of the Safe Drinking Water Act with the operational discretion needed in real time; and the potentially shifting legal landscape around water system liability in the wake of major fires.

5.1. What is the optimal balance between testing and flushing considering field conditions and cost realities?

There was broad agreement that flushing is the foundation of post-fire drinking water restoration, with follow-up testing providing the verification that allows a water system to return to its regular operations. Both actions are necessary, but the balance and sequencing between them depends heavily on field conditions and on what kind of contamination is suspected.

Flushing is the core operational response after a fire, whether or not a system loses pressure (if a system does lose pressure, it must first repressurize). The practice is generally straightforward and greatly improves the likelihood that subsequent test results will come back clean. It was noted that flushing is effectively free under post-fire conditions because labor is already mobilized in an all-hands-on-deck fire response, and the marginal cost of the water itself is not a significant concern in this context.

A consistent theme across the discussion was the importance of acting quickly, which is also echoed in recent research (Newcomer et al., 2026). Flushing within 30 days is particularly critical because, beyond that window, VOCs will adhere to plastic pipe materials and become much harder to remove—potentially requiring two to three years of continued remediation or full infrastructure replacement (Proctor et al., 2020; Isaacson et al., 2025). Keeping the pipes wet is key to limiting or preventing the formation of VOCs and SVOCs, which can be very harmful to health and difficult to fully remove from pipes in the longer term—more difficult than the microbial contamination. The experience of Paradise Irrigation District was offered as a particular case to learn from because the district did not quickly implement flushing following the Camp Fire, and ultimately ended up having to replace extensive portions of its service line infrastructure to remove contamination.

The initial recovery window is also crucial because once debris removal begins, the field environment becomes much more difficult to sample in. Coordination among water utilities, fire response, debris removal, and state regulators is thus essential, but in practice, that coordination is often improvised.

Workshop participants also noted that flushing must be done strategically. It likely should not be deployed as a generic system-wide flush but as a targeted intervention focused on the areas most likely to be contaminated. These areas are typically those that lost pressure, served burned structures, or used plastic service line materials to make sure that the process does not simply move contaminants from one part of the system to another. However, research from the

Los Angeles fires, which was also presented at the workshop, suggests that proximate areas outside the burn zone may also be of concern (Tilzey et al., 2026).

Pipe material composition matters here as well: Plastic pipes have substantial capacity to absorb contaminants, potentially serving as a long-term contamination reservoir, which is why VOC removal can require numerous rounds of continuous flushing depending on contaminant levels (Proctor et al., 2020; Isaacson et al., 2025). Polyethylene specifically has been a focus of post-fire investigations. The implication is that the material composition of the affected infrastructure should inform both the intensity and duration of the flushing response.

Where pressure was maintained throughout a fire, contamination risk is lower, though not zero. The example of the Las Virgenes Water System in its post-Palisades fire approach was discussed at the workshop. Its distribution system did not lose pressure, but operators still had some concern that contaminants may have been drawn up into the system. They utilized chlorine residual monitoring as a leading indicator of contaminant presence followed by aggressive unidirectional flushing of dead ends before any sampling was conducted. The system tested clean for benzene afterward. In this case, the system would have preferred to flush its distribution network as soon as physically possible, but it had to balance that against a neighboring water system's request for emergency water to maintain pressure.

If flushing is the operational backbone of post-fire response, testing is what verifies it worked and can help restore public confidence. In terms of testing, workshop participants drew a distinction between volatile organic compound (VOC) and semi-volatile organic compound (SVOC) sampling. Addressing these two sets of contaminants essentially requires separate workflows with different tools, sample volumes, and laboratory capacities. VOC sampling requires roughly 40 mL of water while SVOC sampling requires approximately 2 liters. Further, depending on field conditions, a service line may not even contain enough water for the larger SVOC sample size. Cost differences are also substantial: A full VOC panel runs $200–$300 per sample under normal turnaround, with rush timing multiplying that figure severalfold, while SVOC sampling can run into the thousands of dollars per sample.

These high costs produce real affordability considerations when considering the number of households affected. Some workshop participants suggested that the relevant regulatory entity in California, the California State Water Board's Division of Drinking Water, cannot reasonably ask every affected water system to sample for a full range of SVOCs from an equity perspective because smaller and less-resourced systems, and in turn their customers, would be disproportionately burdened. In the Marshall Fire context, workshop participants noted that benzene—a VOC—captured the most concerning results, supporting its use as a primary indicator analyte in resource-constrained efforts (Corona Environmental Consulting, 2025). Recent peer-reviewed analysis studying the Marshall fire has found that VOC analysis alone captured 85% of all detections and captured 100% of all maximum contaminant level exceedances (MacArthur et al., in press). Thus, a tiered approach was recommended where testing starts with benzene and other priority VOCs as indicators, those results are used to determine whether further testing is warranted, and more expensive SVOC panels are only pursued when actually needed.

Another secondary operational concern raised in the workshop was the destination of flushed water. Flushed water during the Palisades fire was ultimately routed to the Santa Monica Bay, and it was noted that the water quality and environmental implications of receiving large volumes of post-fire flush water in stormwater and surface water systems deserve more attention. Coordination among drinking water utilities, stormwater systems, and sewer agencies is needed to manage this flow more responsibly.

5.2. Are there sufficient certified labs to run tests for water systems in a timely fashion?

This question received a relatively short but pointed discussion from workshop participants, and again underlined the difference between the ideal versus the feasible in post-disaster contexts. Each state certifies laboratories through its Environmental Laboratory Accreditation Program (ELAP) to conduct compliance testing for the EPA's Safe Drinking Water Act (SDWA). On paper, there are enough certified laboratories in California to support post-fire VOC and SVOC testing. However, in practice, the entire process gets delayed when a major fire hits, with water systems as well as individual residents simultaneously contacting laboratories in the impacted geography. This creates bottlenecks that go beyond the underlying lab inventory, as labs also have to carry on routine testing regimens to support compliance with non-affected water systems.

