

# LEGAL IMPEDIMENTS TO INTEGRATED WATER RESOURCE MANAGEMENT: LESSONS FROM THE EDWARDS

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## INTRODUCTION

The Edwards Aquifer or Underground River is badly over-drafted. Pumping is unregulated, and the adverse effects of pumping are not built into the costs of pumping that the pumper must pay. An Edwards irrigator pays only his cost to lift -- not the cost of covering San Antonio against movement of the bad-water line (a fresh water - saline water boundary). San Antonio pays only its cost to lift, subject to its judgment of where the bad-water line constraint should call for restraint -- not the cost to endangered species or to downstream water users. No one is in charge of the Edwards water resource, and the existing market results in a tragedy of the commons.

Through a seven year struggle involving federal and state courts, federal and state agencies, local governments, and the Texas legislature, the Edwards is moving toward integrated water resource (and broader ecosystem) management. We can use the Edwards to understand the nature of legal impediments to integrated water resource management.

By "integrated" water resource management we mean, or should mean, both (1) conjunctive management of hydrologically connected surface and underground water, and (2) management that takes account of all the widely different impacts our uses of water resources may have.

The major legal impediments to integrated water resource management result from:

- (1) geographic fragmentation of decision-making responsibility for hydrologically-based ecosystems;
- (2) issue fragmentation of decision-making within any given geographic jurisdiction among multiple overlapping decision-making institutions, each with a different mission and different expertise; and
- (3) failure of most relevant laws to help decision-makers integrate environmental and other untraded costs and benefits into the market system.

The Edwards illustrates all three problems, and also illustrates how creative use of ecosystem-based laws offer hopes of overcoming them.

## GEOGRAPHIC BOUNDARIES

Private land ownership patterns rarely if ever coincide with hydrological system boundaries. Except where all the relevant land is owned by the federal government, water resource conflicts among private owners are built into land titles.

All sorts of public institutions, federal, state and local, have decision-making authority that affect water resource management. In the case of the Edwards, these include:

- the federal government (e.g., the U.S. Fish and Wildlife Service ("FWS"))
- the state government (e.g., the Texas Natural Resources Conservation Commission ("TNRCC"))

-- regional and local governments (e.g., the Guadalupe-Blanco River Authority, the City of San Antonio, the Medina and Uvalde County Underground Water Conservation Districts).

The geographic boundaries of public entities rarely if ever match hydrological realities. This is because geographic boundaries result from political and economic processes that are, hydrologically speaking, arbitrary. Note how often we have used rivers as boundary lines. From a hydrological perspective, and an ecological one, this is the worst possible way to divide decision-making authority.

For all hydrologically based ecosystems, the federal and state geographical boundaries are "over-inclusive." They include millions of acres and humans whose activities have nothing to do with any specific hydrological system, e.g., the Edwards. This matters because mental, legal and political agendas are limited. Entirely proper concerns of federal and state decision-makers for other people and problems divide their attention. Just getting on a federal or state agency's agenda for an Edwards problem is hard. In the case of the Edwards, it has taken litigation.

Regional and local entities tend to be "under-inclusive." The City of San Antonio, for instance, has enormous impact on Edwards matters, and a strong self-interest in Edwards matters, but San Antonio's self-interest is much narrower than its impacts. Any mayor of San Antonio is understandably tempted to view downstream Guadalupe River concerns and upstream irrigator concerns as hostile -- to be fought, or if necessary negotiated with, but not as goals of San Antonio decision-making. Edwards irrigators, similarly, tend to set protection of irrigation water and profits as the only legitimate interest.

Some entities are both under-inclusive and over-inclusive. An Edwards example is the Medina County Underground Water Conservation District ("MCUWCD"), the entity that sued to block the Edwards Aquifer Authority, an attempt to create a regional water management entity. MCUWCD is under-inclusive in that it has no incentive to regard non-Medina County interests in the Edwards as legitimate. It is over-inclusive in that its boundaries include some (e.g., south of the bad-water line) who have no stake in the Edwards but who may want to use MCUWCD for leverage, or whom Edwards irrigators in MCUWCD can hold hostage.

