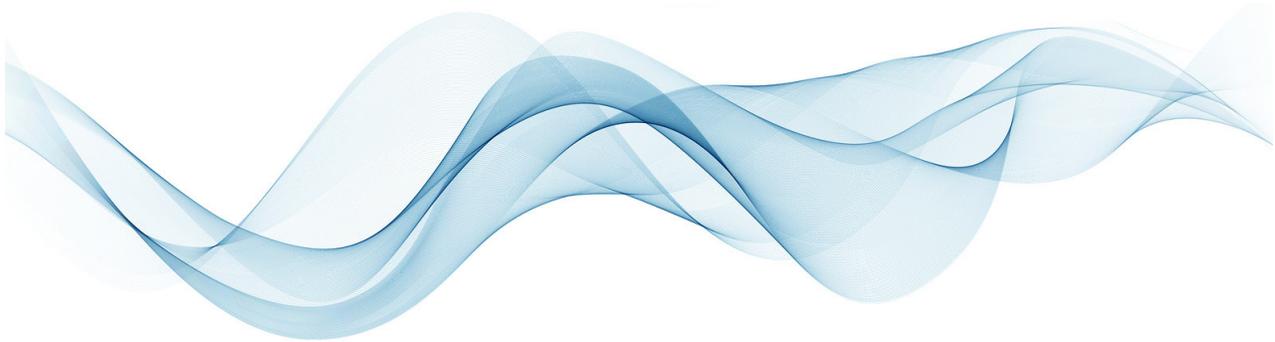

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Interstate Water Solutions: Lessons from the Past and Recommendations for the Future

A Look toward 2050



ICWP

INTERSTATE COUNCIL ON WATER POLICY

◇

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Interstate Water Solutions: Lessons from the Past and Recommendations for the Future — A Look toward 2050

A Project of the Interstate Council on Water Policy



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The Interstate Council on Water Policy is a national organization that provides regional, state, and local water resources agencies a voice in helping to shape today's key water management policies and how they impact real-world issues. ICWP members share expertise and create solutions for the challenges we all face. Through relationships with key federal agency staff, as well as our annual meetings and conferences, our members directly contribute to development and execution of our nation's water policies and legislation.

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Interstate Water Solutions: Lessons from the Past and Recommendations for the Future — A Look toward 2050

A Project of the Interstate Council on Water Policy



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Interstate Water Solutions: Lessons from the Past and Recommendations for the Future — A Look toward 2050

A Project of the Interstate Council on Water Policy

Executive Summary



Our cities, counties, states, tribes and federal agencies depend increasingly on interstate and watershed organizations as coordinating bodies for watershed-based planning and development initiatives to manage water supply, flood protection, water quality controls, fisheries management, recreational areas and other interdependent priorities.

In response to our increasing reliance on interstate water organizations, the Interstate Council on Water Policy (ICWP) undertook a study in 2006 of the various interstate water management patterns and practices across the US as the foundation for recommendations intended to amplify the effectiveness of these organizations in the future of water resource management. The study included case studies, findings, and recommendations intended to help existing agencies and organizations enhance their effectiveness in meeting 21st century water management challenges.

Interstate Water Solutions: Lessons from the Past and Recommendations for the Future A Look toward 2050 reintroduces and refreshes the findings of the 2006 study. It ensures the relevance of previous research and captures additional lessons learned, changes in the federal landscape, and new examples of watershed management arrangements operating in today's world. Notable additions include:

- A “Current Era” of the evolution of watershed management reflects trends toward more “bottom up” initiatives; less regulatory emphasis and stronger partnership-oriented, voluntary compliance; less federal funds and greater reliance on creative funding mechanisms; stronger emphasis on multiple objectives; and a stronger role for non-governmental stakeholders in policy decisions.

- Emerging factors are transforming how state and interstate organizations conduct business and manage water resources. Challenges include:
 - the rise of anti-regulation and state sovereignty sentiments that can lead to viewing interstate organizations as threatening or redundant with state and federal agencies;
 - funding cuts to federal agencies that provide critical data collection and forecasts upon which interstate water management agencies rely; and
 - uncertainty around how climate change is impacting the effectiveness of existing strategies and posing new, complex management challenges.
- Opportunities include:
 - the expansion of data technologies that offer enhancements to our monitoring and predictive capabilities;
 - the growing recognition of eco-system services and water demands for instream flows, estuary health, and endangered species recovery as part of interstate water management solutions; and
 - the return by Congress to a pattern of adopting incremental changes to its Water Resources Development Act every two years.
- An examination of more recent past experiences has taught us that:
 - The legal framework of water law — riparian, prior appropriation, and hybrid states — influences the powers and roles of interstate water resource management agencies.



Water diversion dam on the South Platte River in northern Colorado below Denver.

- There is a need for interstate organizations to guard against member parochialism and bureaucratic fatigue by acting proactively to affirm their purpose and the benefits the members jurisdictions derive from their activities.
 - Ongoing advocacy is needed to maintain reasonable financial support from signatory parties. Justifications for sufficient annual appropriations are most compelling when they speak to specific benefits member jurisdictions receive, align with priorities of the jurisdictions, and offer convincing consequences of insufficient funding.
- New case studies highlighted in this report illustrate the growing emphasis on interstate solutions to species recovery, drought contingency planning in the western states and flood mitigation planning in the eastern states, water quality improvements in rivers, lakes and estuaries, and water supply management in times of low flows.

The ICWP is ideally positioned to move the practice of water resource planning, policy and management from the present toward 2050. Central to its mission is its role as a catalyst in the reformulation of national water policy and as a leader in integrating diverse interests to promote comprehensive approaches to policy making at the state, interstate and federal levels.

The following recommendations, which update and condense the original findings and recommendations found in the 2006 report, anticipate development of an action agenda to improve water resource policy and management processes by the ICWP in partnership with federal officials and association leaders.

Recommendation 1: ICWP should work with interstate organizations to highlight, promote and nourish regional approaches and effective organizations. Better information is needed to publicize the specific contributions that interstate organizations are making to more efficient and effective water resource management decisions on a regional basis. Work is needed to encourage increased state and federal support for and reliance upon interstate agencies and to cultivate program flexibility to allow for adaptation of interstate organization accomplishments and recommendations.

Recommendation 2: Foster integration of interstate water management needs and programs with federal initiatives and policies. Interstate water organizations should encourage federal programs, initiatives, and policies to be implemented in a manner that recognizes the distinct challenges on interstate waters and the need for interstate collaboration, capitalizing on existing interstate organizations to the greatest extent possible. Federal participation in interstate organizations should be directed, in part, at addressing barriers that have historically impeded integrated water resource management. All should collaborate on addressing fragmented authorities, inconsistent standards, and unreliable data and funding.

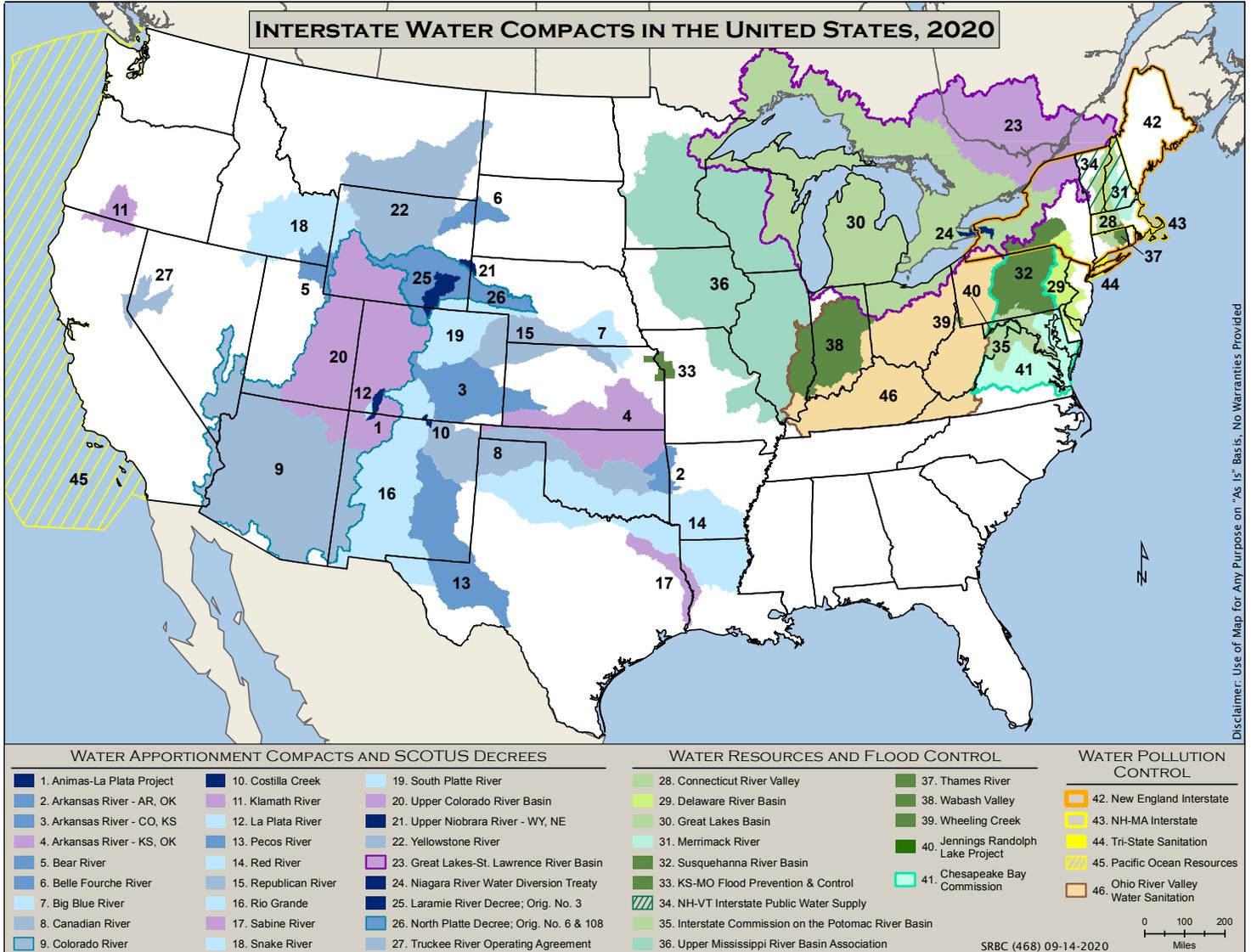
Recommendation 3: Work with interstate water organizations and key stakeholders to evaluate management initiatives, enhance education and engage in strategic planning. Regular education and strategic planning will help ensure engagement and confidence in interstate organizations as large-scale resource management initiatives emerge. Both stakeholders and federal agencies should maintain an awareness of organizations' responsibilities, limitations and relation to other resource management agencies in their watersheds.



Preface

As various sections of this report discuss, the water resource management needs of the nation have been and continue to be addressed by a number of interstate and international agreements. Despite different needs, purposes and varying legal doctrines among the nation's rivers and watersheds, there has nonetheless been considerable engagement in cooperative and collaborative agreements between states, tribes and nations. In an effort to demonstrate the widespread and far

reaching extent of such agreements, this report is prefaced with the map below depicting the active organizations in existence in 2020, categorized within three distinct purposes. See Appendix J for a full listing and description of the interstate and international compacts shown below, and read on to learn more about the history, drivers, and lessons learned from the creation and operations of these organizations.



Interstate Water Solutions: Lessons from the Past and Recommendations for the Future — A Look toward 2050

A Project of the Interstate Council on Water Policy

I. Introduction

For decades, water managers and policy-makers alike have espoused the value of managing water for multiple purposes on a watershed basis. Traditional methods for water allocation, such as litigation, proved to be inadequate on a multistate watershed scale. Despite the fact that the comprehensive watershed approach has become the standard management philosophy, little effort has been devoted to understanding its practical implementation challenges. The fact that watersheds frequently span political boundaries and can be defined at various geographic scales complicates the challenge of balancing water supply, flood protection, pollution control, fisheries management, recreational use and other significant demands. In addition, these management challenges frequently involve several scientific disciplines and the distinct management priorities of several government agencies. The legal systems governing water law also vary significantly across the country with the eastern half of the country generally following riparian laws while the western half are generally prior appropriation states. In brief, there are numerous complications and barriers to managing water in a more integrated fashion, even before we strive to summarize and explain the issues and options to sustain public support and confidence.

Fortunately, there is much to be learned from our history and contemporary experience. Interstate water conflicts and management challenges have given rise to a wide variety of institutional arrangements, ranging from those that are temporary and *ad hoc* to those that are formally structured and authorized by law. In addition, there is enormous variety in geographic scale, types of water issues addressed, and range of parties or agencies involved in these interstate arrangements.

The Interstate Council on Water Policy (ICWP) is ideally positioned to move the practice of water resource planning, policy and management from the present toward 2050. Central to its mission is its role as a catalyst in the reformulation of national water policy, and as a leader in integrating diverse interests to promote comprehensive approaches to policy making at the state, interstate and federal levels.

A. Study Goals and Objectives

The purpose of this report was to document and evaluate the various interstate water management approaches and to recommend options for bringing better information and more effective management strategies to bear on resource decisions in the future. Objectives included:

- Identify the various institutional mechanisms available for addressing interstate water management, and determine their strengths and weaknesses.
- Document the historical and current role of the U.S. federal government in interstate water issues, and identify the various statutory and administrative approaches.
- Examine the geographic scale and extent of interstate water issues, and the ways that they affect the structural and operational characteristics of institutional mechanisms and management approaches.
- Using a case study approach, examine contemporary regional water management approaches and issues to determine “lessons learned” for broader application.
- Develop recommendations for future approaches to interstate water management as follows:
 1. the appropriate future role of federal agencies and their relationship to current/ future interstate institutions; and
 2. common themes and guiding principles for effective interstate water management.

The report presented herein is an update to a report originally published by ICWP in 2006, *Interstate Water Solutions for the New Millennium*. Material from that report not carried forward into this update can be found in the appendices to this report.

B. Study Impetus

2006 Report Update In the few years prior to the first edition of this report in 2006, ICWP members noted a renewed interest in approaching water resource planning and management on a watershed basis, including in situations where hydrology transcended geo-political boundaries and suggested the need for multi-jurisdictional arrangements. This interest was evident in statements released by federal agencies, specifically the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE or Corps), beginning in about 2002. Policy memoranda and strategic planning documents emphasized the importance of interstate, watershed-based management approaches and expressed a commitment by the federal government to take an active role in such efforts. Complementing these agency-specific endorsements of multi-jurisdictional governance arrangements was a pronounced trend toward large scale, ecosystem-based restoration programs such as the Everglades Restoration Plan and the Chesapeake Bay Program.

The priority interests of ICWP were well aligned with the renewed interest in watershed-based management. In the decades prior to production of the 2006 report, ICWP played a key role in the late 1960s passage of the Water Resources Planning Act and in the 1970s advised the U.S. Water Resources Council established under that Act. The organization was later influential in important provisions of the 1986 Water Resources Development Act (WRDA) and following that promoted the development of and dialogue surrounding a National Water Policy Charter. A 1997 national survey revealed consensus opinion that multi-jurisdictional river basin organizations should play a prominent role in water resources policy and management. The survey, in conjunction with the other initiatives, collectively shaped the basis for the 2006 study and its associated recommendations. The recommendations were meant to serve as an action agenda to improve water resource policy and management processes through enhanced use of current and potential capabilities of interstate institutional arrangements. This updated report is intended to ensure that the examples herein remain relevant and contemporary, and that any additional lessons learned and federal landscape changes are captured.

A more detailed description of the impetus behind the original report in 2006 is offered in Appendix B.

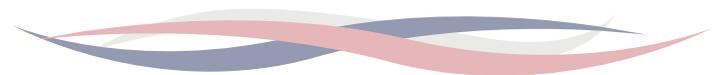
C. Methodology

The project methodology supports the study goal: to document and evaluate the various interstate watershed management approaches in the interest of developing recommended options for the future. The project builds upon the aforementioned ICWP survey and a body of literature concerning past, present and prospective future approaches to watershed-based management. Complementing this research was an outreach effort that yielded practitioner-prepared case studies documenting instances where interstate and other multi-jurisdictional approaches were successfully employed to implement a watershed-based solution to resource management.

Three key questions guided the analysis and case studies:

- What are the various institutional mechanisms for addressing interstate water management that have existed in the past and are currently being employed in the United States and what are their respective strengths and weaknesses?
- What is the current and historic role of the federal government in interstate water issues and institutions?
- What common elements for effective regional water management have been seen across the country and to what degree can those elements be incorporated into future interstate situations?

The ICWP membership, acting through a Project Steering Committee, developed the scope of work for the study and solicited federal funding support for its conduct. The committee retained the services of a consultant to conduct the research, edit case study contributions, generate the first draft of this report and propose a set of recommendations. The draft report and recommendations have been reviewed by the Steering Committee and the ICWP membership, revised by the Steering Committee and finalized by the ICWP Board of Directors for presentation to the larger community of water resources leaders as the basis for discussion and enhancement of the contributions that interstate water organizations can make toward well-informed, collaborative stewardship of water resources across the US.



II. Background

A. Watershed-based Approaches to Resource Management – A Rationale

As discussed in some detail in a later section, multi-jurisdictional, watershed-based approaches to resource management have been a focal point for institutional experimentation in North America for more than two hundred years. While the level of application and acceptance of such arrangements has varied widely over that time, they have proved to be invaluable tools for transcending the inherent limitations of resource management by geo-political boundary.

Past experience has shown that the design and operation of multi-jurisdictional institutions requires a significant investment of time, energy and political capital. Traditional institutions (i.e., those based on geo-political boundaries) are typically protective of their sovereignty and established authorities, and tend to resist any institutional innovation that threatens to compromise such. Thus, it is not surprising that most multi-jurisdictional institutions have their origins in some form of real or perceived crisis of sufficient magnitude to overcome inherent barriers.

Advocates of multi-jurisdictional resource management point to a number of characteristics that, individually and collectively, offer a compelling rationale for such institutional arrangements. Principal among them are the following:

- **Strength in numbers/enhanced voice:** Multi-jurisdictional institutional arrangements, such as interstate commissions (among many other forms), provide individual members with an opportunity to speak and act with a single, harmonized voice. Such unity can significantly enhance political impact; provide an effective platform for “collective bargaining/negotiating” with other entities (e.g., federal agencies); and garner increased public and political visibility for issues of shared concern. Of particular appeal is the way that multi-jurisdictional institutions “level the playing field” and allow member jurisdictions to act and interact on a co-equal basis.
- **Monitoring and surveillance:** Ecosystem assessment programs provide the science-based data and information critical to program design, implementation and evaluation. Such programs can be prohibitively expensive for a single jurisdiction and, further, to maximize their value, they need to be implemented on a watershed basis. Multi-jurisdictional institutions have often been used as an efficient and cost effective vehicle for funding and operating integrated programs throughout the watershed of interest.
- **Pooling/ accessing resources and expertise:** Multi-jurisdictional institutional arrangements allow individual members to leverage limited resources to dramatically increase capability in areas such as assessment, research, program design and implementation, and policy development, among others. Vesting these functions in a jointly supported institution for a defined watershed obviates the need for parallel efforts in the individual jurisdictions. In addition, such institutions generally attract the involvement and financial support of (non-member) cooperating entities, further leveraging member contributions to institutional operations.
- **Ecosystem- based management:** Now widely accepted as a fundamental operating principle, the ecosystem approach to resource management recognizes the interrelatedness of ecosystem components and an associated need for a comprehensive, integrated and multi-media management strategy. The success of such an approach requires that the management unit be hydrologically based (i.e., watershed) and not constrained by the artificial confines of geo-political boundaries.
- **Regional priority setting:** Establishing priorities for resource management is a necessity, given that the nature and extent of management needs within a watershed typically exceeds the resources available to address them. Individual institutions operating within such a watershed find that inefficiency and unwarranted redundancy can be avoided through a single priority setting process. Further, experience has shown that the compilation and advocacy of a single, multi-jurisdictional list of priorities is far more effective than the development of, and competition between multiple lists of (often conflicting) priorities compiled by individual jurisdictions.
- **Communication, collaboration and technology transfer:** Collegiality is one of the most compelling incentives for individual jurisdictions to participate in a multi-jurisdictional forum. Information exchange with like-minded professionals enhances efficiency, fosters partnership, and encourages the type of innovation and creative thinking needed to advance the practice of watershed- based resource management.
- **Uniformity, consistency and program effectiveness:** History is replete with examples of resource management initiatives whose results were negated or otherwise compromised due to inconsistencies in how multiple jurisdictions within a single watershed addressed a shared issue (e.g., pollution sources, fishing limits, invasive species prevention and control). Ensuring some

degree of uniformity from one jurisdiction to the next has been a primary motivation for the establishment and operation of many multi-jurisdictional institutions over the years.

- **Protecting jurisdictional interests:** Despite the broad acceptance of multi-jurisdictional institutions (at least at the conceptual level), traditional levels of government remain highly protective of their sovereignty, and generally hesitant to vest even a modest portion of it in a third party. Thus, jurisdictions can be compelled to participate in a multi-jurisdictional institution as a means to “keep an eye on” neighboring jurisdictions and other parties that may have goals contrary to their own. In the course of evaluating the pros and cons of various alternatives, etc, each participant gets a chance to understand and demonstrate respect for the needs and contributions of other communities. This can provide an invaluable opportunity to earn a measure of trust and credibility that is very difficult to achieve otherwise.

B. The Evolution of Multi-jurisdictional, Watershed-based Management

[This section is abridged from the original 2006 report with supplemental material added. For the original unabridged version, please see Appendix D.]

There exists a long history of watershed-based management approaches, and much can be learned from the institutional experimentation and the resultant successes and failures. In fact, our founding fathers quickly realized the value of water resources in building the new nation and that the established geo-political boundaries presented challenges in managing those resources. The interest in management of water resources in a less-centralized, watershed-based approach has parallels to early federalism arguments, and proponents of the approach believed effective governance followed a “bottom-up” approach with local accountability.

The evolution of multi-jurisdictional, watershed-based management in North America can be conveniently described by characterizing the significant features of six eras spanning 200+ years of experimentation. Briefly, they are:

1. **The Resource Development Era.** Spanning from our early history through the middle of the 19th century, interstate arrangements of this era were typically established on an ad hoc, issue-specific basis. Land development in an expanding nation was typically an impetus, with interest in waterborne transportation and broadening existing

physical limitations as major emphases. Structural development was the priority, with little attention to environmental considerations.

2. **The Transition Era.** In the latter half of the 19th century ad hoc, issue-specific commissions gradually gave way to more permanent commissions with multi-dimensional water resource development responsibilities. This era was characterized by a growing infrastructure of legislatively authorized institutions with a dominant federal influence; either a single or modest set of objectives; and an orientation toward structural alteration of the hydro-geographic system. However, as the environmental consequences of development became apparent, the foundation for the concept of management by drainage basin was born.
3. **The Federal Leadership Era.** Covering the first half of the twentieth century, this era was characterized by landmark federal legislation, an explosion of federally established and federally dominated water management institutions, an acceptance of multi-objective, comprehensive planning, and heated debate on the role of regional, multi-jurisdictional governance in the U.S. system of federalism. Driving factors ran the gamut, including “reclamation” (irrigation), navigation, flood control and hydropower, among others. The 1920s and 30s saw the federal government embrace and dominate the practice of comprehensive basin planning through various pieces of legislation such as the Federal River Act of 1920, the Colorado River Compact in 1922, the Rivers and Harbors Act of 1927, and the Flood Control Act of 1938, among others.

The development and ratification of numerous interstate compacts during this era, apportioning the flow of interstate waters among the states, of several international treaties governing the sharing of streams by the United States with Mexico or Canada, and numerous court decisions complicated the federal government’s efforts to comply with state or territorial water law.

Despite vocal detractors, such arrangements persevered, and the balance of the Federal Leadership Era was characterized by continued institutional experimentation designed to enhance communication and coordination among the increasing number of federal agencies and other public entities involved in water resources management.

4. **The River Basin Era.** Extending from 1940 through the mid-1980s, this era was characterized by unprecedented institution building at the river basin level; an assertion of state stewardship responsibility; emerging federal/ state partnerships; and a decided emphasis on environmental protection and resource management, as opposed to development. As in the 1930s, vocal detractors warned against the perils of regional management subjugating the sovereignty of states but, these concerns notwithstanding, the River Basin Era gave us the Water Resources Planning Act of 1965 and, with it, the U.S. Water Resources Council, a series of federal/state river basin commissions (Title II commissions), and a program providing financial assistance to states for comprehensive river basin planning. However, President Reagan through Executive Order in 1981 dismantled Water Resources Planning Act institutions, thus signaling the beginning of the end of the River Basin Era

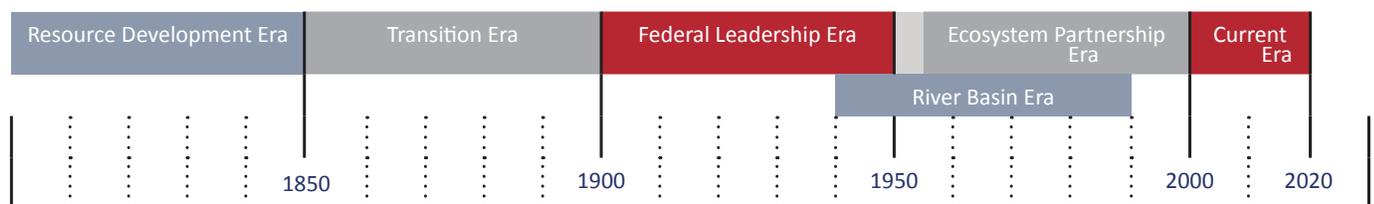
5. **The Ecosystem Partnership Era.** The origin of this era is found in the early/mid 1950s, and its hallmark is the widespread adoption of ecosystem-based management principles and movement from a top down, command and control, government dominated approach to a bottom up, partnership-based, inclusive approach. Multi-jurisdictional water resource management institutions with a basin orientation enjoyed a renaissance in the Ecosystem Partnership Era, pronounced by the re-emergence of large scale, ecosystem based planning reminiscent of the Federal Leadership Era, but with a much more prominent role for the states.

The emergence of the Ecosystem Partnership Era was not without its challenges for interstate organizations. Significant federal government “downsizing” in the mid-1990s, for example, prompted public entities at the state, local and regional levels to pursue new types of partnerships and creative funding arrangements to accommodate loss of federal funds.

6. **The Current Era.** Over a span exceeding 200 years, a grand and continuing institutional experiment in water resources planning and management has seen the following:

- “Top down” mandates have given way to “bottom up” initiatives.
- A vertical management hierarchy has given way to a horizontal approach.
- A command and control, regulatory emphasis has been tempered by a partnership-oriented, voluntary compliance orientation.
- Funding formulas exclusively or primarily dominated by federal appropriations have been replaced by cost share arrangements and other creative funding mechanisms.
- A predisposition to building a legal and institutional infrastructure has been replaced by an emphasis on fine-tuning the existing infrastructure.
- Designation of geo-political boundaries as the basis for planning and management efforts has given way to a basin-oriented approach.
- The single objective, single media approaches of the past are now multi-objective and multi-media in nature.
- An environmental ethic has been broadened to embrace the notion of “sustainability” and the attendant integration of environmental, economic, social and cultural considerations.
- Non-governmental stakeholders, once the recipients of policy decisions, are increasingly partners in the development and implementation of those decisions.