Timing of testing is the key constraint during a major fire response. Standard turnaround is often too slow to support the decisions that need to be made in the first weeks after a fire, and rushed turnaround multiplies costs at best, or at worst is infeasible due to lab staffing constraints. With this in mind, workshop participants noted that it is important to make sure that prior to a disaster, water systems identify laboratory points of contact they can work with and know which laboratories are open on the weekends.

5.3. Does running non-potable water through distribution systems during fires make sense, and if so, when?

Among workshop participants, there was broad agreement that running non-potable (otherwise known as untreated) water through distribution systems during fires should not be considered as a pre-planned strategy, though it may be unavoidable in specific operational circumstances.

There are basic regulatory and operational problems that emerge if non-potable water is run through the distribution system. A water system's primary statutory job under the Safe Drinking Water Act is to provide safe, clean water, and this obligation does not get formally suspended during an emergency. If a system runs non-potable water through its distribution system, it will be on the hook for flushing and disinfecting that system before returning to potable service, which is a process that adds time and cost on top of the other necessary tasks of disaster response and recovery. During this time, which could last days or weeks, residents will receive a "boil water" notice. Some workshop participants thus even asserted that planning to use non-potable water as a routine emergency tool would represent a failure of preparedness and investment.

On the other hand, other participants maintained that there may be scenarios where operational realities force this issue. If maintaining pressure with raw water is the only way to preserve the integrity of the distribution system itself for firefighting purposes, that might constitute an unusual case warranting case-by-case judgment. Doing this would allow the utility to use large amounts of water that is not suitable for drinking, but is perfectly suitable for firefighting and already or could be additionally stored in local or hyper-local reservoirs. This would give the utility a lot more supply to fight wildfires and essentially give firefighters a longer (though still limited) period before the "hydrants run dry." Incident command authority or fire response leadership could also request that a water system take actions outside their normal regulatory posture to maintain firefighting system pressure.

For example, during the Marshall Fire in Colorado, the City of Louisville bypassed its water treatment plant and released raw, untreated water from a reservoir into the distribution system to maintain pressure for firefighting hydrants. The decision to send untreated water into the distribution system was only considered due to the extreme nature of the disaster, and this resulted in a city-wide "boil water" order (Corona Environmental Consulting, 2025). A similar decision was made in the context of emergency measures to maintain and restore water service by the City of Asheville's water system during Hurricane Helene (Fetterolf, 2026).

However, while water systems appear more open to considering this in the future, the report authors are unaware of other contexts where a similar decision was made in the context of a wildfire. LADWP managers explicitly reported deciding not to send raw water through its distribution system, in part due to considering risks in firefighting supply to other areas, as well as the standard concern regarding quality impairments and the need to avoid customer polling for "boil water" notices (Hamilton & James, 2025).

The choice to introduce non-potable water presents tradeoffs with pros and cons on both sides. In addition to the technical considerations, more research is needed regarding current public opinion and preferences between taking this measure to enhance the potential to mitigate catastrophic fire spread, or limiting the temporary but very real inconvenience of not having potable water through the utility.

5.4. What are reasonable timelines for drinking water quality restoration by systems? Is there a need for further state oversight?

Generally, after a wildfire, drinking water quality restoration timing depends on a number of factors so workshop participants emphasized that there is no easy, much less one-size-fits-all, answer to this question. Relevant event-specific contextual factors, in addition to underlying differences in system capacity, include the extent of damage to a system, the timing on when water systems are allowed to enter the burn areas to assess damage and shut off water flow, and how long a system remains depressurized.

Moreover, systems are not monolithic. Parts of one system that serve a burn area are often connected to parts that serve unaffected neighborhoods, which means that contamination concerns and restoration efforts at times cannot be cleanly bound to the fire footprint (as also suggested in Tilzey et al., 2026). This requires a challenge in clear and very nuanced communication to differentially affected communities within a system where residents may not even know which water system serves them before the event, and geographically containing information is almost impossible.

This last factor is particularly consequential: how long a system stays depressurized makes a substantial difference in the contamination levels it ultimately sees, and therefore in the timeline for full drinking water quality restoration. This suggests that investments in pressure recovery—including backup generators, pre-positioned bypass infrastructure, and rapid-deployment repair capacity—produce benefits across both immediate response and long-term restoration.

The Camp Fire experience is illustrative. Four service areas lost pressure during the fire, of which three service areas were served by Del Oro Water Company and the final was served by Paradise Irrigation District (PID). PID was the biggest and most contaminated of the four systems. It had 172 miles of distribution system damage, and a “do not use”/“do not boil” mandate was issued for the entire service area (Whelton et al., 2023). While Del Oro’s pipes were repressurized and functioning within roughly two months of the fire, for PID it took six weeks to get any water back into the lines and three months to fully pressurize the system. Thus, residents served by PID saw more extensive contamination.

In comparison, there was some unevenness in restoration times in the 2025 Los Angeles fires, but generally there was quick response and drinking water quality restoration was considered a success story. Of the utilities placed under fire-related advisories, Pasadena Water and Power—the largest—lifted its “do not drink” notice within roughly two weeks, but it had barely experienced any damage. By contrast, the smallest affected utility, Las Flores Water Company, was heavily damaged, and did not lift its advisory until May 9, 2025—four months after the fire. It also recorded the highest benzene detection of any affected Eaton or Palisades utility at 440 ppb (James & Haggerty, 2025).

