A

COURSE OF INSTRUCTION

IN

BASIC MARINA MANAGEMENT

Sponsored by:

Industrial Economics Research Div.
Texas A&M University Sea Grant Pgm.
Marina Association of Texas
Marina Association of America

1978

Basic training is the key to successful marina management which is a complex, comprehensive, competitive, and expensive undertaking demanding of all those committed to its operation an appreciation of its fundamentals. Instruction, therefore, is of much importance to the concerned career practitioner. It is for these reasons that the Industrial Economics Research Division, Texas A&M University, the Sea Grant Program, the Marina Association of Texas, and the Marina Association of America will offer "A Course of Instruction in Basic Marina Management."

The course is available to qualified career or staff practitioners and to others concerned with the organization, the programming, and the operation of marina programs in the private and public sectors.

OBJECTIVES

The primary purpose of the Course of Instruction in Marina Management is to provide an introduction to the background and practice of marina management. This is not a seminar or a clinic or a conference—it is a formal course in adult education.

The Course has three objectives:

1. To provide a Course of Instruction in Basic Marina Management for individuals in the field and for individuals contemplating entering the field.

2. To provide a medium for the interchange of ideas on the principles, practices, and ethics in the field of marina management.

3. To provide background theory and practical application of marina management techniques.

FACULTY

The Course of Instruction in Basic Marina Management will be conducted by successful practitioners in marina management from private and public organizations and by selected members of the faculty of Texas A&M University. Each instructor is recognized in his special area of assignment and is well qualified to give leadership and instruction in this type of basic course.

INSTRUCTIONAL TECHNIQUES

The instructional techniques to be used in this basic course will be the lecture and open discussion technique between student and lecturer.

ENROLLMENT

Student enrollment will be limited to 50. Students will be accepted to participate in the course on a "first-come, first-served basis." Applications for enrollment will be accepted through January 31, 1978. Registration fees are refundable if written notification is given prior to that date.

CERTIFICATE & CREDITS

Students successfully completing "A Course of Instruction in Basic Marina Management" will be presented a Certificate of Completion at graduation ceremonies.

The course is accredited by the Office of Continuing Education, Texas A&M University. Certificates will be granted verifying the number of Continuing Education Units (CEUs) earned.

REGISTRATION & COST

The Course of Instruction in Basic Marina Management will open with registration on Monday, February 20, 1978, at 9:00 a.m. in the University Center Conference Tower on the Texas A&M University campus, and will be followed by an orientation period beginning at 9:30 a.m. Classes will begin at 1:00 p.m., Monday, and will continue through Friday, February 24, 1978.

Tuition, covering all costs of instruction and student supplies, will be $200. Checks should be made payable to Texas A&M University.

Living costs range from $20 to $25 per day, depending upon individual tastes and requirements. On-campus eating facilities are available at Sbisa Dining Hall and the University Center at student rates. Students provide for their own meals and housing while in attendance at the Course. A block of rooms has been reserved at the Ramada Inn (713) 846-8811.

Address while attending the Course is 4103 S. Texas Avenue, Suite 100, Bryan, Texas, 77801. Emergency phone number is (713) 845-5711 from 8:00 a.m. to 5:00 p.m.

For further information contact:

Kathryn M. Delaune
Industrial Economics Research Division
Texas A&M University
4103 South Texas Avenue, Suite 100
Bryan, Texas 77801
(713) 845-5711

THE SECOND COURSE OF INSTRUCTION IN BASIC MARINA MANAGEMENT

A SEA GRANT MARINE ADVISORY SERVICES PROGRAM

Sponsored by:

INDUSTRIAL ECONOMICS RESEARCH DIVISION
TEXAS ENGINEERING EXPERIMENT STATION
TEXAS A&M UNIVERSITY
and
MARINA ASSOCIATION OF TEXAS
and
MARINA ASSOCIATION OF AMERICA

TEXAS A&M UNIVERSITY
COLLEGE STATION, TEXAS

FEBRUARY 20 - 24, 1978

A

COURSE OF INSTRUCTION

IN

BASIC MARINA MANAGEMENT

Sponsored by:

Industrial Economics Research Division
Texas A&M University
Sea Grant Program

Marina Association of Texas

Marina Association of America

1978

THE COURSE OF STUDY

MONDAY, February 20, 1978
UNIVERSITY CENTER CONFERENCE TOWER

9:00 a.m. – Registration

9:30 a.m. – Introductions and Orientation

10:00 a.m. – *The Recreational Boating Outlook for 1978*
Matthew J. Kaufman, President, Boating Industry Association, Chicago, Illinois

10:45 a.m. – COFFEE BREAK

11:00 a.m. – *The Changing Scene – The Modern Marina*
George Van Zevern, Editor, *Boat and Motor Dealer*, Wilmette, Illinois

11:45 a.m. – LUNCH

1:00 p.m. – *Design and Engineering*
Salt Water Design – Larry Urban, Urban Engineering, Corpus Christi, Texas
Fresh Water Design – Ron Ritchie, R. K. Ritchie & Associates, Oroville, California
Breakwaters – Dr. Walter L. Moore, Moore & Sethness, Inc., Austin, Texas

2:15 p.m. – COFFEE BREAK

2:30 p.m. – *Design and Engineering* (Continued)

4:30 p.m. – CLASS PICTURE

5:00 p.m. –
6:00 p.m. – *Get Acquainted Period* – Ramada Inn

TUESDAY, February 21, 1978

8:00 a.m. – *Marketing Your Product*
Dr. Samuel M Gillespie, Head, Department of Marketing, Texas A&M University

9:45 a.m. – COFFEE BREAK

10:00 a.m. – *Marketing Your Product* (Continued)

11:30 a.m. – LUNCH

1:00 p.m. – *Management and Administrative Functions*
Fee Schedules, Rules and Regulations, Lease Agreements, Overall Maintenance – Glenn Harmes, Cimmarina, Sioux City, Iowa

2:15 p.m. – COFFEE BREAK

2:30 p.m. – *Management and Administrative Functions* (Continued)
Personnel Management – Ed Thompson, Canyon Lake Marina, Inc., New Braunfels, Texas

3:45 p.m. – *Policy Considerations*–
Dr. Robert E. Craft, Jr., Assistant Professor, Management Department, Texas A&M University

5:00 p.m. – ADJOURN

WEDNESDAY, February 22, 1978

8:00 a.m. – *Accounting Procedures*
Donnie Houston, Rhodes & Associates, Decatur, Georgia

9:45 a.m. – COFFEE BREAK

10:00 a.m. – *Accounting Procedures* (Continued)

11:45 a.m. – ADJOURN

12:00 noon – On-Site Tour of Marinas

THURSDAY, February 23, 1978

8:00 a.m. – *Financing*
M. J. Mittenthal, M. J. Mittenthal & Company, Dallas, Texas

9:45 a.m. – COFFEE BREAK

10:00 a.m. – *Financing* (Continued)

11:30 a.m. – LUNCH

1:00 p.m. – *Repair Services*
Hubert Spradling, Sprad's Boat Town, Beaumont and Orange, Texas

2:45 p.m. – COFFEE BREAK

3:00 p.m. – *Operational Equipment*
Hydro-Hoist
Dump Stations
Dredging Equipment

5:00 p.m. – ADJOURN

7:00 p.m. – Social and Dinner

FRIDAY, February 24, 1978

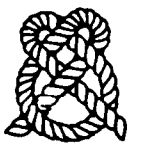
8:00 a.m. – Problem Solving Session

9:45 a.m. – COFFEE BREAK

10:00 a.m. – Problem Solving Session (Continued)

11:30 a.m. – Graduation Ceremonies

12:00 noon – ADJOURN



TEXAS A&M UNIVERSITY
INDUSTRIAL ECONOMICS RESEARCH DIVISION
COLLEGE STATION TEXAS 77843
BOX 83 PHONE 713-845-5711

February 20, 1978

MEMORANDUM

TO: Basic Marina Management Course Attendees

FROM: Perry J Shepard

SUBJECT: General Information

Welcome to the Second Annual Course of Instruction in Basic Marina Management! I hope that your stay in College Station will be a pleasant experience and that the Course of Instruction throughout this week will be beneficial to you in your work.

Classes will begin promptly at the times listed in your program each morning in Room 501 of the Rudder Conference Tower, the building listed as the "Auditorium Complex" - Building No. 51 - on the map enclosed in your packets.

A commuter van will leave the front of your motel each morning at approximately 7:30 a.m. for those needing transportation to the Tower and will make a return trip at the end of each day's session. Please advise us at registration if you plan to take advantage of the commuter service.

We feel especially honored that some of your wives accompanied you to Texas A&M. Your wives and guests are cordially invited to all of the social functions; the Monday evening social hour, the Wednesday afternoon tour of the Lake Conroe Marinas, and the Thursday evening social hour and dinner. Tickets for all of these functions may be purchased at the registration desk or anytime during the week for $20 per person.

Guests are welcome in the class sessions only as space permits so that your learning experience will be unimpeded.

Please let me or Kathryn Delaune know if there is anything we can do to make your visit to Texas A&M more enjoyable and memorable.

PJS/dks

TEXAS A&M UNIVERSITY

INDUSTRIAL ECONOMICS RESEARCH DIVISION

COLLEGE STATION TEXAS 77843

BOX 83 PHONE 713-845-5711

MEMORANDUM

TO: Students of Basic Marina Management Course

FROM: Kathryn M. Delaune, Course Director

All of the sessions of the Course of Instruction in Basic Marina Management will be recorded. Casettes will be available at $5 each. (Some sessions may require more than one cassette.) Please complete and submit the order form below no later than February 24.

ORDER FORM

Tape No.	Subject	Quantity
1	The Recreational Boating Outlook for 1978	_____
2	The Changing Scene—The Modern Marina	_____
3	Design and Engineering—Salt Water	_____
4	Design and Engineering—Fresh Water	_____
5	Design and Engineering—Breakwaters	_____
6	Marketing Your Product	_____
7	Fee Schedules, Rules and Regulations, Lease Agreements, Overall Maintenance	_____
8	Personnel Management	_____
9	Policy Considerations	_____
10	Accounting Procedures	_____
11	Financing	_____
12	Repair Services	_____
13	Problem Solving Sessions	_____

Name _____

Address _____

_____

(Attached is my check in the amount of $_____ made payable to Texas A&M University.)

Dining out in Bryan-College Station

MEXICAN FOOD

Casa Chapultepec
1315 S. College Ave.

El Chico Restaurant,
3109 Texas Ave.

Monterey House Restaurant,
1816 Texas Ave.

Pepe's Mexican Food Restaurant,
107 Dominik Dr.
College Station,

Saenz Tamales,
1418 Sandy Point Road.

Taco Bell,
3901 S. Texas Avenue

El Toro Cafe,
500 N. Sims.

Zarape Restaurant,
311 McArthur at University Dr.

BARBECUE

Gabe and Walker's Barbecue.
Highway 60 West.

Randy Sims Bar-B-Cue,
3824 Texas Ave.

3-C Bar-B-Cue,
810 S. Main.

3-C Corral,
1808 Barak Lane.

Tom's Barbecue,
4313 S. Texas Av.

CARIBBEAN

El Caribe
2919 Texas Ave.

DELICATESSENS AND SANDWICHES

The Grapevine,
701 Texas Ave.

Farmer's Market Sandwich Shop,
329 University Dr.

Scholotzsky's,
100 S. Texas Ave.

Kashim's,
1802 Texas Ave. S.

FRIED CHICKEN TO GO

Church's Chicken,
3207 Texas Ave.
507 N. Texas Ave.

Kentucky Fried Chicken,
110 Dominik
3320 S. Texas Ave.

Tinsley's Fried Chicken,
705 N. Texas Ave.

STEAK HOUSES

The Steak House,
1803 S. Texas Ave.

Western Sizzlin Steakhouse,
1701 Texas Ave.

W.G. and Company,
317 S. College Ave.

GERMAN CUISINE

Haus Edelweiss,
319 University Dr.

FISH

The Country Kitchen,
Jones Bridge Road.

ITALIAN FOOD

Fontana's Italian-Mexican Restaura
1307 S. Texas Ave.

Mr. Gatti's,
107 College Ave.

Pizza Hut,
2610 Texas Ave.
102 University Dr.

Pizza Inn,
413 Texas Ave.
1803 Greenfield Plaza.

Farmers' Market
2700 Texas Ave.

ASIAN CUISINE

China Restaurant,
803 S. Main St.

Hong Kong Restaurant,
3805 Texas Avenue

Tokyo Steak House,
2025 Texas Ave.

PANCAKE HOUSES

International House of Pancakes,
103 N. College Ave.

Kettle Pancake Restaurant,
1601 S. Texas Ave.

CONFECTIONERIES

Cone & Candy Tree
Manor East Mall
University Square

Karmelkorn Shoppe
Manor East Mall

Baskin & Robbins
2500 S. Texas Ave.

GENERAL RESTAURANTS

Kashim's,
1802 Texas Ave. S.

Dead Solid Perfect,
102 Church Street

Sambo's Restaurant,
1045 Texas Ave.

The Texan Restaurant,
3204 S. College Ave.

T.J.'s,
707 Texas Ave.

Wehrman's Cafe,
1009 W. 29th St.

Wyatt's Cafeteria,
804 S. Texas Ave.

Youngblood's Restaurant,
3410 S. College Ave.

The Captain's Table,
2900 Texas Ave.

Denny's Restaurant,
2712 S. Texas Ave.

Holiday Inn,
2300 Texas Ave.
150 Texas Ave.

Mansard House,
1401 F.M. 2818 in the
Doux Chene Apts.

Ponderosa Restaurant,
3702 Texas Ave.

Ramada Inn,
410 S. Texas Ave.

Karl's
Highway 30 East

CLUB MEETINGS

BRAZOS VALLEY KIWANIS
Captain's Table
Thursday
7:00 a.m.

JAYCEES
Wyatt's Cafeteria
Thursday
NOON

KIWANIS OF BRYAN
Wyatt's Cafeteria
Friday
NOON

KIWANIS OF COLLEGE STATION
Ramada Inn
Tuesday
NOON

LIONS CLUB, BRYAN
Captain's Table
Tuesday, NOON
Friday, 7:00 a.m.

LIONS CLUB, COLLEGE STATION
Ramada Inn
Monday
NOON

OPTIMIST CLUB
Captain's Table
Thursday
NOON

ROTARY CLUB, BRYAN
Aggieland Inn
Wednesday
NOON

TOASTMASTERS
St. Mary's Student Center
103 Nagle
Tuesday
NOON

A
COURSE OF INSTRUCTION
IN
BASIC MARINA MANAGEMENT

AN ABSTRACT

OF

BIOGRAPHICAL SKETCHES

OF THE FACULTY

FOR THE

SECOND COURSE OF INSTRUCTION

IN

BASIC MARINA MANAGEMENT

FEBRUARY 20-24, 1978

THE SECOND COURSE OF INSTRUCTION IN

BASIC MARINA MANAGEMENT

Texas A&M University

February 20-24, 1978

SPEAKERS AND INSTRUCTORS

MATTHEW J. KAUFMAN
Boating Industry Associations

GEORGE VAN ZEVERN
Boat & Motor Dealer

LARRY URBAN
Urban Engineering

ROD RITCHIE
R. K. Ritchie & Associates

DR. WALTER L. MOORE
Moore & Sathwess, Inc.

DR. S. M. GILLESPIE
Texas A&M University

GLENN HARNES
Clearwater

ED THOMPSON
Canyon Lake Marina

DR. ROBERT E. CRAFT, JR.
Texas A&M University

DONNIE HOUSTON
Houston & Associates

M. J. MITTENTHAL
M. J. Mittenthal & Company

HUBERT SPRADLING
Sprad's Boat Town

RESUME

October 1977

Bob Craft

Rt. 4, Box 63J2
Bryan, Texas 77801

Office Telephone
713-845-6914

EDUCATION

DBA, Indiana University, Management
MBA, Wake Forest University

EXPERIENCE

Assistant Professor, Department of Management, College of Business Administration, Texas A&M University, College Station, Texas.

1974-1977 - Faculty Lecturer, Department of Administrative and Behavioral Studies, School of Business, Indiana University, Bloomington, Indiana.

1970-1974 - Director and General Manager, Danville Cablevision Company, Danville, Virginia.

Professional activities during this period included:

President, Virginia Cable Television Association
Director, Southern Cable Television Association
Member, Small Operators Board, National Cable Television Association
Member, Virginia Public Telecommunications Council

1972-1974 - Secretary, Treasurer, Founder of Alleghaney Highlands Radio, Inc., operators of AM Radio Station WXCF in Clifton Forge, Virginia.

1966-1970 - General Manager of Cablevision of Virginia, Inc., Clifton Forge, Virginia.

1962-1966 - Quality Control Analyist, WESTVACO, Covington, Virginia.

1958-1962 - United States Army Paratrooper.

Member of Academy of Management.

Life Member of National Guard Association of U.S.

Richard D. Irwin Research Fellow, 1976.

PERSONAL DATA SHEET

Samuel M. Gillespie

Department of Marketing
Texas A&M University
College Station, Texas 77843
Phone: 713/845-6741

4100 Tanglewood
Bryan, Texas 77801
Phone: 713/846-8376

PERSONAL INFORMATION

Date of Birth: August 9, 1934
Marital Status: Married
Number of Children: Three

EDUCATION

B.S., Marketing, University of Illinios, 1956
M.S., Marketing, University of Illinois, 1966
Thesis: An Analysis of Control in Franchise Distribution Systems
Ph.D., Marketing, Univeristy of Illinios, 1970
Dissertation: An Analysis of Antitrust Policy Toward Franchising

ACADEMIC EXPERIENCE

Department Head, Associate Professor, Texas A&M University, 1975-present
Associate Professor of Marketing, Texas A&M Univeristy, 1972-1975
Assistant Professor of Marketing, Texas A&M University, 1968-1972
Assistant Dean, College of Commerce & Business Administration, University of Illinois, 1967-1968
Graduate Assistant Instructor in Marketing, University of Illinois, 1964-1965

Courses Taught (u for undergraduate, g for graduate)

Principles of Marketing (u)
Retail Store Management (u)
Fundamentals of Marketing (u)
Marketing Management (u)
Marketing Research (u)
Product Strategy (u)
Retailing (u)
Physical Distribution (u)
Promotion Strategy (u)
Sales Management (u)
Problems in Marketing (g)
Legal Aspects of Marketing (g)
Fundamentals of Marketing (g)
Ph.D. Seminar in Marketing (g)

GLENN E. HARMES

A native Iowan.

Served in the South Pacific during World War II.

Entire career has been with the Iowa Public Service Company and subsidiaries, in sales, sales engineering, design and management.

Past five years responsible for construction and operation of 400-boat marina.

Married—three children.

RESUME

J. DONNIE HOUSTON

Personal:

Birthplace: Langdale, Alabama, March 1, 1947
Married Gail Settelmayer
Three children: Scott - age 6, Stephen - age 3 1/2, Stacy - age 1
Resident of Stone Mountain, Georgia

Education:

Graduate of Georgia State University
1969 Bachelor of Business Administration with major in Accounting
1971 Master of Professional Accountancy

CPA Certification:
Licensed to practice as a Certified Public Accountant in 1971 under the laws of the State of Georgia.

Professional Experience:

Joined the firm of Donald W. Rhodes, CPA, later known as Rhodes & Associates, CPA'S, in 1968 as a Junior Staff Accountant. Became a partner of the firm in 1976.

Professional Memberships:

American Institute of Certified Public Accountants
Georgia Society of Certified Public Accountants
East DeKalb Rotary Club

FROM: Boating Industry Associations
401 N. Michigan Avenue
Chicago, IL 60611
Phone: (312) 329-0590

CONTACT: Al Limburg
Nina Vogt

Matt J. Kaufman was named executive director of the Boating Industry Associations in February of 1970.

Kaufman, 48, joined the BIA staff in 1955 as a public relations assistant. He was promoted to consumer and dealer relations manager in 1958 and became director of marketing and public relations in 1964. In September of 1969, he was named acting executive director following the resignation of Fred B. Lifton.

Kaufman is a graduate of the University of Illinois School of Journalism. Following graduation, he served stints as a weekly newspaper editor and a writer for an advertising specialties firm. A World War II veteran, Kaufman was awarded the Bronze Star for his service with the U.S. Army Combat Engineers in Europe.

After BIA was reorganized in 1970-71, Kaufman was named administrator of BIA and president of International Marine Expositions, Inc. which produces the annual Marine Trades Exhibit and Conference, the world's largest marine trade show and the Chicago Boat & Sports Show.

Kaufman lives in Park Forest, Illinois, with his wife and three children.

BIA, with more than 600 manufacturer members, is the largest trade group in the recreational boating business. Its full-time staff of 40 is engaged in market research, engineering work, and government and public relations.

* * * * *

M. J. MITTENTHAL
P. O. Box 8023 Dallas, Texas 75205 Telephone: (214)-521-7747

Born and lived entire life in Dallas. B.A. degree with honors: University of Texas.

Acting as a Consultant in real estate, real estate financing, corporate financing, and investment planning since 1971 for borrowers, lenders, and investors, as President of M. J. Mittenthal & Company.

President of N. E. Mittenthal & Son, Inc., Mortgage Bankers, from 1947 until its merger with another firm in 1969, remaining as Vice President of that Company for two years. Was Consultant for a large real estate investment trust from 1971 to 1973.

Owner of N. E. Mittenthal & Son, an insurance agency writing all lines of insurance, from 1947 until sale of the business in 1969.

Past President, Mortgage Bankers Legion, composed of members of the Mortgage Bankers Association of America who have served a minimum of four years on the Board of Governors.

Member of Board of Governors, Mortgage Bankers Association of America 1961-1971.

Director now and Past President of Texas Mortgage Bankers Association.

Past President of Dallas Mortgage Bankers Association.

Past Director of Dallas Association of Insurance Agents.

1969 winner of Distinguished Service Award of Mortgage Bankers Association of America.

1958 winner of J. E. Foster Award of Texas Mortgage Bankers Association for outstanding service.

Adjunct Professor in the School of Business Administration at Southern Methodist Universit having given a course in real estate finance since 1966; also conducted seminars in real estate finance, real estate investments, and investment planning for the School of Continuing Education at Southern Methodist University.

Served as instructor in short courses on mortgage banking at Stanford University, Northwestern University, and University of Miami, which were sponsored jointly with the Mortgage Bankers Association of America.

Served Mortgage Bankers Association of America as follows:

Chairman Insurance Committee
Chairman Education Committee
Chairman Membership Admissions Committee
Chairman Membership Committee
Chairman Conventional Loan Committee

Organized and moderated seminars on income property financing for Mortgage Bankers Association of America and Texas Association of Architects; organized and moderated seminars on insurance for National Association of Insurance Agents, Texas Association of Insurance Agents, and Dallas Association of Insurance Agents.

Speaker at Texas Industrial Development Council, Louisiana Industrial Development Association, Real Estate Finance Executives, Tax Assessors and Collectors of Dallas and Tarrant Counties.

W. L. MOORE

Dr. Walter L. Moore, Professor (B.S. 1937, M.S. 1938, California Institute of Technology, Ph.D. 1951, State University of Iowa).

Dr. Moore started his work in the water resources engineering field in California in the planning division of the Corps of Engineers and then in the Cooperative Research Laboratory of the Soil Conservation Service. He came to the University of Texas at Austin in 1947 and initiated new courses and research activities in the water resources area. He served as chairman of the Civil Engineering Department from 1958-1965. His research activities have included conventional and novel energy dissipation structures, scour of cohesive sediments and incipient motion of alluvial sediments, model studies of hydraulic structures, numerical simulation of watersheds, and the development of a novel design for a floating breakwater. His current research interests are the numerical simulation of watersheds, problems of sedimentation, and further development of the floating breakwater concept.

Dr. Moore has been active in local, state, and national affairs of the American Society of Civil Engineers, serving as president of the Austin Branch and of the Texas Section ASCE. He was a member and chairman of several committees in the Hydraulics Division of ASCE and served as Water Coordinator for the division for several years. He served on the Committee for Education and Training of the U.S. National Committee for the International Hydrological Decade and was U.S. representative on the Working Group for Education and Training of the International Hydrological Decade for the duration of the Decade. He was instrumental in the preparation of several books and manuals prepared by the working group and published by UNESCO. He was a member of the NSF sponsored National Committee for Fluid Mechanics Films.

