
CHAPTER SIX DREDGING AND FILLING

Dredging and filling operations are conducted in and around Galveston Bay for a variety of reasons, including construction and maintenance of navigation channels, harbors, marinas, and boat docks, oil and gas exploration, laying of pipelines, and waterfront residential and industrial development. The largest dredging projects in the Bay are generally the federally sponsored construction and maintenance of major navigation channels, including the Houston Ship Channel, the Gulf Intracoastal Waterway, and the Texas City and Galveston Ship Channels. Hundreds of smaller projects are undertaken each year by state, local, and private entities.

Whatever the purpose of the project, the process of dredging and the act of depositing the dredged material elsewhere to dispose of it has a number of potential environmental impacts. Perhaps the most obvious impact is the destruction of whatever bay-bottom habitat exists at the site dredged. The dredging process also results in resuspension of sediments, causing increased turbidity which may reduce light penetration to seagrass beds or suffocate oysters or other filter feeders. If the sediments are contaminated, their resuspension can cause contaminants to be released into the surrounding waters, degrading water quality and making the sediments available for ingestion. Dredging can also change water circulation patterns, reducing freshwater inflow, or creating anoxic (oxygen-poor) water conditions. In addition, the site where dredged material is deposited will be affected. At open water sites, benthic habitat may be destroyed, and at wetland sites, wetland habitat may be converted to uplands. While the magnitude of each of these impacts will vary depending on the nature and size of the dredging project and the characteristics of the project site and the disposal site, the potential for damage is sufficient that numerous regulatory agencies have an interest in monitoring such projects.

When a channel or other area is dredged, the material removed typically is deposited directly (via a pipe) in an area no more than a few hundred feet away. Disposal sites are commonly divided into three types: open water sites, which are simply designated areas in the Bay or the Gulf of Mexico, not enclosed in any way; upland sites, which are fully confined and are constructed with mechanisms for controlling drainage; and emergent sites, which are intermediate between the open water and upland sites, often partially enclosed, beginning as underwater sites but emerging above the surface as they fill up. It is generally agreed by resource agencies that upland disposal sites are environmentally preferable to open water sites, and there is a continuing effort to find new upland sites to replace existing open water sites for disposal of materials from both maintenance dredging and new dredging. However, the high cost of transporting dredged material and of obtaining land makes upland disposal impractical in many instances. One means of addressing this problem would be to recycle upland disposal sites. Dredged material that has dried could be sold to the Highway

Department for road construction or to anyone needing dirt. This approach not only allows the site to be reused, but provides some cost recovery for the original land purchase and the transportation of dredged material. Materials that have been dredged may also be used for restoration, creation, and enhancement of estuarine habitat.

REGULATORY FRAMEWORK

Federal Laws

With the exception of federal navigation projects subject to FWCA and NEPA regulations, dredging and filling is regulated primarily under Section 10 of the Rivers and Harbor Act of 1899 and Section 404 of the Clean Water Act. Section 10 of the Rivers and Harbors Act requires a permit from the Army Corps of Engineers for excavation, filling, or construction of structures in "navigable waters of the United States." Section 404 of the Clean Water Act requires a permit from the Army Corps of Engineers for the discharge of pollutants (including dredged or fill material) into "waters of the United States." In practice, a single permitting process is used to fulfill the mandates of both of these statutes, although (as will be discussed below) the criteria to be applied in reviewing permit applications differ somewhat depending on which statute covers a given project.

Although neither of these statutes specifically discusses wetlands, the Section 10/404 permitting process has become the nation's primary mechanism for the protection of wetlands. This is made possible by Corps regulations [33 CFR 328] that interpret the Section 10 phrase "waters of the United States" to include not only all navigable waters, but also all interstate waters (including wetlands); intrastate waters (lakes, rivers, streams, and wetlands) the use, degradation or destruction of which could affect interstate or foreign commerce (broadly defined); primary tributaries to these waters; and wetlands adjacent to these waters.

It is important to note that Section 10 of the Rivers and Harbors Act, while specifically including dredging, does not apply to non-navigable waters, and therefore does not cover all wetlands. Corps regulations define "navigable waters of the U.S." as waters up to the mean high tide line. While this definition extends Corps jurisdiction somewhat, it still fails to cover the majority of wetlands in the Galveston Bay area.

Similarly, Section 404 addresses the discharge of dredged material only and not the act of dredging itself. Under current law, dredging a wetlands area and disposing of the material in a non-wetlands area is not subject to Section 404 permit requirements. However, new proposed rules that broaden the Section 404 definition of "discharge of dredged material" aim to extend Corps jurisdiction to require a Section 404 permit for any project that involves mechanized landclearing, ditching, channelization, or any other excavation activity whose effect is to destroy or degrade wetlands or other waters of the U.S. (Federal Register, June 16, 1992). The justification behind this proposal is that such activities necessarily result in incidental discharges of dredged material. By clarifying when the placement of pilings have the effect of fill material, the

proposed rules also aim to close the loopholes on developers that circumvent Section 404 permitting by constructing on top of pilings instead of filling in wetland project sites.¹ Although these rules have not yet been adopted, some agencies told us that the Corps has issued a Draft Regulatory Guidance Letter requesting agencies to follow proposed language guidelines in the interim.

While permit authority under the Rivers and Harbors Act belongs solely to the Corps, the Clean Water Act gives various responsibilities to both the Corps and the EPA: the Corps issues permits based on guidelines developed together with EPA, while EPA has veto authority over the permits. (Under Section 404(c) of the Clean Water Act, EPA has the power to prohibit an area from being used for disposal of dredged material.) In practice, the Corps administers the wetlands program, while EPA plays an oversight role by reviewing Corps actions and policies. (Note that the Corps' permitting authority under the Clean Water Act is carved out from a broader EPA permitting authority. The discharge of any pollutant without a permit is prohibited, and EPA issues such permits for pollutants other than dredged and fill material under the National Pollution Discharge Elimination System.)

Exemptions to Section 404 requirements (set forth in subsection (f)(1)) include "normal farming, silviculture and ranching activities," maintenance activities, and construction or maintenance of farm ponds, irrigation ditches, farm or forest roads, and temporary roads for moving mining equipment. The new proposed rules cited above retain these exemptions. In addition, they codify the current practice of exempting all prior converted cropland from Section 10 jurisdiction.

In addition to these statutory exemptions, the Corps may issue general permits on a regional or nationwide basis for any category of activities that are similar in nature and will have only minimal individual and cumulative environmental impacts, such as boat docks below a certain size. No permit application is needed for activities covered by a general permit, provided the state has issued a water quality certification for the general permit. In some cases, however, developers are required to notify the Corps before beginning a project covered by a general permit. For example, 11 of the 36 nationwide general permits [see 33 CFR 330] require that the Corps be notified before the project proceeds. Once underway, projects allowed under nationwide permits are not tracked by the Corps. In addition, 21 regional general permits issued by the Galveston District office are currently in effect. Seven of these apply to oil field development in specified areas; three apply to other types of projects in specified locations; and the remaining eleven apply to specified types of activities district-wide. Unlike nationwide general permits, regional general permits are kept on file and tracked by the Corps.

¹ Proposed rules published in the June 16, 1992 Federal Register and drafted by the U.S. Army Corps of Engineers and the Environmental Protection Agency are an attempt to implement a settlement agreement in the federal lawsuit brought by the North Carolina Wildlife Federation and the National Wildlife Federation (North Carolina Wildlife Federation, et. al. v. Tulloch, Civil No. C90-713-CIV-5-BO) involving section 404 of the Clean Water Act as it pertains to certain waters in the U.S.

