ICWP
Interstate Council on Water Policy

Position Statement: Water Data & Science

ICWP Recommends:

1. That the federal government should continue and enhance its role in the maintenance and collection of water data from long-term streamgaging and water quality monitoring stations.

2. That management and synthesis of water data, including remote sensing and in situ monitoring of surface and groundwater resources and water quality, should be improved to support timely and well-informed decisions in market, utility and governmental frameworks.

3. That decisions regarding the maintenance and extension of monitoring networks should be evaluated from a watershed (or hydrologic region) perspective with the needs of future decision makers and "integrated water resource management" in mind as priorities are set and partners are engaged to get the greatest advantage from limited program resources.

4. That the federal agencies and interstate water organizations should engage their water data "customers" more directly and more consistently in water science program decisions, especially those concerning use of cost-shared funds.

5. That the leaders of the water community should promote a greater understanding of the management challenges facing the water science program managers and of the opportunities and responsibilities we share for improving our water science programs.

6. That federal funding for the National Streamflow Information Program (NSIP), Cooperative Water Program (CWP), National Integrated Drought Information System (NIDIS), and Integrated Earth Observation System should be enhanced.

7. That descriptive (simulation) and predictive (forecast) models linking surface and ground water quantity and quality should be improved to support quicker decisions in managing the conjunctive use of these sources.

8. That the science associated with the relationships between ecosystems, population biology and their water requirements should be pursued more aggressively to provide information necessary to consider ecosystem needs in other resource management decisions in a timely manner.

9. That opportunities for expanding the recognition of in-kind contributions in collaborative efforts to expand the Nation's data collection network should be more fully developed while assuring quality, consistency and accessibility of the resulting data meet appropriate national standards.

10. That the hydrogeologic and geochemical characteristics of aquifers containing brackish and saline ground-water resources, where they could provide fresh water through desalination, should be investigated.

11. That the interagency Advisory Committee on Water Information (ACWI) should continue to pursue more effective coordination of water data programs.

BACKGROUND

Data and scientific methods and models are essential for describing, understanding and managing our water resources, elements of the hydrologic system and the many water-dependent resources and opportunities that our communities depend upon.

A reliable, quantitative understanding of our water resources has proven necessary over the past 200 years, but it is increasingly essential as our growing population and businesses and our shifting land uses place more pressure on critical systems with smaller margins for error.

We depend on reliable and consistent water data in many decisions by many federal, state, tribal, and local government agencies, and by many businesses, landowners, public interest organizations and individuals. Water data are needed routinely for many essential decisions, including the:

- forecasting flood and drought conditions and issuing emergency advisories;
- designing bridges, dams and other infrastructure;
- identifying flood risk areas for the protection of lives and property and to reduce disaster relief expenses;
- estimating future water needs and availability for agricultural, municipal, and industrial uses;
- managing hydropower, water supply, environmental[1] and navigation releases from reservoirs; and
- planning recreation and water quality protection.

Quantifying the natural variability of precipitation, snow accumulation, ground water recharge and streamflow, as well as the changes we are inducing, is critical to water supply forecasting. Not counting named hurricanes, more than 50 major disaster emergencies were officially declared between January 2005 and August 2006 in 23 states due to flooding, drought and wildfire hazards. In the first six months of 2006 alone, these events required more than $260 million in disaster assistance grants. Severe flooding has recently caused loss of life and property damage in many parts of our country, including New England, the Delaware River Basin and Maryland. At the same time, drought conditions are hitting many states, including Alabama, Arizona, Colorado, Minnesota, Mississippi, North Dakota, New Mexico, Oklahoma, South Dakota, Texas, Wisconsin and Wyoming. Without reliable and consistent water data, our health, safety, property, businesses and many elements of our natural environment are at greater risk.

The gaps in our water monitoring networks threaten future decision makers with greater uncertainty. For example, in locating the boundaries of flood-prone areas so that we can protect our homes, businesses and other assets, we use stream and rainfall data with maps and hydraulic models to mark the 100-year floodplain boundaries. If we want to be even 90% confident that we are locating those boundaries correctly, we need over 230 years of reliable stream flow data. The losses caused by hurricanes Katrina and Rita in 2005 demonstrate that more than just data and science are needed to protect our communities. However, good policy and effective protection start with clear understanding of the natural systems and the options we have. As we build more bridges, dams, homes, water treatment plants, and habitat restoration projects near waterways, we need better data from more sources on a long-term basis.

The Advisory Committee on Water Information (ACWI) organized by the US Department of the Interior to enlist experts from many local, state and federal agencies and from universities, consulting firms and public interest organizations, has documented startling gaps in our water monitoring systems. Gaps exist in our surface water monitoring networks, like the National Streamflow Information Program and Cooperative Water Program operated by the USGS. The gaps in our monitoring of groundwater

[1] Including fisheries management, wetlands restoration and endangered species conservation.

resources and the coastal interface between rivers and estuaries and between estuaries and ocean are even greater.

