

**OPTIONS FOR TRANSBOUNDARY GOVERNANCE
TO PROMOTE SUSTAINABLE AND
ADAPTIVE WATER MANAGEMENT IN THE
APALACHICOLA-CHATTAHOOCHEE-FLINT BASIN**

The ACFS University Collaborative

Laurie Fowler, Katie Sheehan, and Shannon Bonney

Reviewed by Steve Leitman, Sam Fowler, Tom Ankersen, Richard Hamann



[INTENTIONALLY LEFT BLANK]

Table of Contents

Executive Summary	5
A. Introduction, Charge, and Scope.....	7
B. Background on the ACF.....	8
C. Providing an Immediate Forum for Transboundary Management Discussions through a Transitional Organization.....	13
Alternative 1	14
Alternative 2	15
Alternative 3	15
Alternatives Analysis.....	16
Recommendations if there is not immediate federal and/or state buy-in	18
Introducing Alternatives to Relevant Parties	19
D. Considerations for a Permanent Transboundary Water Management Institution for the ACF.....	19
Membership.....	19
Advisory Committees	21
Authorization	22
Functions	22
Functions Recommended for the ACF	23
Data clearinghouse and facilitation	23
Coordination, consensus building and conflict resolution	23
Adaptive planning	24
Education	24
Funding	25
Initial/Operational Funding	25
Special Project Funding	26
E. Examples of Transboundary Water Management Institutions	27
Delaware River Basin Commission.....	27
Interstate Commission on the Potomac River Basin	28
Catawba-Wateree River Basin Advisory Commission.....	30
APPENDICES	33

[INTENTIONALLY LEFT BLANK]

Executive Summary

In April 2014, the Apalachicola-Chattahoochee-Flint Stakeholders (ACFS) asked The University Collaborative (TUC) to develop recommendations for transboundary management of the Apalachicola-Chattahoochee-Flint (ACF) river basin, based upon a synthesis of previous Institutional Options research and a consensus-driven process between TUC authors and members of the ACFS. **The goals of this project are to: (a) suggest scenarios for bringing together key stakeholders in a transitional capacity to develop the framework for a long-standing and adaptive transboundary water management institution, (b) develop recommendations and suggest considerations for creating such an institution, and (c) provide a discussion of organizational components of representative institutions that may be instructional when considering the framework of a permanent ACF organization.**

The TUC Caucus Review Group (CRG) was formed in April 2014; it consists of ten ACFS Governing Board members selected to represent caucus interests and oversee the development of this report. A team composed of faculty, staff, and a PhD student from the academic TUC, which were involved with all three previous phases of Institutional Options research, developed and modified report drafts based upon input from the CRG.

This document, entitled “Options for Transboundary Governance to Promote Sustainable and Adaptive Water Management in the Apalachicola-Chattahoochee-Flint Basin”, represents the collaborative efforts of TUC authors and CRG reviewers. All scenarios and recommendations were initially developed based upon previous TUC research, but were subsequently modified to reflect the views of the CRG and ACFS at large.

Our team has developed three scenarios that provide an immediate forum for transboundary management discussions through a transitional organization. In the first alternative, the ACFS would maintain its current organizational framework with the addition of a new council – the ACF Basin Transition Coordinating Council– that would include representatives appointed by the states and their congressional delegations as well as members of the ACFS. This Council would develop the framework and support for a permanent transboundary water management institution. In the second alternative, the ACFS would provide the organizational home for the new entity but it would amend its membership, leadership, and voting structure to accommodate representatives from the state governments and state and federal agencies, as well as to reflect the new mission—the development of a permanent transboundary water management institution. A third alternative would be to establish a new organization, independent of the ACFS, to develop the framework and political support for a permanent transboundary water management institution. Two potential models for the third alternative are provided: (a) the Catawba-Wateree River Basin Advisory Commission,

and (b) the ACT¹/ACF Comprehensive Study Executive Coordination Committee and Technical Coordination Group which was active in the 1990s.

Our team made recommendations regarding major elements in the development of a permanent transboundary water management institution for the ACF; these address membership, advisory committees, authorization, functions, and funding. The following functions were identified by the ACFS as most important for a permanent transboundary organization to focus its initial efforts:

- Acting as a data clearinghouse and facilitator of common data standards (collection, management, etc.);
- Encouraging and facilitating coordination and consensus building and providing conflict resolution services;
- Supporting development of basin-level water management plans, specifically related to conservation and returns, supply augmentation and drought management; and
- Educating the general public and specific stakeholders about the need for transboundary management and particular opportunities and strategies for doing so.

To provide an idea of the gradient and variance in scope, authority, membership operational rules that are available, our team selected and described three transboundary water management institutions whose responsibilities include issues of water allocation, withdrawals and diversions, which are of particular interest in the ACF basin. These institutions include: (a) Delaware River Basin Commission, (b) Interstate Commission on the Potomac River Basin, and (c) Catawba-Wateree River Basin Advisory Commission.

It is our hope that the information provided in this report will stimulate discussion among the ACF Stakeholders, including the federal and state governments and water and natural resource managers, inform their deliberations, and ultimately lead to the development of an adaptive transboundary institution to assure the sustainability of a significant national resource.

¹ Alabama-Coosa-Tallapoosa (ACT)

A. Introduction, Charge, and Scope

“Water ignores all separations and boundaries save for those of the watershed itself. As such, it offers a vehicle to bring those who share it together. Since it touches all we do and experience, water creates a language through which we may discuss our common future.”

~Aaron Wolf²

The language of water in the Apalachicola-Chattahoochee-Flint basin (ACF) is changing. Despite decades of disagreement and cynicism, undercurrents of understanding, cooperation, and trust are emerging. The individual states have placed greater emphasis on proactive water planning. Federal agencies and non-governmental organizations have made significant advances in scientific knowledge and developed numerous conservation measures. The Apalachicola Chattahoochee Flint Stakeholders, Inc. (ACFS) has shown that it is possible for water users in all three states to work together to develop solutions. As explained later in this document, the U.S. Congress has clearly stated the need for collaborative water management in the basin and its willingness to provide assistance. If a concerted effort is made to continue on this course, future generations will characterize the language of water in the ACF as one of adaptive and sustainable cooperation.

What actions are needed to achieve this outcome? How do state governments and their agencies, federal interests, water users, and other groups work together to identify shared values and develop acceptable management solutions? Success here will not be found through a contentious lawsuit or a one-time agreement that will be obsolete in a number of years. Instead, it will be forged through a carefully constructed, enduring management framework that fosters cooperation, represents the values and interests of all stakeholders in the basin and responds to changing conditions.

Establishment of a transboundary water management institution is essential to provide this framework in the ACF. It can coordinate and integrate existing water programs, address gaps, provide an ongoing forum for building consensus and resolving conflicts between jurisdictions and upstream and downstream users, and anticipate and respond equitably to changing conditions in climate, population, and land use. No organization currently exists to perform such essential services in the ACF; because existing water management institutions in the basin are fragmented along traditional jurisdictional and functional interest lines, it's unlikely that any would either elect to change their mission to comprehensively address transboundary issues or would receive the public and legislative support to do so. A new transboundary organization can provide the

² Wolf, A.T. (2008). Healing the enlightenment rift: rationality, spirituality and shared waters. Journal of International Affairs 6(2): 51-73, p. 69.

ongoing administrative infrastructure needed to transcend jurisdictional barriers to promote water security, aquatic health and biodiversity, and economic development for all three states.

The ACFS, itself a non-governmental transboundary institution (but with no legislative authority), recognized the need for basin-wide water management early on in its existence. As such, it instigated a series of studies on 26 transboundary water management institutions in the United States, Europe, and Australia, including evaluation of their functional, structural, and operational components with an eye on transferability.³ This document builds on these studies and presents options for transboundary water management in the ACF. Pros and cons of the alternatives proposed are set forth frankly with the understanding that the entire document as currently written may never be seen outside the confines of the ACFS Governing Board. It is expected that some of the options identified in this report will be used as “strawmen” to initiate dialogue among the ACFS, state governments, and state and federal agencies, all critical players in transboundary management whose political support will be key to any organization’s establishment and viability.

This report begins by providing background on the ACF and the history of water disputes and collaboration in the basin. It then suggests three scenarios for bringing together key stakeholders in a transitional capacity to develop the framework for a long-standing and adaptive transboundary water management institution. Next, it provides recommendations and considerations for creating such an institution. The report ends with a more detailed discussion of organizational components of representative institutions that may be instructional when considering the framework of a permanent ACF organization.

B. Background on the ACF

Geography - The ACF basin covers approximately 19,600 square miles in the southeastern U.S. with about $\frac{3}{4}$ of the drainage basin in Georgia and $\frac{1}{8}$ each in Alabama and Florida. The Chattahoochee River (430 miles in length) originates in the mountains of Georgia, north of Atlanta, and moves southwest through Georgia, forming part of the state boundary with Alabama. In addition to run-of-the-river dams operated by private power companies, the Chattahoochee is impounded by five U.S. Army Corps of

³ **Phase 1:** Bonney, S., C. Bickerton, and L. Fowler (2012). “Identification and Evaluation of Institutional Models for the Effective Trans-boundary Management of the Apalachicola-Chattahoochee-Flint River Basin”. **Phase 2:** Bonney, S., L. Fowler, C. Ellis, A. Masak, and B. Zwald (2013). “ACFS TUC Institutional Options Study: Phase 2 Report”. Online at: <http://acfstakeholders.org/wp-content/uploads/2013/04/ACFS-TUC-IO-Report-Phase-2.pdf>. **Phase 3:** Sheehan, K., S. Bonney, C. Bartenstein, B. Easley, and L. Fowler (editor) (2014). “ACF Water Management Gaps Analysis”.

Engineers (Corps) reservoirs: Lanier, West Point, Andrews, W. F. George, and Lake Seminole, which is at the confluence of the Chattahoochee and Flint. Relative to other river basins in the United States, the ACF basin has a small volume of conservation storage relative to flow in the lower portion of the basin. Consequently, the capacity to retain and release flow from the ACF storage reservoirs is limited.⁴ The Flint River (344 miles) rises immediately south of Atlanta and flows through an agricultural region that is heavily irrigated by groundwater withdrawals. The connection between these surface and groundwater sources is recognized but not completely understood. The Apalachicola River (107 miles), formed by the confluence of the Chattahoochee and Flint, flows into the Gulf of Mexico at Apalachicola Bay, which is an important nursery for fisheries of the Gulf and the source of sizable harvests of shrimp, oysters, and blue crab. Six federally imperiled mussel species and the threatened Gulf Sturgeon inhabit the lower portion of the basin. The basin's rivers and their reservoirs are used for domestic and industrial water supply, agricultural irrigation, power generation and cooling, and navigation and are sources of recreational pleasure for millions of residents and visitors.

History of Litigation and Negotiation - In 1989, litigation commenced regarding the Corps' proposal to allocate water in Lake Lanier for water supply for metropolitan Atlanta. The suit was stayed when the three states and the Corps negotiated an agreement to conduct the ACT⁵-ACF Comprehensive Study, which was funded by \$11.25 million in federal appropriations and \$2.25 million in contributions from the three states.⁶ The study provided technical information, tools to evaluate water resources from a system-wide perspective, and background information on the management of river basins. It resulted in the ACF River Basin Compact, signed into law by Congress in November 1997. The Compact established the ACF Basin Commission, composed of the governors of the three ACF states and a non-voting federal member appointed by the President of the U.S., and charged it with "establish[ing] and modify[ing] an allocation formula for apportioning the surface waters of the ACF basin." The state commissioners were to unanimously approve an allocation formula to submit to the federal commissioner for final approval. After six years of negotiations, the Compact was allowed to expire in 2003 due to the state commissioners' failure to agree to an allocation formula. The lawsuits filed previously became active and additional suits were filed. (Resolution of the substance of some of these cases will depend on the content of the Corps' updated Master Water Control Manual for the ACF.) In November of 2013 the State of Florida sued the State of Georgia, alleging Georgia's actions have reduced flows of the Apalachicola River and requesting the U.S. Supreme Court to equitably apportion

⁴ Tetra Tech (2013). Final updated scoping report for the Environmental Impact Statement: Update for the Water Control Manual for the Apalachicola-Chattahoochee-Flint basin, Alabama, Florida and Georgia. Prepared for the U.S. Army Corps of Engineers, Mobile District.

⁵ Alabama-Coosa-Tallapoosa (ACT)

⁶ Kenney, D.S. (1995). Supplemental Review of Coordination Mechanisms Found in the Southeastern United States- Task A Report of Phase 2 of the ACT-ACF Coordination Mechanism Study, p. 15.

all of the surface and groundwater hydrologically connected to the Chattahoochee and Flint Rivers. In September 2014 the U.S. Solicitor General advised the Court that the State of Florida has pleaded an interstate water dispute of sufficient stature and character to justify analysis by the Court but that it is impractical to resolve the case before the Corps has updated the master manual which will include a new regime for minimum flows. It therefore recommended that the Court deny Florida leave to file the current lawsuit and instead allow it to refile after the updated manual is issued. A decision by the Supreme Court on whether to hear the case is expected sometime in fall 2014.

ACF Stakeholders - Meanwhile, in 2008 a handful of individuals within the ACF began exploring the possibility of forging a group representing the diversity of interests in the basin to break through the political and legal gridlock and forge consensus on water issues. After holding forums in the basin that confirmed widespread interest, 35 volunteers formed a steering committee and, in late 2009, incorporated a nonprofit organization, the ACF Stakeholders, Inc. The organization currently has 56 Governing Board members who represent 4 sub-basins and 14 interest groups. The tenet of the ACFS is not to suggest that stakeholders abandon their local interests but rather consider them in the context of a sustainable watershed. The mission of the ACFS is to change the operation and management of the ACF basin to achieve (1) equitable water-sharing solutions among stakeholders that balance economic, ecological and social values and (2) viable solutions that ensure that the entire ACF basin is a sustainable resource for current and future generations.

The ACFS holds no regulatory authority or any official governmental powers delegated by the federal or state government. Yet the organization has been effective at bringing together diverse interests to reach consensus on facilitation and development of a united vision and plan, and at raising funds to accomplish those steps. The ACFS has generated funding for an executive manager for organizational administration and part-time staff for meeting facilitation and other services. The meetings and activities of the group are the subject of much interest in the basin, generating media coverage and attendance by agency representatives and the general public.

Recently, the ACFS raised over \$1.7 million in private funds and hired contractors to help it develop a sustainable water management plan for the basin. The plan, written for a non-technical audience, will include detailed metrics on water quantity and quality needs of the stakeholders and explore various management options and trade-offs based on hydrologic modeling. The objective of the plan is the consensus-based development of one or more viable alternative management and water allocation scenarios.

Initiatives Underway - In addition to the work of the ACFS, much progress in sustainable basin management has been made in the last decade by the states, federal agencies, local and regional governments, and private parties (more fully described in

the Apalachicola Chattahoochee Flint Water Management Gaps Analysis published in April 2014⁷). State examples include:

- The State of Florida's investment in restoration projects and land acquisition and preservation in Apalachicola Bay and the establishment of the University of Florida Oyster Recovery Team;
- The Northwest Florida Water Management District's restriction on water withdrawals in the Apalachicola and Chipola Rivers;
- The establishment of the Metropolitan North Georgia Water Management District which encompasses the headwaters of the Chattahoochee;
- The enactment and implementation of Georgia's Comprehensive Water Management Plan including establishment of basin councils in the middle and lower Chattahoochee and the Flint;
- The adoption of the conservation-focused Georgia Water Stewardship Act;
- Restrictions on withdrawals in the Flint River;
- Augmentation of flow in Spring Creek to protect imperiled species; and
- Alabama's adoption of drought management planning.

At the federal level:

- The Corps has been engaged in extensive scoping and Environmental Impact Statement review pursuant to the development of its revised Master Control Manual (expected to be released in 2015).
- The U.S. Geological Survey's Water Smart initiative has provided new information regarding the interaction of surface and groundwater in the basin as well as instream flow needs of its imperiled species.
- The U.S. Fish and Wildlife Service and the Georgia Department of Natural Resources are exploring the feasibility of a habitat conservation plan to address needs of the federally protected aquatic species in the lower Flint and Apalachicola.