Enforcement authority under Section 10 and Section 404 is officially shared by EPA and the Corps of Engineers, though in practice the Corps of Engineers does most of the enforcement. Both EPA and the Corps may issue administrative orders requiring compliance, but penalties are specified only for violation of EPA orders, not for Corps orders. The 1987 amendments to the Clean Water Act established administrative penalty authority, with the Corps having the authority to assess penalties for violation of a permit condition, and EPA having authority to assess penalties for unpermitted discharges of dredged and fill materials. A Corps-EPA Memorandum of Agreement (MOA) established on January 19, 1989 states that the Corps will conduct initial investigations and use its enforcement authority in most cases. The Corps is to act as the lead agency for all violations of Corps permits, as well as for most unpermitted discharges. EPA becomes the lead enforcement agency for unpermitted discharges involving repeat violators or flagrant violations, or whenever EPA requests a class of cases or a particular case, or when the Corps recommends that an EPA administrative penalty action may be warranted.

Both Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act require Corps-issued permits for activities by private, state, and federal entities other than the Corps. Congressionally authorized projects are addressed under the FWCA and NEPA. The Corps does not issue itself permits under these laws, but (unless specifically exempted by statute) is required to follow procedures similar to the permit process to undertake dredge and fill activities affecting wetlands. Oversight of Corps projects will be discussed separately below.

Regulations

Corps regulations describing the permit process are published at 33 CFR 320-330. The Corps evaluates permit applications by means of a "public interest review," balancing benefits against detriments of the proposed project, including a variety of environmental and economic concerns. The regulations also include language describing the qualitative values of wetlands, and state that wetlands are not to be altered unless "the benefits of the proposed alteration outweigh the damage to the wetlands resource." These regulations do not, however, assign quantitative values to wetlands.

In order for the Corps to issue a permit for a project covered by Section 404, it must comply with the EPA Section 404(b)(1) guidelines. These guidelines state generally that no discharge shall be permitted if: (a) there is a practicable alternative which would have less adverse impact on the aquatic ecosystem; (b) it causes or contributes to violation of state water quality standards, violates any toxic effluent standard (under CWA Section 307), jeopardizes endangered species, or violates any requirement for protection of a marine sanctuary; or (c) it causes or contributes to significant degradation of the waters of the United States (including effects on human health or welfare, wildlife, or aquatic ecosystem diversity, productivity, and stability); and (d) unless steps have been taken to minimize potential adverse impacts.

The guidelines further specify a number of factual determinations that must be made regarding the effects of the proposed discharge, and outlines potential impacts -- on physical and chemical characteristics, biological characteristics, special aquatic sites, and human use characteristics -- to be considered. Evaluation and testing methods are described, and possible actions to minimize adverse effects are outlined.

Memoranda of Agreement (MOAs)

MOAs Regarding Resource Agency Comment on Section 404 Permit Applications.

In addition to following the EPA guidelines and allowing EPA review and comment on permit applications, the Corps must consider the comments of several other agencies. As mandated by the Fish and Wildlife Coordination Act (FWCA), the Corps must consult with the U.S. Fish and Wildlife Service (FWS), the National Marine Fisheries Service (NMFS), and the state fish and wildlife agency (in Texas, the Texas Parks and Wildlife Department (TPWD)), and give full consideration to their views regarding the effect of the proposed work on conservation of wildlife resources when making a permit decision. NMFS and FWS also have responsibility, under the Endangered Species Act, for determining whether endangered species may be jeopardized by a proposed project.

Coordination between the federal resource commenting agencies and the Corps is denoted through MOAs under Section 404(q) of the Clean Water Act. EPA, NMFS (Department of Commerce) and FWS (Department of Interior) have MOAs with the Corps (Department of Army) clarifying their right to comment on permit applications and giving them the right to request review of a permit decision by a higher Corps authority if they are dissatisfied with the District Engineer's decision. These MOAs also clarify the Corps' right to reach timely permit decisions. Requests for elevation to a higher authority are allowed for cases involving "insufficient interagency coordination" (which is defined to include resource protection concerns), the development of significant new information, or the need for policy-level review of issues of national importance, and must be approved by the Assistant Secretary of the Army. If the Assistant Secretary decides to deny an elevation request, he must provide a detailed, written response explaining why. These MOAs were renegotiated during 1992 and reportedly include changes in procedures and criteria for requesting case elevations. A new MOA between the Army and the Department of the Interior remains under negotiation.

MOAs Regarding Wetlands Jurisdiction. The definition of wetlands has long been a matter of dispute. The technical basis for defining wetlands is found in the "Joint Federal Manual on Identifying and Delineating Wetlands." In 1989 a new manual was issued, and an MOA signed by the EPA and the Department of the Army on January 19, 1989 established that the Corps would generally make jurisdictional determinations regarding wetlands, unless the EPA first made the area in question a special case. Unfortunately, the new 1989 manual met with stiff resistance from farmers and developers who claimed that its guidelines extended regulatory jurisdiction to wetlands not previously covered. The Bush Administration has since succeeded in annulling the new manual, and the Corps

has been forced to revert back to the 1987 manual. Further information about federal wetlands policies and definitions is provided in Chapter 9.

To address mitigation of wetlands, an MOA between the EPA and the Department of the Army (signed February 7, 1990) articulates the policy and procedures for determining types and levels of wetlands mitigation. The CWA specifies that 404 permit applicants must first attempt to avoid impacting wetlands. The MOA authorizes the Corps to determine whether or not a project's potential impacts have been avoided to the maximum extent practicable. If found unavoidable, the developer must minimize adverse impacts to wetlands habitat and, as a last resort, provide compensation for any degradation and/or loss of habitat. Compensation is the act of restoring or creating wetlands and cannot be the basis for awarding a permit; it may only be imposed as a condition when a permit is issued. Mitigation is discussed in more detail in chapter 9 on habitat protection.

Other Federal and State Laws

Under the National Historic Preservation Act, federal permitting agencies must take into account the effect of the project on properties listed or eligible for listing on the National Register of Historic Places, and give the Advisory Council on Historic Preservation (ACHP) an opportunity to comment. This commenting role is largely delegated to the State Historic Preservation Officer (SHPO). In Texas, this responsibility falls to the Texas Historical Commission. The ACHP also reviews any project where initial review by the SHPO reveals a potential adverse impact on a historic property. In addition, the Texas Antiquities Code gives the Texas Antiquities Committee (a branch of the Texas Historical Commission) responsibility for reviewing activities that may affect historic properties on state-owned lands.

The Coastal Zone Management Act requires applicants for federal permits for activities in a state's coastal zone to certify that it will be consistent with the state's coastal zone management program. Texas does not yet have such a program, but is in the process of developing one. When it is approved, this authority should provide stronger control over dredge and fill projects than is presently available.

In order for a federal discharge permit to be issued, the state must certify that the discharge will comply with state water quality standards. Review of projects for this purpose, mandated by Section 401 of the Clean Water Act, is carried out by the Texas Water Commission concurrently with the Corps of Engineers review. The public notice issued by the Corps upon receipt of a completed permit application also serves as notice by the Texas Water Commission of the state's review process. The state must also certify nationwide and general permits for them to be applicable in a given state. TWC has certified all of the regional general permits issued by the Galveston District of the Corps of Engineers, and has conditionally certified all 36 nationwide general permits. In issuing 401 certification for the nationwide permits, TWC stated that although it is not presently aware of any reason for concern with them, it reserves the right to identify water segments where contamination may be a concern in the future. If such segments are identified, permit applicants would be required to obtain state water quality

certification for individual projects in those areas before proceeding with the project under the nationwide permit.

The Texas General Land Office (GLO) is also involved in the regulation of activities in coastal areas, because the state owns virtually all coastal land from the mean high tide line seaward to a line three marine leagues (about 10.3 miles) from the shore. Under Chapter 33 of the Texas Natural Resource Code and the federal Coastal Public Lands Management Act of 1973, which mandates the protection of natural resources and a fair monetary return to the state, GLO issues leases, easements, and permits for projects on these state-owned lands. Several different types of permits may apply to projects involving dredging and filling. Coastal easements are required for the placement of private structures more than 100 feet long or 25 feet wide on submerged land adjacent to one's private property. Coastal leases are issued to public or nonprofit entities (such as TPWD or the Audubon Society) for public purposes, such as public recreation, estuarine preserves, or wildlife refuges. Commercial leases are required for for-profit use of submerged land. Miscellaneous easements grant rights-of way for pipelines, telephone, telegraph, and electric lines, irrigation canals, and roads. Surface leases authorize projects such as electric substations, pumping stations, loading racks, oil and gas platforms, tank farms, and artificial reefs. Mineral leases are required for sub-surface exploration and production of oil and gas. Seismic exploration permits are required for geophysical exploration for oil and gas. Different rules, procedures, and fee schedules apply to each of these types of permits and leases, but nearly all of them involve some type of environmental review.