A complicating factor that panelists emphasized is the social pressure to enable rebuilding and re-habitation as quickly as possible. After a major fire, residents often understandably press hard for the right to return to see what remains of their homes and to begin contemplating rebuilding. The race to restore water service is part of enabling this return, but it sits in tension with the time required to confirm that the water being restored is actually safe.

This social pressure also underlines that post-disaster restoration timelines are inherently political. In Los Angeles, pressure for restoration prompted the quick timeline of lifting “do not drink” orders by LADWP in Los Angeles to be highly celebrated by the Mayor’s office. This included an explicit albeit erroneous comparison to the restoration timeline following the Camp Fire (City of Los Angeles, 2025).

It is clear that timelines for drinking water quality restoration vary widely based on the factors described above/. There is not currently—and likely cannot be—a single benchmark that applies across systems. Accordingly, workshop participants did not develop a specific proposal for policy, legislation, or new rulemaking in this space. That being said, the development and formal introduction of more objective benchmarks and standards seem advisable.

There was acknowledgment that additional clarity on what constitutes best practice for wildfire response would be valuable both to give systems clearer guidance and to support consistent practice across systems with very different resources. This discussion provided an important forum to surface best practices and lessons learned that systems can draw on in future fires while recognizing that each water system has unique infrastructure, service area characteristics, and institutional knowledge that impacts its response to a disaster event.

6. THE INFORMATION SOURCES AND COMMUNICATION MODES MOST ESSENTIAL TO BUILD TAP WATER CONFIDENCE

The final topically focused session of the workshop took a different format from the first three. Following three lightning talks to frame the session, workshop attendees were assigned to small breakout groups, with roughly two tables of five people each addressing each of the following five sub-questions. Each table reported back to the full workshop on the themes that emerged from its discussion.

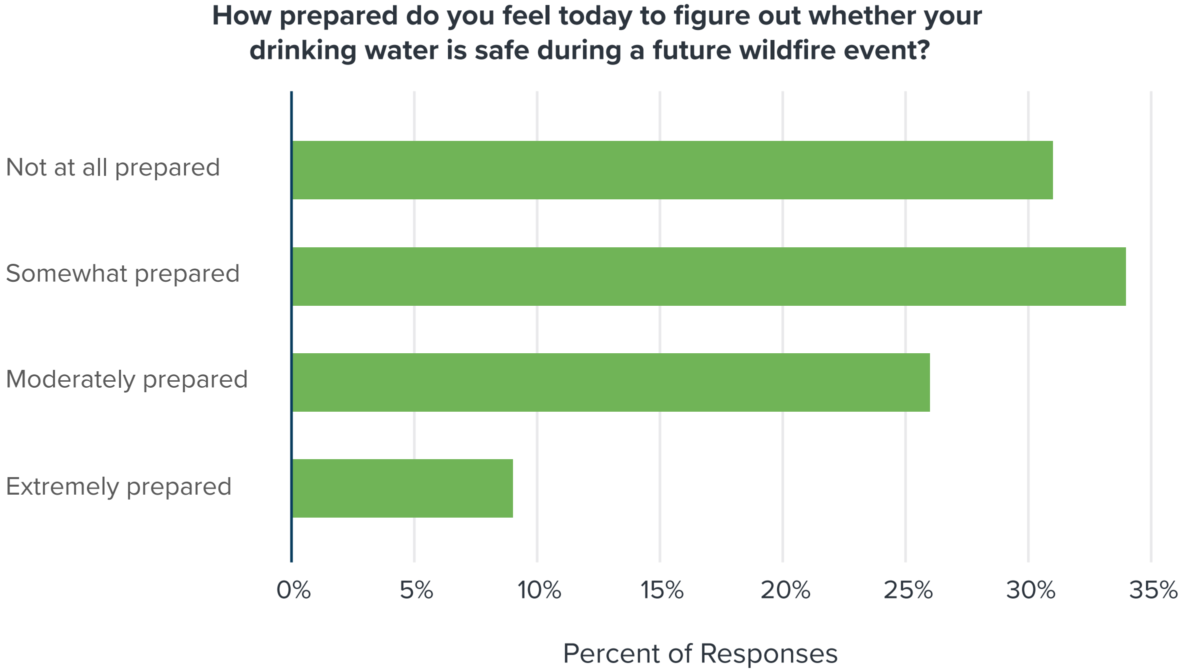
Much of the discussion in this session started from the recognition that, in terms of information flows post-disaster, the first message most people see is not via an official channel. There are two parallel communication systems that operate during and after disasters—one formal and one informal—and each type of communication system faces different factors that determine whether messages reach key audiences, are believed, and are acted on (Stewart, 2024; Kearns, 2021). The formal pathways consist of water utilities issuing official notices such as “do not drink” and “do not use” advisories, “boil water” notices, and customer notifications, with public health agencies and regulators providing guidance and oversight. In these cases, information flows outward from institutional sources to the public. On the other hand, informal communications are typically networked rather than linear. They tend to flow from social and community networks, and confidence in information is shaped by relationships and culture rather than purely based on accuracy (Kearns, 2021).

Participants generally agreed that during a disaster, the ideal scenario for accuracy would be top-down information dissemination—with utilities and local government agencies as the primary, trusted source—but that this is nearly the opposite of the day-to-day information and relational environment in which most people actually live and make decisions. In contrast, genuine communication has to include water systems and other public agencies managing disaster response listening, not just explaining or providing guidance (Kearns, 2021). Public questions need a real mechanism to feed into expert processes and to be addressed in subsequent communications, so that information flows in both directions rather than only outward. This is what turns a one-time message into a relationship, and what allows the relationships described above to deepen over time rather than only being drawn on during emergencies.

Our pilot study of approximately 100 residents in Los Angeles found that only 35% of respondents feel moderately or extremely prepared to determine whether their drinking water is safe to consume during a future event, and 31% of individuals feel not at all prepared, suggesting a gap in accessible information and resources (see Figure 12).