There is also some strong interstate collaboration between local governments and federal and state agencies, universities, and non-profit organizations regarding river restoration and recreation projects such as:

- Dam removal and creation of an urban whitewater course on the Chattahoochee in Columbus, Georgia and Phenix City, Alabama);
- Shared historic and cultural resources;
- Research and demonstration of agricultural water use efficiencies;
- And drought preparation activities of the National Integrated Drought Information System (NDIS) (led by NOAA).

Effect of Litigation - Despite these significant advances, there is still substantial disagreement among the states regarding the management of the ACF, specifically

⁷ See note 2.

under drought conditions. Florida's recent lawsuit shows the states are still in dispute regarding even basic data on flow and user needs. Continued litigation is inevitable unless the states are willing to suspend their traditional state-centric positions and look for new solutions that balance user needs. Cooperation among the states is essential to the economic and ecological sustainability of the region. Litigation, regarding either the Corps' operations of the reservoirs or Georgia's activities, is unlikely to benefit *any* of the parties over either the short or long term. It would cost millions of dollars in attorney and other fees, generate additional ill will among the states, and delay or prevent investment in the basin given the uncertainty in future water access. It precludes the best-combined thinking of the variety of interests and expertise in the basin. Perhaps most importantly, ongoing litigation misappropriates our energy towards "being right" instead of "getting it right." A comprehensive plan and unified vision and goals are far more likely to attract federal and other dollars and resources for infrastructure, restoration, research and other activities in the basin than will fragmented efforts. Furthermore, even if an equitable apportionment scheme is ultimately handed down by the Supreme Court, it will likely take a decade or more to achieve and, given historic precedent, will not provide a permanent solution. A sustainable solution will occur only through the development of an adaptive process to share water under changing conditions and a management institution to oversee and facilitate that process.

Sense of Congress - The Water Resources Reform and Development Act of 2014, signed by the President on June 10, 2014, could not be more clear: discussing conflicts in the ACF, at Section 1051 Congress states "Interstate water disputes of this nature are more properly addressed through interstate water agreements that take into consideration the concerns of all affected States including impacts to other authorized uses of the projects, water supply for communities and major cities in the region, water quality, freshwater flows to communities, rivers, lakes, estuaries, and bays located downstream of projects, agricultural use, economic development and other appropriate concerns. To that end, the Committees of jurisdiction strongly urge the Governors of the affected states to reach agreement on an interstate water compact as soon as possible, and we pledge our commitment to work with the affected States to ensure prompt consideration and approval of any such agreement."⁸

Congress has issued an invitation; the time to respond is now.

⁸ Water Resources Reform and Development Act of 2014.

C. Providing an Immediate Forum for Transboundary Management Discussions through a Transitional Organization

Congress and major water users in the basin have clearly stated the need for a collaborative transboundary solution to the ACF water conflict. Fortunately, there are many examples of institutions that have effectively worked across state and national boundaries to manage water resources, and a number of these have addressed the water scarcity issues of primary importance in the ACF. One example is the Delaware River Basin Commission, established in 1961, which continues to play a critical role in both water supply and quality issues 50 years later. It developed an adaptive drought planning and management process that has proven successful through several major droughts. Another is the more recently formed Catawba-Wateree River Basin Advisory Committee, established in 2004, which brokered the settlement of a 2007 Supreme Court equitable apportionment suit between South Carolina and North Carolina prompted by out-of-basin diversions. We can learn much from their successes, failures, and midcourse corrections. An analysis of their common elements and other characteristics is provided in Section E (a complete analysis is provided in “Identification and Evaluation of Institutional Models for the Effective Trans-boundary Management of the Apalachicola-Chattahoochee-Flint River Basin”⁹).

The likelihood of state and federal buy-in for a formal transboundary water institution is, however, improbable in the short-term. A climate of mistrust persists among the state governments, and they are awaiting several key actions and decisions to assess their positions, specifically the update of the Corps’ Master Water Control Manual and word from the Solicitor General and the Supreme Court concerning the Florida lawsuit. Indeed, even if the states were prepared to consider a formal arrangement, it takes some time to successfully negotiate and ratify a water compact.¹⁰ Potential hesitancy by the states in establishing a formal transboundary organization should not, however, dissuade others from working towards this goal. It is, in fact, more critical than ever to provide an *immediate* forum for discussions among water users, state and federal agencies, and state executive offices, to take advantage of interest in the ACFS Sustainable Water Management Plan and to respond to Congress.

To that end, we recommend establishment of a transitional organization that brings together major water users and representatives of the three states and federal and state agencies to develop a common vision and framework for a future permanent transboundary institution. The framework will need to include specific procedures and processes to facilitate adaptation to changes in climate, demographics and land uses as well as reflect public values and the most current scientific understanding. Although it

⁹ See note 2.

¹⁰ The Hoover Commission refers to a nine-year average. Kenney (1995, p. 4).

would be the province of this transitional organization to develop ultimate recommendations for the future permanent institution, in Section D we provide suggestions concerning focus, structure, and operational components.

Transitional organizations that are sanctioned by and involve the appropriate entities have been successful in facilitating the discussion and consensus necessary to build support for permanent transboundary water management institutions. For example, after twenty-five years of litigation and a U.S. Supreme Court decree, in 1955 the state governors of the Delaware River Basin and the mayors of Philadelphia and New York established the Delaware River Basin Advisory Committee to survey its water resources and recommend a course of cooperative action; the group's work ultimately resulted in the drafting and adoption of the Delaware River Basin Compact in 1961 and the creation of the Delaware River Basin Commission. A current example of a transitional organization is a committee appointed by the Ohio River Valley Water Sanitation Commission. The Commission was established in 1948 specifically to oversee pollution control pursuant to a federal-interstate compact. In determining whether they should expand their role to include water supply and other functions, the Commission in 2011 established a Water Resources Committee to identify the basin's water resources, examine laws and regulations, and evaluate the need for and feasibility of an expanded role. The Committee includes state and federal agency representatives, appointees of the Chairman of the Commission, and ex officio technical experts.

Here, we provide two initial alternatives for structuring a transitional organization in the ACF Basin. In the first alternative the ACFS would host the transitional organization; we provide two variations of that alternative. The other alternative involves creating a new entity; we provide two models in that regard. After short descriptions of each alternative, we provide an analysis of the challenges and opportunities presented by these options, including a recommended course of action if the states are not quick to move forward with a transitional organization. We then provide suggestions for how the ACFS might go about introducing the alternatives to relevant parties.

Alternative 1

The ACFS would maintain its current organizational framework with the addition of a new council – the ACF Basin Transition Coordinating Council– that would include representatives appointed by the states and their congressional delegations as well as members of the ACFS. This Council would develop the framework and support for a permanent transboundary water management institution. One scenario would be for the Council to include 31 members: three members representing each of the states (9 total); two members representing each state's congressional delegation (6 total); and four members representing each of the ACF sub-basins (16 total). There might be other scenarios regarding membership that would be acceptable to federal and state government stakeholders as well as the ACFS. The group would be assisted by advisors

representing federal agencies including the U.S. Army Corps of Engineers, the U.S. Department of Agriculture, the U.S. Department of Commerce, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service and the U.S. Geological Survey and state agencies including the Alabama Office of Water Resources, the Florida Department of Environmental Protection and the Georgia Environmental Protection Division.

The ACF Basin Transition Coordinating Council would be authorized through a modification of the ACFS charter by the ACFS Governing Board; the new charter provisions would include an initial charge and assignment of functions which could be expanded by the Council itself. The charter provisions would also specify how the various representatives would be selected and voting mechanisms; this determination would be made with input by the state governments. Funding for the Council would be procured by the Council and its members in partnership with the ACFS.

If this alternative results in the development of a permanent standalone transboundary institution, the ACFS might elect to ultimately phase out its operations. Current ACFS requirements regarding confidentiality must be amended for either of these alternatives (or any utilizing ACFS as host) to be viable, as state open meeting and open records laws would require transparency.

Alternative 2

Again, the ACFS would provide the organizational home for the new entity but it would amend its charter to accommodate representatives from the state governments and state and federal agencies, as well as to reflect the new mission—the development of a permanent transboundary water management institution to facilitate sustainable and adaptive management of the basin that shares water equitably among stakeholder, balancing economic, ecological, and social values. These changes would reflect extensive consultation with and agreement by the potential new members, and would need to be approved by the existing ACFS Governing Board. They might also include organizational components such as assuring adequate representation of specific water interest groups and the subbasins in the transitional organization, an element that has been essential to the success of the ACFS to date. To provide an opportunity for the current ACFS to remain viable if the transitional organization fails, the charter might include a sunset provision requiring an annual review and reauthorization. If the representatives choose not to reauthorize, the composition and membership of the current ACFS is reinstated.

Alternative 3

This alternative would be to establish a new organization, independent of the ACFS, to develop the framework and political support for a permanent transboundary water management institution. We include here a couple of models for an independent organization. One would be the Catawba-Wateree River Basin Advisory Commission,

which helped broker an agreement resolving an equitable apportionment dispute between North and South Carolina.

Composition of an ACF Advisory Commission could include delegates of the same constituencies as are represented on the Catawba-Wateree – both houses of each state’s legislative bodies, a water utility, a nonprofit conservation organization, an electric utility, lake homeowners’ association, and industry and agriculture, with others added to reflect ACF interests such as the seafood industry, navigation, Riverkeeper organizations, and the ACFS itself. Federal representatives – missing from the Catawba-Wateree – would be added as well. In particular, representatives of the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, the U.S. Department of Agriculture.

Another model would be that originally developed by the ACF states and the Corps in 1991 when they created the Executive Coordination Committee (ECC) and the Technical Coordination Group (TCG) to oversee the ACT/ACF Comprehensive Study and develop a compact. The Executive Coordinating Committee (composed of one gubernatorial appointee from each state, who were drawn from a variety of state government offices and the District Engineer from the Corps’ Mobile District) established and approved all policy and budgetary matters relating to the study, oversaw the work of the TCG and all other committees, negotiated major agreements, and maintained communication with Congress and the governors. The TCG (composed of one appointee per state, selected from state water agencies by the individual ECC representatives) coordinated the actual study process and stakeholder involvement, recommended technical content and direction of study, oversaw performance of specific tasks, and reported to the ECC. All administrative and research staffing needs for the study were provided by participating entities; this staff consisted primarily of agency employees and consultants. Academic and nongovernmental organization representatives were involved through a number of stakeholder workshops and participation in a Technical Review Panel. Decisions were made on a consensus basis, with specific requirements for conflict resolution (via third-party recommendations, facilitation, mediation, and non-binding arbitration) at progressively higher hierarchical levels to resolve stalemates and retractable conflicts. Implementation of all recommendations was “dependent upon the exercise of each party’s independent statutory authority.”¹¹ The efforts of both the ECC and TCG were successfully accomplished through completion of the study and compact, but ultimately expired due to a failure to develop an allocation formula.

Alternatives Analysis

The benefit of moving forward with Alternative 1 or 2 under the auspices of the ACFS is that the organization already exists so time and resources would not be needed to create

¹¹ Kenney (1995, p. 14).

a new organization. It has proven to be capable of raising significant financial resources. It has no agenda other than seeking to facilitate collaboration and consensus in managing the basin, and it has buy-in from major water users across all three states. The ACFS can establish and maintain momentum of the transitional entity by calling meetings, setting the initial agenda, and other means. Furthermore, this is consistent with the original organizing documents of the ACFS, which noted the special role played by federal and state agencies pursuant to “their control and permitting responsibilities and authorities” with their position in the organization to be defined as the ACFS evolves.¹²

It is not known, however, whether federal and state government stakeholders have perceptions about the ACFS which might make it a less-than-optimal spring board to a more formal interstate-federal commission and would therefore make the second and third alternatives more tractable; this is the kind of information that the ACFS Inter-Governmental Affairs Committee can procure with the help of its contractor. A cost of continued reliance on the ACFS is that this organization is composed of volunteers who have contributed thousands of hours over the last five years and who may be close to being tapped out in terms of their ability to donate time and secure financial resources. Alternative 2 provides an avenue for some of these members to retire, with federal and state representatives replacing them. It also provides for a more equal initial partnership between the current ACFS and new federal and state participants. Financial support and staffing of a transitional organization from the states and possibly federal agency stakeholders will be critical in this regard regardless of which alternative is pursued.

One potential conduit for federal funding (pursuant to Congress’ “commitment to work with the affected States”) to cover expenses of the transitional organization would be through the U.S. Army Corps of Engineer’s Section 729 Watershed Planning process. Section 729 of the Water Resources Development Act of 1986, as amended, authorizes the Corps to assess the water resource needs of river basins including needs relating to ecosystem protection and restoration; navigation and ports; flood risk management; watershed protection; water supply and drought preparedness. The initial watershed assessment is limited to \$100,000 per project and is provided by the federal government. The assessment may lead to a watershed study phase and the ultimate development of a plan that recommends tools and a strategic course of action; 75% of the study phase costs are assumed by the federal government and 25% (including in-kind contributions) by non-federal partners. A local sponsoring agency is required to assure formal assurance of local cooperation; it must be a public agency or a non-profit environmental organization.¹³ In this case, the local sponsoring agency could be the ACFS or one of the other alternatives outlined here; the focus of the assessment and study would be on

¹² ACF Stakeholders Charter and Bylaws III. D.

¹³ U.S. Army Corps of Engineers Buffalo District (2012). “Program Fact Sheet Watershed Planning”. http://www.lrb.usace.army.mil/Portals/45/docs/CivilWorks/ProgramFlyers/Section729Flyer_Letter.pdf.

building the capacity for transboundary management to protect and restore the ecosystem, assure water supply and prepare for drought; and Section 729 funding could cover the costs of the transitional organization's meetings and facilitation services and other staffing needed.

Disadvantages of creating a new organization to serve in a transitional capacity include the costs in terms of time and resources in developing organizational documents and obtaining legal and tax-exempt status; time in building a level of trust, relationship, and diverse knowledge base already in place in the ACFS; and reliance on an as yet-to-be determined state or federal champion to support and oversee the process. Though the ACF Executive Coordination Committee and Technical Coordinating Group were successful in its oversight of the ACT/ACF Comprehensive Study and the development of the ACF Compact, it might be that the ultimate failure of the ACF Compact is attributed fairly or unfairly to these entities and therefore make that model politically infeasible. On the other hand, the state agencies in the ACF may be familiar with and inclined toward this model.

Recommendations if there is not immediate federal and/or state buy-in

What happens if the states are disinclined to cooperate in a discussion of transboundary water management regardless of the alternative utilized? State participation is essential, as state law dictates the allocation of waters and state agencies are charged with major water management functions. If the states are hesitant here, the ACFS and its members will need to assume a major advocacy role in bringing the states to the table by clearly outlining the benefits to be gained and the costs to be avoided. With direction from the ACFS Inter-Governmental Affairs Committee and its consultant, it can engage federal partners such as the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service in this endeavor; both agencies have participated in successful transboundary institutions in other parts of the country and both have compelling leverage in the basin. ACFS can also reach out to a number of constituencies to generate support from the three governors and the state water management agencies; these constituencies could include major water users, local governments, state legislators, members of the Congressional delegations, Georgia's regional water councils and the Northwest Florida Water Management District, the soil and water conservation districts, and others. It can engage the press through informational briefings to elicit newspaper coverage and through op-ed pieces. Furthermore the ACFS can initiate a series of informal or formal forums involving interested federal and state stakeholders in discussions of transboundary management opportunities. These forums might include participation from representatives of established transboundary water institutions who can share their organizations' stories and lessons learned and could be cosponsored by the U.S. Army Corps of Engineers and/or the U.S. Fish and Wildlife Service, which have offered their support in this regard.

Introducing Alternatives to Relevant Parties

We suggest these alternatives be generally introduced in individual meetings with the relevant federal and state agencies by either the ACFS Inter-Governmental Affairs Committee or its governmental affairs consultant to elicit an initial response; alternatives can then be more fully developed based on agency input. Suggestions from the federal and state agencies could be added to a comprehensive menu of options. This menu could be used as a “strawman” to provoke initial discussion at a facilitated meeting of representatives of the state governments and agencies, the federal agencies, and ACFS leadership. This meeting could be sponsored by federal partners such as the U.S. Army Corp of Engineers and the U.S. Fish and Wildlife Service, in the event the Inter-Governmental Affairs Committee feels the states may be more responsive to a forum organized by these federal agencies than by the ACFS. Members of the Interstate Council on Water Policy who represent many of the successful transboundary water management institutions cited in our analysis have offered to participate in such a meeting or subsequent meetings to provide overviews of their organizational process and to answer questions.¹⁴ Ultimately these meetings would lead to the formation of a transitional organization tasked with developing the vision and framework for a permanent institution.