Singly and collectively, these and related characteristics of the current era suggest a tremendous opportunity for established regional, multi-jurisdictional institutional organizations to realize their full potential in the restoration, protection and sustainable use of water resources. This potential is and will continue to be influenced by several emerging factors that are transforming how states and interstate organization consider and determine appropriate management of water resources. (See Section II-D.)



Six Eras of Watershed-based River Basin Management in North America

C. The Role of Interstate Organizations

As noted above, the role of interstate organizations has evolved considerably over the years. There are numerous approaches to management of interstate water resources, including interstate compacts, interstate associations, federal-state partnerships, and federal-interstate compacts. These structures address problems that transcend political boundaries and functional responsibilities. Water supply crises and disagreements, complex point- and non-point source pollution problems, ecological restoration, public health threats, protection of commercially significant resources and climate change are among the growing number of cross-boundary challenges that suggest a growing role for interstate organizations with significant third party authority. At their most basic level, these institutions provide another opportunity to overcome the parochialism and boundaries that can inhibit traditional agencies whose responsibilities are defined by geo-political boundaries and a “stovepipe” approach to the assignment of resource management issues. Whether national policies or priorities are clear or ill-defined for a given issue, watershed and interstate organizations typically follow a collaborative, ecosystem approach that infuses local values and innovative methods, along with additional sources of funding.

Beyond the “typical” characteristics of interstate organizations listed above, a variety of widely divergent forms, functions and authorities have evolved to meet specific needs. The interstate and watershed organizations in existence today range from low budget, *ad hoc* arrangements without regulatory authority, to treaty- or legislative-based commissions with large staffs, significant funding, and a range of planning, regulatory and financing authorities. They represent an adaptive means for ensuring cooperative action among the states.

With notable exceptions, including those that are typically brought on by a pronounced water management crisis, many interstate organizations exercise “soft management functions” such as information sharing, coordination, research, data collection, information management, technology transfer, policy development and analysis. This reflects a historical tendency of state and federal agencies to retain their “hard authorities” and to invest “third party” entities with significant authority only when the more traditional and politically conservative approaches prove inadequate. Interstate water compacts may establish a commission, which is responsible for negotiating and administering the allocation. The commission also can provide a forum for ongoing collaboration and negotiation and allow its parties to adapt to changing water needs and political and social concerns. Interstate compacts are contracts between two

or more states creating an agreement on a particular issue, adopting a certain standard or cooperating on regional or national matters. They are the most powerful, durable, and adaptive tools for ensuring cooperative action among the states. Where it is possible to agree on the investment of adequate legal authority in an interstate organization, the benefits are substantial. Two notable examples are the Delaware River Basin Commission and Susquehanna River Basin Commission, each of which is vested with full regulatory authority and, by their operation, facilitates a joint exercise of the sovereign powers of their constituent states; others include the Ohio River Valley Water Sanitation Commission and Interstate Environmental Commission.

Interstate compacts are contracts between two or more states creating an agreement on a particular issue, adopting a certain standard or cooperating on regional or national matters. They are the most powerful, durable, and adaptive tools for ensuring cooperative action among the states.

Where the states are reluctant, for whatever reason, to invest the necessary authority, less formal organizations may nonetheless yield substantial influence by gaining public and political support for programmatic solutions and engaging a peer review process for enhancing education and accountability.

D. Watershed-Based Management Challenges and Opportunities

As we update this report, we find that watershed-based institutions—particularly at the interstate level—have become a solid feature in the national landscape of water resource governance. The future, however, is filled with challenges while at the same time offering continued opportunities.

Summary of Emerging Factors

- In a classic case of the pendulum swinging, strong anti-regulation sentiments are subjecting all government institutions to scrutiny and the threat of dissolution, particularly those such as interstate organizations that may be viewed from a casual perspective as redundant with state and federal agencies.
- Similarly, rising deficits and a general aversion to government spending are impacting the funding available for interstate organizations to carry out their missions and threaten the ability of federal agencies such as USGS, USACE and NOAA to continue to provide the data collection and forecasts that state and interstate water resource management agencies rely on.

- Dramatic expansion of technology, particularly as it relates to computing power and the ability to collect and process massive amounts of data, are offering assessment opportunities that significantly refine and broaden our monitoring and predictive capabilities and expand our very understanding of the interactions between water quality and quantity, between land and water, between groundwater and surface water, and between climate and hydrology.
- The apparent consequences of climate change are upheaving and rendering ineffective the plans, strategies and assumptions that have served water resource managers for decades, while at the same time posing new, complex management challenges.
- Focus on eco-system services and water demands for instream flows, estuary health and other environmental needs have expanded in the Current Era as described above. Water management adaptations to meet Endangered Species Recovery plan goals have also expanded.

Challenges and Opportunities

Water resources planning and management in the US has matured considerably over the past 70 years, and the comprehensive, “watershed” approach to problems and opportunities now enjoys near-universal acceptance, at least at the conceptual level. Interstate agencies have flourished, yielding a multitude of success stories that demonstrate their contributions in terms of efficiency, effectiveness and, ultimately, improvement to the protection and use of this precious resource. Their leadership, facilitation and support in assessment, planning, coordination, policy development, advocacy and project implementation is often so smooth that their efforts may be taken for granted.

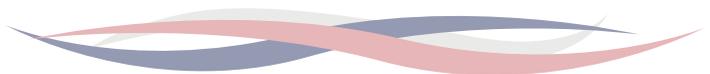
An emerging challenge is that in recent years, increasing fiscal austerity at the federal and state levels has translated into funding limitations (or reductions) for interstate organizations that are largely dependent upon such funds for their operations. Continuing reluctance to invest interstate organizations with substantial authority limits the potential of these organizations, particularly when potential solutions may alter established resource management paradigms or jurisdiction. Stakeholders are more diverse and better informed, and their expectations for governance are high. The cost of “reactive management,” responding to disaster after-the-fact (instead of anticipating and avoiding damage and disruption), and then allowing communities to reestablish in the wrong places or with inappropriate designs or technologies, is difficult to stop, although we have ample

evidence that the cost is exorbitant. Simply put, many of the “old models” for water resources management struggle too hard and we need to open the path to innovation and collaboration.

The question at this time is not whether interstate organizations as an institutional form will withstand these and related challenges—they most assuredly will. Rather, the question is whether they will reach a plateau in their evolution, or move beyond the challenges of the day to assume leadership as innovators in water resources planning and management.

The complexity and consequence of today’s water resources challenges suggest that interstate organizations can thrive in the future, provided that the water community leadership is active in cultivating, applying and promoting their potential. The need for creative, collaborative initiative is very strong. The issues are increasingly complex, the pressures on land use and water development in many areas are approaching limits of sustainable management, while the scientific data and analysis are more sophisticated and the political arguments are often heated and difficult to focus. Interstate organizations have the ability to build on past successes and demonstrate the type of institutional innovation needed to serve the needs of our communities in the midst of 21st Century challenges.

Challenges notwithstanding, there are also opportunities in the current era. Congress has successfully re-established a pattern of adopting incremental changes to its WRDA every two years. While federal funding limitations are challenging, that reality has spurred an openness to revising WRDA to include innovative partnership concepts between USACE and state/interstate organizations. It is also our expectation that the growing pressure to react to climate change will provide an opportunity for states and interstate organizations to re-emphasize the need for comprehensive watershed-based resource management and to offer compelling arguments for supportive state and federal funding.



III. Multi-jurisdictional Approaches to Watershed-based Management

A. An Overview of Institutional Forms

Any systematic effort to develop and employ innovations in institutional design for water resources management requires a multi-faceted approach. A solid understanding of institutional evolution allows one to extract “lessons learned” for prospective future application. An analysis of current planning and management challenges—and the means by which present institutions are addressing them—helps identify the nature of unmet needs and the extent to which “building blocks” for institutional change are available. Finally, a look ahead to emerging water resource management needs—and those just over the horizon—offers an opportunity to design institutions that learn; that can adapt to evolving problems and opportunities, and can accommodate and address those that simply cannot be predicted.

History offers us three realities of institutional performance with regard to water resources management at the multi-jurisdictional level. First, institutions play a critically important (yet seldom appreciated) role in the overall policy and management process. At any level of governance, institutions do far more than simply implement policy established by elected officials. They can play a pivotal role in its development, interpretation and advocacy; how it is perceived by affected communities; and when, how and if it is implemented. Hence, a far greater understanding of the rationale for, and role of, multi-jurisdictional institutions is critical to the future of the resource.

Second, history reveals a longstanding yet poorly articulated sense of dissatisfaction with water resource management institutions. It is generally recognized that institutional advancements over the aforementioned eras have been significant, and that the accumulated set of planning and management principles (particularly as they relate to multi-jurisdictional, watershed-based approaches) has contributed in an equally significant way. Equally recognized, however, is the fact that institutional innovation and change can lag far behind the needs of the resource, holding back (rather than facilitating) the application of rapidly emerging science and technology. Schon (1971) describes such institutions as “memorials to old problems” where the “organizational equivalent of biological death is missing. In sum, institutional design and application continues to be a grand, centuries-old experiment and, consequently, the governmental landscape is littered with various forms and approaches to water resources management: some abandoned others

operational, yet largely ineffective, and still others that hold great promise. Distinguishing between them—and learning from these “experiments”—is fundamental to the future of the discipline.

Third, it is abundantly clear that institution-building for water resource management is as much an art as it is a science. While lessons learned from past experience are exceedingly valuable, there exists no single prototype- or formula that can be universally applied to any given watershed and its associated management needs. Rather, the focus must be placed upon heuristic tools—rules of thumb—that provide general guidance while recognizing the unique nature of every watershed. Derthick’s observation in the mid-1970s remains true today: “When it comes to regional organizations, what works at all and what works best remain unsettled, but these questions are much more open to answers from observations than ever before.”

Simply stated, much can be gained from a thorough analysis of institutional experimentation and from the associated successes, failures and innovations associated with various forms of regional, multi-jurisdictional governance. To assist in identifying promising characteristics of institutions for the new millennium, a descriptive inventory of fifteen distinct institutional forms was developed, representing the array of predominant forms that have been employed in North America over the last century. A summary analysis is presented below, organized around four broad categories of institutional arrangements. The analysis is followed by presentation of significant findings. Appendix I provides additional detail on each of the fifteen forms, including description, brief historical perspective, selected strengths and weaknesses, and an assessment of its prospective contribution to institution-building for the new millennium.

To assist in identifying promising characteristics of institutions for the new millennium, a descriptive inventory of fifteen distinct institutional forms was developed, representing the array of predominant forms that have been employed in North America over the last century. A summary analysis is presented below, organized around four broad categories of institutional arrangements.

The first category consists of **multi-jurisdictional compacts, treaties, conventions and agreements**. Such arrangements are highly formal, legal constructs that are based in law or official action by the respective jurisdictions. These are among the most powerful institutional arrangements for multi-jurisdictional management, often supported by implementing agencies with binding decision making

authority or, at the minimum, highly influential quasi-judicial, advisory and/ or recommendatory functions. Within this category are found **interstate, federal-state, and state-foreign power compacts**. The first two are among the more common forms of institutional arrangements for multi-jurisdictional water resources management in operation today. Among many others, examples include the Great Lakes Commission, Susquehanna and Delaware River Basin Commissions, the Interstate Commission on the Potomac River Basin, and the Ohio River Valley Water Sanitation Commission (ORSANCO). The third institutional form has seen limited application in areas outside of water management, but has potential applicability along the international boundaries (i.e., Canada, Mexico) of the United States with respect to water quantity and quality management issues. **Treaty-based arrangements** (e.g., US-Canada International Boundary Waters Treaty of 1909) are similar in that they enjoy a solid legal basis founded in formal, binding action at the highest level between party nations. Bi-national conventions and agreements enjoy a significant though lesser stature. They are not subject to the rigors of the treaty-making process but, nonetheless, represent the formal commitments of two nations. US-Canada examples include the 1954 Convention on Great Lakes Fisheries and the Great Lakes Water Quality Agreement, first signed in 1972.

The second category consists of **multi-jurisdictional councils and commissions** where a range of state and federal agencies organize themselves on a largely co-equal basis to address shared issues and opportunities within a defined watershed or region. Federal and state law, interagency memoranda of agreement and legislative resolutions are among the mechanisms for establishing these entities. Communication, coordination and collaboration—either on a topic-specific or more general basis—is generally the impetus for formation. This institutional form recognizes the complexity of multi-jurisdictional governance, and the overlapping and sometimes competing authorities between and among units of government at all levels. It also recognizes the need to transcend the traditional focus on geo-political boundaries, and harmonize efforts on a hydrologic, or watershed basis. The collaborative nature of water management in the federal system is seen in such arrangements as **interstate councils and commissions, state-federal commissions, and basin interagency committees**. The Western States Water Council and Council of Great Lakes Governors are examples of interstate arrangements, as are the various multi-state associations (e.g., Upper Mississippi River Basin Association, New England Governors Conference) that emerged following the demise of the Title II (federal Water Resources Planning Act) institutions. The same notion of communication,

coordination and collaborations—as well as harmonizing national policy—is found at the **international level** through institutions such as the Commission on Environmental Cooperation (US-Canada-Mexico), the International Boundary and Water Commission (US-Mexico), and the International Joint Commission and Great Lakes Fishery Commission (US-Mexico). At the single state level, **intrastate special districts** provide a mechanism for state and local governments to address issues within shared watersheds, where inter-jurisdictional complexity can rival that found in interstate and international settings.

The historically significant leadership role of the federal government is represented in the third category of institutional arrangements, which is characterized by federally-led multi-jurisdictional arrangements. The **federal regional council** form has been in common usage since the early decades of the 20th century, instituted primarily as a mechanism to coordinate the actions of multiple federal agencies in a defined region. Ranging from short-lived, issue-specific bodies to long-standing entities with a national focus, such councils have been established through mechanisms as diverse as federal legislation and informal interagency agreements. The federal regional agency, an institutional form uniquely characterized by the Tennessee Valley Authority, is indicative of a “command and control” approach to regional governance whereby the Congress vests a single entity with comprehensive authorities on a multi-state, basin-oriented basis. Also characteristic of the historic federal leadership function is the single federal administrator institutional form, whereby a single individual is empowered by Congress to exercise binding authority over water management decisions. Examples include vesting the Secretary of the Interior with water allocation authority under provisions of the Colorado River Compact, and the U.S. Supreme Court appointment of a Special Master to oversee the Lake Michigan Diversion at Chicago.

The fourth category of institutional forms consists of **entities that operate in a quasi or non-governmental setting**, outside of the typical arrangements that feature a central role for state and federal agencies. The **international court** is one such mechanism, an entity of “last resort” to which water management disputes between two or more nations are referred. While such a function is provided for through the aforementioned International Boundary Waters Treaty, it has never been invoked; the International Court of Justice remains the most relevant example of this institutional form. The **federally chartered/private corporation**, best characterized by quasi-governmental entities in the United States and Canada (e.g., St. Lawrence Seaway Development Corporation, St. Lawrence Seaway Management Agency) has seen limited employment, and typically in a narrowly

focused area of resource management. Finally, **non-governmental arrangements**, ranging from academic institutes to special interest advocacy groups, have taken on an increasingly broad array of multi-jurisdictional functions, including planning, research, policy analysis, coordination and outreach, among others.

Although not an institutional strategy exactly akin to the four categories described in this section, several contemporary **interstate river basin-wide management groups focused on water dependent species listed as threatened or endangered** under the Endangered Species Act have been formed since this original report was written in 2006. The Upper Colorado Endangered Fish Recovery Program was in place in 1988, and since its formation, several other river basin organizations centered on ESA recovery implementation have been organized and chartered. The Platte River Recovery Implementation Program focuses upon the Central Platte River region of Nebraska and the Missouri River Recovery Implementation Committee works with the US Fish and Wildlife Service and the USACE in the recovery of pallid sturgeon and 2 bird species (Piping Plover and Interior Least Tern) in the Missouri River basin. Implementation committees with broad representation serve in an advisory capacity to the federal agencies with direct management oversight in the recovery of the listed species. Two of these programs are described in more detail in the Case Studies section of this report. As compliance with the provisions of these recovery programs provides ESA consultation coverage, these programs enable continued and expanded water use and management to proceed while simultaneously hitting recovery targets for the species of concern.

B. Lessons Learned and Applicability to Interstate Organizations

More than two centuries of institutional experimentation have yielded a multitude of lessons that have shaped the evolution of interstate governance. As “learning organizations,” they have benefited from the individual and collective successes and struggles of their predecessors. And, while the “experiment” continues to this day, their success is beyond question. Interstate organizations have progressed from simple forms and highly contentious beginnings to sophisticated entities that are woven into the very fabric of governance.

As current interstate organizations are refined and new ones developed, “lessons learned” from past experiences can be valuable. Specifically, four six broad areas of advice are particularly relevant for officials considering the

establishment or refinement of an interstate organization for water resources management.

- **The “transaction costs” associated with establishing (or significantly refining) an interstate organization can be high, but the payoff can far exceed the initial investment.** Institutional inertia can be a significant deterrent to the formation of an interstate organization, explaining why most are established in response to real or perceived crises, rather than in the interest of anticipating and avoiding such crises. Challenges include generating the requisite unanimity among prospective member states regarding legal, structural and operational characteristics; securing legislative support at the state level (and federal level if a compact is involved); establishing and pursuing shared priorities; and establishing a “niche” and power base within the larger institutional ecosystem. History has demonstrated, however, that the expenditure of time, labor and political capital will ultimately yield significant, measurable benefits for the resource and the member jurisdictions involved. Thus, officials exploring the establishment/ refinement of such an institution must have realistic expectations and an understanding of the long- term nature of both the investment and resultant dividends.
- **Establishing interstate organizations that “learn” is essential to ensure that authorities and functions remain relevant over time.** Donald Schon once described government institutions as “memorials to old problems” in which the “institutional equivalent of biological death is missing.” His reference speaks to the realities of institution building, where the tendency is to look only at the problem or crisis prompting the action, rather than at the longer term relevance of the institution to problems and crises that

State officials designated as the “architects” of an interstate organization are well advised to look several decades beyond the current crisis, and set in place organizational authorities, structures and operations that are sufficiently broad and resilient to ensure organizational relevance for an extended period.

are well beyond the horizon. State officials designated as the “architects” of an interstate organization are well advised to look several decades beyond the current crisis, and set in place organizational authorities, structures and operations that are sufficiently broad and resilient to ensure organizational relevance for an extended period. This is a particularly significant lesson, given that the governance landscape is cluttered

with agencies and organizations that remain intact yet have compromised capabilities vis-à-vis current issues and needs. Fortunately, when collaborative problem solving is effective, especially in organizations that engage the broader community of interests within a watershed, it tends to attract related challenges, even though they might fall outside the original mission of the organization. Adaptive flexibility is essential.

- **Exploiting the full potential of existing interstate organizations should precede any effort to establish a new institution.** Political leaders and, to a lesser extent, policy officials have historically had a tendency to look past the potential of existing institutions when exploring options to address a newly emerging issue. This tendency is due to both the perceived political appeal in announcing a new organization, and also a failure to fully understand the current (and prospective) authority of the existing organization. Given the time requirements of organizational development (e.g., the many years typically involved in establishing an interstate compact), a critical first step is to characterize current organizations and their current and prospective authorities and capabilities. Given the mature state of governance arrangements in North America, it is highly likely that any given region or watershed will have multiple interstate organizations with some degree of water resources management authority. Very often, the potential for collaborative problem solving and accomplishment of existing organizations is considerably greater than their current expectation or authority.
- **Institution-building exercises must be tailored to the unique circumstances at hand (e.g., resource issues, political considerations, jurisdictional preferences); there is no generic model- or set of models that can be universally applied.** While institutional forms for water resources management can be broadly categorized for descriptive purposes, no two organizations share identical structural and operational characteristics. Officials charged with institutional design or refinement can certainly benefit from similar experiences in other regions, but need to recognize that “form must follow function.” The nature of the resource management issue or problem must be fully characterized before any prospective institutional response is formulated.
- **Legal Framework - “American jurisdictions can be grouped roughly into three doctrines of water law: riparian, prior appropriation, and hybrid states.”** This legal framework influences the powers and roles of interstate water resource management agencies.

- **Even successful and well-run interstate organizations must guard against shifting political winds and changes in momentum.** Forward-thinking elected officials that understand the importance of cooperative agreements eventually leave office, and their replacements will often not have instilled in them an appreciation for the big-picture role the interstate organization plays. Challenges will include aggravation against a perceived loss of state sovereignty, short-sighted decisions that reduce or eliminate supportive funding for organization operational needs, and initiatives to “take back” some of the functions that were duly delegated to the interstate organization in the interest of comprehensive multi-jurisdictional management. Such organizations should be proactive in frequently affirming their purpose and the benefits the members jurisdictions derive from their activities.
- **The advocacy needed to achieve reasonable funding from the signatory parties will become significant after some period of time following establishment of the organization.** Despite broad initial support, competing budgetary priorities will likely result in gradual reductions to member support of the organization. If the organization does not have revenue generating authority (such as taxing or fee imposition), it will rely increasingly on grants for funding, which may focus agency resources on efforts that are ancillary to the broader purpose, or will spend an inordinate amount of time and money imploring its members to contribute sufficient funding to allow the organization to complete even its most basic responsibilities. Justifications for sufficient annual appropriations should speak to specific benefits member jurisdictions receive, align with priorities of the jurisdictions, and offer compelling consequences of continued insufficient funding.

IV. The Federal Role in Interstate Water Management

A. Historical and Current Federal Interest

The federal government has played a subtle, yet pervasive role in the evolution of interstate approaches to water resources planning and management. This role has its genesis in the earliest efforts to organize geo-political jurisdictions around hydrologic boundaries, and has increased in significance over time. In fact, the great majority of the fifteen generic institutional forms for water resource management identified earlier have been profoundly influenced by a federal government presence.

The nature of the federal role has numerous dimensions. In some instances, the role is an overt one, involving full membership, chairmanship or veto power over policy decisions. In others, the role is support oriented, with a federal official serving as advisor, observer, technical resource, and collaborator or implementation facilitator. Often, the federal government has often provided the initial motivation and momentum for the formation of interstate organizations.

The role of the federal government in interstate water resource management has evolved substantially over the years, as evidenced by the six eras described earlier. Through the middle decades of the 20th Century, it held a strong-to-dominant role at the regional level, typically the lead entity in interstate initiatives for water resources restoration, protection and development activity. This role moderated in subsequent years, as states developed stronger expertise, asserted a more independent stewardship role, accepted greater responsibility for funding and federal/ state partnerships and collaborative arrangements emerged. The complex, ongoing negotiation and litigation of water supply, pollution control and other water resource management parameters for the Apalachicola, Chattahoochee and Flint (“ACF”) River system in Georgia, Alabama and Florida provides a prime indication that the federal role remains strong, particularly in areas where existing/ potential water use disputes among states calls for an independent assessment, arbitration and decision making functions. Generally, the federal influence has been more pervasive in the west states, but the protection of water quality and conservation of endangered species have directly involved the federal agencies in regulatory, policy and development decisions across all 50 states in the past 30 to 45 years. One set of relationships, however, is constant: fundamental state reliance on the federal government for scientific information, technical assistance and funding.

From an operational perspective, the federal government provides both positive and negative incentives that help advance the design and operation of interstate organizations for water resources management. On the positive side, such incentives include financial support, organizational support, technical assistance, and provision of authorities that provide nonfederal (and non-governmental) entities with a basis for implementation activity. Negative incentives are predominantly associated with federal regulatory authority (e.g., elements of the federal Clean Water Act and Endangered Species Act). In the interest of avoiding conflicts and potential litigation, states often find that partnering with federal agencies can open up lines of communication and prevent or resolve problems that might otherwise arise.

While the historical role of the federal government vis-à-vis interstate organizations is generally quite positive, some barriers must be addressed if the full potential of these organizations is to be realized. These barriers tend to be based more on issues of policy and procedure than on legislation. One significant concern is a matter of perception; the general mistrust that states have historically held for the federal government. This tension, which exists on many other inter-agency levels as well, can be a deterrent in establishing and enabling interstate/watershed organizations. Where such organizations already exist, these reservations limited their ability to fully exercise its functions. Care must be taken to ensure that the federal government does not assume an overly prominent role within the organization; a careful balance must be struck with the states with regard to decision making influence, agenda setting, financial support, and level of activity, among others. Additionally, financial matters are often cited as a challenge when considering the nature of federal agency participation in interstate organizations. Such matters include concerns over lack of adequate federal funding, laborious procedures for accessing federal funds, cost share issues between state agencies and the federal government, and challenges in interagency transfer of funds. Shared and contributed funding always seems to bring expectations and complications, between individuals and businesses as well as agencies, but the persistent themes of shared governance and cooperative conservation require our dedication to expanding relations with respect to interstate waters. These issues are not insurmountable, but they complicate and limit the effectiveness and productivity of the federal/state relationship.

It is important to remember that, in many instances, the impetus for formation of an interstate organization was the real or perceived inefficiency of the federal government as it discharged its water resource management responsibilities. Fragmentation of laws, authorities and institutions (state and federal) has long been a problem in the effective identification and resolution of water issues, as have differing philosophies and methods for resource management. This has, of course, begun to change in recent decades, as many federal agencies have embraced a watershed-based approach to resources management and recognized the advantages and popularity of collaborative, multi-agency procedures. As the federal budget tightens, the capabilities of many federal agencies and programs must adjust accordingly. The proven abilities of interstate organizations to assume substantial responsibility for water resource stewardship assessment, planning and project implementation in an open, inclusive process should provide an attractive option for sustaining a full range of integrated programs and services.

The U.S. Bureau of Reclamation (USBR)

Established in 1902, the Bureau of Reclamation is best known for the dams, power plants, and canals it constructed in the 17 western states. These water projects led to homesteading and promoted the economic development of the West. Reclamation has constructed more than 600 dams and reservoirs including Hoover Dam on the Colorado River and Grand Coulee on the Columbia River.



USBR's regional organizational structure

USBR is the largest wholesaler of water in the country, bringing water to more than 31 million people, and providing one out of five Western farmers (140,000) with irrigation water for 10 million acres of farmland that produce 60% of the nation's vegetables and 25% of its fruits and nuts.

USBR is also the second largest producer of hydroelectric power in the United States. The 53 power plants annually provide more than 40 billion kilowatt hours generating nearly a billion dollars in power revenues and producing enough electricity to serve 3.5 million homes.