R. K. Ritchie
& ASSOCIATES

Marinas & Campground Consultants

Biographical Sketch

Rod Ritchie has been active in the marina and campground world for five years. He presently has established his own consulting firm. Prior to this he managed the largest concession operation in the state of California.

Mr. Ritchie has earned, over the years, a respected reputation in the profession of marina management. Presently he is on retainer with several different corporations as an advisor in the marina field. Design and operations are the areas of particular interest for he and his staff.

Mr. Ritchie has a Business Administration background and has lectured on Recreation as a profession at various colleges and universities. He is also active in professional and civic work.

California Marina Recreation Association
Past President, now on Advisory Board

California Trailer Park Association
Advisory Board

Chico State University
Recreation Department Lecturer

Oroville Rotary Club
Past Director

78 N. LODGEVIEW DR. • OROVILLE, CA. 95965 • 916/534-0168

Sprad's Boat Town
PLEASURE SQUARE MACARTHUR DRIVE
ORANGE, TEXAS 77630

Hubert R. Spradling, owner and operator of SPRAD'S BOAT TOWN retail boating stores in Beaumont and Orange, Texas. Sprad, as he is better known, entered the marine business in 1956 after making a name for himself as a water ski exhibitionist both competitively and through water ski shows. He was at that time president of the South Central Region of American Water Ski Association.

Sprad has served the Boating Trades Association of Texas as a director for the past 16 years. He is currently vice president of the Marine Retailers Association of America of which he was one of the founders and served as president for the years of 1974 and 1975.

Sprad's Boat Town was selected for the Dealer Award of the Year in 1972 by Boat & Motor Dealer Magazine.

Sprad's two retail stores employ approximately 20 people. They now retail approximately two million dollars worth of products and service annually through the 21 year old business.

RESUME

Edwin (Ed) E. Thompson II
Star Rt. 2 Box 220
New Braunfels, Texas 78130

PERSONAL:

Birthplace: Greenville, Texas
Raised in the Air Force having lived in Kansas, Florida, North Dakota, Alabama, California and Texas.
Married: Starlyn Wood

EDUCATION:

High School: Abilene Cooper High School
College: 1973 Bachelor of Business Administration
Personnel Management from North Texas State University
1977 attended Basic Marina Management course,
Texas A & M University

EXPERIENCE

While attending college worked as hot tar roofer, mason carpenter, and route salesman for 7-Up Bottling.

In January 1974, began managing Canyon Lake Marina Inc., where presently is Vice President and General Manager.

MEMBERSHIPS:

Board of Director of the Marina Association of Texas
Member of Canyon Lake Chamber of Commerce
Member of North Texas State University Alumni Association

LARRY J. URBAN
URBAN ENGINEERING
P. O. BOX 6355
CORPUS CHRISTI, TEXAS 78411

EDUCATION: BS in Civil Engineering from Texas A & M, 1959.

MILITARY: 3 years in U.S. Corps of Engineers, 1959 thru 1961. Stationed at Ft. Belvoir, Va., Korea, Ft. Hood, Texas.

EXPERIENCE RECORD: Worked four years for consulting engineering firm, 1961 to 1965. April 1, 1965 began private practice.

Have been in charge of planning, design and engineering of approximately 5,000 acres of various kinds of water oriented land development.

BOAT & MOTOR DEALER
350 Linden Ave., Wilmette, Ill. 60091 • (312) 251-8301

George Van Zevern has spent a lifetime in the trade paper publishing business. After attending Peabody College, Wright College and Roosevelt University, he took his first job as production editor for People & Places magazine, and external house organ for Chrysler Automotive Dealers. In 1950, moving to American Lumberman Magazine, George spent the next fifteen years working with lumber dealers who were changing their business practices to take advantage of the "do-it-yourself" trends, by expanding showrooms and actively looking for consumer business.

When it became obvious that the marine dealer needed the same type of trade paper communication, George became co-owner of BOAT & MOTOR DEALER magazine in the summer of 1966. Active in association work at the national level of both Boating Industry Association and The National Association of Engine & Boat Manufacturers, he is a constant traveler and speaker, encouraging manufacturers, distributors and dealers to close ranks to improve the industry profit picture.

Matt Kaufman will be traveling with me to Houston. We should arrive about noon time and drive to your Ramada Inn. If you need any more information or have a change of plans here is my schedule.

Miami Boat Show - February 16-20 - Racquet Club, Miami, FL.
On to Houston Monday, A.M. - February 20, 1977

Best personal wishes,

BOAT & MOTOR DEALER

George Van Zevern
Editor & Publisher

GVZ/aw

A
COURSE OF INSTRUCTION
IN
BASIC MARINA MANAGEMENT

BASIC MARINA MANAGEMENT COURSE

Texas A&M University

February 20-24, 1978

AGENDA

9:30 a.m.	Introductions and Orientation Perry J Shepard, Head Industrial Economics Research Division James R. Bradley, Director Office of Continuing Education Dr. Robert B. Abel Assistant Vice President for Marine Programs Center for Marine Resources Rick Smith, President Marina Association of Texas
10:00 a.m.	"The Recreational Boating Outlook for 1978" Matthew J. Kaufman, Administrator Boating Industry Associations Chicago, Illinois
10:45 a.m.	COFFEE BREAK
11:00 a.m.	"The Changing Scene--The Modern Marina" George Van Zevern, Editor Boat and Motor Dealer Wilmette, Illinois
11.45 a.m.	LUNCH ON YOUR OWN

WHERE IS OUR MARKET GOING?

BY M.J. Kaufman, President
BOATING INDUSTRY ASSOCIATIONS

There are many in our industry who feel that 1977 was a good year - but not nearly as good as they had anticipated when it started. Others feel it wasn't so good. And still others worry about future growth trends. Whether you fall into any of these categories, and whether you are mostly optimistic or mostly pessimistic about the future of our industry, you will at least share the desire that we all have for a strong growth industry in the future.

To devise programs to stimulate greater demand for our product, we have to first analyze our present circumstance in the market place. The following discussion is a collection of opinions from many people representing many different types of products in our industry as well as an analysis of statistical data felt to be relevant.

TREND LINES

First of all, what do the trend lines show? Outboard motors were down 1.3% in units during the 1977 model year, but up 16.5% in value. Outboard boats were down 1.5% in units during the 1977 model year, but up 9.1% in value. Inboard boats were up 3% in units and 22.2% in value for the model year. Inboard/outdrive boats were up 8.5% in units and 20.7% in value for the year.

Sailboats were up 5.8% in units and up 24.9% in value for the year. Canoes were up 5.3% in units and 3.4% in value for the year.

Boat trailers were down 3.9% in units, but up 2.7% in value for the year.

There are several interesting facts to note from these figures. First of all, unit gains in most categories were moderate to good, but dollar value increases were medium to large. Where this occurs, it suggests substantial price increases and that our customers were buying more expensive equipment.

Another notable factor is that outboard boats and motors, which together account for the biggest segment of the industry in dollars, were down slightly. Stern-drives, on the other hand, were up very handsomely in units and in value as were sailboats.

These figures suggest the further fact that our market is not a monolithic structure but a series of submarkets, each with its own attractions and problems. This is an important fact to be noted. Perhaps in the past we have sold the concept of "boating" as though it were gravel when, in fact, we are selling a non-homogeneous group of products and activities.

Is boating reaching the point where we have a saturated market? The answer can be yes or no, depending on upon whether we find our market growth penned in on all sides by various obstacles, or whether those obstacles are lacking or can be removed in one or more directions.

WHY DON'T MORE PEOPLE BUY BOATS?

1.) Is it because consumers don't have the money? The answer would appear to be no. In 1976 the real income (adjusted for inflation) of the average U.S. Family was within 4% of its all-time high in 1973 -- which was the all-time high watermark for the recreational marine industry. In 1976 the median income of all U.S. Families was $14,960, an increase in real income of 3% after two years of decrease in real income totalling 7%. The 1976 real income for the average family is only $480 below the record $15,437 set in 1973. One can only conclude that the income -- money to buy boats -- is there.

2.) Are consumers over-extended financially? By mid-1977 consumer installment credit totaled $199 billion which is more than 15% of personal disposable income. Some analysts suggest that this credit level may be too high and that consumers will pull in their horns on purchasing to bring it down again. During the whole period since the Second World War, the rapid expansion of consumer credit has been viewed with alarm by many; during that period, credit has grown 40-fold.

But when installment credit is compared to consumer assets and other liabilities, and compared with the lengthening maturity of installment debt, the conclusion to be made is that consumers are not over-extended.

Between 1960 and 1970 consumer installment credit extensions rose from 14.3% of disposable income to 16.4%. The peak was 18.2% in early 1973, but the proportion dropped to a low of about 14.5% at the bottom of the 1975 recession. By mid-1977 the figure climbed back up to 16.7%. It can be seen, therefore, that installment credit extensions have varied in relation to disposable income within a relatively narrow range over the last 15 years.

Similarly, consumer installment credit ranged between 8.5% and 9% of consumers' physical assets (excluding land) in the last decade. Although consumer credit may have risen slightly in relation to the consumers' net worth figures tend to be understated by excluding pensions assets, inflation gains on assets, capital gains on housing, and by totally excluding the value of land holdings.

The growth in consumer installment debt most recently suggests a lengthening in the average term of consumer credit. A longer maturity of consumer debt simply reduces the burden of payments on any given amount of debt so that greater debt may be undertaken. For example, in 1976 only 13% of all new car installment loans were for a term of greater than 42 months; a year later this proportion had grown almost double to 25%. Thus, the net amount of credit outstanding will grow fairly sharply as consumers adjust to longer but smaller repayment schedules even with no change in credit demand.

More liberal consumer credit terms involve additional costs in the form of larger interests payments over the total life of the loan, and possibly even higher interest rates. Many consumers view this as a small price to pay, however, because they can achieve a higher standard of living, particularly when repayments will be made in "cheaper dollars" as a result of inflation. An expectation of future inflation increases consumer willingness to take on debt. Consumer willingness to lengthen debt maturity contains an implied

expectation of sustained income levels to meet longer debt service terms. This is an indirect measure of positive consumer confidence in the national economy.

3.) Have we priced our product out of the market? There is no doubt that the costs of hull materials and engines have risen substantially in the last 3 or 4 years. However, the cost of living has risen spectacularly during the same period and so have wages.

In terms of constant dollars over the last 40 years - that is, dollars adjusted for inflation - the average price for a 10 horsepower outboard increased by 11% over those 40 years. Wages, however, also in constant dollars, increased by 129%. The average retail price of a 35-horsepower outboard decreased by 18%. For many decades boating was a great bargain, and getting better every year. The price of our product has not increased significantly more than the cost of living or than general wage increases.

Having said this, however, a distortion should be noted. Recreational equipment such as boats, are purchased with discretionary dollars - that is, dollars left over after necessities such as food and housing are taken out. Higher income people have a greater portion of their income available for discretionary purposes since there is a limit to how high on the hog one can eat or live before one is inclined to branch out into other modes of discretionary spending. During inflationary times, even if higher income people do not have a compensating income growth, they have a bigger discretionary income cushion, so to speak, before they have to reduce their lifestyle. In contrast, lower income people have very little discretionary income even in the best of times, and this discretionary income can be quickly eaten up by rapid cost of living increases if not compensated for by equally rapid wage gains.

And this is what has happened in many instances during the recessionary period which began in late 1973: lower income people have enjoyed less discretionary income than before but higher income people, while perhaps having their discretionary income cut, still were left with some discretionary income because they had more to start with.

For those who sell discretionary income products, this often meant that sales at the lower end of the line suffered or the whole line suffered if at the lower price range. This may account for the continued strength of higher priced consumer goods of various types and various price ranges that consistently appeal to the higher income levels whereas the lower priced items - including boating equipment - have not been doing so well.

4.) What are the consumers' attitudes? What the consumer thinks about the economy, his own financial circumstance, his own lifestyle, etc. has a very heavy bearing on whether or not he will buy a given product. There are several prosperous organizations which do nothing more than sample and analyze consumer attitudes on a periodic basis. Besides providing the current reading and trend lines, the consumer survey representatives spend a lot of time defending the scientific methods and economic importance of their work. While it would be unfair to say that such surveys are superficial, they do tend to reflect only short-term attitudes which can and do change very rapidly and they do not offer much when it comes to predicting future trends.

Thus, it is very difficult to develop a meaningful projection of consumer

attitudes. Necessarily, a subjective analysis by insightful people is as good as the statistics from compiled questionnaires.

Here are some subjective views on consumer attitudes:

The political and economic dislocations brought about by the agony of the Viet Nam war shook many American beliefs about the nature, strength, and future of our country. The Watergate debacle, oil embargo, and recession further eroded American confidence in our political system, our economic strength, and our ability to control our own national destiny. For the time being, at least, these upheavals and many minor incidents have produced a fundamental unease in the nation. This, in turn, has produced a reaction of caution and uncertainty which is very fundamental and which will take a few years of favorable news and developments to wear off.

Yet, every night in the evening newspaper or on TV there are further goblins leaping up to scare us again and again - possible oil cut offs from the Middle East, or giving up control of the Panama Canal, or the latest economic statistics, or declining farm income, but food prices are up, etc. This constant drumming of bad news and potential disaster does not, obviously alter the depressed mood of the nation. Nor do hopeful statements of the Carter Administration offer salvation - we are now too cynical to believe in any politician - even if he preaches the gospel truth with every breath.

All of this means that, the "happy days are here again" mentality which fuels boomtimes is not yet among us. When will it arrive? How can we make it return?

Given a reasonable period of economic and political stability, in the nation and in the world, it could return in a few years. A big part of this must be a necessary taking of stock by Americans of their individual circumstances.

In fact, most Americans are better off materially than they ever were, and uniquely blessed in the history of the world. We just haven't realized this fact yet. When we do realize it, as a nation, it will overcome the gloom and doom and may ultimately restore our confidence and make us cynical about the doomsayer as much as we are now about the promises of politicians. It would seem that all merchandisers of consumer goods need to foster this positive attitude almost as a matter of institutional advertising of the American system and its blessings, alongside advertising their own products.

5.) Is there something wrong with our product? Our products are better than they have ever been in terms of reliability, value, maintenance, safety, etc.

What's wrong with the product is what has always been a limiting factor on our market: Boating takes time and money. Boating is not something you do to kill an hour - it usually takes at least a morning or an afternoon. For most people, it is not like taking a bowling ball or golf clubs out of the closet, or the bike out of the garage; the preparation to go boating is more elaborate. The time, money, and preparation factors are not insurmountable obstacles to further growth, but must certainly be recognized and, to the extent possible, minimized. Improvements in these areas such as better consumer financing, more convenient boating facilities, etc. should be well publicized to the consumer.

6.) Is it because there are not enough places to store them, moor them, or launch them? There is no doubt that the availability of boating facilities and access to recreational water increases the ease and attractiveness of boating. There is no question that, in many areas of the country, boating is neither easy nor attractive since good facilities do not exist.

When we talk of facilities, we should not limit our thinking to marinas or launching ramps. In many instances the lack of facilities is a simple question of no place to store the boat if the boat owner lives in an apartment complex or in a residential area where there are restrictions on parking of recreational vehicles.

Finally, there are increasing restrictions upon development of shoreline areas for any use because of the local concerns and influence of environmentalists and preservationists. The red tape and costs involved insecuring requisite permits from government agencies discourages much development of shoreline areas for recreation, even where it is in theory, permitted.

7.) Is it because there are other attractions for leisure time and discretionary money? The answer here is a very definite yes. Think back 10 or 15 years ago and you will see that many outdoor recreations now commonly enjoyed - along with the often elaborate and expensive equipment they require - either didn't exist or were in their infancy and offered no significant competition to boating.

For example, the recreational vehicle industry in terms of campers, motor homes, etc. was a fraction of its present size. The van and 4-wheel drive vehicles were largely limited to construction sites. Back in 1960, there were only 575,000 motorcycles registered in the country. By 1965 it had grown to 1.4 million, and by 1976 to 5.1 million. The motorcycle industry estimates sales and services to be $4.7 billion in 1976 with $1.3 billion coming from the sale of new motorcycles with the average unit costing $1,100.

Such comparisons also could be made with snowmobiles, tennis, winter ski vacations, etc. in terms of cost and competition, we didn't have 10 or 15 years ago.

There is no doubt that the one of biggest obstacle to the growth of boating is the competition from other types of leisure activities, including particularly those involving other types of recreational vehicles. It is competition which we have not adequately recognized, and therefore, not challenged. We continue to sell marine products in about the same way we did 10 or 15 years ago, when such heavy competition for discretionary dollars and leisure time did not exist.

8.) Is it because we are aiming at the wrong people? To an extent, the answer is "Yes". There has been a change in the type of people who buy boats and in the type of boats people buy. This change has not been adequately recognized by those who sell boats, although the change is documented by those who develop their own trend lines from Marex statistical data.

For example, in 1965, skilled and semi-skilled workers (generally, blue collar workers) accounted for almost half the market of boating products.

By 1976, they accounted for only 1/3. Other changes to be noted include the almost dramatic increase in the number of retired people who buy boats now, accounting for more than 20% of all purchases. Retired people - unlike a still fairly popular concept - are neither old nor poor. Many are retired military or union people in their fifties who have good incomes from pensions, often supplemented by part-time work. We do not, in our industry, pitch our product toward retired people who have both the time and money required to go boating.

In addition to these factors, there are other social changes occurring which we have not recognized. In the last several decades, the number of working wives has increased dramatically - as has their influence over how family money is spent. More often than not, the second income provides the discretionary income used to buy such things as vacations and leisure entertainment products. We do not pitch our product toward the discretionary second income originating with working wives.

Another factor we do not seem to consider adequately is the growing inflationary expectations - particularly among younger people who have known only the highly inflationary times of recent years. Simply, the inflationary expectation suggests that a person should buy now, because the price will go up later. Some merchandisers actively push this concept including homebuilders and, to a lesser extent, auto dealers. We don't seem to in our industry. Moreover, the related concept that inflation will mean the boat purchased today will hold or increase its value tomorrow - a very common and easily provable fact - is not used to merchandise boating as a good investment. The "good investment" approach would not only run with the tide of inflationary expectations, but also counter latent guilt feelings about buying a big ticket pleasure item.

WHY DON'T MORE PEOPLE BUY BOATS: SUMMARY

The statistics do not suggest that consumers lack income to purchase our products although inflation has eroded the discretionary income at the lower end of the economic scale more than at the upper end. That factor may account for the lower end of some lines doing poorly as compared to the upper end of the line.

It does not appear that people are over-extended on installment debt - they are about the same as they have been for more than a decade in terms of debt/disposable income and debt/asset ratios.

While our product is not the ever-increasing bargain it has been for decades, price increases in recent years have been roughly the same as inflationary price increases generally. This generality, however, may not apply to specific types or brands nor be accurate in terms of describing the problems of the lower end of the line which traditionally had appealed to those with smaller discretionary income.

Consumer buying attitudes are not those of boom times and are probably unduly pessimistic - a factor reinforced by the constant drumming of bad news in the media. Overall, however, a personal inventory by consumers of their material blessings should increase buying confidence. This will occur with a period of political and economic stability.

Our products are better than they have ever been in terms of reliability, value, maintenance and safety. The biggest problems with our product are the inherent factors that they require time and money.

There are problems with the storage and access to water for our product.

Our product now competes with scores of other attractions for leisure time and discretionary money which did not exist 10 or 15 years ago. It does not appear that our industry has adequately counter-attacked against these new types of leisure spending and activity.

The types of people who purchase our product have changed in age and occupation. We seem not to have recognized these changes in our marketing orientation.

CONCLUSIONS

Looking ahead to 1978, what can we expect to happen and what can we do to insure the continued healthy growth of our business?

Economists and other authorities predict that business activity in the U.S. will improve during the first half of 1978, with a slow-down in the Fall. Overall, the experts are predicting that 1978 will show an increase of 4 to 5% in our Gross National product, an inflation rate of about 6% and a slight decrease in unemployment -- to about 6%.

What all this adds up to is that the boating industry can expect that 1978 will be somewhat better than 1977. This would mean an overall increase in sales of about 5 to 7% in units and 10 to 12% in terms of dollars.

As one of our Chicago dealers said, "And that ain't bad!"

However, we cannot afford to sit back and hope that we will enjoy the fruits of a moderately expanding economy. We -- the associations, manufacturers, distributors and dealers -- must become more active and more aggressive in selling boating as a recreational activity that provides more fun per dollar for America's families than any other recreational activity.

We must make a concerted effort to broaden our market -- to reach families who have never owned a boat or never even thought about buying a boat, and sell them on the idea that boating offers the entire family a whole new world of healthful, wholesome recreation.

We must do a better job of competing for the discretionary dollar by selling boating to retired persons, to young families, to women and to the single persons who are becoming an entirely new marketing frontier.

We must dispel the idea that boating is a costly, energy-consuming activity reserved for the well-to-do.

And we must do everything possible to make good on our promises by providing our customers with better products and the better service than they can find anywhere else.

If we do all this, we can turn 1978 from a "good" year into a great year for boating.

Thank you.

By - George Van Zevern
Editor & Publisher
Boat & Motor Dealer Magazine
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The Changing Scene-The Modern Marina

At no time in modern history (post-World War II) has the need for marina development been greater while the stumbling blocks that hold back actual investment, construction or remodeling been more insurmountable. With the influx of Sea Grant funds, colleges and universities across the land have developed studies and courses like the session you are attending, designed to focus attention on this water environment, and these studies have developed new methods of using water, i.e. Floating Tire Breakwaters, Facilities Planning Coastal zone management, Legal and Permit considerations plus the latest construction techniques and materials. Our approach is very professional but the results are slow in coming.

In September of last year, NAEBM made a survey of the known marinas to develop input for industry action in planned growth. If you haven't seen the figures here they are.....

SURVEY OF MARINA'S - BY NAEBM - 6000 MARINAS & CLUBS - September 1977

PRESENT SUPPLY FOR SLIPS UP TO 25'	-	253,216	TOTAL
SLIPS - 25' to 40'	-	259,072	
SLIPS - 40' to 65'	-	76,448	
SLIPS - 65 & OVER	-	7,952	

PRESENT SUPPLY OF BOAT MOORINGS

UP TO 25'	-	39,056
25' TO 40'	-	26,928
40' TO 65'	-	11,360
65' & OVER	-	1,504

cont...

PRESENT SUPPLY OF DRY STACK STORAGE

UP TO 25'	-	58,800
25' TO 40'	-	3,504
40' TO 65'	-	
65' & OVER	-	

SLIPS ADDED IN JUST 5 YEARS

UP TO 25'	-	48,112
25' TO 40'	-	25,040
40' TO 65'	-	10,464
65' & OVER	-	1,312

NUMBER OF ACTUAL BOAT OWNERS ON WAITING LIST

ALL SIZE SLIPS	-	168,096
ALL SIZE MOORING	-	31,984
ALL DRY STACKS	-	9,360
(TRAILER STORAGE)	-	8,352

NUMBERS OF SLIPS LOST IN PAST 5 YEARS

13,327 - FOR ALL REASONS

POTENTIAL FOR ADDITIONAL MARINA SLIPS AT PRESENT SITES

AREA AVAILABLE - 422,768 TOTAL

REASONS WHY PRESENT MARINA MANAGEMENT IS NOT EXPANDING

ENVIRONMENTAL OPPOSITION	-	37.5%
LACK OF CAPITAL	-	36.1%

cont...

ZONING RESTRICTIONS	-	27.5%
LACK OF PERMITS	-	23.2%
NO DEMAND	-	4.6%
OTHER REASONS (TAXES ETC.) (AGE)	-	28.9%

MARINAS CLOSED IN PAST 5 YEARS

39.4% SOLD OUT TO ANOTHER DEVELOPMENT (REAL-ESTATE-HOMES-MOTELS)

30.9% LACK OF PROFITS-HIGH COSTS-ENVIRONMENTAL PROBLEMS.

SURVEY CONDUCTED BY NAEBM - DIRECT MAIL TO NAEBM MARINA MAILING LIST OF 7,000 IN SEPTEMBER 1977.

