

CHAPTER 30

SANTA MONICA BAY SHORELINE DEVELOPMENT PLANS

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INTRODUCTION

The officially adopted Master Plan of Shoreline Development for Santa Monica Bay covers 13 miles of the shoreline between Topanga Canyon and El Segundo, with 9 miles in the City of Los Angeles, 3 miles in the City of Santa Monica, and one mile in unincorporated territory. It is planned to care for the beach recreation needs of 6,000,000 people, which is the estimated population for Los Angeles County in 1970.

\$109,000,000 is the estimated cost of the proposed project, which includes beach development with an overall cost of \$69,000,000, an amusement park at \$10,000,000 and a yacht harbor, called Marina del Rey, with a capacity of 8,000 craft and costing \$30,000,000. All the cost figures include acquisition.

Preliminary plans, not yet officially adopted, indicate a cost of \$21,000,000 for improving the beaches along the southerly 8 miles of the Santa Monica Bay shoreline, with another \$1,000,000 for Cabrillo Beach at San Pedro.

The beach development includes an ocean fill of 56,000,000 cubic yards, on which all the facilities will be constructed. These include scenic beach drives with divided roadways, promenades, areas for games of various kinds, bath houses, rest rooms, landscaping, restaurants, and last but not least, auto parking areas with a total capacity of 40,000 cars at one time. The amusement park and marina will also have parking fields with a capacity of 6,000 and 11,000 cars, respectively.

BACKGROUND OF MASTER PLAN

Such an ambitious program as this was not planned by someone deciding that we should have recreational beach facilities for 6,000,000 population and a yacht harbor for 8,000 boats and then having the details filled in. The Master Plan came about largely as a result of studies, begun in 1930, of beach erosion problems and of the many mistakes which had been made in shoreline developments in the past. Most of the erosion problems were the result of unwarranted or badly planned small boat harbor projects.

These mistakes of the past and some that are now being proposed bring to mind a quotation from Jonathan Swift:

"There are none so blind as they that will not see."

This quotation typifies the past and to a large extent the present attitude of many people, both in public and private life, toward shoreline development problems.

To understand the many varied problems which entered into the evolution of the adopted Master Plan it is necessary to review briefly the history of the coast of Santa Monica Bay.

NATURAL CONDITIONS

In 1542, when Cabrillo made the first voyage of discovery along the California coast, he gave the name of Bahia de los Fumos to Santa Monica Bay. The English translation is Bay of the Smokes, and the name was occasioned by the many smokes, visible along the shore, which came from the numerous habitations of the Indians.

It is presumed that the Indians, not being subject to pressure from real estate dealers, located their dwelling places beyond the reach of the highest tides and the effects of natural seasonal and cyclical erosion.

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Beaches cut back in the winter time and are restored during the calmer periods of summer and early fall. The cycles of rainfall affect the beaches; narrower beaches resulting during dry cycles due to lack of flood-borne replenishments of sand and other erosion detritus.

The white man, building along the shoreline some 350 years later, ignored these basic facts. Subdivisions on the ocean shore extended to the mean high-tide line, legal boundary of the State-owned tidelands. On narrow lots, extending in many cases only 90 ft. landward from the mean high tide line, houses were constructed. The front yard might be under water at extreme high tide and during winter recessions of the beach. Houses were endangered and sometimes destroyed. Owners of these lots soon learned that the houses should be constructed on long piling.

Later came amusement piers, which had little effect on the shoreline. Still later came jetties and breakwaters which had a great effect on the shoreline, destroying many miles of beaches and filling the harbors the breakwaters were intended to create.

EFFECT OF BREAKWATERS AND JETTIES ON THE SHORELINE

There have been several such structures along the Southern California coast which have caused serious changes in the shoreline, at Coronado, Venice, Santa Barbara, Santa Monica, Seal Beach, Hueneme and Redondo Beach.

At Coronado, near San Diego, some 50 years ago, private interests constructed a curved jetty in an attempt to form a small boat anchorage. Serious erosion of the beach to the north took place, which necessitated construction of a heavy stone riprap seawall. Private interests at Venice, on Santa Monica Bay, in 1905 built a short breakwater to protect their pier. The structure caused the beaches to erode, with some damage to private homes.