Today, USBR is a contemporary water management agency with a Strategic Plan outlining numerous programs, initiatives and activities that will help the Western States, Native American Tribes and others meet new water needs and balance the multitude of competing uses of water in the West. Its mission is to assist in meeting the increasing water demands of the West while protecting the environment and the public's investment in these structures. USBR places great emphasis on fulfilling its water delivery obligations, water conservation, water recycling and reuse, and developing partnerships with customers, states, and Native American Tribes, and in finding ways to bring together the variety of interests to address the competing needs for the limited water resources of the West.

USBR also plays a direct water management role in the lower Colorado River basin, serving as the watermaster for water management and deliveries in that region.

The Tennessee Valley Authority

The Tennessee Valley Authority (TVA) was created by Congress in 1933 and is a corporate agency of the United States that provides electricity for business customers and local power companies serving 10 million people in the Tennessee River Basin which includes parts of seven southeastern states. The TVA receives no taxpayer funding, deriving virtually all of its revenues from sales of electricity. In addition to operating and investing its revenues in its electric system, TVA provides flood control, navigation and land management for the Tennessee River system and assists local power companies and state and local governments with economic development and job creation.

The TVA monitors the health of the region's reservoirs, rivers and streams. In addition, TVA manages the Tennessee River to help with providing a clean and reliable water supply and abundant water-based recreational opportunities. Approximately 5 million people get their water from the Tennessee River and its tributaries with over 10 million gallons of water used each day, drawn from 700 municipal and industrial intakes. The TVA issues permits for all proposed water intake structures. As a condition of these permits, applicants are required to report their annual usage. This data is used in tracking existing usage and evaluating proposed increases in withdrawals from the Tennessee River system.

Drought impacts are minimized by TVA by managing river flows to keep reservoir levels above water intake structures. Without the TVA system of dams and reservoirs, the surface water supply would be much less reliable than it is today.

TVA's Watershed Teams work with municipal water suppliers, elected officials, community activists and economic development executives to protect and improve local surface and groundwater supplies by sharing water quality monitoring results, providing technical assistance and facilitating community-based actions.

The region's drinking water is protected by TVA by ensuring that reservoir levels stay above municipal and industrial intake structures along the river system and monitoring river temperatures to prevent algal growth from causing problems with taste and odor. Special reservoir operations are conducted as necessary to assist local water suppliers in dealing with accidental releases of contaminants that sometimes take place.

B. Relevant Statutory and Administrative Provisions

Federal law underpins and frames interstate agreements and entities. Congressional approval of an interstate compact not only renders its provisions federal law, but also enhances the significant authority conferred by the Compact Clause of the Constitution.¹ Federal power buttresses the ability of interstate compact entities to serve as a conduit between federal and state management and address regional issues that often present jurisdictional challenges to either level of government individually.² Although the potential exists for beneficial comprehensive national effect of purely federal legislation, its application through the filter of state and local government can be cumbersome, and interstate compacts and compact entities provide a means of clearing bureaucratic obstacles and focusing resources on critical regional issues.³

Federal authority with respect to the management of water resources is broad in scope and capable of exerting tremendous power in implementation. The Federal Water Pollution Control Act (Clean Water Act or CWA) and the Endangered Species Act (ESA) are examples of the significant effect of the expression of this power, particularly with respect to their ability to curb land and industrial development in favor of responsible resource management despite financial consequences.⁴ The Federal Power Act (FPA) imposes a unique, intergovernmental regulatory scheme to control the utilization of water resources for power generation by mandating that the Federal Energy Regulatory Commission attach state-generated requirements to federal power licenses.⁵ These few are prime examples of the positive consequences of the precisely focused and proper implementation of federal authority.

The practical application of federal legislative and administrative provisions, however, is sometimes tenuous. Federal prerogatives are nearly always tempered significantly

by requirements for cooperation with and active responses by state and local governments. This mandate for cooperation is more a result of Congressional adherence to a fundamental federalist principle of state and local government independence than a derivative of any particular Constitutional or statutory provision.⁶ This tense stasis between federal decree and state and local implementation is thrown into even sharper relief in cases of regional management issues that cross geopolitical boundaries, particularly state lines. These scenarios often lead officials to employ interstate compacts as solutions to problems that, if left to the sometimes wavering balance between federal and state law, would remain essentially politically insoluble. Well-executed compacts that create well-structured compact entities are typically able to focus the resources and legislative power of member states and the federal government through a mechanism that functions without many of the bureaucratic constraints of either. Historically, interstate compacts and compact entities have represented a relatively peaceful confluence of federal, state and interstate law and have had a conciliatory effect on federal and state conflicts.⁷

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That success notwithstanding, the scope of authority given to interstate compact commissions was challenged, early on, in *West Virginia ex rel. Dyer v. Sims*, which challenged specifically the authority given the Ohio River Valley Sanitation Compact. The Supreme Court ruled that a state legislature could delegate a portion of its police power to

¹ *Cuyler v. Adams*, 449 U.S. 433, 440 (1981); *See West Virginia ex rel. Dyer v. Sims*, 341 U.S. 22 (1951).

² *See McComb v. Wambough*, 934 F.2d 474, 479 (3rd Cir. 1991).

³ *See Broun et. al., The Evolving Use and the Changing Role of Interstate Compacts: A Practitioner's Guide* 154-64, 165-70 (2006).

⁴ 33 U.S.C § 1251 et seq.; 16 U.S.C. § 1531 et seq.; *See also* the U.S. EPA's Consent Decree for Aggregate Industries Clean Water Act Settlement (assessing a \$2.75 million civil penalty to a ready-mix concrete company and requiring the implementation of a regional evaluation and compliance program as a result of numerous violations of the Clean Water Act); *See also Tennessee Valley Auth. v. Hill*, 437 U.S. 153 (prohibiting the completion of a dam to protect the habitat of a species of fish protected under the Endangered Species Act.).

⁵ 16 U.S.C § 791a; *See also Niagara Mohawk Power Corp. v. State Dep't of Env'tl. Conservation*, 624 N.E.2d 146, 148 (NY Ct. of Appls. 1993) (explicitly articulating the federal preemption of state regulation of hydroelectric facilities within federal jurisdiction and the narrowly prescribed ability of a state to attach conditions to federal hydroelectric power licenses under section 401 of the CWA).

⁶ Betsy A., Carter, Nicole T., *35 Years of Water Policy: The 1973 National Water Commission and Present Challenges* (2009).

⁷ *See Broun et. al., The Evolving Use and the Changing Role of Interstate Compacts: A Practitioner's Guide* 154-64 j(2006). *See also* Mathew S. Tripolitsiotis, *Bridge Over Troubled Waters: The Application of State Law to Compact Clause Entities*, 23 Yale L. & Pol'y Rev. 163 (2005).

other member states and the federal government with respect to the subject of the compact.⁸ This decision provided a foundation for the expansion of compact entity authority over conflicting state law and administrative actions and established a precedent that has allowed contemporary compacts and compact entities to achieve the power necessary to generate tangible results.⁹ With respect to legal and political viability, ORSANCO helped to pave the way for the modern compact and compact entity.

Conclusion

Under a federal system that intentionally creates conflict between federal preemption and state independence to foster healthy, but sometimes stalemated, democracy, interstate agreements and entities represent a viable solution to regional issues that might otherwise remain trapped in legal and political stasis. Compact Clause jurisprudence remains a vibrant and evolving area of law precisely because it addresses a mechanism that is uniquely adaptable to the administrative fissures that sometimes result from a system that was designed to be functionally adversarial. Interstate agreements and entities constitute a flexible alternative solution to regional management problems that transcend geopolitical boundaries.

C. Key Considerations for the Future Role of Interstate Organizations

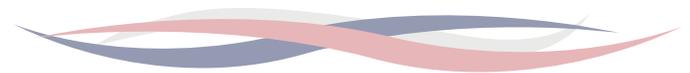
An active federal role in the operation of interstate water resource management agencies remains a vitally important determinant of overall success. With some notable exceptions, interstate organizations often depend on the federal government for legislative authorities, research and technical assistance, data and information acquisition and management, funding support, and collaboration opportunities. While states are well advised to work collectively toward a more significant role in these areas, the federal government is likely to play a major—and sometimes predominant—role in interstate water resources management.

A selection of key considerations for the future of interstate organizations can be gleaned from an analysis of the past and present role of the federal government. For example:

- Interstate organizations must retain flexibility in structure and operation. The federal role should be one

of supporting, assisting and partnering, but should not unduly constrain the states' collective ability to pursue and achieve their goals.

- The full potential of existing interstate organizations should be recognized and exploited before any effort is made to establish a new organization. The historic tendency to “create something new” rather than engaging (and revising, as needed) existing relationships and organizations is inefficient.
- Interstate organizations should advocate and fully employ federal legislative and regulatory authorities consistent with their overall mission. They should not always assume or duplicate such authorities to ensure success; often, they are most effective by providing a forum and bringing the relevant information and relationships together that enable agencies with those authorities to exercise them in a more efficient and effective manner.
- The federal government should maintain its role in conflict resolution, particularly when conflicts arise among the states. In such instances, the federal government is often the best situated to understand the historical, procedural, political, cultural, planning and other differences and provide a “third party” perspective.
- Federal participation in interstate organizations should be directed, in part, at addressing federal barriers that have historically impeded integrated water resource management. Among others, this includes problems of fragmented federal law; lack of adequate and reliable data and funding; complex procedures and rigid criteria.
- The historic federal role in science-based decision support has been essential and should be enhanced, recognizing the states' fundamental reliance on federal agencies for collecting and analyzing data, dispensing technical knowledge and developing management tools and standards for the application of that information.



⁸ 341 U.S. 22, 30-32 (1951).

⁹ See Broun et. al., *The Evolving Use and the Changing Role of Interstate Compacts: A Practitioner's Guide* 154-64, 165-70 (2006). See also Mathew S. Tripolitsiotis, *Bridge Over Troubled Waters: The Application of State Law to Compact Clause Entities*, 23 Yale L. & Pol'y Rev. 163 (2005).

V. Factors Influencing Institutional Design and Operation

As noted previously, institutional arrangements for interstate water resources management vary dramatically in terms of their legal standing, authorities, functions, funding, membership, structure and related considerations. The basis for such variance is founded in a series of factors that collectively influence institutional design and operation and, in so doing, ensure that each institution is unique. Presented below is a descriptive summary of selected factors and their institutional implications, based upon historical analysis and current observations of interstate organizations.

- **Geographic Size of Watershed:** The geographic boundaries of interstate organizations can vary tremendously, ranging from less than a hundred square miles to well over a million. Generally speaking, budgetary and other resource realities (i.e., constraints) prompt organizations functioning in larger watersheds to be highly selective in prioritizing issues and in determining the way in which those issues are addressed. While some organizations in such settings can have significant regulatory/management authorities in certain areas (e.g., water allocation, water quality standards), the majority of functions tend to be at the broader policy analysis, planning, information sharing and advocacy levels. Organizations operating within smaller watersheds are also subject to resource constraints but, generally speaking, are often better positioned to address a larger array of issues in considerable detail.
- **Hydrologic Characteristics:** The hydrologic characteristics of watersheds can also vary tremendously in terms of water/land ratio; water volume/availability; drainage and flow patterns; groundwater/surface water relationships; and the mix of water bodies within the watershed (e.g., lakes, rivers, streams, wetlands). These differences can have pronounced organizational implications. For example, a watershed with a large land to surface water ratio is likely to have a concerted focus on education/outreach efforts for non-point source pollution control, while a watershed with a large surface water to land ratio may have a greater emphasis on point source pollution issues and associated “end-of-the-pipe” regulatory considerations. Also, jurisdictions coping with water scarcity issues within a shared watershed have historically supported interstate organizations with regulatory authority for water allocation, while jurisdictions blessed with abundant water supplies seem less inclined to invest such organizations with allocation authority.

- **Jurisdictional Complexity:** The number and types of governmental units (and non-governmental interests) involved in planning and management activities within a given watershed can have profound impacts on both organizational design and operation. Even organizations whose membership is limited to state officials typically have formal or informal (non-voting) roles that involve local, regional, federal and (occasionally) international agencies and organizations. Additionally, user groups, citizen organizations and other interested parties have a vested interest in, and active influence on, interstate planning and management decisions. Generally speaking, interstate organizations with large (and diverse) numbers of jurisdictional members will have a major—and sometimes predominant—focus on consensus-building exercises and a tendency to develop broader policy statements that reflect necessary compromise among the membership.
- **Level of Congruity Between Hydrologic and Geo-political Boundaries:** Historically, water bodies have been employed as convenient lines of demarcation to separate political jurisdictions rather than as shared resources that unite those jurisdictions. The lack of congruity between these two types of boundaries can have significant organizational implications from both a structural and operational standpoint. In any given watershed, for example, one jurisdiction may be fully within the hydrologic boundaries, while another may have a very limited (yet important) physical presence in that watershed. Further, the interests and needs of a “landlocked” jurisdiction far removed from the watershed’s predominant water body can differ significantly from a neighboring jurisdiction with a substantial riparian presence on that water body. Differing motivations and interests of the various jurisdictions will require special accommodations and compromises in organizational design and operation.
- **Socio-economic and Cultural Considerations:** The motivations and characteristics of various jurisdictions within a given watershed can dictate the structural and operational attributes of the organizations they are party to. A strong maritime transportation, commercial fishing or manufacturing heritage, for example, can significantly influence how that jurisdiction approaches watershed issues and opportunities, and how it relates to neighboring jurisdictions that may have other socio-economic and cultural attributes. Many interstate organizations, particularly those without regulatory authority, tend to focus primarily on areas of ready consensus with only limited attention to the more

divisive issues. Cases exist, however, that demonstrate that strong leadership by an interstate organization can make possible the solution of complex and seemingly intractable regional problems.

- **Nature of Issues and Their Interrelationships:** Significant variance from one watershed to the next can be found with respect to the complexity of issues, the level of contention, and the respective interests, priorities and motivations of the jurisdictions involved. In some instances, pronounced differences are a motivating factor in institutional design and operation, and can prompt member jurisdictions to vest significant regulatory authority in a third party, membership-based organization. In other instances, jurisdictions studiously avoid the contentious issues, instead employing the organization to focus exclusively on areas of ready agreement. A further (and equally significant) consideration relates to the “institutional ecosystem” within which any given interstate organization must operate. Current institutional arrangements, legal regimes and policy frameworks collectively shape this environment and help determine the “niche” that a new (or refined) organization will attempt to fill.
- **Leadership Characteristics:** A major, yet often overlooked, determinant of institutional design and operation is the degree of leadership provided by the jurisdictions involved in an interstate organization. Those with limited resources and authorities can command significant stature and influence through strong and visionary leadership. Conversely, the effectiveness of organizations endowed with considerable resources and management authority can be seriously compromised in the absence of competent leadership. In brief, enabling legislation and organizational charts are indicators of organizational potential, but do not guarantee organizational effectiveness.

In sum, the confluence of many factors determines the nature of organizational design and operation within any given watershed. These factors are dynamic and suggest the need for “learning organizations” that can adapt, over time, to evolving interests and needs. Institutions that are designed only to address the crisis of the moment may achieve short term success, but prove to be singularly ineffective in anticipating and addressing the needs of the future.

Acknowledgments

The ICWP appreciates the assistance of Mike Donahue, former President and CEO of the Great Lakes Commission, in his personal capacity in researching and drafting the original 2006 report (he is currently the Vice-President for Water Resources and Environmental Services with AECOM (formerly URS)). The ICWP also appreciates the support provided for that same effort by the US Geological Survey, US Army Corps of Engineers, US Environmental Protection Agency and the Pennsylvania Department of Environmental Protection. As these agencies have not reviewed or approved the substance of these findings and recommendations or the substance of the ICWP report, they do not necessarily represent views or conclusions of those agencies.

VI: Updated Recommendations

The following recommendations, which update and condense the original findings and recommendations found in the 2006 report, anticipate development of an action agenda to improve water resource policy and management processes by the ICWP in partnership with federal officials and association leaders. See Appendix E for the original complete findings and recommendations.

Recommendation 1: ICWP should work with interstate organizations to highlight, promote and nourish regional approaches and effective organizations. Better information is needed to publicize the specific contributions that interstate organizations are making to more efficient and effective water resource management decisions on a regional basis. Work is needed to encourage increased state and federal support for and reliance upon interstate agencies and to cultivate program flexibility to allow for adaptation of interstate organization accomplishments and recommendations.

Recommendation 2: Foster integration of interstate water management needs and programs with federal initiatives and policies. Interstate water organizations should encourage federal programs, initiatives, and policies to be implemented in a manner that recognizes the distinct challenges on interstate waters and the need for interstate collaboration, capitalizing on existing interstate organizations to the greatest extent possible. Federal participation in interstate organizations should be directed, in part, at addressing barriers that have historically impeded integrated water resource management. All should collaborate on addressing fragmented authorities, inconsistent standards, and unreliable data and funding.

Recommendation 3: Work with interstate water organizations and key stakeholders to evaluate management initiatives, enhance education and engage in strategic planning. Regular education and strategic planning will help ensure engagement and confidence in interstate organizations as large-scale resource management initiatives emerge. Both stakeholders and federal agencies should maintain an awareness of organizations’ responsibilities, limitations and relation to other resource management agencies in their watersheds.

Appendix A: Case Studies to Shape Future Opportunities for Interstate Organizations

We have collected and included case studies of interstate approaches to water resource management to serve two valuable functions:

- document the historic contributions of interstate organizations and, more importantly,
- illustrate a set of patterns that might be applied to future problems and opportunities.

Presented below is a brief summary of fifteen case studies. They are representative of the full range of services and accomplishments that are much more feasible with a collaborative forum and regular meetings to explore and resolve issues that cross state or local boundaries. Their presentation is followed by a brief summary of common characteristics that illustrate the successful patterns and the “value added” by interstate organizations when addressing complex multi-jurisdictional problems and opportunities.

Missouri River Recovery Implementation Committee (MRRIC)

The Missouri River Recovery Implementation Committee (MRRIC) serves as a forum where people with diverse interests in the Missouri River basin can collaborate on recommendations for implementing the Missouri River Recovery Program. MRRIC was authorized by Congress in Section 5018 of the 2007 Water Resources Development Act (WRDA). This authorization included a provision for MRRIC to provide guidance on a study of the Missouri River and its tributaries, known as the Missouri River Ecosystem Restoration Plan (MRERP). That study was suspended per the Consolidated Appropriations Act of 2012 (Section 120). In July 2008, the Assistant Secretary of the Army for Civil Works, John Paul Woodley, signed the Implementation Guidance for Section 5018 of WRDA 2007, thus approving the Charter for MRRIC and establishing the Committee.



Missouri River Basin
Credit: Erin Mairose

The Missouri River is the longest river in North America, flowing over 2,340 miles through seven states. Its basin encompasses over 529,000 square miles. It has been a source of sustenance and transportation for more than 12,000 years. The river basin was heavily developed in the 20th century, affecting the environment and human interests.

In 1989, the USACE announced it would undertake a revision of the Master Water Control Manual (Master Manual) for Missouri River Reservoir Operations, the principal water management tool for the river. The extensive revision process coincided with the listing of

the pallid sturgeon, least tern and piping plover as threatened or endangered species under the federal Endangered Species Act; the issuance by the USFWS of two biological opinions on steps necessary to preclude jeopardy to these species; and extensive federal and state court litigation on water management and species recovery issues. When USACE finalized the revised Master Manual in 2004, the agency committed to establishing a group consisting of stakeholders and sovereign nations to be known as the Missouri River Recovery Implementation Committee, often referred to as MRRIC.

FACTS MRRIC

Created in 2008

70 members
representing a wide array of local, state, Tribal and federal interests across 8 states

Main Focus: Guidance and recommendations on Missouri Recovery Plan, which includes steps to protect pallid sturgeon, least tern, and piping plover.

A Working Group of federal agency representatives organized a Planning Group and a Review Panel to draft a governing document for MRRIC. The Planning Group, with the Review Panel's concurrence, proposed a Charter to the Secretary of the Army in February 2008. Following Government-to-Government consultation with basin Tribes, the Charter was approved by the Assistant Secretary of the Army for Civil Works at the Planning Group's final meeting in St. Louis, Missouri on July 1, 2008.

The Missouri River Recovery Program is designed to comply with the 2003 USFWS Biological Opinion and has a number of elements to the program to include flow management, habitat creation, Adaptive Management, hatchery support, and research. This program is funded annually to support these activities as well as the activities of the Missouri River Recovery Implementation Committee.

The Missouri River Recovery Implementation Committee has nearly 70 members who represent a wide array of local, state, Tribal and federal interests throughout the Missouri River Basin. MRRIC's 2018 membership included representatives of eight states and 20 of the eligible 29 basin Tribes. The 29 stakeholder members, representing 16 different interest categories, apply to and are selected by the USACE's Northwestern Division Commander to serve three-year terms. Federal agency representatives are appointed by their agency. State representatives are appointed by the governor. Tribal representatives are appointed by tribal leadership. USACE and USFWS serve as lead agencies.

The Committee's purposes are set forth in Section 5018 of the 2007 Water Resources Development Act (WRDA) and include:

- Providing guidance to federal agencies on the existing Missouri River recovery plan, including priorities for recovery work and implementing changes based on the results of Adaptive Management.
- Providing guidance to federal agencies on a long-term study of the Missouri River and its tributaries to determine actions required to mitigate losses of aquatic and terrestrial habitat, recovery of federally listed species, and restore the ecosystem to prevent further declines among other native species.
- Developing recommendations that recognize the social, economic and cultural interests of stakeholders; mitigate the impacts on those interests; and advance the multiple uses of the river.

The Committee approves its recommendations by a consensus vote; each recommendation proposal is fully vetted through Work Group deliberations and discussions at one or more MRRIC meetings. While this process takes time, it encourages informed decision-making and widespread agreement for approved recommendations. Consensus recommendations made on substantive issues require a two-step decision making process, with a tentative recommendation made at an initial meeting and a final recommendation made no sooner than the next MRRIC meeting. The two-step process is intended to allow time between the tentative and final consensus recommendation determinations for members to deliberate and consult with their constituents.

Upper Colorado River Endangered Fish Recovery Program

This interstate program was established in 1988 to resolve potential conflicts between water supply management and endangered species protection in the Colorado, Wyoming, and Utah portions of the Upper Colorado River Basin. Participants in the Program include the states of Colorado, Wyoming, and Utah, federal agencies (U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, Western Area Power Administration, and National Park Service), water users, power users, and environmental organizations.

Four Colorado River Basin fish species (Colorado pikeminnow, bonytail chub, humpback chub, and razorback sucker) are listed as endangered under the federal Endangered Species Act (ESA). In 1983, U.S. Fish and Wildlife Service (FWS) issued a draft report that called for no further water depletions from the Upper Colorado River Basin. It indicated that projects could proceed with depletions, but only if their depletion impacts would be replaced on a one-for-one basis. Curtailment of future water depletions (for existing and new supplies) would prevent communities and businesses throughout the area from being able to develop the water supplies allocated for their uses under interstate compacts ratified by Congress.

Negotiations to resolve these conflicts were initiated in 1984 by the states, federal agencies, water development interests, and environmental organizations and, in 1987, the basic tenets of the Program were agreed upon: 1) the objective is to “recover” (rather than simply protect) the four endangered fish species in the Upper Colorado River Basin; 2) a broad array of actions will be undertaken by the Program to recover the fish; 3) funding will be provided for recovery actions under equitable and mutually agreeable funding arrangements among the parties involved in the Program; 4) actions taken by the Program will be considered by FWS as the “reasonable and prudent alternatives” (ESA terminology for adequate mitigation) for depletion impacts of existing and new projects, and all impacts of existing (pre-1988) projects; and 5) water for endangered fish will be acquired and protected in accordance with state water law and interstate compacts.

The Program was established by a Cooperative Agreement signed by the Secretary of Interior, three state governors and other officials in January 1988. It is implemented by a governing committee that includes the signatory agencies and states, as well as representatives of the water and environmental communities, and operates by unanimous consensus. Planning, evaluation and management responsibilities are handled by a management committee and three technical committees. The recovery effort has developed around five basic elements designed to restore habitat conditions and fish populations in the wild that will be sufficient to sustain the reestablish the of the species.

The recovery programs use science-based, cooperative actions to assist in endangered fish recovery, such as re-operating federal reservoirs to create and maintain habitat, working with irrigators to improve their water efficiency, constructing fish passages, and removing invasive predatory fish. At the beginning of the program, habitat related issues were the biggest concerns to the well-being of the four fish species. While much of those issues have been addressed, the top concern today is the impact of new and spreading non-native fish species in the system.

In 2018, based on rigorous species status assessments, the U.S. Fish and Wildlife Service recommended downlisting the razorback sucker and humpback chub from endangered to threatened. Downlisting a species from endangered to threatened requires a public review process that will start in 2019 for humpback chub, and in 2020 for razorback sucker. A Species Status Assessment for Colorado pikeminnow is scheduled for completion in 2019.

Through 2018, the recovery program has provided ESA compliance for over 2,500 water projects depleting more than 3.7 million acre-feet of water per year. In every case, the FWS is required to determine whether sufficient progress has been made by the Recovery Program and that its actions can provide ESA compliance (reasonable and prudent alternatives and measures) for these projects. No lawsuits have been filed contesting those determinations, but this gives the federal agencies an essential interest and a strong voice in the success of planning and implementation decisions. The states also bring responsibility for land use, fisheries (including aquaculture) and water resource management and involvement of the water development and environmental community leaders results in additional public credibility and support for regulation, funding, and other decisions.

FACTS **Upper Colorado River Endangered Fish Recovery Program**

Created in 1988

Committee: signatory agencies and states, as well as representatives of the water and environmental communities; operates by unanimous consensus

Main Focus: water supply management and endangered species protection in the Colorado, Wyoming, and Utah portions of the Upper Colorado River Basin

Top concern today: impact of spreading non-native fish species

The Drought Contingency Plan builds on and is informed by a number of prior efforts:

- The “2003 Quantification Settlement Agreement” provided that California would reduce its Colorado River water use to adhere to its water allocations under the Law of the River.
- The Colorado River Compact of 1922 is the foundation of the “Law of the River,” which governs Colorado River water management. Under the Compact, water supplies are divided equally between the Upper Basin and the Lower Basin, with the dividing line at Lee Ferry, Arizona (near the Utah Border). State apportionments were established in agreements approved subsequent to the Compact, and other laws and court decisions have further added to the Law of the River. Pursuant to a 1944 treaty with Mexico, an additional 1.5 million acre feet per year is reserved for flows to Mexico.
- The “2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead” included criteria for “balancing” releases between Lakes Powell and Mead and created a mechanism for storing conserved water in Lake Mead. They also included a schedule of Lower Basin curtailments in Arizona and Nevada if Lake Mead drops to an elevation of 1,075 feet or less (i.e., a “shortage condition”).
- The “Pilot System Conservation Program” was initiated in 2014 as a Reclamation-led effort to provide cost-shared funding for projects to conserve water supplies in the Lower Basin. It was reauthorized by Congress in 2018.
- The 2017 “Minute 323” agreement with Mexico replaced a previous 2012 agreement (Minute 319) with Mexico. It included increased US storage opportunities for Mexico and a binational plan committing Mexico to new delivery curtailments that would go into effect upon approval of the Lower Basin DCP.

