

ASCE STANDARD

American Society of Civil Engineers

Comprehensive Transboundary International Water Quality Management Agreement

Environmental and Water Resources Institute
American Society of Civil Engineers

Comprehensive Transboundary International Water Quality Management Agreement

Includes balloted revisions by the ASCE BIWQ Standards Committee in 1999 and 2000.



ASCE

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ABSTRACT

The purpose of *Comprehensive Transboundary International Water Quality Management Agreement* is to provide a model for comprehensive water quality planning and management of shared water resources. This model agreement is based on the concept of shared sovereignty and is appropriate only for those situations in which the Parties are prepared to relinquish a significant degree of sovereignty over their portion of the shared water resource.

The agreement is extensive and considers most aspects of planning and management of water resources. The objective of this comprehensive, integrated agreement is to achieve allocation based on equitable utilization. The intent of this agreement is to be sufficiently flexible for use on an international scale and in a variety of geopolitical settings.

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STANDARDS

In April 1980, the Board of Direction approved ASCE Rules for Standards Committees to govern the writing and maintenance of standards developed by the Society. All such standards are developed by a consensus standards process. The consensus process includes balloting by the balanced standards committee made up of Society members and nonmembers, balloting by the membership of ASCE as a whole, and balloting by the public. All standards are updated or reaffirmed by the same process at intervals not exceeding 5 years.

The following Standards have been issued.

- ANSI/ASCE 1-82 N-725 Guideline for Design and Analysis of Nuclear Safety Related Earth Structures
- ANSI/ASCE 2-91 Measurement of Oxygen Transfer in Clean Water
- ANSI/ASCE 3-91 Standard for the Structural Design of Composite Slabs and ANSI/ASCE 9-91 Standard Practice for the Construction and Inspection of Composite Slabs
- ASCE 4-98 Seismic Analysis of Safety-Related Nuclear Structures
- Building Code Requirements for Masonry Structures (ACI 530-99/ASCE 5-99/TMS 402-99) and Specifications for Masonry Structures (ACI 530.1-99/ASCE 6-99/TMS 602-99)
- ASCE 7-98 Minimum Design Loads for Buildings and Other Structures
- ANSI/ASCE 8-90 Standard Specification for the Design of Cold-Formed Stainless Steel Structural Members
- ANSI/ASCE 9-91 listed with ASCE 3-91
- ASCE 10-97 Design of Latticed Steel Transmission Structures
- SEI/ASCE 11-99 Guideline for Structural Condition Assessment of Existing Buildings
- ANSI/ASCE 12-91 Guideline for the Design of Urban Subsurface Drainage
- ASCE 13-93 Standard Guidelines for Installation of Urban Subsurface Drainage
- ASCE 14-93 Standard Guidelines for Operation and Maintenance of Urban Subsurface Drainage
- ASCE 15-98 Standard Practice for Direct Design of Buried Precast Concrete Pipe Using Standard Installations (SIDD)
- ASCE 16-95 Standard for Load and Resistance Factor Design (LRFD) of Engineered Wood Construction
- ASCE 17-96 Air-Supported Structures
- ASCE 18-96 Standard Guidelines for In-Process Oxygen Transfer Testing
- ASCE 19-96 Structural Applications of Steel Cables for Buildings
- ASCE 20-96 Standard Guidelines for the Design and Installation of Pile Foundations
- ASCE 21-96 Automated People Mover Standards—Part 1
- ASCE 21-98 Automated People Mover Standards—Part 2
- SEI/ASCE 23-97 Specification for Structural Steel Beams with Web Openings
- SEI/ASCE 24-98 Flood Resistant Design and Construction
- ASCE 25-97 Earthquake-Actuated Automatic Gas Shut-Off Devices
- ASCE 26-97 Standard Practice for Design of Buried Precast Concrete Box Sections
- ASCE 27-00 Standard Practice for Direct Design of Precast Concrete Pipe for Jacking in Trenchless Construction
- ASCE 28-00 Standard Practice for Direct Design of Precast Concrete Box Sections for Jacking in Trenchless Construction

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PREFACE

The purpose of the Comprehensive Transboundary International Water Quality Management Agreement is to provide a model for comprehensive water quality planning and management of shared water resources. This model agreement is based on the concept of shared sovereignty and is appropriate only for those situations in which the Parties are prepared to relinquish a significant degree of sovereignty over their portion of the shared water resource. The Parties should also show an interest in achieving optimal water quality management of the resource.

The agreement is extensive and considers most aspects of planning and management of water resources. The objective of this comprehensive, integrated agreement is to achieve allocation based on equitable utilization. It requires that the Parties restrict practices to the reasonable use of water and provide sufficient data to the other Parties to verify reasonable and beneficial use. Since the data collection, environmental assessment, and inventories of basin water user efforts are to be systemic in nature and integrated across the Basin, the agreement suggests costs of the collection efforts be apportioned.

The agreement is based on the elements of the *ASCE Shared Use of Transboundary Water Resources Model Water Sharing Agreement (Comprehensive), TAB C (Draper, 2000, in progress)*, which is based on the *Delaware River Basin Compact (DRBC, 1961)*, and its amendments. The Delaware Compact has been extraordinarily successful in resolving interstate conflicts over the water rights and water quality management of the Basin between and among the States of New York, Pennsylvania, New Jersey, and Delaware.