During an interesting industry conference this past Fall at Sea Island, GA, Gerald Bouchard, city manager of Port Huron, MI took time to elaborate on the progress his city had made in improving Port Huron's water front by using federal and state funds. His talk, "Developing More Facilities: An Approach" was an eye-opener for many industry executives who have grown accustomed to the slow pace of marina development and are satisfied with slow or no growth in marina facilities. Even as a non-boater, Gerry Bouchard recognized the importance of the water front to his town, split in two by the St. Claire River. He looked around for ways to improve the condition. Private enterprise was slowly going bankrupt in the area (I had done two case history studies of the marinas in town and found that no matter how much business they did, the expanding tax rate with the permit problems were not condusive to a thriving business) so he looked to slum clearance, downtown development, park development and a raft of other bureaucratic projects to help develop the proper procedures for Port Huron waterway improvements.

cont...

The program is not complete but Gerry was able to secure $ 5 million in funds from various government agencies and was able to increase the available slip count from 40 to over 1000 units. After building the sea walls and facilities, private enterprise runs the marina's on a profit-making basis.

While this type of city manager activity is not advocated as the downfall to private enterprise, it does give us untold opportunities in small towns and villages, and even cities facing water. We can in those cases, jump from few slips, to many thousands of slips, and they will be located where the people are, not on some lake 100 miles away from heavy population areas.

Private enterprise will probably see its greatest growth in three areas:

1. Among recreational planners and building developers who use the marina as part of a life style concept. Such as the Norwich Connecticut Marina begun this past year as a complex which includes a solar-heated office building, commercial center, 76 apartments, 216 boat slips, resturants and swimming pool. These are generally multi-million dollar programs that are funded by large companies or through bond issues. While the percentage of marina cost to the total project cost is small, the slip units will add up and help us keep pace with the growth rate of our sport. It also allows more people to enjoy the joys of a water-oriented lifestyle.
2. There is great opportunity for expansion in the remodeling, rebuilding and redoing of the facilities market. Many marina (especially those created before World War II) sites were loosely

cont....

planned, "grew like topsy" and are not as efficient in profit return as the current investment and tax rate demands. Wet slips could and should be constructed of modern materials, planned in fingers or in a design that makes maximum use of the available waters for the largest number of boats, located for easy storage and service. Combination wet storage & dry stacking could double the slip rentals without increasing land need or taxation. Many marina's in Florida, Texas and California cry for "professional modernization". In fact, without skilled ownership in the next few years they face the fate of the small corner gas station. The world will pass them by as being an inefficient investment of valuable water oriented property.

3. New waterways, impoundments, rivers, small government lakes provide opportunities for private enterprise as long as the state and federal governments realize the need for recreational developments. Each one of us in this room, should become a dedicated zealot in writing and talking to elected officials. Their investments (yours and mine also) has come back a thousand-fold in better land use, water use and high recreational use. The taxes generated return on the investment to government in a few years. These marina's generally come under the building restrictions of the Corps of Engineers, etc., but allow a good deal of latitude in slip construction materials and type of services offered.

Our industry will be hard pressed to continue its production and sales of some 600,000 boats each year if we continue to drag our feet on increased boating facilities. Launch sites are getting as scarce as slips, causing the trailerable boater the same permanent boating problems.

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The opportunity and "know-how" is available right now. We must learn to be "smarter" in our approach to filling these needs. The more professional we become, the easier it will be to work with the diverse governmental bodies that have become involved in our "sport." The Modern Marina offers a full service function to a hat full of needs. With proper planning and cooperation we can make these efforts profitable as well as essential to industry prosperity and growth...

Source materials: Boating Industry Association, 401 N. Michigan Ave., Chicago, IL 60611
National Association of Engine and Boat Manufacturers, Box 555, Grand Central Station, New York, NY.
Boat & Motor Dealer Magazine, 350 Linden Ave., Wilmette, IL 60091

DESIGN AND ENGINEERING

SALT WATER DESIGN

Larry Urban
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LESSON OUTLINE

Site Selection

- Topography
- Tides (Vertical & Horizontal)
- Winds
- Breakwaters
- Determination

Dealing With Agencies

- Federal
  - U.S. Corps of Engineers
  - Federal Insurance Administration
  - International Boundary Commission
  - National Marine Fisheries Service
  - Fish and Wildlife Service
  - EPA
- State
  - General Land Office
  - Parks and Wildlife Department
  - Highway Department
  - Governor's Office of Planning Coordination
  - Department of Water Resources
- County
  - County Engineer
  - Precinct Commissioner
  - Commissioner's Court
- Local
  - Planning & Zoning Commission
  - Department of Public Works
  - Department of Public Utilities
  - City Council

Design Considerations

- Determination of Fleet
- Depth Requirements
- Area Requirements
- Selection of Construction Materials

WAVE PROTECTION FOR MARINAS

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Prepared for Presentation
The Second Course of Instruction
in Basic Marine Management
Texas A & M University
College Station, Texas
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WAVE PROTECTION FOR MARINAS

Walter L. Moore[1] and E. Douglas Sethness,[2] Jr.

INTRODUCTION

The growth of the boating industry has been dramatic and shows no signs of slowing up. The increasing number of boats calls for the building of new marinas and the expansion of existing ones. In all marinas, there is a risk of damage to the boats and facilities from rising water, strong currents, high winds, and waves. These factors may also cause erosion and result in costly maintainance or interference with operation of the marina.

The risk of damage at the marina depends on the degree of protection provided at the site. The best and most economical protection is a site which is naturally well protected by surrounding land masses and has a narrow curved channel to provide access to the sheltered area. In most lakes and harbors there are few sites with natural protection, and they are generally filled with boats. Additional space can only be provided by extending these marinas into less protected areas or creating entirely new marinas in locations in less protected areas.

Man-made works must be constructed to provide protection and reduce the risk of damage to the marina and its contents. However, the cost must be reasonable in relation to value of the risk reduction. The cost of harbor protection is a boating cost which has not been well recognized in the past but one which must be provided for in the future. Methods of evaluating this cost have not yet been properly developed, but as better means of evaluating it become available, the cost of harbor protection must be incorporated into slip rental rates.

Although the hazards mentioned at the outset (rising water, currents, high wind, and waves) may vary in importance at a specific site, the most common causes of damage are wind and waves. This paper is primarily concerned with the reduction of hazardous conditions caused by waves.

METHODS FOR WAVE PROTECTION

A man-made structure which protects a designated area from wave action is called a breakwater although it may be built in many different

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[2]Civil Engineer, Camp, Dresser and McKee, Austin, Texas

ways. Two fundamentally different types of breakwaters are fixed breakwaters and movable breakwaters.

Fixed Breakwaters

Fixed breakwaters are supported from the bottom of the body of water and are permanent in location. They require an adequate foundation for the structure built and are generally not feasible in deep water or water which fluctuates greatly in depth.

A number of fixed-type breakwaters are shown in Figure 1. Type A, the rip-rap mound or rubble mound, is commonly used for major harbor developments along a coastline and has been built in many parts of the world. The size of both the breakwater and the size of the stones increases with the severity of wave conditions striking the breakwater. Design criteria for fixed breakwaters of this type have been developed and in shallow, constant-level waters with a firm bottom they are feasible and very permanent.

Type B, the filled sheet pile breakwater, may be made with either wood, concrete or steel sheet piling and filled with sand, gravel, stone, or earth. Rip-rap is necessary at the top to prevent erosion of the filled material if waves overtop the structure, and care must also be taken to insure that the filled material cannot be washed through cracks in the sheet pile walls.

Type C is a single row of sheet piling braced with heavier piling at a suitable spacing along the length of the wall. Type D is a crib type breakwater which may be made either with timber, metal or concrete cribs filled with stone. A concrete cap is shown at the top to prevent waves from attacking the top of the structure, however, large stone could have been used in place of the concrete cap. Type E represents a sheet piling bulkhead attached to the wave side of a decked pier. This may be quite economical and under certain conditions very satisfactory.

The log boom shown as Type F is not a fixed breakwater, but a rudimentary type of floating breakwater of doubtful performance. It is generally useful only for waves of very short wavelength. Its mass and response to wave action may make it very difficult to anchor effectively.

Two additional types of breakwaters are shown in Figure 2. The pile array, A, may take many different forms consisting of one or several rows of piles with different spacings and arrangements. The piles may be of wood, concrete or steel and of a cross-sectional shape appropriate to the material. The piles must be driven into the ground far enough to resist the lateral forces applied to the upper part of the pile and allow for erosion of the ground level near the base of the piles.

The submerged barrier type of breakwater, B, uses a concept which conserves material and reduces the load on the foundation but also exhibits reduced effectiveness in stopping waves.

All of these fixed-type structures are likely to have erosion pro-

blems near the bottom on the wave side of the structure. If the protection against erosion is inadequate or the structure does not go deep enough it may be undermined and the entire structure endangered.

Moveable Breakwaters

Moveable breakwaters do not rest on the bottom but are supported by buoyant forces and are held in position by anchors or vertical piles. Moveable breakwaters have engaged man's interest for a long time and many different concepts have been proposed. A survey of concepts published by the U.S. Navy in 1971 listed more than 95 types. Many of them involved some kind of a float or pontoon. Figures 3, 4, 5 and 6 taken from the Navy report present some of these concepts. Figure 3 shows various shapes of pontoons. Figure 4 shows a variation of the log pontoon (bundle) and the idea of simulating a beach on the top of the pontoon. Figure 5 shows some more complex shapes, and Figure 6 shows some unusual arrangements incorporating a beach concept and another variation of the log raft. Other types are the horizontal plate, the tethered spheres, and the shallow open box.

Two types which have received considerable attention recently are the flexible membrane or flexible raft and the offset reflecting surfaces breakwaters. Probably the most common flexible raft breakwater is the one made from tying or bolting together old tires. Several different configurations have been proposed for this type of breakwater, a photograph of which is shown in Figure 7. Being made of old tires, this breakwater is generally unsightly. The offset reflecting surfaces breakwater shown in Figure 8, is based on a simple principle that has not been used in any of the other floating breakwaters. The structure is so arranged that wave forces from one part of the wave act to oppose the forces from adjacent parts of the wave. The wave is made to work against itself and to partially balance the forces acting on the structure.

Each basic type of breakwater, the fixed type and the moveable type has certain limitations and certain advantages. The following are limitations of the fixed type breakwater:

1) Excessive cost in deep water.
2) Not feasible where large changes in water level occur.
3) Foundation may be a problem if the material at the bottom of the lake will not support the heavy weight of the structure.
4) Vulnerable to wave generated erosion at the base of the structure.
5) Rock is not available or very expensive in some areas.

The advantages of the fixed type breakwater are given below:

1) A structure made from rock has long life and low maintenance.
2) The structure provides positive protection.
3) It has considerable reserve capacity to withstand waves larger than expected.
4) If a failure occurs, it is likely to be localized and enlarge gradually leaving a large part of the structure intact.

For the moveable type breakwater, the limitations are listed below:

1) The anchors and anchor lines must be adequate and this may be a problem in some lake bottom situations.
2) Generally less desireable for use in shallow water.
3) Has a small reserve capacity for waves larger than anticipated.
4) Its life is limited if made of wood or steel and may require maintenance.

Advantages of the moveable type breakwater are listed as follows:

1) Economical in the use of materials.
2) Free from foundation problems.
3) Free from erosion effects.
4) Causes less interference with normal currents and circulation.
5) Only practical type for deep water because cost does not increase with depth.
6) Effective where large and rapid variations in water level may occur.
7) Structure may be easily moved or transported to accommodate desired changes in position. This is a very important factor for a marina which may be need to expand either offshore or along the shore.

COMMENTS ON COST

Only general comments can be made on cost. It is impossible to be specific since costs vary with many factors. For any breakwater, fixed or moveable, the cost depends on specific site conditions. To design a breakwater for a particular marina, it is necessary to have a plan of the proposed site showing the shore line and water depth in the vicinity of the marina and the entire lake configuration to determine the length of water across which the wind may blow. It is also necessary to determine the most severe storm wind conditions to use in determining the corresponding expected wave heighth and wave length. It is also desirable to have on-the-spot observations of wind speed, wave periods and wave heights. For a moveable breakwater the cost is less sensitive to the availability and cost of materials then for a fixed breakwater. Generally the amount of material is small and the cost does not vary greatly with location. For the fixed breakwater, especially the rubble mound type, the cost may be influenced greatly by the availability of suitable materials. In some areas, the cost of large rock is extremely high and transportation is a very large part of the cost.

Data on the recent cost of rock was obtained from the Corps of Engineers in Galveston and from the Soil Conservation Service in Temple. These costs ranged from a low of $10.50 per ton to a high of $25.00 per ton. A breakwater will usually require two grades of stone, a lower cost stone for the core and a higher cost blanket stone for the outside. In a 10 ft. high rubble mound breakwater with a 10 ft. top width the cost would range from about $300 per ft. to $500 per ft. This is comparable to a cost given to

me by an engineer in Maryland who said in that area a rock breakwater in 10 ft. deep water would cost $900 per ft. For 10 ft. deep water the breakwater would probably be 12 ft. to 15 ft. high. Thus, even in relatively shallow water a cost of from $300 to $900 per ft. is reasonable.

Consideration must be given not only to the cost of a breakwater but also to the cost of being without a breakwater. At the present time it appears that methods of evaluating the cost caused by the risk of damage are not well developed. For some hazards, such as flood risk, rather satisfactory methods have been developed to place a dollar value on the risk cost. It appears that the methods used to analyse flood risk cost could be modified and extended to estimate the expected cost of wind and wave damage for various degrees of protection. At present, I believe that the cost of wave damage is much greater than many people realize. This is evidenced by the increasing difficulty of obtaining insurance for marinas. The risk of damage is an operating cost that cannot be avoided. If no wave protection is provided, the cost is paid by repairing and replacing damaged boats and facilities. It seems reasonable that the cost of wave damage can be reduced by providing adequate wave protection. It is also reasonable that the replacement and repair savings will more than pay for the cost of the protection. Thus, the cost of providing wave protection added to the reduced insurance cost should be less than the cost of the insurance without proper protection.

The risk cost of wave damage will become more important as marinas are forced to move out of the naturally well-protected areas into more exposed sites. This is a cost which cannot be avoided and which the boat owner will ultimately have to pay. It will take time and effort to evaluate the true cost of this risk and to educate the public so that this cost will be incorporated into slip rental fees.

THE OFFSET SURFACES BREAKWATER

The new principle embodied in the offset reflecting surfaces breakwater offers one of the best available prospects for providing reliable protection from wave damage at a reasonable cost. A brief discussion of this structure will be given for the benefit of those who are not familiar with the concept.

Figure 9 illustrates the action of a breakwater in reducing the size of waves. The incident wave approaching the structure is shown with a wave length (λ) and a wave height (H_i). On the protected side of the breakwater the transmitted wave height has been reduced to H_t. One of the best measures of the effectiveness of wave protection is the ratio H_t/H_i called the transmission coefficient.

Figure 10-A shows the action of a deep immoveable verticle wall in preventing the transmission of wave action. It also shows a simplified diagram of the forces acting on the wall when a wave crest is at the outer side of the wall. The result is a force acting toward the protected or still water side. Figure 10-B is a similar diagram but with the wave

trough at the wall indicating that in this case the pressure forces result in a net force away from the protected or still water side.

The offset surfaces concept involves linking two walls together as in Figure 11 so that the distance between the walls is approximately one half a wave length for the largest waves anticipated at the site. With this arrangement, when the wave crest is at the front reflecting surface, the wave trough will be at the adjacent reflecting surface, displaced one half wave length away from the approaching wave. The forces on the two adjacent surfaces always oppose one another, thus making one part of the wave work against an adjacent part. This action greatly reduces both the force on the structure and the wave induced motion of the structure.

Figure 12 shows a plot of the time variation of forces on a unit consisting of equal lengths of front-reflecting surface and rear-reflecting surface. The solid line is the force variation on the front-reflecting surface and the long dashed line the force on the rear-reflecting surface. Positive forces are plotted above the zero line and negative forces below. The result of combining these opposing forces is the force on the offset reflecting surfaces breakwater plotted as a short dashed line in Figure 12. This plot shows that the net force on the structure is very small compared to that on a plain surface and also that the force does not reverse but always acts in the direction toward the protected area. Extensive model studies on the performance of the offset surfaces breakwater have been made in the hydraulic laboratory of the University of Texas at Austin. The tests were made first with regular mechanically generated waves and then with wind generated waves which included a mixture of wave heights and wave lengths more like those that occur in nature. Figure 13 presents transmission coefficient data as a function of the ratio of wave length to offset distance. These tests show that for wave lengths less than about twice the offset distance the transmission coefficient is very low (about 0.10) and rises to about 0.50 at a wave length ratio of 3. The ratio will continue to increase as the wave length increases. Other tests have confirmed the low resultant force acting on the offset breakwater.

The first field installation of the offset surfaces breakwater of this type was at the Marshall Ford Marina on Lake Travis near Austin, Texas in July of 1975. The breakwater is 160 feet long built in 20 foot modules. The offset distance is 16 feet and the total vertical height is 8 feet with 2 1/2 feet of free board and 5 1/2 feet of penetration below the water level. The breakwater has performed very satisfactorily for 2 1/2 years and experienced several severe storms. The marina operator, Dr. Oliver Gravner, has confirmed that the structure sits very still in the water with very low forces on the anchor lines even during severe storm conditions.

The offset surfaces breakwater can be built to incorporate boat slips into the structure so it will serve as a walkway and dock as well as a breakwater. One concept for accomplishing this is shown in Figure 14.

To our knowledge the offset surfaces concept is the only one which permits a rational engineering design (based on valid engineering princi-

ples) to meet a specified set of wave conditions. The forces acting on the structure form the basis of its structural design. The degree of wave protection is more predictable for the offset surfaces breakwater than for other types of floating breakwaters; many of which have no rational basis for analysis.

Estimating the cost of a breakwater is difficult and the estimates may lead to misunderstanding. This uncertainty is caused by the many variations encountered in local conditions such as the nature of the waves, access to the site, and local construction costs. Also, inflation trends can quickly modify any set of figures. Nevertheless, a marina operator has to have some idea of the cost and, at the risk of oversimplification, I would expect the cost of a breakwater for conditions such as found on many Texas lakes to be in the neighborhood of $170 per foot measured along the line of protection. Let me emphasize again that local conditions may cause variations from this figure.

Strong points in favor of the offset surfaces breakwater may be considered as follows:

1) Welded unit construction without bolts to loosen or wear.
2) Low maintenance due to a minimum of moving parts.
3) Attractive appearance.
4) Low anchor requirements.
5) Accomodates to changing lake levels.
6) Economical for deep water conditions.
7) Not affected by scour.
8) Can be decked for recreational use.
9) Can be installed rapidly.
10) Can be moved or extended to accomodate expansion at marina.

The offset surfaces breakwater concept has been patented in the U.S. and several other countries as it is being made available through Moore and Sethness, Inc. as the WAVEGUARD™ floating breakwater.

The risk of wind and wave damage at marinas is increasing due to filling up of the best naturally protected marina sites, and the need to expand into less protected locations. This increased risk of damage adds an important cost that must be met by the boating industry. Many means of protection have been used, and these as well as some new concepts are available to meet the need for better protection. Each site must be individually studied to determine the best means of protection. No one method is best for all circumstances. Some new concepts are being developed, and they will find their place in the spectrum of wave protection devices based on their effectiveness in relation to the total cost of construction, installation, and maintenance.

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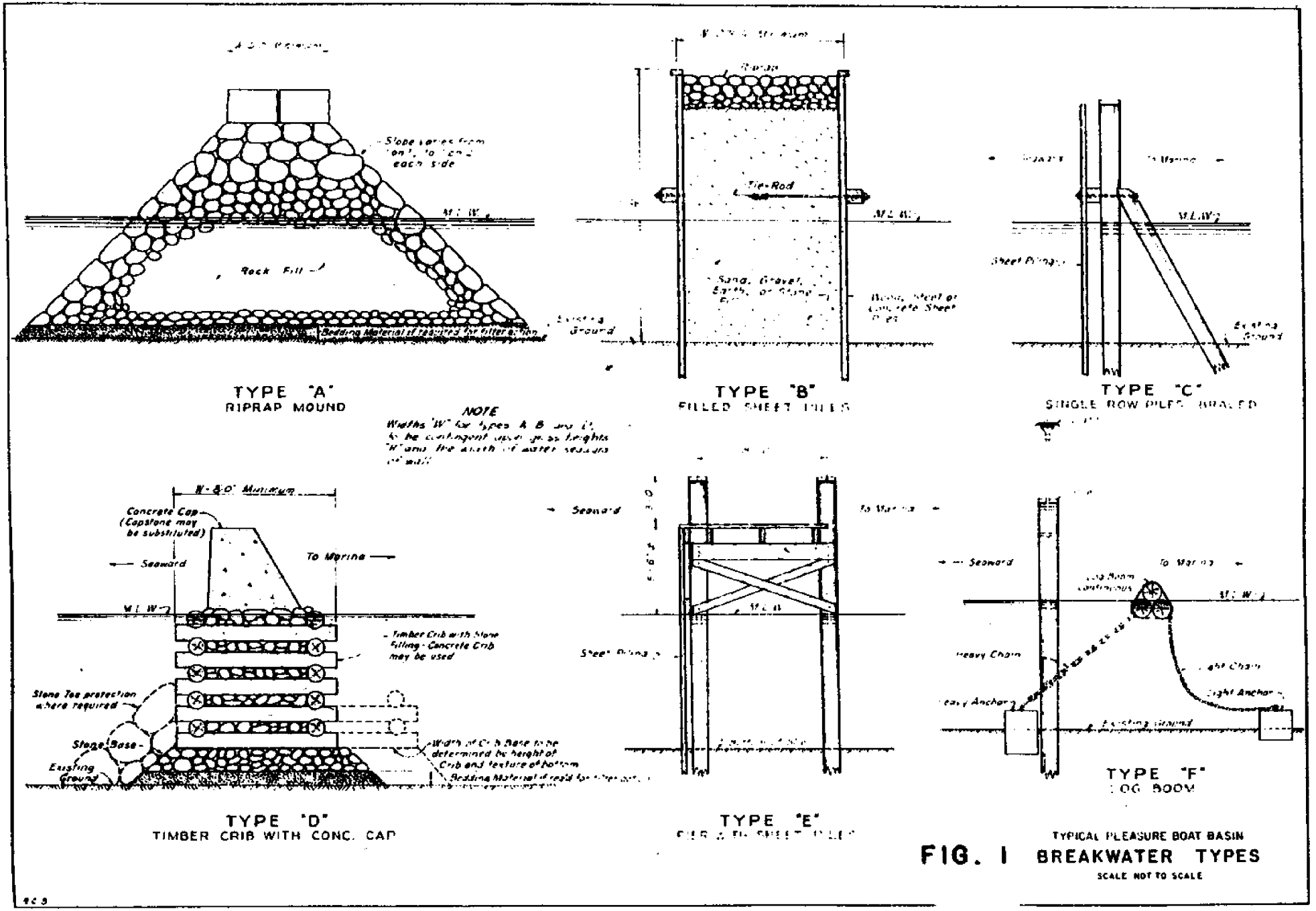
(5) Naval Civil Engineering Laboratory, Transportable Breakwaters - A Survey of Concepts, Tech. Rep. R727, Naval Facilities Engineering Command, May, 1971.

(6) Coastal Engineering Research Center, Shore Protection Planning and Design, Technical Report No. 4, Fourth Edition, 1973.

(7) Corps of Engineers, Engineering and Design - Floating Breakwaters, Engineering Technical Letter No. 1110-2-202, Office of Chief of Engineers, 1 March, 1975.