Drought Contingency Plans

The seven Colorado River Basin States, along with water entitlement holders in the Lower Basin, have developed a set of draft agreements to implement Drought Contingency Plans (DCPs) in the Upper and Lower Basins.

The principal goal of the two Drought Contingency Plans is to reduce the risk that Colorado River reservoirs, primarily the massive reservoirs of Lake Powell and Mead, decline to critically low elevations. Collectively, proposed drought response actions in the Upper Basin, Lower Basin and Mexico would cut the risk of Colorado River reservoirs reaching critically low elevations by approximately 50 percent. The developed plans are as follows:

Upper Colorado River Basin Drought Contingency Plan

The Upper Basin DCP’s “Drought Response Operations Agreement” is designed to reduce the risk of reaching critical elevations at Lake Powell and help assure continued compliance with the 1922 Colorado River Compact. The DCP also authorizes storage of conserved water in the Upper Basin that could help establish the foundation for a Demand Management Program that may be developed in the future. Unlike the Lower Basin, the Upper Basin entered into a Compact to divide its allocation made under the 1922 Compact. The 1948 Upper Colorado River Basin Compact (1948 Compact) not only divides the water between the states, it also establishes the Upper Colorado River Commission (UCRC). The UCRC is composed of commissioners representing each Upper Division State of Colorado, New Mexico, Utah and Wyoming, and a commissioner representing the United States. The 1948 Compact contains provisions regarding the mandatory curtailment of Upper Basin water uses if necessary to comply with obligations under the 1922 Compact. Most specifically, it contains provisions regarding curtailment to satisfy the Upper Basin’s obligation not to deplete the flow

FACTS

Upper Colorado River Basin Drought Contingency Plan

Adopted in 2019

Upper Colorado River Commission representing upper Colorado, New Mexico, Utah, Wyoming and US

Main Focus: flexibility in reservoir operations during drought conditions, investigating how to reduce water demands—including with voluntary water conservation programs—and weather modification to augment precipitation



Lake Powell, the second largest reservoir in the US, is formed by the waters of the Colorado River behind Glen Canyon Dam.

of the Colorado River at Lee Ferry below 75 million acre feet over a ten year running average.

Even though it lies below Upper Basin water users, Lake Powell is critical to developing and utilizing the Upper Basin's Colorado River apportionment. It acts as the Upper Basin's savings account by storing water in wet years to assure the Upper Basin can meet its Compact obligations in dry years. The Drought Response Operations Agreement (DROA) in the Upper Colorado River Basin creates a process to temporarily move water stored in the Colorado River Storage Project (CRSP) "Initial Units" above Lake Powell (Aspinall, Flaming Gorge, and Navajo reservoirs) to Lake Powell if it is projected to approach critical elevations. The Demand Management Storage Agreement creates support for each of the four Upper Basin States, working through the Upper Colorado River Commission, to have access to storage capacity in the CRSP Initial Units where they can store conserved water, should the states decide to create Demand Management Storage programs in the Upper Basin. Water conserved under such programs, if developed, would be set aside for meeting the Upper Basin's obligations contained in the Colorado River Compact of 1922 and the Upper Colorado River Compact of 1948.

Lower Colorado River Basin Drought Contingency Plan



View of Lake Mead and Hoover dam.
Credit: BBC.

and Nevada. Further decline in lake levels would have additional, increasingly severe, consequences. If approved, the Lower Basin DCP would help avoid these larger declines and the significant challenges they would bring. The Lower Basin DCP would require that when Lake Mead reaches predetermined elevations, Lower Basin states would forgo deliveries beyond the levels agreed to in 2007 (and includes for the first-time cutbacks for California).

The Lower Basin DCP creates important incentives to encourage water conservation and storage in Lake Mead. New rules allowing flexibility to withdraw previously conserved water from Lake Mead below elevation 1,075 feet will remove disincentives to conserve water when Lake Mead is near those elevations. The Lower Basin DCP increases the maximum allowable storage of Intentionally Created Surplus (ICS) for each Lower Basin State to help incentivize creation and long-term storage of ICS.

On April 16, 2019, the President signed the Colorado River Drought Contingency Plan Authorization Act (P.L. 116-14) into law. Representatives of seven Western states and the federal government signed the agreement on May 20, 2019 laying out potential cuts in water deliveries through 2026 to reduce the risks of the river's reservoirs hitting critically low levels. The 2026 date coincides with the expiration of the 2007 agreements.

"Colorado River Basin Drought Contingency Plan," The Water Report #182 (4/15/19). Copyright permission granted 5/8/19.

Due to long-term drought conditions, Lake Mead's elevation has dropped 130 feet since the year 2000. Under the 2007 Interim Guidelines, if Lake Mead's level drops to 1,075 feet, an official shortage would be declared. That declaration would trigger cuts in water deliveries to Arizona

FACTS

Lower Colorado River Basin Drought Contingency Plan

Adopted in 2019 by 7 states and federal government

Main Focus: Lays out potential cuts in water deliveries through 2026 to reduce risk of Lake Mead's reservoir hitting critically low levels

Delaware River Basin Commission: Playing a Lead Role in Interstate Flood and Drought Management

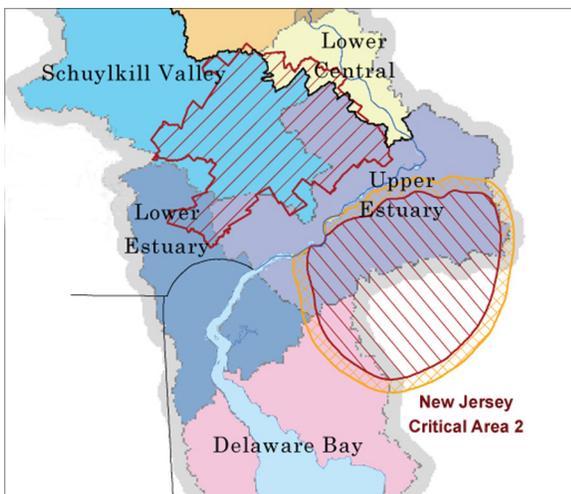
Delaware River Basin Interstate Flood Mitigation Task Force

In September 2004, April 2005, and June 2006, three major floods caused devastation along the main stem Delaware River. The governors of Delaware, New Jersey, New York, and Pennsylvania directed DRBC staff to convene an interstate task force to develop a set of recommended measures for mitigating and alleviating flooding impacts along the Delaware and its tributaries. The Delaware River Basin Interstate Flood Mitigation Task Force developed an action agenda for a more proactive, sustainable, and systematic approach to flood damage reduction. The DRBC recruited a broad array of stakeholders, which included government officials (local, state and federal officials, both legislative and executive) as well as private sector and non-profit organization representatives.

After evaluating flood prevention and mitigation options and considering public written and verbal comments, the Task Force and DRBC staff concluded that no set of mitigation measures will entirely eliminate flooding along the Delaware River. However, a plan was developed to include a combination of measures to improve the basin's capacity to prepare for and recover from flooding in the future. The final report contained 45 consensus recommendations that addressed six management areas: flood warning, reservoir operations, floodplain regulation, floodplain mapping, structural and non-structural mitigation, and stormwater management. Based on recommendations from the task force, DRBC was able to secure funding for many of the agencies to work on the recommendations and continues to monitor progress on implementation.

Southeastern Pennsylvania Ground Water Protection Area

The structure and powers of the Delaware River Basin Commission (DRBC) give it the ability to carry out programs that would be difficult, if not impossible, for the four basin states or the federal government to accomplish on their own. An example is the management of the Ground Water Protected Area of Southeastern Pennsylvania (GWPA).



Southeastern Pennsylvania Ground Water Protected Areas

The GWPA was established by the DRBC in 1980 at the request of Pennsylvania, which lacked the regulatory authority to carry out the program, after it became evident that development was adversely affecting ground water levels in the area. The Commission has adopted a regulatory package that establishes numerical ground water withdrawal limits for 76 watersheds that are partially or fully within the Protected Area. The goal is to prevent depletion of ground water and protect the interests and rights of lawful users, and to balance and reconcile alternative and conflicting uses of the limited supply within the region.

FACTS

Delaware River Basin Interstate Flood Mitigation Task Force

Involves Delaware, New Jersey and New York

Main Focus: 45 consensus recommendations to address 6 key flood management areas: flood warning, reservoir operations, floodplain regulation, floodplain mapping, structural and non-structural mitigation, and stormwater management

FACTS

Southeastern PA Ground Water Protection Area

Created in 1980 by DRBC; involves 128 municipalities in five counties

Main Focus: To prevent depletion of ground water within designated areas; establishes maximum withdrawal limits for 76 subbasins

Lowered water tables in the Protected Area have reduced flows in some streams and dried up others. This reduction in base flows affects downstream water uses, aquatic life, and the capacity of waterways in the region to assimilate pollutants. The review trigger for ground water withdrawals in the Protected Area is 10,000 gallons per day (compared with 100,000 gpd in the rest of the basin). The protected area is subject to a two-tiered system of water withdrawal limits under the DRBC requirements. The first tier serves as a warning that a subbasin is “potentially stressed.” In potentially stressed subbasins, applicants for new or expanded ground water withdrawal permits are now required to implement one or more programs to mitigate adverse impacts of additional ground water withdrawals. Acceptable programs include: conjunctive use of ground and surface water, expanded water conservation programs, comprehensive planning at the watershed level, programs to control ground water infiltration and artificial recharge and spray irrigation.

The second tier serves as the maximum withdrawal limit. Under the regulations, ground water withdrawals cannot exceed that limit. In April 2002, the DRBC issued guidelines for the preparation of integrated resource plans by municipalities under the GWPA regulations. Integrated resource planning is a comprehensive approach to water resource management that evaluates water resources availability and demands on a watershed level. The process encourages planning to meet multiple objectives and evaluate competing uses of water resources.

DRBC's integrated resource planning is a comprehensive approach to water resource management that evaluates water resources availability and demands on a watershed level. The process encourages planning to meet multiple objectives and evaluate competing uses of water resources.

Great Lakes Sediment and Nutrient Reduction Program

Awareness of the linkage between land use and water quality prompted the eight Great Lakes states, along with several federal agencies to develop a unique, basin-specific program to control non-point source pollution from urban and agricultural sources. The Great Lakes Commission,



Satellite image of the Great Lakes, April 24, 2000

an interstate compact agency, was vested with program design and management responsibilities.

Non-point source pollution is a major source of degraded water quality in the Great Lakes basin. Sedimentation plays a major role in the addition of nutrients and toxic chemicals to the Great Lakes system. Beyond water quality degradation, soil erosion and sedimentation reduce agricultural productivity, degrade

fish and wildlife habitat, limit water-based recreation and damage water treatment and water supply infrastructure.

The genesis of this program was a 1987 report of the Great Lakes Commission that documented the serious nature of the problem, analyzed and interpreted soil erosion and sedimentation data and presented a series of findings and recommendations that were subsequently endorsed by the Commission. Among those recommendations was a call to establish a state/federal Great Lakes Basin Program to promote comprehensive, basin-specific erosion and sedimentation control efforts. A state/federal task force overseeing the study also recommended linking the program with the Clean Water Act's Section 319 non-point source pollution control program and relevant Farm Bill provisions to ensure coordination with US EPA and USDA/Natural Resources Conservation Service. The Commission members endorsed the recommendations the following year, and the Great Lakes Basin Program became a reality in 1990 when Congress appropriated start-up funds for demonstration projects, technical assistance programs,

FACTS Great Lakes Basin Program

Start up federal funds in 1990

Great Lakes Commission involves 8 states

Main focus: Improved water quality through soil erosion and sedimentation reduction projects

and information/ education activities. Since that time, the Great Lakes Basin Program has supported over 200 projects throughout the eight states, and substantial benefits to water quality have been documented.

The Great Lakes Commission's ability to bring all prospective partners (i.e., state, federal and regional agencies, relevant non-governmental interests) into the decision process was essential to successful program start-up. In addition, the Commission had significant research, policy, planning and facilitation expertise to draw upon, as well as a reputation for results-oriented work. This collaborative process was later formalized through a partnership agreement with EPA, USDA/NRCS and USACE. A regional task force, comprised of representatives of these three federal agencies and the eight Great Lakes states, was established to oversee program development and administration, including the selection of projects associated with an annual request for proposals.

The federal role in this initiative has been a particularly critical one, given the need to coordinate with and complement related federal programs, engage federal expertise and secure federal funding each year.

Barriers and challenges to the success of the Great Lakes Basin Program have financial, programmatic and scientific dimensions. The absence of reliable long-term funding has been an issue. The program relies upon annual Congressional appropriations and, while they have been growing over time, future funding levels are unpredictable and complicate efforts to build capacity and resolve programmatic issues that include monitoring, project evaluation and comprehensive planning. Difficulties addressing multi-state watersheds are also complicated by the fact that many projects should be implemented across state lines while funds are often appropriated for use on a state-specific basis. Finally, the lack of scientific data on the sources and amounts of sediment entering the Great Lakes and their tributaries makes it difficult to identify baseline conditions and target limited resources to critical areas.

The Commission's staff leadership identifies a number of "lessons learned" that can be applied in other interstate settings. A transparent and inclusive process is essential during the program development phase, and prospective project partners must be brought into the process early. Once established, the lines of communication must be maintained and nurtured, particularly with respect to officials that have decision-making authority. Communicating a unified message to funding agencies, legislatures and Congress on an ongoing basis is also essential and, over time, implementation capacity must be built and maintained to ensure that program goals are met.

The Great Lakes Sediment and Nutrient Reduction Program provides grants to local and state units of government and nonprofit organizations to install erosion and sediment control practices in the Great Lakes basin. Projects funded under the program are selected on a competitive basis and benefit the Great Lakes states and congressional districts. Since 2010, funding for the program has been provided by the Great Lakes Restoration Initiative. The program is able to support projects that not typically funded by other U.S. EPA or USDA cost-share programs, allowing the program to fund innovative and unique projects. The Great Lakes Sediment and Nutrient Reduction Program is a state and federal partnership managed by the Great Lakes Commission in cooperation with the U.S. Department of Agriculture's Natural Resource Conservation Service (NRCS), the U.S. Environmental Protection Agency (U.S. EPA), the U.S. Army Corps of Engineers (USACE) and the eight Great Lakes states. It is directed by a regional Soil Erosion and Sedimentation Task Force that includes representatives from the eight Great Lakes states, NRCS, U.S. EPA, and USACE. The Task Force reviews yearly needs in the basin and adapts the grant program to meet current needs. It employs a rigorous review process that selects projects expected to generate the most impactful environmental and economic benefits for the Great Lakes region.

Lessons learned from the Great Lakes Basin Program include the importance of a transparent and inclusive process during the program development phase; prospective project partners must be brought into the process early. Communicating a unified message to funding agencies, legislatures and Congress on an ongoing basis is also essential and, over time, implementation capacity must be built and maintained to ensure that program goals are met.

Arkansas-Oklahoma Arkansas River Compact Commission (AOARCC)

The states of Arkansas and Oklahoma have worked cooperatively to reduce nutrient phosphorus loading in common watersheds and scenic waterways since the early 1990s. Cooperative efforts through the AOARCC have resulted in jointly supported monitoring programs, point source regulatory changes, best management practice implementation and land-use conservation incentives, academic research, public outreach, and many other public and private sector efforts which have contributed to reduction in phosphorus loadings throughout southeast Oklahoma and



Arkansas River

northwest Arkansas. Over the span of three decades, many solutions to a multitude of legal, political, and social challenges associated with improving water quality in the Arkansas River basin have been formulated and implemented by the AOARCC. Case studies of two of these efforts are highlighted in the following sections:

Development of the Arkansas Phosphorus Index

In 2002, the Oklahoma Water Resources Board (OWRB) promulgated a total phosphorus criterion of 0.037 mg/l for its Scenic Rivers, presenting a challenge to the Arkansas-Oklahoma Arkansas River Compact Commission (Commission). With five of Oklahoma's six designated Scenic Rivers sharing drainage with the State of Arkansas, there were concerns over the fairness of this criterion and its attainability by upstream industries and farmers in Arkansas. The Commission helped to foster an agreement committing Arkansas and Oklahoma to work together to coordinate watershed monitoring and develop joint watershed plans.

An outgrowth of the resulting mediation and consensus building was development of the Arkansas Phosphorus Index (API), a term used to describe the level of risk for potential movement of phosphorus across the landscape. On January 1, 2010, the Arkansas Natural Resources Commission (ANRC) adopted a revised API and began requiring it be used when preparing nutrient management plans in ANRC designated nutrient surplus areas primarily in watersheds which are shared with Oklahoma in northwest Arkansas. The USDA Natural Resources Conservation Service (NRCS) has also adopted the API as part of the 590 nutrient management conservation practices Standard.

The API assesses the risk of phosphorus loss in runoff from pastures and hayland as a function of source potential (phosphorus from the soil and manure application), transport potential (risk of phosphorus movement offsite as affected by runoff and erosion, field slope, grazing intensity and proximity to streams) and any additional best management practices implemented between the application site and potential receiving waters. For a specific set of field conditions, the index associates a phosphorus (P) runoff risk value to a specific manure or biosolids application rate. The classification of this value into a risk range determines if the application is environmentally acceptable.

FACTS Oklahoma-Arkansas Phosphorous Criterion

Phosphorous criterion of .037 mg/l adopted in 2002 to protect Scenic Rivers

Main Focus: Oklahoma and Arkansas commitment to work together to reduce nutrient pollution made possible through partnership with Arkansas-Oklahoma Arkansas River Compact Commission; Commission established Scenic River Monitoring Technical Workgroup to help implement phosphorous criterion and support implementation efforts

Membership and organizational structure are strengths of the Arkansas-Oklahoma Arkansas River Compact Commission. A federally-appointed representative serves as chair and, along with three signatory members from each state, is responsible for administering the compact. Standing committees focus on engineering, budget, environment and natural resources, and legal matters.

The federal role has been a critical one. In addition to chairing the commission, the federal government is involved in data collection and monitoring (USGS) and in ensuring compliance with the Clean Water Act (EPA).

If acceptable, the nutrient management plan specifies this application rate as the maximum rate for the combination of P source and field in question. During the implementation of a nutrient management plan, application rates up to the specified maximum can be applied. Lower application rates are generally assumed to have lower environmental P runoff risk and therefore also acceptable. The University of Arkansas: Division of Agriculture's publication "Using the 2010 Arkansas Phosphorus Index" describes the API and how to interpret the assigned risk and provides example calculations.

The API addresses seven site characteristics which are grouped into either Source or Transport Factors. The Phosphorus Source Factors are: (1) soil test P and (2) soluble P application rate. The Phosphorus Transport Factors include: (3) soil erosion, (4) soil runoff class, (5) flooding frequency, (6) application method and (7) timing of P application. In addition to management practices that influence site characteristics, there are nine additional BMPs that can be considered to reduce P runoff risk. The landowner has the option to implement a combination of diversions, terraces, ponds, filter strips, grassed waterways, paddock fencing, riparian forest buffers, riparian herbaceous buffers and field borders.

Illinois River Watershed

The Illinois River originates in northwest Arkansas and flows westerly into and through Oklahoma before joining the Arkansas River downstream of Gore, Oklahoma. The river is a source of tourism, water supply, and controversy for the states of Arkansas and Oklahoma. Excessive nutrient loading from wastewater discharge point sources, urbanization, and livestock production nonpoint sources led both public and private sector leaders to initiate a comprehensive nutrient reduction effort within the watershed. Baseline nutrient loading levels were agreed upon for major streams in the Illinois River watershed and a reduction goal of 40% of the baseline level was adopted. Reporting of reduction and water quality improvements on these streams is provided annually at the Arkansas-Oklahoma Arkansas River Compact Commission meeting. At present, both point and nonpoint source reduction efforts in Arkansas has resulted in significant downward trends in the 5-year rolling averages at most stream monitoring locations.

The coordinated efforts in the Illinois River watershed consist of legal, regulatory, and voluntary reduction activities that are proving effective in nutrient reduction and water quality improvement. City, county, state, federal, and private industry partnerships have been formed to address nutrient management issues "on-the-ground" in local communities and have resulted in positive changes to existing policies and legal mechanisms available to support nutrient reduction. A few highlights of reduction efforts in the Illinois River watershed include:

- NPDES nutrient limits for wastewater dischargers,
- Increased water quality monitoring and reporting,
- Registration of all poultry and livestock production operations, on-farm nutrient management planning, certification of nutrient management planners and applicators,
- Increased funding for USDA conservation and state nonpoint programs,
- Research and study of new nutrient markets and market-based solutions,
- Development of watershed phosphorus nutrient index, and
- Creation of proactive non-profit watershed groups and stakeholder involvement.

Reduction activities will continue in the Illinois River watershed as long as nutrient impairment remains a threat to beneficial water uses in Arkansas and Oklahoma.

In addressing the matter of barriers and challenges to interstate initiatives, an official with the OWRB notes that interstate compacts are critical in resolving conflicts that might otherwise be referred to the Supreme Court.

FACTS

Illinois River Watershed

Main Focus: Reduction of nutrient pollution from wastewater discharge, urbanization, and livestock production in Arkansas and Oklahoma portions of the Illinois River

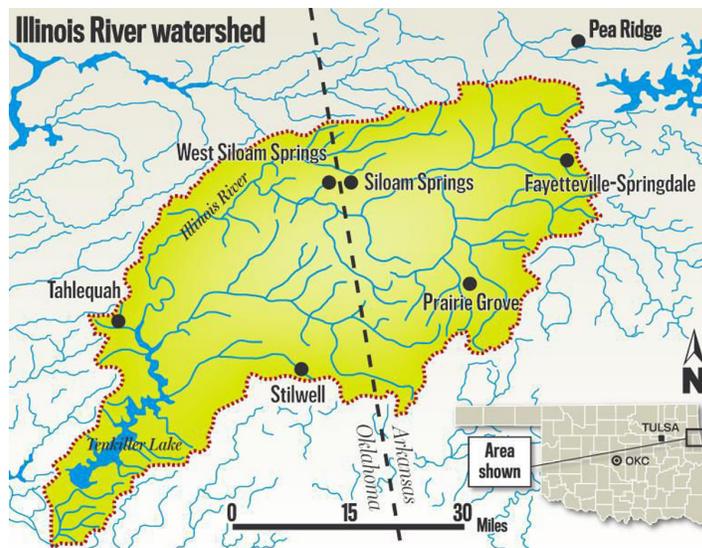
Reporting to the Arkansas-Oklahoma Arkansas River Compact Commission shows significant downward trends in 5-year rolling averages at most stream monitoring locations

Great Lakes Regional Body/Compact Council Review of Water Diversion Proposal

The Great Lakes-St. Lawrence River Governors & Premiers take the lead in protecting the world's largest supply of surface fresh water. In 2005, the governors of the eight Great Lakes-St. Lawrence states (Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, Wisconsin) and the premiers of Ontario and Quebec signed the Great Lakes—St. Lawrence River Basin Sustainable Water Resources Agreement. At the same time, the governors endorsed the companion Great Lakes—St. Lawrence River Basin Water Resources Compact which became law in 2008. These accords, developed through the Council of Great Lakes Governors, detail how the States and Provinces will manage and protect the Basin and provide a framework for each State and Province to enact measures for its protection.

The Compact and Agreement reflect the culmination of the earlier work of a US/Canadian initiative coordinated by the Council of Great Lakes Governors. To ensure consistency in water management policies and practices appointees of the eight state governors and two provincial premiers formed a working group to develop a legal and management regime—Annex 2001. Annex 2001 was an addendum to the 1985 Great Lakes Charter, a non-binding, good faith agreement among the Great Lakes states and provinces to manage large in-basin consumptive uses and out-of-basin diversions. The impetus behind Annex 2001 arose in 1998, when the Nova Group (a small Ontario firm) received a provincial permit to withdraw water from Lake Superior with the intent of transporting it by tanker to Asia. Although the permit was ultimately revoked, it raised alarm in both the US and Canada about the prospect of bulk water exports and emphasized the value of an interstate/international agreement.

The Agreement and Compact, with few exceptions, generally prohibit diversion of Great Lakes water outside of its watershed. For those meeting the criteria for an exception to the prohibition, the Regional Body (the eight governors and the two premiers) must review the proposal according to criteria laid out in the Agreement. Then the Compact Council (the eight governors) reviews the Regional Body's Findings before voting on whether to approve the diversion according to criteria laid out in the Compact.



Illinois River Watershed
Credit: EPA, Steve Reckinger/Tulsa World

The process of review and allowing or not allowing a proposed diversion was tested for the first time in 2016 with the submittal of the City of Waukesha, WI's diversion proposal. The City is located in a county that straddles the Great Lakes watershed making it eligible to apply for a diversion. Guidance to assist the Regional Body and Compact Council with review of a diversion had been drafted soon after the Compact was adopted and the members used this guidance to review the Waukesha proposal. After months of review, a hearing, public meetings and consideration of public comments, the Compact Council voted on June 21, 2016 to approve Waukesha's proposal for a diversion.

FACTS Great Lakes-St. Lawrence River Basin Water Resources Agreement & Compact

Agreement signed in 2005

Compact created in 2008

Involves 8 American states
and 2 Canadian provinces

Main Focus: Generally
prohibit diversion of Great
Lakes water outside of
the watershed; exceptions
voted on by Compact
Council

During the Waukesha diversion review process, some Regional Body/Compact Council members and also some members of the groups that advise the Regional Body noted there were areas of the Guidance that could include more detail or clarification. They determined that potential future applicants and Regional Body/Compact Council members would benefit from a revision of the Guidance. Some members also recommended that the Council write rules for diversion proposal review. The thought was that the Guidance could be revised and rules written soon after the Waukesha decision while the process was still fresh in members' minds.

The Compact Council's decision to approve the City's diversion proposal was challenged by the Great Lakes St. Lawrence Cities Initiative. The Council and the Cities Initiative ultimately settled and revision of the diversion review guidance and rule writing commenced in summer of 2017. The Regional Body and Compact Council worked for 18 months to bring the guidance and rules to a vote in December 2018. The Guidance continues to be revised with additional sections identified earlier that could not be fully addressed before the December 2018 vote.

Ohio River Valley Water Sanitation Commission Pollution Control Standards

The Ohio River Valley Water Sanitation Commission (ORSANCO), established through the Ohio Valley River Sanitation Compact on June 30, 1948, represents eight states and the federal government to improve water quality in the Ohio River Basin. Member states include: Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Virginia, and West Virginia.

The Commission and its member states have cooperated to improve water quality in the Ohio River Basin ensuring the river can be used for drinking, industrial supplies, and recreational purposes; and can support a healthy and diverse aquatic community. ORSANCO operates monitoring programs to check for pollutants and toxins that may interfere with specific uses of the river.