The intent of this agreement is to be sufficiently flexible for use on an international scale and in a variety of geopolitical settings. The major definitions and general provisions for the document are provided in Article 2. Defining the terms in this way avoids the need to include similar language at numerous points throughout the Agreement. Many definitions were taken from *The Regulated Riparian Model Water Code: Final Report of the Water Laws Committee of the Water Resources Planning and Management Division (ASCE 1997, Edited by Joseph Dellapenna)*.

Blanks _____ within the text are used when the readers are to choose the material that is appropriate for their situation. If numbers are underscored (20) within the text, these are the samples used in other cases throughout the world. The basic rules pertaining to vested property rights are found in Part

2 of Article 2. Some of the articles or sub-articles are optional and have been labeled accordingly.

The EWRI/ASCE Border International Water Quality Standards Committee (BIWQ SC) that is within the Standards Development Council of the Society is divided into three subcommittees. The subcommittees are labeled International Agreement (IA), Management Plan (MP), and WQ Standard (WQS). The members of the BIWQ SC are:

- Raymundo Aguirre—Chair of the WQS subcommittee
- Fernando Cadena—member of the IA & WQS subcommittees
- Robert T. Chuck—member of the MP subcommittee
- Harold J. Day—member of the MP subcommittee
- David J. Eaton—member of the MP and WQS subcommittees
- Thomas G. Gebhard, Jr.—member of the IA subcommittee
- Conrad G. Keyes, Jr.—Chair of the BIWQ SC, Chair of the IA subcommittee
- Mark W. Killgore—Secretary of the BIWQ SC and the IA subcommittee, VC of MP subcommittee
- April Lander—member of the WQS subcommittee
- David H. Merritt—Vice Chair of the BIWQ SC and Chair of the MP subcommittee and member of the IA subcommittee
- Percival A. Miller—member of the WQS subcommittee
- Bernardino Olague—Treasurer of the BIWQ SC and member of the MP subcommittee
- Rhea L. Williamson—VC of the WQS subcommittee
- Richard V. Wyman—member of the WQS subcommittee

Conrad G. Keyes, Jr., Chair of the IA subcommittee submitted the first draft of the agreement. The first draft outline was recommended by Lorenzo Ariaga, Fernando Cadena, Thomas G. Gebhard, Jr., and Keyes during a working meeting of the committee in September 1997. One major review meeting occurred in Chicago in June 1998 and Keyes, Gebhard, Mark W. Killgore, and David H. Merritt provided input to version 1.1 of the draft agreement that came from

sections of the *ASCE Shared Use of Transboundary Water Resources, Model Water Sharing Agreement (Comprehensive)*, TAB C (*Draper, 2000, In Progress*).

The document was reviewed and revised at meetings in El Paso, Texas on February 27–28, 1999; in Tempe, Arizona on June 9, 1999; in El Paso on February 26–27, 2000; and again in Albuquerque on June 2–3, 2000. Members of the EWRI/ASCE Border International Water Quality Standards Committee attending one or more of the document revision meetings have included Aguirre, Cadena, David

J. Eaton, Keyes, Killgore, April Lander, Merritt, Percival A. Miller, Bernardino Olague, and Rhea Williamson. All involved individuals are members of the mentioned standards committee that reported to the Water and Environmental Standards Council (as of October 1, 1999 called the Environmental and Water Resources Institute’s Standards Development Council). The W&ESC performed its operations according to the ASCE Rules for Standards Committees that have been established in agreement with the American National Standards Institute.

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**AGREEMENT CONCERNING
THE
COMPREHENSIVE TRANSBOUNDARY INTERNATIONAL
WATER QUALITY MANAGEMENT
OF THE
_____ RIVER BASIN and/or AQUIFER BASIN**

PREAMBLE

The Parties to this agreement, _____

And _____;

Recognizing that the water and related resources of the _____ River Basin and/or Aquifer Basin (hereafter using Basin) are regional assets, for which they have a joint responsibility, and that the reasonable and beneficial use of these water resources are necessary for the health and welfare of its respective people;

Acknowledging that water and the related resources of the _____ Basin may be experiencing water quality problems which must be addressed in order to promote sustainable development;

Recognizing the need to establish a transboundary organization to strengthen cooperation among interested parties and to facilitate the financing, construction, operation, and maintenance for projects in the _____ Basin;

Convinced of the need to collaborate with nations and states, local communities, non-governmental organizations, the private sector, and other members of the public in the effort to manage water quality in the _____ Basin;

Recognizing that the conservation, utilization, development, management, and control of the water and related resources of the _____ Basin and its tributaries, under a comprehensive multipurpose plan, will bring the greatest benefits to public welfare and environmental protection within the context of water resource sustainability;

Recognizing that Parties are desirous of providing effective flood damage reduction; conservation and development of underground and surface water supply for municipal, industrial, and agricultural uses; watershed projects;

Recognizing that protection and aid to fisheries dependent upon water resources, development of hydroelectric power potentialities, improved navigation, control of the movement of saline water, abatement and control of water pollution, and regulation of surface flow are beneficial to the Parties;

Affirming the desirability of encouraging increased investment for water quality management in the _____ Basin;

The Countries or Nations of _____ and _____ hereby solemnly covenant and agree with each other, to the following Agreement.