By 1929 pressure for pleasure craft anchorages resulted in a long breakwater at Santa Barbara. It caused complete erosion of the beaches for 10 miles downcoast and destruction of a number of private homes (Fig. 1). The harbor by now would have been filled with sand but for periodic dredging.

In 1933 the City of Santa Monica built a breakwater which caused extensive erosion, mostly of public beaches (Fig. 2). By the middle of 1948 the harbor was half-filled with sand. In October 1948 a contract was let to dredge out 1,000,000 cubic yards. The erosion has been checked by developments which will be described later. However, the harbor will fill up with sand again and erosion downcoast will continue as long as the breakwater remains in place.

The City of Seal Beach, just south of San Pedro Bay, constructed a long jetty in 1936 which caused serious erosion downcoast.

In 1939 two more small coastal communities constructed small craft harbors on the Southern California coast -- at Hueneme, about 40 miles north of Santa Monica Bay, and at Redondo Beach, near the southerly end of Santa Monica Bay. The entrance jetties at Hueneme caused the downcoast shoreline to recede several hundred feet. At Redondo Beach the breakwater caused destruction of the public beach, and the promenade (Figs. 3 and 4). Over 30 buildings behind the promenade were destroyed or badly damaged. The cost of the property destroyed and of a stone sea wall constructed to prevent further damage is greater than the cost of the harbor and the harbor is practically useless as a boat anchorage.

LACK OF STATE CONTROL

It should have been apparent many years ago that small municipalities and other minor political subdivisions whose boundaries happened to include frontage on the ocean or a bay had neither the knowledge nor the means to cope with the ocean forces and should not have been entrusted with unrestricted control of tide and submerged lands within their boundaries.

Before 1931 there was no State agency empowered to regulate structures on tide and submerged lands. In that year the Legislature placed such power in the Division of State Lands. However, this did not apply to tide and submerged lands

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Fig. 1



Fig. 2



Fig. 3



Fig. 4

Fig. 1

Private beach homes at Sandyland, Santa Barbara, California, destroyed in January 1940. Former wide beach at this location was lost through erosion caused by the breakwater at Santa Barbara Harbor, 10 miles west.

Fig. 2

Venice Beach; Los Angeles, California. Results of erosion caused by breakwater for small craft anchorage constructed at Santa Monica, 3 miles up-coast.

Fig. 3

Redondo Beach, California. Results of erosion caused by breakwater constructed to provide a small craft anchorage (January 1944).

Fig. 4

Redondo Beach, California. Results of erosion caused by breakwater constructed to provide a small craft anchorage (January 1944).

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already granted to political subdivisions. It was another 12 years before the State recognized the need for erosion control study and created the office of State Beach Erosion Control Engineer.

Nevertheless, there seems little excuse for the promoters of these harbors, or at least their engineers, not knowing that the breakwaters and jetties would have the effect on the shoreline which did occur. These problems are as old as the Spanish Armada, at least, and research would have disclosed them.

A report entitled "A Discourse on Sea-Ports, principally of the Port and Haven of Dover" was made by Sir Walter Raleigh to Queen Elizabeth of England. It was published during the reign of Charles the Second.

SHORELINE PROBLEMS OF THE PAST

Breakwater building operations at the Royal Harbour of Ramsgate, England, from 1749 to 1768 resulted in the harbor being nearly filled with sand and silt. An engineer of that time predicted that, instead of an anchorage for ships, the harbor would become a field of corn unless recourse were had to some artificial means of clearing it. This brings to mind a remark made by the late Will Rogers who, when asked what he thought of Santa Monica Harbor, said, "I guess it's a mighty fine harbor but it looks as if it might need irrigating before long."

Two notable examples of the effects of harbor works on a sandy shoreline were at Madras, India, in 1877, and at Ceara, on the northeast coast of Brazil, in 1886. Extensive silting and erosion resulted in both places.

By 1908 these problems had become so important that a special section was devoted to them at the Eleventh Congress of the Permanent International Association of Navigation Congresses, held in Saint Petersburg, Russia, in that year. Experts from various countries, including the United States, presented papers.

