CRITICAL ACTIONS IN WATER POLICY AND PRACTICE IN CALIFORNIA

CALIFORNIA'S WATER MANAGEMENT CHALLENGE

California's water continues to face major challenges as policy makers and water managers pursue various strategies and measures to manage this precious natural resource for sustainability. Stakeholders and citizens of the Golden State have voiced the need for a sustainable water supply while preserving the ecosystems and protecting water quality, life, health and the environment, all while keeping costs under control.

On February 15, 2011, in an interactive symposium titled, ***Resiliency of Water Management – Dynamic Balancing in the 21st Century***, the American Society of Civil Engineers – Environmental and Water Resources Institute (ASCE-EWRI), Sacramento Chapter, in collaboration with the Floodplain Management Association (FMA), brought together over 120 experts and practitioners in water management to discuss new strategies for water management. The symposium highlighted the critical need for a shift toward a new, dynamic, risk-based and adaptive water management approach, one which fully recognizes the existence of (a) uncertainty of natural systems, (b) the variable stressors on water such as scarcity, climate change and population growth, and (c) the diverse interests that play a key role in water governance.

This White Paper presents the key ideas and recommendations set forth by the diverse and distinguished panel members and participants that attended the Symposium.

KEY RECOMMENDATIONS

It is imperative that California invest resources toward the following actions:

1. Develop and adopt a new set of statewide guiding principles and goals for water management in California
2. Develop a new and comprehensive agenda for scientific research to support water management decisions
3. Develop and incentivize regional and inter-regional solutions and enhance local land use planning processes
4. Develop goals and standards for groundwater management
5. Develop a new and sustainable funding strategy for effective management of water
6. Advance a systems approach in the regulatory framework to effectively address the multiple underlying stressors resulting in environmental degradation

A detailed discussion of these recommendations follows.

SECURING RESILIENCY IN WATER MANAGEMENT IN CALIFORNIA –
A Blueprint for Strategic Investment in California's Water

1. A New Set of Guiding Principles

The recommendations for action by experts, practitioners and stakeholders were framed around the topic of water management in the 21st Century for California. The group discussed key principles of building resiliency into water management within a water supply system that is influenced by many natural and manmade stressors and is therefore in a constant state of change. A new management concept of Dynamic Balancing was introduced to stimulate the group discussion. Dynamic balancing aims to produce the optimum response package to system stressors and competing interests, along with alternative responses. It accounts for and incorporates the various relationships among stressors and interests governing water systems.

There is a need for policy makers and resource managers in California to transition to a new paradigm reflecting the critical factors affecting the resiliency of the State's water systems. Going beyond adaptive management and risk management, a new approach would advance resiliency in water resources by cultivating *resiliency in the management of water*. It enables managers of complex, inter-related water systems to develop a flexible solution workspace for water issues with multiple options and models as opposed to simple trade-offs. It integrates knowledge across disciplines and redefines system-level goals and adaptive decision-making processes based on effective feedback mechanisms.

Framed in this context, the following over-arching water management **guiding principles** emerged from this symposium as fundamental to achieving water management resiliency:

- Acknowledge and value that water is a limited natural resource.
- Acknowledge and value that thriving ecosystems are an essential component of a resilient water system. Water management systems must be designed and maintained with nature in mind, with a recognition of the inherent benefits provided by ecosystems.
- Recognize the importance and influence of the social and behavioral dimensions in water decisions.
- Recognize that water is part of an integrated system of resources with multiple goals, conflicts and issues that must be strategically managed as dilemmas, not merely a set of problems that must be solved through engineering solutions.
- Promote an integrated resource management approach that reflects coordinated State, regional and inter-regional water policies and priorities.
- Shift focus from avoidance of uncertainty and fear of unknowns in water management to pro-active and dynamic water management policies and practices that account for uncertainty and change in natural systems.

- Transition from *demand-driven* water management to *supply-driven* water management, i.e., develop strategies where the demand for water is adjusted based on the available and sustainable supply of water, and the need to meet multiple objectives for water and the environment.
- Promote flexible and dynamic water governance structures that adapt and respond to new conditions.
- Elevate the critical role of robust, unbiased science in water management decisions and practices.
- Transition focus in water management decisions from *who wins* to *how to make it work*.
- Diminish the role of politics in water management by engaging in a more transparent public dialogue instead of "back-room" discussions.
- Improve public trust for water management by implementing a conscious and open-minded process for stakeholder involvement.

2. Science for Decision Making

Scientists and water managers alike agree that, to a significant extent, funding for science and technology is *project-based*, not *system-based*, yielding knowledge with limited geographical, scientific and sub-system level relevance. There is substantial agreement that the overall benefits from the knowledge gained through scientific research are not commensurate with the public investment in science. This is caused by a disconnect between science and decision-making that results in two main challenges: (1) the need for decision-makers to pose the right questions to the scientific research community; and (2) the need for better communication of scientific results to decision-makers.

