

XI. DIKING, DREDGING, FILLING AND SHORELINE PROTECTION

A. INTRODUCTION

The Coastal Act requires an assessment of possible impacts which might be caused by diking, dredging, filling of wetlands and shoreline protection. The City of Morro Bay is primarily involved with dredging its harbor and protecting the Embarcadero from tidal erosion. Periodically, the City must dredge the harbor in order to maintain the standards set by the 1945 Rivers and Harbors Act.

B. COASTAL ACT POLICIES

Sec. 30230. "Marine resources shall be maintained, enhanced, and, where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will remain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes."

Sec. 30233 (a). The diking, filling or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

- (1) New or expanded portion, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.
- (2) Maintaining existing, or restoring previously dredged depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.
- (3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 3041, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland; provided, however, that in no event shall the size of the wetland area used for such boating facility, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, be greater than 25 percent of the total wetland area to be restored.
- (4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities.
- (5) Incidental public service purposes, including, but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

- (6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.
- (7) Restoration purposes.
- (8) Nature study, aquaculture, or similar resource-dependent activities.

b. Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable longshore current systems.

c. In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary. Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the 19 coastal wetlands identified in its report entitled "Acquisition Priorities for the Coastal Wetlands of California", shall be limited to very minor incidental public facilities, restorative measures, nature study, commercial fishing facilities in Bodega Bay, and development in already developed parts of south San Diego Bay, if otherwise in accordance with this division.

Other sections of the coastal Act which relate to the physical area of the harbor pertain to protection of uses as they are located within the harbor and alterations of the shoreline to accommodate coastal-dependent uses.

Sec. 30234. Facilities serving the commercial fishing and recreational boating industries shall be protected and, where feasible, upgraded. Existing commercial fishing and recreational boating harbor space shall not be reduced unless the demand for those facilities no longer exists or adequate substitute space has been provided. Proposed recreational boating facilities shall, where feasible, be designed and located in such a fashion as not to interfere with the needs of the commercial fishing industry.

Sec. 30235. "Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.

The Act's provision 30233 (2), (7), (8), and B give permission and provide the criteria in determining the extent and magnitude of dredging and shoreline restoration. The Army Corps of Engineers is responsible for maintenance dredging of the navigational channel and restoration of the shoreline retainer. The City assumes the responsibility of maintaining the mooring area (see Figure 26).

C. DREDGING AND SHORELINE PROTECTION ISSUES

1. Dredging

Major development of Morro Bay Harbor was begun in 1942 by the U.S. Government and continued until the end of World War II. The initial dredging operation between 1942 and 1946 removed over 3,000,000 cubic yards of spoils, two-thirds of which were deposited on the sandspit and the remainder on areas north of Morro Rock. Subsequent dredging is summarized below:

<u>Date</u>	<u>Dredging in Cubic Yards</u>
1949	822,000
1956	905,000
1964	702,000
1968	406,000
1971	190,000
1974	350,000
1980	740,000

The maintenance dredging of navigational channels in the harbor is located entirely within the jurisdiction of the City of Morro Bay. This activity will maintain existing federal channels at presently authorized widths and depths and assure the continued navigability of the channels. Authorized channel configurations are:

	<u>Width</u>	<u>Depth</u>	<u>Length</u>
Entrance Channel	350 ft.	16 ft.	2,500 ft.
Navy Channel	Variable	16 ft.	4,500 ft.
Morro Channel generally	250 ft.	12 ft.	5,300 ft.

It must be noted that since the completion of the initial dredging activity in 1946, the southern most channel in the harbor, Morro Channel, has only been dredged twice, in 1954 and 1980. Periodic maintenance dredging in the harbor is to comply with the agreement between the City and the Federal Government. While the U.S. Army Corps of Engineers is the lead agency in the harbor maintenance, dredging of the Morro bay Channel is the City's responsibility.

Disposal of dredge spoil has occurred mostly on the Morro Bay Sand Spit, though some spoil has been placed north of Morro Rock. The deposition of spoils on the sandspit has often led to severe impacts on the sensitive plant community found there. Much of this disposed spoil has then been blown back into the harbor. The spoils from the most recent dredging were transported several miles down the sandspit and dumped in the intertidal zone. These spoils were then dispersed by the currents for beach replenishment.