D. Considerations for a Permanent Transboundary Water Management Institution for the ACF

It is premature to lay out any detailed proposal for all aspects of a permanent transboundary institution in the ACF prior to discussion with the state governments and state and federal agencies with water management responsibilities in the basin. These discussions can occur under the auspices of one of the transitional organization alternatives described above. Our study of other transboundary institutions and our analysis of the history of water management in the ACF does, however, lead us to make suggestions regarding: (1) membership of the institution; (2) the importance and role of advisory committees; (3) authorization of the institution; (4) initial functions it might undertake; and (5) potential funding sources. We provide additional information about other considerations – decision-making rules, sunset clauses and withdrawal procedures, and staffing – in the appendix.

Membership

The membership of an organization depends greatly on the functions it will perform as well as the source and scope of its authority. Given the issues and history in the ACF, we recommend that the membership of a permanent transboundary water management institution include state government and federal agency representatives and that non-

¹⁴ Personal communication between Robert Tudor, and Laurie Fowler of UGA, spring 2013.

governmental stakeholders be provided a strong participatory role, either through membership or participation on advisory committees.

An organization that purports to engage in planning that will actually guide decision making in the basin should have representation from the governmental bodies and state and federal agencies ultimately charged with making those decisions. For that reason, we recommend that a transboundary institution in the ACF include both state and federal governmental representatives. Interstate compacts frequently specify that representatives of the signatory states must be voting members. Governors often serve themselves¹⁵ or appoint others to serve as the state representatives (occasionally appointments are made by state legislators).¹⁶ This ensures state support and implementation of decisions of the organization. Given the major water management role the U.S. Army Corps of Engineers plays in the ACF, strong consideration should be given for including it as a member as well. Transboundary organizations vary regarding whether the federal agencies are accorded a formal vote. When granted voting powers, federal agencies sometimes abstain from decisions concerning purely state issues. In other scenarios, if a federal agency votes against a decision that is approved by the organization, the agency is not bound by that decision. If not granted voting powers, federal agencies are sometimes authorized to veto decisions; the original ACF Compact, for example, provided the Corps with veto authority over the allocation formula (which was never agreed to by the member states).

Providing non-governmental stakeholders with membership in a transboundary institution is recommended because other members are unlikely to adequately represent the interests of these water users. Representation from these stakeholders may break jurisdictionally-based political impasses and contribute to a better-informed, more democratic and publicly-supported institution. Existing transboundary organizations typically represent groups that will implement or be affected by decisions of the organization, including major water users, local governments, and conservation organizations. The Catawba-Wateree Commission, for example, includes members from a water/sewer utility, an energy utility, a land conservation trust, an economic development organization, a lake homeowner's organization, and others. These members are often appointed by state governors or legislators, but in some instances are actually elected by the general public; this is how the private industry representatives are selected for the Metropolitan Water District of Southern California. Regardless of how they are selected, non-agency members can serve either as individual voting members of the decision-making body or as members of a larger advisory committee

¹⁵ Examples include the Delaware River Basin Commission, the Tennessee-Tombigbee and the Chesapeake Bay Program.

¹⁶ Examples include the Northwest Power and Conservation Council and the Gulf of Maine Council; representatives of industry and nongovernmental organizations can be appointed.

which is given one or more votes on the decision-making body. Appendix B provides more details on potential voting structures.

Advisory Committees

In the event non-governmental stakeholders are not afforded membership on the permanent ACF Commission, they should be afforded a substantive role through service on advisory committees. At least one commentator suggests that the lack of a defined role for nongovernmental stakeholders contributed to the failure of the ACF states to negotiate an allocation formula in earlier days.¹⁷ Transboundary water management institutions use advisory committees for a wide range of purposes, including policy development, data coordination, implementation activities, constituent outreach, and project management. Advisory committees can be invaluable sources of expertise on particular subject areas, and are also places where stakeholders, public officials, and others can compromise on controversial topics before they are presented to the decision-making arm of the organization. The Chesapeake Bay Program, for example, engages approximately 19 federal agencies, 40 state agencies and programs, 1,800 local governments, 20 academic institutions and 60 non-governmental organizations in its Local Government and Scientific and Technical Advisory Committees and other work groups and goal teams. The advisory committees of the Delaware River Basin Commission “provide a forum for the exchange of information and viewpoints, enhancing communication and coordination... to inform [the commissioners’] policy decisions.” That organization has advisory committees on flooding, monitoring, regulated flow, toxics, water charges, water management, and water quality. Appendix E provides more detailed information on how some organizations organize and work with their advisory committees.

The kind and number of advisory committees for a permanent ACF institution would be determined via the process used to create that organization. We do, however, recommend that at least two advisory committees be included to assess the latest scientific understanding and public opinion. The understanding of large watersheds is a complex and ever-evolving issue, and to ensure currency, a transboundary institution in the ACF should consider a committee to assess existing knowledge and provide guidance for future research. This could be a multi-disciplinary committee of people with relevant expertise from universities, state and federal government, and the private sector. To deal with the issue of evolving public values a second advisory committee could be created to establish and evaluate periodically a set of performance metrics to assess management of the basin. This committee could include representatives of diverse stakeholders; both committees could be required to release cyclical reports.

¹⁷Leitman, S.F. (2005). Negotiation of a Water Allocation Formula for the Apalachicola-Chattahoochee-Flint Basin. Adaptive Governance and Water Conflicts. John T. Scholz and Bruce Stiftel, editors, Resources for the Future.

Authorization

Transboundary organizations may be authorized using a number of mechanisms, including: interstate or federal-interstate compact, memorandums of agreement between states and/or agencies, parallel state legislation, or a 501(c) 3 non-profit organization. In the Water Resources Development Act of 2014, Congress specifically suggested that a transboundary solution to the ACF water conflict be crafted via an interstate compact memorialized by state and federal legislation. This is likely the best course of action for several reasons:

- First, the formal nature of a compact, unlike an informal MOU or other agreement, holds signatory parties accountable to clearly delineated responsibilities and authorities. Because of its formality, it also engenders robust, thoughtful communication and negotiation prior to its adoption, which will be necessary given the litigious history in the ACF.
- Second, a compact memorialized in both federal and state legislation could be more challenging to dissolve, and a long-term organization is critical for appropriate basin management.
- Finally, legislation provides the states and federal government with an avenue to formally authorize permanent funding and other assistance to the organization, which is necessary for its success.

Functions

Successful transboundary water management institutions undertake a variety of functions depending on the particular needs of the basin. Provided below is a list of all major functions that may be undertaken by transboundary water management institutions. See appendix E for function definitions and a matrix of functions undertaken by 15 transboundary water management institutions.

- | | |
|--|---|
| • Agency coordination | • Hydroelectric power |
| • Facilitation & consensus building | • Flood control |
| • Conflict resolution | • Land acquisition |
| • Water resource education | • Restoration |
| • Capacity & leadership development | • Stormwater systems |
| • Administer grants | • Planning (water supply, water quality, drought, conservation/returns, flood, reservoir operations, other) |
| • Research | • Policy development |
| • Monitoring | • Policy advocacy |
| • Data coordination | • Regulatory coordination |
| • Data integration/dissemination | • Regulatory review and comment |
| • Technical assessments | • Issue regulations/permits |
| • Water works construction & operation | • Water buy-backs/incentives |
| • Alternative water supply development | |
| • Regional water provider | |

Functions Recommended for the ACF

In the ACF, the most critical role for a transboundary organization to address is the fragmentation of existing water management programs and entities in the basin by providing a forum for collaborative planning and decision making. The organization would not duplicate existing programs but would enhance them. In 2013-2014 the TUC conducted a Gap Analysis of Water Management Functions in the ACF and, based on these findings, the ACFS has identified the following as the most important functions on which a permanent transboundary organization should initially focus its efforts:

- Acting as a data clearinghouse and facilitator of common data standards (collection, management, etc.);
- Encouraging and facilitating coordination and consensus building and providing conflict resolution services;
- Supporting development of basin-level water management plans, specifically related to conservation and returns, supply augmentation and drought management; and
- Educating the general public and specific stakeholders about the need for transboundary management and particular opportunities and strategies for doing so.

More detail about these functions is defined below. For additional details, including specific activities for consideration and examples from other basins, see appendix G.

Data clearinghouse and facilitation

Data management and facilitation is critical in the ACF, where disputes over research and data reliability have resulted in a number of impasses. Here, a permanent water management organization could: (1) provide easily accessible, accurate and relevant data to decision makers, researchers and the general public; (2) facilitate new studies to close current gaps in data to better inform decisions; and (3) compile comprehensive datasets critical for sustainable water management (currently lacking). Easily accessible and comprehensive data could improve decision making and research and help engage and inform the general public.

Coordination, consensus building and conflict resolution

Empowering parties to work together rather than at cross purposes is the most important task for a permanent ACF transboundary institution. Facilitation of communication will be critical in building consensus for coordinated management and a unified vision to attract funding and other investment. Resolving conflicts is also a critical role. Water management is by its nature contentious, and transboundary negotiations can, as we have experienced in the ACF, quickly become antagonistic.

Professionally-facilitated consensus building and conflict resolution can help prevent disputes and find acceptable solutions to those that are unavoidable.

Adaptive planning

Adaptive planning is used to achieve widespread institution-level goals (such as comprehensive water quality or water allocation planning) and to address specific issues (such as drought or flooding), through a structured and iterative process of decision making that aims to reduce uncertainties through time. Three priority areas for adaptive planning were identified through facilitated discussions at 2014 ACFS Governing Board meetings in Apalachicola, Florida and Eufaula, Alabama: 1) drought; 2) supply augmentation; and 3) conservation/returns.

Drought planning is engaged in by a number of transboundary institutions, including the Murray-Darling Basin Authority in Australia, the Interstate Commission on the Potomac River Basin, and the Delaware River Basin Commission. Numerous federal, state, and regional organizations have initiated some form of drought planning in the ACF. However, these efforts are insufficient because they are limited in geographic scope and/or authority; thereby reducing their ability to influence activities outside of agency jurisdiction or across state lines. Building upon successful aspects of these efforts and harnessing existing momentum would be one appropriate course for a permanent ACF organization.

Supply Augmentation, which includes supplementing inadequate supplies with traditional (reservoirs, interbasin transfers) and non-traditional (desalination, aquifer storage and recovery) sources, requires long-range planning. These approaches are and will continue to be utilized in the ACF, and a permanent transboundary organization should be involved in planning here to some extent to ensure a system-wide perspective is maintained.

Finally, Conservation/Returns includes decreasing water demand and increasing returns to the system. Because of the large impact on water supply and the potential to alleviate effects of drought, a transboundary organization should play some role in developing plans for conservation and returns, in order to ensure costs and risks, as well as benefits, are shared evenly.

Education

It is critical to keep the public informed of transboundary water management activities and the reasons for organizational decisions. A supportive public makes compliance with and implementation of decisions more likely and generates the political support that assures a more informed, smoothly functioning, appropriately funded, and long-lasting organization.

Funding

Budgets of transboundary water management institutions vary dramatically, with 2012 expenditures ranging from approximately \$2.8 million for the Interstate Council on the Potomac River Basin, to \$3 million by the Ohio River Valley Sanitation Commission, to \$5.8 million for the Delaware River Basin Commission, to \$9.7 million for the Great Lakes Commission, to \$20.7 million to the Tahoe Regional Planning Commission.

Securing adequate funding is a challenge that all of these institutions address. A variety of funding resources are available, and here we describe them according to two general categories: those appropriate for general operations and those more suitable for special projects. During the first years of the institution's existence, it may also investigate the practicality and legality of other funding sources not listed below, such as water utility surcharges and ad valorem taxes, which are a significant source of funding for some transboundary water management institutions.

Initial/Operational Funding

At the outset, the ACF transboundary institution should secure funding adequate to support its operational expenses for at least the first three to four years. Initial funding may come from member dues and state and federal legislative and agency appropriations.

Member dues. Member dues are collected by many transboundary institutions, including the ACFS, and represent a significant portion of annual funding for some organizations. The Gulf of Maine Council receives dues from all participating jurisdictions, nongovernmental organizations, and agencies that sit on the council or in a working group. These dues represent most of this institution's annual funding, and have been relatively stable except for the last few years during which it has proven harder to ensure timely payments.

Legislative and agency appropriations. State and federal legislative and agency appropriations are also a common source of funding for transboundary water management institutions, and it is critical that the ACF transboundary institution secure these sources at the outset. There are two reasons for this. First, the act of providing funds to the institution will help ensure that state and federal legislatures and agencies are truly committed to its formation and mission. Second, appropriations are typically reliable sources of funding, and securing them at the organization's inception means the institution can largely avoid a constant scramble for operational funds. Therefore it is recommended the compact commit the parties to providing a certain level of funding.

Federal and state legislative appropriations are often used to fund operating costs, projects, and other activities. Amounts can vary from year to year depending on the institution's requests and the whim of the legislature. The South Florida Water Management District has received over \$1 billion in state appropriations since 2000. The

Tahoe Regional Planning Agency receives about 50% of its annual funding from appropriations from the California and Nevada state legislatures; California's appropriation is more stable because it is tied to license plate fees.

Like legislative appropriations, state and federal agency appropriations are often used for operating costs, projects, and other activities. Although generally reliable, they can also vary from year to year, depending on the agency's appropriation from its legislature or at the agency's discretion. Agency appropriations sometimes occur via the specific requirements of a statute, but can also occur at the agency's discretion if the purpose of the funding would fall within a broader authority. The Ohio River Valley Water Sanitation Commission receives annual funding from its member states' natural resource agencies; funding amounts are based on individual states' population and land area within the basin. The Interstate Council on the Potomac River Basin and the Chesapeake Bay Program receive funding from the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency, respectively; federal statutes specifically authorize this funding.

Special Project Funding

If dues and appropriations are plentiful and are approved for use for specific special projects, they can be used. It is likely, however, that special project funding will need to come from other sources, such as grants, contracts, and private donations. These funding sources should not be solely relied on for operational expenses; constantly "chasing the money" can dishearten staff and result in mission drift.

Grants. Many transboundary water management institutions utilize grants from state or federal agencies or private entities (foundations, etc.) to fund a portion of their annual budget. Some institutions use Clean Water Act § 106 grants from the U.S. Environmental Protection Agency to fund operational expenses, but these grants are for water quality activities only. The ACF transboundary institution could utilize § 106 grants for operational expenses only if water quality was part of its formal mission. The Interstate Council on the Potomac River Basin uses grants (primarily § 106) for the majority of its annual budget.

Contracts. Contracts for special projects can be a major source of revenue for transboundary water management institutions, as these organizations can represent a one-stop-shop for the kind of technical expertise and stakeholder involvement often needed for water resource projects. The Great Lakes Commission, for example, uses contracts as one of its primary funding sources.

Private donations. ACFS has proven successful at obtaining private donations for its current activities. If possible, soliciting private funding should continue, so long as all contributions are disclosed and do not influence the impartiality and objectivity of the organization.

E. Examples of Transboundary Water Management Institutions

There is no one “correct” model for a transboundary water management institution in the ACF. What is most important is to develop an organizational framework that the state governments, federal agencies and stakeholders in the ACF can all support. A transboundary management institution in the ACF will differ from other transboundary institutions to some extent because the major players are different and the history of development, conflict and resolution in the basin is different; all of these factors are likely to be reflected in a new institution. There are major features of other transboundary institutions that may be appropriate to emulate in the ACF, however. To provide an idea of the gradient and variance in scope, authority, membership operational rules that are available, we’ve selected three transboundary water management institutions whose responsibilities include issues of water allocation, withdrawals and diversions, which are of particular interest in the ACF basin.

Delaware River Basin Commission

The Delaware River Basin Commission, established in 1961, exercises the most authority. It was formed via congressional compact and the five members of the federal-interstate compact commission are the governors of Delaware, New Jersey, New York and Pennsylvania and a representative of the U.S. Army Corps of Engineers, each of whom exercises one vote. Each member must appoint an alternative to serve in his or her absence and each may also appoint an advisor, usually the head of an environmental protection or water resource agency, to attend meetings. A majority of votes is required for most actions except unanimous approval is required for the adoption of the annual operating and capital budgets and any divergence from the provisions of the 1954 Supreme Court decree on equitable apportionment. The compact authorizes the commission to allocate surface and groundwater among the states consistent with the doctrine of equitable apportionment applied in the decree and waives the right of the states and their political subdivisions to petition the Supreme Court for any further modification of the decree. The DRBC was given broad authorities over basin management, but in general has chosen to exercise powers only if no other agency is already doing so. The commission has delegated to the states many of the responsibilities regarding oversight of water withdrawal and diversions through a cooperative agreement, though the commission’s authority preempts that of any signatory state.¹⁸

¹⁸ Don R. Christy. Can We Move from Conflict to Cooperation: Water Resources Planning in the Southeastern United States. 2014 Dissertation, Odum School of Ecology, University of Georgia, p. 106.