ORSANCO operates programs to improve water quality in the Ohio River and its tributaries, including: setting waste water discharge standards; performing biological assessments; monitoring for the chemical and physical properties of the waterways; and conducting special surveys and studies. ORSANCO also coordinates emergency response activities for spills or accidental discharges to the river, and promotes public participation in programs, such as the Ohio River Sweep.

Potomac River Basin Comprehensive Planning and Water Supply Coordination

The Interstate Commission on the Potomac River Basin (ICPRB) was authorized by an Act of Congress in 1940 as a non-regulatory interstate compact agency of the Potomac basin states of Maryland, Pennsylvania, Virginia, West Virginia, and the District of Columbia. The federal government is also a member. ICPRB was originally formed in response to water quality issues that required a regional, cooperative response. The compact was later expanded to include water resources issues and related land issues by two or more jurisdictions. For 80 years' time, ICPRB recorded a series of impressive successes, such as improving the treatment of wastewater, assisting watershed groups, creating the Emergency River Spill Model, and assessing stream biological health. While these individual achievements were impressive, it was clear that fulfilling the mission of the ICPRB required a comprehensive, integrated, and participatory approach.

In 2014, USACE, The Nature Conservancy, and ICPRB co-authored the Middle Potomac River Watershed Assessment that recommended that the ICPRB "develop the comprehensive water resources plan document" for the Potomac River Basin (page ES-8). As a result, the ICPRB developed and adopted the Potomac River Basin Comprehensive Water Resources Plan in 2018.

FACTS ORSANCO

Created in 1948

Involves 8 states and federal government

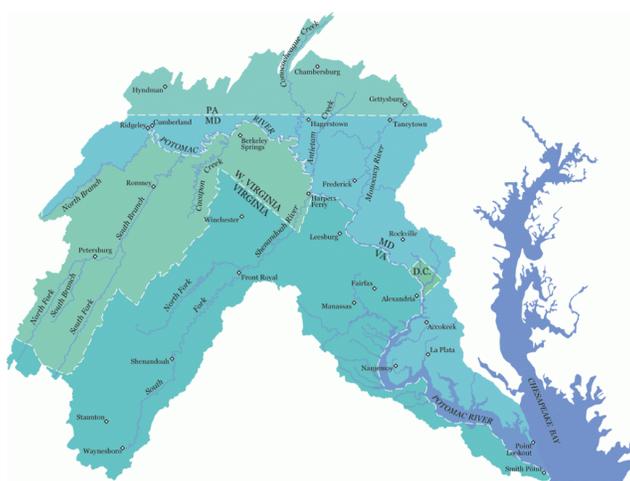
Main focus: Water quality improvement through setting of waste water standards; monitoring of pollutants and toxins; special studies



Given ICPRB’s holistic approach to sustainably managing land and water resources at the basin scale, the Commission was ideally situated to develop and serve as a catalyst for the implementation of such a plan that builds on regional, state, and local planning efforts. The plan represents the culmination of a diverse stakeholder process that included development of a shared vision for the basin, identification of five challenge areas (ensuring sustainable use and supplies, protecting and improving water quality, managing human land use for sustainability, protecting ecological health, and cross-cutting challenges), development of recommendations under each challenge area, and establishment of milestones and measures of success. Successful, adaptive implementation of the plan will require iterative evaluation of basin challenges and needs, ongoing stakeholder engagement, and funding. The ICPRB is committed to working with partners to achieve the shared vision for the basin described in the plan.

As an example of the legacy of collaborative work to ensuring sustainable use and supplies (one of the comprehensive plan’s five challenge areas), cooperative water supply management in the Washington, D.C. metropolitan area has been underway for decades. The need for new resources was recognized in the early 1960s, when a study by USACE first indicated that projected demands were in excess of the supply normally available from the Potomac River. In response to these projections, USACE evaluated structural and non-structural solutions to potential water supply shortfalls. Structural projects that were considered included construction of 16 large, multipurpose reservoirs in the Potomac basin, interbasin transfers, and the possibility of estuarine treatment. A series of studies were also conducted, by ICPRB, Johns Hopkins University, and the University of Maryland, demonstrating that if the operation and capability of the three major DC Metro Area water utilities (the Fairfax County Water Authority, the Washington Suburban Sanitary Commission, and the Corps’ Washington Aqueduct Division) were considered a single entity, the result would be a substantial advantage from the coordinated management of the supplies already available. This evaluation demonstrated that coordinated management of the same water resources produced substantial gains in reliability of the water resource at lower cost and led to the adoption of the Water Supply Coordination Agreement in 1982.

The Water Supply Coordination Agreement was developed among the three major DC Metro Area water utilities and the Interstate Commission on the Potomac River Basin. The ICPRB Section for Cooperative Water Supply Operations on the Potomac (CO-OP) was designated in the Agreement to be responsible for coordination of water resources during times of low flow. The management objectives embodied in the agreement and practiced by CO-OP involve keeping the off-Potomac reservoir resources balanced while meeting environmental requirements and municipal water supply demands.



Potomac River Basin

As an independent inter-jurisdictional organization, the ICPRB provides an effective forum for exploration and agreement on cooperative, multi-state functions that would otherwise be difficult to develop. The independence of its staff, combined with the shared responsibility for funding and guidance in regular meetings among the appointed Commissioners sustains a persistent, factual framework where identified concerns can be understood and resolved and coordinated planning for timely challenges such as climate change and spill response can be conducted.

FACTS ICPRB

Created in 1940

Involves 4 states, D.C., and federal government

Main focus:

Water quality

Led development of Potomac River Basin Comprehensive Water Resources Plan in 2018

Led cooperative water supply management in the Washington, D.C. area

Chesapeake Bay Water Quality and the Chesapeake Bay Commission

Members of the Chesapeake Bay Commission lead legislative and policy actions to restore the environmental health of the 64,000 square mile Bay watershed for the benefit of its living resources and its 18 million residents. Since its inception in 1980, the Commission has been a catalyst for the positive restoration signs we are now seeing. As a formal signatory to every regional Chesapeake Bay agreement, the Commission serves as the legislative voice in the multi-jurisdictional Chesapeake Bay Program Partnership and as a liaison to the U.S. Congress on policy and budgetary matters related to the restoration of the Bay and its watershed.

The Chesapeake Bay Commission traces its origins to a 1978 study by the joint Maryland-Virginia Chesapeake Bay Legislative Advisory Commission. This body was convened to evaluate existing and proposed structures for strengthening interstate ties and better coordinating the management of the Chesapeake Bay. At the time, the extent of the Bay's environmental decline was just beginning to be understood. The full extent of the environmental decline was later characterized by the Environmental Protection Agency in its "Choices for the Chesapeake" report, issued in 1983.

After considering several possible structures for cooperatively managing the Bay, including direct federal involvement, the Advisory Commission recommended the establishment of a bi-state Commission. It was felt that this option was preferable as it involved no federal statutory limitations, it highlighted state responsibility for cooperative Bay clean-up and it strengthened policy linkages between the states. Furthermore, it focused needed legislative attention on Bay problems that had been identified by the states' executive agencies by providing timely policy advice to the state legislatures. At the request of Pennsylvania General Assembly members, the laws in all three states were modified in 1985 to allow the Commonwealth to join as the Commission's third full and equal member.

The legislation creating the Commission, adopted by the General Assemblies in each member state, specified multiple specific goals that still guide the Commission today:

- 1) assist the legislatures in evaluating and responding to mutual Bay concerns;
- 2) promote intergovernmental cooperation and coordination for resource planning;
- 3) promote uniformity of legislation where appropriate;
- 4) enhance the functions and powers of existing offices and agencies; and
- 5) recommend improvements in the management of Bay resources.

Twenty-one members from three states define the bipartisan Commission's identity and its work. Fifteen of the members are state legislators, five each from Maryland, Pennsylvania and Virginia. Completing the ranks are cabinet secretaries from each state who are directly responsible for managing their states' natural resources, as well as three citizen representatives who bring with them unique perspectives and expertise and represent the full range of urban, suburban and rural life enjoyed in the watershed.

With over a quarter-century of work behind it, the Commission has earned its reputation as a regional, bi-partisan leader. By combining its unique access to both the legislative and executive branches of each Bay state with well-honed skills in research, policy-development and consensus building, the Commission has achieved consistently strong and effective results in pursuit of Bay restoration goals. It has made remarkable strides in learning the complex workings of an enormous estuary, determining the federal and state actions that are needed to sustain its living resources, and persuading its colleagues in the general assemblies and executive branches to act.

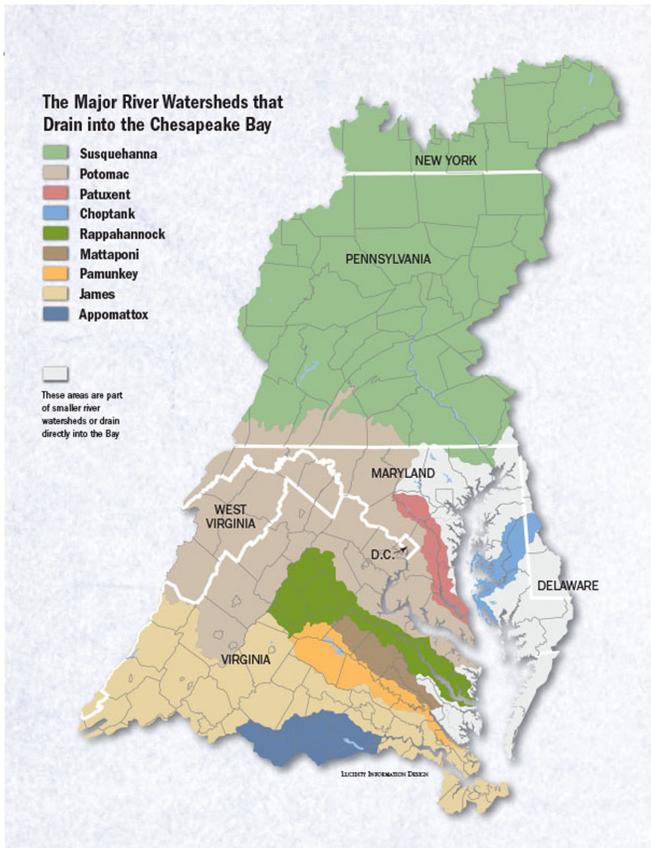
FACTS Chesapeake Bay Commission

Created in 1980

Involves 3 states, D.C., and federal government

Main focus:

Legislative voice and liaison to US Congress and state legislatures



The 64,000 square-mile Chesapeake Bay watershed
 Credit: Chesapeake Bay Foundation

It is important to distinguish the Chesapeake Bay Commission from the Chesapeake Bay Program partnership which began in earnest on the signing of the first interstate Chesapeake Bay agreement. The Commission was a precursor to the Program, helping to both create and launch it, and remains a signatory member.

The EPA study, congressionally funded at \$27 million over five-years to analyze the Bay's rapid loss of wildlife and aquatic life, identified excess nutrient and sediment pollution as the main source of the Bay's degradation. With a signing on December 5, 1983, the initial Chesapeake Bay Agreement committed the signatories – Maryland, Virginia, Pennsylvania, the District of Columbia, EPA and the Chesapeake Bay Commission – to work cooperatively, across jurisdictional boundaries, to

The Commission's foresight in organizing a partnership with the states, EPA, and the Alliance for the Chesapeake Bay led to the 1983 Agreement, launching the nation's most prominent and successful ecosystem restoration initiative. Five agreements later, the Commission remains a signatory and a member of the Chesapeake Executive Council, helping to set region-wide policy to advance Bay restoration.

manage and reduce pollution entering the Bay as well as to protect the Bay's habitat and living resources. A simple one-page document, it was oriented to management matters, calling for the establishment of the Chesapeake Executive Council, the governing body of the new multi-jurisdictional effort; the establishment of an Implementation Committee, which over time would become the heart of the "on-the-ground" work; and the maintenance of an EPA liaison office in Annapolis, MD, designed to ensure the ongoing investment of the Federal government in the initiative and to provide support to the Council and the Committee.

The Commission's foresight in organizing a partnership with the states, EPA, and the Alliance for the Chesapeake Bay led to the 1983 Agreement, launching the nation's most prominent and successful ecosystem restoration initiative. Five agreements later, the Commission remains a signatory and a member of the Chesapeake Executive Council, helping to set region-wide policy to advance Bay restoration.

The initial agreement defined the Chesapeake Bay Program efforts for the first four years. During those formative years, each signatory to the Agreement returned to its home turf to address Bay pollution water quality, habitat, and living resources issues raised by the EPA study. What we now consider basic and ordinary environmental laws and programs were the result. At the time, however, they were revolutionary: new state sediment and erosion control laws; sewage treatment plant upgrades; Maryland's Critical Areas Law and the beginnings of Virginia's Chesapeake Bay Preservation Act. Most significant, however, was the addition of Section 117 to the Clean Water Act in 1987, which specifically acknowledged the national importance of the Chesapeake Bay and efforts to restore it.

The initial agreement was updated in 1987, 1992 (through amendments), 2000 and 2014, with each update providing stronger commitments, more specific goals, and innovative strategies, often in recognition of a desire for more demonstrable restoration results.

- The 1987 Chesapeake Bay Agreement marked a significant expansion from the brief declaration of purpose and governance signed in 1983 to a goal-oriented framework of interstate policy to drive very specific, meaningful and measurable targets and timeframes. The most notable commitment was that of reducing nitrogen and phosphorus entering the waters of the Bay by 40 percent by 2000. Agreeing to numeric goals such as the 40 percent reduction, with specific deadlines, was unprecedented in 1987, but has since become a hallmark of the Program.
- In 1992, the Program adopted a set of amendments, drafted by the Commission, to the 1987 Agreement. These amendments moved the restoration effort watershed-wide, establishing the critical commitment to reduce nitrogen and phosphorous by 40 percent in the Bay's largest tributaries by 2000, and to cap those nutrients upon achieving the reduction. This new "tributary strategy" approach led to the creation of river-specific cleanup plans and load reductions specific to sub-watersheds across the states of Pennsylvania, Maryland, Virginia and the District.
- Judicial action in 1999 led the Program to consider, adopt and embrace the most ambitious of agreements in 2000, committing to an aggressive strategy for future restoration actions. Poor water quality resulting from excess nitrogen, phosphorus and sediment had led portions of the Bay to be listed as "impaired" under the Federal Clean Water Act. Collaborative actions to remove the Bay from this list, and generate cleaner and healthier waters, became the primary focus of the 2000 Agreement. And, in an unusual recognition by the Program partners, the agreement acknowledged that if the Program was unsuccessful in removing these waters from the "impaired waters list" by 2010, as required by a judicial consent decree, the Federal government would impose a clean-up plan known as a Total Maximum Daily Load, or TMDL.
- In addition to the water quality commitments, the Chesapeake 2000 Agreement or "C2K" as it is familiarly known, stated commitments for a broad range of restoration activities, including living resources, habitat, land use and stewardship. This is important because, while water quality demanded the focus of the day, the purpose of the Bay restoration was and remains to restore the living resources. Water quality is a component part of this effort.
- Because the loadings of nutrients and sediment come not just from the signatory states and the district but also from Delaware, New York and West Virginia, the water quality commitments of 2000 led the Program to seek the engagement of those three "headwater states". By 2002, all three had officially joined the Program's water quality restoration efforts through a memorandum of understanding.
- By the year 2008, it became clear that despite myriad initiatives designed to reduce the loads of nitrogen and phosphorus pollution, the Program would not succeed in removing the Chesapeake Bay and its tidal tributaries from the "impaired waters list" by the 2010 deadline. The Executive Council members, along with the headwater states, agreed to the development of a Federal TMDL.
- On December 29, 2010, the EPA established the Bay TMDL, including accountability features to guide actions to restore clean water in the Chesapeake Bay and the region's streams, creeks and rivers. The TMDL is the largest ever developed by EPA, encompassing the entire 64,000-square-mile watershed. The TMDL identifies the necessary pollution reductions from major sources of nitrogen, phosphorus and sediment across the Bay

jurisdictions and sets pollution limits necessary to meet water quality standards. Bay jurisdictions include Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia and the District of Columbia.

- In 2011, the CBP partners recognized the need to create a new, up-to-date agreement. Since the close of 2010, focus on the comprehensive commitments of Chesapeake 2000 had taken a back seat to the water quality efforts defined by the TMDL. Moreover, 14 years had transpired with improvements in scientific knowledge, significant changes in the regulatory landscape that brought in the headwater states, and the issuance of the federal Chesapeake Executive Order by President Obama.
- The 2014 Bay Agreement focuses on the near-term doable, reflecting the budget constraints, political volatility and conservative leanings of the times. It emphasizes the region's commitment to restore water quality, as outlined in the TMDL, a target based upon the science of the Program. It also commits to 30+ goals representing the ongoing and comprehensive nature of the restoration, addressing land, water and living resources restoration and management needs. New to the agreement is climate change (known as "resiliency"), embracing of the concept of adaptive management, and the expansion of the formal partnership to include the three headwater states – New York, West Virginia and Delaware.

As the Chesapeake Bay restoration has evolved, the Chesapeake Bay Commission has used its policy-making focus to pursue state and Federal policy – laws and budgets – to support the restoration. The result is an ecosystem whose restoration, management and protection are among the most sophisticated in the world.

Platte River Recovery Implementation Program

The Platte River Recovery Implementation Program (Program) brings together the states (Wyoming, Colorado, and Nebraska), federal government, water users, and environmental groups to work collaboratively to improve and maintain the associated habitats for the designated species, the endangered whooping crane, interior least tern and pallid sturgeon, and the threatened piping plover. The Program is intended to address the concerns including loss of habitat in Central Nebraska by managing key land and water resources in the central Platte region and in the process avoiding harm to the lower Platte River stretch.

The program has three main elements:

- Increasing stream flows in the central Platte River during relevant time periods
- Enhancing, restoring and protecting habitat lands for the target bird species
- Accommodating certain new water-related activities

Efforts to re-license Kingsley Dam on the North Platte River in western Nebraska, the presence of threatened and endangered species, and the U.S. Fish and Wildlife Service's 1994 Biological Opinion on Platte River operations provided the backdrop for conflict over the Platte River's vital water. Rather than engaging in years of courtroom battles over limited water supplies and individual river species, the governors of the three basin states joined with the Secretary of Interior in July 1997 to sign the "Cooperative Agreement for Platte River Research and Other Efforts Relating to Endangered Species Habitat along the Central Platte River, Nebraska."

As a part of the Cooperative Agreement, a Governance Committee (GC) was formed to lead the negotiation process. The GC consists of representatives of the three basin states; the Bureau of

FACTS **Platte River Recovery Implementation Plan**

Final agreement signed in 2007

Involves Colorado, Wyoming and Nebraska

Main focus: Protection of endangered species habitat along Central Platte River in Nebraska; four target species

Incentive-based water projects to improve flows to restore habitats

Reclamation; the Fish and Wildlife Service; water users from each of the three basin states; and environmental groups. The work of the GC culminated in early 2006 with a Final Program Document containing direction for all key elements necessary to implement a program to manage land and water resources to provide benefits for four target species on the river in Nebraska. The secretary of the interior and the governors of Colorado, Wyoming and Nebraska all signed the Final Program Agreement and the program commenced on January 1, 2007.

The program is being implemented in an incremental manner, with the First Increment covering the 13-year period from 2007 through 2019. The Program also provides Endangered Species Act compliance for existing and certain new water-related activities in the Platte basin upstream of the Loup River confluence for potential effects on the target species. Further, the Program mitigates the adverse effects of certain new water-related activities through approved depletions plans.

Over the past century, 70% of the water that was originally in the Platte has been removed or re-timed by storing it in reservoirs. Without these flows and the sediment load carried, sandbars and riverbanks have become overgrown with vegetation and the channels confined and narrow. To restore the habitat, the Program clears trees and other vegetation, increases flows at critical times, and augments sediment volumes in the river. The Program also releases “pulse flows” of water, a flow of 5,000 to 8,000 cubic feet per second (cfs) for three days in the spring, to help clear sandbars and maintain a braided river. Such pulse flows are, on average, planned for two out of three years.

The program’s objective is to use incentive-based water projects to provide sufficient water to and through the central Platte River habitat area to assist in improving and maintaining habitat for the target species. During the First Increment, the program has focused on re-timing and improving flows to reduce target flow shortages by an average of 130,000 to 150,000 acre-feet per year. In addition to the improved flow conditions, small pulse flows in the spring are intended to create vegetation-free sand bars suitable for plover and tern nesting. Flow re-timing will be accomplished in part by releases from Lake McConaughy, specifically the portion of the water stored in Lake McConaughy that is set aside and managed by the Fish and Wildlife Service for the benefit of the target species.



Platte River Basin

As the First Increment is set to expire December 31, 2019, new federal legislation was introduced in April, 2019 to provide the congressional authority for the extension of the First Increment for 13 additional years, with an expiration of December 31, 2032.

Lessons from the Case Studies

Despite the variation in authority, issues and geography, these case studies demonstrate some significant similarities with regard to their pattern of success and the “value added” for water resource management across state (and other) political boundaries:

- Anticipate and prevent inter-jurisdictional disputes by maintaining open lines of communication.
- Promote consistency in the development and application of multi-jurisdictional models and criteria, laws and regulations, and programs and procedures.
- Provide a reliable mechanism for decision makers to understand and collaborate on issues that cross jurisdictional boundaries.
- Pool resources and share expertise that exceeds the capability/resources of any single jurisdiction.
- Extend and sustain coordination among state and federal agencies. Avoid or resolve disputes due to inconsistencies in laws, policies, programs or priorities.
- Enhance implementation effectiveness through more integrated programs at a basin-wide or multi-state level (e.g., monitoring, information, education).
- Maintain a clear sense of purpose and momentum, an adequate and reliable funding base, and sufficient legal authority so that participating jurisdictions are willing to invest their time, talent, political support and funding.



Appendix B: Impetus for Study (as presented in 2006 Report)

Recent National and Regional Developments. Recent years have witnessed a “re-discovery” of watershed-based planning and management approaches to resource stewardship based on a growing awareness of the need for integrated water resource management. This re-discovery has been accompanied by a renewed interest in the multi-jurisdictional institutional arrangements needed to transcend geo-political boundaries and focus laws, policies, programs and projects on a hydrologic basis. Increasingly, traditional political jurisdictions (e.g., states, counties, federal agencies) are looking to established institutional arrangements as coordinating bodies and delivery mechanisms for watershed-based initiatives. In instances where interstate or watershed organizations do not exist (or are otherwise considered ineffective), attention is also being directed to organizational design and development efforts that will yield a new or revised institution best suited to the needs at hand.

Evidence of these trends is readily found in developments at the federal level over the past several years. A December 3, 2002 memorandum from the U.S. EPA Assistant Administrator for Water (G. Tracy Mehan III) outlined the Administration’s “Renewed Commitment to Watershed Management.” The memo describes the watershed, or “place-based” approach as one of the most important environmental guiding principles for U.S. EPA and the Administration. Soon thereafter, the agency’s new pollutant trading policy was released (January 13, 2003), clearly recognizing the need to involve interstate water resource organizations in policy implementation. In fact, the stated purpose of the policy is to “encourage states, interstate agencies and tribes to develop and implement water quality trading programs for nutrients, sediments and other pollutants where opportunities exist to achieve water quality improvements at reduced costs.”

During the same time frame, the USACE developed a Civil Works Program Strategic Plan for FY2003- FY 2008. This document stresses the growing importance of the comprehensive watershed approach to managing the nation’s water resources. In discussing the Corps’ vision of the watershed approach as a means to achieve integrated water resources management, the draft states “the foundation principles inherent to Corps planning- cost efficiency, environmental protection, and public participation- are consistent with a watershed approach.” The document also presents the federal agency obligation to “foster dialogue” about means to support state and local governments, but emphasizes that “the complexity of contemporary water management requires a commitment on the part of those involved in water resources management across all levels of government to find consensus regarding the development, management and stewardship of America’s water resources.” Complementing this initiative was a November 2004 memorandum (U.S. EPA and Asst. Secretary of the Army for Civil Works) regarding watershed-based approaches to planning and management activities.

The U.S. Council on Ocean Policy, a legislatively mandated body charged with providing a comprehensive review and assessment of the nation’s ocean and freshwater policies and programs, issued its report in March 2004. Consistent with the tenor of the U.S. EPA and USACE statements noted above, the Commission recognized the need for a regional (i.e., watershed-based) approach to resource stewardship. Its sweeping recommendations placed interstate agencies and other multi-jurisdictional bodies (both existing and to be established) in a pivotal coordinative, planning and service delivery role. Similarly, outcome of the National Water Policy Dialogue (refer to Appendix F), sponsored by the American Water Resources Association in Arizona in October 2005, further reinforced the need for a concerted effort to embrace interstate approaches to watershed management.

Complementing these agency-specific endorsements of multi-jurisdictional governance arrangements is a pronounced trend toward large scale, ecosystem-based restoration programs that transcend individual agencies (at any level of government) and geo-political boundaries. Examples, among many others, include the Everglades Restoration Plan, the Chesapeake Bay Program, the Coastal Louisiana initiative; the Gulf of Maine initiative and the Great Lakes

Regional Collaboration. Such efforts have captured the imagination (and, increasingly, the funding support) of Congress. They have invariably been accompanied by concerted institutional analyses, and associated institutional building or revision efforts that recognize the complex, multi-jurisdictional management requirements of the restoration effort.

Priority Interests of the Interstate Council on Water Policy. The Interstate Council on Water Policy (ICWP) is a national organization of state and regional water resource management agencies that provides a forum for information exchange and technology transfer, and a mechanism to work with federal agencies on issues of shared responsibility. In particular, ICWP focuses on water quality and quantity issues, and the dynamic interface between state and federal roles.

ICWP has provided a voice for the states on issues of national water policy since its establishment in 1959. In the late 1960s, ICWP successfully fought for the Water Resources Planning Act, which provided the basis for improved state water planning programs. During the 1970s, ICWP served as the Standing State Advisory Committee to the U.S. Water Resources Council established under that Act. In the late 1980s, ICWP influenced the development of the 1986 WRDA that redefined cost-sharing for federal water projects. In the following decade, ICWP continued its leadership by spearheading the development of a National Water Policy Charter and promoting a national dialogue on water policy. Associated with this leadership was promotion of a watershed-based approach that transcended an historical focus on geo-political boundaries.

Beginning in the 1990s, ICWP sharpened its focus on interstate water policy and management issues. A driving factor was a national survey of river basin interests conducted in 1997 in collaboration with the Great Lakes Commission. Survey results were later published in a report suggesting that multi-jurisdictional river basin organizations can- and should- play a key role in the future of water resources policy and management, particularly given the continuing trend toward watershed-based approaches that transcend geo-political boundaries. One outcome of this survey was the signing of an Interstate Partnership Declaration by nine interstate organizations in 1999, with a tenth joining the following year. Among others, the declaration provided for the establishment of an Interstate Governmental Water Resources Standing Committee that provided these entities with a continuing forum for information sharing, policy development and advocacy. Charter members included the Great Lakes Commission, Delaware River Basin Commission, Interstate Commission on the Potomac River Basin, Interstate Environmental Commission (New York, New Jersey, Connecticut), New England Interstate Water Pollution Control Commission, Ohio River Basin Commission, Ohio River Valley Water Sanitation Commission, Susquehanna River Basin Commission, Upper Mississippi River Basin Association, and the Missouri River Basin Association. For further reference, the text of the Interstate Partnership Declaration is included in Appendix C.