Planners and others are still proposing small craft harbors at various places along the Southern California coast, apparently without consideration as to their effect on the shoreline. One such instance is at Redondo Beach. In spite of the disastrous results of the present breakwater, it is proposed to extend it to create a small craft harbor. If this is done I predict that serious erosion will occur downcoast from the proposed harbor in the southerly portion of Redondo Beach and possibly in Torrance, the adjoining municipality to the south.

SHORELINE HIGHWAYS

Another factor which increases the difficulty and cost of public beach development has been the practice of opening a coastal highway, which skirts the shoreline, and leaving a narrow strip of private land between the highway right of way and the mean high tide line. This usually results in unsightly buildings along the seaward side of the highway, destroying its scenic value and multiplying the costs of acquisition of ocean frontage which could have been acquired as a part of the right of way. Permissive but not mandatory legislation concerning such conditions was enacted by the Legislature a few years ago.

ENGINEERING STUDIES AND RESEARCH

In 1930 the City Council of Los Angeles instructed the City Engineer "to make a study and report on the best methods of temporary, as well as permanent protection and development of the City beaches." This initiated the research, studies and surveys from which grew the proposed \$109,000,000 beach and marina project briefly described at the beginning of this paper. Since the ocean forces do not recognize political boundaries it was necessary to make surveys and studies of the entire shoreline of Santa Monica Bay, which required collaboration between the engineering and planning forces of both the City of Los Angeles and the County of Los Angeles.

Extensive research was made of data on shoreline problems in the United States and other countries. Studies were made of the original sources of beach sand and its replenishment and of wave, wind and current action, and the effect on the beaches of various structures along the tidelands, both those now existing and

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those which had existed in the past. Field surveys of the beaches and the adjoining ocean bottom to a half-mile offshore were made along most of Santa Monica Bay and at Cabrillo Beach at San Pedro. These have been repeated at intervals.

The importance of such surveys and studies cannot be emphasized too strongly. Without them, planning shoreline improvements and protective works is largely guesswork and serious mistakes may be made.

Because of the comparatively narrow beaches and the need for conserving and utilizing them to the fullest extent, the matter of erosion control was important. The City of Santa Monica was considering construction of a breakwater to create a small craft anchorage. Los Angeles had no jurisdiction in the matter and there were no legal means of preventing construction of the breakwater, which was certain to cause serious erosion of the Venice beaches. Therefore, the matter of erosion became a problem of paramount importance.

The erosion problem, the need for wider beaches, the need for a shoreline highway for direct access to the beaches and particularly the need for automobile parking space, combined with the fact that millions of yards of sand existed on the dunes located on city-owned property at Hyperion, led to investigation of the feasibility of solving these problems by utilizing the sand on the dunes for widening the beaches.

ENGINEERING REPORTS

In reports prepared in 1934 and 1935 and submitted by the City Engineer to the City Council it was recommended that the beaches be widened between Santa Monica and Hyperion with sand pumped from the dunes so that the area of public sand beach would be doubled, and sufficient space provided for a shore front drive, parking areas and other facilities. Due to the difficulties of financing such a project during the depression days no further action was taken.

By 1940 erosion caused by the Santa Monica breakwater had become quite serious. The City Engineer in another report to the City Council recommended that 500,000 cubic yards of sand from the Hyperion dunes be placed along the most seriously eroded frontage as an emergency measure and that an additional 12,000,000 cubic yards be later placed along the six miles of beach frontage between Santa Monica and El Segundo to provide beach facilities for the rapidly growing population. No action was taken.

The proposal to widen the beaches by pumping sand into the ocean evidently was considered extremely impracticable and visionary, judging by the many criticisms made both by public officials and private citizens. However, in 1943 when portions of Venice seemed about to meet the fate of Redondo Beach, an appropriation of \$88,000 was secured to truck 150,000 cubic yards of sand from Hyperion and deposit it along the beach in the most threatened areas. In spite of dire predictions that all this sand would be washed away by the ocean waves in a single storm, the major portion of it still remained in place four years later. This small fill proved the soundness of conclusions based on studies and surveys made since 1930.