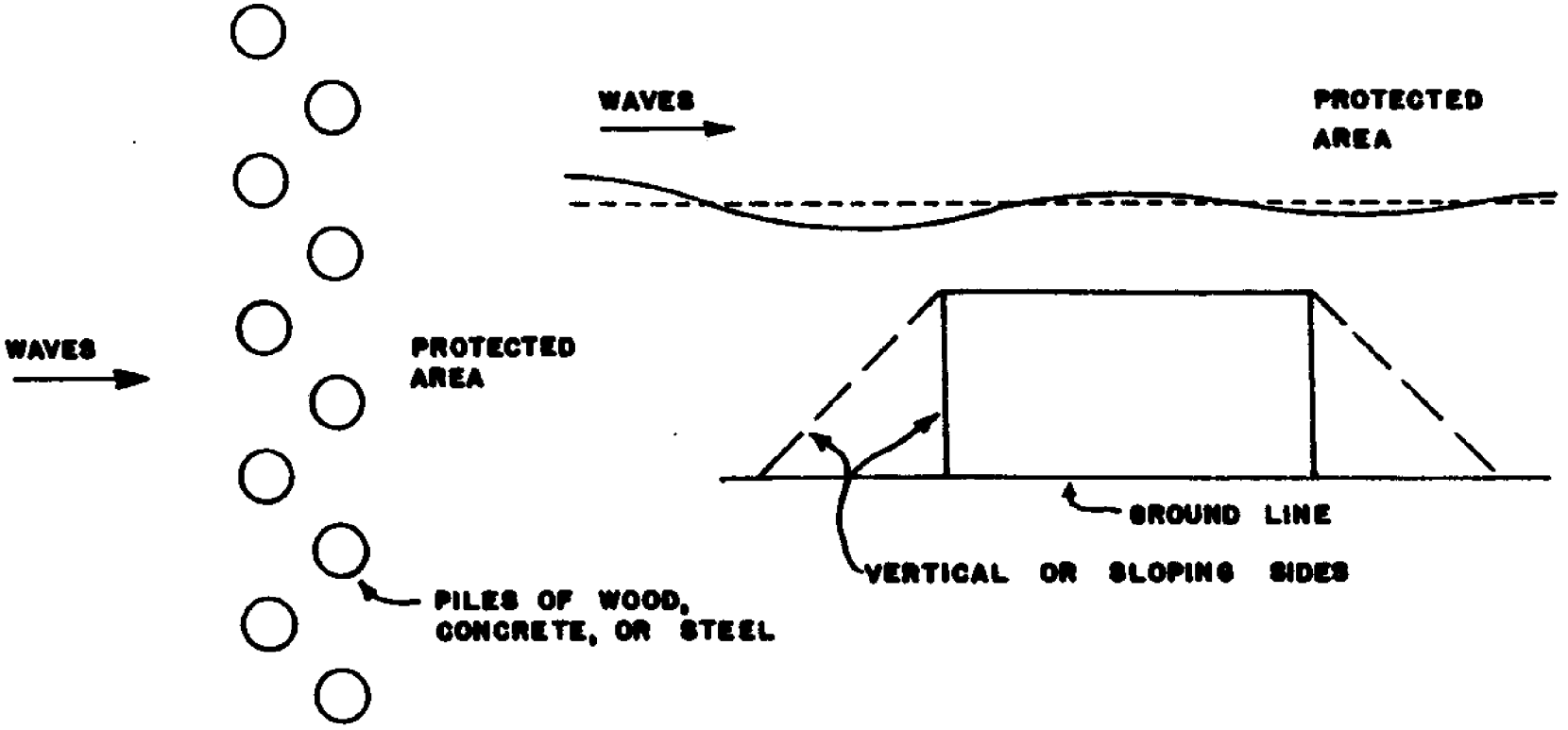
(8) Naval Civil Engineering Laboratory, The Waveguard Offset Surfaces Floating Breakwater, Tech. Memorandum No., M-42-76-16, September 1976.



TYPICAL PLEASURE BOAT BASIN

FIG. 1 BREAKWATER TYPES

SCALE NOT TO SCALE



TOP VIEW

A

PILE ARRAY

ELEVATION VIEW

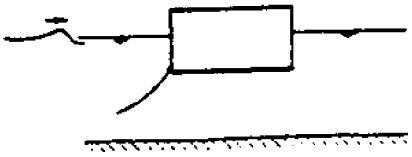
B

SUBMERGED BARRIER

FIG. 2 ADDITIONAL FIXED BREAKWATER

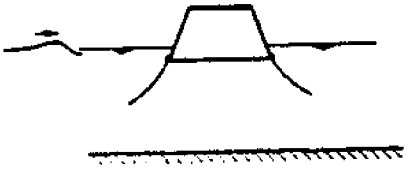
2. Compact float

a. Rectangular-prism pontoon (References 25, 28, 52, 57)



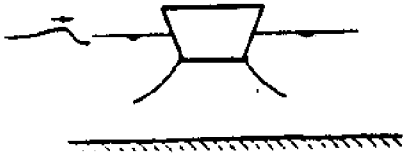
For H/L ≈ 0.06, D/d = 0.15 to 0.35, and L/d = 3 to 4:
$C_T < 0.4$ for $\lambda/E = 1.6$ to 3.4 if $\lambda/L > 0.2$ to 0.4.
Status: Laboratory measurements of C_T have been made; prototype has been built and used.

b. Trapezoidal-prism pontoon (Reference 57)



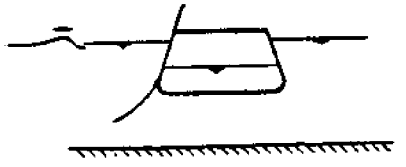
For $\lambda/E = 1.6$, $D/d = 0.12$, $H/L < 0.06$, and $L/d < 1$: $C_T < 0.3$ if $\lambda/L > 0.7$.
Status: Laboratory measurements of C_T have been made.

c. Inverted trapezoidal-prism pontoon (Reference 57)



For $\lambda/E = 1.6$, $D/d = 0.23$, $H/L < 0.06$, and $L/d < 1$: $C_T < 0.3$ if $\lambda/L > 0.8$.
With special mooring and steep waves ($H/L > 0.07$): $C_T < 0.3$ if $\lambda/L > 0.25$, $L/d < 2$.
Status: Laboratory measurements of C_T have been made.

d. Floodable hull-shaped pontoon (Reference 58)

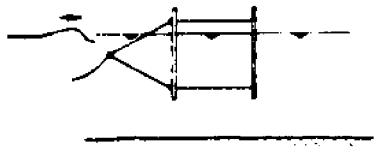


Steel hull with upper compartment airtight and lower compartment floodable.
Status: Concept only

FIG. 3 FLOATING BREAKWATER CONCEPTS

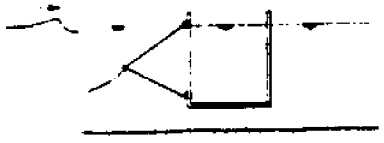
e. Open pontoon (resonant structure)

(1) Vertical resonator (Reference 59)



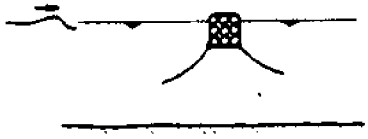
For L/d = 3 to 5 and D/d = 0.6 (optimum conditions):
$C_T \leq 0.4$ if $\lambda/L > 0.16$ ($C_T^* \leq 0.63$ for $\beta = 0.28$).
Status: Laboratory measurements of C_T have been made.

(2) Horizontal resonator (Reference 59)



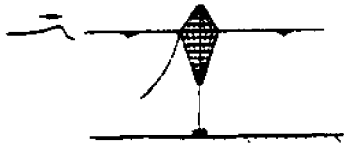
For L/d < 3, D/d = 0.86, and $\beta = 0.28$ (optimum conditions):
$C_T^* < 0.4$ if $\lambda/L > 0.23$.
Status: Laboratory measurements of C_T have been made.

f. Log bundle (Reference 55)



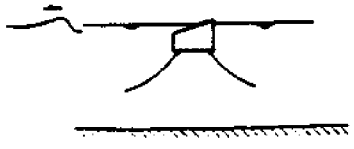
Effective if L < 15 to 30 feet and H < 2 feet.
Status: Prototype has been built and used.

g. Wooden crib (Reference 29)



Destroyed in storm.
Status: Prototype has been built and used.

h. Pontoon-beach (Reference 29)



"Favorable results."
Status: Laboratory measurements of C_T have been made.

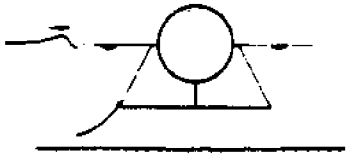
FIG. 4 FLOATING BREAKWATER CONCEPTS

3. Elaborate float (for greater inertia and/or dissipation)

a. Inertia primarily

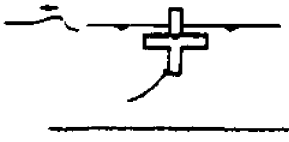
(1) Pontoon with pendant barrier (References 3, 60; 58, respectively)

Cylindrical iron tank with skirt of iron bars in timber frame.
Status: Concept only

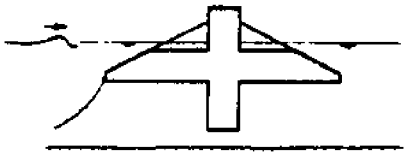


Cylindrical steel tank with solid longitudinal web and platform and transverse stiffeners.
Status: Concept only

(2) Cruciform pontoon (References 61, 29, respectively)

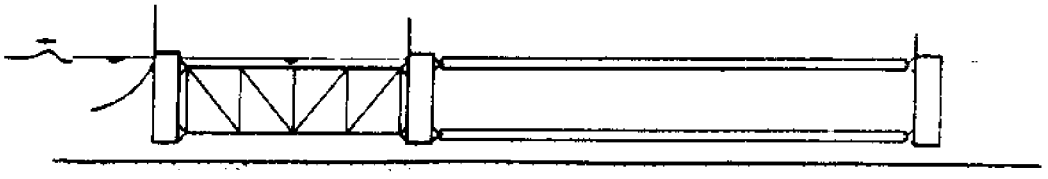


"Bombardon"; steel pontoon, water ballast.
For $L/d \approx 2.8$ and $D/d \approx 0.3$: $C_T \approx 0.25$.
Status: Field tests of structure have been made; prototype has been built and used.



Status: Concept only

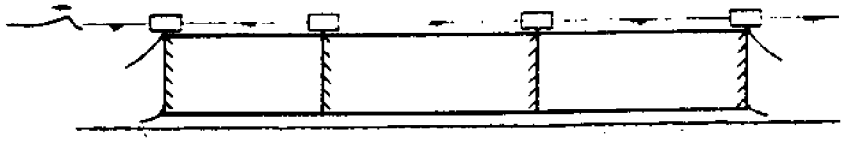
(3) Triple pontoon-bulkheads (References 62, 63)



For $D/d = 0.80$, and $L/d < 10$: $C_T < 0.3$ if $\lambda/L > 0.8$.
For $D/d = 0.60$ and $L/d < 6$: $C_T < 0.3$ if $\lambda/L > 0.9$.
Status: Laboratory measurements of C_T have been made.

FIG. 5 FLOATING BREAKWATER CONCEPTS

(8) Multiple louvered panels (References 68, 69)



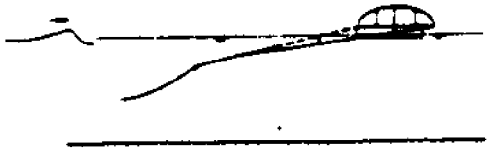
U. S. Rubber Co. long period wave trap. For a four-panel assembly with $D/d = 0.86$, $\lambda/D = 6.6$, and $L/d < 10$: $C_T < 0.2$ if $\lambda/L > 0.5$. For a three-panel assembly with $D/d = 0.91$, $\lambda/D = 4.2$, and $L/d < 10$: $C_T < 0.35$ if $\lambda/L > 0.4$.
Status: Laboratory measurements of C_T have been made; mathematical analysis for C_T has been made.

(9) Floating impervious beach (Reference 29)

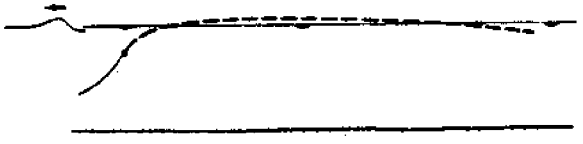
Status: Concept only

c. Dissipation primarily

(1) Floating pervious beach (References 3, 70; 28, respectively)

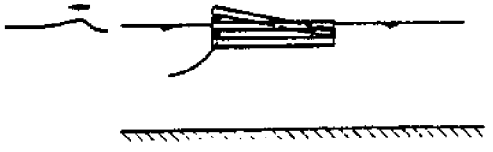


Timber frame, cast iron struts, and slatted "beach" in herringbone pattern. "Effective until moorings destroyed by corrosion."
Status: Prototype has been built and used.



Spaced slats. For $D/d = 0.25$, $\lambda/L = 1.3$, and $p = 0.25$: $C_T < 0.2$ if $L/d < 2.5$.
Status: Laboratory measurements of C_T have been made.

(2) Open log raft (Reference 55)



"Delta log raft." An improvement over log bundle and log raft. Effective if $L < 30$ feet and $H < 3$ feet.
Status: Laboratory measurements of C_T have been made.

FIG. 6 FLOATING BREAKWATER CONCEPTS

A 500' x 20' floating breakwater in Narragansett Bay.

FIG. 7 PHOTOGRAPH OF USED TIRE BREAKWATER

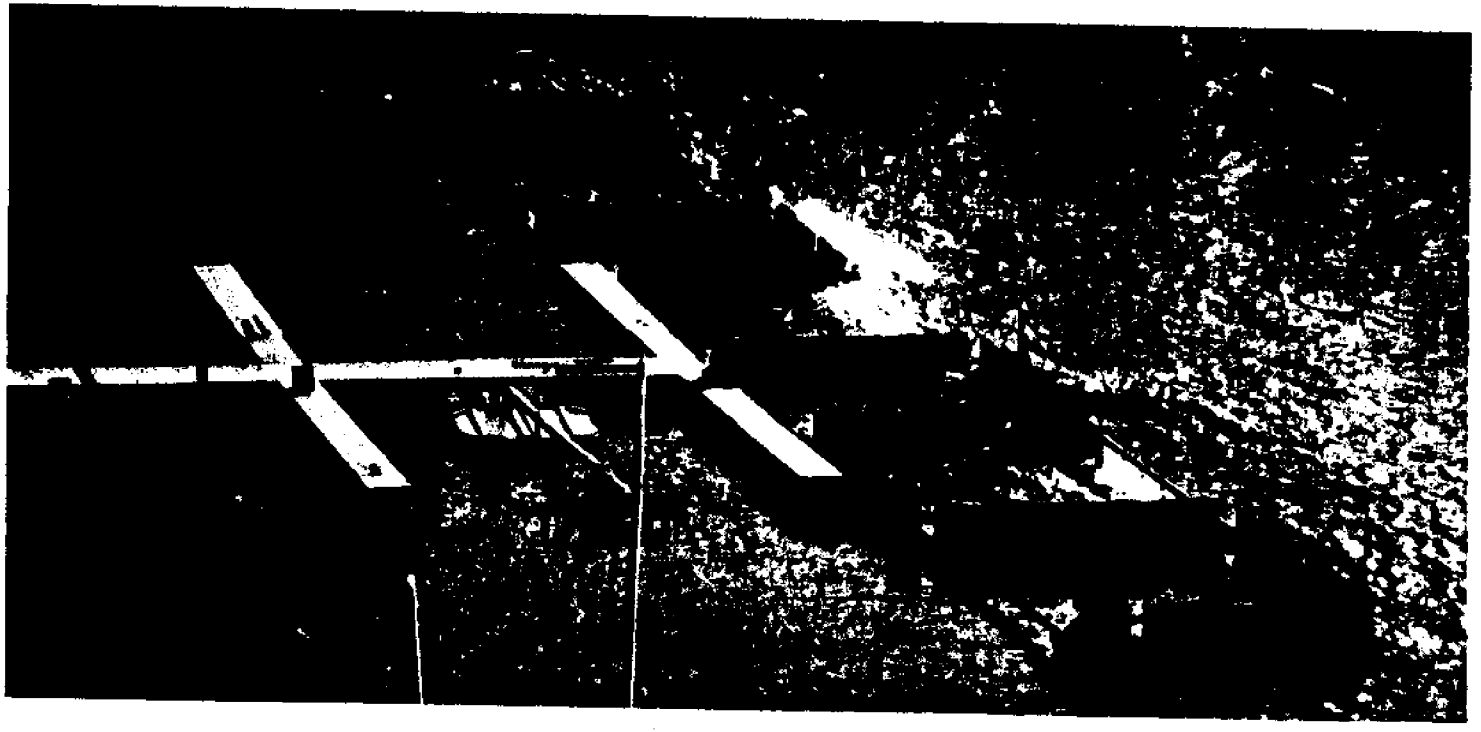


FIG. 8 PHOTOGRAPH OF OFFSET REFLECTING SURFACES BREAKWATER

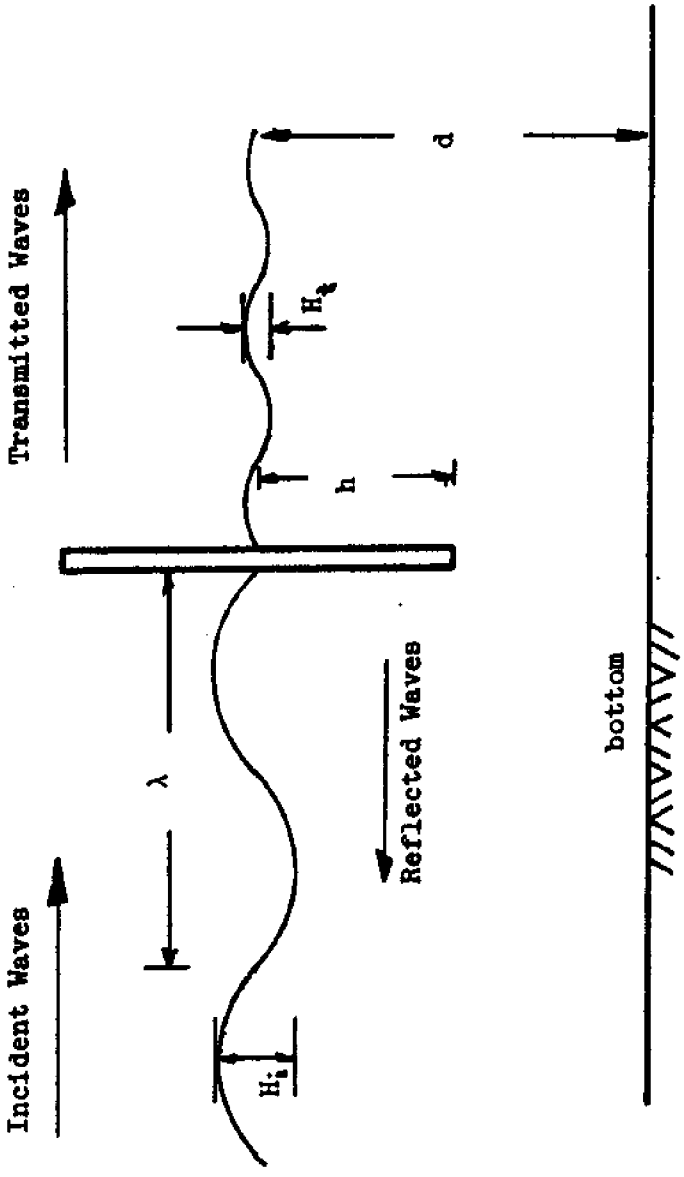


FIG. 9 WAVE REDUCTION BY A BREAKWATER

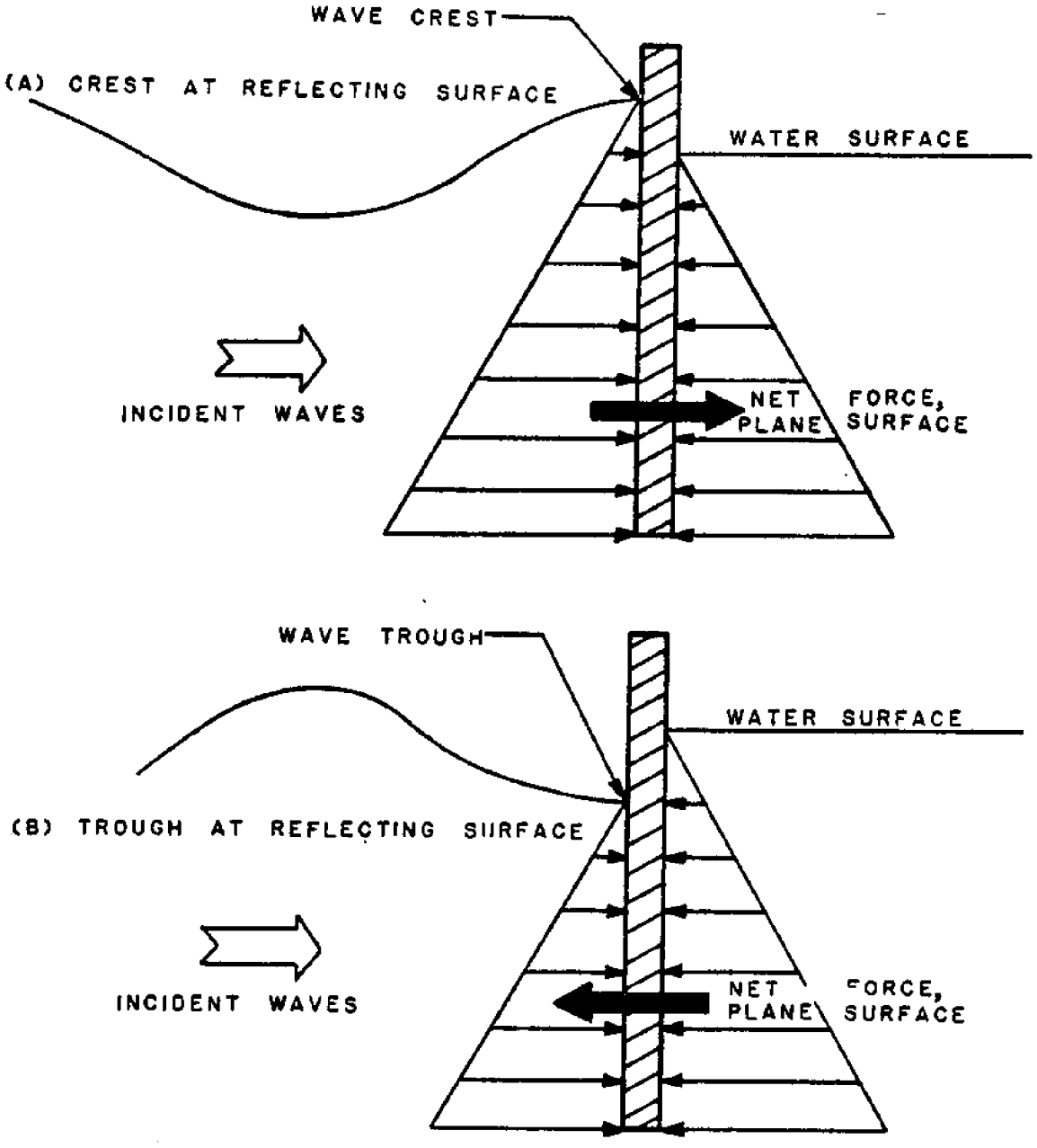
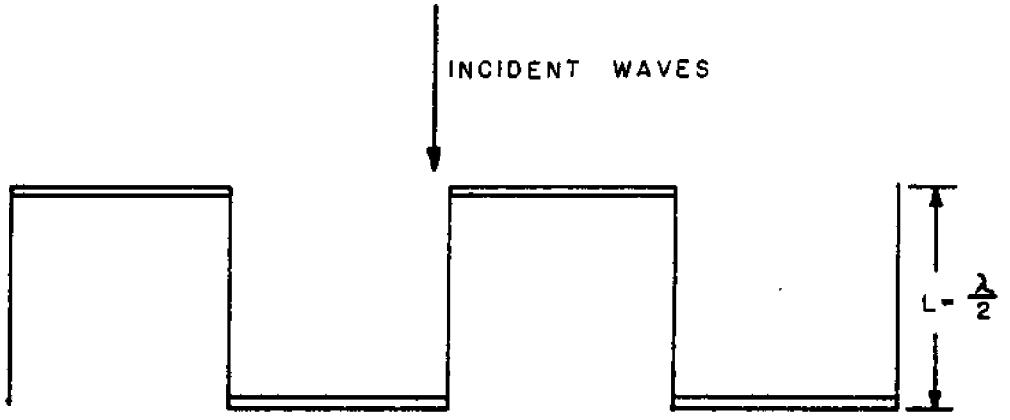
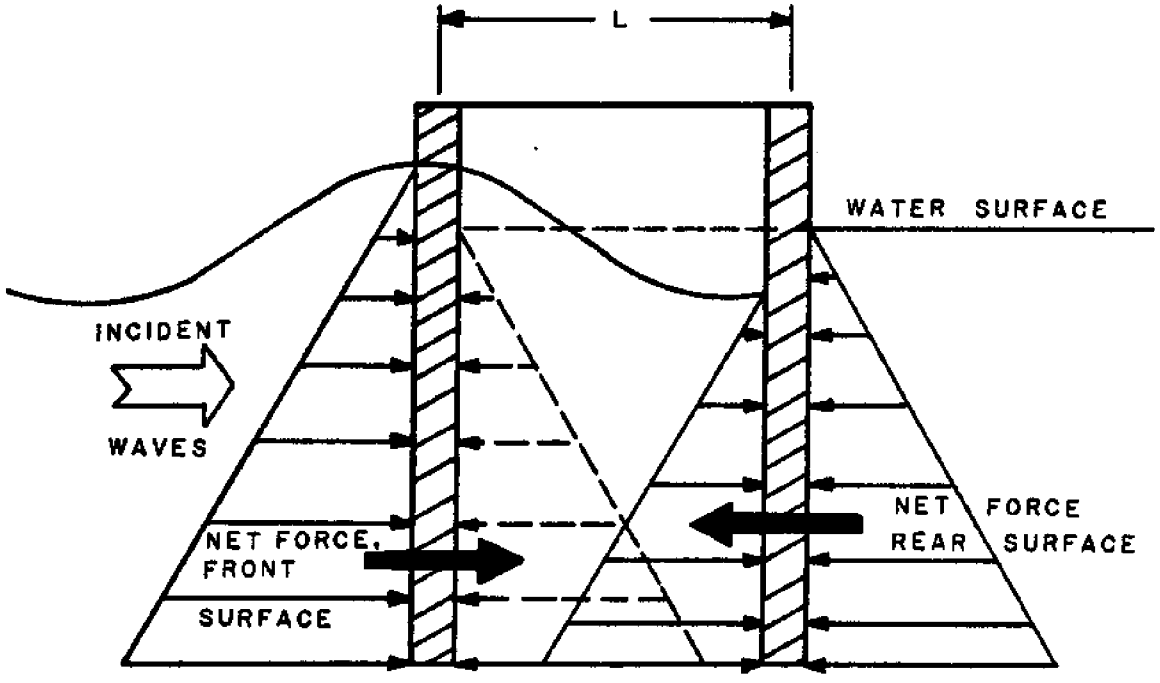


