

The Arizona Riparian Area Advisory Committee: An experience in defining desired conditions

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Abstract.—Created in 1992 by the Arizona Legislature, the Riparian Area Advisory Committee (RAAC) developed recommendations for protecting, maintaining, and restoring riparian areas in Arizona. These recommendations were submitted to the Legislature and to the Governor after concluding a two year period of study and discussion. The RAAC, consisting of 34 members broadly representative of federal and state agencies, tribal government, counties, municipalities, major economic resource user groups as well as environmental and recreational organizations, agreed on a Conservation Goal and on the broad outlines of a riparian area protection strategy that took a watershed approach. The adopted Conservation Goal was to sustain and enhance Arizona's riparian areas by managing land, water, and resource uses to protect ecological integrity and functionality. RAAC recommended that cooperative efforts with local, state, federal governments and Indian tribes in the protection, maintenance and enhancement of riparian areas be encouraged. Direct involvement of local groups and citizen participation would be a cornerstone of these efforts. Riparian protection solutions should be unique to the circumstances of each area of the state. At the present time, the submitted recommendations have not resulted in changing any existing state regulatory authorities.

INTRODUCTION

The need to develop riparian area protection for the State of Arizona has been identified as an important issue. State efforts on this issue have been on-going since 1985. Previous studies include the 1986 *Arizonans Recreation Needs on Federal Lands*, the 1988 *Arizona Wetlands Priority Plan* (addendum to the 1983 SCORP), the 1988 *Report of the Commission on the Arizona Environment*, the 1989 *Statewide Comprehensive Outdoor Recreation Plans* (SCORP), and the 1990 *Final Report and Recommendations of the Governor's Riparian Habitat Task Force*. Governor Rose Mofford issued Executive Order 89-16, *Streams and Riparian Resources*, of June 10, 1989, and Executive Order 91-6, *Protection of Riparian*

Areas, of February 14, 1991 to address this important state issue. She also created the Governor's Riparian Task Force, which issued its report in 1990. Other studies include *The Interrelationship Between Federal and State Wetlands and Riparian Protection Programs* (Steiner, et al. 1991) and *Analysis of Water Quality Functions of Riparian Vegetation* (Engineering-Science, Inc. 1994).

In an effort to resolve the public debates and the many issues that surround riparian areas, the Arizona legislature passed a Riparian Area Act in 1992 which amended Arizona Revised Statute (ARS) 45-101. This paper discusses three components of that act.

One component directed three state agencies to study various aspects of riparian areas. The second component formed and directed the activities of the Riparian Area Advisory Committee (RAAC).

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The third component was the final recommendations for protecting, maintaining, and restoring riparian areas developed by RAAC which were submitted to governor and legislature.

COMPONENTS OF THE 1992 RIPARIAN AREA ACT

In passing the Riparian Area Act, the legislature debated on an appropriate definition for riparian areas and decided to define riparian areas to mean “a geographically delineated area with distinct resource values, that is characterized by deep-rooted plant species that depend on having roots in the water table or its capillary zone and that occurs within or adjacent to a natural perennial or intermittent stream channel or within or adjacent to a lake, pond, or marsh bed maintained primarily by natural water sources. Riparian area does not include areas in or adjacent to ephemeral stream channels, artificially created stockponds, man-made storage reservoirs constructed primarily for conservation or regulatory storage, municipal and industrial ponds or man-made water transportation, distribution, off-stream storage and collection systems.”

The Riparian Act called for three state agencies to collect scientific and economic data on riparian areas in the state of Arizona. Reports were to be submitted to the Governor, the legislature, and the Riparian Area Advisory Committee (hereafter referred to as RAAC). RAAC was a legislatively formed committee called in order to make recommendations to the legislature concerning protection of riparian areas.

Scientific data were collected and analyzed by three State agencies. The Arizona Game and Fish Department classified and mapped riparian areas along perennial stream reaches (Valencia, et al. 1993). Mapping efforts are continuing for intermittent streams.