The compact specifically charges the commission to: (1) promote interstate comity; (2) remove causes of present and future controversy; (3) protect present development within the states; (4) encourage and provide for the planning, conservation, utilization, development, management and control of the basin's water resources; (5) foster cooperative planning and action by the signatory parties regarding water resources; and (6) apply the principle of equal and uniform treatment to all water users who are similarly situated and to all users of related facilities, without regard to established political boundaries.

Following consultation with water users and interested public bodies, the commission adopts a comprehensive plan to guide immediate and long-term water resource development throughout the basin. The Commission must review any project having a substantial effect on the water resources of the basin with approval required for any project that would not substantially impact or conflict with the comprehensive plan. Funding for the construction, acquisition or operation of any federal, state or local government project is contingent upon inclusion in the comprehensive plan.¹⁹

The Commission has a staff ranging from 40 to 50 people. To improve intergovernmental coordination, the commission is required to provide technical services and advice to, and consult with, relevant state or federal agencies; the states must provide technical and administrative services and cooperate in compact implementation.²⁰

The Commission relies heavily on seven active advisory committees to vet proposals and begin building consensus on controversial issues as well as distribute information. Public hearings, seminars or conferences are also held to obtain additional input and deliberation on these issues.²¹ Members of the advisory committees include federal and state agency representatives, major water users, industry and conservation leaders and other interest parties appointed by the executive director with input from the commissioners. The member states and the federal government provide funding, with the federal contribution decreasing substantially over time. The 2014-2015 budget for the Delaware River Basin Commission is \$5,457,500²².

Interstate Commission on the Potomac River Basin

The Interstate Commission on the Potomac River Basin (ICPRB) was created by compact in 1940 and its commissioners include three representatives appointed by each of four signatory states (Maryland, Pennsylvania, Virginia, and West Virginia), three representatives appointed by the District of Columbia, and three representatives of the

¹⁹ Christy (2014, p. 104). .

²⁰ Christy (2014, p. 106).

²¹ Christy (2014, p. 110).

²² From the DRBC website "Budget", online at: <http://www.state.nj.us/drbc/about/budget.html#2>.

federal government appointed by the President. While every commissioner may have an appointed alternate, the appointment process varies among signatory states, as each state appoints commissioners in accordance with the state statute that created the compact. Maryland holds a seat for the governor, but an alternate selected by the governor generally attends meetings. Pennsylvania, West Virginia, and Virginia each appoint a legislative member and provide the head of the U.S. Environmental Protection Agency an ex-officio position. The federal Water Resources Development Act of 2007 designated one of the presidential appointments to be the North Atlantic Division Commander of the U.S. Army Corps of Engineers. Voting is generally done on a consensus basis. In the rare cases where consensus is unachievable and a vote is taken, cited as occurring less than a handful of times since the ICPRB's creation,²³ each jurisdiction receives one vote that is split between the commissioners present at the time of the vote.

While originally authorized for regulation, control and prevention of pollution, its authority expanded to water quantity issues as related to their impact on water quality in 1970, and its mission expanded in recent decades to help basin states and the federal government “enhance, protect, and conserve water and associated land resources...through regional and interstate cooperation.”²⁴ It varies from the Delaware River Basin Commission primarily because its authority has never included the ability to establish standards or regulations as related to water quality or quantities. Rather, the ICPRB relies on standards and regulations of basin states and the federal government to implement desired actions. As such, consensus building and coordination of existing agencies and program is paramount to developing a common vision and garnering the political will necessary to achieve basin-wide results.

A major drought in the 1960s and continued population growth in metropolitan Washington, raised concerns about the long-term viability of water supplies for the region. In response, the Compact was amended in 1970 to expand the mandate of the ICPRB to both water quality and quantity. A series of ICPRB, Army Corps, and Johns Hopkins University studies, including computer simulations similar to those being developed by the ACFS pursuant to its Sustainable Water Management Plan, pointed to the synergistic gains from operating the system as a whole, ultimately leading to 1) the Low Flow Allocation Agreement of 1978, which dictates a process for water allocation during droughts, 2) the creation of the Cooperative Water Supply Operations on the Potomac (CO-OP), an ICPRB section providing technical lead for cooperative water supply operations, and 3) the Water Supply Coordination Agreement of 1982, which assures that utilities and the ICPRB coordinate reservoir operations during low flows.

²³ Personal Communication between Joe Hoffman and Clare Ellis of UGA, from TUC interview with the ICPRB on March 19, 2012.

²⁴ Quote from ICPRB website “About ICPRB”, online at: <http://www.potomacriver.org/about-icprb>.

Members of the CO-OP section include all ICPRB commissioners with the exception of Pennsylvania, which does not participate because it does not withdraw waters from the Potomac mainstem. The CO-OP Operations Committee, comprised of general managers of the three major metropolitan Washington water utilities, may override the decisions of the CO-OP director. In the CO-OP's 40 years of operation, the utilities have only overridden the director's decisions one time, showing the trust the utilities place in the ICPRB to see them through droughts.

The ICPRB pre-dates the establishment of independent state regulatory bodies and the symbiotic relationship between it and its member states is partly attributable to that fact. The subsequent emergence of state natural resource and environmental protection agencies in the 1970s made it incumbent on ICPRB to carve out a meaningful role for itself in the modern administrative era. The ICPRB staff suggests the biggest benefit to its member states is its neutrality and impartial study of interstate water issues. For example, the ICPRB helped Maryland, D.C., and Virginia resolve discrepancies in the inconsistent Total Maximum Daily Load Standards each had established pursuant to the federal Clean Water Act. It undertook an independent study to generate a suite of load allocations sufficient to meet the varying water quality standards in each jurisdiction.²⁵

Catawba-Wateree River Basin Advisory Commission

The Catawba-Wateree River Basin Advisory Committee was not established via federal compact; instead it was created by legislation enacted by the North Carolina and South Carolina legislatures in 2004 at the same time they established a similar Yadkin/Pee Dee River Basin Advisory Commission to address interstate issues. It serves purely in an advisory role and has no binding authority. Its 15 members include legislators from both houses in both states to be appointed by those houses' leaders; a South Carolina representative of a water or sewer utility appointed by the South Carolina legislative member of the commission; a representative of a nonprofit land conservation trust within the North Carolina portion of the basin appointed by the Governor of North Carolina; three representatives (or their designees) appointed by title: the President of Duke Power, the chair of the Bi-State Catawba River Task Force, the Chief Executive Officer of Carolina's Partnership, Inc.; one person to represent specific marine commissions appointed jointly by the three executive officers of the commissions; and one South Carolina member of a lake homeowner's association located on the river. The legislative members may appoint additional members to serve on the commission as advisory members as they consider necessary.

The charge of the commission is to: (1) provide guidance and make recommendations to legislative and administrative bodies at all levels of government for the use, stewardship, and enhancement of the water for all citizens within the basins; (2) provide a forum for

²⁵ Bonney *et al.* (2013, p. 4).

discussion of issues affecting the river basin's water quantity and quality; (3) promote communication, coordination and education among stakeholders; (4) identify problems and recommend appropriate solutions; (5) undertake studies related to water quantity, water quality and other natural resources based on existing data; and (6) determine the optimum approach to comprehensively and collaboratively provide recommendations for integrated river management including, but not limited to, the total assimilative capacity for the river basin.

Staff support and facilities are provided by the North Carolina Department of Environmental and Natural Resources and the South Carolina Department of Health and Environmental Control; additional staff may be hired through funds raised by or provided to the commission. Other state agencies shall cooperate with the commission and provide information and data as requested. Funding is apportioned between the two states through their regular appropriations process.²⁶

The biggest accomplishment of the commission to date is brokering the settlement of *South Carolina v. North Carolina*, an equitable apportionment case filed by South Carolina in 2007. That settlement does not preclude litigation over shared water but provides for a 90-day negotiation period with the Catawba-Wateree River Basin Commission acting as arbiter before a lawsuit can be filed. It lays the groundwork for cooperative relationships between the state agencies to share information between agencies; conserve water and enforce withdrawal reductions during drought pursuant to protocol; coordinate state-level interbasin transfers; project withdrawals and returns; guide permitting of bi-state water providers through a memorandum of agreement; develop protocol for periodic updating of basin water supply study; and other measures. In this case, the provisions of the settlement are overseen by the state agencies but the bi-state commission brokers any disagreements.

Elements of each of these three organizations regarding membership composition, mission and duties, staffing and funding could be emulated by a transboundary institution in the ACF. The three agencies vary greatly in terms of the actual management authority they exercise. The Delaware River Basin Commission was established prior to the enactment of the federal Clean Water Act, which precipitated the development of powerful state regulatory agencies that now allocate water resources as well as oversee pollution control. It might therefore be unnecessary and/or politically infeasible to provide the same level of authority to a transboundary institution today. In the 1960s there was an unsuccessful push to create a regulatory commission similar to the Delaware River Basin Commission in the Potomac River Basin. Though the Interstate Commission on the Potomac River Basin wasn't ultimately given the same level of authority as the Delaware River Basin Commission, through creation of sophisticated

²⁶ Personal communication between David Baize of the South Carolina Department of Health and Environmental Control and Laurie Fowler of UGA, August 4, 2014.

committees and a strong independent staff with unparalleled expertise it has seen its recommendations implemented in most cases. On the converse side, the Catawba-Wateree River Basin Advisory Commission plays a purely advisory role and lacks independent staff and the authority necessary to prompt implementation of its advice in matters other than conflict resolution.

Here we provide examples that vary significantly in terms of scope, functions, and authority. But ultimately, the three state governments and the federal agencies will determine the level of authority they feel is most appropriate and politically viable for a transboundary water management institution in the ACF.

Over the last six years, the ACFS has clarified the values held by diverse stakeholders regarding water and the metrics to achieve those values. It will soon unveil a decision-support model that shows how different management decisions will affect these metrics in times of both abundance and drought and demonstrates that equitable water-sharing across state boundaries can actually occur. The next step is the creation of a transboundary water management institution to guide the use of this adaptive decision-support model, assuring the sustainability of Apalachicola-Chattahoochee-Flint basin.

Momentum is building --- the invitation by Congress in the Water Resources Development Act, the update of the Water Control Manual, even the latest lawsuit --- now is the time for the ACFS to reach beyond its current membership to engage the state governments and federal agencies in adaptive and sustainable transboundary sustainable governance of the ACF basin. Let's make these rivers sing!

APPENDICES

Table of Contents

Appendix A- Membership	35
1. Voting members of select transboundary organizations.....	35
2. Appointed voting members of select transboundary organizations	36
3. Role of non-governmental stakeholders	37
Chesapeake Bay Program.....	38
Delaware River Basin Commission	39
Gulf of Mexico	39
Great Lakes Commission.....	40
Northwest Power & Conservation Council	40
Ohio River Valley Sanitation Commission.....	40
South Florida Water Management District.....	41
Appendix B- Decision-Making Rules	43
Appendix C- Sunset Clauses and Withdrawals.....	45
Appendix D- Staffing	47
Appendix E- Advisory Committees	51
Delaware River Basin Commission	51
Chesapeake Bay Program (CBP)	54
Northwest Power and Conservation Council (NWPCC).....	56
Appendix F- Matrix and Annotations for All Potential Functions	59
Appendix G- Functions Identified as Important by ACFS Governing Board.....	63
Data clearinghouse and facilitation.....	63
Coordination, consensus building and conflict resolution	65
Adaptive planning.....	66
Education	69
Appendix H- Recent Revenue Sources and Funding Considerations	71

[INTENTIONALLY LEFT BLANK]

Appendix A- Membership

1. Voting members of select transboundary organizations

Membership of representative institutions is described in the table below.

Organization	#	Membership Details
Chesapeake Bay Program	6	Governors of 3 member states; mayor of DC; chairman of Chesapeake Bay Commission; EPA Administrator
Delaware River Basin Commission	5	1 from each of 4 states (governor or alternate appointed by governor); 1 federal rep (appointed by president, must be member of Army Corps of Engineers)
Gulf of Maine Council	22	4 reps from each state/province (appointed by governors/premiers; can be NGO or industry representatives); representative of federal agencies; tribal representative (appointed by First Nation)
Great Lakes Commission	30-50	3-5 from each of 8 states (appointed by governors and state legislatures); 3-5 nonvoting members represent 2 Canadian provinces
Interstate Commission on Potomac	18	3 from each of 5 states/DC (appointed by governor/DC mayor); 3 federal reps (appointed by President)
Missouri River Assoc. States & Tribes	23	2 from each of 5 states (appointed by governor); 13 Native American reps (appointed by tribes)
NW Power & Cons. Council	8	2 from each of 4 states (appointed by governor)
Ohio R Valley Sanitation Co	27+	3 from each of 8 states (appointed by governor); 3 fed reps (appointed by President)
SW Florida Water Manage	9	9 governing board members total from 16 counties (appointed by governor and approved by state senate)
Susquehanna River Basin Commission	4	1 from each of 3 states (governor appoints head of Natural Resources Division; appointee can then appoint a substitute if necessary); 1 federal representative (generally Secretary of the Interior who can appoint a substitute)
Tahoe Regional Planning Agency	14	7 from each of 2 states including 1 representative for each county/major city (appointed by county/city governing boards); 2 representatives appointed by CA governor; 1 by CA senate rules committee; 1 by CA speaker of the assembly; 1 by NV governor; NV Dir. of Dept. of Conservation and Natural Resources, 1 by 6 NV board

Upper Miss River Basin Association	11	1 coordinating rep from each of 5 states (appointed by governor); 1 rep from 6 federal agencies (Army Corps, NRCS (Dept. of Ag), Homeland Security (Coast Guard & FEMA), DOI (Fish & Wildlife, USGS), DOT, EPA)
Upper Colorado	5	1 commissioner from each state (appointed by governor); 1 federal representative who serves as chairman (appointed by President). Secretary of Interior is responsible for enforcing apportionment

2. Appointed voting members of select transboundary organizations

A detailed description of members that are appointed by governors or the federal government is provided for a select number of commissions:

Organization	Voting Members
Chesapeake Bay Program	Governors from 4 states, mayor of DC, representative from research consortium, EPA, Chesapeake Bay Commission, USDA (executive council)
Delaware River Basin Commission	Governors are automatically commission members, but there are alternates and some advisors appointed. NJ: 4 alternates- 3 DEP, 1 state geologist; NY: 4 alternates and advisor- DEC 4, NYC DEC advisor; DE: 2 alternates- Secretary of Environment & Energy for governor, DNREC; feds: 3 alternates- all from USACE
Great Lakes Commission	3-5 state delegations from state legislators, agency officials, or governors' appointees. IL- DNR, foundation, office of mayor Chicago, counseling company, state rep; IN- DEM, ports of Indiana; MI- DNR, attorney general, TNC, state senate; MN- state rep, state rep, Office of Governor, state senate, state senate; NY- DEC, state rep, DEC, DEC; OH- DNR, state senate, OH EPA, Lake Carriers' Association; PA- DEP, dean at Penn State, Earth Action; WI- DNR, County Port & Solid Waste Dept., DNR
Interstate Commission on the Potomac River Basin	3 commissioners and 3 alternates from each state, DC, feds. DC- vacant/professor, DC dept. of environment/vacant, vacant/vacant; MD- governor/dept. environment, state rep/local watershed association head, vacant/vacant; PA- DEP/DEP, state rep/vacant, county conservation district/local businessman; VA- DEQ/DEQ, think tank/professor and director of University Potomac Research Center, state rep/state rep; WV- vacant/consulting for state reps, state rep/vacant, DEP/DEP; fed- vacant/vacant, technology consultant/consultant
Ohio River Valley Sanitation	State agencies, consultants, legislators, and others; IL- IL EPA, 2 others; IN- lawyer, DEM, consultant; KY- Energy and Environment

Commission	Cabinet, Lieutenant Governor, water district; NY- Chautauqua Institution, DEC, 1 other; OH- OH EPA, 2 others; PA- conservation district, DEP, DEP; VA- DEQ, state Water Control Board; WV- DEP, 2 lawyers
Susquehanna River Basin Commission	Appointed by governors- currently made of DEC/DEP/DOE (state environmental agencies) and USACE commander

3. Role of non-governmental stakeholders

Engaging non-agency stakeholders, such as water users and local governments, is an essential component of sustainable water resources management that is generally accomplished via information disclosure and reporting, consultation and grievance management, and stakeholder participation on committees and working groups in a voting or non-voting capacity. Stakeholders knowledgeable of the issues, directly impacted by activities, willing to engage, or part of an influential group are important to involve²⁷. Stakeholders may be engaged throughout the decision-making process, but better outcomes are achieved when meaningful participation begins early and is sustained²⁸.