FIGURE 10
NET PRESSURE FORCES
ON A RIGID, VERTICAL WALL



(A) PLAN VIEW



(B) ELEVATION VIEW

FIGURE 11
NET PRESSURE FORCES ON OFFSET REFLECTING SURFACES

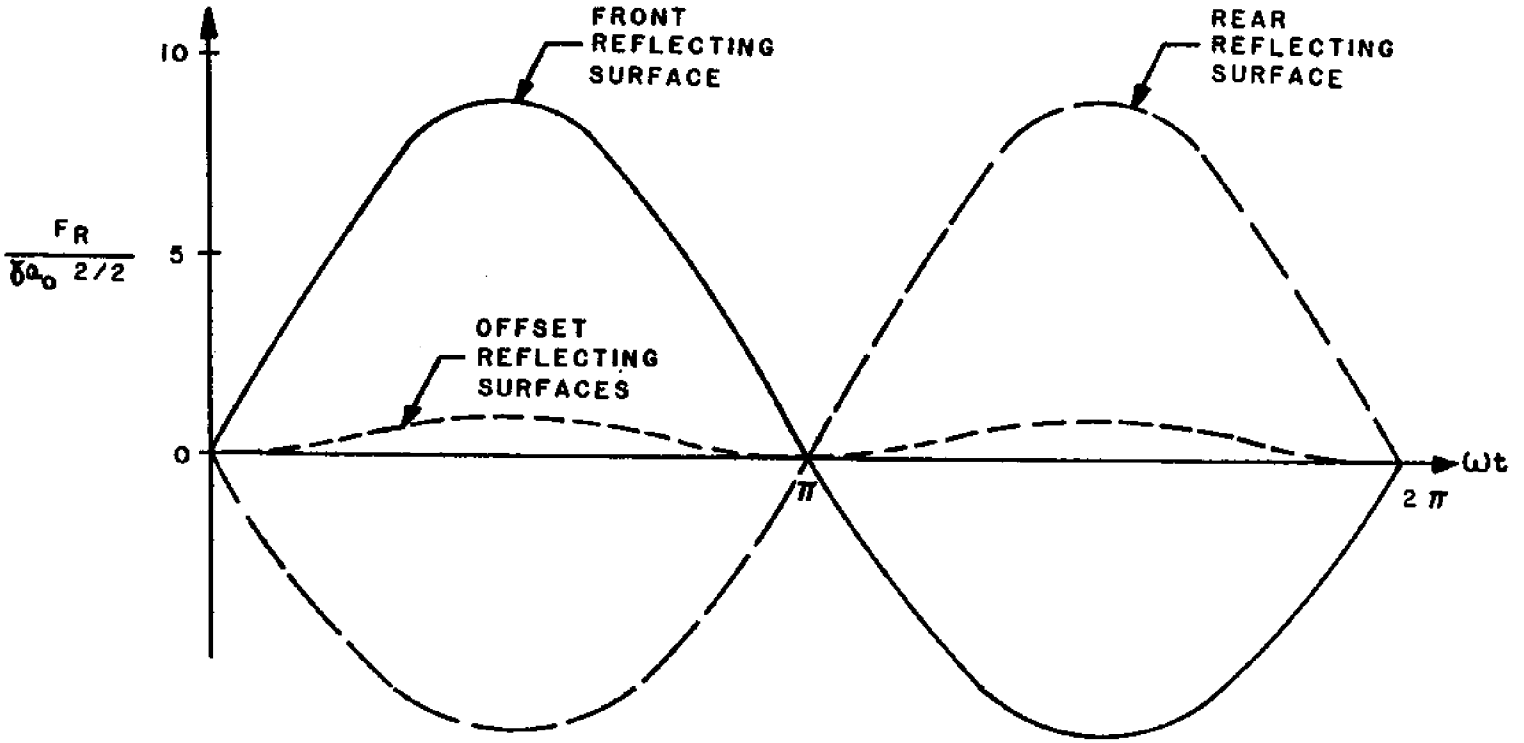


FIGURE 12
TIME VARIATION OF FORCE ON OFFSET REFLECTING SURFACES

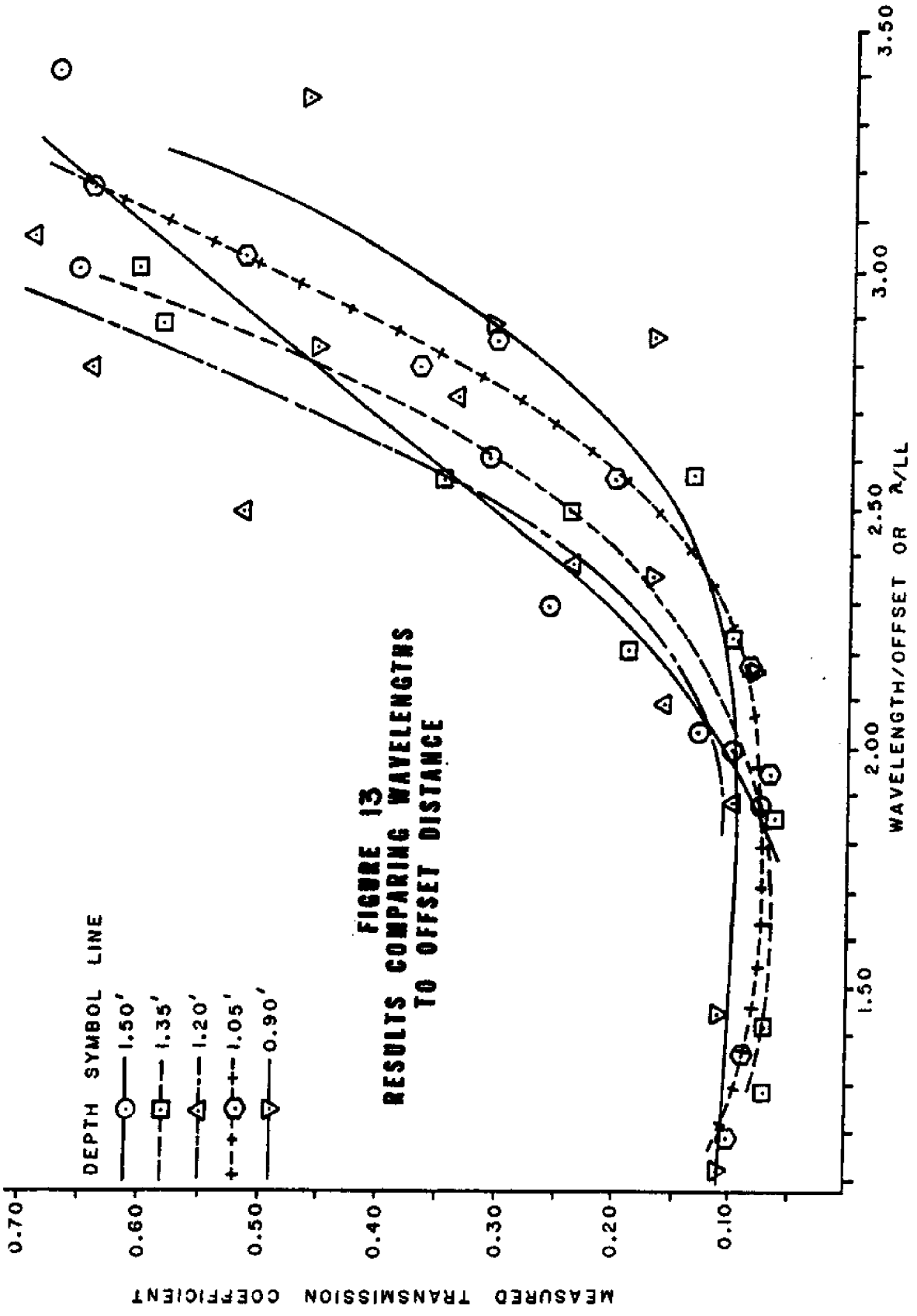


FIGURE 13
RESULTS COMPARING WAVELENGTHS TO OFFSET DISTANCE

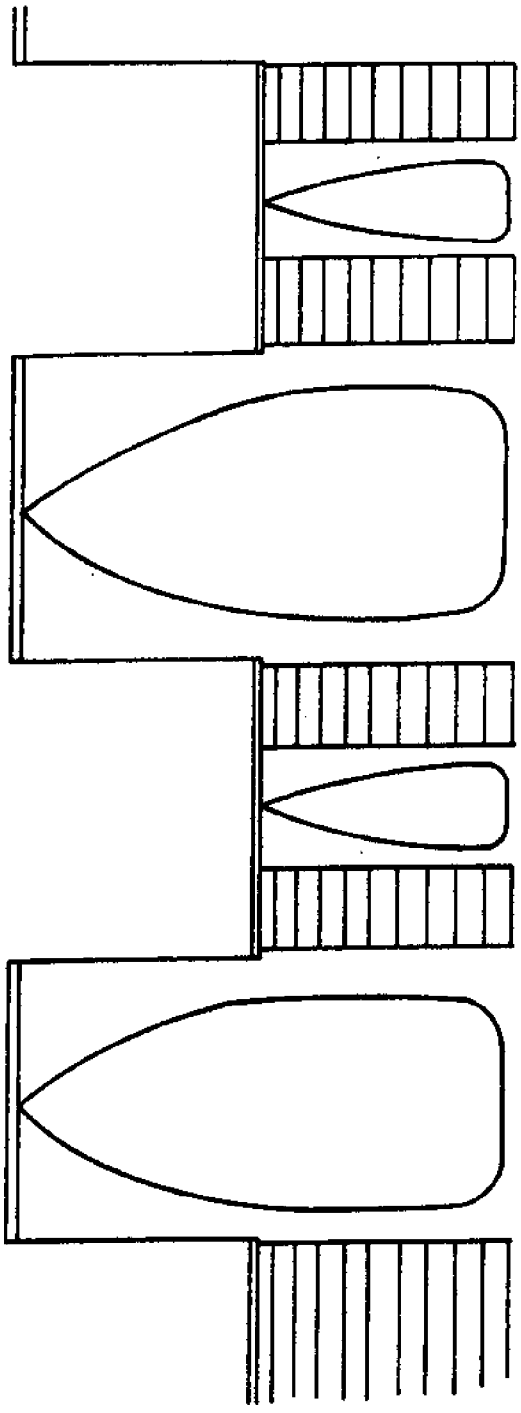


FIGURE 14
USE OF THE OFFSET SURFACES
BREAKWATER AS A PART
OF A MARINA DOCKING SYSTEM

TUESDAY

A
COURSE OF INSTRUCTION
IN
BASIC MARINA MANAGEMENT

FRESH WATER MARINA CRITERIA

By
R. K. Ritchie & Associates
Marina & Campground Consultants

Fresh Water Marina Criteria
Outline

1. Site Selection Basics

    A. Weather Factors

        1. Precipitation
        2. Wind
        3. Ice
        4. Fog
        5. Waves
        6. Water Flucuation

    B. Geological Factors

        1. Basin Excavation
        2. Foundations

    C. Environmental Impact

        1. Water Quality
        2. Preservation of the Ecology
        3. Disposal of the Dredged Material
        4. Esthetics

    D. Sociological

        1. Relation to Surrounding Developments
        2. Related Recreation
        3. Transportation

2. Planning and Design Criterias

    A. Objectives

        1. Protective Design
        2. Space Allocation
        3. Marina Layout
        4. Dockage Structure
        5. Support Facilities

3. Summary

Fresh Water Marina Criteria

Recreational marinas are designed for various crafts including sailboats, ski boats, fishing and day cruisers, large houseboats, etc..

Site Selection

There are two basic needs that must be fulfilled regardless of the body of water. The site must provide a safe navigation access to and from cruising waters, and have adequate land access, including approach roads, for boat owners to conveniently reach their own craft. Other important factors in site selection are; a) enough protected water area now and for future expansion, b) adequate perimeter land that can be for vehicle parking, service structures, roads and future expansion, c) utility service to the site, electric power, water, telephone, gas, sewage and garbage disposal.

A. Weather Factors

1. Precipitation - Maximum rainfall or snowfall present no serious problem if the design is adequate and the weight factor of the snowfall is figured along with the drainage.

2. Wind - Structures must be designed to withstand the maximum amount of force. Slips must be capable of withstanding the horizontal thrust of the berthed craft. The land structures must be anchored securely to their foundations.

3. Ice - In most cases the most popular precaution against ice damage is to remove all boats from the water in winter. There are several preventative icing systems on the market and each one is designed to protect the marinas. Floating slips can be designed with tapering or rounded bottoms so that the pinching effect of the ice squeezes them upward and allows them to stay on top.

4. Fog - There is no method of dispelling fog and for this reason entrance channels and fairways should be designed so they can be navigated in dense fog by marker buoys and channel-markers, with as few turns as possible.

5. Waves - The harbor must be planned so as to reduce wave action from the entrances and the interior basin as much as possible. The entrance should be oriented for a boat to enter without turning broadside into the incoming waves and thus risk broaching during high wave conditions.

6. Water flucuation - With the increasing use of man-made

reservoirs, the water table will flucuate because of the dual purpose of the reservoir - recreation and water storage. The harbor must be designed with the knowledge of what the normal draw-down will be as well as the maximum draw-down.

B. Geological Factors

1. Basin Excavation - On rare occasions the harbor site is already the correct size and shape and has the proper depth throughout. However, some excavation is usually required, and a knowledge of the substrata to be removed must be obtained to determine the proper method of removal and disposal.

2. Foundations - Data of soil on the site is needed to determine the anchoring, building foundations, and the active earth pressure to be resisted. Such data can only be obtained by core-borings or other undisturbed samples of the substrata in a soild laboratory.

C. Environmental Impact

1. Water Quality - Water is particularly important for health and environmental quality especially in today's standards. Water quality is usually dependent on the amount of exchange between the harbor water with the main body of water that the harbor serves. The problem is minimized where river currents will induce circulatory flow.

2. Preservation of the Ecology - In the construction of artificial harbors, the habitat of many living creatures might be disturbed. As a result of such activities the National Encironmental Policy Act of 1969 (Public Law 91-190) requires an environmental statement to be filed on all projects, especially on projects requiring Federal permits.

3. Disposal of Dredged Material - Without careful planning the disposal of dredged materials may be harmful to the environment, yet dredged sand and coral may be highly successful. Such material settles out of suspension quickly, it regains the same characteristics it had before. The material can be used to replenish or build new beaches, raising ground levels and other beneficial purposes. When using dredged material it is very important to engineer the runoff waters properly.

4. Esthetics - With good architectural treatment of the buildings and imaginative landscaping any harbor can be made pleasing to the eye and surrounding area. All lands that are walked or traveled on should be paved or treated to eliminate dust and mud. Perimeters should either be natural, bulkhead, revetted, or beached. Work areas should be located in an area shielded from view. Utilities should be kept underground in marginal lands and below the decking in the berthing area.

D. Sociological Factors

1. Relation to surrounding developments - Site selection for a harbor should be compatible with other developments in the general area. Zoning restrictions may rule out harbor construction in a highly desirable site, and conversely, may allow the harbor location in accordance with a municipal development plan. Some desirable adjacent developments might be parks, large estates, shopping centers, condominiums, historical landmarks, forest and wildlife preserves, amusement centers and many others.

2. Related recreation - Facilities such as golf courses, tennis courts, gymnasiums, hiking trails, etc., will be complimentary to the harbor.

3. Transportation - If it is possible, local bus or rail systems should be encouraged to include one stop at the marina. Where the harbor is isolated, signing should be as simple and direct as possible from a ten mile radius.

Planning and Design Criterias

A. Objectives - The basic objectives must be kept in mind throughou the planning stage. A Master Plan should be adopted as a guide for all development. The interior channels, fairways, and berthing areas must be adequate for the sizes, types and numbers of boats that are intended to be berthed in the facility. Channels should be wide enough to accomodate the anticipated peak hour traffic. The normal use at any one period of time in a recreational marina would be one-third useage at any one time. Fairways must be wide enough to permit boats in and out of slips and to the entrance channel. Berthing areas must be large enough for the planned number of berths without encroaching on other standards.

A proper balance between land and water area must be adequate for all purposes. Enough perimeter land must be available for streets, parking, and ancilliary facilities that will provide additional revenue to supplement slip rental and for harbor support facilities. Where future expansion is anticipated, adequate undeveloped land or water must be available for this purpose.

1. Protective Design

a. Breakwaters where necessary will vary due to the type of construction and design based on the availability and cost of materials, and or the amplitude of the waves to be resisted.

b. Entrance channel and structure should be related to the site selection and psoitioning of the protective structures. The jetties and breakwater must permit construction, maintenance, and passge of currents. All of these aspects must be considered in harbor design.

2. Space Allocations

a. Average marina can berth 15 - 20 boats per acre of navigable water are. Average boat size would be 30 - 35 feet.

b. Three parking spaces for every four berths would be adequate. About 90 cars can be parked in an acre.

c. An average launching ramp and hoist will serve about 50 boats on a peak day. Car parking will only require 80% of the peak-day traffic. About 30 car-trailer units can be parked in an acre if pull-through parking at 45° is provided. This equals 1.33 acres of parking per lane or hoist.

d. Once the parking area requirement has been determined for slips and launching it should be multiplied by 4 to obtain the total minimum land area necessary for a complete marina.

3. Marina Layout - Know what type of vessel the facility will be mooring. The proper placement of the various components that make up a small craft harbor is a pre-requisite for the functional soundness of the over-all success of the plan.

a. Large craft should be berthed near the entrance.

b. Rental boats should be berthed in a separate area and not mixed with private boats. This location should be located close to the office, with easy access to the harbor entrance. The parking area should also be separated if possible.

c. Sailboats without auxiliary power should be berthed in slips that open to leeward of the prevailing winds.

d. Launching ramps and hoists should be as far from the berthing area as possible. This helps eliminate congestion and problems in the berthing area.

e. The fueling dock's best location is as near the entrance as possible and protected from waves and winds.

f. Pumpout stations should be located in the same area as the fuel dock so it can be operated and supervised by the station manager.

g. Harbor administration area should be located near the entrance and where visitors can obtain information.

h. The Harbor Master should be located in an area that allows good view of the entrance and traffic lanes but does not have to view the mooring area.

i. Parking lots are very inportant to the permanent berther. Due to the necessity of bringing items to and from their boats, location of the parking space no more than 500 feet from the head of the pier would be perfect.

j. The boat repair and service yard should be located in a remote part of the marina that has adequate access for the largest craft to be removed from the water.

k. All other facilities such as boat sales, restaurants, should be located along the main access road. They should have a view of the marina but not interfere with it in any way. Parking for these facilities should be separate from the marina parking.

4. Dockage Structure - The oldest methods of securing unattended small craft are anchor moorings and beaching. Any type of anchor mooring, from a single-point, results not only in the inefficient use of space, but the need for shoreboats to transfer personnel from the craft to the shore. For these reasons, neither anchor moorings or beaching are compatible with a modern marina.

The full-length, single-slip system is the most desirable from the boatman's standpoint. The system selected will depend largely on what boats you are trying to attract to the facility, and what they are accustomed to, or the amount of slip rental fees they are willing to pay.

a. Berthing facilities for commercial fishing boats are more utilitarian than those serving the recreational fleet. Slip arrangements vary, but for best results should conform to the shape of the basin. The most common is a series of piers or headwalks extending perpendicular to the bulkhead to a pierhead line, with finger piers extending at right angles from the headwalk on either side. Power craft require 1.75 to 2 times the length of the longest slips served for the fairways. Sailboats should have 2 to 2.5 times the length of the longest slip for the fairways. The width of a slip should allow about 1.5 feet of clearance on each side between full and finger for boats up to 35 feet and 2 feet of clearance for longer craft. Slips should be designed for the boats you want to serve.

b. Widths of headwalks and finger piers vary from one region to another, cities, counties and other agencies have begun to set minimum limits. Headwalks range from 5 to 16 feet with the average being

8 feet. The wider headqalks usually have some width for bearing-pile risers, locker boxes, firefighting equipment, and utility lines.

c. Boarding fingers for up to 20 feet are 3 feet normally, due to the instability of narrower floats. Fingers longer than 20 feet are 4 feet wide for single-boat slips.

All timber should usually be treated to avoid damage by dry rot and living organisms. Because of undetected weakness in the wood, deck planking should be no less than 1 inch thickness and not less than 6 inches in width. Galvanized nails should be used. Deck nailing should penetrate the supporting timbers at least 3 inches so the nails will not pull up under repeated flexure of wave action.

d. Metal framework structures are generally too costly to fabricate. Several systems have been developed that use factory-built components for easy field installation. Most systems are of tubular and pressed steel construction with different decking available. Most prefabricated systems are for fresh water installations.

e. Reinforced concrete construction is frequently used for fixed-level berthing systems. The structural design criteria are similar to timber except the connections and fastening devices are different and the dead load is greater. Lightweight concretes are sometimes used in stringers and decking to reduce the dead load. If there is not enough concrete cover on the reinforcing steel, cracking and spoiling from rust may result. With a properly designed mix and careful placement, a good dense concrete can be obtained to outlast almost any other type of construction.

f. Floating pier structures can be used where water levels fluctuate more than two feet. If the normal range is between 2 to 5 feet, the use of a floating system is optional. When water levels fluctuate more than 5 feet, a floating system is mandatory. The cost of a floating system is usually greater than a fixed system, but the difficulty in keeping boats properly tied and the inconvenience of boarding or leaving the boats justify the choice of a floating system.

A successful floating dock system has the best possible combination of flotation units and structural system. Numerous floats have been used. Some of the successful foams are styrofoam, expanded-pellet polystyrene and foamed polyurethanes. In salt water it is advisable to use an external protection such as a coat of polyvinyl-acetate emulsion or dense polyurethane, a fiberglass and resin application, or concrete encasement of the foam.