Declaration of Partnership For the 21st Century

A **Resolution**, forming a partnership among interstate governmental organizations for water resources management.

Whereas, the management and protection of water and associated land resources for the long term is essential in maintaining a healthy environment, vibrant economy and a high quality of **life; and**

Whereas, water resources are shared through numerous basins both nationally and internationally, requiring collaborative approaches among a multitude of jurisdictions and organizations; and

Whereas, the roles of federal, state, provincial, regional and local governments have undergone rapid change in the area of water resources management, including an enhanced focus on the watershed approach; and

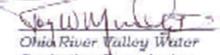
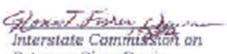
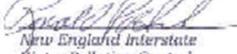
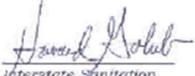
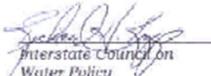
Whereas, interstate governmental organizations for water resources management have a long history of providing programs and services at the watershed level on an efficient and cost-effective basis; and

Whereas, such organizations provide a forum for discussion and action on water policy issues at the federal, state, provincial, regional and international levels of government; and

Whereas, such organizations share an interest in strengthening and formalizing a partnership focusing on increasing their effectiveness in water resources management and enhancing their responsiveness to their membership and the public.

Therefore, Be It Resolved, that the undersigned organizations acting through the Interstate Council on Water Policy establish this Partnership for the 21st Century to develop a network for sharing and coordination; to collaborate to the extent possible on special projects and studies that impact multiple jurisdictions; and to develop and recommend water resources policies on issues of a regional, national and international nature.

Signed this 15th day of September in the Year 1999, by the following interstate governmental organizations for water resources management and the Interstate Council on Water Policy:

 Great Lakes Commission	 Upper Mississippi River Basin Association
 Susquehanna River Basin Commission	 Delaware River Basin Commission
 Ohio River Basin Commission	 Ohio River Valley Water Sanitation Commission
 Interstate Commission on Potomac River Basin	 New England Interstate Water Pollution Control Commission
 Interstate Sanitation Commission	 Interstate Council on Water Policy

Appendix D: The Evolution of Multi-jurisdictional, Watershed-based Management (as presented in 2006 Report)

Speculating upon, and preparing for the future of water resources management in the new millennium is an exercise in futility if we choose to ignore the past. Much can be learned from the evolution of multi-jurisdictional, watershed-based management approaches in North America; an evolution characterized by a long and storied history of institutional experimentation. “Lessons learned” from these experiences- both successes and failures- can help shape and refine institutional innovations to address current, emerging and even presently unanticipated needs.

This grand “experiment” literally began before the ink was dry on the U.S. Articles of Confederation, which established the limits of state sovereignty and outlined federal/ state relations in our fledgling nation. Our founding fathers quickly discovered three realities of the new frontier: 1) waterways were a vital transportation route; 2) access to abundant quantities of high quality water was a prerequisite to settling the interior of the new nation; and 3) geo-political boundaries were more of a hindrance than a help in developing and managing the nation’s water resources. In fact, the first interstate commission was established in 1784 when leaders in two of the original colonies- Maryland and Virginia- quickly realized that development of the Potomac River for navigation purposes could not be accomplished unilaterally. The resultant Bi-State Commission was subsequently formed and chaired by George Washington himself.

The logic of the watershed orientation in the US dates back at least to the observations and recommendations of explorer and land use planner, John Wesley Powell, who asserted in 1890 that the management of water in the arid regions of the US should be entrusted to the people making a living within the watershed. This less-centralized system is also similar to the federalism that James Madison argued for in the Federalist Papers and was embraced in the US Constitution. As “laboratories” for political innovation, in the terminology of the founding fathers, interstate organizations provide pragmatic and effective decisions following a “bottom-up” approach, when they align local, state and regional institutions in governing and developing public support while allowing flexibility to accommodate varied political, cultural and hydrological circumstances. Madison argued that effective governance requires assigning the functions of government to the institutions that have the leverage and accountability.

The evolution of multi-jurisdictional, watershed-based management in North America can be conveniently described by characterizing the significant features of five eras spanning 200+ years of experimentation.

The first might be considered the **Resource Development Era**, which includes our early history through the middle of the 19th century. The Bi-State Commission chaired by General Washington was the first in a series of interstate arrangements typically established on an ad hoc, issue-specific basis. These water resource management initiatives were generally development oriented, with waterborne transportation as a major emphasis. Virtually all were the outcome of management decisions designed to broaden the limitations of the physical system.

Single objective, structural development with little attention to environmental considerations was the order of the day during this era. However, the seeds of a more comprehensive, regional approach to resource management were planted during this era, as evidenced in the 1808 Gallatin Report, a national planning strategy prepared by Albert Gallatin at the request of the federal government. While this strategy focused primarily on transportation concerns, it is regarded as the first national effort at strategic planning with a regional focus.

The pressures and consequences of a rapidly expanding nation led to a second era of water resources management. The **latter half of the 19th century** might be referred to as the **Transition Era**. Ad hoc, issue-specific commissions gradually gave way to more permanent commissions with multi-dimensional water resource development responsibilities. The Mississippi River Commission, established in 1879, is considered to be the first federal commission with a multi-objective focus: navigation improvements, bank stabilization and flood control. The federal Rivers and Harbors Act, which established that commission, was amended numerous times to create other regional institutions, such as the Missouri River Commission (1884) and the California Debris Commission (1893).

The majority of this era was characterized by a growing infrastructure of legislatively authorized institutions with a dominant federal influence; either a single or modest set of objectives; and an orientation toward structural alteration of the hydro-geographic system. This focus, however, began to shift subtly as resource management challenges became increasingly complex, as the environmental consequences of development became apparent, and as visionaries of the day began to influence the policy process. In 1874, naturalist George Marsh introduced the notion of watershed-based management. Four years later, John Powell proposed

a radical change to water resources management; an approach that embraced drainage basins as the primary management unit and linked water and land allocations. While application of the watershed approach- even on a limited scale- was decades away, the foundation for hydrologically-based approaches to water resource management was established.

A third era in water resources management, which we will refer to as the **Federal Leadership Era**, includes the **first half of the twentieth century**. In many respects, it is the most complex and fascinating era to date. It was characterized by landmark federal legislation, and explosion of federally established and federally dominated water management institutions, an acceptance of multi-objective, comprehensive planning, and heated debate on the role of regional, multi-jurisdictional governance in the U.S. system of federalism.

Before 1900, the US Congress had already invested heavily in America's roads, river navigation, harbors, canals, and railroads had all received major subsidies. A tradition of subsidizing the settlement of arid western lands was well established when the Congress passed the Desert Land Act in 1877 and the Carey Act in 1894, which were intended to encourage private irrigation projects in the West. Beginning in 1888, Congress appropriated money to the USGS to study irrigation potential in the West and, while that irrigation study was underway, in 1890 and 1891, Congress passed legislation reserving rights-of-way for reservoirs, canals, and ditches on lands then in the public domain. However, westerners wanted more: they wanted direct federal investment in irrigation projects. Interest in federal development of irrigation projects increased as a result of the Depressions of 1873, 1883, and 1893, which dried up private investment in irrigation and other projects.

As the 20th Century began, these precedents and pressures converged to create the political, economic, and technological setting for the "reclamation" movement, which demonstrated its strength when pro-irrigation policies were adopted in both Democratic and Republican election platforms in 1900. In 1901, "reclamation" gained a powerful supporter in President Theodore Roosevelt.

To Roosevelt and others of that time, "reclamation" (i.e., irrigation) would promote "homemaking" (i.e., settlement of the western region) on subsistence family farms in line with the agrarian Jeffersonian ideal. After some political bargaining over rivers and harbors legislation, the Reclamation Act passed both Houses of the Congress and was signed by President Roosevelt in June 1902. The Reclamation Act provided both a mechanism for direct federal promotion of water development and a pledge to defer to the authorities of the states:

"Nothing in this act shall be construed as affecting or intended to affect or in any way interfere with the laws of any State or Territory relating to the control, appropriation, use, or distribution of water ... or any vested right acquired thereunder, and the Secretary of the Interior... shall proceed in conformity with such laws..."

President Roosevelt appointed an Inland Waterways Commission (IWC) in 1907 to prepare a comprehensive plan for improving and controlling river systems and declared in his letter appointment that each system, "from its headwaters in the forest to its mouth on the coast, is a unit and should be treated as such." A year later, the IWC offered three principles that are now fundamental to water management philosophy:

- comprehensive planning as a precursor to water resources development;
- intergovernmental and public/private sector cooperation in development activities; and
- an institutional structure that formalized cooperation among principal federal agencies.

A National Waterways Commission was also established upon the recommendation of the IWC, advising Congress in the areas of navigation, ports and terminals, flood control and hydropower, among others. Roosevelt also established a National Conservation Commission in 1909, with endorsement from the states that embraced comprehensive planning, although its focus went beyond water resources.

In the ensuing decades, this marriage of comprehensive planning with regional, multi-jurisdictional governance progressed quickly, with noteworthy examples ranging from the international to sub-state levels. The International Boundary Waters Treaty of 1909 between the US and Canada established the International Joint Commission with investigative and quasi-judicial functions across a broad range of-objectives. At about the same time, the Mayor of Chicago spearheaded the formation of an interstate commission to address pollution problems in southern Lake Michigan and a similar group was formed to address Lake Erie water quality problems. Six years later (1914), the Miami Conservancy District was formed in Ohio, moving beyond its primary flood control mandate to provide comprehensive planning and management services.

At the national level, many pieces of flood control and public works legislation were adopted with provisions that made development activities contingent upon the assessment of impacts on a watershed basis. These featured many new requirements that challenged the traditional hierarchy characterized by multiple agencies with substantial but separate authorities. In 1917, Senator Newlands of Nevada engineered passage of a bill with the goal of comprehensive planning for all the nation's waterways; this included not only navigation but, in his words, "every useful purpose" of the resource. His legislation also proposed intergovernmental coordination of a vertical as well as horizontal nature, assigning different levels of government distinct tasks. The initiative never came to fruition, due to disagreements in Congress on membership arrangements, but the fact that such a bill passed was indicative of the progressive thinking in regards to water resources planning and management.

The 1920s and 30s saw the federal government embrace and dominate the practice of comprehensive basin planning through various pieces of legislation. The Federal River Act of 1920, the Colorado River Compact in 1922, the Rivers and Harbors Act of 1927, and the Flood Control Act of 1938, among others, offer evidence of such dominance. The second of these was particularly significant because it included language authorizing USACE to undertake systematic surveys of each major river valley in the interest of flood control, navigation, and power and irrigation development. This signaled the federal government's first major venture into regional planning on a national scale. The ensuing "308" reports, so named for the relevant section of the legislation, have been described by one author as "the most comprehensive planning for water resources development that has ever been attempted."

The "alphabet agencies" of the New Deal years reflected the federal dominance as well, as evidenced by the establishment of entities such as the Civil Works Administration, Works Progress Administration, Civilian Conservation Corps and Public Works Administration. The latter entity involved a National Planning Board that made federal funds available to states for planning purposes, provided that the states created statutory planning agencies. During this era, the Tennessee Valley Authority (TVA) Act of 1933 was also passed, creating what remains the single most powerful and autonomous multi-state planning and development agency in the nation. The TVA, an outgrowth of the "308" report on the Tennessee River basin, was as much a social change initiative as it was a water resource management initiative, and its establishment and evolution over the years has had an impact far beyond the river basin boundaries.

By 1934, New Deal activities nationally had become a serious concern to Congress, and a resolution was passed specifically to address the need for a better coordinated approach to resource management and related activities. In response, President Roosevelt appointed a Committee on Water Flow to develop a series of coordinated water projects for Congressional consideration. Another outcome of the committee's work was formation of the National Resources Planning Board, charged with developing a better coordinated program for national public works planning; this body was operational until 1943.

In 1936, Congress ratified a compact between New York and New Jersey to establish the Interstate Environmental Commission (known as the Interstate Sanitation Commission until October 2000); Connecticut joined the IEC in 1941 based on recognition that it was sufficiently affected by the same water quality concerns and needed to implement efficient solutions. In 1940, Congress approved the creation of the Interstate Commission on the Potomac River Basin to address pollution concerns on the "Nation's River". In 1947, the New England Water Pollution Control Commission was established by an act of Congress with jurisdiction over the interstate waters of New England and New York.

Concurrent with these planning activities were other developments that signaled the evolution of the nation's approach to water resources planning and management. In 1936, in response to devastating floods in the New England and Mississippi Valley regions, Congress authorized massive amounts of funds for flood control- but with strings attached. Responsibility was centralized within USACE and cost share requirements with affected states were established. Two years later, with passage of the 1938 Flood Control Act, the federal role was further expanded, with the federal government assuming all costs of reservoir construction for flood control- including lands, easements and rights of way.

Interstate concern over water supply allocation early in the century, as development in some western states proceeded faster than in others and it appeared that the Prior Appropriation Doctrine might be applied across state lines to the disadvantage of those states that were starting later and developing slower. The US Supreme Court decided the case of Wyoming vs Colorado in 1922, the same year representatives of the seven Colorado River Basin states met in Santa Fe to endorse the Colorado River Compact. Many more interstate-federal compacts allocating interstate waters on the basis of negotiated terms and conditions were adopted in the 1940s and '50s.

In 1928, the Boulder Canyon Act ratified the Colorado River Compact and authorized construction of Hoover Dam, which was a key element in implementation of the compact, and the All-American Canal System. During the Depression, Congress authorized almost 40 reclamation projects promoting water supply and hydropower infrastructure development and providing

public works jobs. Among these projects were the beginnings of the Central Valley Project in California, the Colorado-Big Thompson Project in Colorado, and the Columbia Basin Project in Washington.

The development and ratification of numerous interstate compacts over the years, apportioning the flow of interstate waters among the states, of several international treaties governing the sharing of streams by the United States with Mexico or Canada, and numerous court decisions made Reclamation's efforts to comply with state or territorial water law even more complex.

In 1943, USACE established a successor agency to the National Resources Planning Board in the form of the Federal Inter-agency River Basins Committee (FIARBC). A multi-agency federal organization, the FIARBC was tasked to establish a series of regional committees to "serve as centers for communication among federal agencies concerning their respective plans." Six such entities were eventually established between 1945 and 1950, and were comprised of federal and state representatives. The FIARBC gave way to an Interagency Committee on Water Resources during the 1950s and was subsequently replaced by the U.S. Water Resources Council in 1965.

The nation's willingness to embrace this emerging notion of regionalism and the attendant proliferation of various forms of regional governance was cause for alarm in some sectors. The federal Bureau of the Budget, for example, feared that such institutions would compromise the tradition of federalism and place a growing burden on the federal budget. The agency described such institutions in disparaging terms, such as "excrescences on the constitutional system"; "unusual cases, deviant new growth in the government landscape"; and "a constitutional anomaly to be treated with caution." Such arrangements, however, were here to stay, and the balance of the Federal Leadership Era was characterized by continued institutional experimentation designed to enhance communication and coordination among the increasing number of federal agencies and other public entities involved in water resources management.

A fourth era in water resources management might be termed the **River Basin Era**. Extending from 1940 through the mid-1980s, it was characterized by unprecedented institution building at the river basin level; an assertion of state stewardship responsibility; emerging federal/ state partnerships; and a decided emphasis on environmental protection and resource management, as opposed to development.

President Truman's Water Resources Policy Commission (1950) called for dramatic change in national water policy, recommending that Congress establish separate river basin commissions for each of the major basins. This recommendation was never acted upon by Congress. However, in 1955, President Eisenhower's Advisory Committee on Water Resources Policy (comprised of the Secretaries of Agriculture, Defense and Interior) recommended a similar arrangement and, four years later, authorizing legislation was introduced in Congress. The need for such an arrangement was subsequently reiterated by a Senate Select Committee on National Water Resources in 1961.

There were, however, vocal detractors of this continuing evolution toward basin governance that echoed some of the concerns articulated by the federal Bureau of the Budget in the 1930s. For example, Representative Harris Elsworth of Oregon spoke against the establishment of a Columbia Valley Administration that would, in his words, "bind most of the five states in the Pacific Northwest in the chains of a regional agency." Representative Ben Jensen of Iowa described the proposed national system of regional management authorities as "the recommendation and hope of the Communist Party of America." Even the National Wildlife Federation, via resolution, stated its opposition to the creation of any such authorities as being "unjustified, unnecessary and a dangerous departure from our American form of government."

These concerns notwithstanding, the River Basin Era gave us the Water Resources Planning Act of 1965 and, with it, the U.S. Water Resources Council, a series of federal/ state river basin commissions (Title II commissions), and a program providing financial assistance to states for comprehensive river basin planning. Institution building prior to passage of that Act was intense as well and, among many others, this era saw the establishment of the Great Lakes Fishery Commission (1954), Great Lakes Commission (1955), Delaware River Basin Commission (1961) and the Susquehanna River Basin Commission (1971).

The dismantling in 1981 of Water Resources Planning Act institutions, via Executive Order of the president, signaled the beginning of the end of the River Basin Era. Soon thereafter, however, numerous states in regions throughout the nation took it upon themselves to "resurrect" the Title II commissions (minus the federal participation) to maintain basic planning and coordination services. The Missouri River Basin Association is an example.

A fifth, and current, era in water resources management might be termed the **Ecosystem Partnership Era**. Its origin is found in the early/ mid 1950s, and its hallmark is the widespread adoption of ecosystem-based management principles and movement from a top down, command and control, government dominated approach to a bottom up, partnership-based, inclusive approach.

Evolution to this current era was not the product of an orderly, calculated strategy. Rather, it was the outcome of multiple- and not necessarily mutual compatible- developments. The “new federalism” philosophy of the Reagan Administration resulted in the downsizing and “reinvention” of the federal government, a move undoubtedly influenced by budgetary concerns and fiscal constraints. The impact on water resources management was profound; the aforementioned termination of the U.S. Water Resources Council was illustrative of the Administration’s view of water resources issues as matters primarily of state and interstate concern. Over time, a “kinder and gentler” federal government emerged, tempering its regulatory emphasis with voluntary compliance and a decided emphasis on partnering with other levels of government. Coinciding with this evolution was a new found ethic of self-determination, stewardship and collaboration among states within various river and lake basins around the country.

Multi-jurisdictional water resource management institutions with a basin orientation have enjoyed a renaissance in the Ecosystem Partnership Era, complemented by a flurry of basin-oriented institution building at all levels of government from the local watershed to bi-national levels. A particularly pronounced development has been the re-emergence of large scale, ecosystem based planning reminiscent of the Federal Leadership Era, but with a much more prominent role for the states. Evidence of this is found in a multiplicity of restoration-related initiatives that focus, among others, on the Chesapeake Bay, Everglades, Coastal Louisiana, Gulf of Maine, Gulf of Mexico and the Great Lakes. On a broader level, the 2004 report of the U.S. Commission on Ocean Policy (and a subsequent Executive Order) firmly endorsed a basin-oriented approach to management of the nation’s marine and freshwater resources, and recognized the emergence of state stewardship as a defining characteristic.

The emergence of the Ecosystem Partnership Era is not without its challenges for interstate organizations. Significant federal government “downsizing” in the mid-1990s, for example, included the loss of federal budget line items for support of many interstate organizations (e.g., Susquehanna, Delaware and Potomac commissions), as well as reductions in funding availability for a range of regional water resource planning and management programs. This has prompted public entities at the state, local and regional levels to pursue new types of partnerships and creative funding arrangements to accommodate loss of federal funds.

Characteristics of the Ecosystem Partnership Era reflect an evolution of thought and practice that has spanned more than 200 years. Over this time, a grand and continuing institutional experiment in water resources planning and management has seen the following:

- “Top down” mandates have given way to “bottom up” initiatives
- A vertical management hierarchy has given way to a horizontal approach
- A command and control, regulatory emphasis has been tempered by a partnership-oriented, voluntary compliance orientation
- Funding formulas exclusively or primarily dominated by federal appropriations have been replaced by cost share arrangements and other creative funding mechanisms
- A predisposition to building a legal and institutional infrastructure has been replaced by an emphasis on fine-tuning the existing infrastructure
- Designation of geo-political boundaries as the basis for planning and management efforts has given way to a basin-oriented approach
- The single objective, single media approaches of the past are now multi-objective and multi-media in nature
- An environmental ethic has been broadened to embrace the notion of “sustainability” and the attendant integration of environmental, economic, social and cultural considerations
- Non-governmental stakeholders, once the recipients of policy decisions, are increasingly partners in the development and implementation of those decisions

Singly and collectively, these and related characteristics of the Ecosystem Partnership Era suggest a tremendous opportunity for established regional, multi-jurisdictional institutional organizations to realize their full potential in the restoration, protection and sustainable use of water resources.

Appendix E: Findings and Recommendations Associated with Interstate Water Management (as presented in 2006 Report)

Interstate water organizations focus and facilitate complex decisions and the delivery of services in accordance with disparate state and federal laws and policies in a way that is responsive to local and regional needs and priorities. These organizations and capabilities should be cultivated if we expect to meet growing needs with limited resources.

Drawing from the preceding recollection, assessment, discussion and examples and from the principles articulated in our National Water Policy Charter (see Appendix F), we offer the following findings as the basis for discussion and the development, refinement or implementation of action items by members of the Interstate Council on Water Policy with our partners in the water community. While these findings relate specifically to interstate organizations, it is important to note that they also have relevance to intrastate and international organizations and, in fact, any entity operating within a watershed where the integration of water resource management should take place across local, state, tribal or other boundaries.

The following findings are derived from this report and are intended to summarize the basis for the associated recommendations. Together, our findings and recommendations anticipate development of an action agenda to improve water resource policy and management processes in partnership with federal officials and association leaders.

Finding 1: Interstate organizations have demonstrated their effectiveness in a variety of important roles, including water resource planning, monitoring, management, and policy development. Nonetheless, much of their potential is underutilized. Their contributions are not always recognized by their member state- or federal agency representatives or by state legislative or congressional leaders. As a result, the extent to which they have been enabled and engaged, and their ability to attract the necessary financial resources, has been compromised. As the federal budget tightens, the capabilities of many federal agencies and programs must adjust accordingly. The proven abilities of interstate organizations to assume substantial responsibility for water resource stewardship assessment, planning and project implementation in an open, inclusive process should provide an attractive option for sustaining a full range of integrated programs and services.

Recommendation 1: Highlight and Promote the Effectiveness of Interstate Water Organizations. Better information is needed to illustrate and publicize the specific contributions that interstate organizations are making to more efficient and effective water resource management decisions, and to encourage increased support for and reliance upon them. Among other objectives, these programs should produce a more visible and consistent presence at water meetings and conferences, enhance the national awareness of interstate water organizations (the consistencies and variations in their organization and responsibilities as well as their accomplishments and challenges).

Finding 2: The federal government has played a significant role in the management of interstate waters. This role has had many dimensions over time, ranging from exclusive decision making responsibility to technical assistance and financial support. Federal officials serve substantial roles in many interstate organizations: as a predominant member; as a co-equal partner; or in a supporting/observer role. Regardless of their role, the federal agencies have important national responsibilities with respect to interstate waters and bring valuable expertise, data and modeling assets, perspective and resources that complement those of the states in the interstate setting. A strong state/federal partnership is necessary to enhance the efficiency and capacity of integrated water resource management efforts in the interstate setting, especially in these years of very lean budgets and reduced agency capabilities.

Recommendation 2: Engage Federal Agencies in Collaborative Planning and Implementation of Interstate Water Management Programs and Projects. Interstate water organizations should expand their efforts to engage appropriate federal officials and agencies effectively in data collection, planning, and implementation efforts. Federal participation in interstate organizations should be directed, in part, at addressing barriers that have historically impeded integrated water resource management. Among others, this includes problems of fragmented authorities and inconsistent standards, inadequate and unreliable data and funding; complex procedures and rigid criteria.

Finding 3: Interstate water organizations are efficient service-delivery mechanisms for federal programs and projects that have regional (i.e., multi-state) dimensions. However, this role has not been institutionalized in federal legislation or recognized in the development and administration of many federal programs. Furthermore, the erosion of federal funding in recent years for interstate water organizations has compromised their ability to sustain essential services.

Recommendation 3: Fully Engage Interstate Water Organizations in Implementing Federal Programs, Initiatives, and Policies. Federal programs, initiatives, and policies should be implemented in a manner that recognizes the distinct challenges on interstate waters and the need for interstate collaboration. They should also be designed to engage and invest in existing interstate organizations to the greatest extent possible and to provide incentives that reward collaborative approaches among states and other jurisdictions.

Finding 4: The River Basin Commissions and Water Resources Council established under the Water Resources Planning Act of 1965 were abandoned in the early 1980s. The problems they were intended to resolve, however, still present a substantial concern. In many regions, successor organizations have evolved to meet the needs—or new organizations have developed to fill the void. A stubborn gap in national policy persists, where federal water programs and policies remain disjointed, fragmented, and sometimes in serious conflict. In addition, there doesn't appear to be an adequate interface at the national level between federal policies and interstate water management needs.

Recommendation 4: Establish a New Federal Advisory Committee for Coordinating Federal Water Programs, Policies, and Laws and to Guide Federal Involvement in LargeScale Watershed and Interstate Water Management Initiatives. The federal Advisory Committee on Water Information (ACWI) provides a very useful framework, consistent with the Federal Advisory Committee Act (FACA), for engaging stakeholders in a regular review and refinement of water data programs, policies, priorities and operations. A similar advisory committee should be established for the assessment and guidance of programs and policies related to other aspects of water management, particularly those related to large-scale watershed and interstate water resource management concerns, and focus on areas where there is conflicting guidance from federal statutes.

Finding 5: Federal water programs are designed primarily to respond to national priorities, which may or may not be consistent with local and regional needs, opportunities and values. Interstate water organizations provide an effective means for integrating federal and regional priorities, responding to issues at a regional scale, and promoting regional identity and enthusiasm for solutions that are consistent with national policies.

Recommendation 5: Interstate Water Organizations Should Nourish and Promote Regional Approaches for Meeting National Priorities. Federal officials and agencies and the ICWP should encourage interstate organizations to nourish local strategies and projects tailored to local hydrology, needs, opportunities and ecology and should cultivate sufficient flexibility in state and federal programs to allow for adaptation to new methods for assessing needs, establishing priorities, implementing projects and measuring results.

Finding 6: Large scale sustainable use and ecosystem restoration initiatives have been promoted with increasing regularity in recent years, an indication of growing local, state and federal support for integrated water resource management with a watershed perspective. These initiatives require effective collaborative governance. In some instances, failure to recognize and rely on existing interstate organizations has resulted in the creation of new entities, with redundant or confused responsibilities, and the inefficient use of limited public resources.