SEWAGE POLLUTION

Pollution of the waters of Santa Monica Bay caused by discharge of raw sewage into the bay at Hyperion has been a problem for many years. In 1943 the pollution became so serious that the State Health Commission quarantined ten miles of beaches in the central portion of the bay. In 1945 the Commission secured a court order requiring Los Angeles, and other municipalities using its outfall sewer, to abate the nuisance by constructing a sewage treatment plant.

Clearing the site of the proposed plant required excavation of 14,000,000 cubic yards of dune sand. A contract for the excavation was let in 1946 which required disposal of the sand to be made along the six miles of beaches between Santa Monica and El Segundo, as recommended by the City Engineer in 1940. The southerly three miles of the fill were placed to the full width proposed in the Master Plan and the remainder to about two-thirds the planned width. The fill was completed in December 1948 and resulted in a beach six miles long with an average

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width of 600 ft. The unit cost of excavation and disposal was 22.6 cents per cubic yard.

MAJOR FEATURES AND COST OF THE MASTER PLAN

The 56,000,000 cubic yard ocean fill required for beach development is the most spectacular feature of the Master Plan. This includes the 14,000,000 cubic yards already placed. The average width of the total fill extending along 13 miles of the shoreline will be 900 ft. and the maximum about 1200 ft. Only the outer one-third of the fill needs to be sand. The remainder can be material taken from high bluffs adjoining the beach near the northwesterly end of the project.

One-fourth of the entire fill has been in place for one and one-half years and many of the skeptics are convinced that the proposed project, from a construction standpoint, is not impracticable and visionary. Financing the project has produced just as much skepticism. The costs are great. A good idea of their magnitude can be secured from the following breakdown:

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|-------------------------------------|---------------|
| Acquisition costs | \$ 21,000,000 |
| Ocean fill | 15,000,000 |
| Groins | 3,400,000 |
| Sewers, storm drains and utilities | 19,200,000 |
| Highways and streets | 17,500,000 |
| Dredging and harbor improvements | 13,500,000 |
| Buildings and recreation facilities | 8,400,000 |
| Landscaping | 5,200,000 |
| Parking areas | 3,700,000 |
| Miscellaneous | 2,000,000 |

Improvement of the beaches between El Segundo and Palos Verde is estimated to cost \$21,000,000 and of Cabrillo Beach at San Pedro, \$1,000,000.

COORDINATING AND FINANCING THE MASTER PLAN

This total figure of \$131,000,000 may seem extravagant for recreation facilities until one gives consideration to the great population of six million people they will serve, and to the revenues that can be derived from operation of the various facilities, which would amortize the cost within a reasonable time.

In 1948 the City Council of Los Angeles retained the firm of Madigan-Hyland, nationally known consulting engineers of New York City, to make an engineering and economic study and report on the shoreline development plan. They approved the project and recommended that it be carried out through a regional authority and district, encompassing the area tributary to the development, under an enabling Act enacted by the State Legislature in 1947.

All operation, maintenance, bond redemption and interest charges would be taken care of by revenues plus a tax of only 9 cents per \$100 of assessed value on real and personal property within the proposed district, with the entire capital cost amortized in 35 years. The tax rate of 9 cents would amount to slightly more than two dollars annually to the average home owner.

Madigan-Hyland analyzed other methods of financing the project, including revenue bonds. They found that the latter method was not in any way feasible for the entire project and would be feasible for the marina alone only if at least \$16,000,000 could be secured from outside sources. They recommended against any attempt to finance the marina by revenue bonds.

The district tributary to the project comprises a portion of Los Angeles County and contains 30 municipalities and considerable unincorporated territory. The shoreline within the limits of the proposed project includes frontage, within 7 municipalities and a mile of unincorporated frontage. The Madigan-Hyland survey shows that 86.6% of beach visitors come from Los Angeles County, 6.1% from other counties of California, and 7.3% from outside California.

Under these conditions close coordination will be required if the project is to go ahead. It appears that the interests of the people will be best served through the medium of a regional shoreline park and recreation district.