

An aerial photograph showing a coastal area with a harbor, residential developments, and industrial zones. The harbor is filled with numerous small boats and is bordered by a dense residential area. To the left, there are large industrial buildings and parking lots. The ocean extends to the horizon with some distant islands visible. The text "2014-15 ACOE Dredging Project Channel Islands Harbor" is overlaid on the right side of the image.

2014-15 ACOE Dredging Project Channel Islands Harbor

Oxnard Coastline

* Coast Guard Station

Channel Islands Beach

* Naval Base – Port Hueneme

Port Hueneme

Pacific Coast Hwy

* Naval Base – Point Mugu

Hueneme Canyon

Hueneme Canyon







FIGURE A.10. AERIAL PHOTOGRAPH, 1945 (UNKNOWN)

submitted by the district engineer and reviewed by the Board of Engineers for Rivers and Harbors and by the Chief of Engineers. A report of survey scope was authorized by the Chief of Engineers in a letter dated March 16, 1948.

Recommendations of Chief of Engineers

The Chief of Engineers, United States Army, proposes to make the following recommendations:

9. After due consideration I concur in the views and recommendations of the Board of Engineers for Rivers and Harbors. Accordingly, I recommend adoption of a project for establishment of a harbor for light-craft vessels on the coast of southern California about 1 mile northwest of the existing harbor of Port Hueneme, and for shore-protection works; the improvement to consist of an entrance channel 20 feet deep and 300 feet wide, protected by 2 parallel jetties about 1,400 feet long, an entrance basin 20 feet deep, 850 feet wide, and 1,200 to 1,700 feet long, thence a channel 10 feet deep and 300 feet wide extending to an inner basin 10 feet deep, 700 to 1,300 feet wide, and 1,500 feet long; deposition of the dredged material to restore the downcoast shoreline; an offshore breakwater 2,300 feet long, placed to form a sand trap in conjunction with the entrance jetties; and initial and then biennial dredging of about 1 million cubic yards of material from the sand trap and placing the material to restore and maintain the downcoast shoreline; all generally in accordance with the plan of the district engineer and with such modifications thereof as in the discretion of the Chief of Engineers may be advisable, including the substitution of other means for bypassing and trapping beach material than herein proposed, all at an estimated cost to the United States of \$4,041,000 for construction and \$160,000 annually for maintenance; subject to the condition that local interests agree to: provide without cost to the United States all lands and rights-of-way properly cleared, access roads, and relocation of utilities, necessary for construction and maintenance of the improvement; provide adequate facilities for berthing, servicing, and maintaining small craft, open to all on equal terms; establish a public body empowered to regulate the use and development of the harbor facilities; acquire and hold in the public interest lands bordering the harbor to a width sufficient for proper utilization of the harbor; maintain and operate all necessary harbor facilities except those parts of the project constructed by the United States; eliminate and prohibit pollution of the bathing beaches affected; hold and save the United States free from all damages due to the construction and maintenance of the improvement; and make fish cannery sites available and encourage the construction of canneries by private interests; And provided further, that the biennial dredging and bypassing of beach material be continued at Federal expense only so long as Federal ownership or use of the lands and improvements necessitates such protection.

Features of plan

Port Hueneme Harbor was built by the Oxnard Harbor District through the period from 1938 to 1940, and financed by a bond issue of \$1,750,000 voted by the district. On March 30, 1942, the Department of the Navy acquired Port Hueneme Harbor by condemnation at a cost of \$2 million, and it has since been utilized exclusively for naval purposes.

In connection with construction of Port Hueneme Harbor, two entrance jetties approximately 1,000 feet long were constructed. The jetties converge to provide an ocean entrance 1,100 feet wide opposite the head of a submarine canyon which extends seaward at approximately right angles to the shoreline. The jetties intercept normal downcoast littoral drift of sand, increasing natural losses into the submarine canyon and causing erosion on downcoast beaches, with consequent damage to public and private property.

The plan for shore protection at Port Hueneme recommended in the report includes an off-shore breakwater to protect an excavated sand trap or littoral reservoir, into which sand will drift and remain

until periodically dredged and pumped to downcoast beaches to restore and maintain the coast-line. The plan also includes a small-craft harbor with entrance channel and jetties, together with deposition of materials dredged from the harbor on to the downcoast beaches. This plan is found to be economically justified and is recommended for construction by the Chief of Engineers.

