
**FINAL REPORT
FRAMEWORK FOR ACTION:
GALVESTON BAY MANAGEMENT EVALUATION**

EXECUTIVE SUMMARY

The regulatory framework for protecting the environment of Galveston Bay is very complex, involving literally hundreds of laws and every level of government: federal, state, regional, local, and special district. One way to order the complex regulatory framework is to evaluate programs according to problem areas. The Galveston Bay National Estuary Program (GBNEP) has developed a list of ten "action plan topics," or areas for which it intended to develop action plans as part of its comprehensive management program. Our evaluation of the regulatory framework is ordered first according to the ten action plan topics that concern substantive areas. (After our study was nearly complete, GBNEP's Management Committee decided to add a new topic, Water Quality, to coordinate the approach to water quality management.) Each chapter includes a one-page summary of the regulatory framework and our evaluation of it. The final section of the report includes three chapters that evaluate environmental management of Galveston Bay in other ways. First, eight management topics guide the discussion. Then we consider various issues of special importance to Galveston Bay, including the institutional resources available and the various institutions that could be established to conduct ongoing management of the Bay. The final chapter offers some general findings and a list of the recommendations found throughout the other chapters, ordered according to level of government.

Chapter 1. Introduction and Evaluation Criteria. The criteria used for evaluating the programs can be summarized as follows: authority—are laws and regulations adequate for controlling the problem; capacity—are there adequate resources for undertaking the programs spelled out in the laws and regulations; policy—is there support for the goals of the program; and environmental outcome—is the regulatory framework succeeding in protecting the environment.

Chapter 2. Galveston Bay. The Galveston Bay system constitutes the seventh largest estuary in the United States, with 600 square miles of shallow water. Galveston is one of the most productive and complex of the nation's bays. It is bordered by the Houston Metropolitan Region, a very densely populated area with the highest concentration of petrochemical facilities in the world. The bay supports several ports, carries a vast amount of shipping, and produces fish, shrimp, and oysters in quantity.

ACTION PLAN TOPICS

Chapter 3. Point Sources. In Texas at present, generators of point source discharges are regulated under a dual permitting system: they must obtain permits both from the Texas Water Commission (TWC) or the Texas Railroad Commission (RRC) and from the U.S. Environmental Protection Agency (EPA).

Otherwise, the statutory and regulatory framework for reducing point source pollution is strong, consistent with the two decades of experience in implementing it. Although TWC's resources for permitting seem adequate, over-emphasis on facilities consistently in compliance reduces resources for enforcement, which is weak. TWC is also faced with the transition to the Natural Resources Commission; merging of the municipal group from the Texas Department of Health has already occurred but will take some time to smooth out. The RRC has a smaller staff, conducts no post-permit review, and appears less concerned about environmental impacts of oil and gas activities. Technical review of permits is routine, with limited attention to ambient monitoring nearby, and coordination between TWC and RRC is minimal; neither knows of the other's permittees nearby when issuing a permit. TWC policies limiting delegation to field offices slows permitting and enforcement. The system could be improved by delegation of more authority to field offices, and increase in emphasis on enforcement, and a concerted effort to obtain NPDES delegation so EPA permits would not be required.

Chapter 4. Non-point Sources (NPS). Nonpoint sources of pollution include urban runoff, agriculture, hazardous waste disposal sites, and septic tanks. Stormwater runoff is now regulated as a point source under the federal Clean Water Act. Federal funding is available to implement control programs for NPS pollution under the Clean Water Act, which requires states to identify water bodies affected by NPS pollution and develop programs to control it. The Texas Water Commission undertakes these programs. However, the framework for regulating NPS is relatively weak because agencies have little authority over specific activities generating NPS: localities permit septic tanks if properly constructed; urban pesticide use is unregulated; agricultural land use (soil erosion) and pesticide use are largely unregulated; and construction sites are permitted by localities for purposes other than water quality. Similarly, NPS is difficult to control because it requires working with thousands of individuals to change their lifestyles. The most effective mechanisms for reducing NPS are market-based incentives that encourage individuals to change their ways: several agricultural programs give loans and technical assistance to farmers to improve practices, and similar programs could be instituted for urban runoff. The complexity of the problem, its dispersed nature, and the multiple agencies and governments, each responsible for only one aspect, make NPS a relatively intractable problem. The State Revolving Fund could assist all parties with NPS programs; in other states, the SRF makes loans to counties who pass them on to qualified individuals and small businesses for NPS reduction. Cities can include erosion and waste runoff control requirements in construction site permits.

