

A STUDY OF THE EFFECTS
OF WATERWAY EXPANSION

CHANNEL ISLANDS HARBOR

Prepared for

COUNTY OF VENTURA
DEPARTMENT OF PUBLIC WORKS

by

MOFFATT & NICHOL, ENGINEERS
Long Beach, California

April 1970

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CALIFORNIA • OREGON • HAWAII • MICHIGAN

April 1970

Director of Public Works
County of Ventura,
592 Poli Street
Ventura, California 93001

Subject: Channel Islands Harbor
Engineering Study

Gentlemen:

In accordance with your Engineering Services Contract A&E 70-9, Project No. 9797, we are pleased to submit herewith our report regarding limiting conditions of harbor expansion.

The report contains conclusions, recommendations and comparative background data for evaluating the tidal and navigational capacity of the Channel Islands Harbor complex.


Also included in the Appendix to this report is a study prepared by Mr. Charles H. Turner, Consulting Marine Biologist, regarding the Harbor's present and estimated future biological well-being.

In order to facilitate a quick perusal of our findings, the Summary, Conclusions and Recommendations are at the beginning of the report commencing on page 3.

We considered it a privilege to serve you in this investigation of a most interesting project.

Very truly yours,

MOFFATT & NICHOL, ENGINEERS


John M. Nichol

JMN-e.

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Ecological Study
Charles H. Turner,
Marine Biologist

INTRODUCTION

Definition of the Problem

Ventura County is presently considering certain expansion regulations for the progressive development by private interests of a residential water-oriented community (residential marina) in the land adjacent to its Channel Islands Harbor. Boat access and tide-water exchange for this community will be through the harbor, and the harbor itself will ultimately be expanded both in water area and small-craft berthing capacity. The Southern California Edison Company draws cooling water for its Mandalay power-generating steam plant from a canal leading from the harbor through the proposed residential marina area. The County is concerned over possible detrimental effects that might ultimately result from an uncontrolled expansion of the residential marina community by private interests, not only in the harbor entrance but also in other parts of their waterway system.

Purpose and Scope of Study

The purpose of this study is to develop the criteria necessary to determine the limits that must be imposed on the proposed waterway expansion to prevent overcrowding of the harbor entrance and generation of troublesome tidal currents. Four items of investigation are required to accomplish this purpose:

1. Evaluation of tidal prism for different degrees of waterway expansion and determination of the effects of the resultant currents on channel stability and small craft navigation.

2. Evaluation of the entrance congestion that will result from the additional boats using the entrance at different levels of waterway expansion.

3. Appraisal of possible detrimental changes in the ecology of the harbor and residential marina sites resulting from the proposed expansion.

4. Appraisal of the effects of terminating the northeast arm of the harbor basin at Channel Islands Blvd., when the proposed northwest arm is extended past that roadway under a new bridge to join the Edison canal further north.

SUMMARY AND CONCLUSIONS

The tidal prism of the inland waterway, measured at the Harbor entrance and at Channel Islands Blvd., and the resultant current velocities at these points were calculated (taking into account cooling-water withdrawals) for residential-marina expansion by progressive steps northward of the County Harbor. The effects of the currents on channel stability and boating activities were then analyzed. A measure of the level of traffic congestion in the entrance was devised by utilizing the blockading-area method of analysis in conjunction with lane-density calculations and sailboat-tacking patterns. Traffic-densities for various fleet-count levels were estimated through comparative use of traffic-count surveys of the Newport Bay entrance made over a 7-year period by the Orange County Harbor District.

Electronic-computer programs were implemented to carry out the voluminous calculations involved in the analysis, and the results were tabulated and depicted on charts. Discussion of entrance traffic problems with various Southern California Harbor Officials formed the basis for certain assumptions that had to be made to keep the analysis from becoming too involved. The validity of the computed results was demonstrated by their general agreement with opinions of such officials as to just how much congestion can be tolerated in a navigation entrance. The ecological effects of the

proposed expansion were estimated by conducting a floral-fauna inventory of the existing water areas and forecasting the impact of the proposed expansion on water quality. As a result of this study, the following conclusions were reached:

1. The increase in tidal-current velocities due to a waterway expansion to approximately 5th Street will not cause channel instability within the County Harbor or navigational hazard in the entrance.