The proposed offshore breakwater is of random stone construction, 2,300 feet in length, with its downcoast end located about 5,000 feet upcoast from the existing Port Hueneme harbor west jetty. The breakwater, designed to protect the small-craft-harbor entrance as well as the sand trap, parallels the coast along the 30-foot depth contour. It has a crown width of 18 feet at an elevation 14 feet above mean lower low water, shoreward side slope of 1 on 1½ and seaward side slope of a on 1½ from the crest to elevation -10 feet, at which elevation a horizontal berm extends 10 feet seaward. Remainder of the seaward slope from this point to the bottom is 1 on 1½. The section consists of class A stone (10-ton average) from the crest to elevation -10 feet, and of class B stone (quarry run) from elevation -10 feet to the bottom.

The sand trap, located in the area shoreward of the breakwater, is dredged to a 30-foot depth and provides 1 million cubic yards of material for initial restoration of the shoreline downcoast from Port Hueneme Harbor. Average pumping distance for dredged material is about 10,000 feet. It is expected that about 1 million cubic yards of sand will be entrapped every 2 years, and at such intervals will be dredged and pumped for maintenance of downcoast beaches.

Entrance jetties for the small-craft harbor extend about 1,400 feet seaward from Ocean Drive to the 12-foot-depth contour, and are 518 feet apart. They are parallel, approximately at right angles to the shoreline, and the downcoast jetty is in line with the downcoast end of the breakwater. The jetty section is of rubble mound, with 1 on 1½ side slopes, 16-foot crown width, and crown elevation 14 feet above mean lower low water. Stone sizes are 8-ton average for the outer 200 feet of jetty, and 5-ton average for the remainder.

An entrance channel to the small-craft harbor, 300 feet in width and 20 feet in depth, is provided. Channel side slopes are 1 on 2, leaving minimum berms of 40-foot width between toe of jetties and top of dredged cut.

The small-craft harbor includes an entrance basin 850 feet wide and ranging in length from 1,200 to 1,700 feet, and an inner basin about 1,500 feet in length, ranging in width from 700 to 1,300 feet. The channel connecting the basins is 300 feet wide and 1,300 feet long. The entrance basin has a depth of 20 feet, while that of the inner basin and connecting channel is 10 feet. Harbor side slopes are expected to assume natural slopes of 1 on 6 within the tidal range, and 1 on 2 below elevation -1 foot. Material dredged from the harbor entrance, interior basin, and connecting channel, provides 3 million cubic yards of material for initial restoration of beaches downcoast from Port Hueneme Harbor. Average length of pipeline for material dredged from the harbor is about 12,000 feet. Incidental harbor improvements consist of floats, slips, and light and water facilities for about 500 boats, an access road 1.62 miles in length, and an administration building and parking facilities.

much property damage and possibly loss of life.

87. No opposition to the provision of shore protection was advanced.

PLAN OF IMPROVEMENT

88. *Analysis of problem.*—Shore erosion downcoast from Port Hueneme has been continuous since construction of the harbor jetties

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PORT HUENEME, CALIF.

intercepted normal littoral drift. Unless remedial measures are accomplished, the erosion will continue until major realignment of the shore again establishes stable conditions. It is believed that the period required for such major realignment would exceed 100 years, and that vast areas of existing land would be eroded in the process.

89. Erosion could be prevented by construction and maintenance of a seawall. Erosion would continue downcoast of the end of the seawall regardless of its length. To prevent serious erosion of Navy property surrounding Laguna Mugu, and public and private property between Port Hueneme and Laguna Mugu, a minimum of 7 miles of seawall would be required. It is estimated that an adequate seawall would cost \$140 per linear foot to build and \$7 per foot per year to maintain. Initial cost of such length of wall would exceed \$5 million, and annual maintenance would exceed \$250,000. Littoral transport would be reduced to a negligible rate at the downcoast end of the seawall, and erosion problems would be expected to develop at more remote downcoast locations.