Recommendation 6: Interstate Water Organizations & ICWP Should Evaluate Emerging Large-Scale Resource Management Initiatives and Seek Full Engagement of Existing Organizations. As large-scale resource management initiatives emerge, they should be reviewed by interstate organizations and the ICWP to assure that existing organizations are engaged to their full potential. Federal officials should be alerted to this need, as well.

Finding 7: As an institutional form, interstate organizations exhibit a broad range of structural and operational characteristics that reflect the needs and circumstances of the watershed and constituent states. Although these organizations provide an extensive range of services, states often limit their authority in an effort to retain more independent control over the resulting rules, programs and projects. In addition, the normal turnover of official representatives in the governing and managing committees reduces the momentum needed in decision-making and implementation of interstate water organizations and leads to a diminished sense of potential as a vibrant forum for collaboration and problem-solving.

Recommendation 7: Enhance Education and Strategic Planning Functions for Committee Members and Key Stakeholders of Interstate Water Organizations. Interstate water organizations should maintain regular education and strategic planning functions for new and continuing members of their executive and management committees and for all interested stakeholders to strengthen their awareness of—and their confidence in—the capacity of the organization. These programs should sustain a stronger awareness of the organization's responsibilities and limitations and their relation to other resource management organizations in their watershed or region

These findings and recommendations anticipate development of an action agenda to improve water resource policy and management processes by the ICWP in collaboration with federal officials and other water community leaders.

Appendix F: ICWP Charter and AWRA Guidance

ICWP National Water Policy Charter

The following principles were articulated and adopted in our National Water Policy Charter and serve as the foundation for our undertaking this report and pursuing its recommendations with our partners in federal and state agencies, interstate organizations and in other water organizations. The complete Charter is located on the ICWP website.

Guiding Principles

- Manage water for long-term goals, recognizing both human needs and the health of water-dependent ecosystems.
- Manage ground and surface water as an integrated system, by hydrologic units, including both quality and quantity and considering all phases of the water cycle.
- Realign government roles and responsibilities for water management, shifting responsibility and authority from the federal government to states, regional agencies, and local government where appropriate.
- Improve government performance, reorganizing, consolidating, and integrating government water programs to increase their effectiveness and responsiveness to the public.
- Set water management priorities based on relative risk, considering costs and benefits of management actions.
- Recognize and include all affected interests in water policy making.
- Emphasize water management program results, not the bureaucratic process.
- Use economic and other incentives, wherever feasible, to achieve water management objectives.
- Increase awareness and improve the quality of public dialogue on water issues.

AWRA 2nd National Water Resources Policy Dialogue

We also give special recognition to the following guidance recommended by the American Water Resources Association, as a result of the Second National Water Resources Policy Dialogue they organized, which is expressed in their March 28, 2005 letter to President George W. Bush:

“Significant Challenges”

The Nation’s water issues need to be addressed in an integrated manner, focusing not on single projects but on programs and watershed and basin level issues. The successful cooperative and holistic efforts evidenced in evolving programs to restore the Everglades, manage the California Bay Delta, and protect Coastal Louisiana, need to be replicated across the country.

There is need to reconcile the myriad laws, executive orders and Congressional guidance that have created a disjointed, ad-hoc national water policy and to clearly define our 21st Century goals. Many important laws were passed early in the last century when national objectives and physical conditions were far different than they are today. Many of these laws are in conflict, placing executing Federal, State, and tribal agencies in tenuous and sometimes adversarial situations. Reexamination of these laws would eliminate contradiction and confusion and lead to far more effective water policies and policy implementation.

Recognizing the fiscal realities facing the Nation, there is need to more effectively coordinate the actions of Federal, State, tribal, and local governments in dealing with water. Collaboration instead of competition will provide better and more fiscally efficient use of scarce resources and will assist in overcoming decision gridlock on key water programs.

The Nation is blessed with access to superb scientific capabilities and cutting edge information technologies that can support water related decision making. These capabilities and technologies need to be clearly focused on supporting water policy decision makers as they carry out their challenging responsibilities.

Appendix G: Preferred Structural and Operational Characteristics for Interstate Organizations

Presented below is a descriptive listing- or checklist- of the types of institutional characteristics that will enhance the likelihood of success for interstate organizations. This includes structural characteristics (i.e., those that relate to the organization's legal basis, resources, authorities and membership/staffing arrangements) and operational characteristics (i.e., those that relate to the question of how the organization pursues its mandate and performs its functions.) Drawn from the literature, case study analyses and institutional observations, this checklist offers guidance in the design, revision and/or evaluation of any interstate organization for water management.

Structural Characteristics

1. Mandate and Legal Basis

- a. The organization's enabling legislation/bylaws must clearly state goals and objectives that are fully supported by, and consistent with the perspectives of the member jurisdictions. They should be sufficiently specific to be meaningful, yet flexible enough in interpretation to accommodate new challenges and remain relevant over time.
- b. Goals and objectives should differentiate the organization from other public bodies with similar interests, and clearly define the organization's unique niche in the "institutional ecosystem."
- c. Where possible, goals and objectives should be stated in terms that lend themselves to evaluation, and allow the membership (and other interested parties) to gauge progress over time.
- d. A strong legal foundation should be pursued in the interest of providing the organization with the formality, authority and longevity needed to perform its functions. Options include the use of legislation, treaty, compact, articles of incorporation or other legally recognized means.

2. Geographic Scope

- a. The geographic scope of the organization's authority should be hydrologically based, and encompass the water and related land resources of a clearly defined watershed, or basin.
- b. Given that membership typically includes public officials with statewide responsibilities, interstate organizations addressing a specific watershed must be sensitive to the impact that resource management issues in other areas of the state may have on their own geographic area of interest.

3. Membership

- a. Membership arrangements must be consistent with the organization's authority and, at the minimum, ensure equitable representation by all states within the basin. Full federal membership should be provided if organizational authorities include areas where there is a strong/predominant federal interest.
- b. In those instances where organizational membership is appointed, public hearings and a legislative confirmation system should be considered to ensure that broad input from the policy and stakeholder communities is received during the selection/ confirmation process.
- c. Representation from the citizen, private sector and sub-state/provincial levels should be secured by providing direct access to state and federal members through formal observer roles, advisory committees and other means.
- d. Each member's representative should bring sufficient authority and expertise into the deliberation process to warrant the confidence of other members and to enable the decision making process to move efficiently.

4. Breadth of Authority

- a. Interstate organizations must be fully accountable to their membership and responsive to its consensus decisions. However, in addition to responding to member state directives, they should have the authority to identify new and emerging issues and offer recommendations to the membership on appropriate actions.

- b. Member states must be willing to cede some degree of sovereignty to an interstate organization if that organization can perform associated functions more efficiently and effectively than individual states within the basin.
- c. Interstate organizations should be vested with a comprehensive range of authorities, recognizing that effective watershed-based resource management requires an “ecosystem approach” with environmental and economic dimensions.

5. Funding Arrangements

- a. Compulsory dues payments for member jurisdictions (i.e., states and federal agencies, as appropriate) should provide the primary basis for financing organizational operations, and be established in a manner that allows periodic adjustment over time to ensure adequate resources to address evolving needs and priorities. Dues should be augmented, but not replaced by acquisition of public/ private grants, donations and contracts, as appropriate, for established organizational priorities.
- b. Full participation and voting privileges should be contingent upon a given member jurisdiction’s full and timely financial contribution to institutional operations.

6. Staffing Arrangements

- a. Staffing levels should be conservative in recognition of budgetary realities, but sufficient to address mandated functions. This includes multidisciplinary capabilities to ensure competence in all areas of the organizations authority and function.
- b. Member jurisdictions must commit the staff needed to ensure full and meaningful participation in all aspects of the interstate organization’s work. This should also include the use of member jurisdiction staff for temporary assignments to the interstate organization, both to satisfy organizational needs and to enhance member jurisdiction understanding/ appreciation of the role of the interstate organization.
- c. Organizational structure should focus on staff development and retention, given the importance of retaining a stable, quality staff with an understanding of member jurisdiction needs and perspectives.

7. Management Function

In the interest of ensuring a comprehensive, “ecosystem approach” to the problems and opportunities within the basin, the interstate organization must have the authority to maintain and pursue a suite of functional capabilities that include, but are not necessarily limited to, the following:

- a. Centralized data collection, storage and analysis.
- b. In-house research and research coordination capability to address/ analyze emerging issues.
- c. An extension service capacity to advise, educate or otherwise inform member jurisdictions and constituents of emerging issues.
- d. Regulation and enforcement functions in those areas where centralized, basin-wide administration is more efficient and effective than individual jurisdictional approaches. At the minimum, a role in recommending environmental quality/ resource standards for uniform adoption is appropriate.
- e. A forum for dispute avoidance and, where necessary, arbitration/ conflict resolution.
- f. Comprehensive, basin-wide planning for the restoration, protection and sustainable use of the resource base.
- g. In-house monitoring and assessment capability, or a role in coordinating such among relevant basin jurisdictions.
- h. Coordination of policies and programs among member jurisdictions and other relevant public and private sector entities with shared interests and responsibilities.
- i. A stakeholder participation program to inform, educate and solicit input at all stages of the planning, policy development and management process.
- j. An advocacy role directed at points of political influence for the purpose of enhancing progress toward stated goals and objectives.

- k. A consensus building function to secure member jurisdiction agreement on policies, priorities and actions.
- l. A special studies function to provide the authority and flexibility needed to address and respond to emerging issues of relevance, including recommendations to member jurisdictions on appropriate course of action.

8. Resource Focus and Priority Setting

- a. The resource base in its entirety (i.e., water, land and air components of the ecosystem and the interactions among them) should be accommodated within the organization's areas of authority.
- b. A formal priority setting process should be specified to ensure that organizational resources are targeted in accordance with member jurisdiction interests. Principal focus should be directed at issues with transboundary implications where responses at the individual jurisdictional level are neither efficient nor effective.

Operational Characteristics

1. Role in the "Institutional Ecosystem"

- a. Before consideration is given to revising an existing organization or establishing a new one, a clear demonstration of need must be evident in light of existing organizational capabilities and basin management goals and objectives.
- b. In establishing a new organization, consideration must be given to other entities with related missions. Unwarranted duplication of effort should be avoided, and linkages established with other organizations, as appropriate, to ensure complementary and mutually supportive programs.
- c. In order to maintain trust and confidence in their operations, interstate organizations must reflect the "culture" and preferences of member jurisdictions, and be sensitive to the political realities of the basin.
- d. Operational decisions must be made in light of the larger "institutional ecosystem", with sensitivity to the perspectives of public and private sector stakeholders as well as member jurisdictions.

2. Allocation of Resources

- a. The full range of authorities and functions vested in an interstate organization should be exercised, consistent with stated goals and objectives, to the extent that resources permit.
- b. Organizational flexibility in the allocation (and reallocation) of resources is essential, given that anticipated problems and emerging priorities typically require a rapid response.
- c. The organization must position itself to look beyond current issues, and dedicate adequate resources to anticipate and respond to newly emergent issues, as well as those that cannot be anticipated at present.

3. Membership/Constituent Relations

- a. Responsiveness to member jurisdictions is the highest priority consideration for interstate organizations, both on a day-to-day and long-term basis.
- b. Given the often tenuous funding arrangements associated with interstate organizations, they must continuously demonstrate their "value added" to member jurisdictions and, where possible, quantify that value.
- c. Interstate organizations must carefully balance dual functions, as they are typically responsible for both carrying out the directives of member jurisdictions, and for advising those jurisdictions on new directions and initiatives. In either case, member jurisdictions must regard the interstate organization as a tool to support their collective efforts.
- d. Strong linkages (both formal and informal) between the staff of an interstate organization and the member jurisdictions they serve should be nurtured and maintained to ensure a collegial working relationship and clear understanding of current priorities and expectations.

4. Stature and Credibility

- a. Openness and objectivity in agenda setting, planning, analysis and policy development is essential in earning and maintaining credibility among member jurisdictions and constituents. This includes a willingness to address difficult and controversial issues, and fully disclose the rationale behind associated decisions.
- b. Publicizing and showcasing success stories to member jurisdictions and the broader community of constituents is important in maintaining a high profile and cultivating support among key decision makers and opinion leaders. Toward that end, a public affairs/media relations strategy should be an integral component of the organization's overall strategic plan.
- c. In the interest of maintaining stature and credibility across the broadest possible constituency, the organization must be sensitive to problems and opportunities throughout the entire basin, and to both environmental and economic issues.
- d. The stature and credibility of an interstate organization is a function of the level of interest, support and political conviction exhibited by its member jurisdictions. Positive relationships with these members must be nurtured and maintained.

5. Management Philosophy

- a. An "ecosystem approach" to resource planning and management should guide all organizational activities, and reflect a true focus on hydrologic boundaries and the integration of environmental and economic goals in addressing all issues.
- b. Long term planning and management goals should not be sacrificed for short term considerations designed only to enhance the organization's stature.
- c. Interstate organizations must be wary of "capture" by special interests and avoid any perception that their objectivity has been compromised.
- d. Although interstate organizations are mechanisms for supporting, assisting and responding to the stated needs of member jurisdictions, they must also exercise an appropriate level of initiative in identifying and addressing other new and emerging issues consistent with their mandate.

Appendix H: Parameters for Effective Interstate Water Management

The following list of questions builds upon the discussion of preferred structural and operational characteristics presented in the preceding section. These questions are intended to provide a framework and point of departure for dialogue as interstate organizations for water management are established, revised and/ or evaluated. The objective is to identify and implement measures that may be needed to ensure that all questions can be answered in the affirmative.

1. Does the institutional form provide some degree of longevity and constancy to permit ongoing attention to pertinent issues?
2. Does the structure allow for flexibility in addressing a range of emergent issues over time?
3. Is the range of desired resource management functions (and attendant authorities) adequately incorporated in the structure?
4. Is adequate financing, staffing and overall support sufficiently provided for?
5. Does the form permit equitable, multi-jurisdictional participation among all affected governmental units, as well as stakeholder input?
6. Can the form ensure, or at least encourage active support and participation by member jurisdictions?
7. Does the form have the credibility and standing to serve as the region's "agenda setter?"
8. Is a positive, interactive relationship with other components of the "institutional ecosystem" a consequence of the form?
9. Does the nature of the form permit a relatively smooth entry into the existing "institutional ecosystem?"
10. Is the geographic jurisdiction sufficient to encourage "ecosystem" management?
11. Is the legal authority vested in the institutional form sufficient for the management responsibilities to which it should be entrusted?
12. Is the membership structure sufficient to ensure responsiveness and accountability to members and constituents?
13. Does the form "build in" a base of support to permit its acceptance and influence in regional management?
14. Does the form provide the institution sufficient discretion to respond promptly to crises and identify and address issues before they become crises (i.e., anticipatory and response capability)?

Appendix I: Institutional Forms for Multi-Jurisdictional Water Resource Management

Category One: Multi-jurisdictional Compacts, Treaties, Conventions & Agreements

1. Interstate Compact

The interstate compact is among the most common forms of institutional arrangements for multi-jurisdictional water resource management. Compared to other arrangements, it is a formal mechanism: a legally binding instrument among two or more states on issues of shared interest. As identified by Zimmerman and Wendell in their definitive work on the subject, primary compact characteristics are as follows: 1) formal and contractual nature; 2) an agreement exclusively among states; 3) enacted into law in each party state via virtually identical language; 4) often subject to the consent of Congress; 5) enforceable provisions via the Supreme Court; and 6) takes precedence over “ordinary” state statutes. Interstate compacts typically provide for a commission to carry out its provisions. (Zimmerman and Wendell, 1951)

The interstate compact is a highly versatile mechanism and, as noted by Muys, has been applied to a variety of water resource management issues including but not limited to water allocation; pollution control; flood control and planning; and regulatory and project development. (Muys, 1971) Powers and authorities range widely, and include compacts with limited planning, coordination and advisory responsibilities, as well as others with extensive decision making and regulatory authorities.

The formality, authority and versatility of the interstate compact explain its extensive use and application over time: compacts were employed in the earliest days of the nation’s history and remain the instrument of choice in many settings today. Its strengths include its legal grounding; proven record of performance; the capabilities typically associated with an implementing entity (i.e., compact commission); its flexibility to accommodate emerging and evolving issues; its co-equal treatment of all parties (i.e., providing a “level playing field.”); and the collegiality it often cultivates among party states- essential in building trust, establishing cooperative initiatives, and avoiding/ amicably resolving disputes.

Weaknesses associated with this institutional form relate primarily, though not exclusively, to the inherent obstacles and delays associated with compact ratification. The compacting process is laborious and time consuming and, depending upon its focus, can become a highly politicized process that is subject to compromises, delays or outright termination. With notable exceptions, the inherently conservative nature of party states (i.e., hesitancy to surrender a significant degree of sovereignty to a third party) tends to limit compact authorities. Structurally, its exclusion of membership for non-state entities can limit its planning and coordination potential, although various devices (e.g., associate membership or Observer roles) can help mitigate any such problems. Finally, enforceability of compacts tends to be problematic in a practical sense, requiring the use of consensus-building and “peer pressure” techniques, rather than legal recourse, in implementing actions.

2. Federal- State Compact

The federal- state compact is an institutional device with many of the same characteristics associated with the interstate compact. The primary difference, as the name implies, is some form of formal federal membership, whether it be a non-voting arrangement or a co-equal status with member states that includes voting privileges. Impetus for federal involvement in compact activities can vary, but is typically seen in those instances where there is an overriding federal interest in the relevant geographic area and/ or the topics to be addressed under compact authority. Operationally, the federal government’s role under such a compact is quite similar to the states, except in the area of judicial enforcement, where the federal entity is exempt from the Compact and Contract clauses of the U.S. Constitution. Federal compliance with a compact action is not enforceable by other member states if the U.S. Congress elects not to cooperate. Also, federal agencies that agree to such a compact may exercise authority to unilaterally terminate their membership, an option not generally available to member states.

The federal- state compact came into broad usage in the early 1950s; the Delaware River Basin Commission (established in 1963) and the Canadian River Compact Commission (established in 1952) are generally regarded as good examples: each involves commissioners with equal authorities, one appointed from each member state and one federal representative appointed by the President. Many similar arrangements followed, and helped influence the federal/state Title II river basin commissions established later under the authority of the Water Resources Planning Act of 1967.

The strengths and weaknesses of the federal- state compact arrangement bear some similarity to those of the interstate compact. Federal agency membership does add an additional dimension to the water resources management process, as it unites the

constitutional powers of the two levels of government. Current trends in water resources management, which include state assertion of stewardship authority and continued/ enhanced reliance on federal funding sources and overarching legislation, suggest the need for the kinds of federal/ state partnerships that such an institutional device provides for. This device, however, adds considerable complexity to the compacting process. This process, which is consuming and laborious even when limited to states, is fraught with additional political obstacles when given a national profile and subjected to associated debate.

3. State- Foreign Power Compact

The state- foreign power compact is a variation of the previous two, and entails a formal alliance between states and their foreign counterparts. This device has garnered much interest over the years, particularly with respect to U.S.- Canada relations, but has seldom been applied due to the unique and fairly narrow application of the device, and the political challenges associated with adoption and implementation.

The U.S. Constitution prohibits any state from entering into a “treaty, alliance or confederation” with a foreign power, but does allow entry into an “agreement or compact.” (Article 1, Section 10). The Canadian equivalent (Constitution Act, 1982) appears also to allow such an arrangement, provided that it does not reach beyond the established authority of the provinces.

Interest in such a device dates back to the early 1930s, prompted by plans for state/ provincial cooperation in developing the hydropower potential of the St. Lawrence River. During the same period, depletion of the Lake Erie fishery prompted discussions concerning a state/provincial compact as well. Two decades later, a similar arrangement was proposed to establish the Great Lakes- St. Lawrence Seaway System. None of the three compacts materialized, due in large part to the U.S. Department of State’s fundamental objections, but the discussions did legitimize the notion, and potential value, of such a device.

The drafting of the Great Lakes Basin Compact in 1955 represents the closest approximation to a state/ provincial compact to date. As enacted by the eight Great Lakes states, the compact explicitly provided for full voting membership by Ontario and Quebec, subject to relevant provincial and federal law. However, in deference to the pronounced objections of the U.S. Departments of State and Justice, federal consent language adopted by Congress excluded such language. This has delayed, but not terminated efforts to establish the Great Lakes Commission as North America’s only example of a state- foreign power compact for water resources management. The Commission’s member states are on record in support of such a transformation, and efforts to that end are proceeding.

The strengths of such an arrangement are substantial. It provides a mechanism for state/ provincial coordination and decision-making in a bi-national setting; it offers a potent legal device with a significant degree of stature and formality; and it brings the attention- and resources- of two nations to bear on shared issues and opportunities. On the other hand, this device would likely garner the active opposition of the two federal governments, given concerns over the potential to supplant or supersede water resource management authority historically entrusted to the federal governments. Enforceability would be an issue as well, along with questions as to how such a compact would related to established arrangements at the federal level, such as the International Boundary Waters Treaty of 1909 and its implementing agency, the International Joint Commission.

4. International Treaty/ Convention/ Agreement

Although potential application of this institutional device is clearly limited to a bi-national setting, its many positive characteristics warrant careful examination. One obvious distinction is the formality associated with the device.

The power to make treaties with another nation is the most potent of any arrangement between two or more sovereigns. It is typically delegated expressly to the president or head-of-state and, in the United States, is preemptive of any conflicting state laws.

The international convention is similar in nature, although its legal status is somewhat less than a treaty; it is typically negotiated and signed by federal agency representatives and subsequently ratified by legislative bodies and heads-of-state.

The international agreement is the most frequently employed of these three devices, including any formal document signed by duly authorized federal officials.

Examples of these devices, as pertaining to US water resources management issues, include the Boundary Waters Treaty of 1909; the Colorado River Treaty with Mexico (1948), the Convention on Great Lakes Fisheries (1954); and the Great Lakes Water Quality Agreement, first signed in 1972.

The bi-national nature of these devices is fundamental to their strength. As formal statements of mutual agreement, they have an elevated stature in the external affairs of party nations and, generally speaking, are long-lived. While enforcement is problematic from an operational standpoint, there exists a significant degree of “peer pressure”; an obligation to live up to commitments. Further, they typically provide for an administrative/implementing body to ensure continuing oversight in addressing objectives. Finally, with respect to the aforementioned examples, they tend to be flexible in nature; able to provide for the involvement (at some level) of state/provincial governments and other nonfederal entities; and capable of embracing an ecosystem-based approach to water resource management issues.

Due to the elevated political sensitivities seen in bi-national settings, negotiation of such arrangements tends to be a laborious and time-consuming proposition. Authorities vested in their administrative bodies, with some exceptions, tend to be limited to “soft management” functions, a reflection of a general unwillingness to cede sovereign authority to a third party. Also, while such arrangements are reasonably inclusive from an operational standpoint, they can exhibit a “top down” hierarchical approach to management, and care must be taken to ensure meaningful participation by state/provincial governments, tribal authorities/ First Nations and other more localized public entities.

Category Two: Multi-jurisdictional Councils & Commissions

5. Interstate Council/ Commission

This category is a broad one, comprised of any multi-state entity for cooperative and coordinated management of a shared resource. While technically encompassing interstate compact commissions, this device refers more generally to a variety of less formal arrangements established by means such as federal legislation, consistent multi-state legislation, multi-state resolution or memoranda of agreement. Its application has been observed in an equally diverse array of settings ranging from ad hoc, issue-specific, advisory roles to permanent, multi-state authorities with broad powers. Primary characteristics include an explicit agreement between two or more states; formation of an implementation body; defined procedures to guide decision making; and a level of authority that does not interfere with the federal government’s primacy in domestic and international relations (i.e., powers generally less than those associated with a compact authority.)

The interstate council/commission device has been employed extensively over the years for water resources management, generally in those instances when “soft” management authority (e.g., planning, coordination, policy analysis, advocacy and other non-regulatory, non-binding functions) is desired. Examples, among many others, include the Western States Water Council (1965); Council of Great Lakes Governors(1982); and various “successor” agencies to the Title II river basin commissions established under the Water Resources Planning Act of 1976 (e.g., Missouri Basin States Association, New England Governors’ Conference).

Strengths associated with this device include its flexibility; relative ease of establishment; and demonstrated value in the areas of planning, coordination and regional advocacy. Unlike other arrangements with a stronger legal foundation (e.g., compact), the “gestation” period is significantly shorter and the institutional focus can be readily redirected to address emerging issues. Weaknesses include its states-only membership arrangement and generally limited authorities. Autonomy is also limited, and institutional power is derived solely from the support vested in it by the member states at any given point in time. Thus, breadth of activity and overall effectiveness can vary significantly.

6. Federal- State Commission

Also commonly referred to as a river basin commission, this institutional form was popularized in the 1960s and remains a dominant feature in the governance landscape for water resources management. Its distinguishing characteristics include a legally-constituted entity with state and federal government membership; parity among all members; geographic authority generally defined by hydrologic boundaries; an independent staff for administration and implementation; consensus-based decision making; and an orientation toward planning, coordination, research and advisory services.

The basin interagency committees of the 1940s, extraordinarily informal federal-state arrangements, laid the groundwork for this institutional device. The following decade (1955) saw President Eisenhower’s Advisory Committee on Water Resource Policy, a cabinet level body, recommend a nationwide system of river basin commissions. Another decade of Congressional study and debate ultimately led to the Water Resources Planning Act of 1967 and the establishment of Title II river basin commissions and the associated U.S. Water Resources Council. Eventually, six such federal- state entities were established (i.e., New England, Great Lakes, Ohio, Upper Mississippi, Missouri, Pacific Northwest) and served a range of critical functions until their ultimate

demise in 1981 when federal support was eliminated, and the U.S. Water Resources Council functions terminated, via Executive Order. Today, federal- state commissions remain in operation in a variety of forms, and federal/state partnerships have become a common feature of water resources management.

The federal- state commission device, as employed in the Title II river basin commissions, has a multitude of strengths that include a firm legal basis, co-equal federal and state participation; strong emphasis on planning, policy development, coordination and research; relatively significant organizational resources; and adoption of the watershed as the primary planning and management unit. The primary weakness of this arrangement is one found with other multi-jurisdictional arrangements as well: the historic reticence of member jurisdictions to vest significant management authority in these institutions. They have traditionally been used for baseline coordination and planning functions; states and federal governments have, only on rare occasions, selected to vest them with some level of “third party” management authority.

7. Basin Interagency Committee

With its origins in the 1940s, this institutional form is generally considered to be the first concerted attempt at comprehensive basin planning through multi-jurisdictional (i.e., federal/state) partnership.

An extraordinarily informal arrangement, it typically has no statutory basis, management authority or permanent staff. Its primary value is as a forum for communication and coordination among multiple governmental agencies with planning and management responsibilities in a shared basin. Administrative/ implementation responsibilities are shared among the members.