ARTICLE 1

DECLARATION OF PURPOSES AND POLICIES

1.1 PURPOSES OF AGREEMENT

1. **The water resources of the _____ Basin are affected with a local, national, and regional interest and their planning, conservation, utilization, development, management, and control, under appropriate arrangements for intergovernmental cooperation, are public purposes for the respective signatory Parties.**
2. **The purposes of this Agreement are to promote international comity; alleviate causes of present and future controversy; make secure and protect present developments within the nations of the Basin; and encourage and provide for the planning, conservation, utilization, development, management, and control of the water resources of the Basin.**
3. **Additionally, the purposes include providing for cooperative planning, financing, and action by the signatory Parties with respect to water quality such that human health and beneficial uses are protected.**
4. **Furthermore the purposes are to apply reasonable and nondiscriminatory treatment to all water users, and to all users of related facilities without regard to established political boundaries.**
5. **A controlling Commission is to be established to carry out the operations within the _____ Basin.**

Commentary: A key challenge for the Parties is to make more efficient and productive use of water and to reshape the institutions managing water to better suit the increase in water shortages (Postel, 1996). The purpose statement is indefinite in order to allow flexibility in the planning and management of the shared water resource.

The Parties must carefully frame the extent of the water quantity and quality involved in the agreement. They must identify the type and geographical extent of the Waters of the _____ Basin to be subject to the Agreement. In order to be accurate, the analysis must include a review and analysis of the factors, which influence the availability of water: the climatology, physiology, geology, and the interaction between underground and surface water resources. The analysis must identify pollution sources and the resulting impact on water quality. The purposes and scope of the Agreement will weigh heavily on this assessment, as it will delineate the

Parties to be included and the structure of the Commission established to manage operations within the Basin. The geographic extent of the water quantity and quality to be covered by the Agreement should be equal to the water sharing problems to be addressed. The use of the terms “Basin” or “Waters of the _____ Basin,” if objectionable for any reason by one or more Parties, may be changed to “region,” “area,” or “system,” or any word that accurately describes and encompasses the entirety of the water resources subject to the Agreement.

It should be noted that comprehensive basin-wide management is established in a number of recent international agreements, to include the Convention on Biological Diversity (1992); Convention on Wetlands of International Importance (1975); and Rio Declaration on the Environment and Development (1992). It has been noted that “integration of water quality and quantity programs is one aspect of, and is inseparable from, comprehensive, coordinated, multipurpose, basin-wide water, and related resource planning and management” (Goldfarb, 1993).

Cross-Referencing: 1.6 (coordination and cooperation); 2.1.3 (amendments and supplements); 2.1.4 (withdrawal); 2.2.1 (_____ Basin defined); 2.2.2 (beneficial use defined); 2.2.12 (party or parties defined); 2.2.13 (project defined); 3.2 (powers and duties); 3.3 (intergovernmental relations); 5.3 (grants, loans, or payments); 5.5 (borrowing power).

1.2 JOINT EXERCISE OF SOVEREIGNTY

The water quantity and quality of the Basin are subject to the sovereign right and responsibility of the signatory Parties, and it is the purpose of this Agreement to provide for the joint exercise of such powers of sovereignty in the common interests of the people of the region.

Commentary: All principal stakeholders directly affected by the shared use must be identified and included in the negotiations. This includes any sovereign government having direct access to the surface or underground water. Both governmental and private stakeholders should have a voice in Agreement formulation. While private water rights holders within the various jurisdictions will not be joined as Parties to the Agreement, the various persons and organiza-

tions associated with the various water demands should have a voice in formulating the Agreement. Although the extent of consultation with private groups will depend largely on the political nature of the sovereignties themselves, some recognition of existing rights is required. For instance, in most situations a conflict will exist between demands for water for economic purposes and the needs of environmental protection. Water users may require incentives to accept that some water is reserved for environmental and ecological protection. Additional incentives may also be required for maintaining or improving water quality during or following use and prior to discharge in accordance with water quality standards or other compliance requirements. Unless the governmental entities involved with formulating the Agreement actively seek to include the various interest groups, the effectiveness of the Agreement may be compromised.

Many international agreements reserve the sovereign right of each signatory to exploit its own resources (e.g., Convention on Long-Range Transboundary Air Pollution, 1979). Some, however, allow for a measure of joint sovereignty but reserve sovereign activities that affect industrial and commercial secrecy or national security (e.g., Convention on Environmental Impact Assessment in a Transboundary Context, 1993). However, recent agreements testify to the trend of joint development of shared water resources (Trolldalen, 1992) and joint development presupposes the joint exercise of sovereignty. In addition to the Delaware River Basin Compact (DRBC, 1961) and Susquehanna River Basin Compact (SRBC, 1970), examples include the Act Regarding Navigation and Economic Development between the States of the Niger Basin (1963); Convention Establishing the Organization pour la Mise en Valeur du Fleuve Senegal (OMVS) (1974); Convention and Statute Relating to the Development of the Chad Basin (1974); and Agreement on the Action Plan for the Environmentally Sound Management of the Common Zambezi River System (1987).

Cross-Referencing: 2.1.4 (withdrawal); 2.2.12 (party or parties defined); 3.2.2 (powers and duties reserved to the commission); 3.2.9 (condemnation proceedings).