90. Erosion could be prevented by restoring normal littoral sand supply to the shore downcoast from Port Hueneme. This solution requires mechanical transportation of littoral material across Port Hueneme Harbor entrance channel. It is estimated that the required rate of supply is 500,000 cubic yards per year. Littoral material now accumulates on the exposed ocean shore upcoast from the harbor. Normal dredging methods cannot be employed for transporting the material without the construction of protective works to provide a suitable dredging area.

91. Erosion has progressed over a length of 7 miles of shore in 10 years. Restoration of normal supply alone would not immediately benefit the downcoast portion of the eroded area. The cost of distributing material over the full length of the eroded area would be excessive. On the basis that remedial measures could be initiated within 2 years (by the end of 1950), the most practicable solution would provide for initial deposit of not less than 4 million cubic yards of material along 7,000 feet of shoreline immediately east of Port Hueneme Harbor. This large initial deposit would increase the rate of littoral transport to the downcoast area and would shorten the time required to halt the erosion in the Laguna Mugu area. In addition, provision must be made for future supply to the downcoast area at a rate of 500,000 cubic yards a year.

92. *Plans considered.*—The criteria discussed in preceding paragraphs led to consideration of many methods of accomplishment.

PORT HUENEME, CALIF.

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is such as to require early correction. The installation of any form of fixed plant would be of an experimental nature and, possibly, would have to be later abandoned in favor of the recommended plan.

94. The eliminated plans were rejected for economic reasons, because of operational difficulties and hazards, because of experimental nature of the plan and lack of positive assurance that it would work, and because of the inability of the plant to positively intercept and bypass all of the sand in littoral transport. This last reason is of primary importance when considering any type of fixed plant. Sand lost from littoral drift represents a real economic loss because it probably would eventually contribute to the nourishment of the beaches as far downcoast as Redondo Beach in Santa Monica Bay.

95. The method selected is susceptible of being designed in such manner as to be positive in operation, most conservative of the available sand supply, and to provide maximum benefit at lowest cost. Descriptions of all plans considered, together with comparative costs of initial installation and operation are given in appendix 5.

96. First consideration was given to a plan for shore protection only by means of bypassing sand from a trap constructed adjacent to the upcoast jetty at Port Hueneme. However, the survey indicated that a considerable quantity of sand would be required to partially restore eroded beaches and to provide an adequate feeder beach for the prevention of further erosion. Also, this large quantity of sand could best be obtained, with a resultant overall betterment of the benefit-cost ratio, through the partial accomplishment of a desired small-boat navigation project.

97. *Recommended plan.*—The recommended plan for shore protection provides for (1) an offshore breakwater to provide a sand trap and to provide protection to a pipeline dredge operating in the trap; (2) dredging 4 million cubic yards for a feeder beach and beach restoration; (3) biennially dredging about 1 million cubic yards of material from the sand trap and depositing the dredged material to restore the feeder beach. This plan would provide for adequate shore protection, would restore a substantial portion of the downcoast shoreline to approximately its 1938 position, would prevent loss of valuable beach material into Hueneme submarine canyon, and would provide for securing the material for downcoast beaches by incidental partial completion of a small-craft harbor desired by local interests in Ventura County.

98. Consideration was given to a small-craft harbor in Ventura County at either Pierpont Bay or Port Hueneme in the report on preliminary examination of the coast of southern California with a view to the establishment of harbors for light-draft vessels, submitted June 30, 1947. The preliminary examination indicated that a small-

COMMENTS OF THE BUREAU OF THE BUDGET

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington 25, D. C., August 21, 1952.

The honorable the SECRETARY OF THE ARMY
(Through the Budget Officer for the Department of the Army.)

MY DEAR MR. SECRETARY: Receipt is acknowledged of your letter dated December 27, 1950, submitting the proposed report of the Chief of Engineers on a survey of Port Hueneme, Calif., with a view to shore protection, authorized by the River and Harbor Act approved July 24, 1946. The report is also in partial response to the River and Harbor Act approved March 2, 1945, which authorized a preliminary examination and survey of the coast of southern California, with a view to establishment of harbors for light-draft vessels.