The Federal Interagency River Basin Committee (FIARBC), formed in 1943 via agreement between seven federal agencies, signaled the emergence of this form. Soon thereafter (1945-1950), a series of six interagency river basin commissions with federal and state representation, were formed. The record of accomplishment associated with this form has varied significantly, with federal and state participation varying from one institution to the next. The Missouri River Inter-Agency Committee has been identified as one of the more successful arrangements.

The Basin Interagency Committee was a transitional form that provided the foundation for more elaborate, statutory bodies that eventually followed. The FIARBC, for example, gave way to the Inter-agency Committee on Water Resources the following decade and, in 1965, that agency was replaced by the US Water Resources Council. Similarly, the various Basin Interagency Committees established in the 1940s were characterized by many of the baseline communications, coordination and planning functions later embodied in the river basin commissions established under the Water Resources Planning Act of 1965.

The appeal of the Basin Interagency Committee remains today what it was over 60 years ago: an informal, flexible and basin-specific arrangement that can be readily established to ensure co-equal interaction among federal and state agencies in a nonbinding setting. Resource commitments are minimal, and the form can be activated to varying levels as need dictates with significant maintenance costs.

Offsetting these appealing institutional characteristics are the negative aspects associated with informal arrangements of this nature. The absence of a statutory basis prevents the committee from exercising any form of binding planning or management authority, and the voluntary aspect of participation suggests the likelihood of sporadic participation by various parties over time. The non-binding nature of the institution may establish a “friendly” climate for addressing inter-jurisdictional conflicts, but any resultant resolution lacks enforceability.

8. Intrastate Special District

This category of institution is a broad one, and refers to any unit of government authorized by a given state to perform some type of resource management function on a watershed basis. Variations of this form are significant and, depending upon the state and associated management needs, intrastate special districts can range from large river basin authorities with broad powers to smaller, issue-specific authorities such as conservancy districts, flood control districts or planning-oriented watershed councils. The primary common characteristics are state authorization and a watershed focus.

This institutional form appears to have emerged in the early decades of the 20th century, and has remained popular to the present time. The Miami Conservancy District in Ohio, established in 1914, is one of the earliest and best known examples of the application of this form, having realized considerable success in comprehensive, watershed based planning and management. Intrastate special districts have flourished in many regions of the country, particularly in the south and southwest. Texas, in

particular, has broadly employed the intrastate special district to address a series of issues that include, among many others, infrastructure improvements; navigation; water supply; pollution control; conservation and reclamation; and drainage. In Canada, this institutional form is found in the series of watershed-based conservation authorities that blanket the province of Ontario and exercise a range of planning and management functions.

Despite the single state (provincial) character of this institutional form, its characteristics do have some transferability to the interstate level. Strengths of this form include the watershed focus; a statutory basis; strong local input; an emphasis on comprehensive planning; and (in some cases) significant management authority. Also, in some regions, adjacent institutions of this nature are linked to provide a broader geographic focus and enhanced coordination with similar entities. On the other hand, the intrinsic focus is on single-state issues, and extensive linkages between such institutions (and a new coordinating body as well) would be required to ensure interstate relevance.

9. International Commission

This institutional form pertains to any formally constituted public entity vested with authority to address resource management issues shared by, or otherwise impacting two or more sovereign nations. A variety of such arrangements can be found around the world and, principally, in Western Europe. In North America, leading examples include the (U.S.- Canada) International Joint Commission (formed under the Boundary Waters Treaty of 1909); the Great Lakes Fishery Commission (formed under the 1954 Convention on Great Lakes Fisheries); the (U.S.- Mexico) International Boundary and Waters Commission (formed via treaty); and the North American Commission for Environmental Cooperation, a tri-national (entity (i.e., U.S., Canada, Mexico) formed as a side agreement to the North American Free Trade Agreement signed in 1993. Complementing these arrangements are some two dozen additional institutions (in the Great Lakes region alone) that have some type of bi-national governance dimension. The scope and level of authority of such arrangements varies significantly.

Generally speaking, strengths and weaknesses associated with this institutional form have some similarity to those previously identified for the state/foreign power compact; interstate council/ commission; and federal/ state commission. International commissions tend to have a solid legal basis (i.e., treaty, convention or other formal agreement); generally broad planning and management functions; long term stability; professional staff and significant institutional resources; and mechanisms to involve (to some degree) other public institutions and stakeholder groups in decision making processes. Further, their bi-national/multi-national status also “levels the playing field” for all parties and ensures a co-equal role for each.

International commissions, however, generally tend to concentrate authority within the federal governments of each nation, thereby limiting the role of sub-national entities such as state governments. Decision making processes can be laborious and time consuming given the diplomatic nature of their activities. Further, the authority of such bodies tends to be largely (though not exclusively) limited to “soft” management functions, given the historic reticence of governments to invest some level of their sovereign functions in a third party.

Category Three: Federally-led Multi-jurisdictional Arrangements

10. Federal Regional Council

This category of institutional arrangement includes any council, committee, board or commission established by the federal government and characterized by a strong federal presence. Federal legislation and presidential executive orders are typically used to establish such entities, which have proliferated over the years and remain among the most frequently employed arrangements for multi-jurisdictional water resources management. Primarily advisory and coordinative in nature, federal regional councils tend to focus on a specific policy objective, are tied to and heavily influenced by the policies of the Administration establishing them and, comparatively speaking, tend to be rather short lived. Typically, they either address issues within a single, defined region (geo-political or hydrologic), or have multi-regional responsibilities within a nationwide focus.

The genesis of the federal regional council is found in the earliest days of United States history, but this device was popularized during the President Theodore Roosevelt era, with its federally-driven, river basin oriented planning and management emphasis. The “New Deal” years of the President Franklin Roosevelt administration also saw significant use of this device: the many federally-initiated “alphabet agencies” of the time are evidence of such. This institutional form remains popular today, but the top-down, federally-dominated characteristics of earlier applications have been replaced with a partnership-based emphasis featuring significant state involvement.

The strength of the federal regional council lies in the relative ease by which it is established; its region- specific focus; its ability to coordinate the efforts of often disparate federal agencies; and its effectiveness in elevating regional issues and needs to the national and federal agency levels. Historically, however, federal regional councils have not exhibited comprehensive planning or management functions, and have been primarily (though not exclusively) focused on intergovernmental coordination among federal agencies.

11. Federal Regional Agency

The federal regional agency is one of the most interesting institutional arrangements for water resources management, yet among those that have been employed the least. In fact, the Tennessee Valley Authority (TVA) is generally considered to be the only true example of such a form. It is characterized, as the name implies, by a single federal agency with comprehensive (and preemptive) management authority over a defined geographic area. Over the years, the TVA has on numerous occasions been lauded as a model for application elsewhere although never successfully emulated. In fact, bills designed to replicate the TVA in other regions were introduced in Congress every year for almost two decades after the Tennessee Valley Act was passed in 1933.

The TVA is vested with exceptionally broad, “cradle to grave” authorities addressing every aspect of water resources planning. Among others, this includes project financing, construction, operation and regulation in areas such as public and industrial water supply; water treatment; flood control; hydroelectric power; water-based recreation; fish and wildlife; navigation and ports; and, more generally, natural resources-related economic development. This breadth of authority is complemented by an equally extraordinary degree of autonomy and flexibility relative to other federally established entities. The TVA Board of Directors is empowered with sweeping responsibilities that include establishing general policies and programs; establishing and overseeing a staff; reviewing and evaluating progress toward goals; and annually approving all programs and budgets.

The events that culminated in the establishment of the TVA were unique to that time: a severe national economic depression; pronounced poverty in the seven state TVA region; the existence of significant federal properties in the region; a federal agency predisposed to large scale projects; the absence of a federal presence in the region; confusion of the “Hundred Days” in Congress that precluded full review, debate and understanding of the breadth of the legislation and, perhaps, most importantly, the personal interest of President Franklin Roosevelt.

Strengths associated with this institutional form are derived primarily from its strong centralized authority and comprehensive responsibilities. Such powers minimize the need for intergovernmental coordination and allow initiatives to be pursued from the conceptual to implementation stage within a single agency. Furthermore, direct revenue sources from operations, as well as a favored status with the Administration and Congress, help ensure that the resources needed to address agency objectives are available.

On the negative side, this “command and control” approach to resource management does not provide for inclusive, consensus-based decision making, and encourages an undue reliance on the federal government. Further, it severely limits opportunities to employ “checks and balances”, and temper agency decision making with external input. From a more practical standpoint, the prospects of employing this institutional form to future water resource management needs is limited by the political impracticality of pursuing an institution with TVA- like authorities.

12. Single Federal Administrator

As the name implies, this institutional form is the antithesis of the various inclusive, multi-agency, consensus-based arrangements described earlier. Rather, it refers to any arrangement in which a single, federally-appointed official is vested with decision making authority over a specified set of resource management issues within a defined geographic area.

Application of this institutional form has historically been limited, with the best example being found in the Colorado River Basin where, under provisions of the Colorado River Compact, The Secretary of Interior has been delegated broad management authority with respect to apportioning the waters of the Colorado. This arrangement arose out of a 1963 decision by the U.S. Supreme Court that legitimized the Congressional apportionment method of resolving water allocation disputes. A more limited application of this institutional form is found in oversight of the Lake Michigan Diversion at Chicago, a function performed by a Special Master appointed by the U.S. Supreme Court.

The single federal administrator arrangement epitomizes the “top down, command and control” approach to basin governance and therein lays both its strength and weakness. Lines of authority are clear and definitive, decision making can be expedited,

and a single leader provides the focal point for all planning, policymaking and implementation activity. On the negative side, this institutional form tends to be limited to issue-specific concerns (e.g., water allocation) and does not lend itself to the broader planning, management and coordination functions typically associated with basin governance. Intergovernmental collaboration and shared stewardship/ decision making authority is clearly lacking.

Category Four: Quasi and Non-governmental Institutions

13. International Court

The international court is a formally constituted legal institution vested with authority to adjudicate differences arising between two sovereign nations on any matter of shared interest. It is not a management agency in the conventional sense and exists solely for the purpose of providing disputing parties with recourse for a binding decision.

This institutional form has historically had little appeal in North America, where nations prefer to resolve disputes through diplomatic channels. At the broader international level, however, this form has been used extensively. Various forums and procedures for dispute avoidance and resolution are available through the United Nations and its Environmental Program. Most notably, the International Court of Justice is a well-established mechanism for resolution of resource management and environmental disputes. Specific to North America, quasi-judicial authority is vested in the International Joint Commission via Article X of the International Boundary Waters Treaty of 1909. Under this authority, the two governments can agree to refer to the Commission “any questions or matters of difference” arising between them for a binding decision. Notably, this provision has never been invoked, and both parties have historically pursued non-adjudicative means to resolving disputes.

Provided it has the ability to compel two or more parties to be bound by its decisions, this institutional form has a number of strengths. It is a formally constituted body that operates on an ongoing basis; it provides clear and unquestioned decision making authority; it serves as a locus for expertise/institutional history; and it ensures equitable treatment of all parties that come before it.

A primary limitation inherent in a court-based approach is the focus on dispute resolution as opposed to prevention. Enforceability is also an issue, as such arrangements generally lack effective mechanisms to compel parties to acquiesce to decisions rendered. Further, while court decisions can help shape future policy, this institutional arrangement has no planning or management function; it is reactive in nature.

14. Federally Chartered and Private Corporations

This form is comprised of corporate entities involved in resource development, either a quasi-public arrangement operating under a charter granted by a public agency, or an entirely private entity.

While the federally chartered corporation does not enjoy as much operational latitude as the private corporation, both institutional forms share similar characteristics. Both are seldom- if ever- used for broad resource planning and management functions; they have an emphasis on resource development; have a well- defined (and limited) authority; and operate in close coordination with governmental entities that provide oversight and regulatory functions. Few such entities are found in the water resources/ natural resources arena, but abound in other areas. In the United States, Amtrak, Comsat and the Public Broadcasting Corporation are examples of federally chartered corporations, and in Canada, the Ontario Waste Management Corporation and various provincial hydropower authorities offer examples. In the resource management arena, one of the best U.S. examples is the St. Lawrence Seaway Development Corporation (established in 1958 via presidential executive order). In Canada, its counterpart is the St. Lawrence Seaway Management Agency.

The private corporation has seldom been used for the type of large scale, multi-objective resource management functions typically performed by public agencies. The closest example may be the Wisconsin Valley Improvement Company established by that state in 1907 (under unique circumstances) for flood control and developmental purposes associated with the state's pulp and paper industry and various hydropower facilities. Under state authority, the company (to this day) operates a reservoir system; leases reservoir rights; charges tolls for use; finances projects through bonds and company stock; and exercises the power of eminent domain.

This institutional form does have its strengths, such as the profit motive which can help maximize efficiency; the ability to respond more quickly to management needs than governmental bureaucracies typically can; the ability to develop a rapport and positive working relationship with private sector interests; and the potential to consolidate- within a single institution- planning, design,

financing construction and operations functions. On the negative side, the profit motive can have an adverse impact on long term resource management needs; the opportunity for broad stakeholder (and public agency) involvement can be limited; and viability of this arrangement is generally suited to a smaller geographic scale (i.e., sub-watershed as opposed to a larger lake or river basin.) Further, certain resource management functions (i.e., coordination, aesthetics, preservation) are often not well-suited for a profit-driven management arrangement.

15. Non-Governmental Organizations

Various functions associated with multi-jurisdictional resource management are increasingly being assumed by nongovernmental bodies, including such entities as academic institutions; foundations; professional associations; nonprofit organizations; citizen groups; business and industry coalitions; and individual “user” groups. Among their diverse range of resource management-related functions is coordination; information, education and outreach; research; legislative and policy analysis; advocacy; advisory services; fundraising; and program/ project management and implementation. The relationship of such entities to public agencies and other nongovernmental organizations varies widely. They can work in partnership; in separate but complementary ways; and/or in active opposition, depending on the nature of the issue and the mission of the organization.

By definition, nongovernmental organizations lack direct responsibility/ authority for public policy decisions. However, they can be a highly influential partner and opinion leader in the public policy process. They are free from the constraints of public institutions and often have greater flexibility to adapt to change. Many have substantial followings and a proven effectiveness in influencing public opinion and governmental action. Others, such as academic institutions that embrace objectivity and impartiality, can serve as effective intermediaries between opposing interests and bring respected expertise and research capability to bear on issues. Foundations, corporations and various associations can also direct substantial resources to management activities, significantly augmenting funds available through public institutions.

It is important to note that not all nongovernmental organizations are oriented toward facilitating the public policy process via independent and impartial coordination, catalytic and consultation functions. Many such organizations are best characterized as special interests, with a predisposition toward influencing the policy process with a specific objective in mind; resource management interests are often issue specific as opposed to “ecosystemic” in nature. Also, accountability is directed toward the organization’s Board of Directors and/ or constituency, as opposed to the public in general. Interests and priorities can change over time, and the viability of such entities (e.g., with regard to influence, impact and resources) can be short-lived. Finally, the “institutional ecosystem” for any given lake or river basin is typically a crowded one for nongovernmental organizations, and competition for funds, profile and projects can be intense. It is often difficult in such an environment for any single organization- or coalition- to establish a broadly supported role in coordinating and advancing resource management functions.

Appendix J: Interstate Compacts in the United States, listed by General Purpose

Organization	Congressional Approval	Roles of Organization
WATER APPORTIONMENT		
Animas-La Plata Project Compact	1968	Provides for storage and diversion of water from the Animas and La Plata River systems in Colorado and New Mexico for utilization in the Animas-La Plata Federal Reclamation Project.
Arkansas River Compact - Arkansas and Oklahoma	1970	Apportions the waters of the Arkansas River Basin. Creates the Arkansas-Oklahoma Arkansas River Compact Commission to administer the apportionment agreement, encourages pollution abatement programs, and facilitates cooperation for total development and management of water resources in the river basin. Commission advises a 100-member citizens organization known as the Arkhoma Association.
Arkansas River Compact - Kansas and Oklahoma	1965	
Arkansas River Compact - Kansas and Colorado	1948	
Bear River Compact	1958	Apportions the waters of the Bear River and establishes a commission to administer the compact among Idaho, Utah and Wyoming. Amended in 1980 to increase the storage allowance and establish a depletion level of 28,000 acre-feet annually. Also allocated new blocks of water for future development in Idaho and Utah.
Belle Fourche River Compact	1944	Apportions the waters of the Belle Fourche River with particular emphasis on administering public water supplies in South Dakota and Wyoming.
Big Blue River Compact	1971	Establishes a commission to promote interstate (Kansas/Nebraska) comity and equitably apportion the waters in the Big Blue River basin to promote orderly development of water resources and to continue active water pollution abatement programs in the party states. Provisions of the compact are administered by existing agencies in signatory states.
Canadian River Compact	1950	Establishes a commission to allocate and apportion waters of the Canadian River in New Mexico, Oklahoma and Texas and to perform all functions required by the compact either independently or in cooperation with appropriate government agencies and to make and transmit annual reports to the governors and to the President on the commission's activities for the preceding year.
Colorado River Compact	1928	Apportions the waters of the Colorado River Basin. Congress authorized seven states in 1921 to negotiate the compact. Six of them ratified the compact promptly, but Arizona did not join until 1944. An amendment was adopted in 1925 to waive the requirement that all seven states approve. Congress accepted the revision in the 1928 Boulder Canyon Project Act, which however, required California's approval. California approved the amended compact in 1929.
Costilla Creek Compact	1946	Apportions the waters of Costilla Creek in Colorado and New Mexico and creates the necessary administrative structure. In 1963 both states and Congress approved an amendment perfecting further utilization of the interstate waters.

Organization	Congressional Approval	Roles of Organization
Great Lakes – St. Lawrence River Basin Water Resources Compact	2008	The Great Lakes and St. Lawrence River Basin Water Resources Council and Regional Body was established through a parallel interstate compact between the eight Great Lakes states and a companion international agreement between the eight Great Lakes states and the Canadian Provinces of Ontario and Quebec. This international agreement seeks to reduce future water resource conflicts between the jurisdictions and allows for standardization of water management program components in the Great Lakes and St. Lawrence states and provinces to provide for the effective regulation of water withdrawals, consumptive uses, and diversions of water from out of the Basin.
Klamath River Compact	1955	Establishes a commission to promote comprehensive development, conservation and control of the resources of the Klamath River, and to foster interstate comity between California and Oregon.
La Plata River Compact	1925	Apportions the waters of the La Plata River between Colorado and New Mexico, and creates a joint commission to administer the compact.
Niagara River Water Diversion Treaty	1950	The Niagara River Water Diversion Treaty between Canada and the United States was created because of the concern of the uses of the waters of the Niagara River. Its purpose is to preserve and enhance the scenic beauty of Niagara Falls and the Niagara River, while providing for the most beneficial use of the river waters.
Pecos River Compact	1949	Establishes a commission to administer provisions of the compact and apportion the waters of the Pecos River between New Mexico and Texas.
Red River Compact	1955	Congress, in 1955, granted consent to Arkansas, Louisiana, Oklahoma, and Texas to negotiate a compact providing for an equitable apportionment among them of the waters of the Red River and its tributaries (69 Stat. 654).
Republican River Compact	1943	Establishes an agency to provide for the most efficient use of the waters of the Republican River Basin for multiple purposes and to provide for an equitable division of those waters among the party states. Provisions of the compact are administered by existing agencies of signatory states (Colorado, Nebraska and Kansas).
Rio Grande Compact	1939	Establishes the Rio Grande Commission to administer the compact and to apportion the waters of the Rio Grande River between Colorado, New Mexico, and Texas.
Sabine River Compact	1951	Establishes a commission to apportion the waters of the Sabine River and to plan develop and conserve the water resources of the river basin in Louisiana and Texas.
Snake River Compact	1943	Apportions the waters of the Snake River and directs that the compact be administered through the official in each state (Idaho and Wyoming) who is responsible for public water supplies and the collection of necessary data.

Organization	Congressional Approval	Roles of Organization
South Platte River Compact	1926	Establishes a commission to apportion the waters of the South Platte River between Colorado and Nebraska.
Upper Colorado River Basin Compact	1948	Establishes a commission to administer apportionment of the waters of the Upper Colorado River Basin System and to promote agricultural and industrial development. (Wyoming, Colorado, Utah and New Mexico)
Wyoming-Nebraska Compact on Upper Niobrara River Compact	1969	Apportions the waters of the Upper Niobrara River Basin and the groundwater common to Nebraska and Wyoming.
Yellowstone River Compact	1950	Establishes a commission to apportion the waters of the tributaries of the Yellowstone River among Montana, North Dakota, and Wyoming.
WATER POLLUTION CONTROL		
Mississippi River Interstate Pollution Phase Out Compact	1994	Establishes the Mississippi River Interstate Pollution Control Commission to eliminate water pollution under cooperative leadership between Louisiana, Mississippi, Arkansas, Tennessee, Missouri, Kentucky, Illinois, Iowa, Wisconsin, and Minnesota, and the United States.
New England Interstate Water Pollution Control Compact	1947	Establishes a commission to coordinate the water pollution control activities of the signatory states as they pertain to the waters of the compact area. Other activities include the assurance of water quality planning and standards in the compact area improving groundwater program coordination and distributing public oriented information addressing current environmental issues.
New Hampshire-Massachusetts Interstate Sewage and Waste Disposal Facilities Compact	1994	Authorizes local governments and sewage districts in New Hampshire and Vermont to engage in programs for abatement of pollution through joint facilities for the disposal of sewage and other waste products.
Ohio River Valley Water Sanitation Compact	1940	Establishes a commission for the purpose of maintaining waters in the river basin in a satisfactory condition, available for use as public and industrial water supply after reasonable treatment, suitable for recreational use, and capable of maintaining healthy aquatic communities, with the guiding principle being that pollution from one state shall not injuriously affect the various uses of the interstate waters.
Pacific Ocean Resources Compact	1994	Establishes an authority to coordinate and protect marine and coastal resources along the Pacific ocean. This includes encouraging uniform regulation of the transportation of oil and hazardous substances, providing a legal mechanism to regulate certain activities within the U.S. Exclusive Economic Zone, environmental monitoring and management, and ocean resource management. The compact becomes effective when two or more of Alaska, California, Hawaii or Washington ratify the compact and when it receives congressional consent. The Province of British Columbia is also eligible to join.

Organization	Congressional Approval	Roles of Organization
Tri-State Sanitation Compact	1935	Creates a commission to promote water pollution abatement and control within the tidal and coastal waters in the adjacent portions of Connecticut, New Jersey and New York. Since 1962, the commission has served as the coordinating and planning agency for air quality control Within the tri-state boundary area.
WATER RESOURCES AND FLOOD CONTROL		
Connecticut River Valley Flood Control Compact	1953	Establishes a commission to provide for financial reimbursement by downstream states for economic losses to political subdivisions in which flood control reservoirs are located. Commissioners have exercised more responsibility recently in keeping abreast of activities along the river which affect flood control.
Delaware River Basin Compact	1961	Establishes a commission as a regional multipurpose water resources regulatory agency with broad authorities for the planning, conservation, utilization, development, management and control of water resources and the promotion of cooperative and collaborative planning and action by the signatory parties. In addition to the four basin states (DE, NJ, PA, NY), the United States, represented by the USACE, is a party to the compact as well as having granted congressional consent to the agreement among states.
Great Lakes Basin Compact	1968	Establishes a commission to advise and make recommendations to the member states concerning regional water resources matters. These including comprehensive water use, economic development, and maintenance of a high-quality environment.
Jennings Randolph Lake Project Compact	1994	Authorizes the West Virginia governor to join with Maryland and the U.S. Army Corps of Engineers regarding the management, planning, operation and maintenance of the Jennings Randolph Lake Project in Mineral County, West Virginia, and Garrett County, Maryland. Provides for concurrent jurisdiction between West Virginia, Maryland and the Corps to enforce civil and criminal laws of the respective states concerning natural resources, boating and other regulations over the land and waters of the project.
Kansas-Missouri Flood Prevention and Control Compact	1994	Establishes a commission to plan and coordinate flood prevention and control efforts in Johnson, Wyandotte and Atchison counties in Kansas; Jackson, Clay, Platte, and Buchanan counties in Missouri.
Merrimack River (Basin) Flood Control Compact	1994	Establishes the Merrimack River Valley Flood Control Commission to coordinate flood control planning and water resource management in the basin of the Merrimack River and its tributaries.
New Hampshire-Vermont Interstate Public Water Supply Compact	1996	Agreement whereby joint public water supply facilities are erected and maintained.

Organization	Congressional Approval	Roles of Organization
Interstate Commission on the Potomac River Basin	1940 (water quality) 1970 (water resources and land issues)	The Interstate Commission on the Potomac River Basin is an advisory, non-regulatory interstate compact agency of the Potomac basin states of Maryland, Pennsylvania, Virginia, West Virginia, and the District of Columbia. The federal government also is a member. ICPRB was authorized by an act Congress in 1940 in response to extreme pollution levels that required a regional, cooperative response by all the jurisdictions. In 1970, amendments to the compact empowered ICPRB to address not just pollution issues, but water resources and related land issues by two or more jurisdictions. In 1979 the Commission created the Section for Cooperative Water Supply Operations on the Potomac (CO-OP), designated to be responsible for coordination of water resources during times of low flow.
Susquehanna River Basin Compact	1970	Establishes a commission as a regional multipurpose water resources regulatory agency with broad authorities for the planning, conservation, utilization, development, management and control of water resources and the promotion of cooperative and collaborative planning and action by the signatory parties. In addition to the three basin states (NY, PA, MD), the United States, represented by the USACE, is a party to the compact as well as having granted congressional consent to the agreement among states. Authorities also include water allocation and water quality monitoring.
Thames River Flood Control Compact	1958	Establishes a commission to administer the compact and promotes the cooperation in flood control and in the use of water resources of the Thames River Basin. (Connecticut and Massachusetts)
Tri-State Agreement on the Chesapeake Bay	1980	The Chesapeake Bay Commission is a tri-state legislative advisory group created in 1980 and composed of 21 legislators, executive branch appointees and citizens from Virginia, Maryland and Pennsylvania. The purpose of the commission is to advise the state legislatures on matters of concern regarding the restoration and management of Chesapeake bay. The commission is also a signatory to the 1987 Chesapeake Bay Agreement along with the governors of Virginia, Maryland, and Pennsylvania, the mayor of the District of Columbia and the administrator of the Environmental Protection Agency. In that capacity, the commission is obligated to move forward initiatives of the multi-jurisdictional Chesapeake Bay Program.
Wabash Valley Compact	1994	Created to promote better development of the natural resources within the Wabash Valley. Areas of focus for this compact's work are the improvement of agricultural function, recreational use and economic success. (Illinois & Indiana)
Wheeling Creek Watershed Protection And Flood Prevention District Compact	1967	Establishes a commission for the purpose of administering programs of flood control and preservation of natural resources and recreational facilities in the Wheeling Creek watershed. (Pennsylvania & West Virginia)