
CHAPTER FIFTEEN CONCLUSIONS AND RECOMMENDATIONS

This report, covering as it does ten different substantive issues and at least eight management concerns, has already offered a range of conclusions. Our evaluations of the management of each action plan problem are found at the end of the relevant chapters. The one-page summaries of each topic also provide highlights. Chapter 13 attempted to evaluate the management of Galveston Bay as an environmental regulatory process, cutting across the several different action plan topics. Chapter 14 described concerns relating to implementing the CCMP. In this final chapter, we do not attempt to reiterate or summarize any of these approaches. Instead, we present some very general conclusions and observations. We then gather together our most important recommendations according to the level of government and actors.

It is important to note that these recommendations are those of the authors alone and are not recommendations of any unit of the Galveston Bay National Estuary Program. We provide the recommendations for three related reasons. First, this document is so long that readers may well have forgotten the recommendations. Second, the CCMP, which we hope will draw on our research, will itself contain recommendations; some of these may prove useful in developing CCMP recommendations. Finally, our recommendations are intended to stimulate discussion, which we hope will lead in turn to developing new policies and institutions that can effectively manage the environment of Galveston Bay.

CHARACTERISTICS OF THE FRAMEWORK FOR MANAGING THE ENVIRONMENT OF GALVESTON BAY

The framework for managing Galveston Bay's environment defines the boundaries of what is possible. We find that it is characterized by fragmentation, weak enforcement, and conflicting agency mandates, along with a focus on command-and-control regulation. Taken together with chronic underfunding and understaffing, we find that the framework discourages the setting of priorities for focusing limited resources on the most serious problems or those that can be resolved most cost-effectively. Readers should not be surprised at this characterization, so our discussion of each of these features is brief.

Fragmentation. We have mentioned six state agencies (GLO, RRC, TDA, TDH, TPWD, and TWC) that play noticeable or very important roles in managing the environment of Galveston Bay and of Texas more generally. Because of the Management Committee's decision not to focus on air pollution, we have not discussed in any detail the Texas Air Control Board, a major agency that will soon be merged into the new Texas Natural Resources Commission. We have mentioned only in passing the Texas Department of Transportation (formerly the Department of Highways and Public Transportation), which has a newly-created environmental division in recognition of the effects of highway construction and maintenance on the environment. We have also mentioned federal agencies,

independent river authorities, regional governments of all kinds, five county governments, and eighteen city governments. The number of enabling laws runs to the hundreds, if not thousands.

Such fragmentation is not inherently bad; each agency can focus on a single area and develop real competence in managing it. Unfortunately, the history of U.S. environmental policy coupled with Texas' weak governor and weak government approach has created a system in which "problems" are defined according to the polluted medium rather than by the ecosystem, and solutions tend to be narrow, often technological, fixes rather than (more difficult to define and manage) approaches intended to modify behaviors and prevent rather than control.

Weak enforcement. Throughout this report, we have noted that enforcement is frequently subordinated to permitting. Enforcement staffs are smaller, even though the field work necessary for identifying violations is more time-consuming. Data collection and management intended to identify violations is weak, often based on self-reporting data that are not verified independently. Fines are seldom assessed and are usually well below statutory maxima.

We recognize that routine is more comfortable than non-routine, a category into which we hope violations and violators fall. We also recognize that once violations are identified, agencies become the focus of lawsuits and political unpleasantness; it is easier to negotiate quietly with violators than spend the time and money following up, only to be battered in the press. Nevertheless, without enforcement the system falls apart: those who comply are economically at a disadvantage compared to those who do not, creating widespread inequity; further violations are encouraged; the environment is harmed; and those members of the public who wish to find grounds for criticizing government say, "See, they never enforce. They must be in the pockets of the businesses." Some changes in procedures that would reduce agencies' costs of enforcement—some may be internal, but some may require legislative action—would be very helpful.