The Arizona Department of Water Resources (DWR) evaluated the hydrologic effect of groundwater pumping and surface water appropriations on riparian areas (Arizona Department of Water Resources 1994 a,b,c,d). Surface water law and groundwater law are separate in Arizona. For this evaluation DWR used case studies of three perennial rivers in the state; Verde River, San Pedro

River, and the Santa Cruz River. Additionally, DWR also evaluated alternative regulatory programs designed to balance the protection of riparian areas with existing and future groundwater pumping and new surface water appropriations and changes in the use of point of diversion of existing surface water appropriations.

The Arizona Department of Environmental Quality (Arizona Department of Environmental Quality 1993) assessed the impact of 12 land use activities that occur on land in riparian areas in the state that involve removing or depositing material, removing vegetation or otherwise obstructing, altering or destroying riparian areas. The activities evaluated were:

- Timber harvesting
- Agricultural land clearing
- Recreational use and development
- Commercial, industrial and residential development
- Road and bridge construction
- Dam and reservoir construction and operation
- Channelization and bank stabilization
- Sand and gravel extraction
- Wetland drainage
- Grazing
- Landfills and sewage treatment facilities
- Mining and metallurgical operations.

These reports were provided to members of the RAAC to report on the status and condition of Arizona's riparian areas and the impact human activities have had. The committee was comprised of 34 people representing varied interests in riparian area issues. The 19 members appointed by the governor represented industry such as cattle growers, timber, agriculture, and sand and gravel. Also included were environmental organizations such as The Nature Conservancy, Native Plants Society, and Audubon. A river runner represented recreational users. One person served as the sole representative of the Indian nations in the state of which there are 22 separate and sovereign tribal governments. Seven of the members represented state agencies. Coordination with existing federal programs was recognized as important, and eight members from federal agencies were represented as *ex officio* members.

RAAC began meeting in November 1993. After gathering background information on riparian areas, they began to assess alternative regulatory and nonregulatory strategies to protect riparian areas. An interim report of these findings was submitted to the legislature in July 1994. Final recommendations were developed and submitted to the legislature in December 1994 outlining the statutory provisions for a riparian area protection program in the state.

OUTCOMES OF THE INTERIM REPORT

To facilitate the analysis of existing state and federal regulatory and nonregulatory programs in Arizona and in other states and development of alternative regulatory and nonregulatory strategies, the RAAC identified committee and conservation goals and guidance principles.

Committee goals

1. Identify the kinds of measures that may be needed for a riparian area protection program in Arizona.
2. Assess alternative regulatory and non-regulatory strategies with an analysis of the fiscal, economic and environmental impacts of each, and consideration of different alternatives for different classes of landowners.
3. Evaluate the agency reports directed in the legislation.
4. Recommend a comprehensive strategy for the conservation and enhancement of Arizona's riparian areas including proposed statutory provisions.

Conservation goal

To sustain and enhance Arizona's riparian areas by managing land, water and resource uses to protect ecological integrity.

Guiding principles

1. The best available scientific and technical information should form the basis for riparian area management decisions.

2. Cooperative and consultative approaches to decision-making and action should be employed.
3. Full consideration of environmental, social and economic costs and benefits should be a part of decision-making.
4. There should be regulatory and non-regulatory measures as part of a comprehensive plan.
5. The legal rights of the private property owners must be respected.
6. The spirit of State Executive Orders 89-16 *Streams and Riparian Resources* and 91-6 *Protection of Riparian Areas* will serve as guidance for development of recommendations by the Committee.

Early during one of RAAC's meetings, a brainstorming session was held in which members discussed and identified current threats to riparian areas and what future desired conditions for riparian areas should be. Five major issues and their associated activities that impact riparian areas were identified by RAAC (table 1). These issue areas focused upon causes of damage to riparian areas and possible solutions. Identification of these issues assisted RAAC in developing various regulatory and nonregulatory strategies for protecting, maintaining, and restoring riparian areas.