For integrated water resource management purposes, the proper boundaries for the Edwards would include all of the watershed area in the Hill Country that feeds the surface streams whose waters recharge the Edwards; the recharge zone itself; the area underlain by the Aquifer; the springs at which the waters of the Edwards emerge if pumping does not intercept them first; the Guadalupe river basin whose base flows the springs furnish; and the bay into which the Guadalupe flows. More broadly, it would include the basins of the rivers that recharge the Edwards, whose waters if they do not recharge the Edwards contribute to those rivers' streamflows and bays.

Before the passage of S.B. 1477, known as the Edwards Aquifer Authority Act, no entity came close to having these boundaries. Under S.B. 1477, the Edwards Aquifer Authority (EAA) has boundaries that include substantial key portions of the Edwards ecosystem.

The usual way to describe what is needed here is "conjunctive management" of surface water and hydrologically connected underground water. Arrangements for such management are common west of Texas but not universal. One useful approach is that of the State of New Mexico. (1)

There the State Engineer has the responsibility to declare and determine the boundaries of groundwater basins. Within each declared basin, the State Engineer regulates pumping to serve multiple broad public interest goals, subject to limits imposed by the legal duty to "keep the river whole" -- to protect senior rights in any hydrologically connected surface waters against erosion by uncompensated pumping. The limits that the State Engineer imposes result in a market system by which growing cities buy and retire irrigation rights.

## **ISSUE BOUNDARIES**

With two principal exceptions, the federal, state, regional and local institutions that have decision-making authority over some or all of the Edwards, geographically, are all more or less narrowly focused special-interest institutions. Some agencies are responsible for specific types of economic interests (e.g., agricultural interests and U.S. Department of Agriculture), economic interests generally (the Texas Water Development Board), environmental interests generally (Environmental Protection Agency), wildlife (Texas Parks and Wildlife), and some for geographically limited economic and environmental interests (San Antonio).

The two exceptions are Congress and the Texas legislature. They face constitutional limits on subject-matter jurisdiction that are real, but the reach of their legal and political authority is enormously broader than those of the agencies and political subdivisions they create.

The role of the Texas Water Commission ("TWC")/TNRCC in the Edwards illustrates the important difference between legal authority and political authority. The TWC/TNRCC undoubtedly has legal authority under which it could address the problems of excessive Edwards pumping. The TWC proposed in 1992 to do so by rule based on an underground river finding. The TNRCC still has that authority, but withdrew the rule when S.B. 1477 expressed legislative preference for the EAA approach. The TNRCC still has water quality rulemaking authority, which in view of the bad-water line it should certainly exercise. Under political pressure coordinated by the Agriculture Commissioner and the Attorney General, however, the TNRCC has abandoned any effort to help solve the problems of the Edwards, even in the current crisis.

Twenty or thirty years ago, most federal and state agencies had missions assigned by the Congress or state legislature that were narrow to the point of tunnel vision. USDA, for instance, was charged with maximizing farmer productivity and supporting farmer income. Except to the extent that these missions themselves turned out to conflict (productivity gains depressed prices and favored larger farmers), USDA succeeded -- but at a staggering price in off-farm environmental terms. (2) The job of the TWDB, similarly, was to build reservoirs, whatever the environmental costs and whatever the comparative economics of conservation.

Agencies with narrow subject-matter focuses result in part from natural features of human thinking. We tell ourselves "one problem at a time," "first things first," "we need an expert." They also result from natural features of the political process. Any specific constituency (such as farmers) wants an agency to serve its interests and solve its problems, not someone else's. Any agency that wants to survive needs to show its core constituency that it delivers for them.

The result is an assortment of government agencies that not only have hydrologically harmful geographical boundaries, but also different subject matter constituencies, missions, and expertise. Integrated water resource or ecosystem management is unlikely to emerge naturally from interactions among such agencies. If, as a society, we want integrated water resource management we have to change the system of relationships among such agencies, or create new agencies that are designed for that purpose.

## **REQUIRING INTEGRATION OF ENVIRONMENTAL COSTS AND BENEFITS INTO THE MARKET AND THE GOVERNMENT**

In various ways, we have tried to add new environmental missions to existing agencies.