Chapter 5. Spills/Dumping. Spills are regulated by many different agencies, and spill response is conducted by these agencies as well as by private spill response teams maintained by private companies or by public-private response teams. The Texas Water Commission is the lead agency for spill response and cleanup, with special responsibility for hazardous materials. The 1991 session of the Texas Legislature made the General Land Office responsible for prevention and oversight of most oil spills. A complex 4-tier response team mechanism was instituted after the Exxon Valdez spill. The authorities covered by these tiers and participating agencies have been clarified since 1990. Pipelines, another source

of spills because of their large number in the bay, are regulated by RRC. Spill response is difficult to evaluate because, happily, there have been no major spills since the new system was instituted. However, there are gaps in the present plan, including lack of an inventory of resources available for spill response and very little awareness of private resources that could be deployed. The Coast Guard has inadequate resources to board and inspect ships for spill plans and preventive procedures. The entire system, moreover, is based on developing a strong spill response rather than focusing on prevention. Ship personnel are licensed but otherwise unregulated, despite the fact that many spills are a result of human error, and two "minor" spills occur each day in Galveston Bay alone. Development of a database of bayside facilities and substances that could be spilled and of response capabilities and a system for mobilizing them very rapidly would be useful, as would new ideas to encourage prevention.

Dumping of waterborne trash is regulated under a series of federal laws, but enforcement is difficult and dumping is widely believed to occur regularly. Marine debris is regulated under Annex V of the MARPOL Convention, which prohibits disposing any plastics into the sea. Under the Marine Plastic Pollution Research and Control Act of 1987, the Environmental Protection Agency regulates discharge of plastics, food wastes, and other garbage within the 200 mile zone. The Coast Guard enforces the law by boarding ships and conducting inspections.

Chapter 6. Dredging/Filling. Construction activities in navigable waters of the U.S. are regulated under the federal Rivers and Harbors Act of 1899. Disposal of dredge material is also regulated under Section 404 of the Clean Water Act. Permits under both laws are granted by the U.S. Army Corps of Engineers; section 404 permits are also reviewed by EPA, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service and several state agencies, including TWC, Texas Parks and Wildlife Department, and the General Land Office. Under Section 401 of the Clean Water Act, the Texas Water Commission (TWC) may prohibit any permit that will violate state water quality standards, although it denies only 1-2 permits annually, partly because of the draft status of sediment standards that could form the basis for such denials. Final Corps evaluation is based on a "public interest review" that includes consideration of environmental and economic concerns, but the Corps' primary mandate is construction and maintenance of channels. The General Land Office issues permits for all activities on state-owned submerged lands. As they review permit applications, few of the agencies can inspect the actual sites, but the interagency review meetings allow agency comments to be heard and fully discussed. There is virtually no enforcement, either to ensure all relevant projects are permitted or that permitted projects are following guidelines. Meanwhile, at the federal level the Corps is seeking a "streamlined" review process that would downgrade impact of other agencies' comments. The essential problem is that the statutory framework was not really intended to protect wetlands, and there are no laws offering a comprehensive policy approach including proper mitigation of the *cumulative* impacts of dredge and fill. The proposed Coastal Zone Management program will ensure consistency of dredge and fill and other coast-disturbing projects with a plan yet to be developed.

Chapter 7. Freshwater Inflow. Freshwater inflow is regulated largely by the water rights provisions of the Texas Water Code administered by the Texas Water Commission. The Texas Water Code prioritizes water uses, with municipal and agricultural uses much more important than preservation of bays and estuaries. In issuing permits for diversions, TWC must take into account 1) studies by the Texas Parks and Wildlife Department and the Texas Water Development Board that determine inflow conditions necessary to maintain bays and estuaries and 2) effects on fish and wildlife. Although TPWD reviews permits, it cannot veto them, and there is no way for TWC to ensure that TPWD has actually reviewed all permits within the allowed time. Removal of the environmental review group out of the permitting office of TWC further distances environmental concerns from the permit review. TWC processes 500 permits or amendments a year with 5 staff members. Monitoring of actual water use is not required, making self-reporting, the basis of both planning and enforcement, inaccurate: because they would otherwise lose their water rights, people have an incentive to report full use rather than actual use. Regulations that would provide guidelines for managing water rights with estuaries in mind are slow in being issued. The multiplicity of agencies that can build surface water impoundments adds to the complexity of managing freshwater inflow. Metering water, and perhaps even imposing a water use fee, would rationalize the water rights system considerably.