Existing programs in Arizona and in other states can be better understood by determining how they address these issues through either regulatory or by nonregulatory methods. The cost of dealing with some issues may be greater than the benefits. Regulatory programs at the state and federal levels that address these activities through regulatory measures, policy statements, or management plans were identified in a matrix format. This matrix is attached as an appendix.

The level of protection to riparian areas a regulation offers was identified for particular regulations. Very few laws and regulations were rated as 3. This rating indicated that the regulation directly or indirectly addressed riparian areas or where specific examples in Arizona were known that these laws and regulations have been used and generally offer high protection. Equally limited were laws and regulations that have the potential to protect but implementation or results have not

Table 1. Major Issues that affect riparian areas in Arizona and possible solutions.

Issues	Possible solutions
1. Water Availability	
Groundwater pumping depletes surface water flows, or lowers water table below root zone	Limit pumping amount; limit withdrawal from certain areas; incentives to switch to other water sources or deeper aquifers; require groundwater replenishment; education: water conservation to reduce demand; mitigation in another area
New surface water diversions or changes in current diversion points reduce stream flows	Purchase and retire water rights; instream flow rights; better court protection of existing downstream rights; limit new diversion; permitting for changing point of diversion; water conservation to reduce demands; incentives to use other sources; mitigation in other areas
Reservoir release patterns affect seasonal availability disrupt flood cycles	Mitigation; incentives to change release patterns; negotiated permits and operating criteria
2. Large-scale destruction or alteration of river channels	
Sand and gravel mining; placer mining	Best Management Practices (BMPs); exclusion from some areas; reclamation requirements; mitigation measures; impact assessments
Dredging and filling	Best Management Practices (BMPs); exclusion from some areas; reclamation requirements; mitigation measures; impact assessments
Landfills	Best Management Practices (BMPs); exclusion from some areas; reclamation requirements; mitigation measures; impact assessments
Road construction	Best Management Practices (BMPs); exclusion from some areas; reclamation requirements; mitigation measures; impact assessments
Channelization and bank stabilization	Improved benefit/cost studies; impact assessments; flood plain management and zoning; compensation/incentive programs for adjacent landowners; exclusion from certain areas
Inundation caused by new reservoir construction	Improved benefit/cost studies; impact assessments; mitigation; exclusion from certain areas; water supply or flood protection alternative
3. Adjacent land uses (erosion, sedimentation, vegetation change, water quality impacts)	
Grazing	Permitting with BMPs on public lands; BMPs on private land; fencing; incentive programs for riparian improvement; incentives to develop alternative water sources; exclusion from some public lands
Timber harvesting	BMPs; require buffer strips; exclusion from special areas; incentives for buffer strips
Agriculture	BMPs; require buffer strips; exclusion from special areas; incentives for buffer strips
Mining	Impact assessments; BMPs; reclamation requirements; require bonds posted to ensure cleanups and compliance; large buffer zones
Road construction	Impact assessment; benefit/cost assessment; alternative route selections; BMPs; reclamation requirements; buffer zones
Commercial/residential/industrial development	Zoning; construction setbacks; buffer strips; BMPs; incentives for conservation easements; government purchase of special areas

(Cont'd.)

Table 1. Continued

issues	Possible solutions
Degradation from recreational uses	Quota; reservations for certain areas; improved trails; facilities; closing some access points; limitation of off-road vehicle use; education
4. Point Source water quality problems	
Effluent from sewage treatment plants	NPDES permits; improved monitoring and enforcement; improved secondary or tertiary treatment; government grant/loans for treatment plant upgrades; special standards for effluent dominated waters: pre-treatment programs; effluent reuse or recharge
Pollution from industrial and other point sources	same as above
5. Exotic (non-native) species	
	Eradication programs; stocking and planting programs; prescribed burning

been seen in Arizona. These were defined as offering moderate protection and rated 2. The majority of the laws and regulations address riparian areas through management plans, policies, and technical assistance. These generally offer low or incidental protection and were rated 1. Laws and regulations that offer no protection were rated 0. Many regulations were thought to address riparian areas but after analysis it was determined that did not. These regulations were left blank.