FIGURE 26
NAVIGATIONAL CHANNELS



The sedimentary material that fills in the navigation channel has been identified as being from several sources. A study conducted by the U.S. Geologic Survey pinpointed the major source as silt and clay which is carried north along the sandspit and then into the harbor as shown by Figure 27. Some of the heavier material carried is deposited on the sandspit by the littoral current and forms sand dunes. The wind then creates blow out areas along the spit which allows sand to move freely across the spit into the bay. The blow out areas also prevent vegetation from stabilizing the wind carried sand. The sand dunes in the Coleman Drive area have also been created by the same process and contributes some material to the harbor.

While sediment carried into Morro Bay by the Los Osos and Chorro Creeks may have a severe impact on the wetlands in the southern portion of the bay, this source contributes little material to the navigation channels. Since material carried by the littoral currents accounts for approximately 90 percent of the sediment, shoaling in the extension of the breakwater may significantly interfere with this process and reduce the need for maintenance dredging. The City should encourage the Army Corps of Engineers to conduct a study to fully evaluate this proposal.

An additional project the City should encourage is a dune stabilization project by the State Department of Parks and Recreation on the Morro Bay Sandspit. This dune stabilization program utilizing native vegetation could protect habitat values while reducing shoaling in the harbor.

2. Shoreline Protection

Piers, rock shore facing, sheet piles and other pilings are constantly being pressured by the current within the bay. Over a period of time, the current can undercut the rock shore facing and cause it to slip down the bank, likewise the current can deposit sand in and around slips thus making the area more shallow. currently, the Coleman Drive rock facing is being undercut by the bay and potentially causing the need to repair or reconstruct the facing.

The Corps of Engineers is responsible for maintaining the navigational channel and the maintenance of the rock shore facing. The maintenance of the rock facing in the portions of the bay which are not under buildings or wharves stand a greater chance of being eroded by the current. The maintenance of the rock facing under buildings and wharves will be most difficult to accomplish.

3. Environmental Impacts

In the past, Morro Bay has been dredged prior to consideration of the environment and any adverse impacts which might result from that dredging. The first dredging probably had the most adverse impact, with approximately 3,000,000 cubic yards removed within the bay. Since that time, subsequent dredging operations have been only for harbor maintenance and have been less environmentally disruptive

