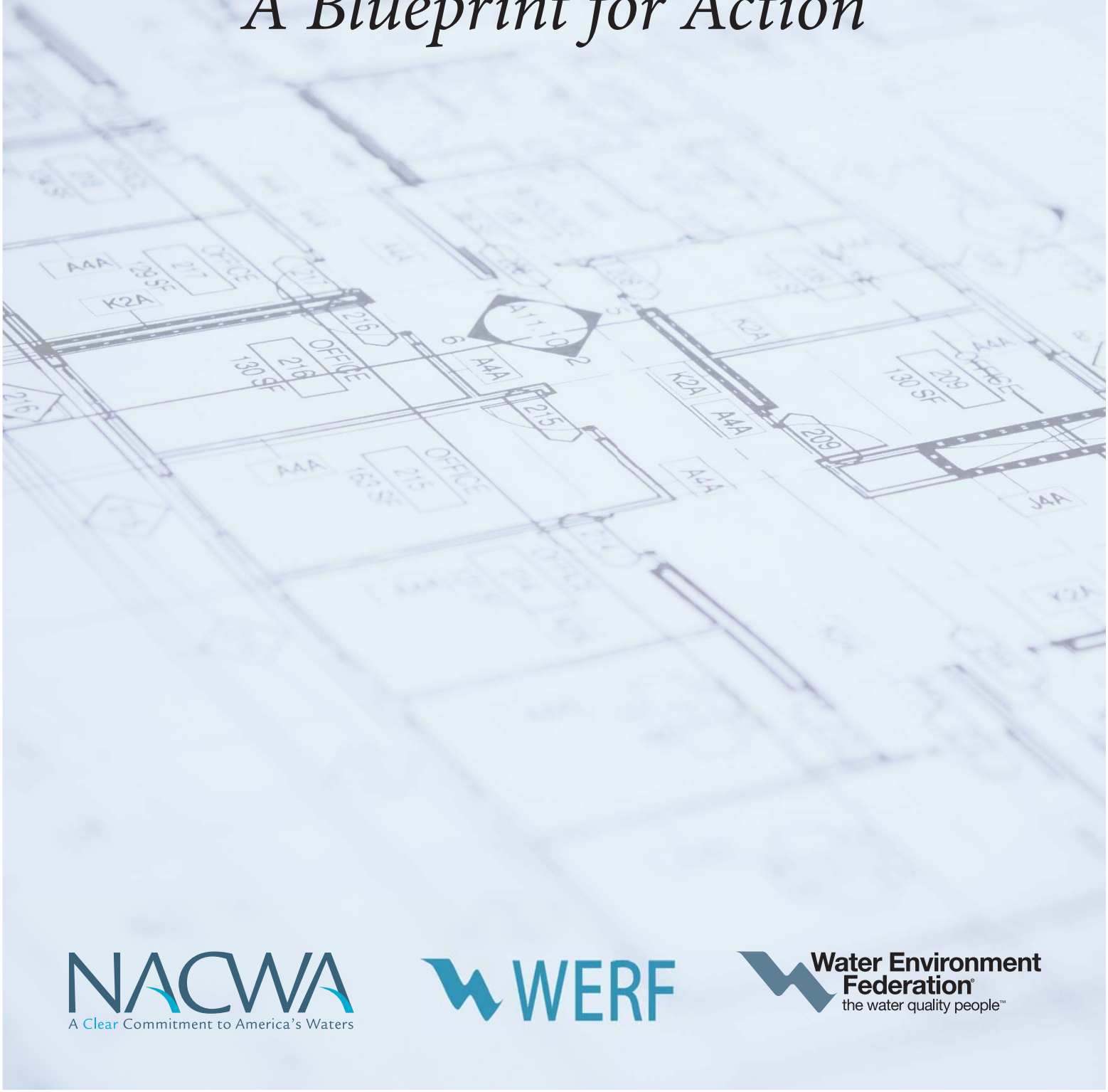
The Water Resources Utility of the Future:

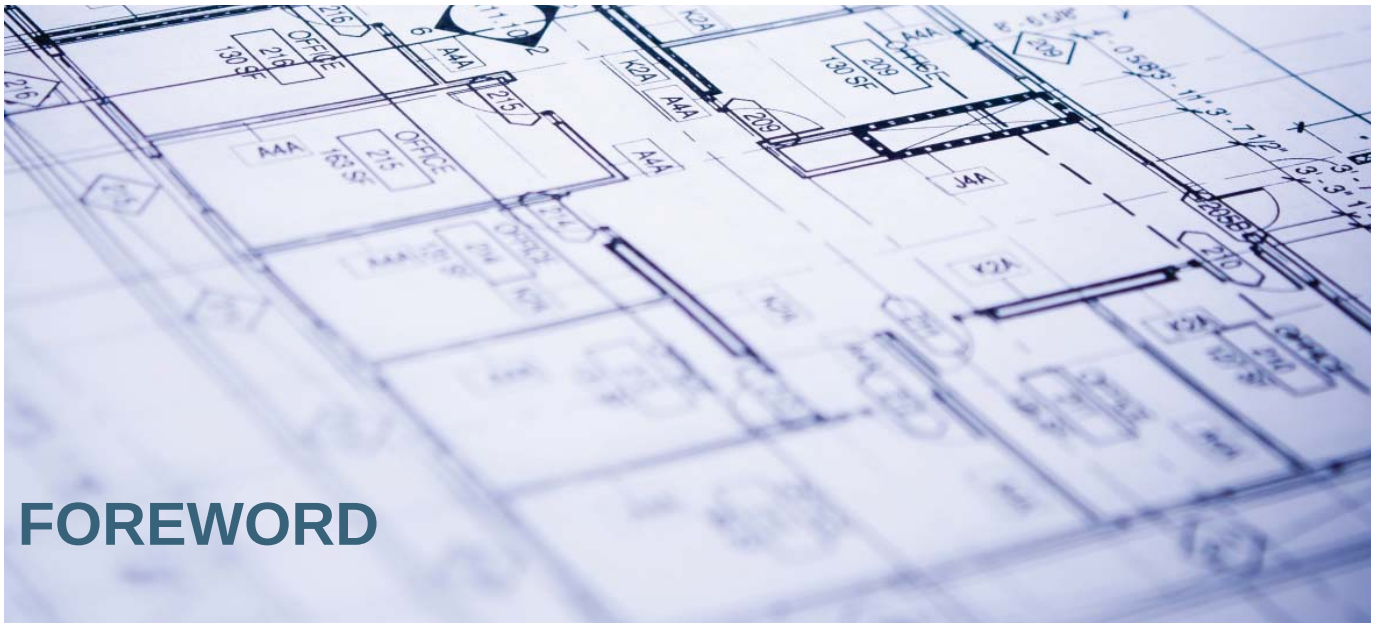
A Blueprint for Action



NACWA
A Clear Commitment to America's Waters

WERF

Water Environment Federation®
the water quality people™



FOREWORD

The National Association of Clean Water Agencies (NACWA), the Water Environment Research Foundation (WERF) and the Water Environment Federation (WEF) are pleased to release the *Water Resources Utility of the Future . . . Blueprint for Action*. Work on this document began in earnest in September 2012 and has been shepherded along by the strong efforts of a joint Steering Committee made up of three representatives from each of the three organizations as well as by a diverse Task Force of 49 experts representing a broad cross-section from the three organizations' memberships. The Steering Committee ensured the *Blueprint* remained both targeted and comprehensive while the Task Force provided data, input, editing and insight throughout the drafting process.

This *Blueprint* was placed on a fast-track for finalization to ensure that Utility of the Future (UOTF) issues are front and center as the 113th Congress and incoming Administration develop their environmental priorities. The audience for this *Blueprint,* however, is broader than just federal policy-makers and includes local utility managers, private sector interests, state and local governments, and many others within the clean water, drinking water, energy and agricultural communities.

Our three organizations have different missions and strengths - these include advocacy, technical input, outreach/communications, scientific research, data collection and media relations. Each organization will cull from this document to determine which particular UOTF priorities to advance. Wherever possible, however, the three organizations will work together to advance shared objectives and will seek to encourage the array of organizations that make up the clean water sector to review this document closely and work to advance the UOTF objectives outlined in the *Blueprint* as well.