Conflicting agency mandates. We have repeatedly noted that many agencies both promote and regulate some activity. The Texas Department of Agriculture, for example, promotes as well as regulates pesticide use, while the Railroad Commission promotes and regulates the oil and gas industry. The General Land Office is to protect state lands in order to raise revenue off them. Even the Texas Water Commission, whose environmental protection mandate is perhaps the clearest of all the agencies we have discussed, promotes water use in its water rights and water utilities programs; under the latter, TWC actually creates MUDs and other utility districts whose discharges are believed to be an important source of pollution for many of the state's water bodies, although perhaps not Galveston Bay itself.

Command-and-control regulation. For many years, we assumed that environmental regulation meant rules, permits, and direct governmental oversight. Congress used that approach, and the states followed. We now know that such command-and-control regulation is not appropriate under all circumstances. It is most effective when there are a limited number of clearly-

defined entities creating the problem, when effluent standards can be clearly related to environmental goals, and when technical means are available for meeting the standards. It is less effective when there are thousands of small entities each making only a tiny contribution to the overall problem; the costs of reaching and overseeing each one individually probably exceed the environmental benefits, even when the cost of not reaching all of them is a large amount of environmental degradation.

For the last fifteen years or so, there has been a growing movement to adopt other kinds of regulations—ones that use people's instincts for economic betterment to achieve environmental goals. The Clean Air Act of 1990 finally establishes a market in air pollution rights; properly implemented (that is, retaining the original total pollution limits that are designed to reduce pollution gradually for the remainder of the century), this law will achieve pollution reduction at a much reduced cost in government oversight. Other similar mechanisms are available, ranging from bottle deposit laws to payments for installing soil erosion controls. Many will require legislative action.

Prevention is the best solution of all. Pollution prevention is a relatively new approach, and we are just learning how to put together a combination of regulation and economic incentives that will achieve prevention. Much more attention should be paid to preventive measures.

Chronic underfunding and understaffing. Underfunding and understaffing represent a lack of commitment to the goals of affected programs. In a reinforcing downward cycle, programs with inadequate resources are inefficient and irritating to both the regulated community and environmentalists, leading to a belief that government is not the answer and further reductions in resources. If wages are very low, they attract only young or inexperienced people who do not have the incentive or knowledge to pursue environmental goals aggressively; when they are trained at public expense, they leave for the private sector (obtaining wages at least 25 percent and often 100 percent higher), where they often seek to challenge or undermine their old programs. If, as Governor Richards says, government is part of the solution rather than part of the problem, we must give it a chance by providing resources adequate to the herculean tasks we have set it.

Lack of priority-setting. The result of the other characteristics taken together is that it is very difficult to set priorities among environmental programs or issues. In a time of limited budgets and low public respect for government, it is especially important that emphasis be placed on controlling the most serious problems and identifying areas where big returns may be achieved for a relatively small investment. Instead, the legislative framework drives agencies' actions, and the legislative framework represents an ad hoc and fragmented response to each week's faddish problem. For example, largely at federal insistence, we are focusing on such intractable and dispersed problems of unknown severity as nonpoint source pollution, while wetlands, which are not directly addressed by any legislation despite their critical role in estuary maintenance (and their role in controlling the ill effects of NPS), are being lost forever. The CCMP and CZM

Plan offer us critical opportunities to set priorities and allocate our resources in ways that accomplish something significant—something the public can recognize and even reward with additional resources and support.

ASSUMPTIONS UNDERLYING OUR RECOMMENDATIONS

The recommendations that follow derive from these characteristics of the regulatory framework and the following assumptions:

Coordination rather than a single agency. A comprehensive approach—a single agency with oversight of all environmental issues, a comprehensive multi-media or ecosystem-based environmental statute—is **not** possible in the present political climate. Instead, it will be necessary to look for means of coordinating among the existing agencies and laws.