2. The Edison Company's ultimate cooling-water demand of 3000 cfs combined with any appreciable residential marina development will cause tidal-current velocities in excess of 1.5 feet per second in the channel under the new Channel Islands Boulevard Bridge. Current velocities of this magnitude will create navigation difficulties for small sailboats and will interfere with docking maneuvers in the adjacent slip-lease area.

3. The boat-traffic capacity of the entrance channel exceeds the ultimate needs of the County's Small Craft Harbor. Various levels of this surplus count and their corresponding effects on entrance congestion are as follows:

600 boats- Slight Congestion

1100 boats- Significant Congestion

1600 boats- Severe Congestion

4. The marine biota in the existing harbor are presently in good health.

5. While localized water-quality degradation may occur in some of the proposed new water areas north of Channel Islands Boulevard, no significant reduction in the Small Craft Harbor water quality should result.

6. Maintaining the east bridge opening will improve water circulation in the Harbor and reduce channel-current velocities.



California Regional Water Quality Control Board

Los Angeles Region

Anton H. Hickox
Secretary for
Environmental
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Gray Davis
Governor

August 3, 2000

Jeff Pratt
Deputy Director, Department of Public Works
Ventura Countywide Stormwater Quality Management Program
Ventura County Flood Control District (Principal Co-Permittee)
800 South Victoria Avenue, L#1600
Ventura, CA 93009

Directors of Public Works/City Engineers
Municipal Co-Permittees
Ventura County MS4

VENTURA COUNTY MUNICIPAL STORM WATER NPDES PERMIT (BOARD ORDER No. 00-108; NPDES PERMIT No. CAS004002) – LETTER OF TRANSMITTAL

Dear Mr. Pratt, et al:

We are pleased to send you the final municipal storm water permit for the Ventura County (attached), which was adopted by the Regional Board at its meeting on July 27, 2000, pursuant to Division 7 of the California Water Code. Board Order No. 00-108 serves as your permit, under the National Pollutant Discharge Elimination System (NPDES), for storm water discharges and urban runoff within Ventura County, and will expire on July 27, 2005.

The Order requires the Ventura County Flood Control District, herein referred to as the Principal Co-Permittee, and other Co-Permittees to implement the NPDES Permit No. CAS004002, including the Monitoring and Reporting Program, Ventura Countywide Stormwater Quality Urban Impact Mitigation Plan (SQUIMP), and Ventura Countywide Stormwater Quality Management Plan (SMP). The first Annual Storm Water Report and Assessment, for the period July 1, 1999 through July 27, 2000, is due on October 1, 2000. The first Annual Monitoring Report is due July 15, 2001.

Once again, we wish to thank you and your staff for their participation and assistance during the development and adoption of the permit for the Ventura County. Should you have any questions, please do not hesitate to call me at (213) 576-6605 or Dr. Xavier Swamikannu at (213) 576-6654.

Sincerely,

The Original signed by
Dennis A. Dickerson
Executive Officer

California Environmental Protection Agency

Recycled Paper

Our mission is to preserve and enhance the quality of California's water resources for the benefit of present and future generations.

Jeff Pratt
Ventura County Flood Control District

- 2 -

August 3, 2000

cc: Jorge Leon, State Water Resources Control Board
Marilyn Levin, Office of the State Attorney General
County of Ventura Co-Permittee
City of Camarillo Co-Permittee
City of Fillmore Co-Permittee
City of Moorepark Co-Permittee
City of Ojai Co-Permittee
City of Oxnard Co-Permittee
City of Port Hueneme Co-Permittee
City of San Buenaventura Co-Permittee
City of Santa Paula Co-Permittee
City of Simi Valley Co-Permittee
City of Thousand Oaks Co-Permittee
Interested Parties on File

California Environmental Protection Agency

 Recycled Paper

Our mission is to preserve and enhance the quality of California's water resources for the benefit of present and future generations.