1.3 INTERRELATIONSHIP OF WATER RESOURCES

The Waters of the _____ Basin are functionally interrelated, and the uses of these re-

sources are interdependent. Joint planning, management, and coordination of projects and policies within the Basin are essential to effective and efficient use of the water resource.

Commentary: This provision expands the purpose statement by expressing the intent of the Parties to seek effective water management. Similar provisions are included in the Report of the United Nations Conference on Environment and Development, Agenda 21 (1993), which proposed that a program of integrated water resources development and management is necessary.

Cross-Referencing: 1.6 (coordination and cooperation); 2.2.1 (_____ Basin defined); 2.2.12 (party or parties defined); 2.2.13 (project defined); 2.2.20 (waters of the _____ Basin defined).

1.4 SEVERANCE OR MATERIAL BREACH (Optional)

1. **Parties consider this agreement to be a whole. Each recommendation and provision of this agreement is considered material to the entire Agreement and failure to implement or adhere to any recommendation or provision may be considered a material breach.**
2. **Tribunal Parties of competent jurisdiction may hold any part of this Agreement to be void or unenforceable; all other severity provisions shall continue in full force and effect.**

Commentary: The drafters of the Agreement should consider whether they wish these clauses to be included. The advantage of such clauses is that it avoids the possibility of having the entire Agreement become null and void if any part is found to be void or unenforceable. These provisions are standard to most agreements, indicating that all provisions of the Agreement are interrelated and that breach of any provision by one Party may jeopardize the Agreement.

Cross-Referencing: 2.1.3 (amendments and supplements); 2.2.12 (party or parties defined); 3.2.2 (powers and duties reserved to the commission); 3.3.4 (cooperative services); 6.3 (conciliation and mediation).

1.5 GOOD FAITH IMPLEMENTATION

Each of the Parties pledges to support implementation of all provisions of this Agreement, and covenants that its officers and agencies will not

hinder, impair, or prevent any other Party from carrying out any provision or recommendation of this Agreement.

Commentary: A country or nation normally enters into any international agreement with a position of self-interest. In the negotiations, each party seeks the rights and authorities critical to certain political, economic, or social objectives while ceding less critical rights and authorities to the other nations. While accepting this fact, all Parties have a duty to cooperate and negotiate in good faith. This principle is the foundation of international law, and it applies in all relations between sovereign States.

Similar provisions are found in the following references: Declaration on Principles of International Law Concerning Friendly Relations and Cooperation among States in Accordance with the Charter of the United Nations (1970), Charter of Economic Rights and Duties of States (1975), Helsinki Rules on the Issues of the Waters of International Rivers (1966), and Stockholm Declaration of the United Nations Conference on the Human Environment (1972).

Cross-Referencing: 2.2.12 (party or parties defined); 3.1.4 (commission administration); 3.2 (powers and duties); 3.3.2 (project costs and evaluation standards); 6.1 (alternative dispute resolution).

1.6 COORDINATION AND COOPERATION

The Parties shall at all times endeavor to agree on the interpretation and application of this Agree-

ment, and shall make every attempt through cooperation and consultations to arrive at a mutually satisfactory resolution of any matter that might affect its operation.

Commentary: This provision recognizes the inherent need for coordination and cooperation in the joint management of the Basin. This provision appears in a number of international treaties, including: NAFTA (1993); Agreement between the Government of the United States of America and the Government of the United Mexican States Concerning the Establishment of a Border Environment Cooperation Commission and a North American Development Bank (1993); Declaration on Principles of International Law Concerning Friendly Relations and Cooperation among States in Accordance with the Charter of the United Nations (1970); Charter of Economic Rights and Duties of States (1975); Stockholm Declaration of the United Nations Conference on the Human Environment (1972); Treaty for Amazonian Cooperation (1978); Convention on Long-Range Transboundary Air Pollution (1979); Draft Articles on the Nonnavigational Uses of International Watercourses (1991); Convention on Environmental Impact Assessment in a Transboundary Context (1993); and Vienna Convention for the Protection of the Ozone Layer (1985).

Cross-Referencing: 1.1 (purposes of agreement); 1.3 (interrelationship of water resources); 2.2.11 (multilateral body defined); 2.2.12 (party or parties defined); 3.2.1 (general powers and duties); 3.2.10 (meetings, hearings, and records); 3.3.1 (intergovernmental coordination and cooperation).

ARTICLE 2

GENERAL PROVISIONS

2.1 GENERAL OBLIGATIONS

2.1.1 Effective Date of Execution

This Agreement shall become binding and effective (_____) days after the enactment of concurring legislation by the signatory Parties. The Agreement shall be signed and sealed in (_____) duplicate original copies by the respective chief executives of the signatory Parties. One such copy shall be filed with the Secretary of State of each of the signatory Parties or in accordance with the laws of the country or nation in which the filing is made, and one copy shall be filed and retained in the archives of the Commission.

Commentary: This provision is administrative in nature. It describes when the Agreement becomes enforceable and the administrative steps necessary to assure all Parties are so informed.

Cross-Referencing: 2.1.2 (duration of agreement); 2.2.12 (party or parties defined); 4.4 (water allocation).