Under Chapter 86 of the Texas Parks and Wildlife Code, TPWD is responsible for the management and protection of marl, sand, gravel, and shell located within the tidewater limits of the state (as well as in non-privately owned freshwater areas). Anyone who wishes to disturb or remove such materials must obtain a permit from TPWD and pay a per-ton fee for materials removed. In deciding whether to issue such permits, TPWD must consider potential adverse effects to oysters, oyster beds, fish-inhabiting waters, or navigation. In addition, far stricter regulations govern shell dredging activities. Shell dredging has essentially been eliminated through the combination of these regulations and adverse economic conditions, but sand and gravel removal continues. However, activities related to navigation are exempt from the permitting requirement, as are activities authorized under an oil and gas lease issued by the GLO. In addition, a recent attorney general's ruling found that anyone holding a GLO lease for any purpose was exempt from this requirement. This ruling has largely eliminated TPWD authority under this statute.

AGENCIES AND IMPLEMENTATION

The essence of the Section 10/404 permitting process is review by multiple agencies of permit applications submitted to and ultimately issued by the Corps. This section first details the inter-agency permitting process, then briefly describes the resources available to each agency that participates. The final subsection describes enforcement.

Permit Procedures

Corps regulations spell out the general process to be followed in reviewing Section 10/404 permits. When an applicant submits a completed permit application to the Corps, the Corps must issue a public notice to all interested parties within 15 days. Anyone who wishes to comment on the application must do so within a time period specified in the public notice, usually 30 days. Corps staff review the application, taking into account the views of commenters as well as the criteria described above. In addition, under the requirements of the National Environmental Policy Act (NEPA), the Corps prepares an Environmental Assessment (EA) and determines whether an Environmental Impact Statement (EIS) is needed. The Corps then prepares a statement of findings (or, if an EIS was prepared, a record of decision) presenting views on the probable effect of the proposed work, and decision whether to issue or deny the permit. If the Corps issues the permit, it sends the standard permit form and any special conditions to the applicant, who must sign and return it for a Corps signature. Permits continue in effect until they expire (normally three years) or are modified.

In practice, a considerable amount of informal consultation and negotiation between the applicant, the Corps, and the various commenting agencies takes place before and between the formal milestones in this process. Anyone wishing to undertake a project that would require a permit may consult with the Corps and request a meeting prior to submitting a formal application. The Galveston District Office of the Corps routinely conducts "joint processing meetings" every two weeks to discuss applications currently under review as well as projects for which applications have not yet been submitted. All of the regulatory agencies that have some role in the permitting process are invited to these meetings, and they are regularly attended by staff from FWS, EPA, NMFS, TPWD, GLO, and TWC. Due to travel restrictions imposed in early 1992, EPA staff only attend these meetings once a month. When they miss a meeting, they coordinate with other agencies by telephone on an informal basis. The Texas Historical Commission (THC) is not represented at these meetings, due to insufficient staff and resources.

At these meetings, the various agencies share information and discuss concerns about the proposed projects. If none of them has any objections to a project, the Corps may issue a public notice with an abbreviated (15-day) comment period, in order to accelerate the permit process. If more than one agency raises concerns, they may discuss ways that the project could be modified in order to satisfy all parties. In addition, applicants frequently schedule pre-application meetings with all of the relevant agencies on the same day as the joint processing meetings. These meetings allow the applicant to learn what the agencies' concerns are and how to modify a proposed project to satisfy those concerns.

As a result of the joint processing meetings and pre-application meetings, the formal comments submitted by different resource agencies can be made very similar or compatible with each other. A project may even be sufficiently modified before a formal application is submitted that it engenders no formal

objections. Several of the agency staff interviewed commented that the meetings are useful for helping applicants understand the permit requirements, facilitating coordination between agencies, and expediting the permit process.

For many small projects that are expected to have minimal impacts, the Corps project manager will recommend approval in the form of a Letter of Permission (LOP) rather than going through the full permit review process. Such cases are generally discussed with the resource agencies that normally comment on permit applications, but no public notice is released, and there is no 30-day general comment period. At present, LOPs are issued for Section 10 related activities only. The Galveston District Office estimates that 6.4% of its actions are issued in the form of an LOP.

Each of the resource agencies that plays a role in commenting on permit applications in Texas has its own procedures for reviewing the applications. Obviously, each agency is mandated to address a different set of concerns. NMFS looks at impacts on marine and estuarine fisheries' habitat; FWS and TPWD consider impacts to all types of fish and wildlife; TWC addresses water quality impacts; the EPA may consider both habitat and water quality; and the THC Advisory Council on Historic Preservation consider impacts on historic properties. GLO considers a range of environmental concerns in issuing their own permits, but they comment less frequently on Corps permits.

In general, staff of each agency will first review in-house references and documents such as maps, aerial photographs, and records of past surveys of resources to determine what is known about the site of a proposed project, then will consult with other interested agencies to tap their expertise about the site. If it appears possible that a project may adversely affect a resource, staff may conduct a field investigation. NMFS staff conduct (or hire a contractor to conduct) a site investigation for any project where significant impacts cannot be ruled out by consulting in-house references and other agencies. However, according to NMFS, this contracting program is not likely to continue once existing contracts expire. TPWD staff conduct field investigations for most projects. GLO staff conduct field inspections for all projects requiring coastal easements, commercial leases, and miscellaneous easements, but not for mineral leases or seismic permits. TWC staff only occasionally conduct field investigations, relying mainly on existing data (such as records of spills of hazardous materials) and on concerns brought to their attention by other agencies. EPA staff, with no field office near the coast, similarly tend to rely on data gathered by other agencies, and only conduct their own field investigations in the case of major projects. Official comments in response to the Corps public notice are prepared after each agency has completed reviewing a project, and often after negotiation with the applicant has resulted in modification of the project.

THC operates under a more detailed set of official project review procedures than do the other commenting agencies. Regulations implementing Section 106 of the National Historic Preservation Act spell out a series of steps and deadlines for determining the potential effects of a proposed project. Although the Corps makes all final decisions with regard to whether or not a historic property would be

adversely affected by a proposed project, it must consult with the State Historic Preservation Officer throughout the process of making this decision. In addition, the THC Advisory Council on Historic Preservation is notified and provides its own comments whenever an adverse effect is suspected. When it is determined that a project would have adverse effects, the Corps, State Historic Preservation Officer, and Advisory Council on Historic Preservation may sign an MOA to formalize plans for avoiding or reducing those effects. If the site in question is of archeological value, one option is to excavate the site before proceeding with the project as planned. However, because this is a costly process, it is more common for projects to be modified to avoid damaging the site.

Meanwhile, Corps staff conduct their own review of the proposed project. As part of this review, an EA is prepared. Although the EA is technically a determination of whether or not a project would have effects significant enough to require an EIS, the Galveston District Office has confirmed that, in practice, EIS's are prepared for only about two percent of all projects. This is because the permit review process is conducted so as to allow a project to be modified to avoid or minimize impacts before a final permit decision is made. Thus, Corps staff will routinely prepare a Finding of No Significant Impact (FONSI) as a prelude to issuing a final statement of findings on a permit.

Slightly over half of all permit applications processed by the Galveston District Office are decided within 60 days, somewhat less than a quarter take between 60 and 120 days, and somewhat more than a quarter take over 120 days. Delays in processing are often caused by the time needed for an applicant to respond to agency comments. The permit review process followed by GLO, while coordinated with the Corps permit process and with other interested agencies, is geared primarily toward ensuring that GLO requirements are met rather than providing input to the Corps. GLO very rarely (less than once a year from the Upper Coast Field Office) submits official comments to the Corps. Usually GLO staff work directly with the applicant to resolve any problems with a planned project.