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STATE OF CALIFORNIA

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION**

**ORDER NO. 00-108 NPDES PERMIT NO. CAS004002
WASTE DISCHARGE REQUIREMENTS
FOR
MUNICIPAL STORM WATER AND URBAN RUNOFF DISCHARGES
WITHIN
VENTURA COUNTY FLOOD CONTROL DISTRICT,
COUNTY OF VENTURA, AND THE CITIES OF VENTURA COUNTY**

FINDINGS

The California Regional Water Quality Control Board, Los Angeles Region (hereinafter called the Regional Board), finds that:

Permit Parties

1. Ventura County Flood Control District (VCFCD), the County of Ventura, and the Cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, San Buenaventura, Santa Paula, Simi Valley, and Thousand Oaks (hereinafter referred to separately as Co-permittees and jointly as the Discharger) have joined together to form the Ventura Countywide Storm Water Quality Management Program to discharge wastes under waste discharge requirements contained in Order No. 94-082, adopted by this Board on July 27, 2000. The Discharger discharges or contributes to discharges of storm water and urban runoff from municipal separate storm sewer systems (MS4s), also called storm drain systems, into receiving waters of the Santa Clara River, Ventura River, Calleguas Creek, and other coastal watersheds within Ventura County.
2. The Regional Board may require a separate National Pollutant Discharge Elimination System (NPDES) permit for any entity that discharges storm water into coastal watersheds of Ventura County. Such entity can be any State or Federal agency, State or Federal facility, real estate development, waste disposal facility, special district, private interest, etc. Pursuant to 40 CFR 122.26(a), the Regional Board will give these entities the option to become a Co-permittee, after obtaining the concurrence of the Co-permittees, or obtain an individual storm water discharge permit.

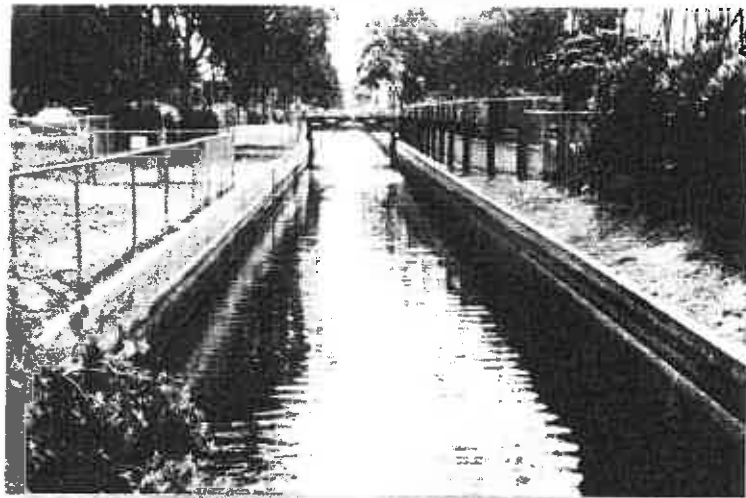
Nature of Discharge

3. Storm water discharges consist of surface water runoff generated from various land uses in all the hydrologic drainage basins which discharge into waters of the State. The quality of these discharges varies and is affected by hydrology, geology, land use, season, and sequence and duration of hydrologic events. The primary

Ventura County
Watershed Protection District

Oxnard West Drain Trash and Debris Study

January 2004



Study Report

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Section 1

Project Goals and Research

1.1 Project Goals

The Oxnard West Drain (Drain) is one of four main drainage channels located in the City of Oxnard and City of Port Hueneme. The other drainage channels include the J Street Drain, Oxnard Industrial Drain, and Wooley Road Drain. The Drain begins near West 5th Street and runs in a southerly direction along Ventura Road then proceeds westerly along Channel Islands Boulevard where it connects with the Wooley Road Drain (at Patterson Road) before it discharges into Mandalay Bay (Bay). The total length of the Drain is 3.39 miles with an approximate tributary watershed area of 2,800 acres (4.4 square miles). Figure 1-1 shows the location of the Drain.

The Ventura County Watershed Protection District (VCWPD) goal is to identify and evaluate sources of trash and debris in the Drain and receive recommendations for minimizing trash and debris discharges from the Drain. To meet this goal, the following tasks were performed:

- A field review of the Drain's tributary watershed
- A review of local agency control programs
- A literature review of relevant studies involving debris collection and characterization efforts within the Drain and in other urban watershed areas
- A review of treatment control options

The VCWPD hosted two stakeholders meetings in July and September 2003, where findings were presented from the research. Key input from stakeholders including the Channel Islands Waterfront Home Owners Association (HOA) and local City staff was received and considered in the options and recommendations for trash and debris control presented within this report.

1.2 Field Review

A field review was conducted to gain a baseline understanding of sources of trash and debris within the Drain's watershed area. Several sources of trash and debris were identified including commercial retail areas, landscape areas, city streets, curbs, sidewalks, and residential areas.