OUTCOMES OF THE FINAL REPORT

The information in the Interim Report was utilized by RAAC in preparing the Final Report. The RAAC reached broad agreement that there needs to be a local riparian planning process that incorporates state and other interests to achieve the Conservation Goal. The Committee further agreed that there needs to be some mechanism to bring people to the table, and there should be a balance of power between state and local governments in the planning process and all stakeholders should be included in the planning process to achieve the Conservation Goal.

The approach to riparian planning, methods for convening a local riparian planning process, the local, state, tribal, and federal roles in such a process, and the currently available authorities that could be used for planning purposes are described as follows. The creation of local riparian planning councils would be either locally or

legislatively initiated. These councils would be broadly representative of the local, state, tribal, and federal agencies affected by riparian decisions as well as of the various resource user and citizen groups with a stake in the future of riparian areas. These councils, defining a study area in terms that is locally meaningful, would produce a plan in a two year period to achieve goals of local definition. By taking advantage of authorities already available to existing agencies, the councils could help produce Intergovernmental Agreements that would be the mechanism for implementing planning goals.

The state would participate in such councils and would also create a Coordinating Council. Consisting of the Arizona Department of Environmental Quality, the Arizona Department of Water Resources and the Arizona Game and Fish Department, the Coordinating Council would provide technical assistance and other support to the local riparian councils. Technical assistance in restoring, maintaining, and restoring riparian areas has received significant attention. There is a need to assist land owners in the permitting process, analysis of riparian functions, advise on best management practices, funding assistance, and information exchange.

This Coordinating Council would use the riparian mapping and inventory information prepared by the Game and Fish Department to assess riparian areas on an on-going basis. The Coordinating Council would be able to convene a local riparian planning process, one outcome of which may be

the formation of a riparian planning council, but would have no new authority to impose goals for riparian protection on local areas.

Riparian Planning Councils should make full use of the land and water management authorities that are available under state law. The current surface water authorities (no change to existing statutes) would allow the Riparian Planning Councils to perform hydrologic modeling studies to determine a threshold volume that could trigger additional programs. Until threshold volumes were reached, new uses could be treated like existing uses. Instream flow water rights could be established for specific perennial stream segments. The concept of conjunctive management of both surface and groundwater was proposed. One proposal was to provide incentives for use of alternate water sources that would not create a potential adverse impact on baseflow or riparian vegetation water needs. Another proposal was to develop a conservation program for all water users with technical assistance from the Coordinating Council.

The need to establish an education program to disseminate information regarding the needs of the riparian area and appropriate regulatory requirements for the affected and interested public and private groups and industries within the planning area was recognized as important. The need to develop information about the functional condition of riparian areas (using standard methodology) in order to assist in understanding how the riparian area operates and to implement proper management tools was also recognized as an important planning tool.

CONCLUSION

RAAC created a possible structure for riparian area planning. The unanimously agreed-upon structure identified that such plans need to be unique to the area, locally driven, provided with technical and financial assistance, and have minimal (to none) regulatory authority.

At the same time RAAC was developing its recommendations, a similar piece of legislation was drafted for Sierra Vista, a community in southeastern Arizona. The community of Sierra Vista has had a long debate on whether groundwater pumping is affecting the surface flow in the

San Pedro River. Legislation was drafted to address the issue of water management planning. However, because of the political climate in 1994, neither RAAC's recommendations nor Sierra Vista's proposed legislation were ever introduced in the legislature.

Arizonans have long recognized the value of riparian areas to the State, and have sought ways to protect them that would not cause undue hardship or infringe on private property rights. The recommendations of RAAC were major steps toward addressing this issue in Arizona. However, at the present time, there remains no State regulations to protect and maintain riparian areas.