As noted, the Corps must obtain comments from the several other participating agencies but need not take them into account in issuing the permit. An obvious concern is the extent to which comments relating to environmental protection are heeded by the Corps. NMFS conducted a review of permits issued by the Corps Galveston District Office from 1981-1985 and found that the Corps accepted NMFS comments in their entirety over 50 percent of the time, and accepted them in part 31 percent of the time. NMFS comments were rejected in full only 13 percent of the time. From 1981-1985 the Galveston Corps permitted 1,895 acres of wetlands for dredge and fill, although NMFS recommended only 625 acres for dredge and fill during these same years. While NMFS authority extends beyond coastal wetlands to inland areas, they have not engaged much in inland activities because of manpower and funding constraints. Many dredge and fill permits in the Galveston Bay area consider inland freshwater wetlands (Mannchen, n.d.). A 1988 report by the federal General Accounting Office (GAO) reviews Corps use of agency environmental comments. Although the report does not focus specifically on the Galveston area, it nevertheless affirms a general tendency for the Corps to consider agency comments without acting on those comments, i.e.

including them in the actual permit requirements. Moreover, the report notes that the commenting agencies seldom appeal in cases of disagreement. As noted, this is attributable in part to the perceived difficulty of the appeals process, but is also attributable to the discouraging effects of a recurring pattern of unsatisfactory resolutions even when cases do get elevated.

Table 6-1 provides data from NMFS on permits applied for from 1988 to 1992.² These data cover the entire Galveston District, not just the five bay counties. The table shows the types and numbers of permits requested for each of fifteen different project categories as well as for any "other" request not covered by these categories. It also includes data on de facto permits issued for illegal dredge and fill projects. The greatest number of permits were requested for shoreline activities such as bulkheads, followed by oil and gas, docks, and maintenance dredging. According to NMFS, most of the maintenance dredging reported was related to FWCA/NEPA type activities.

Table 6-1
NMFS Applications 1988-1992

Project Type	Permit Applied For			De Facto Permits Issued for Illegal Projects		
	Sec. 10	Sec. 404	Sec. 10/404	Sec. 10	Sec. 404	Sec. 10/404
Barriers and Impoundments	2	1	4	0	0	1
Beach Restoration	2	3	9	0	0	0
Docks and Pilings	60	0	10	2	0	1
Electric Generating Plants	0	0	1	0	0	0
Housing Developments	2	7	8	0	0	1
Industrial/Commercial Development	3	6	9	0	1	1
Irrigation, Drainage, Mosquito Cont.	3	3	1	0	0	0
Maintenance Dredging	37	5	29	0	0	0
Marsh Management	0	0	2	0	0	0
Mineral (commercial sand dredging)	6	0	1	0	0	0
Navigation Channels and Marinas	10	1	17	0	0	1
Oil and Gas	29	7	44	0	0	0
Pipelines	6	9	15	0	3	0
Shoreline (bulkheads,groins,ramps)	22	0	10	0	0	0
Transmission Lines	1	9	104	2	6	7
Other	7	2	3	0	0	0
TOTAL	190	53	267	4	10	12

Source: Compiled by authors from data supplied by NMFS

² We have recently been informed by NMFS that computerized habitat data back to 1981 are available from the Southeast Regional Office in St. Petersburg, Florida.

Table 6-2
Corps Action on Dredge and Fill Permit Applications, 1981 - 1991

	1981	1982	1983	1987	1988	1989	1990	1991
Applied For:								
Section 10	1811	581	359	705	728	*	*	*
Section 404	*	30	18	*	*	*	*	*
Sections 10/404	*	917	567	*	*	*	*	*
TOTAL RECEIVED	1811	1528	944	*	*	755	740	885
Action:								
Approved	1508	1464	1158	592	641	696	612	843
Denied	2	4	0	17	15	9	2	7
Contested	~30%	*	*	290	345	*	*	*
Withdrawn	*	133	141	*	*	66	65	88
Processing Time (hr\$)								
Contested	221	255	257	150	160	120-315	120-315	120-365
Uncontested	56	89	54	40	45	46	60	60

Note: Data are not necessarily comparable from year to year; different questions were asked and answered, accounting for different entries.

*Indicates data not supplied. Each year the Sierra Club wrote the ACE asking for information about permits. The questions and answers were given in different forms each year, preventing direct comparison of data across all years.

Source: Compiled from Army Corps of Engineers letters to the Sierra Club.

Table 6-2 provides additional permit data supplied by the Corps to the Sierra Club in response to the latter's almost-annual requests. These data also cover the entire Galveston District (49 counties) as opposed to just the five county area surrounding the bay. We have tabulated the data, which were not provided to us in identical format, to show how many applications the Corps received, approved, denied, contested, and withdrew, in addition to showing the processing time required for contested versus uncontested applications.

In an effort to determine the extent to which agency comments affect Corps' decisions, we obtained data from several of them, this time covering only the five-county area. The results are shown in Tables 6-3a and 3b. (Comments on the data collection process are included in the evaluation section below.) Permits are indicated in the year issued, not the year originally submitted. The total acreage involved is usually around 200 acres (of perhaps 100,000 acres of wetlands—we had some difficulty obtaining a useful total). In all the years, especially 1990, the bulk of the affected acreage was in Galveston County. Although the affected acreage is about two-tenths of one percent of the total, the overwhelming importance of wetlands means that it is not to be taken lightly. On the other hand, this relatively limited amount of acreage may reflect the lack of development activity in the aftermath of the economic downturn; in some counties it may reflect the lack of undeveloped property; in any case, it certainly reflects the fact that the Corps only permits dredge and fill, while activities affecting wetlands

include draining, flooding, and so on. Thus the total proportion of wetlands affected by human activity is much larger than indicated in this table.

Perhaps even more interesting from the standpoint of policy is the relatively small difference between the recommendations of the advisory agencies and the recommendations of the Corps. In the columns that display differences between agency recommendations, positive figures indicate the Corps allowed fewer acres to be disturbed than were recommended by the commenting agency; negative figures indicate the Corps allowed more disturbance than recommended. For example, in 1992 (January - March) the Corps allowed 17 more acres to be filled than recommended by NMFS. Comparing Corps final decisions with original applicant requests, the data indicate that in 1992 the Corps allowed for considerably less dredging and filling than originally requested by the applicants.

Conversely, in the case of mitigation, applicants actually offered to mitigate more than the Corps required in the last three years, and in ever increasing amounts. Note that the negative figures in the mitigation column represent instances when the Corps recommended *more* mitigation. However, one must be careful in interpreting these results which in part reflect the fact that the need for mitigation arises from disturbing wetlands. If the Corps were expecting to approve more acres for dredging or filling than were finally approved, they would also have recommended the larger amount of mitigation. Presumably, the Corps' recommendation to mitigate more acres than recommended by NMFS also reflects this point, because NMFS would not recommend mitigation for areas it believes should not be disturbed.

We caution that these data are complex and aggregating them may hide important points, especially the interaction just noted between recommendations concerning mitigation and those for dredging and filling. We also note that the number of permits is often larger than the total number of acres affected; many permits are very small indeed, complicating the development of sensible on-site mitigation strategies. One alternative to on-site mitigation (i.e. mitigation banks) is discussed in chapter 9 on habitat protection.