2.1.2 Duration of Agreement

- 1. The Parties intend that the duration of this Agreement shall be for an initial period of (_____) years from its effective date. If none of the signatory Parties notifies the Commission of intention to terminate, the Agreement shall be continued for additional periods of (_____) years.**
- 2. In the event that this Agreement should be terminated by operation of the above paragraph, the Commission shall be dissolved, its assets and liabilities transferred, and its corporate affairs discontinued, in such manner as may be provided by agreement of the signatory Parties.**

Commentary: Three significant principles are established by this provision. First, setting duration for an extended period of time allows for predictability on terms of water management. Secondly, it also allows sufficient time to recover capital costs in the financing of projects. Finally, establishing duration ensures that the Parties reconsider the Agreement only after a sufficient hydrologic record is established.

Cross-Referencing: 2.1.1 (effective date of execution); 2.2.12 (party or parties defined); 3.1.1 (commission created); 4.2 (purpose and objectives); 4.5 (withdrawals and diversions).

2.1.3 Amendments and Supplements

- 1. Amendments and supplements to this Agreement to implement the purposes thereof may be proposed by any of the signatory Parties. The amendments and supplements shall become incorporated in the Agreement if approved by all Parties.**
- 2. In the event that any Party is substantially hindered or prevented from performing any obligation or implementing any provision under this Agreement, by reasons of circumstances beyond the control of the Party (including natural disasters, labor disputes, judicial decrees, armed intervention, and/or action of national legislative bodies), the Parties agree to meet and negotiate an appropriate modification of the applicable provisions of the Agreement. Such modifications may include extensions of applicable schedules and timetables, or agreements on substitute actions to fulfill the objectives and spirit of this Agreement.**

Commentary: This provides a mechanism for the Parties to agree and develop extensions to the Agreement when the need arises.

It also provides a remedy for unintentional breaches of the Agreement that may occur due to certain unforeseen situations or changed conditions. Similar provisions may be found in most agreements (Convention on Environmental Impact Assessment in a Transboundary Context, 1993; Vienna Convention for the Protection of the Ozone Layer, 1985).

Cross-Referencing: 1.1 (purposes of agreement); 1.4 (severance or material breach); 2.2.12 (party or parties defined).

2.1.4 Withdrawal

Any sovereign Party has the power and right to withdraw from this Agreement. Notification of withdrawal to all Parties shall be made (12) months in advance of the prospective withdrawal.

Commentary: This provision acknowledges the advance notification of withdrawal by the individual Parties and recognizes that any relinquishment of sovereignty is limited solely to the purposes of this Agreement.

Cross-Referencing: 1.1 (purposes of agreement); 1.2 (joint exercise of sovereignty); 2.2.12 (party or parties defined).

2.1.5 Existing Agencies

The Parties shall preserve and utilize the functions, powers, and duties of existing offices and agencies of the country or nation to the extent consistent with the Agreement. The institution established to enforce this Agreement is authorized and directed to utilize and employ such offices and agencies for the purpose of this Agreement to the fullest extent it finds feasible and advantageous.

Commentary: The use of existing offices and agencies prevents duplication associated with costs of data collection and management of the water quantity and quality subject to the Agreement.

Cross-Referencing: 2.2.12 (party or parties defined); 3.2.2 (powers and duties reserved to the commission); 3.2.7 (advisory committees); 3.3.1 (intergovernmental coordination and cooperation); 3.3.4 (cooperative services); 4.3 (conditions of comprehensive plan).

2.1.6 No Precedence (Optional)

The physical and other conditions pertinent to the Basin constitute the basis for this Agreement, and its provisions are applicable only to the Basin.

Commentary: The Agreement reflects the circumstances and compromises reached in its formulation. The Parties may not desire to make this Agreement apply to other basins. This clause may avoid later claims that other rivers and basins, or other bodies of water, should be dealt with in a similar manner.

Cross-Referencing: 2.2.1 (_____ Basin defined); 2.2.12 (party or parties defined).

2.2 DEFINITIONS

2.2.1 _____ Basin

“_____ Basin” means the area of drainage into the _____ River and its tributaries, aquifers underlying the drainage, or only the aquifers themselves.

Commentary: The Agreement could include the total surface area of drainage throughout the Basin and contain aquifers underlying the surface drainage. Some tributaries can be connected to the underlying aquifers holding the underground water. Some of the aquifers could be connected to more than one of the surface water basins. The geographic scope of the Agreement should be defined to ensure there are no future disagreements about what lands are or are not covered by the Agreement. A map may be incorporated, but care should be taken that the map is cartographically accurate. Because the map is likely to be at a scale too small for precise delineation of boundaries, it should be made clear that it is for general reference only. In the event of a dispute over land or within the defined _____ River and its tributaries, the actual limits of the watershed as determined on the ground should be controlling (Draper, 2000, ASCE Task Committee work in progress).

Cross-Referencing: 1.1 (purposes of agreement); 1.3 (interrelationship of water resources); 2.1.6 (no precedence); 2.2.3 (commission defined); 2.2.18 (transboundary waters defined); 2.2.20 (waters of the _____ Basin defined); 3.1.1 (commission created); 3.1.2 (jurisdiction of the commission); 3.2.1 (general powers and duties); 3.2.2 (powers and duties reserved to the commission); 3.2.3 (obligations of the commission); 3.2.6 (referral and review); 3.3.3 (projects of the signatory parties and their subdivisions); 3.3.4 (cooperative services); 4 (transboundary water quality management).