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APPENDIX FOLLOWS

ISSUE AREAS vs. REGULATIONS	Groundwater Pumping	Surface water diversion	Water release patterns	Sand & gravel mining	Dredging & filling	Landfills	Road construction	Channelization & bank stabilization	Inundation by new reservoir releases	Grazing	Timber harvesting	Agriculture activities	Mining & Metallurgical Operations	Commercial/Residential/Industrial development	Recreational uses	Effluent discharges	Restoration
STATE				3/2	3/2	3		3/2	1							3/0	
Clean Water Act, Sec. 401				3/2	3/2	3		3/2	1							3/0	
ADEQ Nonpoint Source Management Program				0	0	0	1/0	0		0	1/0	1/0	0	0	0		
Surface Water Quality Standards				3/0	3/0	3/0		2/0		1						3/0	
Arizona Native Plant Law				0	0	0		1/0						1/0			
Groundwater Management Act (1980)														2		0	
Groundwater Rights	2/0															0	
Groundwater Basin Transfer Law	3																
Groundwater Recharge Program																	
Effluent Regulation																	
General Surface Water Rights		2/1	2/1													0	
Instream Flow Rights		2															
Adjudication of Water Rights	2	2															
Water Right Sever & Transfer		2															

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Executive Order 91-6		1		2	2	3/2	2	3/2		1	1		2	2	1		
Antidegradation Standards for surface water																	
Unique Waters Designation				3	3	3	2	3		1	3/2					3/0	
Aquifer Protect Permit													1	1		1/0	
Riparian Ecosystem Strategic Plan (1989) - State Lands Department					1			1					1				
State Land Mineral Leasing (ARS 27-251)													3				
ADOT Standards Specifications for Road & Bridge Construction						2/1	1										
Solid Waste Facilities					1	3											
State Land Code (ARS37-)										1	1	1					

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FEDERAL																	
Clean Water Act, Sec. 404/ Sec. 10 Rivers & Harbors Act		1		2	3/2	3	2	3/2	2	0			3	3/2		0	
Wilderness Act					3		3/2	3		1/0			3/2		3		
Wild & Scenic River Act		2		3	2			3	2/0		2		2	2/0	3/2		
Endangered Species Act	3/2	3/2	2/1	3/2	3/2	3/2	3/2	3/2	2	3			3/2	3/2	3		
National Environmental Policy Act	2	2/1		1	2/1		2	2	2/1	2/1			2		2		
BLM Management Plans				2/1	2/1		2			3/2	3/2		2/1		1		
USFS Management Plans				2/1	2/1		2			3/2	3/2		2/1		1		
BOR Wetland/Riparian Policy				3/2	3/2	3	2/1	3/2	2/1						2/1	3	3
Clean Water Act, Sec. 402 (NPDES)							2/1	1/0					2	2		3/0	
Emergency Wetlands Resources Act							1										
Federal Reserved Water Rights	3/2	3/2															
Fish & Wildlife Coordination Act				2	2		2		2/0					2/0			
Surface Mining Control and Reclamation Act of 1977																	
Water Project Recreation Act									1								

ISSUE AREAS vs. REGULATIONS	Groundwater Pumping	Surface water diversion	Water release patterns	Sand & gravel mining	Dredging & filling	Landfills	Road construction	Channelization & bank stabilization	Inundation by new reservoir releases	Grazing	Timber harvesting	Agriculture activities	Mining & Metallurgical Operations	Commercial/Residential/Industrial development	Recreational uses	Effluent discharges	Restoration
National Historical Preservation Act					1/0			2									
Minerals & Materials Act, 1947				2/1											1/0		
Farmland Protection Policy							1										
Water Bank Act				2/1			2/1					2/1					
Department of Transportation Act							1										
Surface Transportation & Uniform Relocation Assistance Act							1										
Taylor Grazing Act										1							
BLM Range Regulations										3/2							
BLM Regulations 43 CFR 3809													1				
Public Rangelands Improvement Act (1978)										2							
Forest and Range Renewable Resource Planning Act (1974)				1	1					2	2						
U.S. Forest Service Manual															2/1		
U.S. Forest Service Organic Act										3/2	3/2						
Ft. McDowell Water Settlement Act			3							2	2						