The two most common methods used to secure foam floats to the deck structure are; a. a long bolt that penetrates the entire thickness and has a large washer on one end, b. two inch nylon strapping that goes completely around the bellit.

Due to the extra weight and severe stress on concrete or part-concrete floating units, these types of systems should be installed in well protected harbors.

The structure of any floating system requires careful analysis to ensure its capability of supporting the design loads as well as resisting windloads, currents and impact stress. Some agencies are now specifying the deck level limits and a water surface under bad loading conditions. Entrapment of floating debris is a major problem in using 100% flotation. The level at which the deck floats above the water surface can be determined by using the characteristcs of the craft you have designed the marina for. Floating systems must always be analyzied to determine the number of guide piles required. With a cable-moored system you must determine the adequacy of the lines and anchors. Any covered systems must be analyzed for windloading against the building itself and not the berthed boats. This results in exceptionally high lateral loading in most areas. The anchorage of a covered floating system is usually required to be much stronger than that of an open system.

At some sites, the water may be too deep or the water may fluctuate enough that a guide pile system would not be useable. A cable and bottom anchor system is then necessary. Where this system can be installed in the dry reservoir, the work will be greatly simplified. Anchors that can be installed in deep water include massive concrete weights, large boulders with drilled-and-grouted eyebolts, pulled ship anchors, and shot-in anchors. Where the surface level fluctuation is small, a system of long lateral lines with sinkers or counterweights will provide for automatic adjustment. In cases where adjustments are done by winches, it is important to devise a system that is simple to operate.

g. Deck materials - Many decks are wood-plank without having any coating and have given many years of satisfactory life without maintenance. Coating is provided to improve the appearances and to minimize splintering. Wood planking should not be more than 6 inches wide and spaced about a quarter of a inch apart where moisture is a problem. Diagonal planking is

sometimes used to provide cross-bracing strength. Some plywoods have a special palstic surface that is waterproof and provides an excellent base for painting. Some other manufacturers provide a heat and pressure bonded silicone base synthetic coating with an embossed pattern that provides an excellent nonskid and long-wearing quality.

h. Laminated plank provides a deck that has many favorable qualitites, a pleasing appearance and a high degree of stiffness. It is usually made of 2 by 3 inch or 2 by 4 inch cedar sticks glued together side by side in a special endless-belt press that moves the plank slowly through a curing oven. As the plank emerges the press passes it through a planner that finishes the sides and edges.

i. Metal decks are available in modular units. Modern coating techniques have been used for good weathering and wearing quality. However, all parts are usually factory built, and field modifications are difficult. Once bent, or pulled apart at their connections, repairs may be difficult.

j. Fiberglass decks and other synthetic decks are available. Most of these type decks have little resistance to torsional bending forces and must rely on the framework for stiffness and prevention of damage by rough water.

5. Support Facilities

a. Utilities are provided from land based facilities. Large marinas usually porvide electric power outlets either to each slip or are at various locations. Capacities will vary from 20 to 50 amperes depending upon the amount of electrical gear carried by each craft. Most craft require 120-volt service, but some of the larger craft may require 240-volt service. In most of the new installations electric service is provided by a utility channel located inside the decking. It is important that the circuits be designed by a qualified electrical engineer to avoid inadequate wire sizing. A 25 to 50% demand factor should be applied to each pier in estimating the connected load. Grounding wires should always be returned to land the grounding plates must not be put in water.

Freshwater is normally piped along the main walks of the marina, mainly for use by boaters and can be used for fire protection. A .75 inch line will serve about 20 boaters and a 1 inch line will serve about 40. Local regulations will usually establish the pipe size. In saltwater marinas the lines should be plastic or copper. Unprotected risers should not extend higher than 1 foot above the deck and be attached to a supporting pile, or something attached to the dock.

b. Fuel docks design differs from an ordinary dock because they must be more rugged, and require additional flotation to support the extra weight of customers, fuel pumps and lines from the gangway to the pumps. The simplest solution, if possible, is to lease the entire fueling area to an oil company to develop and operate. Where it is not available to lease the facilities a mechanical engineer specializing in piping systems should be hired to engineer the system. A fixed system does not require any special problems. A floating system requires flexible lines at various locations and should be given a close look at quick-disconnect fittings.

c. Cleats are necessary items along with fenders. The 10 or 12 inch cleats are preferred for craft up to 40 feet long, 16 to 20 inch will serve craft up to 75 and 100 feet long. The cleats must be securely bolted to the framework with through bolts rather than lag bolts. Cleats should be placed at the end of each finger and in the middle of the slip width on the headwalk. Many old systems were using old rubber tires, firehoses or hemp hawsers for bumper elements. Today there are a wide variety of synthetic extrusions or molded shapes that are being manufactured for fendering docks. The preferred type of bumper stripping for the edge of a finger or dock is a synthetic extrusion that runs along the top edge of the outside stringer with a lip extending over the top. Outside-corner fendering requires special consideration, due to the fact that this is where most contact occurs. Molded corner bumpers are available and often can be obtained and will provide adequate protection. There are corner wheels also available for the fingers. Some manufacturers design their systems with rounded ends, thus avoiding the sharp corner problem.

d. Hoist-launching operations require the use of mechanical equipment and trained operators. Some marinas provide only a launching ramp to get any boat that can be transported by trailer into or out of the water. The slope of the average launch ramp is a 12 to 15% grade. Few trailered boats can be launched with a slope less than 12% without submerging the wheel hubs of the pulling vehicle. Slopes greater than 15% are dangerous except for the skilled drivers. The ramps should be paved with cement-concrete, asphaltic or bituminous paving does not hold up well. One lane should not be less than 15 feet wide.

e. The administration building is the most important support building in the entire complex. It should be carefully located due to the need for accounting, records keeping and easy availbility for all personnel.

The internal allocation of space also requires careful planning. Although it only takes two or three rooms for a small marina, many rooms are needed for a large one.

Every harbor requires a maintenance building and a yard for storage of equipment, vehicles, and parts. A boat repair installation is a necessary item for a large marina and a desirable facility for a small marina.

A marine hardware supply store is a welcome facility at most marinas, it serves a basic need for patrons, and may also be a source to increase the revenue for the overall project it serves.

Public restrooms should be provided as part of the harbor complex on the basis of about one toilet for every 15 berths (equal number of men's and women's facilities) unless local authorities specify a different ratio. Restrooms should be located no farther than 1,000 feet from any slips.

f. The need for dry storage is becoming more and more important especially for boats 20 feet long and shorter. If dry storage is on trailers, the facility may be only a designated area where the trailers may be parked in a protected area. The need is greater today for dry storage along the water front. These systems are normally a stack type system where the operator will launch and retrieve your boat for you.

g. After the required number of parking spaces has been determined and the sites of the parking lots delineated, they must be designed for optimum functioning ease and pleasing appearance. Rectangular lots are the easiest to design, but other shapes are often imposed by terrain limitations and space availability. Some controlling agencies have strict regulations for such layouts. It is not customary to charge a slip renter a parking fee at the marina. The number of reserved parking spaces is usually half the number of berths in the marina, under normal use this is adequate.

h. Signs neatly painted will save many hours of explanation to visitors. Normal signs include; 1. a welcome sign located at the entrance, 2. easily readable direction signs with arrows, 3. signs designating buildings, 4. information signs concerning parking regulations, slip rental rates, schedules, pier and slip designations, regulations and hours of operation. A large bulletin board located near the entrance to the slips can provide a lot of information.

Summary

Due to the time limitations of this class I could only describe the very basics of marina planning and design. My intent was to point out what I felt to be the important elements in developing a quality facility that you will be proud of. The hiring of qualified architects, engineers and consultants in this field is very important to the over-all project. These people should work together to achieve the maximum potential out of the project. Give consideration to your Master Plan throughout the project and not just to each phase seperately. Use a Master Plan that you have developed and not one that somebody else has done for you.

Basic Planning Outline:

A. Background Information and Data
B. Hiring of consultants, engineers and architects
C. Develop Master Plan
D. Site Usage
E. Programming facilities for use
F. Shore protection
G. Shore amenities

Thank you for allowing me this opportunity. I hope that you have discovered steps in planning and design that might help you build a first class facility.

Site Work Items Requiring Design Control

Curbs, Gutters and Walks
- Configuration
- Material
- Mixing, forms and finish

Drainage
- Catch basins, storm drains, sinks
- Outfalls
- Curbs and gutters
- Hydrology study

Landscaping
- General plan
- Lawns
- Small shrubs and plants
- Trees
- Sprinkler system

Signs

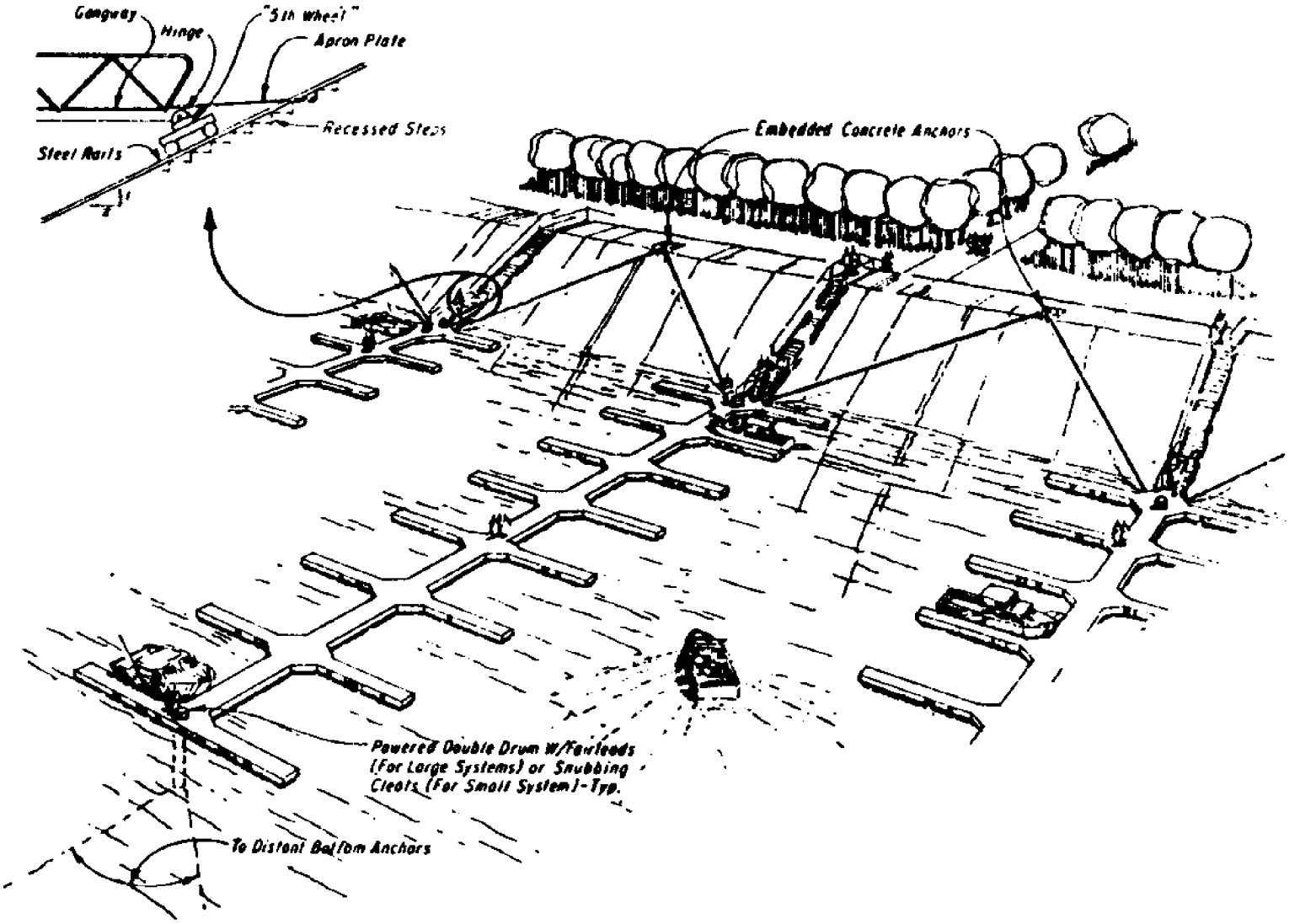
Utilities
- General
- Sewers
- Electrical
- Water
- Telephone
- Rubbish collection
- Public address system

Perimeter Screening and Barriers
- Falls
- Fences
- Other barriers

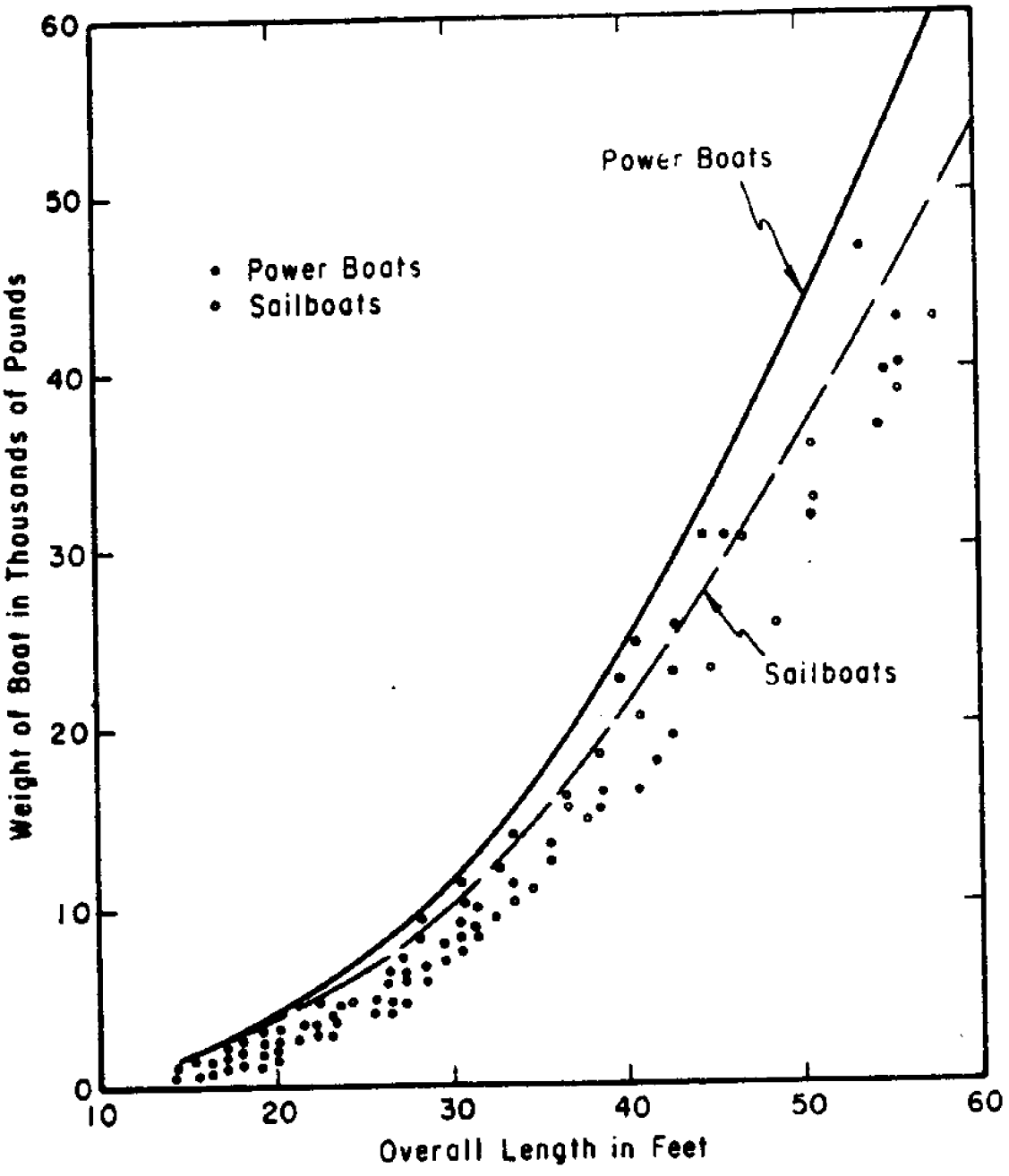
Grading
- Required slopes
- Tie-in to universal datum
- Fill compaction
- Fill materials

Area Lighting
- Luminaries and standards
- Circuitry and switching
- Height
- Density
- Shielding
- Safety

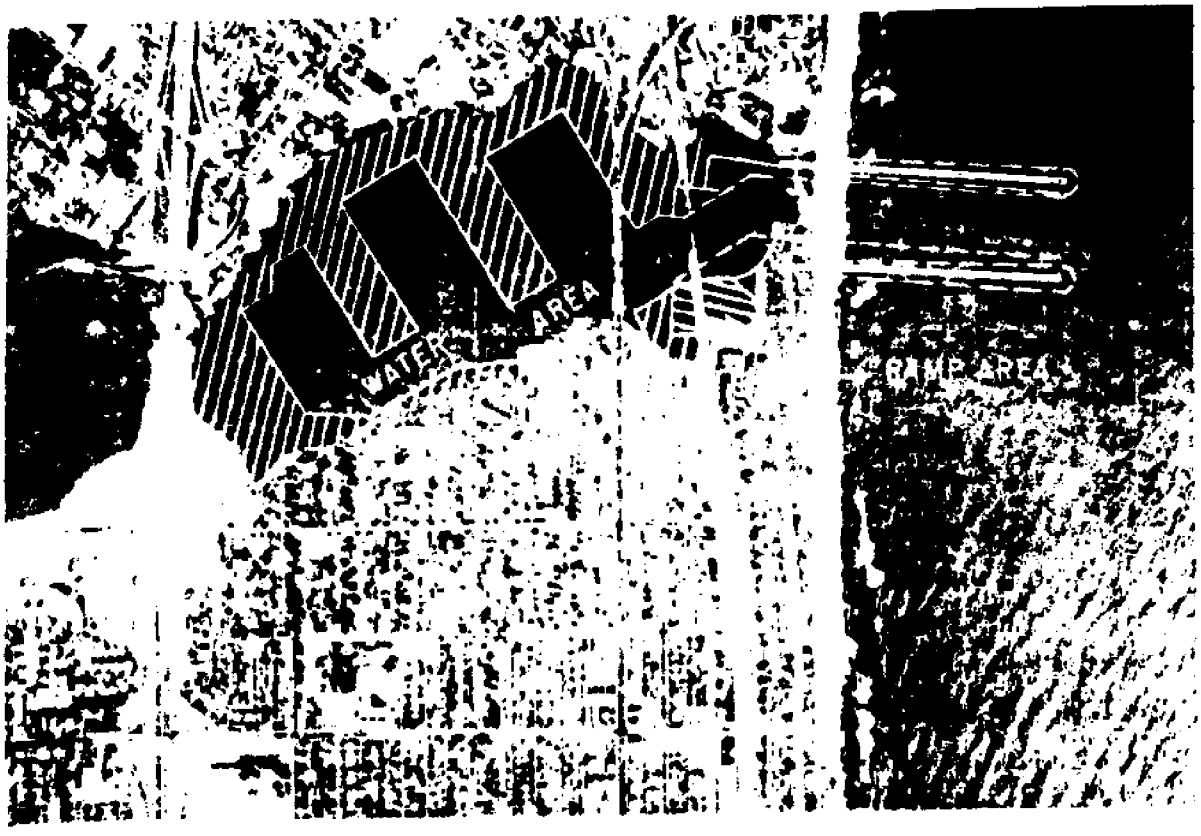
Parking
- Boat slips and launching areas
- Ancillary facilities
- Employees
- Surfacing
- Curbs, planters, tire bumpers
- Surface markings
- Traffic patterns



Deepwater anchorage of floating pier with drawdown adjustment. Schematic is but one method of drawdown adjustable anchorage; each situation requires special engineering and detailing.



Weight versus length of recreational craft.



Available Area = 140 Acres (Two Bridges to be Removed)

Want 3-Lane Launching Ramp

Parking = 3 X 1.33 Acres = 4 Acres

Ramp, Road, Wash Area = 1 Acre

Available For Marina - 135 Acres

Let W = Water Area of Berthing Basins & Channels

Then $W + 4(\frac{W}{6}) = 135$ Acres

$W = 81$ Acres

(This Leaves 54 Acres For Back-up Land to be Filled)

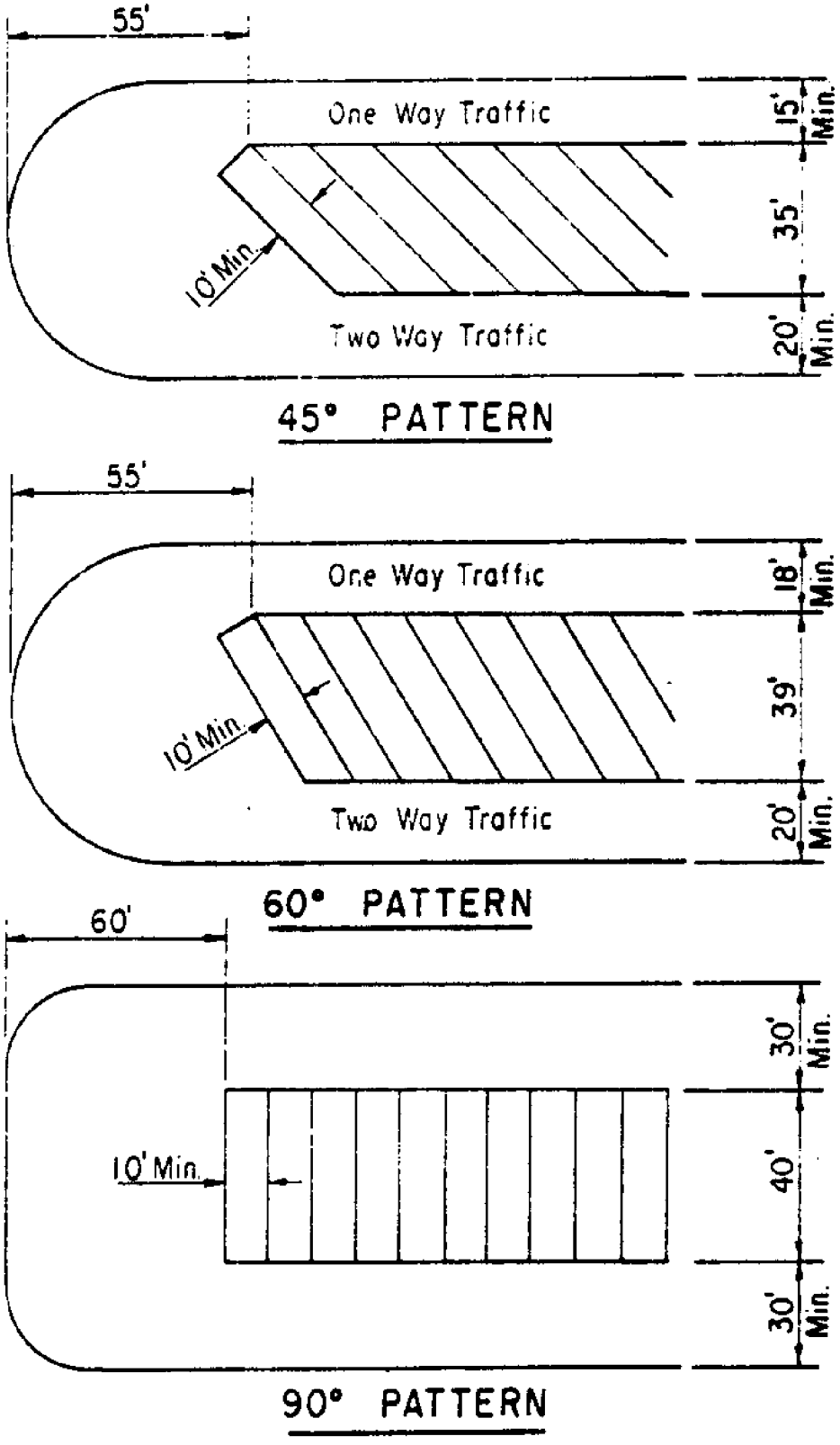
Approx. Berthing Capacity = 81 X 20 = 1620 Boats

Daily Launching Capacity = 3 X 50 = $\underline{150}$ Boats

1770

Entrance Channel Width = 300 + 100 = 400 Ft.