Depending on the objectives for engagement and stakeholders identified various tactics may be employed, which range from informing, communicating, to engaging stakeholders²⁹. The format(s) used to approach a stakeholder may be tailored to the tactics employed. For example, a partnership engages, a survey communicates, and a report informs stakeholders. The International Finance Corporation, of the World Bank Group, defines 8 key components of stakeholder engagement: stakeholder identification & analysis, information disclosure, stakeholder consultation, negotiation and partnership, grievance management, stakeholder involvement in project monitoring, reporting to stakeholders, and management functions.

Non-governmental as well as regional and local municipal stakeholder involvement with transboundary commissions is generally accomplished via committees and working groups. An effective model for stakeholder inclusion utilized by the Chesapeake Bay Program includes 3 advisory committees (citizen's, local government, scientific & technical) that report directly to gubernatorial and legislative appointees on the executive council. Stakeholders generally are only involved in voting at committee

²⁷ Morris, J.M. and F. Baddache (2012). Back to Basics: How to Make Stakeholder Engagement Meaningful for Your Company. Online at: http://www.bsr.org/reports/BSR_Five-Step_Guide_to_Stakeholder_Engagement.pdf, Business for Social Responsibility.

²⁸ International Finance Corporation (2007). Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets. Online at: http://www.ifc.org/wps/connect/938f1a0048855805beacfe6a6515bb18/IFC_StakeholderEngagement.pdf?MOD=AJPERES.

²⁹ See note 1.

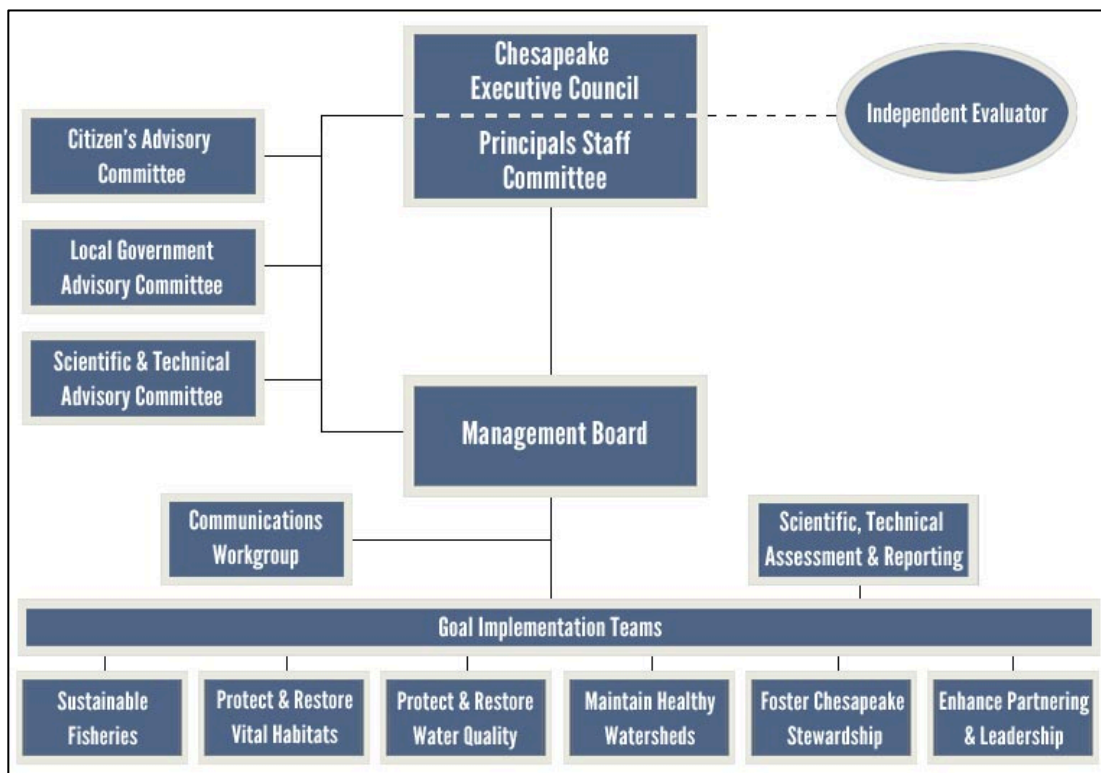
and working group levels, unless governors appoint them to the commission. While stakeholder and federal agency participation in full commission meetings is common, it is generally in a non-voting capacity; with the notable exceptions of the Army Corps of Engineers having voting privileges in federal-interstate compact commissions and stakeholders or other federal representatives being appointed as commissioners. We've provided examples from seven transboundary organizations.

Chesapeake Bay Program

An especially effective model for stakeholder inclusion utilized by the Chesapeake Bay Program includes three (3) advisory committees (citizen's, local government, scientific & technical) that report directly to gubernatorial and legislative appointees on the executive council.

The executive council is supported by: principals staff committee (made of federal & state agencies), an independent evaluator, and 3 advisory committees (citizens, local government, scientific & technical). The management board oversees all implementation teams (made of agencies, NGOs, researchers) and implementation teams oversee specific goals. Organizational structure diagram is below.

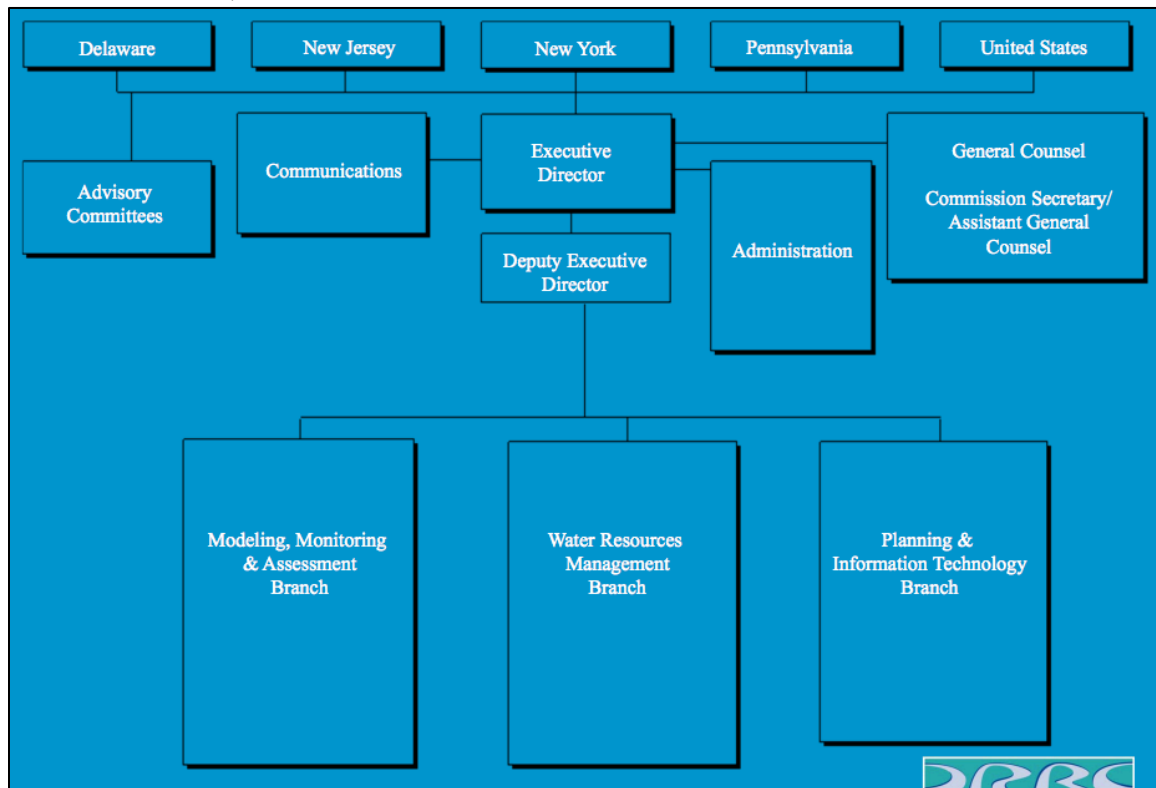
The **Citizen's Advisory Committee** has 28 voting members representing conservation, business and industry, agriculture, recreation, seafood, and development. Non-voting guest members may be appointed as needed. Consensus vote is preferred, but majority vote is used if needed.



Delaware River Basin Commission

Seven (7) advisory committees provide forums for communication and coordination with state and federal agencies, industry, municipalities, academia, and NGOs. These cover: flood, monitoring, regulated flow, toxics, water charges, water management, and water quality. Membership varies among committees:

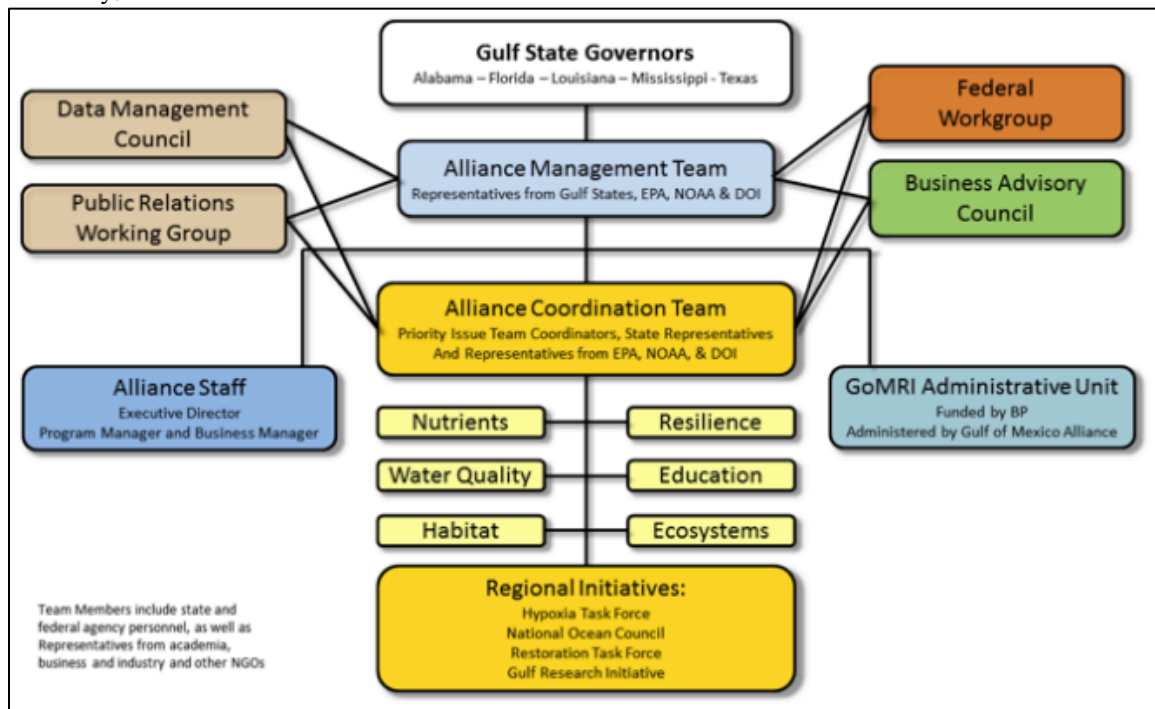
- 1) The **Flow Regulation Committee** has appointed members: 2 each from DE and NJ, 1 each from NY, NYC, PA, and Philadelphia.
- 2) The **Water Management Committee** has representatives appointed by executive director based on commissioner recommendations. Representatives are from following constituencies: States of DE, NJ, NY, PA; USACE, EPA, USGS NYC, City of Philadelphia, county water agencies, water resources associations, industry, water utility, agriculture, league of women voters or other civic organization, environmental organization, watershed organization, academia, recreation, and fisheries.



Gulf of Mexico

This is a broad network of partners from federal and state agencies, academia, businesses, and non-profits led by governors of five (5) Gulf States. Governors oversee the management team (made of representatives from state agencies, EPA, NOAA, and DOI). Two (2) councils (data management, business advisory) and two (2) working groups (federal, public relations) advise the management and coordination teams. Coordination teams oversee priority issues and are made of priority issue team coordinators, state representatives, representatives from EPA/ NOAA/ DOI. Staff and

the administrative unit supports management and coordination teams. Team members for regional initiatives include federal agency personnel, academia, business and industry, and other NGOs.



Great Lakes Commission

This commission allows for non-government stakeholder involvement through appointments to commission. Each state may use advisors and consultants they choose for any commission or committee meeting. Advisors and consultants may participate in discussions but cannot vote. The commission may designate observers representing US or Canadian federal governments, regional organizations, or any others as needed. These observers may participate in discussions but cannot vote. Committees and task forces members are delegated by commission chair. Associates and advisors may help committees without voting. Each state gets one vote on committees and task forces.

Northwest Power & Conservation Council

Council allows for non-governmental stakeholder involvement through appointments to commission, however it is uncertain how common this is. Non-governmental stakeholders are primarily involved through appointment to advisory committees.

Ohio River Valley Sanitation Commission

This commission allows for non-governmental stakeholder involvement through appointments to commission. Standing committees are for commission members or their proxies only. But advisory committees may be any appointed stakeholder representatives. Advisory committees include: water users, industry action (1+), public interest, and publicly owned wastewater treatment works.

South Florida Water Management District

Unpaid citizen volunteers may appointment by governor (need to be confirmed by senate). These volunteers represent a cross-section of interests: environment, agriculture, local government, recreation and business. The water resources advisory commission advises governing board. Members of this advisory commission are appointed by governing board and represent broad range of interests: business, agricultural, environmental, tribal, governmental, and public.

[INTENTIONALLY LEFT BLANK]

Appendix B- Decision-Making Rules

1. Voting procedures for select transboundary organizations

The selection of a decision rule “determines the relative allocation of power among members and that guides the selection of dispute resolution tactics and strategies.”³⁰

The two primary decision-making styles are consensus or majority voting.

Organizations do not have to use one method exclusively, but can use different types of voting for different issues. It is common for organizations that employ majority voting in some instances to require consensus on particularly important issues, such as the institution’s budget, and, in the case of the Delaware River Basin Commission, drought declarations. The TUC interviews revealed advantages and disadvantages for each method of voting. Reaching decisions through consensus ensures that all members are engaged in the process and can live with the decisions. The consensus-building process can also bring the group closer together and develop social capital. The downfall of consensus-based decision making is that it is often time intensive and one dissenting vote can block an otherwise popularly supported action. Majority voting has complimentary benefits and drawbacks. Decisions can occur more quickly and efficiently. However, there is a threat of losing the support of marginalized members. Majority voting can entail a simple majority or a super-majority. The following table summarizes the voting procedures for select transboundary organizations.

Name	Voting
Susquehanna River Basin Commission	Each of 4 members gets single vote; 3 out of 4 needed unless unanimous vote is required
Delaware River Basin Commission	Majority on most issues; unanimous on- budget and drought declarations
Interstate Commission on the Potomac River Basin	Majority vote on most issues; no action is binding unless at least 2 out of 3 members from an affected area are in favor
Northwest Power & Conservation Council	Quorum= 5; Majority (of present) on most issues; super-majority on some issues (1 member from each state, or 6 members)
Chesapeake Bay Program (CBP) and Chesapeake Executive Council (CEC)	Unanimous vote required; contentious issues often tabled in CEC because voluntary organization; also members that may agree in vote do not have to push hard to enact decisions in their own states if they aren't fully on board with decision
Ohio River Valley Sanitation Commission	1 vote per member; majority on most issues; 2/3 vote on budget and amendments; any affected state has veto power
Colorado River (Law of the River)	Upper basin- everyone gets one vote; 4 out of 5 votes needed

³⁰ Kenney (1995), p. 28.