First, beginning in 1969, through the National Environmental Policy Act (NEPA), Congress required all federal agencies to consider the environmental consequences of major federal actions. (3) NEPA helped. NEPA created a level of expertise in and attention to environmental issues that had not existed before. Under NEPA, this expertise developed not only in EPA, but inside each more narrowly-focused agency. Because most major state, local and even private projects have federal funding or requires federal permits, NEPA also prompted the development of environmental expertise in state and local agencies, and in the private sector. Because NEPA's required environmental consideration could be litigated, and because environmental litigation is newsworthy, NEPA also prompted a measure of environmental expertise in the courts and in the media. But NEPA was not enough. NEPA required only consideration. When push came to shove, every mission agency would sacrifice as much of any concerns that were

not those of its core constituency and mission as it thought it could explain with a straight face to a reviewing court and a newspaper.

Second, we have also added new environmental missions to specific agencies. The on-farm and off-farm environmental missions added to USDA beginning in the 1980's illustrate this approach. (An important example is the Conservation Reserve Program. (4) These decisions have also helped, creating agency constituencies for and expertise in these new missions. But core missions remain core missions, and this approach remains ad hoc and fragmented by subject-matter. The Edwards again is a good example. USDA wants to spend environmental money on brush-clearing in the Hill Country. This approach is environmentally problematic for terrestrial species. It saves water when we need it least (when rainfall and recharge are good). Additional water recharged this way costs three to four times what Edwards irrigation water saved by USDA cost-shared conservation costs. Edwards irrigation water conservation has no adverse effects on terrestrial species and saves the most water when we need it most (when it doesn't rain and farmers therefore irrigate). But brush-clearing offers USDA a way to deliver money to a constituency (ranchers) it cannot reach with irrigation cost-sharing.

Even within a single agency, there remain significant cognitive fragmentations. EPA, for instance, had to be sued to get it to consider aquatic species impacts in its implementation of Clean Water Act mandates. USDA's Natural Resources Conservation Services is, relatively speaking, conservation minded; the Farm Services Agency, which has so far had responsibility for administering the Conservation Reserve Program, is not.

The Endangered Species Act (ESA) tries a third approach. (5) The ESA keys on endangered species, and recognizes that a wide range of human activities may endanger them directly or by harming the ecosystems on which they depend. The ESA therefore requires everyone - federal, state, local and private -- not to harm individual members of a listed species, including by modification of their habitat. This ESA provision (section 9) was the part upheld by the Supreme Court in the Sweet Home case. (6) Among the losers were the timber companies (who said only shooting owls should count as a violation of § 9) and the Texas Attorney General (who said that pumping from an Aquifer that dries up the springs where an endangered fish lives shouldn't count as a violation of § 9). Section 9 is also the subject of the newest Edwards case, filed against all the major pumpers and representatives of all types of pumpers. Sierra Club v. San Antonio, No. MO-96-CA-97 (W.D. Tex.) (7)

ESA § 7(a)(2) also requires every federal agency to insure that actions it funds, authorizes or carries out are not likely to jeopardize the continued existence of the species. This part of the ESA was the subject of the first ESA case to reach the Supreme Court, the case involving the Tellico Dam and the snail darter. (8) ESA § 7(a)(2) has also been at the heart of the northern spotted owl and Pacific salmon cases.

ESA § 7(a)(1) requires every federal agency to affirmatively carry out programs to conserve listed species. ESA § 7(a)(1) has not been the direct subject of a Supreme Court decision. It is one important subject of the other current Edwards case, Sierra Club and Clark Hubbs v. Glickman, No. MO-65-CA-091 (W.D. Tex.). (9) J.B. Ruhl, formerly of Fulbright & Jaworski's Austin office and now a law professor at Southern Illinois, has recently published a law review article on the importance and value of ESA § 7(a)(1). (10)

ESA § 4 requires a mission agency whose constituency consists of those who care about endangered species and ecosystem protection (the FWS, or the NMFS) to develop and implement a recovery plan, and to consult with federal action agencies to make sure they take the ESA and its concerns seriously. The recovery planning duty was the subject of Sierra Club v. Babbitt, the original Edwards ESA case that ended in early 1996. (11)

As these cases suggest, the ESA works only if someone enforces it. That requires citizen suits.