Table 6-3a
Corps Action on Dredge and Fill Permits (In Acres)
1988-1992

YEAR	DREDGE			FILL			MITIGATE		
	Applicant	Corps	Difference	Applicant	Corps	Difference	Applicant	Corps	Difference
1988	2.5	0.0	2.5	5.0	5.0	0.0	0.0	0.0	0.0
1989	10.6	10.3	0.2	48.8	35.9	13.0	41.8	40.8	1.0
1990	23.1	7.0	16.0	137.5	29.6	107.9	64.7	59.5	5.2
1991	19.8	6.2	13.6	76.6	20.7	55.9	111.6	83.7	27.9
1992	40.6	5.4	35.2	112.6	19.4	93.2	106.4	15.2	91.3

Table 6-3b
Comparison of Agency Recommendations With Corps Action on Dredge and Fill Permits
(In Acres)
1988-1992

YEAR	DREDGE			FILL			MITIGATE		
	Corps	EPA	NMFS	Corps	EPA	NMFS	Corps	EPA	NMFS
1988	2.5	0.0	0.0	0.0	0.0	(-5.0)	0.0	0.0	0.0
1989	0.2	0.0	(-10.3)	13.0	(-3.5)	(-35.8)	1.0	(-10.5)	(-40.8)
1990	16.0	(-1.0)	(-4.7)	107.9	12.3	(-15.0)	5.2	1.2	(-29.2)
1991	13.6	0.0	(-1.1)	55.9	13.7	(-18.3)	27.9	27.0	(-79.0)
1992	35.2	0.0	35.8	93.2	7.8	(-17.1)	91.3	11.0	(-12.7)

Finally, we obtained information on Texas Water Commission (TWC) certification of Section 404 permits. Table 6-4 displays the results.

Table 6-4
TWC Action on Section 404 Permits in Five County Area
1989-1992

ACTION	1989	1990	1991	1992
Certify	57	29	81	22
Letter	52	22	14	11
Waive	2	1	0	1
Deny	1	0	1	0
TOTAL	112	53	97	39

Source: Texas Water Commission

Despite the fact that all of the Galveston area agencies seem generally satisfied with the permit review process, new White House policies may result in significant changes in the near future. In an effort to "streamline" the permit process, a draft Corps Regulatory Guidance Letter (RGL) aims to allow the Corps to exert stronger control over the entire review process. According to the RGL, other agencies would continue to be involved in interagency permit review meetings, but they would not be allowed to initiate pre-application meetings with permit applicants. Moreover, they could not initiate meetings to evaluate proposed general permits. Only the Corps would have the right to determine the need for such meetings. In addition, agency comments would be required to be site-specific and limited to their area of expertise. General information on habitat value or interpretations of Corps regulations would not be allowable comments. Other proposed changes to the permitting process include replacing agency appeals of individual permits with appeals based on issues of national significance; expanding the use of general permits; developing a wetlands categorization system that would rank wetlands based on function, value, and relative abundance or scarcity; and discussing mitigation in the early stages of the pre-application meetings. Under this last change, only the highest-ranked wetlands would be accorded the level of protection currently given to all wetlands; less stringent requirements would apply to other areas.

If implemented, these changes would seriously weaken the regulatory system. Apparently the Corps considers the RGL issued and active as a result of its publication in the June 4, 1992 Federal Register. According to that publication, the RGL remains in effect until December 1997 unless revised or rescinded. Moreover, the published RGL states that federal resource agencies (i.e. those that comment on the Corps permit review process) reviewed and concurred with the RGL and agreed to act in accordance with its provisions. In fact, some of the regulatory agencies we interviewed appeared to be unaware of the proposed changes. Those contacted that were aware (NMFS, FWS, and TPWD) neither

agreed nor concurred with the content of the RGL and do not feel bound to abide by its provisions.

Agency Resources

Although the total number of agency staff involved in the Section 10/404 permit process is large, each individual agency assigns only a few people to this process. For the program to be successful, therefore, staff from different agencies must work cooperatively. Most of the agency staff interviewed indicated that cooperation with other agencies is not a problem, but a certain amount of duplication of effort appears inevitable given the regulatory structure of the program.

Army Corps of Engineers (Corps). The Regulatory Branch of the Galveston District Corps Office is responsible for review and enforcement of Section 10/404 permits for the entire Texas coast, and includes a total of 43 staff people. Of these, ten are in the north evaluation section and four are in the north unit of the enforcement section. Together these sections handle review and enforcement of permits for the Texas coastline from Brazoria County to the Louisiana border. Staff in these sections are primarily biologists and physical scientists. Supervisory personnel and the seven-member Special Actions Section (which handles large and complex permit applications, and includes 2 archeologists) add to the manpower available for review of Galveston Bay activities. The annual budget for the Regulatory Branch is approximately \$2.3 million, of which \$1.7 million is for permit evaluation and \$0.6 million is for enforcement.

The Environmental Resources Branch of the Galveston District office, responsible for environmental review of federal projects, has a total of 12 staff people, including biologists, archeologists, and environmental specialists. In addition, certain staff in the Operations and Maintenance Branch are responsible for documenting any environmental changes resulting from ongoing maintenance of federal projects, such as maintenance dredging of navigation channels.

Environmental Protection Agency (EPA). The Federal Activities Branch of Region 6 of EPA is responsible for the environmental review of Section 10/404 permits from the Galveston District Corps Office. Additionally, the Federal Activities Branch is also responsible for the review of EAs and EISs associated with the Galveston District's federal dredge and fill projects. These responsibilities are divided between the two sections that comprise the branch: the Wetlands Protection Section and the Federal Assistance Section. In the Wetlands Protection Section, two staff people are responsible for reviewing and commenting on Corps public notices from eight Corps districts within the geographical boundaries of the region. One of these persons works almost entirely on Galveston district projects, and the other spends approximately half of his time on Galveston district projects. The section is also responsible for enforcement on cases involving illegal (unpermitted) work. These activities are coordinated with the respective Corps districts.

Under Section 309 of the Clean Air Act, the Federal Assistance Section has the responsibility to review and comment on proposed federal actions. Under NEPA, each federal agency is responsible for allowing public participation in its decision making process before final decisions are made on projects that affect the environment. In the Wetlands Protection Section, one staff person reviews the EAs and EISs of other federal agencies, including those for Corps projects throughout EPA Region VI.

National Marine Fisheries Service (NMFS). The Galveston Field Branch of the Habitat Conservation Division employs three full-time professional staff (biologists), a co-op student, and a secretary. Two of the professional staff and the student deal primarily with reviewing federal permits and federal dredge and fill projects covering the entire Texas coast and the Sabine Lake watershed in Louisiana. (The third staff person deals primarily with spill response and other types of permit reviews.) Annual budget for the Galveston Field Branch of the Habitat Conservation Division is \$234,000.

Fish and Wildlife Service (FWS). The Clear Lake field office of the U.S. Fish and Wildlife Service includes two staff people who review and comment on Section 10.404 permits. FWS also implements the Migratory Bird Treaty Act under the authority of which it may review all projects affecting wetlands and migratory bird habitat.

Texas Water Commission (TWC). At TWC one person in the Austin office is responsible for review of Section 404 permits for all of Texas, as well as for water quality certification of other discharge permits. In addition, staff from the District 7 Office in Houston attend permit processing meetings at the Galveston District Corps Office and report back to the Austin office and the relevant area office for each project.

Texas Parks and Wildlife Department (TPWD). At TPWD the Wetland Resources Program (part of the Environmental Assessment Branch of the Resource Protection Division) has responsibility for reviewing Section 10/404 permits and federal projects throughout Texas. This program also reviews local park grants, conducts GBNEP studies, and develops management plans for the Christmas Bay and Armand Bayou Coastal Preserves. The annual budget is approximately \$250,000-\$300,000. Staff of the Wetland Resources Program include the program coordinator, project ecologist and a secretary in the Austin office, as well as a biologist and a research assistant in each of two field offices (in Seabrook and Corpus Christi).

Texas General Land Office (GLO). The Coastal Division of GLO includes 5.5 professional staff involved in permit review and five other staff in the main office in Austin. These people are responsible for reviewing activities throughout the state's coastal region. The Upper Coast Field Office in LaPorte, which covers the coast from the Colorado River to the Louisiana border, has a total of four staff members, including two field inspectors, an administrative technician, and a clerk. The Lower Coast Field Office has one field inspector.

Texas Historical Commission (THC). At THC, three staff people in the Review and Planning Department are involved in reviewing Section 10/404 permits and federal dredging projects, as well as other types of federal projects throughout Texas. In addition, the Texas Antiquities Committee (a division of the Texas Historical Commission), which includes three professional staff and a secretary, reviews projects on state-owned lands. However, the Antiquities Committee usually defers to the Review and Planning Department for review of projects that are under both state and federal jurisdiction (i.e., most Corps projects and permits).