Space allocation for a typical marina.



Standard parking lot layout criteria.

Municipalities planning a marina development in connection with a major waterfront improvement may be able to obtain assistance under Section 107 of the River and Harbor Act of 1960. This grants authority to the Chief of Engineers, U.S. Army to develop small navigation projects, that are feasible and economically justified. Maximum participation with federal funds is limited to $200,000, with local cost sharing at least 50 percent of the first cost of general navigational facilities serving recreational traffic. Such facilities include a safe entrance channel, protected anchorage basins and interior access channels and turning basins. Dockage facilities must be provided by the municipality. Another possibility of federal participation is the Accelerated Public Works Program, under which grants can be obtained for municipal improvement. And there have been occasions where a marina has been developed as a part of a waterfront clean-up program in which the major spur to action was the construction of a sewage treatment plant, partly financed by federal grants.

Organization

Whether the marina remains under the direct operation by the community or is leased to others makes little difference when setting up the plan of management.

All phases of marina operation may be grouped under four general headings, control, finance, purchasing and selling, which are the essential functions of any revenue producing organization. These should be coordinated by a general manager. The "control" function includes general bookkeeping, time keeping, internal control, inventory control and accounts receivable bookkeeping. The treasury and banking relations constitute the "finance" phase. The function of "purchasing" involves order placement, traffic department and expediting. Yard and harbor management, retail sales, eating and sleeping accommodations, repair, boat building, refitting and refinishing are classified in the "selling" category.

There are several concrete steps essential to effective marina management. First, each key departmental and subordinate position must be formally designated in the table of operation. The department heads should form a team under the direction of the general manager. A definite line of communication should be established for rapid handling of interdepartmental problems.

The selection of personnel to fill each position from general manager to dockhand must adhere to the specification that each be qualified to handle consumer contacts tactfully wherever called for. The latter may seem routine, but it is sometimes amazing how poorly the choices are made in many of our most modern marinas.

Operation

Establishing good will requires little capital investment. Consistent cheerfulness and willingness to please as simple human endeavors can equal all the publicity, promotion and advertising the installation can afford. A recent study by NAEBM entitled "Some Boat Owner Impressions of Marina Services" shows that boatmen nationally give marinas only a fair rating in regard to the following:

- Welcome by marina personnel upon arrival.
- Help with lines when coming alongside.
- Suggestions from marina personnel regarding available services.
- Willingness of dock hands and other personnel to render service.
- Availability of personnel when needed.
- Cleanliness of premises.
- Slip or mooring rates, and charges for extras, in relation to services rendered.
- Availability of services and supplies.
- Adequacy of services and supplies.
- General appearance of piers, buildings, grounds, equipment and floats.
- Availability of top management.
- Competence of management and personnel.

Accounting can be a pretty cold phase of any business operation, at least until some good customer warms up over a sloppy billing procedure. Many small business managers fail to do a proper job of accounting because they are not aware that it takes an expert accountant to know that an expert is needed. The public marina operator has a moral obligation to recognize this fact since he is handling community funds. Since most accountants are not familiar with the specific application of their skills to marina and boatyard operations, the special manual "Accounting Manual for Marinas and Boatyards," listed among the references, has been prepared to accomplish four things:

1) Help the accountant with the transition necessitated by the peculiarities of the marina operation.

2) Give the operator a reference book from which to learn the methods of, reasons for and benefits to be derived from a proper system.

3) Provide the bookkeeper with a guide to the mechanics of maintaining the accounts and records.

4) Establish a reasonable basis fo standardizing marina accounting systems.

One of the most important purposes a good accounting system can serve is to provide a base for an accurate costing procedure. It is most important to be able to gauge operating ratios for each phase of service and supply in the marina.

A prompt, accurate billing procedure is an excellent good will builder. Without records to substantiate the work done and the goods delivered, it may be impossible to prove to the owner that the charges are legitimate.

Most yacht owners are business men who generally have great respect for an efficient operation and will express reliance on such service by making greater use of it.

Marina management requires all the attributes of a good innkeeper, ambassador - at - large and trouble shooter. A sense of organization is essential as helpmate in the proper care and harboring of boatmen. Whether it is privately or publicly sponsored makes little difference, the customer is the same.

The references listed at the end of this article are all publications of the National Association of Engine and Boat Manufacturers, 420 Lexington Ave., New York, N.Y. 10017. Where a cost figure is not indicated, the publication is available without charge. □□□

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Directory of Marine Architects, Consultants, Designers, Engineers.

NAEBM's Study of Marinas, Yacht Clubs, Boat Yards, 1959.

NAEBM's Study of Marina Revenues & Expenditures, 1960.

NAEBM's 2nd Study of Marina Revenues & Expenditures, 1962.

Some Boat Owner Impressions of Marina Services, 1964.

MARINA MANAGEMENT

How satisfied are your personnel? Are you sensitive to their needs?

Even a small operation should hold regularly scheduled meetings for all personnel (or by departments if your operation is large and specialized.) Between meetings, all personnel should be encouraged to make notes of problems or suggestions they feel will affect business.

• An open line of communications must exist between you and each of your employees. At least every few months sit down with each person individually and let him air his gripes. You'll never know if you're losing incoming calls due to insufficient telephone lines unless the secretaries tell you.

How frequently do you review your employees' salaries? Are their salaries comparable to the other firms in your area? Do your salary reviews provide an incentive for your workers, or are raises arbitrary or determined only by length of employment? Are your employees reimbursed for overtime?

• Salaries are certainly not the only form of reward for dedicated service. Are your vacation schedules generous? In an industry as seasonal as boating, vacations are often a means of compensating for lower salaries. You may well be able to spare an employee for an extra week during the winter better than you can afford a $1000 raise—yet both may be equal rewards from the employee's point of view.

• What employee benefit programs have you initiated? In this day and age it is virtually impossible to keep an employee without a benefit program. Is your group insurance program adequate? What are your retirement benefits? Often group plans are the only means by which

employees can cope with the ever-increasing drain from medical expenses—and with the price of living, how many people can afford to put aside enough money for their old age? While these programs are often largely paid for by the employees themselves, it is your responsibility to compare the available programs and find the most workable. If you have any doubts, consult your personnel and find out their personal needs.

• Although a large turnover allows employers to continually begin workers at the bottom of the pay scale, it is certainly false economy. How many weeks' or months' salary do you throw away on training? How many sales do you lose because of incompetent personnel? How important is that "Hello, *Mr. Jones*" to your regular customer?

• Make your seasonal workers regulars, too. Recruit your summer help from the local high schools, train them well and pay them competitively. You may get five or six summers each from local college-bound students, and maybe even some of your future full-time personnel. Once they know the ins and outs of your operation, you have someone to call for a week-end fill-in or help during a busy holiday, as well.

Have you looked into local retired people as a source of regular part time help? Many senior citizens are only able to make a fixed income in order to keep their eligibility for social security. That fixed amount of money may coincide with your needs for a regular temporary for your busiest season. Many sixty-five year old bookkeepers have years of valuable service ahead of them. Find one to oversee your annual inventory or financial review.

How departmentalized is your operation? Be sure each person on your staff has individual responsibilities, whether it is the charge of your entire inventory or keeping the glass cases clean. Everyone wants to know what is expected of him and to have his own set of responsibilities.

• Do you have a list of qualified jobbers to contact for specialized work? Only the largest operations can afford a full time electronics specialist, yet any smart dealer will accept the job and know whom to call. Have jobbers on call for fiberglass repair, canvas work, or any other specialty you're not equipped to handle.

MARINE ADVISORY BULLETIN
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Marine Products Liability Law

Ed Bluestein, Jr.*

Major developments in products liability law have occurred in modern times and further changes can be predicted.

Products liability means the legal liability in damages of those who deal in products or services which, when defectively made or rendered, injure the person or property of those who use or are otherwise affected by them.

There is no consensus concerning the proper conceptual basis for imposing such liability. Recovery is generally sought, however, on one or more of the following legal theories: negligence, strict liability or breach of express or implied warranties. There is also an increasing trend in consumer legislation that will undoubtedly affect the marine products industry. Overall, the trend in products liability is from one of buyer beware to seller beware.

Negligence

The law requires everyone to use reasonable care to minimize the risk of possible injury to others — that is, not be negligent. That rule is in the maritime law as well as the common law. At one time, however, a manufacturer was not liable to a person who was injured by a defective product if the injured party had not purchased the goods himself.

This privity of contract principle was stated in the British case of ***Winterbottom v. Wright,*** 152 Eng.

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**The author acknowledges the assistance of Mike Ratliff, University of Houston law student, in preparing this report.*

Products Liability Loss Control

Charles E. Hayden

Products liability lawsuits increased from 50,000 in 1963 to 500,000 in 1971. One authority expects the number to exceed one million by the end of 1978. The amount of awards has also ballooned, and those of $1 million or more are not exceptional. Even some of $4 million or more have been made.

One effect of this growth in products liability is greatly increased cost of products liability insurance, which in turn has produced higher deductibles in insurance coverage. Manufacturers are going to higher limits of self-insurance, and supposedly more suits are being settled out of court because of increasing costs to defend against claims.

Many factors contribute to this products liability situation: (1) The body of consumer protection law is being expanded at a tremendous rate by legislatures, courts and government administrative agencies; (2) Consumer interest groups continue to proliferate; (3) Membership of the plaintiff's bar is growing rapidly and is becoming more aggressive and sophisticated; (4) Many highly skilled employees with long service are reaching or approaching retirement age, while the expanding work force is taking in those with little or no skill to build products that become increasingly complex; and (5) At times, shortages of certain materials compel recourse to new sources of supply and acceptance of substitutes.

The number of persons is increasing who, injured while working and dissatisfied with the limited benefits under workers' compensation, are having recourse to third-party liability suits to collect damages from the manufacturer of the equipment which caused their injury. In one such recent case, more than $4

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million was awarded to the plaintiff. In another, an injured worker was awarded $1,750,000 actual damages plus $500,000 punitive damages despite his admission that he had deliberately bypassed the safety device on the machine. The machine was not designed to tolerate the bypass and an accident occurred, thus injuring him.

In a recent restatement of torts, "A manufacturer is strictly liable in tort when an article which he places on the market proves to have a defect in the design or manufacture that causes injury to a human being." In some jurisdictions this doctrine means that the manufacturer is liable for any harm resulting from the use or misuse, abuse, improper maintenance or alteration of the product if such were reasonably forseeable at the time the product was placed on the market. The rapidly spreading doctrine of strict liability does not require proof of negligence. Existence of the defect sufficiently fixes liability if the user or bystander is harmed.

A manufacturer who has had adverse product liability experience might have undergone the following:

- Loss of reputation and customer confidence;
- Increased insurance costs, more restrictive coverages;
- Increasing amount and frequency of awards to plaintiffs;
- Criminal sanctions that are becoming more common — for example, under certain federal laws;
- Government regulation that is increasing in amount and degree of restriction.

Current administrative law indicates that levels of product safety that have become standard in the aerospace industry will eventually be imposed upon manufacturers of all products. Liability law is ahead of administrative regulations since the doctrine of strict liability makes the manufacturer responsible for harm caused by the defect even though he may have complied with all applicable standards.

Need for a Program

Apparently, then, the manufacturer of any product which could, through foreseeable use or misuse, injure or harm a person or his property must have an effective product liability loss control and product safety program. Such a program reduces the rate of product failures, provides appropriate reaction to product failure incidents and enables the manufacturer to mount a competent defense in claims and litigation.

Too, such a program can contribute substantially to profit by reducing (1) the number of injury- and damage-producing component failures and claims, (2) percentage of unjustified and litigated claims, (3) percentage of cases lost in court, (4) dollar amount of settlements and awards, (5) insurance premium costs and reliance on insurance (6) warranty costs and (7) number and extent of recall campaigns. It can also improve customer relations and increase acceptance of the manufacturer's products in the marketplace.

Undoubtedly, most manufacturers desire to produce and market profitably a safe, reliable product and to have the product serviced properly throughout its life. In addition to this, however, the manufacturer must be prepared to respond effectively to complaints and claims and to mount an effective defense in litigation. A man going into business should recognize that he will probably be sued and should conduct his business from the outset in such a way that it could mount an effective defense.

An essential element in a product liability control and product safety program is a policy statement published to the entire company announcing in positive terms the chief executive's attitude toward producing safe products. It should hold everyone accountable whose work affects characteristics of the product. Line managers are particularly responsible for carrying out such a policy.

The next important step is appointing a strong, well-qualified executive to develop and direct the product safety and liability control program. He should report to the chief executive and not be part of the production or engineering organization. One well-known international corporation has recently created a vice president/product integrity position.

Many companies, particularly those which manufacture complex products, find a product safety committee consisting of highly qualified personnel from their engineering, quality control, research, procurement, marketing, legal, field service, insurance and safety organizations is effective.

Program Functions

Engineering

Original designs and changes should be reviewed. Engineering standards should conform to applicable codes and standards and provide safety margins for features not covered by codes and standards. The design review committee should not include the designer, who has a vested interest in the design, but should include members of all those functions which have the technical expertise to evaluate the design — particularly the safety features. Safety significant features should be identified in design specifications. At least 39 design safety engineering techniques can be utilized; therefore, most situations offer some ways to achieve sufficient safety.

Production and packaging engineering functions must interface with the design. Changes in production methods and techniques should be

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evaluated by disinterested, qualified persons regarding impact on the product's safety. Evaluation by quality assurance, safety, design engineering and possibly others should be included in reviewing production changes. Production markings can contribute to the traceability of the product, an important element when a recall becomes necessary.

Quality Assurance

Quality Assurance should develop the QA program and procedures. Specifically, it should be included in the design review and may employ fault tree analysis, failure mode and effect analysis or other techniques for determining the relative safety of the product's characteristics. Quality assurance is usually responsible for the program of destructive and non-destructive testing in-house and in independent testing laboratories. It should determine the required level of sampling on each component or part of the product and monitor, if not carry out completely, the sampling program. In most complex products, a program of statistical quality control should be established since 100 percent sampling is neither possible nor economically feasible. If an allegedly defective unit was not sampled, the next best situation would be to have it come from a sampled lot.

Quality assurance should be responsible with others for determining the acceptable quality level of all parts and components of the product and particularly of the end product. A most important quality assurance function is vendor surveillance, including assisting procurement in establishing vendor qualifications. The quality assurance program includes receiving and in-process inspections and tests. In well-established programs, quality assurance is responsible for the final sign-off of the product prior to delivery. It is also important that it be responsible for testing warranty returns and other defective units.

Research

The research function helps the product safety program by identifying safe and unsafe effects in the various components of the product and through developing safety improvements.

Procurement

Procurement's contributions to the product safety and liability control program include developing and maintaining qualified sources of supply through quality assurance, engineering and production. Procurement negotiates appropriate contracts and coordinates with the legal staff regarding hold harmless agreements and vendors' certificates of insurance. On-schedule deliveries contribute considerably by avoiding the need to substitute marginal or unqualified vendors into the procurement stream. Terms imposed on suppliers include coding requirements which help trace parts and components from suppliers through the factory to the field.

Marketing

Marketing identifies product uses and application, establishes distributors' qualifications, produces advertising and sales literature and helps establish records to trace the end product to the purchaser. Marketing personnel must be particularly sensitive to the need for effective coordination with legal, engineering, quality assurance, field service and others to avoid the inadvertent expansion of potential liability through exaggerated or inaccurate performance claims for the product.

Legal

The legal function should include (1) review of advertising and sales literature, warranties, warning labels, instruction manuals and contracts; (2) reaction to claims and litigation; and (3) defense against claims and litigations. Warnings are a two-edged sword. A posted warning indicates there is a danger to the user or person exposed to the thing warned about and that the manufacturer is aware of the danger or potential danger in the product. Instruction manuals should include all appropriate warnings in proper language and format. Languages should be considered if the product is being distributed, for example, in an area where it is to be utilized by numerous personnel who do not speak English. Then, perhaps the manuals should be printed in the users' language.

Field Service

Field service provides feedback to the factory regarding complaints, reliability and maintainability of the product. It should be looked to for investigation and prompt response to complaints and for providing records and reports of the service on the company's products. Field service personnel should be advised on how to respond to complaints, incidents or accidents involving the products and how to report potential liability in such cases.

Insurance

Insurance should coordinate with other functions to determine appropriate levels of coverage, assist in response to claims, collaborate with the insurance carrier in handling claims and assist the legal staff in preparing defense.

Safety

Where the organization includes a specific product safety function, it should evaluate the product design and performance for possible unsafe effects and should analyze experience to help improve the product's safety.

The manufacturer is legally and morally obligated to take effective corrective action when potentially harmful product defects are discovered. Certain members of the plaintiff's bar regard the large

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awards in product liability cases as therapy which removes unsafe products from the marketplace.

Other Important Elements

Records

The importance of records is illustrated somewhat by a case which was tried in 1969 and in which $350,000 was awarded to the plaintiff who alleged his arm was amputated as a result of a defect in a press that he was operating which was manufactured in 1918. Important product liability and safety records include design, design review, changes in design, procurement, production, inspection, tests, service and repairs, sampling and necessary records to trace safety critical parts and facilitate recall.

While discovery in litigation does not permit the plaintiff's attorney to indulge in a fishing expedition, it can seriously hurt the defendant manufacturer whose records disclose target weaknesses in his product's safety.

Recall Capability

The manufacturer must determine the economically effective level at which parts, components and production units should be coded to facilitate recall. For example, coding parts by batch or production lot might cost more than coding by month and year but would allow the recall effort to be focused on far fewer units. Recall capability must include sales, warranty and other records which facilitate the process and also consider such factors as safety significance of and reliability of various parts and the distribution and field service systems.

Communications

The safety program functions obviously show that effective communication throughout the company is essential for effective product liability control and product safety.

Accident Reconstruction Capability

For effective product liability control and product safety, the manufacturer must have access to technical capability for accident reconstruction, which requires considerable technical knowledge and good investigative techniques. The defective unit must be brought under the control of the manufacturer as quickly as possible when involved in an incident that could result in a claim.

Expert Witness/Trial Team

If litigation can be expected at some frequency, the manufacturer should develop an in-house capability to provide expert witnesses at trials. A bright, presentable engineer knowledgeable about product safety techniques, product design techniques and quality assurance should be especially educated in product liability and prepared to testify for the company. Such a witness can be much more effective than an outside expert retained on a specific case.

Audit

Audits should be conducted (preferably by a disinterested agency such as an outside consulting firm) frequently enough to assure that the entire product liability control/product safety program has been implemented, that the company is complying with it and that it changes when the situation changes in order to remain effective.

Cost/Benefit

Controls placed on product liability and the product safety program implemented by the manufacturer should be justified — as with other functions in the business process — by comparing the cost to the expected benefits.

The manufacturer should at least be able to know what went into the product, why it was designed the way it was, how it was manufactured and tested, where it was distributed and how it has performed. Then, he should be able to mount an appropriate defense in litigation.

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Rep. 402 (Ex. 1842). A contractor who sold mail coaches to the Postmaster General was not liable to a driver when a coach collapsed. The reason that "there was no privity of contract" was followed by the American courts and applied to cases involving manufacturer's liability for product-caused injuries. Manufacturers were practically insulated from liability for their products as a result.

A number of exceptions to the lack of privity doctrine soon appeared in order to avoid harsh results. Exceptions developed when the product by its nature was dangerous to mankind, such as explosives, poisons and tainted food; when the manufacturer's negligence injured one using the defective product upon the owner's premises; and when one sold or delivered, without warning, an article which he knew to be imminently dangerous to life.

The landmark decision of ***MacPherson v. Buick Motor Co.,*** 111 N.E. 1050 (Ct. of App. N.Y. 1916), sealed the rejection of the privity rule in negligence cases where the product involved could be regarded as dangerous if defectively made. The dangerous aspect of an automobile with a defective wheel required a higher priority than restrictive contractual rules of privity. The court emphatically stated:

> We have put aside the notion that the duty to safeguard life and limb, when the consequences of negligence may be foreseen, grows out of contract and nothing else. We have put the source of the obligation where it ought to be. We have put its source in the law. *Id.* at 1053.

Inserting the *MacPherson* principle into maritime law occurred in a decision extending the seaworthiness doctrine to include a longshoreman performing seaman's work: ***Sieracki v. Seas Shipping Co.,*** 149 F.2d 98, 1945 A.M.C. 407 (3d Cir. 1954), aff'd 328 U.S. 85, 1946 A.M.C. 698 (1946). The plaintiff longshoreman was loading certain cargo into a vessel. A 10-ton boom, which had not been previously used, was rigged to lift the cargo. While loading, the shackle which supported the boom broke because of a defect in the metal. Certain available, but unperformed, tests would have disclosed the defect before the shackle's installation. As a result, the boom and its tackle fell, injuring the plaintiff. The court held that reasonable care required more testing than had been performed. Proof of negligence in manufacturing a marine product that proximately causes injuries that are reasonably foreseeable will impose liability regardless of a contractual relationship.

Warranty

Causes of action arising from a breach of express or implied warranty are primarily based upon provisions of the Uniform Commercial Code, which has been adopted in 49 states. The Code lists three types of warranty: express warranty (Section 2-313), implied warranty of merchantability (Section 2-314) and implied warranty of fitness (Section 2-315).

EXPRESS WARRANTY applies when the seller makes an oral or written statement or promise about the product to the buyer. That statement or promise must then become the "basis of the bargain," that is, the buyer must purchase the product because of the representation made by the seller. The buyer, as his part of the bargain, is to use the product as intended or in a specific manner if so instructed by the seller or agreed upon by the parties.

The **IMPLIED WARRANTY OF MERCHANTABILITY** is involved when there has been no representation by the seller. The product is nevertheless warranted for its general purpose — it will do what it is supposed to do. An **IMPLIED WARRANTY OF FITNESS,** on the other hand, is involved when the seller knows that the product will be used by the buyer in a particular way. For example, a boat hull would have an implied warranty of merchantability to not leak and to be buoyant. But, if the seller knows the buyer intends to use that hull for an icebreaker vessel, then the product is further warranted under fitness to endure arctic conditions.

In ***Jones v. Bright,*** 5 Bing. 433, 130 Eng. Rep. 1167 (C.P. 1829), another old English case, a shipowner purchased copper sheathing for the hull of his ship. The copper deteriorated, and the shipowner sued for breach of warranty. The court found that there had been a breach of express warranty, but also stated the implied warranty principles:

> If a man sells an article, he thereby warrants that it is merchantable — that it is fit for some purpose. . . If he sells it for a particular purpose, he thereby warrants it fit for that purpose. . . *Id.* at 544.

This case was decided long before the Uniform Commercial Code existed, illustrating the fact that these three warranties are based upon common law principles.

In a case decided after the Code was written, the seller expressly warranted that an evaporator installed in the buyer's tanker would make 12 tons of fresh water per day. Instead, it only produced five tons per day. The court held that the manufacturer's breach of warranty precluded its claim for the unpaid purchase price. ***Condensor Service & Eng. Co. v. Compania Maritima,*** 1954 A.M.C. 1243 (E.D. Va. 1954).

Warranties are not limited to heavy commercial machinery, as illustrated by ***Pabellon v. Grace Line, Inc.,*** 191 F.2d 169 (2d. Cir. 1951), *cert. denied,* 342 U.S. 893 (1951). In this case a seaman was injured in an explosion resulting from his mixing three commercial cleansers. He sued the shipowner, who, in turn, brought action against the manufacturers. The

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manufacturers claimed that there was no implied warranty because the cleansers were sold under their brand names. This defense was predicated upon a New York law eliminating the implied warranty of fitness to "patent or trade name" articles. The second circuit, correcting the trial court's "misconception of law" by pointing out the case law construction of the statute, allowed the shipowner to proceed against the manufacturers. *Id.* at 72. The court's acknowledgment that the elimination of the patent or trade name exception constituted the major extension of the warranty of fitness in the Uniform Commercial Code was an additional major factor in the decision. As is stated in the Code comments following the implied warranty of fitness for a particular purpose section:

> The existence of a patent or other trade name and the designation of the article by that name. . . is only one of the facts to be considered on the question of whether the buyer actually relied on the seller, but it is not of itself decisive of the issue. If the buyer himself is insisting on a particular brand, he is not relying on the seller's skill and judgment and so no warranty results. But the mere fact that the article purchased has a particular patent or trade name is not sufficient to indicate nonreliance if the article has been recommended by the seller as adequate for the buyer's purposes. UCC §§ 2-315, comment 5.