Great Lakes Commission	Signatory states can have between 3 and 5 members, but only 3 votes; decisions are reached on a majority voting provided there is a quorum unless on decisions that influence how the Commission is structured; usually they work until there is a unanimous decision, sometimes they adopt policy where there is a dissenting vote, voting is done in state blocks
Murray-Darling Basin Authority	Majority vote of those at meeting, 1 deliberative vote per member (when equal also 1 casting vote); some decisions can be made with no meeting
International Commission for the Protection of the Danube River	Each delegate gets 1 vote; "European Community, within the areas of its competence, is entitled to a number of votes equal to the number of its Member States, which are Contracting Parties to this Convention. This organization shall not exercise its right to vote in cases where its Member States exercise theirs and conversely"; quorum is 2/3 delegates; urgent cases can have written vote if no delegate responds to written notice opposing then the vote passes
International Commission for the Protection of the Rhine	Each delegation gets 1 vote; unanimous vote required; European Community votes (1 vote per number of member countries) unless the country votes (?); can still be unanimous w/ abstention of 1 vote (not for Euro Com though)
Metropolitan Water District of Southern California	Each member gets 1 vote plus additional vote for every \$10mill of district's taxable property (but can't have enough votes to be majority); majority vote needed on most issues; "Consent Calendar" used to expedite process (cannot be items that aren't simple majority vote or >\$2mill)
Gulf of Maine Council on the Marine Env.	Consensus basis for all issues (as it is non-binding)
Missouri River Association of States and Tribes	Quorum is majority of voting members; 2 votes per state, equal number of votes for tribes (w/ no more than 2/3 from upper basin tribes); voting privileges revoked if dues not paid; consensus is 1st goal, if not consensus reached director may request vote, then 3/4 of attending voting members needed (just need to live w/ it rather than approve)
Tahoe Regional Planning Agency	Most items at least 4 members from each state required, for approving projects at least 5 members of state where project located and 9 total members of the board required
Upper Mississippi River Basin Association	Each state gets one vote; board strives for consensus; state can withhold vote (but counted as positive unless conflict of interest); chair or vice-chair can suspend vote if they think it will help to reach consensus in future; when no consensus reached it's a 2/3 majority vote; quorum of 3 states

Appendix C- Sunset Clauses and Withdrawals

Compacts, acts, and other documents creating trans-boundary water institutions can be drafted to include sunset provisions. These provisions specify a date that the institution will cease to have power unless renegotiation and reaffirmation extend the duration of the institution. The length of the cycle and the amount of warning needed to provide intent to withdraw vary by organization. Sunset provisions are beneficial because they require members to reconfirm their commitment to the organization and its mission periodically. The Columbia River Treaty has a 60-year sunset clause and members must provide intent to withdraw more than ten years before the end of the cycle. The Columbia River Treaty is approaching the end of its first cycle, and the member countries are in the process of renegotiation. There are other mechanisms for disbanding institutions or for particular members to withdraw. Public agencies that are members of the Metropolitan Water District of Southern California can vote to withdraw through a proposition during any general or special election. Members of the Interstate Commission on the Potomac River Basin can withdraw through an act of legislation if they provide at least one year's notice to the commission. Upper Mississippi River Basin Association can be dissolved if two-thirds of its members vote to withdraw or if there are fewer than three members remaining.

[INTENTIONALLY LEFT BLANK]

Appendix D- Staffing

The number of staff a transboundary institution depends on the functions it undertakes and these numbers vary widely with the Tennessee-Tombigbee Waterway Development Authority having two staff, the Gulf of Mexico Alliance having three and entities with a large geographic and regulatory scope such as the Delaware and Susquehanna River Basin Commission and the Northwest Power Planning Council having from 30 to 65. Staffs can be internal to an organization, may be hired on a consulting basis, or may be a combination of both. Some of the larger organizations boast an internal independent staff that is responsible for all technical and administrative needs, while other organizations utilize existing federal and state resources rather than funding their own staff. These represent far ends of the spectrum. Many organizations fall somewhere in between, with a dedicated internal staff to provide administrative and technical services and reliance upon other organizations and advisory committees for specific technical or monitoring needs. Many institutions the TUC interviewed cited an impartial technical staff as among their primary strengths. These independent staffs are seen as honest brokers between all of the varied interests of the states.

Positions that might be considered in a transboundary institution in the ACF are an:

- Executive Director to direct the program, leading staff in day-to-day operations and ensuring good communication between commission members and staff
- Administrative support in the areas of general administrative and office support activities for core staff and Governing Board
- Technical expertise in the areas of biology/climatology, hydrology/agriculture, law on a part-time or contract basis
- Outreach coordinator with expertise in science communication
- Data manager

The following table summarizes the number and types of staff members for select transboundary organizations. For especially large staffs, only the number is provided.

<u>Organization</u>	<u>Number of staff</u>	<u>Types of staff members</u>
TN-Tombigbee Waterway Development Authority	2 (website)	Administrator, business manager
Gulf of Mexico Alliance	3 (website)	Executive director, program manager, business manager

Gulf of Maine Council on the Marine Environment	~6 (interview)	Secretariat (meetings & daily operations) = council chair, working group and management and finance committee chair. Contractors (support for project implementation)= systems administrator, data architect, and programmer; gulf of Maine times editor; finance manager; development coordinator; executive director US Gulf of Maine Association; Council coordinator; habitat restoration program coordinator; ESIP program manager
Upper Mississippi River Basin Association	7 (interview)	Executive director, GIS and planning assistant (2), administrative assistant, project coordinator, water quality program director, ecosystem and navigation program director
International Commission for the Protection of the Rhine	13 (interview)	Chairman, secretary general, assistant manager, secretariat (3), scientific staff (3), language department (5)
International Commission for the Protection of the Danube River	~15 total, 9 permanent (interview)	Executive secretary; office manager; technical experts= financial management, GIS, information and GIS, pollution control, public participation & communication, river basin management, water quality; administrative assistant; intern
Interstate Commission on the Potomac River Basin	20 (website)	General counsel; administration = executive director, administrative officer, accountant, administrative assistant; CO-OP = director for co-op operations, water resources engineering assistant; communications & outreach = communications manager, watershed coordinator; living resources = director, ecological support specialist; water resources = associate director, geologist/hydrogeologist, water resources planner; watershed analysis = associate director, environmental scientist; aquatic habitats = director of program operations, water quality database manager, aquatic ecologist

Great Lakes Commission	20-30 (interview)	Executive director; directors = deputy, policy, communications, program; program staff = design manager, project manager (4), program specialist, web development manager, senior project manager, senior program specialist, GIS programmer/analyst; administrative staff = manager financial operations, administrative assistant, grants and contracts manager; interns = gov't of Quebec intern, sea grant fellow (2); contract staff = great lakes wind collaborative, special projects, web design & communications support, Michigan clean water corps
Ohio River Valley Sanitation Commission	25 + 4-6 interns (interview)	Senior biologist, director of administration & human resources, data processing specialist, environmental specialist (4), communications director, manager- water resources assessment, administrative assistant, comptroller, head of maintenance, technical programs manager, environmental chemist, analytical & environmental chemist, public information / education specialist, executive director- foundation for Ohio river education; manager of source water protection, emergency response & external relations; computer systems administrator, executive director, aquatic biologist, manager of biological programs,
Northwest Power Planning Council	30 or 40 + 1-2 interns (interview)	Central office = executive director, executive assistant & legal assistant; administrative division (8); fish & wildlife division (10); power division (11); public affairs division (5); legal division (3). 3 staff at each of Idaho, Montana, Oregon offices; 4 staff in Washington offices
Delaware River Basin Commission	43 (interview)	Directorate (6), administrative (5), communications (3.5), planning & information technology (9), water resources management (12), modeling monitoring & assessment (9) [slight overestimate as 2 positions (secretary & accounting assistant/information resources coordinator) are shared throughout many of the sections, plus there is a vacant position]
Susquehanna River Basin Commission	60-65 (interview)	Executive team & commission officers = executive director, secretary to the commission, deputy executive director, director- administration & finance; communications & legal = special counsel, general counsel, regulatory counsel; managers = planning & operations, policy implementation & outreach, project review, information technology, compliance & enforcement, monitoring & protection

Tahoe Regional Planning Agency	70 (interview)	Executive director, clerk to the board, legal (3), planning department (5), code compliance (2), current planning (9), transportation planning (6), long range planning (4), implementation department (2), environmental improvement program (4), measurement program (2), aquatic invasive species & watercraft program (3), forest management program (1), shore zone program (1), storm water management program (2), communications & external affairs (4), human resources (1), finance (5), information technology/operations (3)
Columbia River Treaty	~100	
Chesapeake Bay Program	(70-90)+(29 EPA)+(partnership) = >100-120 total	
Murray-Darling Basin Authority	320 (interview)	
South Florida Water Management District	1650 (interview)	
Metropolitan Water District of Southern California	1750 (interview)	

Appendix E- Advisory Committees

We provide three case studies for advisory committee structure and interactions with their associated transboundary organizations.

Delaware River Basin Commission

In General: “The DRBC's advisory committees provide a forum for the exchange of information and viewpoints on a variety of issues, enhancing communication and coordination. The commissioners recognize the importance of engaging qualified representatives from state/federal government agencies, industry, municipalities, academia, public health, and environmental/watershed organizations to inform their policy decisions. Committee meetings are open to the public.”

Compact Language Authorizing Creation of Advisory Committees: “3.10 Advisory Committees. The commission may constitute and empower advisory committees, which may be comprised of representatives of the public and of federal, state, county and municipal governments, water resources agencies, water-using industries, water-interest groups, labor and agriculture.”

Disclosures to Advisory Committees (from Administrative Manual/Rules of Practice and Procedure): “2.8.16 Disclosure to Consultants, Advisory Committees, State and Local Government Officials, and Other Special Government Employees. Data and information otherwise exempt from public disclosure may be disclosed to Commission consultants, advisory committees, state and local government officials, and other special government employees for use only in their work in cooperation with the Commission. Such persons are thereafter subject to the same restrictions with respect to the disclosure of such data and information as any other Commission employee.”

Flood Advisory Committee

Focuses on “efficient use of technical expertise and financial resources dedicated to flood loss reduction in the Delaware River Basin.”³¹ Flood loss reduction includes “flood plain management, flood forecasting and warning, storm water management, flood response, flood control, education, and public outreach.”³² The Flood Advisory Committee provides a forum for coordination of activities and promotes efficient use of technical and financial resources for the benefit of the basin community.

³¹ DRBC Resolution No. 2000-8 (establishing Flood Advisory Committee).

³² *Id.*

Monitoring Advisory and Coordination Committee

The Committee reviews and offers recommendations for the improvement of basin monitoring activities, and seeks to enhance coordination among the parties with respect to monitoring programs and data sharing.

Regulated Flow Advisory Committee

The historical precedent for this committee was a technical task group, comprised of all parties to the 1954 U.S. Supreme Court Decree (*NJ v. NY*, 347 U.S. 995), the River Master, the City of Philadelphia, and the DRBC. Purpose of the task group was to reevaluate the adequacy of water supply resources of the basin and its service area. In 1977 the task group's mandate was expanded to include the development of drought emergency criteria, conservation measures and long-term reservoir operations planning.³³ DRBC found that there was a continuing need for good faith recommendations and kept the technical task group around as the Flow Management Technical Advisory Committee. By resolution in 2005, DRBC noted it needed recommendations of a technical and non-technical nature and reconstituted the committee as the Regulated Flow Advisory Committee. Resolution No. 2005-18 specifically notes that this committee has no authority other than advisory.

Duties: 1) Advising the Commission about the views of fishery, boating, and industrial interest groups and other resource management agencies, in addition to those of the Decree Party representatives, with respect to diversions and releases from and flows regulated by the Cannonsville, Pepacton, Neversink, Merrill Creek, Blue Marsh, F.E. Walter, Beltzville and Nockamixon reservoirs, Lake Wallenpaupack and the hydropower reservoirs on the Mongaup River ("Regulated Flows"); 2) Providing a public forum for discussion and debate on flow management issues throughout the Basin; 3) Disseminating accurate scientific information and increasing the participants' understanding of operational and legal constraints and opportunities; and 4) Advising the Commission with respect to potential changes to the Water Code.

Toxics Advisory Committee

The TAC's input is desired to inform the Commission's ongoing initiatives associated with: (1) updating DRBC water quality criteria for toxic pollutants; (2) developing Stage 2 TMDLs for PCBs in the Delaware Estuary; (3) developing uniform water quality criteria for toxic pollutants in Zone 1 of the Delaware River; (4) investigating contaminants of emerging concern, including ambient screening surveys and review and development of fish tissue data; and (5) testing for chronic toxicity in ambient waters of the estuary and its tributaries.

³³ DRBC Resolution No. 2005-18 (reconstituting Flow Management Technical Advisory Committee as the Regulated Flow Advisory Committee).

Water Charges Advisory Committee

Resolution 2010-09 authorized the Executive Director establish a Water Charges Advisory Committee (WCAC) to advise the Commission on the analysis and interpretation of studies that will be conducted to evaluate the various aspects of the Commission's water supply charges program. The WCAC will be an ad hoc Committee for the express purpose of reviewing studies outlined above and providing recommendations to the Executive Director about the results of the studies. The Committee may be requested to brief the Commissioners regarding its advice and recommendations. Committee recommendations and advice is advisory only. All determinations and changes to the Commission's Water Supply Charges Regulations are subject to Commission action after notice and opportunity for public comment. Commission staff will serve as technical and legal experts to the Committee regarding matters of the Compact, Commission regulations and procedures. Commission staff will also assist the committee by providing reasonable administrative support to the committee. Members may identify issues for consideration by the Executive Director and offer proposals on these issues. Issues will be presented to the Executive Director by the Chair or Vice-Chair of the Committee. The presentation will include the pros and cons of possible alternative approaches, the substance of the discussion, and the recommendation of the Committee. In cases where the Committee does not agree on an issue, the Chair or the Vice-Chair will also present the alternative approach.

Water Management Advisory Committee

Advise the Commission and its staff on the following topics: (a) water demand and consumptive use forecasting techniques; (b) implementation of Commission water conservation regulations and recommendations for additional technology transfer sessions; (c) models and methodologies for characterizing ground water flow patterns and instream flow needs and conducting baseflow frequency analyses and water supply assessments for upstream watersheds; (d) protocol for review of integrated resource plans; and (e) potential watersheds to be considered for watershed action teams and recommendations for the conduct of watershed-based plans that consider the interrelationships of ground water recharge and discharge, stormwater management, and instream flow needs.

Water Quality Advisory Committee

The Committee shall develop recommendations for consideration by the Commission with respect to policy and technical matters of water quality and pollution prevention, control and abatement within the Basin. The Committee shall work with the Commission staff to ensure its recommendations are compatible with other Commission activities.

Chesapeake Bay Program (CBP)

In General: Through goal teams, workgroups, and committees, the CBP engages 19 federal agencies, almost 40 state agencies and programs, approximately 1800 local governments under the auspices of the Local Government Advisory Committee, more than 20 academic institutions under the auspices of the Scientific and Technical Advisory Committee, and more than 60 non-governmental organizations.

Language Authorizing Creation of Advisory Committees: *From the 1983 Agreement:* 1) “The Chesapeake Executive Council will establish an implementation committee of agency representatives who will meet as needed to coordinate technical matters and to coordinate the development and evaluation of management plans. The Council may appoint such ex officio nonvoting members as deemed appropriate. *From the 1987 Agreement:* 2) [objective] “provide for technical and public policy advice by maintaining strong advisory committees”, and 3) [commitment] “by March 1988, to establish a local government advisory committee to the Chesapeake Executive Council and charge that committee to develop a strategy for local government participation in the Bay program”. *From the 2000 Agreement:* 4) “Jurisdictions will work with local governments to identify small watersheds where community-based actions are essential to meeting Bay restoration goals...and work with local governments and community organizations to bring an appropriate range of Bay program resources to these communities”, 5) “Strengthen the Chesapeake Bay Program’s ability to incorporate local governments into the policy decision-making process. By 2001, complete a reevaluation of the Local Government Participation Action Plan and make necessary changes in Bay program and jurisdictional functions based upon the reevaluation”, 6) “Improve methods of communication with and among local governments on Bay issues and provide adequate opportunities for discussion of key issues”, 7) “By 2001, identify community watershed organizations and partnerships. Assist in establishing new organizations and partnerships where interest exists. These partners will be important to successful watershed management efforts in distributing information to the public, and engaging the public in the Bay restoration and preservation effort”, 8) “Work with non-signatory Bay states to establish links with community-based organizations throughout the Bay watershed”.