If there is someone willing to sue, the ESA provides a mechanism that in fact can and frequently does compel the large grab-bag of geographically fragmented and narrowly focused decision-making agencies to focus on an ecosystem problem. Many of these ecosystems are not defined hydrologically (e.g., the Pacific Northwest and the Southeast forest ecosystems). But others, including the Edwards, are defined hydrologically.

While the ESA tries to guarantee conscious decisions on integrated ecosystem management, and often succeeds, it cannot guarantee wise decisions. A major barrier to sound integrated ecosystem management remains: most of the decision-makers are given no guidance, and no constraints, on the way they integrate the various environmental and non-environmental factors.

For example, the USDA has stumbled badly in implementing the Conservation Reserve Program. Even though the TWC chairman in 1992 described the Edwards as the state's most critical water problem, CRP has only been used to retire 770 acres of Edwards-irrigated land (out of 35 million acres nationwide). (12) In general, CRP money has mainly been used for economic not environmental priorities -- to retire the most economically marginal cropland -- i.e., as an auxiliary part of USDA's productivity and farmer subsidy missions. This is easy to understand, given USDA's primary constituency and mission and inertia, compounded by the Farm Service Agency's farmer-income orientation.

Part of the problem is that, as a society, we have only been thinking about how to integrate environmental concerns -- what the economists call "externalities" -- into our regulated market economy for a very short time. We are early and low on the learning curve, though moving up rapidly.

USDA again furnishes a good example. The 1996 Farm Bill requires USDA to concentrate ECARP funds (the successor to CRP and other conservation programs) in "conservation priority areas." (13) Under the statutory criteria, the Edwards certainly qualifies. Within "conservation priority areas," the USDA is now required to maximize environmental benefits per dollar expended. This should improve the odds that, in the future, substantial USDA conservation money will go to Edwards irrigation water conservation and to conversion of irrigated cropland to dryland cropping.

Many of the legal difficulties in working toward integrated water resource and other ecosystem management result from failure to take full advantage of the market. Surprisingly, environmentalists, not businesses, are largely responsible for most of the progress we have made toward using the market. Examples abound. Environmentalists pointed out that subsidizing irrigation water used to grow cotton (as BuRec has routinely done in the West for 100 years) and subsidizing cotton under statutes that give more money to those who achieve greater yields (as the farm subsidy laws did until 1985, and to some extent until 1996) is both environmentally perverse and economically irrational, and that part of the environmental perversity is the economic irrationality. The result is movement under a variety of new federal statutes (such as the 1996 farm bill and the Central Valley Project Improvement Act) and existing ones toward less destructive subsidies.

In the case of the Edwards, we are still a long way from taking full advantage of what a free market, regulated to protect public interests in untraded benefits, can do, but we are moving in the right direction. S.B. 1477 is a good example (assuming as I do that the Texas Supreme Court will uphold its facial constitutionality). (14)

Currently, in the Edwards, no pumper owns a meaningful property right to Edwards water. But under S.B. 1477, marketable rights to definable quantities (varying, as surface water rights do, with hydrological conditions) will be protected by permit. Market transfers by willing sellers to willing buyers, from lower-valued uses to higher-valued uses, will go a long way toward easing the problems caused by over-drafting of the Edwards. Readers are referred to the article by Keplinger et al in this issue for an example of reallocation through market forces. If the EAA limits the permits to hydrologically safe total levels, and builds in an appropriate fee for the downstream impacts of all pumping, the resulting market should largely solve the problems.

## **UPDATE**

Since this paper was prepared and presented, there have been a number of Edwards-related developments. In the summer of 1996, the Texas Supreme Court unanimously affirmed the constitutionality of the Edwards Aquifer Authority statute. (15) Springflow levels dropped very sharply in the late summer of 1996. The EAA's interim board,

facing imminent election and severe political pressure, was unable to agree on action. The federal court soon entered a temporary injunction in the section 9 case, but the Fifth Circuit stayed the injunction pending appeal. (7) Late in 1996, under its first elected board and a new general manager, the EAA began the process of regulating pumping. The federal court ordered USDA to consult and plan, setting a November 1, 1996 deadline, but the Fifth Circuit stayed this order pending appeal. (9) A San Antonio citizens' committee on water appointed by the Mayor issued a report stating that San Antonio's reliance on the Edwards is a serious problem, both for itself and for the region, and that the problem requires that a variety of approaches to solution be pursued simultaneously, including conservation, wastewater reuse, purchase of agricultural water rights, and alternative water supplies; despite inclusion of the oft-rejected "springflow augmentation" concept, the members of the committee associated with a particular mayoral candidate, with springflow augmentation and with opposition to S.B. 1477 refused to sign. San Antonio, GBRA and other regional entities joined forces to carry out the first-ever "dry-year option," on a small scale.