Infrastructure development is properly a public/governmental activity. Economic development is not the same thing as economic growth: development lays the groundwork for growth by building infrastructure. Galveston Bay can be considered infrastructure because it underlies many economic activities, including tourism and fishing. Like roads or telephone wires, other forms of infrastructure, the bay can become worn out and in need of renewal. Unlike roads, however, the means for that renewal are inherent to the bay itself in the form of water, wetlands, and other "environmental resources." Thus protection and maintenance of the infrastructure is central to its continued ability to be infrastructure; that is, to provide the basis for continued growth.

In the early part of this century, people unashamedly turned to government for assistance in developing infrastructure. Following World War II, the United States not only developed its own infrastructure through the federal highway program, but also invested public resources in regenerating the infrastructures of Europe and Japan, recognizing that without infrastructure, these nations would remain dependent and weak. Only in the latter part of the twentieth century has public investment in infrastructure become a dirty word, with public resources instead devoted to private causes such as saving privately-owned banks from the consequences of their ill-advised investments. But no one else other than government has the resources to invest in public resources and infrastructure such as Galveston Bay, and no single individual benefits enough from such investment to make it worthwhile. Together, however, we benefit much more than the cost of the initial investment. Thus no fisherman could afford to ensure that water quality is high and fish are restocked; acting together through government, we ensure that not only that one fisherman but all of them can earn a livelihood.

Uncertainty is often worse than stringency in environmental regulation. Industry will usually accept strict (within reason) regulations if they are consistently applied and remain unchanged for several years, allowing for planning. In general, uncertainty costs more than certainty, however severe or unpleasant the latter may be. Our conversations with businesses in the Galveston Bay (and other) areas suggest that inconsistencies in applying regulations, constant

changes in regulations, and other forms of regulatory uncertainty are the part of the process that makes them most unhappy, not the regulations *per se*. Thus we should not hesitate to develop plans that call for stringent environmental protections, so long as we commit to keeping them in place unchanged for at least 5 to 7 years and to implementing them consistently, accurately, and efficiently.

The public supports environmental protection. Their enthusiasm and energy constitute an important resource for any environmental programs. People cannot support what they do not understand, however. When local officials think they must choose between economic development and environmental protection, the choice is clear. Thus protectors of the bay must develop advertising and public outreach campaigns that are not just moralistic preachings but punchy and compelling arguments for protecting a public resource—protecting their own property.

The latter three of these assumptions are very powerful. They justify a CCMP (and a coastal plan) that are far-reaching, forceful, and comprehensive. The following recommendations include ways of making sure that Galveston Bay and the remainder of Texas invaluable coast remain available to and productive for posterity.

RECOMMENDATIONS

In the chapters that consider environmental problems, we made many explicit and implicit recommendations, some very specific and some more general. Here, we focus on the recommendations that require changes in agency policy or legislative action. They are arranged according to agency or level of government, with the exception of the first group of recommendations, that apply to all actors or are intended to address general problems of the regulatory framework identified above.

I. General

a. Develop a vision for Texas' natural resources. Case-by-case (or permit-by-permit) review can lead towards a unified goal if each case is assessed against a vision. Regulators and decisionmakers can ask, "If we do this, will it take us closer to the goal or farther away?" One result of the fragmented regulatory structure—both laws and agencies—is that no one has the authority or impetus to develop an overall vision of how Texas natural resources should look in twenty years. The Governor should appoint a citizen task force to develop such a vision. The CCMP, CZM, and other "comprehensive" plans should both be consistent with the vision and make it specific for the areas they cover.

b. Rank problems and solutions. Ranking problems according to severity and identify areas where regulatory solutions will offer "the most bang for the buck." In our opinion, wetlands preservation and restoration is the single most important problem facing Galveston Bay. However, the public should have a strong role in defining the problems they will have to help solve.