Citizens Advisory Committee (CAC)³⁴: The Chesapeake Executive Council created the CAC to “represent residents and stakeholders of the Chesapeake Bay watershed in the restoration effort”. The CAC has the following functions: 1) “Advise the Executive Council”, 2) “Provide input of the CAC on aspects of the watershed restoration”, 3) “Endeavor to understand and consider all aspects and views of an issue or topic primarily using the venue of quarterly meetings and inviting interested/affected

³⁴ All quoted language is from the Chesapeake Executive Council Citizens Advisory Committee Bylaws.

stakeholders to share their views in a nonbiased objective CAC meeting environment”, 4) “Share information, when appropriate and applicable, about the Chesapeake Bay watershed with those groups whom individual members may be affiliated”, 5) “Participate with and contribute to the work of the Chesapeake Bay Program (CBP) committees and subcommittees (Additional tasks can be set before the committee at the request of the Executive council or at the suggestion of individual committee members)”, and 6) “Inform elected officials and other decision makers external to the CBP to facilitate their ability to act effectively on behalf of the Bay watershed”.

Local Government Advisory Committee (LGAC)³⁵: The Chesapeake Bay Executive Council created the LGAC in 1987 to “assume both a proactive and reactive policy development role in advising the Executive Council on how to most effectively, equitably, and expeditiously implement the projects and other actions required to engage the support of local governments to achieve the goals of the Bay Agreement”. “The LGAC is responsible for communicating both with the Executive Council in its advisory capacity, and with local governments throughout the Bay region. The LGAC’s goal is to develop and execute strategy to ensure continued local government participation and input in the design, development, and implementation of programs to protect and improve the Chesapeake Bay”. The LGAC undertakes the following functions: “[1] Identify communities and officials who must be involved in the improvement and protection of the Bay; [2] Develop a strategy that will encourage willing participation by local governments in the Bay program; [3] Educate local governments concerning the Chesapeake Bay program and promote cooperative local and regional efforts where appropriate; [4] Encourage cross-fertilization of experiences among local governments (technology transfer); [5] Assist local governments to find technical and financial support to meet their responsibilities under the Chesapeake Bay program; [6] Provide input concerning the development of draft commitment strategies; [7] Comment on draft commitment strategies; [8] Monitor implementation of commitment strategies; and [9] Coordinate and work with commitment teams and other committees”.

Scientific and Technical Advisory Committee (STAC)³⁶: The STAC, created by the Executive Council in 1984, “provides scientific and technical advice to the Chesapeake Bay Program (CBP), reports annually to its Executive Council, and regularly interacts with the CBP throughout the year”. “In acknowledgement of its unique advisory role and the need to maintain independence, STAC’s membership on the Management Board is as a non-voting, advisory member”. “The STAC provides independent scientific and technical advice in various ways, including (1) technical reports and position papers, (2) discussion groups, (3) assistance in organizing merit reviews of CBP programs and projects, (4) technical workshops, and (5) interaction between STAC members and the

³⁵ All quoted language is from The Chesapeake Bay Local Government Advisory Committee Bylaws.

³⁶ All quoted language is from the Scientific and Technical Advisory Committee Bylaws.

CBP. STAC serves as a liaison between the scientific community and the CBP. Through professional and academic contacts and organizational networks of its members, the STAC ensures close cooperation among and between the various research institutions and management agencies represented in the Bay watershed”.

Northwest Power and Conservation Council (NWPCC)

In General³⁷: There are approximately 10 advisory committees that interact with the NWPCC or its various boards. Advisory committees (AC) that were created for the 7th Power Plan include: Conservation Resources AC, Natural Gas AC, Generating Resources AC, Demand Forecast AC, System Analysis AC, Resource Adequacy AC, and Resource Strategies AC. There is also a Wildlife Mitigation AC (no longer active) and a Wildlife AC. While all meeting times, locations, and agendas are announced to the public, not all advisory committee meetings are open to the public. “The federal Advisory Committee Act provides that interested persons shall be permitted to attend, appear before, and file statements with any advisory committee, subject to that Act and to such reasonable rules as the Council may prescribe”.

Language Authorizing Creation of Advisory Committees: Chapter 18 of the bylaws states that “The Council may establish such advisory committees as a majority of its members deem appropriate to assist it in carrying out its functional and responsibilities. The Chair may appoint such committees of Council members, as he deems necessary”.

Public Disclosures: Records, reports, minutes, agendas, and other supporting materials for all advisory committee meetings that were open to the public are available for public inspection in a Council Public Reading Room. “Subject to the Freedom of Information Act (5 U.S.C. 552), the following records will be made available for public inspection by the Advisory Committee Management Officer if appropriately requested: signed charters, records, reports, transcripts, minutes, appendices, working papers, drafts, studies, agenda and notice documents, Advisory Committee rules and other documents by or for the Advisory Committee”.

Conservation Resources Advisory Committee (CRAC): The CRAC was formed to “advise the Council regarding formulating and reviewing policy and program alternatives to effectively develop the region's cost-effective conservation potential having significance to the Seventh Pacific Northwest Conservation and Electric Power Plan”.

³⁷ All quoted language from Advisory Committees policies and bylaws.

Natural Gas Advisory Committee (NGAC): The NGAC was formed to “help the Council determine appropriate forecasts of fuel prices for use in its planning. The NGAC brings together representatives from natural gas utilities, marketers, pipelines, consultants, public interest groups, electric utilities, and others to discuss fuel market conditions. The NGAC reviews and provides advice on Council fuel price forecasting assumptions and models for natural gas, oil, and coal. The NGAC also provides an opportunity for coordination and information exchange between electric utilities and natural gas utilities and related businesses and interests. ” The NGAC reports to the Council’s Executive Director and serves in an advisory capacity only.

Generating Resources Advisory Committee (GRAC): The GRAC was created to “advise the Council regarding generating resource and technology alternatives having significance to the Seventh Pacific Northwest Conservation and Electric Power Plan. Activities of the Committee will include: 1) Assisting in the identification of generating resources and technology alternatives having significance to the power plan, 2) Assisting in the identification of sources of technical, cost, environmental and other important information concerning significant generating resources and technology alternatives, 3) Reviewing the information and assumptions concerning generating resources and technology alternatives considered for the power plan, and 4) Reviewing and interpreting the analyses concerning generating resources and technology alternatives undertaken for development of the power plan.”

Demand Forecast Advisory Committee (DFAC): The DFAC was created to fill an “important advisory role with assisting in review of the demand forecasting tools, input assumptions and forecast results.”

System Analysis Advisory Committee (SAAC): The SAAC was formed to “review the Council’s computer models and provide advice on their further development. Specifically, it will examine models used to assist in the selection of the resources to include in Council power plans. The Council is required to identify a resource plan as part of its regular review of regional electrical power requirements.”

Resource Adequacy Advisory Committee (RAAC): The RAAC “replaces the Resource Adequacy Forum, an ad-hoc committee created in 2005 to assess the adequacy of the Northwest’s power supply. The RAAC now performs this function as an advisory committee to the Council.”

Resource Strategies Advisory Committee (RSAC): The RSAC was created to “advise the Council, its Power Committee and the Council’s staff on regional power resource strategies and related matters during the development of the Council’s power plan. The Committee will meet at key stages during the Council’s power planning process to review and discuss methods, inputs and analyses of regional power resource strategy alternatives. Topics for review and discussion may include: (A) scope, analytic approach,

evaluation criteria, public involvement process, and timeline for development of the power plan; (B) key assumptions, forecasts, scenarios and other major analytical inputs into the resource plan; (C) candidate regional power resource strategies to be evaluated; (D) quantitative modeling of candidate regional power resource strategies; and (E) qualitative assessment of leading candidate regional power resource strategies, including implementation considerations.”

Wildlife Mitigation Advisory Committee: Created in the 2009 Fish and Wildlife Program to: “[1] Recommend a commonly accepted ledger of habitat units acquired, [2] Recommend to the Council ways to resolve issues about accounting for habitat units, and [3] Develop a common data base for tracking, assigning and recording habitat units. In addition, “[a]s part of the Advisory Committee, the Council will work with Bonneville and the managers to develop a comprehensive agreement on the proper crediting method for construction and inundation losses or strategies that will allow parties to reach long-term settlement agreements. Once completed, the Council will consider adopting the comprehensive agreement into the Program.”

Wildlife Advisory Committee (WAC): The WAC was created in 2013 to “facilitate discussions between resource managers, BPA, the Council, and other interested parties to plan the future for Regional HEP Team needs and to make recommendations and guide the Regional HEP Team into the future where work on operational losses will create a need for employment of new methods and technologies.” The objective of the WAC is to “advise and make recommendations to the Council regarding the following issues: 1. The need for additional HEP reports and future HEP Team funding. 2. The diminishing need for HEP on new acquisitions as BPA completes C&I mitigation. 3. Current regional need for follow up HEP capacity to track project agreement compliance on many properties. 4. The need for new methods to assess operational losses that incorporates the results of ongoing pilot projects that have explored how best to fulfill that specific need. This could include technical testing and evaluation of operational loss models and methodologies, or other alternative habitat evaluation methods.” The WAC reports to the Council’s Executive Director and operates in an advisory capacity only.

Appendix F- Matrix and Annotations for All Potential Functions

	<div style="text-align: center;"> <div style="display: flex; justify-content: space-between;"> <div>Function</div> <div>TWMI</div> </div> </div>	ACF Stakeholders	Chesapeake Bay Program	Delaware R.B. Commission	Great Lakes Commission	Gulf of ME Coun. Marine Envt.	Gulf of Mexico Alliance	Interstate Commiss. Potomac	Murray-Darling B. Authority	Metro Water Dist. So. Cal.
facilitation	agency coordination		X	X	X	X	X	X	X	
	facilitation & consensus building	X	X	X	X	X	X	X	X	
	conflict resolution	X		X	X			X		
outreach	water resource education	X	X	X	X	X	X	X	X	X
	capacity and leadership development	X	X		X	X		X		X
	administer grants		X		X	X	X		X	X
data	research	X	X	X	X		X	X	X	
	monitoring		X	X	X	X	X	X	X	
	coordination		X		X	X	X		X	
	integration / dissemination	X	X	X	X	X	X	X	X	
	technical assessments	X	X	X	X	X	X	X	X	X
infrastructure	water works construction & operation								X	X
	alternative water supply development								X	X
	regional water provider			X					X	X
	hydroelectric power									X
	flood control			X					X	
	land acquisition		x	X					X	
	restoration		X		X	X	X	X	X	
	stormwater systems			X	X					
water resource planning	water supply	X		X				X	X	X
	water quality	X	X	X		X	X	X	X	X
	drought management	X		X				X	X	X
	water conservation/ demand reduction	X		X	X			X	X	X
	flood control			X						
	reservoir operations	X		X				X	X	X
	other	X	X	X	X	X	X	X	X	
policy/ regulatory	policy development	X	Q	QSD	QS	Q	Q	QSD	QSD	S
	policy advocacy		Q		QS		Q			S
	regulatory coordination		Q	QSD			Q	QD	QSD	
	regulatory review			QSD				QD	QSD	
	issue regulations/ permits			QSD						
	water buy-backs/ incentives		Q(I)						S(B)	

	<div> <div></div> <div>TWMI</div> </div> <div>Function</div>	NW Power & Conserv. Council	Ohio R. Val. San. Commission	S. FL Water Mgmt. Dist.	Susquehanna R.B. Commission	Tahoe Reg. Planning. Agency	Upper Miss. R.B. Assoc.
facilitation	agency coordination	X	X	X	X	X	X
	facilitation & consensus building	X	X		X	x	X
	conflict resolution				X		X
outreach	water resource education	X	X	X	X	X	
	capacity and leadership development	X	X	X		X	X
	administer grants			X	X	X	
data	research		X	X	X		X
	monitoring		X	X	X	X	
	coordination	X	X		X	X	
	integration / dissemination	X	X		X	X	
	technical assessments	X	X	X	X	X	
infrastructure	water works construction & operation			X			
	alternative water supply development			X			
	regional water provider			X	X		
	hydroelectric power						
	flood control			X			
	land acquisition			X	X		
	restoration	X		X	X	X	X
	stormwater systems			X	X	X	
water resource planning	water supply		x	X	X		X
	water quality	X	X	X	X	X	X
	drought management			X	X		
	water conservation/ demand reduction	X		X	X		
	flood control			X	X		X
	reservoir operations	X		X	X		
	other	X	X	X	X	X	X
policy/ regulatory	policy development				QSD	Q	QSD
	policy advocacy						QSD
	regulatory coordination		Q	QSD	QSD	Q	
	regulatory review		Q	QSD	QSD	Q	x
	issue regulations/ permits		Q	QS	QSD	Q	
	water buy-backs/ incentives			S(I)	S(I)		

Information sharing, facilitation, consensus building

- **Agency coordination:** coordinating the efforts of federal, state, regional, or local agencies through enhanced communication, collaborative projects, or complementary policies.
- **Facilitation and consensus building:** providing forum for building consensus and facilitating basin-wide communication on critical topics.
- **Conflict resolution:** providing a formal or informal forum for the resolution of conflicts that arise between basin stakeholders and agencies.

Water resource education and outreach

- **Water resource education:** production of materials, programs, and other venues for the dissemination of information related to water resource issues or transboundary organization activities. The form and technical complexity of educational materials may vary depending on the intended audience.
- **Capacity and leadership development:** developing the capacity of member jurisdictions, legislators, agencies, stakeholders, and citizens to engage in water management through trainings, consultations, and other opportunities.
- **Administer grants:** providing grants to NGOs, citizens, and other entities for projects that enhance water resources.

Data acquisition, coordination and dissemination

- **Research:** acquisition of data and research into a variety of issues, including: agricultural practices, recreation, habitat needs, etc.
- **Monitoring:** engaging in or funding any type of environmental monitoring relevant to water resources management.
- **Coordination:** coordinating data collection efforts or assuring data quality, through: developing and promulgating protocols governing data collection and exchange; promoting communication among various data collectors; and setting strategic research goals that guide the disbursement of funds.
- **Data integration/dissemination:** integrating data from a wide array of sources and making it available for water managers through reports or data management systems.
- **Technical assessments:** providing assessments of technical aspects of water resources that are critical for planning, regulating, and other management purposes.

Infrastructure:

- **Water works construction & operation:** constructing, maintaining, or operating infrastructure needed to supply water for municipal and industrial needs.
- **Alternative water supply development:** diversifying water portfolio to meet demands through the use of technologies such as: desalination, aquifer storage and recovery, water reuse, or other nontraditional sources.
- **Regional water provider:** supplying water regionally or directly impacting regional water suppliers through regulations.
- **Hydroelectric power:** owning and/or operating hydroelectric power facilities.

- **Flood control:** mitigating risks to human health and property caused by floodwaters through infrastructure, i.e. reservoir storage or stormwater drainage systems.
- **Land acquisition:** purchasing land for public purposes from individual landowners.
- **Restoration:** managing or funding projects that improve the environmental health of a water-body through repairing degraded habitat, reestablishing natural processes, or environmental remediation.
- **Stormwater systems:** constructing and maintaining infrastructure to manage stormwater.

Water resources planning

- **Water supply:** creating basin-wide plans that pertain to the provisioning of water for municipal, industrial, or other consumptive and non-consumptive uses.
- **Water quality:** creating basin-wide plans that pertain to the chemical, physical, or biological condition of water resources.
- **Drought management:** mitigating risks caused by drought, through infrastructure, i.e. reservoir storage, or emergency preparedness and response programs.
- **Water conservation/ demand reduction:** reducing consumptive and non-consumptive demands for water in one or more sectors, using a wide-array of approaches and technologies.
- **Flood control:** mitigating risks to human health and property caused by floodwaters through emergency preparedness and response programs.
- **Reservoir operations:** transboundary organization activities directly or indirectly impact reservoir operations.
- **Other:** creating basin-wide plans for other subjects, including: biological resources, land use, and environmental flows.