The Chief of Engineers recommends the adoption of a project providing for establishment of a harbor for light-draft vessels about 1 mile northwest of the existing harbor of Port Hueneme and for shore protection works; the improvement to consist of an entrance channel 20 feet deep and 300 feet wide, protected by 2 parallel jetties about 1,400 feet long, an entrance basin 20 feet deep, 850 feet wide, and 1,200 to 1,700 feet long, thence a channel 10 feet deep and 300 feet wide extending to an inner basin 10 feet deep, 700 to 1,300 feet wide, and 1,500 feet long; disposition of the dredged material to restore the downcoast shoreline; an offshore breakwater 2,300 feet long, placed to form a sand trap in conjunction with the entrance jetties; and initial and then biennial dredging of about 1 million cubic yards of material from the sand trap and placing the material to restore and maintain the downcoast shoreline; at an estimated cost to the United States of \$4,041,000 for construction and \$160,000 annually for maintenance; subject to certain conditions of local cooperation involving an estimated initial non-Federal expenditure of \$1,602,000; all subject to the proviso that the biennial dredging and bypassing of beach material be continued at Federal expense only so long as Federal ownership or use of the lands and improvements necessitates such protection.

The report indicates that the total annual carrying charges are estimated at \$393,400, of which \$322,600 is Federal and \$70,800 is non-Federal. The estimated annual benefits are estimated at \$587,060, of which \$423,150 are classified as general (Federal) and \$163,910 as local. The annual shore protection benefits of \$237,360 consist of \$24,760 from increased land value; \$126,600 from damages prevented in areas not protected by seawalls; \$14,500 from savings in maintenance of seawalls, utilities and other property; \$21,500 from indirect damages prevented; and \$50,000 from prevention of loss of recreational value of beaches. The annual navigation benefits of \$349,700 consist of \$220,000 from the net value of increased commercial fish catch; \$13,500 from sports fishing craft navigation; and \$116,200 from recreational craft navigation. On the basis of these figures the benefit-cost ratio is computed at 1.5.

The report further shows that the existing jetties at Port Hueneme which are part of the harbor acquired by the Navy from local interests in 1912 have caused the erosion of the 7 miles of beach downcoast

submitted by the district engineer and reviewed by the Board of Engineers for Rivers and Harbors and by the Chief of Engineers. A report of survey scope was authorized by the Chief of Engineers in a letter dated March 16, 1948.

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Sand Moves South Along the Coast