Experts from across the nation and from many disciplines are designing plans to fill these gaps and to begin collecting the data that our communities will need in making intelligent decisions about flood protection, drought response, contaminated water supplies, and fisheries. The same data are needed to make choices about protecting wilderness and endangered species and to support agriculture, waterfowl, power generation, wetlands, and navigable waterways. The ACWI and agency experts have studied and agreed on priorities for strengthening our streamflow information programs and for developing a national water quality network for US coastal waters and their tributaries. They are starting next on the design for a national groundwater monitoring network.

Policy Considerations

While these ACWI initiatives are pointed in the right direction, progress is very slow and the prospect for implementing their recommendations during the coming years of very tight budgets is limited and alarming when viewed in context.

When water supplies were abundant relative to their level of use, the information needed to plan for and manage their availability was considerably easier to develop. However, as population and economic growth drive up demand, competition for water intensifies and the need for more precise information becomes much more significant. Water in the US is becoming a marketed resource in many ways at every scale and we already confront the need in business and public policy decisions for new scientific capabilities to anticipate and avoid unintended consequences.

To identify and anticipate the many hazards that threaten communities, an efficient data collection and interpretation capability must be readily available to and usable by scientists, emergency managers, first responders, citizens and policy makers. Developing and improving our water monitoring networks (including water quality and groundwater) is essential to provide pertinent, comprehensive and timely information for intelligent planning, public support and deliberate action. Water officials from 39 states identified expansion of the number of federal data collection points as the most useful federal action that would help them meet their water management challenges[2].

Unfortunately, the funding for data collection, investigation and interpretation is eroding to the point that the quantity and quality of the basic data is threatened, with significant adverse consequences to a growing and diverse number of American decision makers and stakeholders. Years of neglect from slow erosion in federal funding – with flat or nearly flat appropriations in the face of continually rising costs – threatens the availability of critical data that are needed to inform many complex public- and private-sector decisions.

The Cooperative Water Program has served for over 110 years as a federal/non-federal partnership. Historically, the CWP was funded through 50/50 cost-share agreements. Today, however, the USGS is struggling to support even 30% of the Program cost. CWP Cooperators have increased their contributions to help meet inflationary increases, while limited USGS funds have been diverted to cover increases in personnel and operating expenses. Between 2000 and 2005, almost 1,100 stations were discontinued (many with over 30 years of continuous operation) and more than 200 stations in 27 states are currently at risk due to the lack of adequate funds. The FY-2007 appropriation of $64 million for the Cooperative Water Program was not sufficient to reverse the continuing erosion of federal support or to match the $138M contributed annually by CWP Cooperators since FY-2004.

[2] GAO report "Freshwater Supply –States' Views of How Federal Agencies Could Help Them Meet the Challenges of Expected Shortages, July 2003.

In 1998, concern about long-term reliability of streamgaging in the US led the Congress to authorize the National Streamflow Information Program (NSIP). Unlike the Cooperative Water Program, the NSIP is supposed to be funded entirely with federal appropriations. In 2005, there were approximately 4,725 stations in the plan for this network but only 3,096 (65%) were active and funded by the USGS (21% had been discontinued, 4% were active and under operation by other agencies and 10% had not been installed). Another $100 million will be needed to achieve the full vision of the NSIP. Full funding for the NSIP would reverse the loss of long-term gages and provide essential information for analysis of climate change, forecasting floods and droughts, administering water rights, managing interstate water supplies, and fulfilling federal treaty, compact and Native American trust responsibilities.

The conclusions of the National Drought Commission Report in May 2000 indicate that drought-related data and research are the foundation of many drought programs and are critical in the production of high-quality innovations and technology that lead to improved drought preparedness. Flexibility and decisiveness in water resource management depend on ready access to comprehensive and reliable information about our resources and our alternatives. Authorization of the National Integrated Drought Information System (NIDIS) in the 109th Congress provides a significant step toward an early warning system to communicate water supply emergency information to all levels of government and to the public. Funding for its implementation and collaborative support for its integration into the NOAA observing networks are essential.

Giving due consideration to the quantities of water needed for the maintenance and enhancement of natural systems (such as instream flows, wetlands and estuary protection) has become a major challenge for water managers at every level of responsibility across the county. Unfortunately, our understanding of these systems (including their resiliency and the quantity, quality and timing of water required to sustain the health of these interrelated communities and features) is limited and varies greatly by region. Until these ecosystem needs are better understood in quantitative terms, the associated uncertainty will complicate and delay many public and private decisions; the economic, political and social cost will be substantial while our communities and ecosystems will lack the appropriate level of protection.

Many water resource management challenges affect individuals, communities, businesses and government agencies within natural watershed and hydrologic areas, without regard for political boundaries and agency jurisdiction. Organization and investigation based upon these logical units helps identify the appropriate monitoring points, the appropriate science, useful partnerships, effective alternatives and the full range of affected interests and agencies that should participate in the decisions and facilitate the actions needed.

EFFECTIVE DATE: This position was developed by the ICWP Legislation & Policy Committee and adopted by the ICWP Board of Directors on February 7, 2007. It will continue in effect until December 2008 unless revised or archived at an earlier time by the Board of Directors.