c. Devote relatively more resources to enforcement. Ineffective enforcement sends a signal that compliance is not very important; it is also very inequitable, imposing additional costs on those who comply voluntarily and giving a market advantage to those who do not comply. Enforcement is relatively more expensive than issuing permits because it requires agents in the field as well as activities to show that violations have taken place. Nevertheless, with permitting programs in many areas well in hand, it is time to focus on enforcement. Areas needing more enforcement include shellfish closures and treatment of shellfish once collected; dredge and fill permits, especially unpermitted activities implicitly sanctioned by post hoc permits; and, to a lesser extent, point source emissions.

d. Develop incentives to protect the environment. Because so many problems are created by many dispersed actors, each of whom contributes just a little to pollution, we should devote considerable effort to developing incentive mechanisms that will make use of the marketplace to achieve environmental ends. Nonpoint source pollution, spills and dumping, and septic tanks are examples of such dispersed environmental problems, as are the activities of MUDs and other utility districts. Incentives we have mentioned include water use fees, motor oil deposits, a bottle deposit program, and perhaps a plastics deposit program. In addition, programs might provide an incentive for domestic and foreign vessels using bay area ports to dispose of their trash at the dock. Incentives to recycle and substitute degradable materials for nondegradable ones are other important components of a revised marine debris program. Another area where incentives are needed is in encouraging cities to work together on regional waste disposal facilities; one important incentive would be to make the state's interest rate on funds borrowed to upgrade wastewater treatment facilities competitive with the (now lower) rates on the open market. Technical assistance and incentives in the form of loans or grants for reducing pesticide use (analogous to BMPs) would help nonpoint source pollution as well.

e. Conduct research that is closely related to policy needs. This should be done at least in the short run. Among the studies whose results we would have found useful in writing this report are the following:

- (Nonpoint source) Cost effectiveness of cleaning water after collection by the city compared to limiting it at the many sources.
- (Nonpoint source) BMPs appropriate to Galveston Bay area, especially optimal pesticide and fertilizer use taking into account the area's unusual weather and the need to reduce runoff into surface water.
- (Habitat/dredge and fill) Study the effects of ranking wetlands according to quality and assigning a dollar value to wetland acreage.
- (Spills) Develop a combined public-private sector spill response equipment inventory.
- (Dumping) Improve the means and frequency of reporting amounts and types of marine debris, using model developed by EPA, the Center for Marine

Conservation (CMC), NOAA, and the National Park Service. Existing data gathered from shoreline and bay park clean up projects could be used to develop a more sophisticated data base. Coast Guard data and port disposal data should eventually be incorporated into the data base.

- (Dumping) Document the costs of offloading trash in the bay area ports as well as the actual number of ships that offload trash. Conduct the planned comparative study of trash disposal programs at Texas ports with an emphasis on user-friendly, cost-effective trash facilities.
- (Dumping) A study of recycling programs of ports and marinas would be helpful in developing the criteria and incentive mechanisms for a successful baywide program.
- Compile an inventory of locally-owned public lands in the bay area to supplement the inventories of state and federally-owned lands.

f. Manage information effectively. This includes coordination within and among agencies as well as recognizing that data may be used for different purposes and must be stored in flexible formats. Not only are data that could help determine a good policy often lacking, but data that are collected are difficult to find and manipulate for policy purposes. Among our concerns in this area were the following:

- Designate funds for improved information systems for spill response, perhaps from the annual equipment budget.
- Coordinate GLO and GBF shoreline mapping systems.
- Develop a coordinated, comprehensive water quality monitoring program that takes into account the different data needs of the several agencies.
- Ensure that TWC and RRC have compatible databases and use each other's information in issuing permits to point source dischargers.
- Coordinate data collection and management among agencies reviewing dredge and fill permits.

g. Develop a program for bay erosion. There are few if any studies of bay erosion, since most focus on coastal erosion. Based on the study, we must pass laws, write regulations, and implement and enforce them. Establish a baywide shore ranking system to identify areas that need erosion protection.