FIGURE 12

Perceived Preparedness to Assess Drinking Water Quality Safety During a Future Wildfire Event Among Pilot Study Participants



Given these complexities, the breakout discussions therefore focused, in different ways, on the same underlying question: Given the information environment that actually exists, how can water systems and their partners meet the public where they are with accurate, trustworthy information?

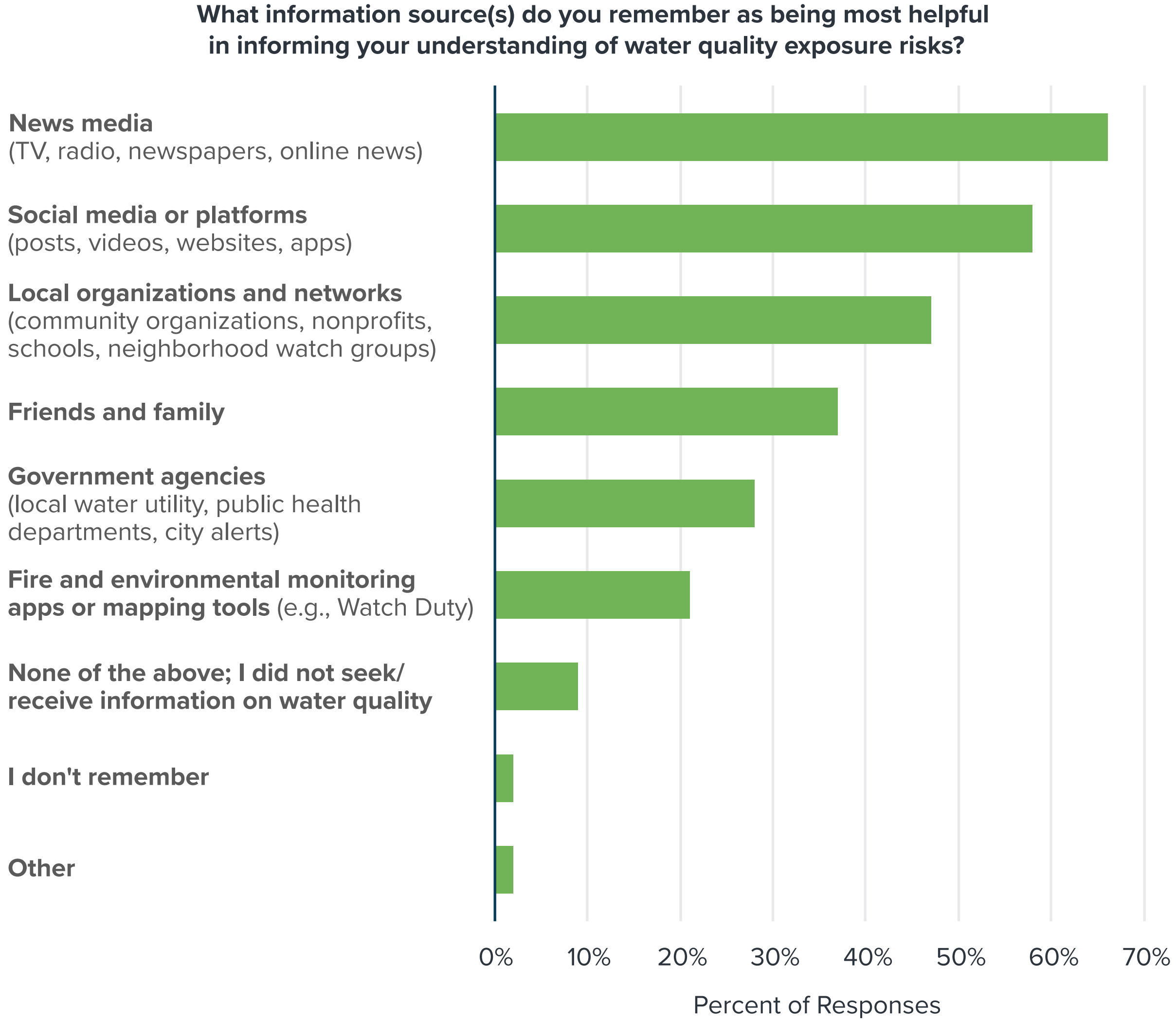
6.1. What information sources are best received by the public that enhance tap water use confidence?

Information delivery has become increasingly disjointed and distributed over the past two decades (Lewandowsky et al., 2023). The pace of this is accelerating, as in the past year, AI tools have begun to take over first-line information processing, prioritization, and delivery. This shifting landscape complicates any simple answer about which sources work best to enhance public trust.

Figure 13 presents findings from a small pilot survey on which information sources Los Angeles County residents found most helpful for understanding drinking water quality risks during the fires (multiple selections were allowed). News media, social media, and local organizations and networks were the most commonly selected. Less than 30% of respondents listed government agencies, which include local water utilities, as being most helpful.

FIGURE 13.

Perceived Helpfulness of Information Sources for Understanding Drinking Water Quality Exposure Risks Among Pilot Study Participants



Utilities and government agencies are more or less by default the original source of any accurate information about drinking water quality, but they are rarely the messengers the public actually hears from first or trusts most. A "boil water" notice issued directly by a utility reaches a fraction of the audience that the same information reaches once it has been picked up by a local news outlet, shared by a neighborhood organization, or forwarded through a group chat. Reaching the public therefore depends on trusted intermediaries carrying the utility's message into the channels where people actually get their information and feel confident in acting on it.