2.2.2 Beneficial Use

“Beneficial Use” includes that use by which the water supply of a drainage basin is consumed or stored, when usefully employed by human activities, and also includes water lost by evaporation, and other natural causes from streams, canals, ditches, irrigated areas, and reservoirs. The term

additionally includes instream use for aesthetics, ecological and environmental maintenance, and protection, recreation, minimum flow maintenance, or any other purpose agreed by the Parties to be for the general benefit of the public and the environment.

Commentary: “Beneficial use” has long been the criterion for the validity of water rights under the appropriate rights doctrine. In that setting, the concept of beneficial use both serves to define the proper purposes for which a water right might be acquired, and to limit or measure the quantity of water lawfully appropriated for the intended purpose (Dellapenna, 2000, in progress).

At the present time, not all jurisdictions agree that “instream” uses are beneficial, but the trend is to recognize and provide for such uses. Requirements of instream use maintenance should be addressed; if not, future requirements may result in disruption of allocation or other provisions contained in the Agreement. The Parties may wish to modify or refine this definition further, depending upon the particular goals included in the Agreement.

Cross-Referencing: 1.1 (purposes of agreement); 2.2.3 (commission defined); 2.2.10 (instream use defined); 2.2.12 (party or parties defined); 2.2.16 (sustainable water use defined); 4.2 (purpose and objectives of transboundary water quality management); 4.4 (water allocation).

2.2.3 Commission

“Commission” means the _____ Basin Commission created and constituted by this Agreement.

Commentary: The Commission is the group that is put together from personnel from the Parties and/or from personnel hired to carry out the operations within the Basin. Further information about the Commission is covered in Article 3 of this document.

Cross-Referencing: 2.2.1 (_____ Basin defined); 2.2.2 (beneficial use defined); 3 (administration); 4 (transboundary water quality management); 5 (financing); 6 (dispute resolution).

2.2.4 Comprehensive Transboundary International Water Quality Management Plan

“Comprehensive Transboundary International Water Quality Management Plan” means a plan that considers the interrelationship of transboundary water resources, describes current and prospective water uses, identifies water supplies, and matches these supplies to water uses. It also identifies needed water-related management measures, facility needs and costs, addresses environmental concerns, and offers program and policy recommendations to better manage the basin’s water resources and water quality. This plan is for the long term to produce the highest quality and most efficient use of water resources for the greatest benefit to the public and the environment.

Commentary: Comprehensive water management plans generally are guides for the orderly development and management of water resources. Generally, these plans span a 50-year horizon, consider population growth, development and availability of new water supplies, water transfers from one basin to another, data sources and methodologies, cost of water, regional or subregional plans, regulatory issues, economic development, specific projects, health and public safety issues, and other concerns. The Parties should negotiate the time horizon and the frequency for updating the plan. Additional information can be obtained from the Texas Water Plan (Texas Water Development Board, 1997).

Cross-Referencing: 3.3.3 (projects of the signatory parties and their subdivisions); 4 (transboundary water quality management).

2.2.5 Consumptive Use

“Consumptive Use” means the use of water consumed and the water that is not returned to the source of supply.

Commentary: A consumptive use is one that diminishes the quantity of water in a water source. Excessive consumptive use impairs the sustainable development of a water source. While water rights can be perfected for both consumptive and nonconsumptive uses, the effects of the two forms of use are so different that regulations and permits will often treat consumptive uses differently from nonconsumptive uses. This has been recently defined by the ASCE

Appropriative Rights Model Water Code, Water Regulatory Standards Committee (Dellapenna, 2000, in progress).

Cross-Referencing: 4.2 (purpose and objectives of transboundary water quality management).

2.2.6 Cost

“Cost” means direct and indirect expenditures, commitment, and net adverse effects, whether compensated or not, incurred or occurring in connection with the establishment, acquisition, construction, operation, and maintenance of a project.

Commentary: The Appropriative Rights Model Water Code (Dellapenna, 2000, in progress) uses the term “cost” in the sense of “opportunity cost,” referring to the value of foregone opportunities made necessary by the project or activity for which the cost is to be determined. Opportunity costs include the actual out-of-pocket expenditures that are necessary action for forbearance. These can include the costs of construction, costs of land acquisition, costs of acquiring water rights, easements, and franchises, and expenses for engineering, legal work, planning, surveys, and other expenses for determining the feasibility of a project. “Costs” also include the adverse effects on the environment, including costs to mitigate negative environmental impacts, and on others (people, entities, and organizations) regardless of whether those effects are compensated.

Cross-Referencing: 2.2.13 (project defined); 2.2.14 (reasonable use defined); 3.2.4 (regulations and enforcement); 3.3.2 (project costs and evaluation standards); 5.1 (annual current expense and capital budgets).

2.2.7 Drought Conditions

“Drought Conditions” means conditions brought about by the lack of precipitation, in a quantity agreeable to the Parties, from the mean annual precipitation.

Commentary: Management action will arise from a drought, or lack of mean annual rainfall, but could arise from other causes as well, such as the collapse of a dam with the resulting draining of a reservoir on which the Commission users depend. Mather (1974) indicates that the number of quite different definitions

is large. The definition should be determined, in large measure, by the use intended. Then a “drought management strategy” would be a specific course of conduct planned by the Commission as a necessary or appropriate response to the lack of precipitation or a reduction in water quantity, including catastrophic events (e.g., dam failure).