Chapter 8. Shoreline Development. Shoreline development is regulated primarily under local zoning and development ordinances. Several major cities on Galveston Bay—Houston, Baytown, and Pasadena—do not have zoning ordinances, although Houston is developing one. Existing and proposed zoning ordinances focus on neighborhood compatibility rather than natural resource protection. At the same time, all localities on the bay are actively seeking new development and, in many cases, providing tax and permit abatements as part of the recruitment effort. The Texas Coastal Zone Management Plan, provided for in acts passed by the legislature in 1989 and 1991, significantly increases governmental control over shoreline development by requiring all projects to be consistent with the as-yet-undeveloped coastal management plan. The General Land Office also permits activities on state-owned submerged lands. Counties have virtually no land use authorities. In addition to economic development pressures, subsidized federal flood insurance encourages people to build on the shoreline. Working with local governments to help them understand the economic benefits of environmental protection, as well as the costs of cleaning up NPS, should improve commitment to shoreline management.

Chapter 9. Habitat Protection. The combination of fragmented and indirect authorities and low capacity along with the extreme importance of wetlands in cleansing the water and providing nursery habitat makes wetland loss perhaps the most important problem facing Galveston Bay. Although there is no comprehensive law to protect habitat or wetlands, they are partly protected under the federal Endangered Species Act, the Fish and Wildlife Coordination Act, and other laws, generally administered by the federal Fish and Wildlife Service and the National Marine Fisheries Service, that require various activities to be reviewed for their effects on habitat and for habitat to be acquired if necessary. The Texas Parks and Wildlife Department reviews many activities at the state

level for their effects on habitat, although in general it cannot veto permits. A controversy over the definition of wetlands has been fueled by the August 1991 announcement of a Bush Administration proposal to alter the definition to reduce the number of acres designated as wetlands and rank wetlands according to their importance. Resolution of this controversy will be important to continued use of the Rivers and Harbors Act and section 404 of the Clean Water Act as tools to protect habitat. State and federal agencies have very small staffs to review permits. The General Land Office, very supportive of wetlands protection under its present leadership, must always take into account its mandate to maximize revenue from state-owned lands, creating an incentive to give use permits rather than protecting habitat. Some wetland losses are offset by habitat restoration, creation, and enhancement. Funds are inadequate for land purchase, which is the most effective method presently available for ensuring continued protection of habitat. Adoption of the Coastal Zone Management Plan will be useful in protecting habitat if the plan is strong.

Chapter 10. Species Protection. The federal Endangered Species Act, which is implemented by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, protects living resources and their habitat. Under the Fish and Wildlife Coordination Act, the same agencies, along with the Texas Department of Parks and Wildlife, also have authority to review proposed projects of any federal agency that hopes to control or modify any body of water. TPWD also sets limits on takings of fish and wildlife and enforces them, and undertakes a variety of other programs, including nursery protection, stocking, and designation of scientific areas, that are intended to protect living resources. However, the most effective method of species protection is habitat preservation; so long as wetlands and other habitats continue to be lost, species will also be threatened.

Chapter 11. Human Health. Human health is protected by water quality laws discussed above, by laws concerning hazardous waste disposal, and by state activities concerning fish and shellfish consumption. The Texas Department of Health surveys bodies of water and classifies them according to their ability to produce healthful shellfish. Of Galveston Bay's total of 331,000 acres available for shellfish production, 60 percent were closed in 1990. The various indicators of safety include rainfall and fecal coliforms; improved indicators would refine the classification process. The Texas Water Commission also samples water to determine water quality and establishes water quality standards for contact and non-contact recreation, although the agency does not have the authority to post signs indicating that an area does not meet the standards for compliance with shellfish bed closures. Twenty Parks and Wildlife game wardens oversee several hundred commercial oyster boats; many other sport fishermen are more casual and less likely to be aware of closings, which change frequently. Management of human health risks due to consumption of fish and shellfish contaminated with toxics is based on chemical analysis of seafood tissues. This is complicated by a lack of laboratory resources and an incomplete scientific understanding of human health effects of human consumption of contaminated fish. Swimming and boating are virtually unregulated.