ENFORCEMENT

When a violation is suspected, the Corps sends a letter requesting information from the person conducting the activity and, based on the response, determines whether a violation has occurred. In urgent cases, the Corps may issue a cease and desist order while the activity is being investigated. If there is a violation, the course of action followed depends on the severity. The Corps may issue an after-the-fact permit, may turn the case over to the U.S. Attorney or the EPA, or may assess an administrative penalty. (Administrative penalties are a new option, and have not been used yet.) The majority of cases can be resolved without the involvement of the EPA or the U.S. Attorney. There are only about 30 active court cases out of the Galveston District Office, some of which are ten or twelve years old.

In 1987, various sources reported an total of 314 violations. 139 were reported by the public, 81 by natural resource agencies, and 94 by the Corps itself. Of the more than 300 violations, 203 were unauthorized projects; 82 after-the-fact permit applications were made for some of these projects, and 55 were finally approved. 199 violations were resolved through mitigation measures. In the same year, 96 warning letters and 47 cease-and-desist letters were issued; no criminal and two civil cases were referred to the Justice Department; ten cases were referred to EPA. Of these, EPA accepted seven. The two civil cases resulted in fines of \$10,000 and \$3,750 and restoration of 2.5 and 2.7 acres of wetlands. Only one permit was modified as a result of Corps inspection; none were revoked or suspended (Mannchen, n.d., p. 3).

The Corps is unable to investigate all suspected violations immediately. Most incident reports are filed and (if the activity in question does not turn out to be a permitted project) are investigated later, when staff are available. The Corps does not have the budget or the manpower to conduct investigations on a routine basis. In 1987, the Corps conducted five overflights and several vehicle surveillance trips. The promptness in which a site is investigated depends on the significance of the project in question, the size of the enforcement backlog, and existing staff schedules. Some may be investigated immediately, most within a month, and some take even longer. In 1987, investigations averaged sixteen days to complete from the date a complaint was received. There is no rush to investigate projects that are already completed.

As noted, other agencies do report violations to the Corps. Usually the violations are detected by agency staff in the course of their other work. None of the other agencies has resources to routinely follow up on permits once they are issued or to monitor for compliance with permit conditions. Several noted that their staff periodically inspect project sites if they are already nearby for some other reason, while others simply defer all enforcement responsibility to the Corps.

Enforcement is widely believed to be the most serious problem in the entire dredge and fill process. Many people tell of seeing unpermitted projects; the number of complaints lodged by citizens in 1987 (more than one-third of the total) supports this anecdotal evidence. When enforcement is lax, whether by intention or because of lack of resources, people feel free to bypass the permitting process, to violate the conditions on their permits, or to conduct their projects differently. In any of these cases, wetlands do not receive the protection the law is intended to provide. Enforcement is a necessary component of regulation, not a frill to be dispensed with when budgets are tight.

REVIEW OF FEDERAL DREDGE AND FILL PROJECTS

Dredging and filling projects conducted by the Corps are governed by an entirely different set of laws and regulations than those governing private, state, and local projects. Corps projects are, however, reviewed by the same commenting agencies, and under many of the same procedures, as the projects discussed above. Federal projects tend to be larger in size and duration than other projects.

There are about 280 miles of federally maintained navigation channels in Galveston Bay, ranging from 6 to 40 feet in depth and from 60 to over 1000 feet in width. The estimated shoaling rate (the rate at which "excess" sediment accumulates in the channel) for all of these projects combined adds up to 15.7 million cubic yards per year. A total of 170 dredged material disposal sites (of which 65 are open water sites, 65 are confined, and 40 are partially confined) are used for material dredged from these channels. Most of the disposal sites are located adjacent to the channels and are usually set back a few hundred feet.

Environmental review of federal dredge and fill projects is provided for under the FWCA, the Magnuson Fishery Conservation and Management Act (or MFCMA under which public hearings have been held on several federal projects in Texas), and under NEPA which requires EAs and/or EISs for federal undertakings. A substantial fraction of Corps-sponsored dredging consists of maintenance dredging of existing navigation channels. However, most existing channels and their associated dredged material disposal sites pre-date NEPA by several decades. EISs were prepared for these channels some time after NEPA went into effect. EAs must be prepared each time the Corps wants to change maintenance procedures, such as by changing a disposal site.

The NEPA environmental review process for Corps maintenance dredging is coordinated through an "annual dredging conference" that the Corps holds. Resource agencies are invited to come to this conference to learn what maintenance projects are planned for the coming year, so that they can prepare

comments in advance. A detailed package of information about all of the projects is provided to the agencies attending, as well as to those who wish to review the information without attending. Later, throughout the year, detailed project plans are sent to the resource agencies for official comments as the time comes to let a contract to do each project (e.g. to dredge a particular section of a particular channel).

When new projects are planned, input from the resource agencies is solicited from the outset of the planning process. This is, however, only recently the case. Projects as recent as HG50 did not solicit agency input. The EIS process for new projects begins during the reconnaissance phase (when the need for a project is investigated), and a full EIS is prepared during the project feasibility phase. If any changes to the proposed project are made during the engineering and construction phases, additional environmental documentation (EA or supplemental EIS) is required. The original EIS will describe plans for future maintenance of the project, but if any changes are made to the maintenance procedures, new environmental documents are required. When environmental impacts are unavoidable, mitigation measures are undertaken.

Each of the agencies discussed above may submit comments during the NEPA process. The EPA is given authority to review EA's and EIS's of all other federal agencies by Section 309 of the Clean Air Act; review of Corps projects falls under this mandate. In addition to the NEPA process, a few special mechanisms for interagency coordination regarding major current projects have been developed. The Galveston District Corps Office, the Texas State Historic Preservation Officer, and the Advisory Council on Historic Preservation have signed a "programmatic agreement" governing all maintenance dredging and new construction in the Galveston Bay Area Navigation Study. This agreement primarily addresses the proposed deepening and widening of the Texas City Channel, the Houston Ship Channel (HSC), and the Galveston Harbor Channel. Although the Texas City Channel project is the only one among these to receive Congressional authorization, it has been closed due to a withdrawal of local funds. Similarly, local sponsors have placed the other two projects on hold because of a lack of funding. Congressional authorization for the HSC project is contingent upon the results of an EIS now underway. The agreement lays out general procedures to be followed to take into account the effect of these activities on historic properties. As required by this agreement, the Corps is in the process of drafting a comprehensive Historic Preservation Plan for the Galveston Bay area that will outline procedures for protecting historic properties.

An Interagency Coordination Team (ICT), headed by the Corps and the Port of Houston Authority, has been formed to coordinate planning for the "HG50" project, which involves widening and deepening the Houston Ship Channel from its current size of 400 feet wide and 40 feet deep to 600 feet wide and 50 feet deep in two stages. Representatives of TWC, FWS, GLO, NMFS, TPWD, the Texas Water Development Board, the U.S. Soil Conservation Service, and EPA comprise this team, along with representatives from appropriate ports. All of these agencies are closely affected by the proposed widening.

The Corps cannot undertake even channel maintenance by itself; instead, another agency must act as local sponsor. In the past, the primary duty of the local sponsor was to provide areas for disposing of dredge material, while the Corps dredged, built dikes, and disposed of the dredge material. The 1986 Water Resources Development Act required cost-sharing by the local sponsor, with contributions related to the depth of the channel. In addition, the local sponsor became responsible for provision, construction, and management of disposal areas. The Port of Houston is the local sponsor for the Houston Ship Channel, and thus for the proposed widening and deepening, which is one of the most controversial issues in the Galveston Bay area.