Cross-Referencing: 2.2.12 (party or parties defined); 4.2 (purpose and objectives of transboundary water quality management); 4.3 (conditions of comprehensive plan); 4.5 (withdrawals and diversions).

2.2.8 Equitable

“Equitable” means fair; just; according to the principles of justice. An equitable settlement of a dispute is fair to both sides.

Commentary: Utilization of a transboundary water resource in an equitable manner requires taking into account all relevant factors and circumstances (Draper, 2000, in progress). They could include: (1) social and economic needs of the Parties, (2) population dependent on the water resource of the Parties, (3) effects of the use or uses of the water resources of the other Parties, (4) existing and potential uses of the water resources, and (5) availability of alternatives.

This definition is part of the 1997 Convention on the Law of the Non-navigation Uses of International Watercourses. It should help set recommendations for agreements concerning the shared use of transboundary water resources (Draper, 2000, in progress).

Cross-Referencing: 3.2.1 (general powers and duties of administration); 3.2.2 (powers and duties reserved to the commission).

2.2.9 Flood Conditions

“Flood Conditions” means conditions resulting from heavy runoff with a frequency agreeable to the Parties.

Commentary: The flood condition is almost the opposite of a drought. A large amount of water is to be controlled by facilities of the Commission. The Parties are to agree as to the frequency of the flow of high waters in the Basin. Most of the time, these flows are during periods that exceed the amount of flow that occurs during the years of mean annual precipitation.

Cross-Referencing: 2.2.12 (party or parties defined); 4.2 (purpose and objectives of transboundary water quality management); 4.3 (conditions of comprehensive plan).

2.2.10 Instream Use

“Instream Use” includes any use that does not withdraw water from the stream, but may affect instream water quality or habitat. Examples include navigation, certain types of hydroelectric power facilities, maintenance of water quality, provision for fish and wildlife habitat, and fulfillment of aesthetic goals.

Commentary: The uses of water for certain types of use are to be classified as “instream use.” The Parties are to agree as to the uses that fit into this category, i.e., navigation, certain types of hydroelectric power facilities, maintenance of water quality, provision for fish and wildlife habitat, and fulfillment of aesthetic goals (Dellapenna, 2000, in progress). These uses can be recognized and associated water rights could be the property of the Commission or part of the Party’s water resources.

Cross-Referencing: 2.2.2 (beneficial use defined); 4.4 (water allocation).

2.2.11 Multilateral Body

“Multilateral Body” means any joint commission or other institutional arrangements for cooperation between the Parties.

Commentary: This is another group that is different than the Commission. These groups can be used by the Commission to carry out operations and/or other activities of the Commission or can be used by the Parties of the Commission to fulfill other items in association with the Commission activities.

Cross-Referencing: 1.6 (coordination and cooperation); 2.2.12 (party or parties defined); 5.8 (funding and refunding).

2.2.12 Party or Parties

“Party or Parties” means those sovereign countries or nations signatory to this Agreement, unless the text otherwise indicates.

Commentary: The allocation of water between two groups has been done in the past. In fact, some allocation to one of the Parties could be done by the Parties of the Agreement while a portion of the other Parties do not receive any water for a period of time. This can be done to maximize the use of the water resource during a particular period of allocation and the other Parties could get its share of the resource at a later date during each year. The apportionment between the Parties can be established by the Agreement and it can be binding on the citizens of each of the Parties (Draper, 2000, in progress).

Cross-Referencing: 1 (declaration of purposes and policies); 2.1 (general obligations); 2.2.2 (beneficial use defined); 2.2.7 (drought conditions defined); 2.2.9 (flood conditions defined); 2.2.11 (multilateral body defined); 2.2.15 (riparian rights defined); 2.2.18 (transboundary waters defined); 3.1 (administrative authority); 3.2 (powers and duties); 3.3.1 (intergovernmental relations); 4 (transboundary water quality management); 5 (financing); 6 (dispute resolution); 7 (effectuation).

2.2.13 Project

“Project” means any work, service, or activity that is undertaken or anticipated to be undertaken by the Commission within a specified area, for the conservation, utilization, control, development, or management of water resources.

Commentary: This definition is almost self-explanatory. Projects can be established and utilized independently or as an addition to an existing facility, and can be considered as a separate component for purposes of evaluation.

Cross-Referencing: 1.1 (purposes of agreement); 1.3 (interrelationship of water resources); 2.2.6 (cost defined); 3.2 (powers and duties); 3.3 (intergovernmental relations); 4 (transboundary water quality management); 5 (financing).

2.2.14 Reasonable Use

“Reasonable Use” means the use of water, whether in place or through withdrawal, in such quantity and manner as is necessary for economic and efficient utilization without waste of water, without unreasonable injury to other water right holders, and consistent with the public interest and sustainable development.