- Develop a science and research agenda to accomplish the following:
    - Link ecosystem functions to regulatory standards for species, water pollutants
    - Link land use, land development and their impacts to environment, public health and safety, and water
    - Develop collaboration, tools and procedures to link science and technology to decision-making

3. Regional and Inter-Regional Water Management

Water management is to a significant degree a local process whose impact is felt at varying degrees throughout the entire water system in California. This complex relationship is optimally addressed through a regional approach that recognizes this dynamic connection between the entire system and its sub-systems.

- Seek regional and inter-regional solutions to remove over-reliance of outside water sources and increase regional self-sufficiency.
- Incentivize and promote regional and inter-regional collaboration and planning, as well as regional decision support tools and science. Invest greater efforts toward integrating water goals at the regional scale, toward broader inclusion of regional interests and stakeholders, and toward multi-benefit solutions.
- Give new statutory authority for integrated regional water management, integrating water supply, water quality, flood risk and environmental priorities.
- Enhance the local and State growth and development planning processes to:
    - Connect population growth, land development and water
    - Ensure protection of groundwater recharge areas and sensitive ecosystems from incompatible development

4. Enhancing Groundwater Management

The symposium highlighted the unequivocal agreement among experts and stakeholders that groundwater is a part of the water system under public trust and must be managed responsibly. California must go beyond the current process of basin-by-basin adjudication.

- Establish statewide goals and standards for management of groundwater that are implemented at the local and regional levels.

5. Financing Water Solutions

The symposium conveyed consistently the need for financing research and development, information technology, water infrastructure, governance improvements, planning, public processes and ecosystem restoration. Several key strategies for financing water management were presented:

- Develop *sustainable* alternatives to using General Fund and periodic Water Bond money for regulatory and resource planning and water management, such as a fee system.
- Create strong incentives for infrastructure improvements that leverage federal and local funding.
- Link government investment to the level of achieved public benefits.

6. A Systems Approach in the Regulatory Framework

The symposium organized an entire panel to discuss opportunities for improving the regulatory framework. The discussion highlighted the adverse consequences of multiple agencies working in silos and sometimes in conflict; the failure to make use of flexibility already provided in existing laws, statutes and regulations; and the misplaced focus on the symptoms of environmental degradation as opposed to their multiple underlying causes. The panel tackled critical solutions in the following subject areas: aligning regulations with water system goals, regulatory rigidity and opportunities for flexibility, optimizing the regulatory framework through feedback mechanisms, engaging stakeholders and other agencies to develop better solutions, advancing proactive approaches to regulations and enforcement, and investing in science and planning.

Out of these discussions, the following findings and recommendations are made:

- Adequately fund regulatory planning including the necessary science and monitoring to sustain the development of effective regulations. Recognize the critical importance of adequate regulatory planning to achieving effective environmental compliance.
- Encourage the full use of flexibility provided by current state and federal laws and regulations to accomplish the following:
    - Shift focus to improve ecosystem functions as a whole through defined outcomes as opposed to merely following prescribed standards.
    - Incentivize collaborative processes in the regulatory framework to promote voluntary cooperation to advance innovation and develop optimized solutions.
    - Review, evaluate and update current statutes and regulations that may affect management of water in California to resolve regulatory conflicts, inefficiencies and redundancies.
- Develop sunset provisions for State laws and regulations on water and the environment requiring an effectiveness evaluation of the regulation for continued implementation. Encourage equivalent requirements for federal regulations.

- Develop and implement a process for permitting projects impacting water and the environment to ensure timeliness of permits and eliminate regulatory conflict and redundancy.
- Establish integrated and coordinated regulatory goals and priorities for management of water supply, flood risk, water quality and ecosystem health across State programs.

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This document was prepared and submitted by the following representatives of the Sacramento Chapters of the Environmental & Water Resources Institute (EWRI) and its Committee on Sustainability and Floodplain Management Association (FMA):

- ***Pamela Creedon, P.E., BCEE, MASCE***, EWRI Chapter Vice-Chair and Symposium Chair, Executive Officer, Central Valley Regional Water Quality Control Board, pcreedon@waterboards.ca.gov
- ***Iovanka Todt***, Executive Director, Floodplain Management Association, iovanka_todt@floodplain.org
- ***Pal Hegedus, Chair, P.E., D.WRE, MASCE***, EWRI Chapter Chair, FMA Chair, Vice President for Water Resources and Stormwater Management RBF Consulting, phegedus@rbf.com
- ***Robert Shibatani, M.Sc.***, EWRI Chapter Vice-Chair, CEO & Consulting Hydrologist, The SHIBATANI GROUP, INC., robert@theshibatanigroup.com
- ***Rich Juricich***, California Department of Water Resources, Division of Statewide Integrated Water Management, juricich@water.ca.gov