The Corps argues that its existing plan for disposal of the material generated by "HG50," (which relies heavily on existing fill areas, including those immediately adjacent to the channel) is environmentally sound and has been approved and is therefore not open for negotiation. Critics believe that the large mass of material to be disposed of, combined with the tendency of fill material to slide out of the intended boundaries in existing underwater fill areas such as those immediately adjacent to the channel, will combine to create serious adverse environmental effects. The Port of Houston Authority has proposed to dispose of the material in environmentally sound ways, called "beneficial uses," and the agency has asked local groups to suggest areas where they would like to use the material to create new wetlands. Other uses include using the shell from fossil layers as starter material for creating new oyster reefs, or to build up areas that help regulate the salinity of the bay. The Corps has reportedly agreed to applying HG50 dredge material to beneficial uses. Historically however, there have been very few instances of beneficial uses in Galveston Bay. Congress cannot approve the project until a local cooperative agreement is signed, providing local citizens with an opportunity to try to ensure alternative disposal sites for the widening and deepening of the channel.

EVALUATION

Statutory Framework

The most important thing to remember in considering the laws under which dredging and filling activities are regulated is that they were not designed as mechanisms for averting the adverse environmental effects of dredging. Section 10 of the Rivers and Harbors Act, while specifically addressing dredging, only applies to navigable waters, and does not require consideration of environmental criteria in evaluating projects. Section 404 of the Clean Water Act, while covering most water bodies and wetlands and clearly intended as an environmental protection statute, only addresses the discharge of materials into these areas, not the dredging process itself. Thus, neither law functions solely as a mechanism for environmental protection.

The regulations implementing these laws, while introducing environmental criteria into the review process for activities covered by Section 10 as well as those covered by Section 404, nonetheless maintain the distinction between the two laws. Only activities covered by Section 404 must comply with the detailed requirements

imposed by the EPA guidelines, such as the guideline that an activity be water-dependent and the requirement for mitigation for unavoidable impacts. While these guidelines strengthen the environmental protection function of Section 404 review, the Corps review under both statutes considers environmental criteria as only one element among many in its "public interest review." The Corps must balance qualitative environmental considerations against quantitative economic concerns in making permit decisions. At least one environmental group is of the opinion that because numbers are not assigned to the environment, its value is never properly balanced with economic concerns. Similarly, NMFS considers the failure to assign a quantitative value to wetlands to be a serious obstacle to ensuring that wetlands receive equal consideration in the permit review process. The absence of a common yardstick for comparing environmental values with economic values frustrates the proper functioning of regulatory guidelines intended to protect the environment. Since neither Section 10 nor Section 404 functions solely as a mechanism for environmental protection, it is imperative that the guidelines meant to enhance the protective functions of these laws are respected.

Because the numerous agencies that review and comment on Section 10 and Section 404 permit applications do focus on environmental considerations, the existing system offers an opportunity for balancing diverse interests. Yet, the fact that the Corps, by law, has the final say on all permit decisions relegates these agencies to an advisory role and impedes this opportunity for balance. A few agencies (USFWS, EPA, and NMFS) have the right to appeal Corps decisions to a higher level in the Corps hierarchy, but the appeal process generally is cumbersome and time-consuming, and is rarely used. At least one agency that has exercised its right to appeal indicated general dissatisfaction not only with the process itself, but with the resolutions ultimately offered. Similarly, although the EPA has the power (under Section 404(c) of the Clean Water Act) to prohibit an area from being used for disposal of dredged material, thereby "vetoing" a Corps decision, this is a lengthy process, usually involving litigation, and it is even less frequently invoked than is elevation to a higher Corps authority. Only about 24 such cases have arisen nationwide since the legislation went into effect.

The one environmental agency with the power to directly prevent a permit from being issued is the Texas Water Commission, as a Section 404 permit cannot be issued without certification from the state that the proposed activity will not violate state water quality standards. However, TWC is entitled to comment only on water quality impacts, not on fish and wildlife impacts, and there are few clear water quality standards for dredging activities; thus, water quality certification rarely stands in the way of permit issuance. Furthermore, this authority only applies to activities covered under Section 404, not to those regulated under Section 10.

Because Corps regulations are fairly general in nature, the extent to which natural resources are protected through the permit process depends heavily on the interpretation and policies of Corps district offices. Additional guidance comes from Regulatory Guidance Letters issued by Corps headquarters, but these are also subject to change as administration policies change.

Further uncertainty in regulation is introduced by the issuance of general and nationwide permits, which can effectively exempt a large number of projects from individual review. While these permits are designed to apply to projects that would be unlikely to have adverse impacts, the cumulative impacts of many small projects covered by these permits could be significant and should perhaps be monitored.

Permit Review Process

As described above, the process by which the various regulatory agencies review permit applications and work out project modifications and mitigation procedures consists largely of informal discussion and negotiation. The formal commenting and permit decision procedures that are spelled out in the regulations proceed only after concerns have largely been addressed. Nearly all of the agency staff interviewed felt that the existing system of interagency coordination is effective and does a good job of protecting environmental resources, or at least as good a job as could be expected under the existing regulatory structure.

Several of the resource agency staff commented that they have a good working relationship with the Galveston District Corps staff, maintaining good communication and an ability to work out their differences amicably. A few noted that this is a relatively new situation, due to new staff and/or new top-level management at the district office within the last few years; in the past, resource agency comments were not given as much weight. Corps staff also expressed satisfaction with the existing system as a means of bringing together numerous agencies with differing goals, commenting that a faster process would not be thorough enough, and a more thorough process would not be fast enough.

There appears to be some disagreement as to how successful the process is in protecting natural resources. One EPA staff person commented that the federal goal of no-net-loss of wetlands is being achieved, and another noted that loss of intertidal wetlands has been largely stopped. NMFS staff, on the other hand, were strongly of the opinion that habitat loss is continuing (though at a far slower rate than would be occurring without their efforts), and the data they have compiled seem to support this view. Unfortunately, available data appear to cover only through the mid-1980s, and more recent data might indicate increased protection of wetlands. The absence of data about the quantity and quality of wetlands in Galveston Bay was a source of continuing frustration for the authors, since many policy choices hinge on this information.³ TWC staff noted that major water quality problems resulting from dredging and filling are relatively rare; although some turbidity is inevitable, contaminants are not common. The only continuing water quality concern is the shortage of economically feasible upland dredged material disposal sites to replace existing open water disposal sites. As

³ We have recently been informed by NMFS that more recent data on this subject is available from the St. Petersburg office.

previously noted, more thought should be given to the possible benefits of recycling upland disposal sites.

FWS staff pointed out a number of weaknesses in the regulatory process. They noted that cumulative impacts of dredging and filling projects are not adequately addressed. They also commented that the Corps does not always adhere to the policy of first avoiding impacts, then minimizing impacts, and only then resorting to compensation, and have stated that a comprehensive mitigation policy for Galveston Bay is needed. These comments echo those in a 1988 General Accounting Office study on dredge and fill permits around the entire nation. FWS also felt that EPA's response to permit applications is very unpredictable and that EPA's veto power is not used sufficiently. Furthermore, they noted that the fluctuating work load results in an inconsistent level of effort applied to permit reviews. FWS also suggested that MOAs between all agencies involved in the process, and/or statutory changes requiring concurrence on permit decisions, (as opposed to just a review) would improve the level of environmental protection achieved by the permit process.

These weaknesses could be partially offset by a stronger public review process. Although NEPA requires public review of a permit, by the time the public notice is issued, a decision on the permit has already been made (for all practical purposes) as a result of the multi-agency review. The public review process therefore serves as little more than a formality. In addition, it has been suggested that the public notices mailed out by the Corps do not always include certain information critical to organizing a viable petition against a permit. Examples include the character of the fill material, the type of vegetation that will be destroyed or damaged by the project, and a list of the other property owners adjacent to the proposed project site in order that they may consult each other. It has also been suggested that permit applicants, although directed by the Corps to reach consensus with an objecting public party, are sometimes allowed to make a half-hearted effort in this regard since the Corps makes the final decision anyway.

Protection of historic properties faces a few special problems as well. In some cases, applicants who learn in advance that the presence of a historic site may cause delays for their project have been known to bulldoze such sites in order to avoid difficulties. In addition, looting of sites (especially archaeological sites) is sometimes a concern. Although for this reason, the Corps generally does not publicize the location of historic sites, private consultants sometimes publish information about them.