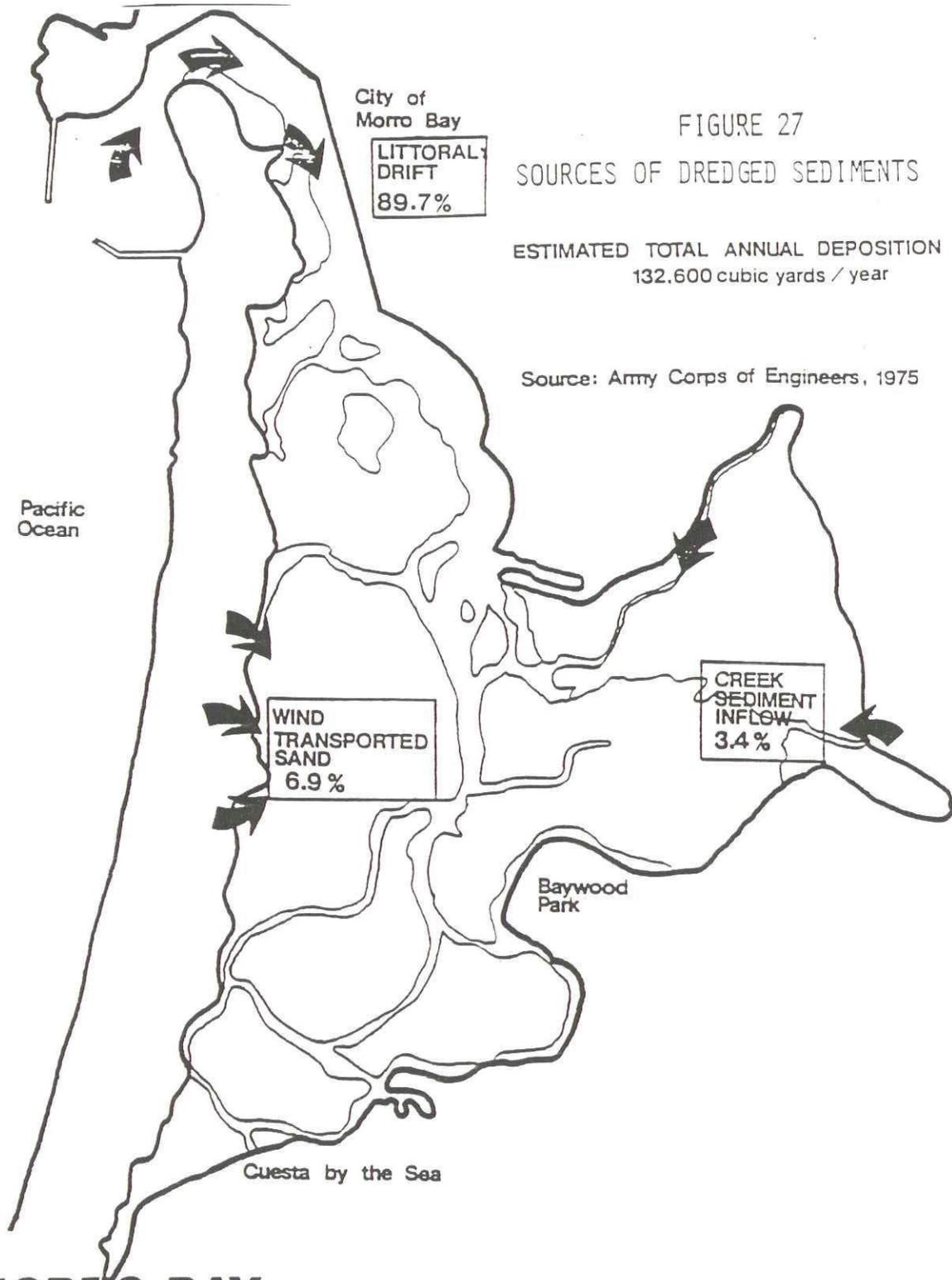
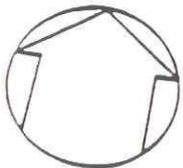


FIGURE 27
SOURCES OF DREDGED SEDIMENTS

ESTIMATED TOTAL ANNUAL DEPOSITION
132,600 cubic yards / year

Source: Army Corps of Engineers, 1975

MORRO BAY LOCAL COASTAL PLAN



As shown on Figure 26, the navigation channels where dredging occurs have been designated as open water areas. Here environmental impacts have been concerned with bottom dwelling organisms which quickly recolonize the area.

One specific resource that may be impacted by dredging has been the eel grass bed. Eel grass is an important food for the Black Brant and serves as a cover plant for many juvenile fish species. Impacts on the eel grass from dredging may be reduced by only allowing the minimum disturbance necessary and through the replanting of those beds that are disturbed.

Another concern is for the timing of dredge operations. Dredging during the spawning season may inhibit reproduction and alter migratory patterns. Additionally, disposal of these dredge spoils may have significant environmental impacts. The dumping of spoils may smother plant and animal communities and increase erosion and destabilization of the dunes. However, to protect the environmental resources in the bay, it is necessary that the Army Corps of Engineers, the U.S. Fish and Wildlife Service and the California Department of Fish and Game evaluate before and after, all dredging and spoil disposal operations as well as pursue baseline studies to allow proper evaluation of the bay.

The bay appears to have the capacity to assimilate the present loads of waste generated by human and aquatic organisms, however, there are indications that further commercial and recreational development would heavily tax the capacity of the bay. Currently, pressures to increase the use of the bay must be analyzed with regard to the impact of additional commercial fishing and recreational boating.

4. Harbor Dredging

Maintenance of the harbor is necessary for the continued economic and productive longevity of Morro Bay. Balanced with this must be the protection of the sensitive resources in the bay, especially in the southern bay.

For these reasons, further harbor expansion, specifically for commercial fishing, should occur in the northern portion of the bay. This area is better suited to accommodate the larger boats which are becoming more prevalent in the fishing industry. If this future harbor expansion reduces the demand for existing commercial fishing facilities, those areas south of Tidelands Park should be utilized by recreational boats.