II. Federal

Many of these recommendations are really directed at state and local actors, on the assumption that our recommendations are not appropriately directed at federal agencies. However, certain decisions now being made at the federal level are of such importance that anyone who can should attempt to influence them.

In addition, this section reflects several concerns about the dredge and fill program, which is primarily a federal program, but which is crucial to maintenance of wetlands, which we have identified as a primary concern.

- a. Revise proposed Army Corps of Engineers streamlined dredge and fill permit review process to include specific requirements for including and responding to the comments of environmental agencies.
- b. Define wetlands broadly but thoroughly enough to limit agency or individual interpretation.
- c. Work for a new federal law that is intended to protect wetlands and other habitat directly, rather than relying on Section 404 or Section 10 procedures, because environmental concerns. Adopt a wetlands manual that contains a relatively expansive definition of wetlands. Give consulting agencies stronger power over the permit process.
- d. Require more acreage for new and restored projects intended to offset disturbing existing wetlands, recognizing that new and restored wetlands as not as functional as existing ones. Offset projects should be started two years in advance of disturbing existing wetlands to allow habitat to develop and flora and fauna to migrate to new location.
- e. Monitor effects of general 404 and 10 permits to determine whether they offer effective oversight of wetlands.
- f. Work for reauthorization of the Endangered Species Act with at least its present level of protection for habitat and species.
- g. Revise federal flood insurance so that it does not effectively subsidize building in coastal floodplains.
- e. Make Vessel Traffic Service (VTS) mandatory for all channel-going traffic and installing VTS in the 5 miles of the Houston Ship Channel where it does not exist.
- f. Require barge traffic and tow boats to have pilots aboard.
- g. Work for Congressional approval and funding of the regionally-approved plan to merge the two Coast Guard port authorities in Galveston Bay.
- h. Encourage the Coast Guard to establish and enforce speed limits for large vessels.
- i. Encourage the Coast Guard to impose fines for small spills as well as large ones.

III. State

General

- a. Aggressively pursue CZM designation, but ensure that the coastal plan itself is very strong.
- b. Consider adding to county authority over land use planning to promote wetlands and shoreline maintenance in unincorporated areas.
- c. Strengthen enforcement programs and reduce procedural barriers that impede agencies from enforcing against violators.
- d. Develop authorities for user fees and other market mechanisms. Devote at least part of the revenues from these fees to the programs that generate them as a reward and incentive. On the same basis, ensure that penalties assessed in wildlife cases go back to TPWD for wildlife protection.
- e. Review state participation in federal programs and develop means for increasing participation where possible; in particular, help counties or appropriate units prepare proposals to take fuller advantage of the several USDA programs for technical assistance to farmers to reduce nonpoint source pollution.
- f. Develop three resources for improved spill response: a combined public/private sector spill response equipment inventory; an improved inventory of private contractors; and an inventory of shoreline facilities and special environmental areas.
- g. Eliminate deferred adjudication of cases involving hunting, fishing, and other violations relating to wildlife.
- h. Eliminate the power of Justices of the Peace to hear cases involving wildlife violations and septic tank violations.
- i. Establish a market for fishing rights in state fisheries based upon amount of fish and their breeding characteristics.
- j. Ensure coordination between TWC and the RRC in issuing permits.
- k. Fund the state fund for acquiring wetlands and institute an aggressive wetlands acquisition program.
- m. Limit new inland water impoundments and develop methods of getting the sediment from existing ones to the bays and estuaries. Require mitigation for all developments that steal sediment and habitat.
- n. Develop a program for replanting grasses in mud flats that were formerly wetlands to restore them to their earlier state.

o. Post signs in areas closed to swimming--TDH has authority to post signs but TWC monitors. Post signs in harvest areas closed to oystering where feasible.