Workshop participants noted that friends, family, and neighbors are highly trusted intermediaries, but the conversations that happen in these private networks (whether online or in person) are largely invisible to utilities and regulators. Institutions don't have a direct way to participate in many of these channels, although attempts are made on venues like Nextdoor, even though the messages flowing through them shape public response. Further, social media and messaging platforms dominate real-time awareness during disasters, where speed often outweighs verification (Eckert et al., 2018; Lewandowsky et al., 2023). Beyond personal networks, community organizations carry significant credibility within the populations they serve.

Local news outlets were also singled out as especially valuable messengers, a sentiment echoed in Figure 13, during the immediate disaster response because they have already built relationships with their audiences and tend to translate technical information in an approachable, measured tone. For example, LAist was offered as a positive example of doing this kind of influential local news work after the January 2025 fires. The outlet used its on-the-ground engagement with residents to identify the common questions and pieces of misinformation circulating in affected communities, including on the drinking water quality issue, and then brought in expert perspectives to address those specific concerns via “Cheat Sheets” and other similar explainers (Fox & Lee, 2025). Participants also noted a more aggressive strategy LAist employed: incorporating common misinformation phrasing into article titles so that searches for those terms would surface accurate, independently reported responses rather than the original misinformation.

A recurring observation across the workshop discussion was that the communication infrastructure needed during a disaster cannot be built once the disaster has already begun. Outside times of crisis, most residents are not seeking information about their water and may tune out generic utility messaging when it does reach them. As a result, when an emergency hits, utilities and their partners are trying to reach an audience that has little existing relationship or foundation of trust with them. The trusted messengers and communication channels that make disaster messaging actually land with residents have to be cultivated through ongoing, lower-stakes engagement well before they are needed (Stewart, 2024; Kearns, 2021).

6.2. What are reasonable goals and timelines for messaging?

Responses to this question were framed as fundamentally context-dependent (Coombs et al., 2024). The reasonable goals and timelines for messaging depend on the issue at hand—particularly its urgency and political contentiousness—and on the audience being addressed.

That said, several principles emerged regarding messaging goals and timelines. The first is the speed–accuracy trade-off. During a disaster, there is an inherent need for speed in terms of communication delivery; this must be balanced against the need for accuracy. Getting information out quickly matters because the first message tends to stick most. If the early framing is wrong, the water system or other actor will likely spend the rest of the response playing defense. Thus, there is a strong argument for pre-developed template messaging and protocols for communications that can be deployed quickly without sacrificing accuracy.

Second, it is well-understood that diverse audiences receive information through different channels and from different messengers. Younger residents may receive information first through social media and then pass it on to older family members. Some audiences respond to influencers while others find them off-putting and require more traditional trusted messengers. There is no universal messaging strategy that works across all audiences, so a broad approach should be employed to make sure messaging is cohesive but is also spread across media types and the languages residents speak.

Finally, communication should be thought of as a sustained practice rather than a single messaging moment, and this is especially true through the recovery phase after a disaster. Trust can accumulate through repeated, consistent contact over weeks and months, particularly when water systems continue to thoughtfully communicate in the context of providing broader support after the acute emergency has passed.

6.3. What nongovernmental platforms or trusted messengers can be leveraged to communicate more effectively? How do we build the infrastructure/network that can be mobilized to disseminate messages quickly when needed?

There are also simple limits to water utilities and other public agencies' official messaging reach, regardless of any strategy. That being said, water system staff themselves can be among the most effective trusted messengers informally and somewhat independent of the institution they work for, particularly when they live in or are visibly embedded in the communities the system serves. A line worker who is a neighbor, a parent at the same school, or a member of the same congregation carries credibility that no press release can replicate. Empowering internal staff to carry messages into the communities they are already part of—rather than routing everything through public information professionals—is an underused approach.

Institutional trust has been declining, and water utilities and other public agencies increasingly need to reach their customers through trusted intermediaries rather than directly. Three distinct kinds of relationships came up across the discussion, each requiring its own investment. The first, discussed previously, is directly with customers. The second is among the institutions that need to coordinate during a disaster—water utilities, public health agencies, state regulators, emergency response, and local government. Interinstitutional trust is what allows these actors to deliver consistent, aligned messages in a crisis rather than contradictory ones, and agencies that cannot coordinate with each other in normal times rarely manage it when an emergency hits. The public can tell the difference.

The third is with third-party intermediaries. The hardest question in this space is thus how agencies can effectively engage them. The most consistent discussion point in the workshop was that the right messengers vary by community, and any strategy has to be customized to local context. In rural areas, churches and schools tend to be central institutions through which information flows. In urban areas, homeowner associations, chambers of commerce, and similar organized civic entities play a comparable role. Schools can also serve as a route to families more broadly. In California, community-embedded UC Cooperative Extension specialists, who combine subject-matter expertise with established community engagement infrastructure, may also play a role. The unifying principle is to lean into existing, trust-based relationships and find where people are already going for information, rather than trying to create new channels from scratch.

Social media influencer partnerships came up as a newer strategy worth considering. In an environment where attention spans are short, and the volume of content is high, how content is delivered may matter as much as what it says. There are social media channels such as Instagram and TikTok that have leaned into short-form content for information delivery. The caveat is that influencer partnerships are not suitable for every audience and work best alongside, not instead of, more traditional trusted messengers.