Regulatory/policy

- **Policy development:** developing policies related to water quality ("Q"), water supply ("S"), or drought ("D").
- **Policy advocacy:** advocating for policies at regional or national levels.
- **Regulatory coordination:** promoting consistent and complementary regulations among member jurisdictions through model codes, enhancing communication during regulation development, reviewing regulations to highlight inconsistencies between member jurisdictions, etc.
- **Regulatory review:** advising federal or state agencies on regulatory or permitting decisions; may include veto power.
- **Issue regulations/ permits:** issuing regulations; or approving, denying, or conditioning withdrawal or discharge permits
- **Water buy-backs/ incentives:** implementing auctions or other compensation schemes to temporarily or permanently purchase water rights (buy-backs, "B"); or providing financial incentives for water demand reduction or pollution prevention (incentives, "I").

Appendix G- Functions Identified as Important by ACFS Governing Board

Data clearinghouse and facilitation

1. Provide easily accessible, accurate and relevant data to decision makers, researchers and the general public.

Rationale: Water resources management is aided by access to high quality and relevant data. Decision makers are able to make more informed decisions. The capacity of the general public to engage with the decision-making process and to take action in their communities is enhanced. Researchers are more able to design studies and present results in ways that are relevant to the decision-making process and citizen stakeholders. Dashboards display data in a visually striking and easily digestible way. The use of dashboards may make data more understandable, and therefore more likely to impact decision makers and citizens alike.

Specific activities: This could entail communication between decision makers, researchers, and citizen stakeholders to prioritize the most necessary data, to illuminate the timing and forms of data that is most relevant for actor needs, and to coordinate data collection efforts. It could also entail investigating the costs and potential benefits of utilizing dashboards to display data. These activities could occur through the auspices of a “Research and Data Advisory Committee”.

Examples: The Chesapeake Bay Program has multiple tools to track critical ecosystem indicators and progress towards its commitments and goals: (<http://www.chesapeakebay.net/trackprogress>). These tools help decision makers and stakeholders visualize the data necessary to make decisions, identify priorities, and reveal funding gaps. The Northwest Power and Conservation Council host an elaborate dashboard system (<http://www.nwcouncil.org/ext/dashboard/>) to display sub-basin and species management objectives, limiting factors and actions, projects, and external resources.

2. Facilitate new studies to close current gaps in data to better inform decisions

Rationale: A number of data gaps were identified in the recent TUC Gap Analysis, which if filled have the potential to better inform decisions. Examples for consideration include: imperiled species and oyster water needs, cumulative impact of small farm ponds and amenity lakes, viability of sustainable commercial navigation, incremental benefits to downstream ecosystems provided by navigation releases, and effects of water augmentation.

A “Research and Data Advisory Committee” could facilitate dialogue between decision makers, researchers, and citizen stakeholders to come to consensus on where there are

gaps in our current knowledge that if filled could inform better decisions. Through this dialogue data gaps may be prioritized and funding sources identified. The Committee may also identify appropriate partners to conduct the research, provide grant writing and data management assistance if needed, and track progress towards research goals.

The Northwest Power and Conservation Council have developed frameworks for monitoring, reporting, and data access that guide research and monitoring activities (<http://www.nwcouncil.org/fw/merr/home/>). The Council has also developed a Research Uncertainties Database (<http://research.nwcouncil.org>) that highlights uncertainties and gaps in data.

3. Compile comprehensive datasets critical for sustainable water management, which are currently lacking.

Rationale: The recent TUC “Gap Analysis” provided examples of a number of datasets that are important for making informed decisions, but presently lacking in comprehensiveness or completeness. These datasets are only listed currently to provide some examples for consideration, but ultimately a consensus process will drive which datasets are compiled: major water conservation activities; small farm ponds; flow alteration and augmentation activities; and withdrawal, consumption, and discharges for all power production plants. Currently, these data are located in multiple databases, leading to inconsistencies in format and high time costs locating or reformatting data; lacking for all or part of the basin; or not compiled but rather kept in individual landowner, NGO, business, or agency records.

A first step could be to come to consensus on which datasets warrant compilation. We recommend starting with only those datasets critical for informing planning decisions, with the potential for further datasets explored after the initial interim period. Subsequently, there will need to be agreement on the adequacy of the monitoring network and whether there is a need for additional sites or real-time data; data collection protocol and quality standards; data format(s); location of the data management system; and rules for data access, use, and contributions. We recommend the “Research and Data Advisory Committee” facilitates this process in the 1st year and includes all relevant agencies, researchers, and stakeholders in the dialogue. Whether the transboundary organization or another agency compiles, hosts, and maintains the resultant data management system(s) will depend on budget constraints, technical capacity, and stakeholder needs. Once the datasets are compiled and data management systems created, one agency may be responsible for quality assurance and maintenance.

The Great Lakes Commission hosts an online database and map of restoration activities in the Great Lakes region, which can be found online at: <http://glc.org/projects/habitat/glri-db-map/>. Moreover, the Great Lakes Commission

maintains the Great Lakes Information Network (<http://www.great-lakes.net>), an online repository of information about the region's environment, economy, and more.

Coordination, consensus building and conflict resolution

1. Facilitate communication and collaboration and build consensus

Collaboration is likely to promote efficiencies and result in more funding and resources from federal/other sources. Communication and building consensus promotes equity and sustainability around transboundary issues. The recent TUC Gap Analysis suggested a few areas where additional collaboration, communication, and consensus building could be helpful. Basin-wide dialogue on critical issues, identification of areas for collaboration, and processes to build consensus will occur through the meetings and activities of the transboundary organization at large, working groups, and advisory committees.

Nearly all transboundary organization case studies featured activities related to coordination, communication, collaboration, and consensus building. These activities appeared to be universally important. The ACF Stakeholders group is an excellent example of basin-wide communication and consensus building among water user groups.

2. Resolve conflicts

Transboundary organizations provide a forum for resolving water-related conflicts through communication rather than through litigation.

The process of professionally facilitated consensus building, inherent to all recommended transboundary organization activities, will serve to identify and resolve water-related conflicts. In the case there are intractable conflicts unable to be resolved through these means, more formal conflict resolution approaches may be warranted.

The Delaware River Basin Commission, for example, was able to resolve a conflict over water allocations during drought through facilitated dialogue, preventing the need for the US Supreme Court to make another equitable apportionment ruling. This "Good Faith" agreement was the result of 4 years of intense deliberations between member jurisdictions, facilitated by the Commission.

Adaptive planning

Like data acquisition, coordination, and dissemination, planning is a function that is engaged in by every transboundary water institution TUC interviewed. Planning is used to achieve widespread institution-level goals (such as comprehensive water quality or water allocation planning) and to address specific issues (such as drought or flooding). Three priority areas for adaptive planning were identified through a facilitated discussion at the 2014 ACFS Governing Board meeting in Eufaula, Alabama: 1) drought, 2) supply augmentation, and 3) conservation/returns. Drought planning is engaged in by a number of transboundary institutions, including the Murray-Darling Basin Authority in Australia, the Interstate Commission on the Potomac River Basin, and the Delaware River Basin Commission. Numerous federal, state, and regional organizations have initiated some form of drought planning in the ACF; building upon these efforts and harnessing existing momentum would be one appropriate course for a permanent ACF organization. Supply augmentation, which includes supplementing inadequate supplies with traditional (reservoirs, interbasin transfers) and non-traditional (desalination, aquifer storage and recovery), requires long-range planning. These approaches are and will continue to be utilized in the ACF, and a permanent transboundary organization should be involved in planning here to some extent. Finally, conservation/returns includes decreasing water demand and increasing returns to the system. Because of the large impact on water supply and the potential to alleviate effects of drought, a transboundary organization should play some role in developing plans for conservation and returns.

1. Drought

Drought is a specific issue that several transboundary water institutions named as requiring complex plans. The Murray-Darling Basin Authority (MDBA) was created largely due to the drastic toll that droughts took on the water resources in the Murray-Darling Basin. The Interstate Commission on the Potomac River Basin and the Delaware River Basin Commission are fully engaged in drought management planning and play various roles in the implementation of these plans. Numerous federal, state, and regional organizations have initiated some form of drought planning in the ACF. We recommend that a transboundary organization build upon these efforts to harness existing momentum and to learn from what has and has not worked thus far. While it is certain that a transboundary organization should facilitate consensus around drought impacts, monitoring tools, triggers and responses, it is less clear what role a transboundary organization should play in actually creating and implementing such plan.

Deficiencies in the intensity, amount, or timing of precipitation lead to reduced runoff and aquifer recharge, while increased transpiration and evaporation are caused by factors such as high temperatures, reduced cloud cover, or high winds. These factors may ultimately lead to deficiencies in soil moisture content. Soil moisture deficiencies

lead to stress on plants and consequently to reduced plant biomass and yields. Soil moisture and precipitation deficiencies may lead to reduced streamflow, reservoir or lake levels, and wetland or habitat area. All types of droughts lead to economic, social, and environmental impacts.

Drought management includes both short- and long-term approaches to reducing vulnerability to meteorological, agricultural, hydrological, or socioeconomic droughts. The drought planning process entails research on the impacts to society and ecosystems, monitoring tools, and management options. Various federal, state, and regional organizations have initiated some form of drought planning in the ACF. We recommend that a transboundary organization build upon these efforts to harness existing momentum and to learn from what has and has not worked thus far. While it is certain that a transboundary organization should facilitate consensus around drought impacts, monitoring tools, triggers and responses, it is less clear what role a transboundary organization should play in actually creating and implementing such plan. We will provide a few options in this regard.

We recommend basin-level drought management planning because no one agency is doing this currently. However, we recommend first determining where state and regional plans are and are not adequate. A preliminary role for a transboundary organization may be to look at existing state drought management plans to look for gaps, to determine if and when there is a need for coordinating them, and if there is a need for some overarching authority.

A transboundary organization may actually develop a drought management plan or alternatively, it may play a role in facilitating or providing technical assistance to other agencies in their development of the plan. The following examples illustrate the various ways transboundary organizations may partake in drought management, whether through facilitating others' efforts to develop plans, creating plans that are implemented by others, or creating and playing some part in implementing plans. The Great Lakes Commission developed a Task Force on Drought Management and Great Lakes Water Levels in 1989 to come to consensus on a regional policy statement. While the Great Lakes Commission approved this policy statement, planning and implementation activities occur at the state level through the work of the Council of Great Lakes Governors and Great Lakes-St. Lawrence River Water Management Regional Body. The Interstate Commission on the Potomac River Basin serves as the technical lead for cooperative water supply operations and conducts drought exercises, but states and municipalities are responsible for creating drought plans and implementing all other drought responses. The Susquehanna River Basin Commission (SRBC) developed a comprehensive drought coordination plan, which is implemented through both SRBC and state actions. The SRBC monitors drought conditions, makes drought declarations, implements public media programs, coordinates responses of member states, coordinates reservoir operations, calls for voluntary or mandatory demand reduction

through conservation measures, modifies or temporarily suspends permits to meet conservation goals, and enforces pass-by flows,

We recommend the following components to include in a drought plan, based upon review of numerous case studies in the National Drought Mitigation Center Drought Management Database³⁸:

- Transboundary organization authority for drought management,
- Definition of drought,
- Definitions of essential and non-essential water uses,
- Drought stages,
- Monitoring parameters and triggers,
- Drought declarations,
- Response actions,
- Drought management activities of member states/ federal agencies/ municipalities, and
- Coordination with surrounding regional organizations.

The authority afforded to a transboundary organization will determine what role it plays in implementing a drought plan. Minimal authority is needed for a transboundary organization to facilitate consensus around plan development, provide technical expertise to member jurisdictions, or fund demand reduction projects. More authority is required for a transboundary organization to declare drought levels and require response actions.

Responses to drought include both short- and long-term actions; with long-term actions, such as water pricing policies, being implemented before a drought commences and short-term actions, such as water use restrictions, being implemented during a drought. Triggers link certain thresholds, such as reservoir elevation or monthly precipitation, to the timing and level of drought responses. We recommend drought triggers and responses are developed through a basin-wide consensus-driven process. There are a variety of drought responses that appear successful in the ACF sub-basins and in other transboundary river basins. The suite of responses selected will depend on the authority granted to the transboundary organization. Long-term actions may include: conservation pricing, xeriscaping for residential and commercial lots, leak detection and repairs for all sectors, improving irrigation efficiency, implementing permanent buy-back programs, and conducting drought exercises. Short-term actions may include: restricting outdoor water use, coordinating reservoir operations, load shifting (i.e. withdrawing from lessor water stressed parts of system), augmenting flows through reservoir releases or recovery of aquifer storage, calling for voluntary use cutbacks especially for non-essential sectors, temporarily suspending water withdrawal or

³⁸ Online at: <http://drought.unl.edu/droughtmanagement/Home.aspx>.

consumptive use permits, enforcing pass-by flows (i.e. defined streamflow below which withdrawals must cease), and conducting irrigation reduction auctions or other temporary buy-back programs.

2. Supply augmentation

Sustainably augmenting inadequate water supplies with traditional sources, such as additional reservoirs or interbasin transfers, and non-traditional sources, such as desalination or rainwater harvesting, requires long-range planning.

3. Demand reduction

Increasing returns and reducing demands for water, i.e. conservation, may help alleviate the effects of drought. Promoting water conservation and returns involves short- and long-term actions of one or more sectors that increase water use efficiency, reduce losses to leaks, or alter behaviors to consume less water.

Education

1. Educate the general public and specific stakeholders about the need for transboundary management and particular opportunities and strategies the ACFS suggests for doing so.

It is critical to keep the public informed of transboundary water management activities and the reasons for organizational decisions. A supportive public makes political support much more likely, and political support equates to a more smoothly functioning, appropriately funded, and long-lasting organization.

Through a series of speakers' bureaus, one-on-one meetings, and webinars, members of an interim organization will educate major water users, agencies, and legislators on the importance of cooperation and coordination at a basin-wide scale. A website and speakers' bureaus will also be used to educate the general public in order to promote an informed constituency. The goal of these education activities will be to build the political will and public support necessary for the creation of the aspirational transboundary water management organization.

[INTENTIONALLY LEFT BLANK]

Appendix H- Recent Revenue Sources and Funding Considerations

Organization	Funding Details
Interstate Council on the Potomac River Basin	In 2012 revenue was \$2.5-2.6 million and expenditures were \$2.6-2.8 million. Grants for specific projects are 80-85% of budget; the largest being from the EPA for water quality management. The compact requires the CO-OP section to pay for its operation. Rather than requiring payments from member states, the ICPRB was able to get the metro Washington water utilities to pay the \$400,000 needed to run the CO-OP section
South Florida Water Management District	An ad valorem tax supports the recurring operating costs while legislative appropriations provide money for projects. The tax generates \$260 million per year needed to support their 1600 employees. Since 2000 the state has appropriated over \$1 billion, while the federal government \$700 million
Ohio River Valley Sanitation Commission	In 2012 operating budget was ~\$3 million, provided for nearly evenly between states and federal contributions. State funding comes from agency that has authority over water quality, in proportion to population and land area. The EPA provides section 106 grants to both the states and ORSANCO. There may also be special grants that vary dramatically from EPA, US FWS, or federal appropriations. Initial funds for the water resources management committee, responsible for exploring the need to expand from just quality into quantity, are provided for via the support of private foundations. Including all special projects and operating costs, the annual budget is typically \$4-5 million
Great Lakes Commission	FY 2012-2103 revenues were \$9.4 million and expenses were \$9.7 million. 94% of revenues from federal grants and contracts, while 5% came from state contributions (\$60,000 from each of 8 states)
Delaware River Basin Commission	FY 2012-2013 expense budget was \$5.8 million (with \$3.7 million being approved for Water Supply Storage Facilities Fund). Signatory parties (states and federal government) provided \$2.2 million. The compact calls for this breakdown of contributions: PA 25%, NJ 25%, feds 20%, NY 17.5%, and DE 12.5%. However some states and federal government are behind on their payments. The federal government hasn't been contributing its dues since 1996 and its shortfall now totals almost \$10 million. The remainder of the budget came from: grants & special projects (\$1.2 million), surface water supply charges (\$3.4 million), and project review fees, investment income, and other (\$1.8 million)
Tahoe Reg. Planning Agency	FY 2012-2013 revenues were \$20.7 million. States contributions included: CA \$4.1 million and NV \$1 million. Fees generated \$2.7 million and grants contributed \$12.3 million

Susquehanna River Basin Commission	FY 2012-2013 total revenues were \$10.5 million. Signatory members provided \$1.2 million, grants & projects \$1.7 million, and fees & others \$7.4 million. The federal government has not paid its due in a number of years. Most of funds come from permit review fees for gas companies to fracture shale
--	---