Texas Water Commission

a. Promulgate regulations for NPS, and then provide technical assistance to cities in complying with new federal and state NPS program requirements.

b. Work with TWDB to use SRF loans for reducing NPS, both by cities and by individuals in unincorporated areas through loans to counties.

c. Allow district or local delegated offices to collect fees (especially for septic tanks) and provide for administrative penalties for septic tank violations, bypassing the unresponsive county enforcement procedures.

d. Send a warning letter after three months of steady exceedances rather than waiting for four months. Determine effectiveness of present 4-month/40-percent criterion for violations and consider effects of altering these slightly.

e. Establish a field citation program.

f. Hold public hearings on permits in affected area, or, recognizing that using the Austin site probably saves trips by many agency personnel, require the applicant to pay for the travel costs of Austin-based agency personnel to attend the hearing.

g. Deploy new computer and telecommunications techniques to reduce the cost of reporting and of issuing permits.

h. Increase permit fees to reflect costs of issuing permits.

i. Seek statutory changes to allow TWC employees to collect septic tank fees in the field and establish administrative penalties for violations.

j. Require septic tank repair and maintenance crews to educate owners on proper use and to recognize problems.

k. Strengthen water quality standards that would affect dredge and fill.

l. Institute a program of metering water use.

m. Work with the Legislature to institute a program of charges for surface water.

n. Formulate the regulations for determining water needs of bays and estuaries.

o. Work with the Legislature to change the ranking of water uses to emphasize environmental concerns instead of assuming human uses are paramount.

p. License operators of dredge equipment to make them partly responsible for violations.

Galveston Bay National Estuary Program

- a. Increase efforts to work with local officials on purposes and benefits of CCMP
- b. Work closely with CZM to gain benefits of consistency requirement.
- c. Continue and even enhance public involvement activities. Reach out to people not already convinced of the Bay's value, especially with campaigns about economic benefits of environmental protection.
- d. Work with TACB to see that studies are conducted concerning the effects of airborne toxics on water quality.

Texas Department of Agriculture

- a. Develop coordinated programs for use of BMPs to reduce nonpoint source pollution and help extension workers conduct classes as well as continuing to provide one-on-one technical assistance.
- b. Consider regulations concerning application of lawn pesticides and fertilizers to ensure that runoff is minimized. Include this issue in training of structural pest control applicators, since many lawn services are owned by or otherwise related to structural pest control companies.

General Land Office

- a. Designate beach areas as unavailable to motorized vehicles.
- b. Use the Coastal Protection Fund to take preventive measures against oil spills.
- c. Implement a stronger program of follow-up spill management evaluation. Conduct official damage assessments or management evaluation reports for spills.
- d. Include environmental scientists more fully involved in spill cleanup, especially in determining when cleanup is complete (now CG and RRT)

IV. Local Governments

- a. Include specific requirements for erosion control and proper waste disposal in construction permits.
- b. Adopt ordinances to control runoff from construction sites.
- c. Develop programs for receiving and recycling household hazardous wastes, including paint cans, used motor oil, and pesticide containers. Allow construction contractors to dispose of their hazardous wastes at the same sites for a small drop-off fee or include the fee in the construction permit fee.

d. The lack of zoning provisions focusing on environmental protection coupled with programs which allow cities to abate taxes that could be used to limit the adverse environmental effects of growth bespeak a weak effort to protect Galveston Bay at the local level.

e. Try where possible to reduce the number of septic tanks in use; TWDB could use the State Revolving Fund to assist in extending sewer systems to areas where none are presently available.

CONCLUSION

The National Estuary Program offers the people living near important bodies of water an opportunity to take into their own hands the fate of their environment and, thereby, themselves and their families. The Coastal Zone Management Program offers governments an increased opportunity to ensure that the wishes of the people expressed through the Comprehensive Coordination and Management Plan (perhaps a shorter term would provide a better rallying cry) can be enforced. Working together, governments at all levels, industry, and the public can preserve and protect a resource that will provide benefits to all for many years to come. The time is now.