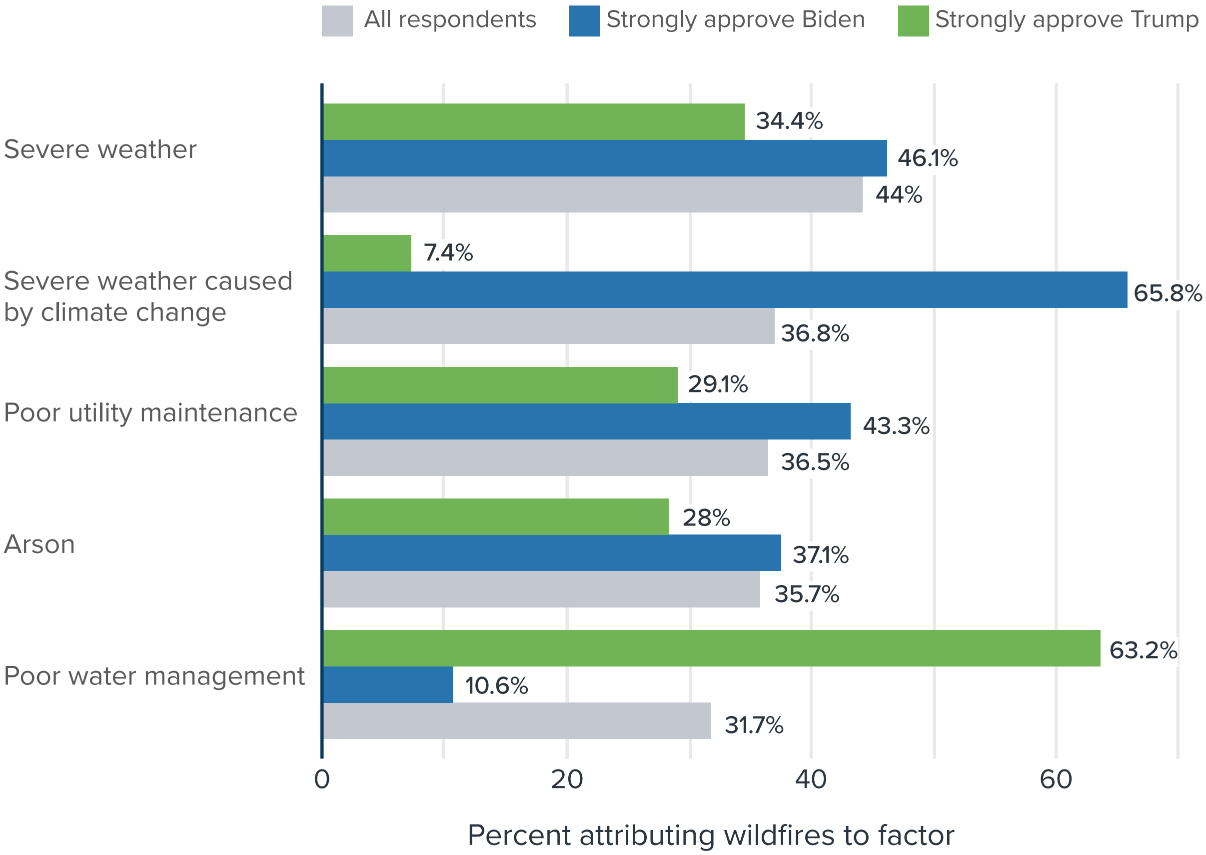
6.4. How should we think about climate-related communication in the current political and media environment?

The January 2025 Los Angeles fires were a clear example of how misinformation and political polarization can shape public confidence in water systems during a climate-driven disaster. The aftermath of the fires was marked by widely circulated false claims about California water policy and wildfire response, with public discourse around perceived water system shortcomings shaped heavily—at least in the short term—by partisan politics and media headlines.

A dramatic shift in perception about the role of water systems in fighting wildfires appears to have occurred, as shown by Figure 14 (Pierce, Hernandez, et al., 2026). Although water supply is only one element of wildfire-fighting and may not be the highest priority for investment from a cost-benefit perspective, heightened policymaker and public discourse around water system operations during wildfires has produced novel and unprecedented expectations for utilities (Porse et al., 2025). The narrative was driven by voices ranging from local political figures—notably former Los Angeles mayoral candidate and LADWP Board Member Rick Caruso—to the president of the United States, who repeatedly amplified claims about the role of water supply in the disaster that do not comport with the reality of water supply in Southern California, the way imported water moves across the state, or the relative role of water supply in fighting wildfires.

FIGURE 14

Political Polarization of Post-Disaster Blame Following the January 2025 Los Angeles Wildfires



Source: Pierce, G., Hernandez, A., Connolly, R., Gorman, J., Thomas, K., & Sandlin, E. (2026). Political sentiment explains perception of the role of water system performance in the Los Angeles wildfires [in press]. *ACS ES&T Water*. https://doi.org/10.1021/acsestwater.6c00325

This dynamic is a microcosm of broader challenges in the current information environment. The rising expectations directed at water systems are being fueled in part by misinformation, a fractured media environment, and the related politicization of nearly every major event in American public life (Lewandowsky et al., 2023). However, several specific insights about how to operate in this environment emerged from workshop discussions.

The first is that generic messaging is not sufficient and can actively undermine credibility. Canned or formulaic communications hurt impact and reach, particularly on platforms where algorithmic distribution rewards distinctive and authentic content. Platform policies also introduce operational complications that water systems often do not anticipate. Meta, for instance, now classifies "water conservation" as political content, which means even routine educational messaging from utilities can be subject to reduced distribution or shadow banning.

While generic institutional messaging falls flat, user-generated content reaches audiences in ways that institutional content typically cannot. The reach differential between content created by individual users and content posted by institutional accounts is dramatic. This points to a potential role for partners who can coordinate user-generated content campaigns in partnership with water systems and government agencies, thus combining the credibility of institutional accuracy with the reach of authentic user voices.

A related observation concerned the perspective brought to public engagement. Resident concerns about water quality are generally grounded in lived experience, and communications that begin from that premise tend to be received more constructively than those that treat public concern as a problem to be managed. Finally, the capacity to correct misinformation depends on having already established a track record of straightforward, responsive communication during periods when residents have the attention and bandwidth to take it in.