D. DIKING, DREDGING, FILLING AND SHORELINE PROTECTION POLICIES

Policy 10.01 All diking, dredging, filling and shoreline protection developments within the harbor area (land and water) shall be subject to a full assessment of potential biological impacts until an accurate delineation of the real extent of wetlands and estuarine resources contained within City limits are reflected on a map adopted by the City as provided for in Policy 7.02 in Commercial Fishing/Recreational Boating. Once such a map has been adopted, the level of biological assessment may be diminished relative to the resource(s) (wetland, estuary, open coastal water) and corresponding buffer zones potentially impacted by a project. Diking, dredging, filling, and shoreline protection development within Morro Bay's wetland areas shall only be permitted consistent with Section 30233(c) of the Coastal Act. In designated areas, diking dredging, filling and shoreline protection developments for commercial fishing, coastal-dependent industry and recreation

and visitor-serving uses shall be permitted when consistent both on an individual and cumulative project basis, with the preservation of the Morro Bay wetland/estuarine system.

- Policy 10.02 All permissible new development within the harbor which may adversely impact the current tidal flushing of the harbor or which may increase shoaling shall be prohibited unless there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects.
- Policy 10.03 The city should encourage the U.S.Army Corps of Engineers to evaluate potential harbor improvements, such as expanding the existing breakwater, to reduce sediment deposition in the harbor channels.
- Policy 10.04 The city should encourage the State Department of Parks and Recreation to implement a dune stabilization program, utilizing native plant species, on the Morro Bay Sandspit.
- Policy 10.05 Future harbor development shall provide waste disposal to protect the water quality of Morro Bay.
- Policy 10.06 The City should monitor the continued effect of the bay's erosion cycle on shoreline protection structures and seek the Army Corps of Engineers assistance in the repair or reconstruction of these structures and should request the Army corps of Engineers to repair the tidelands Park revetment prior to installation of the improvements as proposed for the Tidelands Park project, i.e., boat side tie-ups and shore-based recreational fishing and accessways facilities.
- Policy 10.08 Dredging and spoils disposal in open coastal waters and estuaries shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation, or affect public access. Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable longshore current systems. Studies assessing the impacts of dredging and spoils disposal shall accompany applications for dredging and spoils disposal development subject to review and comment of U.S. Fish and wildlife and California Department of Fish and Game. Spoils disposal impacts shall be monitored so that the U.S. Army corps of Engineers, U.S. Fish and wildlife and California Department of Fish and Game in conjunction with the applicants can participate in the assembling of baseline data to allow proper assessment of the impact of present and future harbor development.
- Policy 10.09 Construction of shoreline structures that would substantially alter existing land forms shall be limited to projects necessary for:
- (a) protection of existing development; new development must ensure stability without depending on shoreline protection devices;
 - (b) public recreation areas;

- (c) other coastal-dependent uses.

Shoreline structures include revetments, breakwaters, groins, harbor channels, seawalls, cliff-retaining walls, and other such structures that alter natural shoreline processes.

Policy 10.10 Retaining walls shall be permitted only where necessary to stabilize bluffs adjacent to the coastline where no less environmentally damaging alternative exists or where necessary for coastal-dependent projects, protection of existing development and public recreation uses.

Policy 10.11 The diking, dredging or filling of open coastal waters, wetlands and estuaries shall be permitted in accordance with Section 30233 Coastal Act provisions and where there is no feasible less environmentally damaging alternative and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

- (a) New or expanded energy and coastal-dependent industrial facilities including commercial fishing facilities.

- (b) Maintaining existing or restoring previously dredged depths in existing navigational channels and berthing and mooring areas and boat launching ramps.

- (c) In open coastal waters, other than wetlands, including estuaries, new or expanded boating facilities.

- (d) Incidental public service purposes, including, but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

- (e) Restoration purposes.

- (f) Nature study, aquaculture, or similar resources-dependent activities.

- (g) In addition to the other provisions of this policy, diking, filling or dredging in existing estuaries shall maintain or enhance the functional capacity of the estuary. Any alteration of the Morro Bay wetland area shall be limited to very minor incidental public facilities, restorative measures and nature study.