The Edwards experiences and the impact of more widespread drought have also led to the filing, as the first bill in the 1997 legislative session, of a more general reform of Texas water law, S.B. 1. If adopted (by no means certain), S.B. 1 would result in modest steps toward more integrated management of surface and ground water, involving environmental consequences on springs and rivers as well as effects on other pumpers and diverters.

## CONCLUSIONS

- (1) The application of the ESA to the Edwards highlights the importance of enforceable legal requirements that decision-makers conduct integrated economic and environmental decision-making at the hydrological system (or other ecosystem) level. Otherwise, the geographic and subject-matter fragmentation of existing decision-makers prevents integrated management.
- (2) Defining property rights and integrating environmental externalities into the free market purchase and sale of those property rights can solve integrated water resource and other ecosystem management problems. The Edwards Aquifer Authority Act of 1993, as modified in 1995, highlights this potential for the Edwards.

## REFERENCES

- (1) A useful discussion of New Mexico groundwater law in a context involving Texans and state lines as barriers to integrated water resource management is City of El Paso v. Reynolds, 563 F.Supp 379 (D.N.M. 1983).
- (2) See generally AGRICULTURAL POLICY REFORM IN THE UNITED STATES (American Enterprise Institute 1995) (D. Sumner, ed.).
- (3) The National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321 et seq.
- (4) Section 1231 of the Food Security Act of 1985 (16 U.S.C. § 3831 et seq.).
- (5) 16 U.S.C. §§ 1531 et seq.
- (6) Babbitt v. Sweet Home Chapter of Communities for Greater Oregon, 115 S.Ct. 2407 (1995).
- (7) A temporary injunction was issued after this conference, August 23, 1996, but has been stayed pending appeal. Sierra Club v. City of San Antonio, No. 96-50636 (5th Cir. Sept. 10, 1996).
- (8) Tennessee Valley Authority v. Hill, 437 U.S. 153 (1978).
- (9) The district court entered summary judgment July 2, 1996, requiring USDA to prepare a conservation plan in consultation with USFWS; this order was stayed pending appeal. Sierra Club v. Glickman, Nos. 96-50677, 96-50778 (5th Cir. Oct. 23, 1996).

- (10) J.B. Ruhl, Section 7(a)(1) of the "New" Endangered Species Act: Rediscovering and Redefining the Untapped Power of Federal Agencies' Duty to Conserve Species, 25 Env't'l L. 1107 (1995)
- (11) Sierra Club v. Lujan, Amended Findings of Fact and Conclusions of Law (W.D. Tex. May 26, 1993), appeals dismissed sub nom. Sierra Club v. Babbitt, 995 F.2d 571 (5th Cir. 1993), affirmed on appeals from post-judgment orders, 81 F.3d 155 (5th Cir. 1996), cert. denied sub nom. Texas v. Sierra Club, 65 U.S.L.W. 3261 (Oct. 7, 1996)
- (12) Biological Evaluation Of USDA Farmer Assistance And Rural Development Programs Implemented In Bexar, Medina, And Uvalde Counties, Texas On Edwards Aquifer Threatened And Endangered Aquatic Species, Prepared By USDA, et al. Revised March 1996.
- (13) Section 1230(c) of the Agriculture Improvement and Reform Act of 1996. (16 U.S.C. § 3830(c).)
- (14) Act of May 30, 1993, 73rd Leg., R.S., ch. 626, 1993 Tex. Gen. Laws 2355, as amended, Act of May 29, 1995, 74th Leg., R.S., ch. 261, 1995 Tex. Sess. Law Serv. 2505.
- (15) Barshop v. Medina County Underground Water Conservation District, 925 S.W.2d 618 (Tex. 1996).

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