It is critical to understand that the *Blueprint* is a living document and that new ideas under the UOTF umbrella will continue to be added. This document represents an opening salvo in the effort to define and tie together a diverse realm of resource recovery activities and innovative approaches, many of which were never contemplated, and likely could never have been foreseen, 40 years ago when the Clean Water Act was enacted.

This project was advanced because a group of industry leaders arrived at a shared realization that the challenges (and opportunities) faced by wastewater agencies are unprecedented and that some of the paradigms

that have been in place for decades are changing to meet these challenges. This *Blueprint* underscores the need for the clean water sector to work together to shape the landscape of clean water going forward. It also highlights the type of collaboration that is needed to ensure a sustainable future that minimizes waste, maximizes resources, protects the ratepayer, improves the community, and embraces innovation in an unprecedented manner.

The joint Steering Committee and Task Force that did the hard work to make this *Blueprint* possible constitutes a model that is now in place not only for further joint efforts under the UOTF banner but potentially for other efforts that can advance the clean water sector's lofty objectives. We sincerely hope you find this document as fascinating and useful to read as our organizations did creating it!

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of today's legislators and ratepayers. Thus, it is essential to acquaint children with the importance of water to public health and, ultimately, the welfare of our society. UOTFs also need to make the broader public benefits case regularly to legislators, governing boards, ratepayers, and the press, demonstrating delivery of value for money and reminding the public of the environmental and economic services they deliver every day.

Environmental Management Systems to Set Priorities. An Environmental Management System (EMS) is a framework that helps any organization achieve its environmental goals through consistent control of its operations. EMSs address regulatory demands and other objectives like energy conservation or reduction of infiltration and inflow to collection systems in a systematic and cost-effective manner, setting priorities to reduce risks of non-compliance and improve public health and safety outcomes for the public and employees, respectively.[39] In practice, clean water agencies have found that EMSs also enable the organization to capture institutional knowledge, making it available to future decision makers, in effect ensuring continuity over generations of leadership and management.

Smart Technology to Improve Service Delivery and Customer Care. Web-enabled tablets, smart phones, and cloud-based communications have transformed the way clean water agencies deliver services and interact with their customers. They enable customers to share information instantaneously about service disruptions, faulty infrastructure, and meter figures as backup to automated readings. Work orders can be routed efficiently to field crews according to their location, enabling very fast response times. They also enable work crews in the field to access and update vital information stored centrally about asset location, condition, and performance. Smart phones allow customers to track progress against work requests in real time. Credit card and check payments using mobile devices linked to central billing and collection databases avoid labor-intensive turn-off/turn-on trips. Social media allows dissemination of critical information to customers to support both routine and emergency activities. Smart meters enable automated, labor-free two-way monitoring, communication, and control (customer to utility and vice versa) of usage patterns for billing and for customer awareness. GPS

EMSs & Other Management Tools

The Lawrence, Kansas water and clean water utility serving 90,000 customers implemented a utility-wide EMS in 2007. As a result, it reduced biosolids transportation and land application fuel use by 13.5%, eliminated drinking water taste and odor problems, sited a new 530 acre wastewater treatment plant, achieved 73% customer satisfaction, and reduced workers compensation liability by more than 20% in three years.

The Camden County NJ Municipal Utilities Authority (CCMUA) used an EMS process to address its discharge and biosolids issues with equally impressive results. Prior to its EMS, CCMUA was barely meeting its state discharge permit, being fined and sued for almost continuous odor problems and had recently raised its user rates by over 22%. Through the EMS, the CCMUA identified its core objectives to be (1) optimization of water quality, (2) minimization of odors and (3) cost efficiency. Within 5 years of implementing an EMS, the CCMUA improved solids capture by 40%, virtually eliminated its odor problems, completely overhauled its physical plant, and reduced suspended solids in its discharge from 26 to 7 parts per million (permit limit of 30 ppm). The utility accomplished all of this while reducing rates from $337/household in 1996 to $324/household in 2012.

Global Water Resources, which operates a portfolio of small and medium drinking water and clean water agencies in Arizona, is perhaps the most technologically sophisticated utility in the US. It has taken utility efficiency to a new level using evaluation and productivity improvement processes (Total Water Management) similar to Lean, advanced metering infrastructure, and cloud-based data analytics and presentation technology to reduce water losses and put real-time monitoring of water use in the hands of their clients.