Commentary: This definition was taken from the Regulated Riparian Model Water Code (Dellapenna, 1997). “Reasonable use” includes the geographic, hydrographic, hydrological, climatic, ecological, and other factors of a natural character that pertains to water resources, and they are to be agreed to by the Parties of the Agreement. Conservation, protection, development, and economy of scale of the water resource and the costs of measures taken to each effect are to be agreed to by the Parties of the Agreement. Estimations of the reasonable uses by each suggested activity associated with water quality management within the Parties should be established during the initial meetings of the Commission and/or before the signing of the Agreement. The concept of “sustainable development” originated in the writings of economist Kenneth Boulding (Jarrett, 1966) was incorporated in the Rio Declaration on the Environment (1992); ASCE Model Water Codes (Dellapenna, 1997 and 2000); and is used herein. A national and international consensus has emerged over the past several decades that “sustainable development” is a criterion for combining the exploitation of resources with the protection of the environment without compromising the ability of future generations to meet their own needs.

Cross-Referencing: 2.2.6 (cost defined); 2.2.20 (waters of the _____ Basin defined).

2.2.15 Riparian Rights

“Riparian Rights” means the rights of the Parties bordering the same watercourse.

Commentary: The “Riparian Rights” of the parties of the watercourse are the groups, individuals, companies, land owners, or others people that have property along and adjacent to the river and/or overlay the property of the underground aquifer.

Cross-Referencing: 2.2.12 (party or parties defined); 3.2.9 (condemnation proceedings).

2.2.16 Sustainable Water Use

“Sustainable Water Use” means the reasonable and beneficial use of water that avoids the wasting of the water resources and ensures reasonable protection of the watercourse and its environment.

Commentary: Water resources are finite and demand is approaching or exceeding the available supply in

most regions of the world. To achieve sustainability will require decisions regarding the conservation of water and steps to limit the use of water to uses that do not permanently impair the biological, physical, and chemical integrity of the water resource. Generally, “Sustainable Water Use” will require the integrated management of water sources on a water basin basis and the limiting of withdrawals to the safe yield of each water source without degrading the source (Dellapenna, 1997).

Cross-Referencing: 2.2.2 (beneficial use defined); 2.2.19 (wasting defined); 4 (transboundary water quality management).

2.2.17 Total Maximum Daily Load (TMDL)

“Total Maximum Daily Load” means the sum of the individual waste load allocations (WLAs) for point sources, load allocations (LAs) for non-point sources and natural background, and a margin of safety (MOS).

Commentary: The definition was obtained from Storm Water Pollution Control (Dodson, 1998). TMDLs can be expressed in terms of mass per time, toxicity, or other appropriate measures that relate to a government’s water quality standard. Pollutant loads may be transported into water bodies by direct discharge, overland flow, ground water, or atmospheric deposition. The TMDL concept has successfully been applied to develop waste load allocations for point source discharges in low flow situations where non-point sources are not a concern. TMDLs can and should be used, however, to consider the effect of all activities or processes that cause or contribute to the water quality-limited conditions of a water body. Activities may relate to thermal changes, flow changes, sedimentation, and other impacts on the aquatic environment. Control measures to implement TMDLs, therefore, are not limited to NPDES authorities, but should also be based on government authorities and actions to reduce non-point source pollution (USEPA, 1991).

Cross-Referencing: 4.1 (comprehensive transboundary international water quality management plan).

2.2.18 Transboundary Waters

“Transboundary Waters” means any surface or underground waters that mark, cross, or are lo-

cated on boundaries between two or more Parties; wherever transboundary waters flow directly into the sea or ocean, these transboundary waters end at a straight line across their respective mouths between points of fresh water discharge.

Commentary: This definition of transboundary waters can refer to either surface or underground waters. The surface waters do not have to be connected to the underground Waters of the _____ Basin. Some aquifers could be connected to more than one above surface water drainage. The location of the boundary at the inlets to the sea or ocean is defined in this section and this definition could be used for rivers that lie between the Parties of the Agreement (Draper, 2000, in progress).

Cross-Referencing: 2.2.1 (_____ Basin defined); 2.2.7 (drought conditions); 2.2.9 (flood conditions); 2.2.12 (party or parties defined); 4 (transboundary water quality management).

2.2.19 Wasting

“Wasting” of water by a specific use means the use of water over and above the current available technology or scientific analysis indicates is necessary for the specific beneficial purpose.

Commentary: “Wasting” of water is defined by the Appropriative Rights Model Water Code (Dellapenna, 2000, in progress). This type of definition for “wasting” will enable the Parties to regulate or otherwise deal with the waste of water in all of its myriad forms. “Wasting” includes any use of water that

takes an unreasonable form, regardless of whether the waste is intentional or unintentional. The “wasting” is one of the major impediments to assuring the sustainable development of the waters of the Parties. It can be said that the wasteful use of water is never beneficial.

Cross-Referencing: 2.2.16 (sustainable water use defined).

2.2.20 Waters of the _____ Basin

“Waters of the _____ Basin” includes the water in, on, under, or above the ground, which are subject to beneficial and reasonable use, ownership, or control, including related uses of land.

Commentary: This definition would be included to make it clear that underground and atmospheric water can be included within the scope of the Agreement, if that is the intent of the Parties. The technological questions relating to atmospheric and underground water may result in uncertainty regarding its allocation, unless adequate modeling of such is underway. The Parties should reserve that right for later resolution. The Parties should also decide whether water imported from other basins should be included within the scope of the Agreement.

Cross-Referencing: 1.3 (interrelationship of water resources); 2.2.1 (_____ Basin defined); 2.2.14 (reasonable use defined); 3.1.2 (jurisdiction of the commission); 3.2 (powers and duties); 3.3 (intergovernmental relations); 4 (transboundary water quality management).