A theme that runs through these observations is that the communication challenges water systems face during climate-driven disasters cannot only be solved by better messaging in the moment. The 2025 Eaton and Palisades fires showed that water systems can find themselves at the center of a public narrative they did not create and cannot control, with expectations and accusations shaped by political and media dynamics far outside their authority. In that environment, the ability to communicate effectively depends on credibility built well before a crisis. The work of climate-related communication for water systems is, in this sense, about what they say during a disaster, how they deliver that information, and whether a trusted relationship exists between the water system and their customers.

7. FUTURE RESEARCH AND IMPLEMENTATION DIRECTIONS

Recent major fires have intensified attention to technical concerns regarding how wildfires affect delivered drinking water quality and the role of water systems in restoring and effectively communicating restoration to support public confidence. However, they have also surfaced a parallel set of much broader behavioral and institutional questions. These questions include how disasters affect public confidence in water systems and which kinds of institutional and relational infrastructure are needed to sustain that confidence over time.

The workshop discussions pointed to several key areas where further research could advance understanding in this space, including:

- how households actually respond to post-fire water quality events;
- how the limits of utility authority over premise plumbing can be addressed;
- the timing, scope, and feasibility of systems' technical operations to restore full service;
- whether the communications strategies water systems are pursuing produce measurable changes in public confidence;
- how water systems can build the staffing and partnership infrastructure needed to communicate effectively in the first place;
- how information about drinking water quality moves through formal institutional channels and informal community networks following disasters, and how those parallel communication systems shape public understanding, trust, and behavior; and
- how water systems can navigate an increasingly fragmented media environment.

First, additional empirical work is needed to understand the behavioral response of households to wildfire-related water quality events. Existing research on customer behavior following disasters draws largely on hurricane analogs, which produce documented spikes in bottled water and emergency supply purchases. Whether wildfires produce similar patterns, whether these shifts are temporary or persistent, and how disaster events interact with preexisting patterns of mistrust remain open questions. Ongoing work using consumer purchase data to examine sustained shifts in bottled water purchasing following wildfire events was previewed at the workshop but is not yet published. Replicating and extending this work across fire events and geographies and pairing it with survey-based measures of stated trust would help build the evidence base needed to design effective communications and recovery strategies.

In addition, the question of premise plumbing and the limits of water utility authority warrants focused attention, outside of but, especially, during and after wildfire crises. A substantial share of both pre- and post-fire water quality concerns originate in premise plumbing rather than in the distribution system, yet water systems have limited ability or responsibility to engage past the meter. Water systems are accountable for delivering safe water up to the meter, and what happens between the meter and the tap is the legal responsibility of the property owner. Premise plumbing problems can arise from aging plumbing materials such as lead service lines or corroding galvanized steel, stagnation in unused fixtures, and, in the wildfire context specifically, contaminants drawn into premise plumbing through depressurization or leached from heat-damaged plastic pipes. Thus, more work is especially needed to better define how renters and other populations with limited ability to address premise plumbing concerns on their own can be supported through water system, state agency, and community-based intervention.

In terms of expectations and standards for systems' technical operations to restore service, there was a major focus on feasibility and cost. Some of the resource constraints systems face are endemic, including the dearth of certified labs and the high costs of wide-scale testing. Imposing universal oversight standards regarding reasonable timelines for drinking water quality restoration by systems appears inappropriate given differences in context and capacity, but the collection of best practices was recommended. Workshop participants also encouraged conducting more case studies of the optimal balance between testing and flushing in different disaster contexts, as well as delineating between contexts in which running non-potable water through distribution systems during disasters is advisable versus those that are not, as well as this strategy's impact on trust.

Additionally, the relationship between communications interventions and downstream changes in public confidence remains under-documented. The workshop surfaced a number of promising practices—community-based residential testing programs, neighborhood ambassador campaigns, trusted-messenger partnerships, transparent disaster communications, and creative reframings of tap water (i.e., "Chicagawa" water in Chicago)—but rigorous evaluation of these interventions is uneven. Forthcoming research presented at the workshop is examining whether providing households with individualized water quality test results increases trust in tap water, which is a question that is surprisingly understudied given the volume of communications infrastructure already built around water quality reporting. Expanding this kind of evaluation work and developing common measurement frameworks for trust and confidence that allow comparison across contexts could help water systems and partners invest in practices that have documented effects rather than relying on intuition alone.

Workshop discussions also consistently returned to the point that effective communications during disasters depends on relational infrastructure built and maintained long before disasters occur, but participants noted that this may not be a traditionally expected role of water system communications or public affairs team. This underlines that the institutional infrastructure for community engagement within water systems is an under-explored area. Documenting the staffing, skills, organizational placement, and funding models of utilities that have invested successfully in community engagement—and examining where such investments have produced measurable changes in disaster response outcomes or customer trust—could help establish a clearer evidence base for water systems considering similar investments. Further, development of case studies regarding the role of community-based organizations as partners in water system communications could provide a useful reference point. These could include details on partnership structures, funding mechanisms, and communication methods. Attendees also acknowledged that, especially during fires which span communities and different jurisdictions, systems and local groups are not well equipped to communicate in a comprehensive and time-sensitive manner on their own. In such cases, workshop participants underlined the need for a robust single website platform maintained by the state or county, which would provide residents with information on the status of their drinking water quality that is more user-friendly, as close to real-time as possible.

Finally, the workshop surfaced the broader question of how water systems can navigate climate-related communications in an information environment increasingly shaped by polarization, algorithmically distributed misinformation, and platform policies that can constrain even routine educational content. Research on the effectiveness of trusted-messenger strategies, user-generated content campaigns, and other media strategies in the social media age is at an early stage. Research in three areas could be particularly informative to address this question: documenting how water systems have navigated misinformation events and which institutional capacities supported the most effective responses; examining how online platform policies, algorithmic curation, and the rise of generative AI in information ecosystems are reshaping the channels through which water-related information actually reaches the public; and understanding how trust dynamics interact with the political and demographic contexts in which water systems operate.