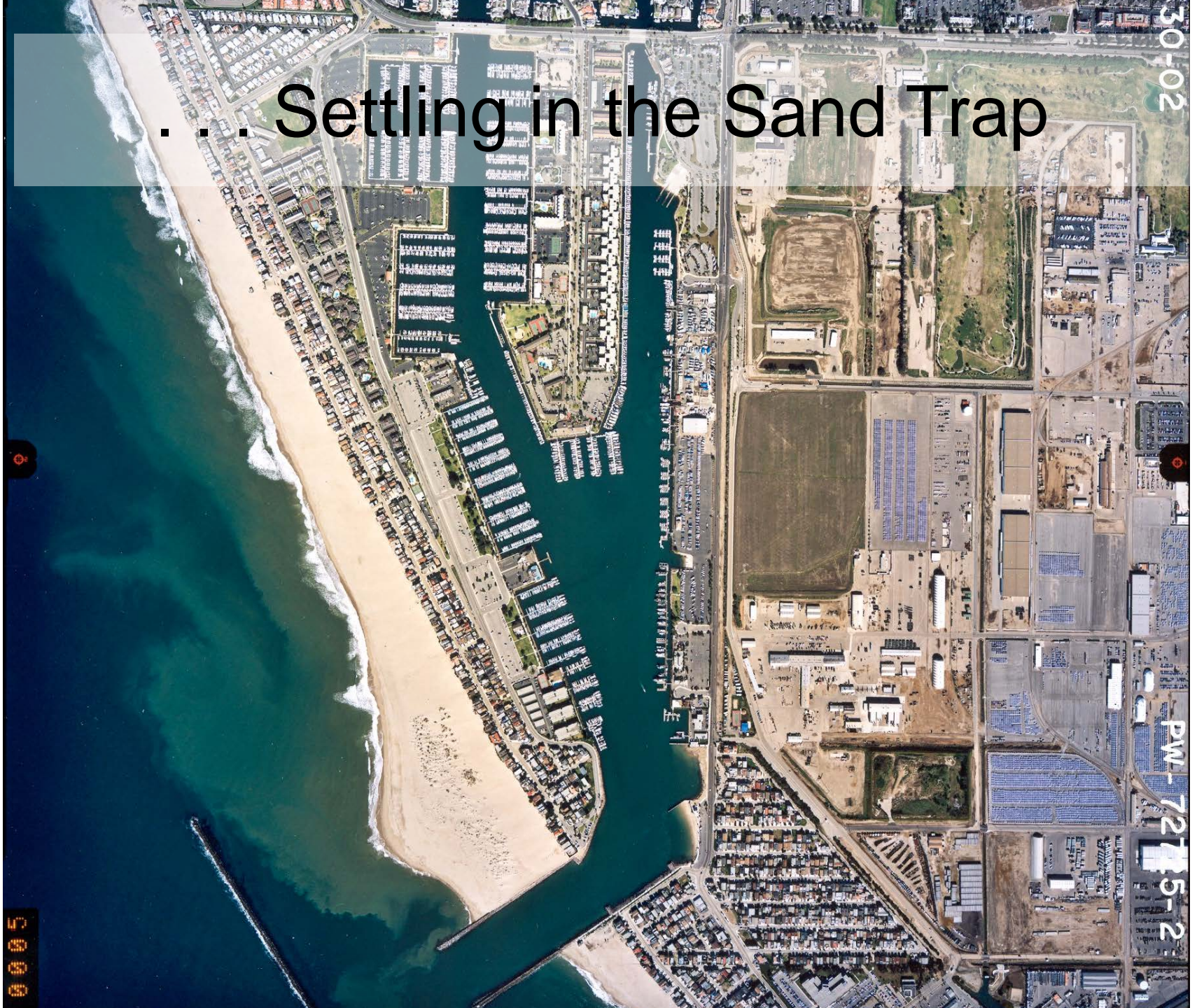


... Settling in the Sand Trap

30-02

PW-7275-2

5000



2004 – Before Dredging



2005 – Before Dredging



March 2007 After Dredging





Port Hueneme Beach
Prior to Sand Replenishment
December 2012

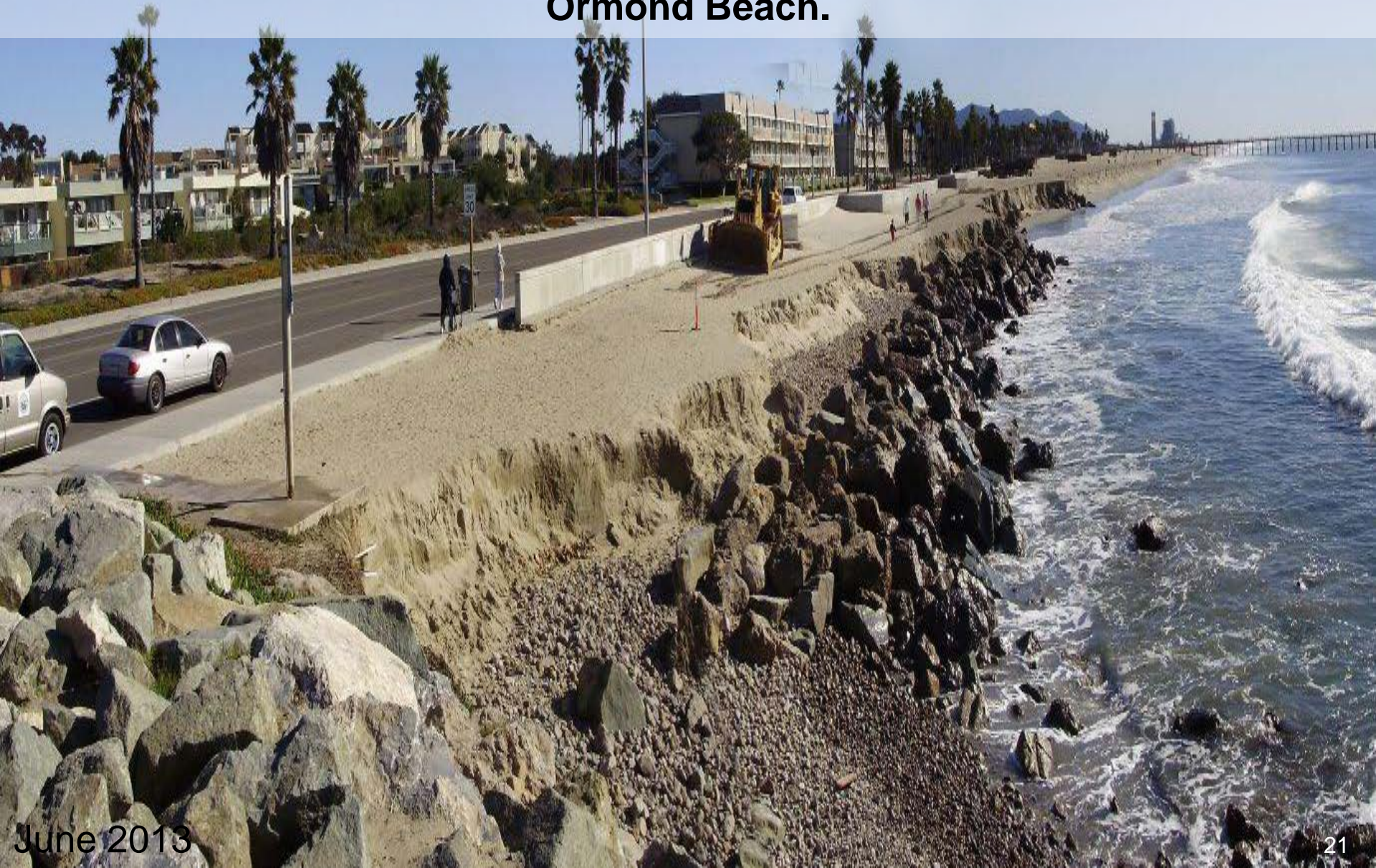


Port Hueneme Beach
After full Sand Replenishment

Recent Dredging Data

Year	Volume
1990-91	1,093,000 cubic meters
1992-93	850,000 cubic meters
1994-95	670,000 cubic meters
1996-97	1,023,000 cubic meters
1997-98	1,230,000 cubic meters (interim/emergency dredging)
1998-99	854,000 cubic meters
2000-01	945,000 cubic meters
2002-03	1,577,000 cubic meters
2004-05	1,637,000 cubic meters
2006-07	895,300 cubic meters
2008-09	1,680,500 cubic meters
2010-11	741,000 cubic meters
2012-13	600,000 cubic meters

The erosion of the shoreline not only affects the City of Port Hueneme, but also Naval Base Ventura County and the hard-won wetlands at Ormond Beach.