GLO staff noted that because the Governor's Office is the official voice of all state agencies, GLO staff comments on federal dredge and fill projects do not carry much weight. When a pro-development Governor was in office, detailed criticisms from GLO staff were sometimes filed and ignored, while a brief letter from the Governor's Office approved the project in question.

The fact that so many agencies play a role in the regulatory process suggests that there might be unnecessary duplication of effort or that applicants may find the

permit process cumbersome. However, none of the agency staff interviewed expressed concern over this issue. Several noted that the agencies' roles are often complementary, since they focus on different types of environmental concerns, have different areas of expertise, and have differing abilities to enforce their recommendations. However, the Corps' proposed new procedures for centralizing and streamlining the review process seems likely to reduce the effectiveness of agency comments and increase the impact of the Corps' internal review. Moreover, the policy of the Corps is to rotate officers on a regular basis; to the extent that the prevailing atmosphere for rather stringent permit review reflects the predilection of the commanding officer rather than agency policy, the proposed new rules could have an even more detrimental effect.

One area in which interagency coordination is clearly ineffective is in recordkeeping on permit processing. Nearly all of the agencies keep some kind of log of permits reviewed, but none of them shares data with the others. As a result, each agency lacks one or more categories of data that may be kept by another agency. For example, the Corps database includes a number of details about permit applicants, but no data about habitat types or acreage affected, while both the NMFS database and the EPA database include data about habitat types and acreage, but not as much background information. The NMFS database contained some cases not included in the EPA database, although these were relatively small, and often failed to record the county in which the permit was to be effective. The TWC database lists the TWC decision on each permit but not the final Corps decision. None of these databases seems to be coordinated with any other, and each agency uses different computer software system, so it is difficult to reconcile data from one source with another.

Perhaps the biggest shortcoming of the permit system, mentioned by most of the agency staff interviewed, is the lack of any consistent follow-up or monitoring of project sites after permits are issued. None of the agencies (including the Corps which has enforcement responsibility) has the budget or staff to do routine follow-up. As a result, no one even tracks whether permitted projects are completed, let alone whether the permittees comply with permit conditions. In addition, many unpermitted dredging and filling activities apparently go undetected and unreported. The Corps investigates suspected violations if they are reported by other agencies, or if Corps personnel see questionable activities when they are in the field for other reasons. TPWD, GLO, and NMFS occasionally investigate project sites when staff are in the area for other reasons, and report suspected violations or unpermitted activities to the Corps. EPA and TWC, on the other hand, essentially leave all such monitoring responsibility to other agencies. Perhaps the only cases in which monitoring is fairly routine are those where special actions are required to recover or protect a historic site. Texas Historical Commission staff monitor sites where archeological excavations are occurring, and Corps archeologists typically monitor sites where construction activities must be modified to protect a historic property. GLO staff also conduct special inspections to check whether special conditions on GLO leases or easements have been met. However, relatively few leases and easements include such conditions.

An additional weakness in the regulatory system is the current limitation on TPWD's regulation of sand, gravel and shell dredging. TPWD jurisdiction over these activities in the past provided a mechanism for monitoring the environmental effects of dredging projects that do not involve the discharge of material into a water body or wetland, and thus do not require a Section 404 permit. However, a recent attorney general's ruling that any activity for which GLO has issued a lease is exempt from TPWD regulation significantly curtails TPWD's ability to oversee dredging activities. Only projects whose sole purpose is to gather sand, shell or gravel would need a TPWD permit. Since GLO is not required to coordinate with other agencies when issuing leases or easements, except for geoseismic projects, the only way to reinstate TPWD's regulatory authority would be to modify the enabling legislation. TPWD has already made one attempt to submit revised language to the legislature, which would have eliminated exemptions (including the exemption for navigation), but GLO objected and the issue was tabled. GLO staff feel that TPWD is attempting to gain control over projects that are already adequately reviewed by GLO, thereby creating unnecessary confusion and difficulties for permit applicants. It is important that this interagency "turf battle" be resolved. Staff of the two agencies apparently get along well, but legal barriers often prevent them from working cooperatively.

Conclusion

Dredging and filling is one of the most pervasive human activities in Galveston Bay. From individual piers to multi-agency navigation channels, many bay uses require some dredging. The regulatory framework for dredging and filling is relatively simple: the Army Corps of Engineers may issue permits, while other agencies with a strong environmental focus may only comment on these permits. However, there are some gaps and complexities in the law: Section 10 of the Rivers and Harbors Act covers both dredging and filling, but only in navigable waters, while Section 404 of the Clean Water Act, which covers wetlands in addition to water, only addresses the discharge, not the dredging process itself. Neither law covers many other kinds of common activities that disturb the various estuarine habitats, and the Corps' own activities seem to undergo a lighter scrutiny than other projects.

The review process is surprisingly well-conducted, considering the large number of diverse agencies involved, but there are serious questions about the extent to which it is effective in preserving wetlands. The scientific basis for understanding the impacts of dredging on water quality also seems to be inadequate for formulating sound public policy. Cumulative impacts to coastal wetlands permitted under the several laws need to be assessed before the Corps issues a general permit or a letter of permission, but neither the science nor the regulatory process is adequate for this more comprehensive approach.

Perhaps the most serious problem in dredge and fill is the lack of enforcement. Given the number of projects, especially small projects, spread around the bay, the resources that would be required for full enforcement are enormous. Even taking that problem into account, however, enforcement must be deemed inadequate when the permitting process is widely regarded as optional rather

than mandatory. Given that enforcement is always easier when the number of entities to be regulated is smaller and more centralized, an alternative might be to regulate through those who operate dredging equipment, either through a licensing program or by holding them partly responsible for violations.

SUMMARY EVALUATION: DREDGING AND FILLING

Problem. Dredging destroys the bottom-dwelling habitat of the dredge site and creates turbidity that harms flora and fauna. Contaminated sediments release toxics into surrounding waters; improper disposal of contaminated dredged material.

Authority: Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act (also the primary mechanism for protecting wetlands). Corps and the EPA may develop permit guidelines. TWC may prohibit any permit that will violate state water quality standards. TWC also certifies nationwide and general dredge and fill permits for Texas. GLO issues permits for all activities on state-owned submerged lands. NMFS implements the Magnuson Fishery Conservation and Management Act and the Fish and Wildlife Coordination Act. NEPA of course applies.

Agencies and Implementation: The 10/404 permitting process requires a multi-agency review of applications by the following agencies: National Marine Fisheries Service; US Fish and Wildlife Service; Texas Water Commission; Texas Parks and Wildlife; Texas General Land Office; and Texas Historical Commission. Commentary is typically provided to the district Corps via "joint processing meetings." Corps need not heed these comments, but often does grant applicants fewer disturbed acres than requested. Agencies may request review of a permit by a higher Corps authority. Final Corps evaluation is based on a "public interest review" that includes consideration of environmental and economic concerns.

Capacity. Mixed. Few agencies can inspect the actual sites, but interagency review meetings allow agency comments to be discussed. Few resources for enforcement.

Policy: Corps response to environmental comments supportive but apparently dependent upon specific individuals, thus open to change. Follow-up after permit issued and detection of unpermitted activities is given very low priority. Corps seeking a "streamlined" review process that would downgrade impact of other agencies' comments. EPA has authority to enforce but relies on Corps. TWC denies about one permit per year on the basis of water quality problems.

Technical and environmental results: Apparently, continuing loss of wetlands.

Barriers, problems. Statutory framework does not provide direct protection of wetlands. No laws offering a comprehensive policy approach including proper mitigation of the *cumulative* impacts of dredge and fill. Corps mandate is construction and maintenance of channels; environmental concerns secondary. Lack of TWC sediment standards impedes effective TWC review of dredging/fill on the basis of water quality.

Recommendations: Identify upland disposal sites and purchase if necessary; recycle wherever possible. Lobby nationally against the present Corps streamlining proposal; develop sediment standards; improve the public review process of permits; develop stronger disincentives against skirting the permitting process; modify water quality standards to strengthen the 401 certification process; assign a per acre dollar value to wetlands.

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