Given the interdisciplinary nature of these questions and the rapidly evolving landscape in which water systems operate, the authors welcome further focus and engaged efforts by other scholars, practitioners, and community partners to explore solutions in this space.

8. DISCUSSION AND CONCLUSION

The UCLA and UC ANR Water Supply + Wildfire Research and Policy Coordination Network was launched in response to heightened scrutiny of water systems during the January 2025 wildfires in Los Angeles. This report presents insights and questions from the third in a series of four workshops, held in May 2026, and contributes to an evolving body of work examining the role of water systems in wildfire preparedness, response, and recovery. Through the remainder of this workshop series and related research efforts, the network or working group will continue to explore these issues and support evidence-based approaches to the challenges posed by 21st-century wildfires.

Public debate following recent fires has often focused on whether water systems performed adequately at moments of acute crisis. The third workshop examined a complementary set of questions about public confidence in tap water during and after these events, and the institutional and relational infrastructure needed to sustain it. The two sets of questions are closely linked because a water system's operational performance during a fire shapes how the public perceives and trusts it afterward, and public confidence in turn shapes the political, financial, and regulatory environment in which water systems must operate when a new disaster strikes. In other words, trust is not a separate concern from operational performance; rather, the ability to maintain one depends on sustaining the other.

Tap water trust in the United States was eroding well before recent wildfires brought new attention to the issue. The decline is documented across national surveys and reflects a longstanding, unequally distributed pattern: Distrust is concentrated in communities of color, low-income communities, and communities with prior negative experiences of water quality or institutional failure. Households that do not trust their tap water spend more on bottled water and are less likely to drink enough water. Distrust also weakens the political and financial support water systems need to maintain and upgrade aging infrastructure, which creates a negative feedback loop between system performance and trust levels.

Wildfire interacts with the preexisting baseline of trust that a community has in its water system rather than creating concern from nothing. It deepens distrust in communities that have long held it while drawing previously unconcerned populations into uncertainty about water they had not questioned before. This dynamic is also now playing out in an information ecosystem that has evolved more rapidly than the institutions communicating through it. The formal communications model—utilities and public health agencies issuing official notices that flow outward to the public—assumes a top-down information environment that is nearly the opposite of the distributed and rapidly evolving social media environment that shapes communications today. Now, information most typically reaches residents through social and community networks, local journalists, social media platforms whose algorithms reward emotionally compelling content, and, increasingly, through AI tools that filter and prioritize what people see. The January 2025 Los Angeles fires offered the clearest recent example of how rapidly misinformation and political polarization can shape public understanding of a disaster event.

These communications challenges intersect with operational and regulatory realities that complicate post-fire drinking water restoration in ways often invisible in public debate. There is now more than a decade of science and practice on how wildfire affects drinking water systems, including the importance of rapid flushing within roughly 30 days and the use of testing of VOCs and SVOCs to verify that water quality has been restored. But across this workshop discussion, the same tensions recurred. First, there is a divergence between the ideal scenarios articulated in research and the resources available during a disaster response. Additionally, there is a difference between who is formally responsible for communicating with the public during a disaster and who is best positioned to be a trusted messenger. Smaller water systems face these tensions in a particularly acute form given human capital and financial constraints. A related and persistent question regarding water quality concerns premise plumbing—the pipes, fixtures, and service lines inside individual homes and buildings.

A theme running through all of these challenges is that addressing them requires a deeper kind of relational work than water systems have traditionally been staffed or funded to undertake. Effective communications during disasters depend on relational infrastructure built and maintained long before disasters occur. These relationships are shaped by the everyday interactions a community has with its water system, such as how questions and complaints are handled, whether public commitments have been followed through, and whether the institution is visible in community life beyond billing and emergencies. To be truly effective, these relationships cannot be built at the moment a disaster begins.

The workshop pointed to near-term actions that hold promise for building and sustaining trust between communities and water systems, as well as several existing efforts that offer useful examples. Coordinated educational efforts like California Central Valley's CV Water Counts demonstrate the value of utilities working collectively to build community understanding of tap water rather than each operating in isolation. Trusted-messenger and ambassador programs, such as Philadelphia's Drink Philly Tap, show how water systems can extend their reach by training and resourcing partners to carry water-related information into networks the water system itself cannot easily access. Community-based residential testing programs, exemplified by LADWP's residential lead sampling in Watts, illustrate how engaging residents directly with their own water quality data can build trust and provide useful information at the same time. Transparent disaster communications, as in the Asheville Water Resources Department's response following Hurricane Helene in North Carolina, demonstrate the value of straightforward, frequent updates during a crisis. The on-the-ground misinformation response from LAist following the January 2025 fires shows the role local journalism can play as a trusted intermediary during a disaster. Finally, utility–researcher partnerships, such as those that emerged in Paradise following the Camp Fire, also offer a way to fill resource and capacity gaps that individual water systems cannot close on their own.

Looking ahead, wildfires will continue to affect the quality of water in communities, and the public communications and trust challenges identified in this workshop will not be resolved on their own. Meeting these challenges will require water systems, their partners, and the communities they serve to invest in the kind of sustained relational work this report has described. This work is, by nature, local, but it can be supported by state-level coordination, sustained investment in community engagement infrastructure within water systems, and research and case-study development that documents lessons learned about post-disaster trust and communication methods so they can be useful in future cases. As infrastructure ages, fires intensify, and the information environment continues to evolve, the work of building the relationships that carry credible information and support the restoration of public confidence through a crisis will only grow more important.

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