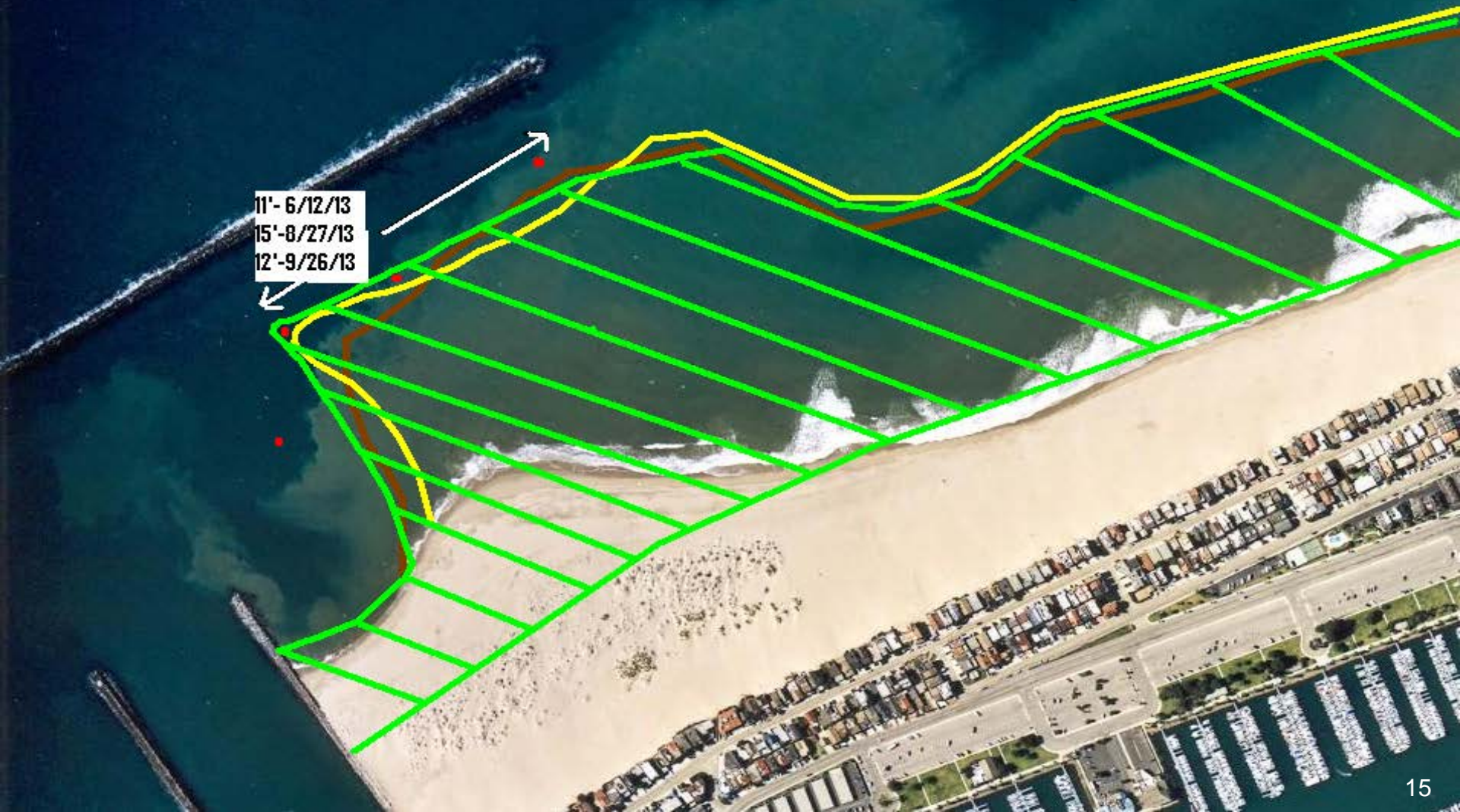




RED LINE - 6/12/13
YELLOW LINE - 8/27/13
GREEN LINE - 9/26/13
RED DOTS ARE SHOAL BUOYS

DREDGING WAS COMPLETED ON 2/6/13
FIRST SHOAL BUOY SET ON 4/11/13
DESIGN DEPTH 35'

Current Status of Sand Trap



2013 Dredging Numbers

- ACOE Request 2013

Follows the rule of 75% of the 5-year average

Increment 1: \$4.89 Million

Increment 3: \$760 K

Increment 4: \$3.51 Million

Increment 4: \$3.42 Million(Breakwater)

Total: \$12.58 Million

President's Budget: \$5.4 Million

ACOE Survey of Available Sand

- Sand available to be removed to meet authorized/design depth in sand trap
 - November 2010 (pre-dredge): 2.857 M cubic yard
 - January 2011 (post dredge): 1.907 cubic yards
 - Quantity Removed: 949K cubic yards
- September 2011 (prelim. Survey): 2.539 M cubic yards
- July 2012 (pre-dredge survey): 3.129 M cubic yards
- Quantity removed: 600K cubic yards
- Remaining sand: 3+ Million cubic yards**

2014-15 Funding

- \$5.4 Million, President's Budget
- \$4.8 Million, Corps Work Plan
- \$2.6 Million, Navy 19% Share
- \$973,000 "Re-Programmed" Funds
- Project Total \$13,773,000

Project Issues

- Notice Timing to Contractor and Sponsor
- Contracting – As funding methods and timing have changed, contracting has become more complex

2014 Dredge- Port Hueneme



Before



After

2014 Dredge- Port Hueneme Pier



Before



After



Before



During



After

2014 Dredge-
Hollywood Beach
Sand Trap

2014 Dredge- Hollywood Beach Sand Trap



Before



After





This photo, taken in January 2012, shows the erosion on the beach, and the significant and risky dropoff.



The erosion of the shoreline not only affects the City of Port Hueneme, but also Naval Base Ventura County and the hard-won wetlands at Ormond Beach.

Shoal in June 2014 with Depths at 11 Feet or Less