It is evident that maritime law draws upon the Uniform Commercial Code and common law principles of sales. This is a necessary stance since additional maritime sales cases are required to develop a separate maritime sales law. Consequently, it seems possible for marine suppliers and distributors to utilize the Code provisions on disclaimers to minimize liability under the warranties. These exclusions or modifications of warranty must be in conspicuous and reasonable writing before they will be given effect. UCC §§ 2-316. Case construction of this provision has also required that the disclaimer be specific.

For instance, in ***Jig the Third Corp. v. Puritan Marine Insurance Underwriters Corp.,*** 519 F.2d 171 (5th Cir. 1975), the purchaser of a shrimp boat brought action against the shipbuilder-seller when it sank in the Gulf of Mexico. The purchaser's theory of recovery was based on the negligent design and construction of the shaft assembly. The court held that a disclaimer of warranty that made no specific mention of negligence or of tort liability was not such a clear and unequivocal disclaimer of negligence so as to preclude recovery.

As illustrated, these disclaimers are very important because damages arising from breach of warranty are not merely the common law remedy of difference in value between the goods as warranted and as they appear. Incidental and consequential damages resulting from the seller's breach may also be recovered in a proper case. Furthermore, consequential damages include (1) any loss resulting from requirements and needs of which the seller at the time of contracting had reason to know, as well as (2) injury to person or property proximately resulting from any breach of warranty. UCC §§ 2-715.

Thus, in ***Gambino v. United Fruit Co.,*** 48 F.R.D. 28 (S.D. N.Y. 1969), a shipowner bought a bottle of ketchup which exploded at sea and injured a seaman. Damages sought by the seaman from the shipowner were recoverable as consequential damages from the ketchup manufacturer under breach of warranty principles. Whether or not consequential damages are allowed can mean the difference between 50 cents and a million dollar damage award. For example, if a defective 50-cent bolt snaps, it may cause the deaths of a crew of seamen or the breakdown of a giant generator needed to operate an ocean liner for several months. Consequential damage provisions provide the only Code remedy that can come close to fully compensating plaintiffs in these cases.

Limitation of damages may not be unconscionable. "Limitation of consequential damages for injury to the person in the case of consumer goods is prima facie unconscionable, but limitation of damages where the loss is commercial is not." UCC §§ 2-713 (3). Thus, the Uniform Commercial Code has proved most beneficial in economic loss situations. Its dubious utility in personal injury cases, however, motivated a search for a more thorough theory of recovery.

Strict Liability

A theory of recovery that has gained increasing acceptance in recent years that contains neither the pitfalls nor the fine points of a negligence or warranty action is **STRICT LIABILITY.** The theory is adopted in most jurisdictions as expressed in the Restatement (2d) of Torts §§ 402A (1966):

> One who sells any product in a defective condition unreasonably dangerous to the user or consumer or to his property is subject to liability for physical harm thereby caused. Restatement (2d) of Torts §§ 402A (1).

This liability is imposed if two additional requisites are met: (1) that the seller be engaged in the business of selling; and (2) that the product reach the consumer without substantial change. Liability is imposed even if the seller has "exercised all possible care in the preparation and sale of his product." Restatement (2d) of Torts §§ 402 (2) (a) 1966).

Strict liability is similar in many ways to the traditional **ADMIRALTY DOCTRINE OF SEAWORTHINESS.** That doctrine requires a shipowner to furnish

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his crew "a vessel and appurtenances reasonably fit for their intended use." The doctrine reflects "an understanding that the owner's duty to furnish a seaworthy ship is absolute and completely independent of his duty to exercise reasonable care." ***Mitchell v. Trawler Racer, Inc.,*** 362 U.S. 551, 80 S.Ct. 926, 932 (1960). In ***Alaska Steamship Co. v. Petterson,*** 347 U.S. 396, 74 S.Ct. 601 (1954), the shipowner was held liable for injuries caused by defective equipment, temporarily brought on board by an independent contractor over which the owner had no control. The decision illustrating "that the shipowner's actual or constructive knowledge of the unseaworthy condition is not essential to his liability" demonstrates the scope of this doctrine. *Mitchell, supra,* at 933.

A cause of action for injury from unseaworthiness is limited to seamen or those doing seaman's work. This limitation is not present in strict liability actions. Furthermore, the unseaworthiness doctrine places liability on the shipowner. It is the manufacturer or supplier who is subject to liability in strict liability suits.

Will the doctrine of strict liability for harm caused by defective marine products be applied in admiralty cases? The U.S. Supreme Court has not yet given a definite answer. The concept appears to be gaining a foothold in admiralty cases, and those dealing in marine products must be aware of the trend.

In ***Lindsay v. McDonnell Douglas Aircraft Corp.,*** 460 F.2d 631 (8th Cir. 1972), a widow brought suit to recover for the death of a Navy pilot whose jet aircraft crashed into the ocean because of an alleged design or manufacturing defect. The court permitted the case to be considered without demonstrating the specific defect or showing that the manufacturer knew about the defect.

The Seventh Circuit appears to have applied the theory of strict liability in a case within its admiralty jurisdiction (the suit was brought on a negligence theory, but the court recited strict liability principles). In ***McKee v. Brunswick Corp.,*** 354 F.2d 577 (7th Cir. 1965), liability was imposed upon the retailer, boat manufacturer and the maker of the coil on the boat's engine for injuries sustained to boat passengers when the engine exploded. This illustrates that the manufacturer need not make the product. Assembling parts from other sources is sufficient to impose liability. Thus, the manufacturer of a crane mounted on an oil drilling platform in the Gulf of Mexico was liable for $257,000 when it toppled from its base and killed an employee, even though the defective "hook roller link" was obtained from another source. ***Soileau v. Niklos Drilling Co.,*** 302 F.Supp. 119 (W.D. La. 1969). The principal is stated as:

> One who puts out as his own product a chattel manufactured by another is subject to the same liability as though he were its manufacturer. Restatement (2d) of Torts, § 400 (1966).

Some federal district court admiralty cases have declined to impose liability on manufacturers without proof of negligence. For example, in ***Noel v. United Aircraft Corp.,*** 204 F.Supp. 929 (D. Del. 1962), a death resulted from an airplane crash at sea allegedly caused by a defectively designed or manufactured propeller. The court concluded that it was not justified in adopting into the general maritime law the products liability concepts of shore-based cases. A similar approach was taken in ***Jennings v. Goodyear Aircraft Corp.,*** 277 F.Supp. 246 (D. Del. 1964) by the same court.

It should be noted that the *Noel* and *Jennings* cases were decided just at the inception of the strict liability doctrine, which began in California with ***Greenman v. Yuba Power Products, Inc.,*** 377 P2d 897 (Cal. 1963).

In a recent case, the products liability issue in general was raised. ***Williams v. Brasea, Inc.,*** 497 F.2d 67 (5th Cir. 1974). A shrimp boat's master was injured when a winch was activated while his hands were entangled in the line. He brought action against the owner of the vessel on the basis of unseaworthiness and against the shipbuilder and the designer-manufacturer of the winch assembly under a strict products liability theory. The trial court awarded $316,000 in damages. The Fifth Circuit held that the shipbuilder was not negligent nor strictly liable even if products liability law was applicable for positioning the pulley in such a manner that the likelihood of line tangling was increased. Additionally, the designer-manufacturer of the winch assembly was not negligent nor subject to strict liability though the winch lacked a brake. The case is still in litigation.

Strict liability has been alleged against shippers as well. In ***China Union Lines, Ltd. v. A. O. Andersen & Co.,*** 364 F.2d 769 (5th Cir. 1966), *cert. denied,* 386 U.S. 933 (1967), the shipper-manufacturer of a flammable chemical was sued when a collision caused the chemical to catch fire and burn, giving off highly toxic fumes. The case was dismissed against the shipper, but Judge John R. Brown dissented:

> Cynamid. . .is the manufacturer and supplier of a chemical that it knows can and does kill. Cynamid's awesome obligations in this day of products liability when Acrylonitrile goes to sea is no less than on land. . . It owed a duty literally to the world. . . The duties owed to this limitless group of protectees require as a minimum that it not knowingly participate in a method of handling or transport which would imprudently imperil the lives of these people. I do not suggest here that Cynamid. . .has the liability of an insurer, but. . .when the material is fraught with so much danger, the liabilities may be almost absolute either because the so-called ordinary care of the

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> prudent person itself calls for care which is extraordinary or because of principles of strict liability.

Statutory Guidelines

Federal statutes and regulations have been periodically enacted or promulgated which affect the marine products industry and its liability to buyers and users. A particularly important thrust in this area has been the passage of increasing amounts of consumer protection legislation. One of the most significant pieces of such legislation is the Magnuson-Moss Warranty Act. 15 U.S.C. §§ 2301, *et seq.* (1975). The act provides for additional rules governing the contents of warranties and disclaimers made to consumers, not affecting Uniform Commercial Code provisions on warranties and disclaimers between merchants. Of special interest is the act's provision for the "lemon" product cases.

> If the product contains a defect or malfunction after a reasonable number of attempts by the warrantor to remedy defects or malfunctions in such product, such warrantor must permit the consumer to elect either a refund for, or replacement without charge of, such product or part. *Id.* at §§ 2304 (a) (4).

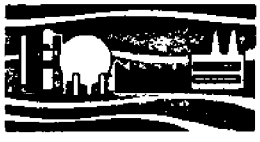
The act further provides that damages, plus attorney's fees, may be collected for the warrantor's failure to comply with his obligation. *Id.* at §§ 2309 (d) (1).

The Consumer Product Safety Act, 15 U.S.C. §§ 2051 *et seq.*, was enacted in 1972 in response to the "unacceptable number of consumer products which present unreasonable risks of injury." *Id.* at §§ 2051 (a) (1). Its primary purpose has been to develop uniform safety standards for consumer products. These standards have set forth requirements as to "performance, composition, contents, design, construction, finish, or packaging of a consumer product," as well as requirements that adequate warnings or instructions accompany such products. *Id.* at §§ 2056. Failure to abide by these safety standards may subject the violator to damages sustained by persons injured because of such violation. Attorney's fees may also be recovered under this act. *Id.* at §§ 2072.

As new federal standards, regulations and interpretations continue to be issued, it is essential to be aware of the additional federal protection granted to consumers in the products liability area (See e.g., 40 Fed. Reg. 60168 December 31, 1975, for statements issued by the Federal Trade Commission on the Magnuson-Moss Warranty Act). It is also critical to be aware of any possible legislation affecting manufacturing and marketing of a marine product.

Manufacturers and suppliers of marine products must be cognizant of potential liability for injuries resulting from use of their products. This liability can arise from negligence of the manufacturer or supplier, from a breach of express or implied warranty, from strict liability or from breach of a statutory duty. The effect of products liability has been widening in depth and scope. It must be reckoned with constantly in business, for even further expansion of this liability is predictable. The old days of *caveat emptor* (buyer beware) have vanished.

The *Industrial Economics Research Division (IERD)* is a unit of the Texas Engineering Experiment Station at Texas A&M University. With support from Texas A&M's Sea Grant College Program, IERD provides advisory services, including individual consultation, seminars, conferences, workshops and publications for marine-related businesses. To obtain additional publications or other information concerning the business management advisory services program, contact Dewayne Hollin, research associate, at IERD's Houston office, 2100 South Post Oak Road, Suite 422, Houston, Texas 77058, (713) 626-0624.



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Business Policy Considerations

For

Marina Management

I have been asked to talk to you about Business Policy Considerations for Marina Management. The logical point of departure is to 1st examine what Business Policy is:

Most schools of business in the United States, as well as those in other countries of the world, have a capstone course in their curriculum that is concerned with "business policy". Schools that are accredited by the American Assembly of Collegiate Schools of Business are required to have such a capstone course. What, then, is business policy, that it receives such widespread attention?

BUSINESS POLICY AS A FIELD OF STUDY

As a field in business administration, Policy is the study of the functions and responsibilities of senior management, the crucial problems that affect success in the TOTAL enterprise, and the decisions that determine the direction of the organization and shape its future. The problems of policy in business, like those of policy in public affairs, have to do with the choice of purposes, the molding of organizational identity and character, the continuous definition of what needs to be done, and the mobilization of resources for the attainment of goals in the face of competition or adverse circumstance.

The Presidential Point of View

In Business Policy, the problems considered and the point of view assumed in analyzing and dealing with them are those of the chief executive or general manager, whose primary responsibility is the enterprise as a whole. But, while the study of Business Policy is considered the capstone of professional business education, its usefulness goes for beyond the direct

preparation of future general managers and chief executives for the responsibilities of office. In an age of increasing complexity and advancing specialization, and in companies where no person knows how to do what every other person does, it becomes important that the functional specialists acquire a unique nontechnical capacity. This essential qualification is the ability to recognize corporate purpose, to recommend its clarification, development, or change and to shape their contributions to the TOTAL enterprise. To be effective in our organization, we need to have a sense of its mission, of its character and of its importance.

General Management Skills

General management skills center intellectually upon relating the firm to its environment and administratively upon coordinating departmental specialities and points of view. General management is indeed an art to be learned only through years of responsible experience. And even through experience, it can be learned only by those with the necessary native qualities: intelligence, a sense of responsibility, and administrative ability. The need for general management ability, to include the ability to adopt a general management perspective, is for too acute to be left to chance.

THE CHIEF EXECUTIVE'S JOB: ROLES AND RESPONSIBILITIES

What General Management Is - Management we regard as leadership in the informed, planned, purposeful conduct of complex organized activity. General management is in its simplest form the management of a total enterprise. The senior general manager in any organization is its chief executive officer, who may be the General Manager or the Executive Vice President but is most frequently called the President.

COMPLEXITY OF GENERAL MANAGEMENT TASKS

We are in great need of a simple way to comprehend the total responsibility of chief executives. To multiply the list of task's they must perform and the personal qualities they would do well to have would put general management capability beyond that of reasonably well-endowed human beings. Corporate presidents are accountable for everything that goes on in their organizations. They must preside over a total enterprise made up often of the technical specialties in which they cannot possibly have personal expertness. They must know their company's markets and the ways in which they are changing. They must lead private lives as citizens in their communities and as family members as individuals with their own needs and aspirations.

THE PRESIDENT AS ORGANIZATION LEADER

Chief executives are 1st and probably least pleasantly persons who are responsible for results attained in the present as designated by plans made previously. But the organizational consequences of the critical taskmaster role require presidents to go beyond insistence upon achievement of planned results. They must see as their second principal function the creative maintenance and development of the organized capability that makes achievement possible.

THE PRESIDENT AS PERSONAL LEADER

The functions, skills and relevant point of view of chief executives hold true no matter who they are or who makes up their organizations. In addition, presidents contribute as persons to the quality of life and performance in their organizations. This is true whether they are dynamic or colorless. By example, they educate subordinates to seek to emulate them or simply to learn from their behavior what they really expect. This personal

influence can contribute to the achievement of corporate purpose.

THE PRESIDENT AS ARCHITECT OF ORGNIZATION PURPOSE

The most difficult role - and the one we concentrate on in policy courses - of the chief executive of any organization is the one in which they serve as custodian of corporate objectives. The entrepreneurs who create a company know at the outset what they are up to. Their objectives are intensely personal, if not exclusively economic.

The presidential functions involved include establishing or presiding over the goal-setting and resource - allocation process of the company, making or ratifying choice among strategic alternatives, and clarifying and defending the goals of the company against external attack or internal erosion. The installation of purpose in place of improvisation and the substitution of planned progress in place of drifting are probably the most demanding functions of the president.

The crucial skill of the top manager concerned with corporate purpose includes the creative generation or recognition of strategic alternatives made valid by developments in the market place and the capacity and resources of the company. Along with this, in a combination not easily come by, runs the critical capacity to analyze the strengths and weaknesses of documented proposals. The ability to perceive with some objectivity corporate strengths and weaknesses is essential to sensible choice of goals, for the most attractive goal is not attainable without the strength to open the way to it.

Probably the skill most nearly unique to general management is the intellectual capacity to conceptualize corporate purpose and the dramatic skill to invest it with some degree of magnetism.

STRATEGY AS PROJECTION OF PREFERENCE

We must acknowledge at this point that there is no way to divorce the decision determining the most sensible economic strategy for a company from the personal values of those whom make the choice. Executives in charge of company destinies do not look exclusively at what a company might do and can do. In apparent disregard of the second of these considerations, they sometimes seem heavily influenced by what they personally want to do.

We are ourselves not aware of how much desire affects our own choice of alternatives, but we can see it in others. We should in all realism admit that the personal desires, aspirations,and needs of the senior managers of a company actually do play an influential role in the determination of strategy.

STRATEGY MANAGEMENT

Strategy management is the continuous process of effectively relating the organization's objectives and resources to the opportunities in the environment. Objectives are desired results or targets. The resources of the organization refer to the entire range of human, physical and financial resources the organization currently possesses or has the potential to obtain. Consequently, the resources of the organization are in a constant state of flux. In developing strategy, managers must recognize the presence of resources at any one point in time and the potential for modifying, expanding, or contracting these resources.

The final ingredient in strategy management is the opportunities available to the organization. Opportunities include the entire spectrum of products or services that the organization currently or potentially may provide as well as recognition of the magnitude of these opportunities. In identifying opportunities, the manager must consider what competitors are doing or may do in the way of fulfilling consumer needs. The other side of

the opportunities coin is determining the availability of raw materials and technology. Indeed, an opportunity does not exist, despite strong consumer desires, if the raw materials or technology are not available. Further, negative opportunities in the form of threats to present or future competitive advantages must be recognized.

For strategy to be effective, the organization must operate at the intersection of these elements, as illustrated:

Opportunities Resources

Objectives

One cannot pursue opportunities for which there are inadequate or inappropriate resources. One should not pursue opportunities that are inconsistent with objectives of the organization. Further, objectives outside the realm of available resources or opportunities should not be developed.

ESTABLISHING FUTURE STRATEGY

Obviously, the most important phase in strategy management is establishing future strategy and attempting to ensure that future strategy is modified and adjusted for changes in conditions.

BASIC OJECTIVES FOR THE ORGANIZATION AS A WHOLE

There are 3 categories of basic objectives. The 1st basic objective is the product/mission philosophy. Product/mission philosophy (PMP) is a recognition of the basic products or services that the organization plans to deliver to the consuming public. The 2nd basic objective is financial or profitability, and the 3rd objective is composed of social and psychological objectives.

The statement of PMP may be written in very broad or very narrow terms. The particular way in which the organization structures the product/mission philosophy statement can have a profound effect on the future development of the organization.

Financial objectives - The 2nd basic objective found in all types of organizations is the financial or profitability objective. It is basic because without sufficient financial resources an organization cannot survive. The variability and detail in profitability objectives differ markedly from organization to organization. Nevertheless, all organizations have some financially oriented basic objectives. Public organizations must have financial resources in order to function and survive, and business organizations must have some level of profitability in order to survive as ongoing conerns. Indeed, the profitability objectives normally imply and assume survival.

Social or Psychological Objectives - Most organizations have social or psychological objectives as well. Social and psychological objectives are of a broad and encompassing character. To a great degree they represent the values of the individuals responsible for establishing objectives. Many corporations are established by professionals as vehicles for utilizing their professional skills. Thus the opportunity to use professional skills is basic to the organization. A similar kind of pattern is found when someone who has a particular talent establishes an organization to utilize the talent. Clearly, there are organizations whose primary purpose is social service or whose primary purpose is to deflect social service values of the individuals that established the organization.

Another common example of the 3rd type of objective found in business firms is the retention of family ownership or the retention of present management.

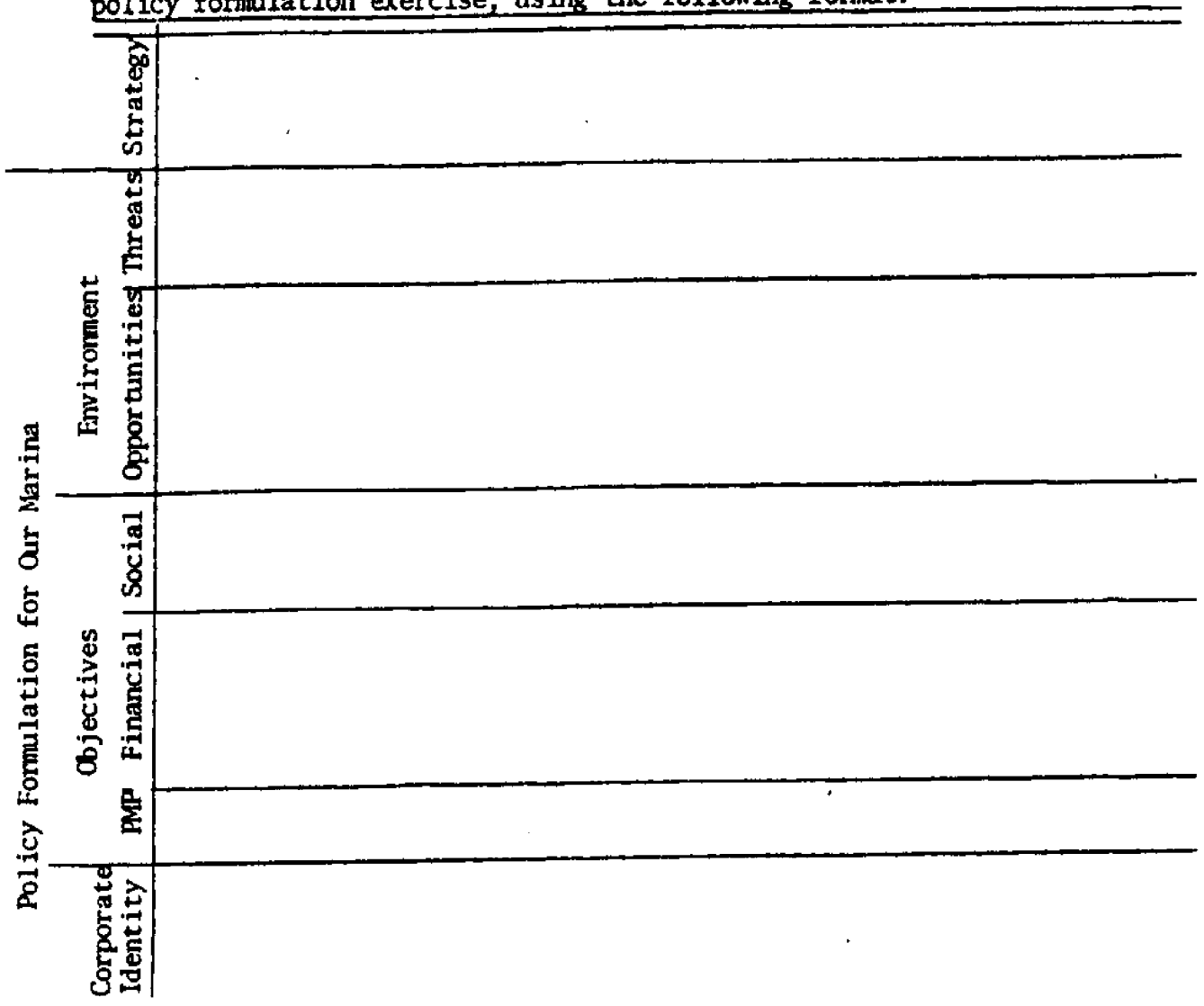
CONFLICT BETWEEN THE 3 BASIC OBJECTIVES

It is possible for conflicts to occur between the basic objectives. For example, the retention of family ownership as a social or psychological objective may be at odds with the desire to maximize profits.

Generally, the most common conflicts occur between the profitability and the social or psychological objectives. Basically the problem is in deciding how much of a profitability trade-off the organization is willing to accept in order to ensure the fulfillment of its social or psychological objectives.

Basic objectives are long term in nature. They are intended to be a stable base for corporate planning.

The last part of the session will involve class participation in a policy formulation exercise, using the following format:



STACKED STORAGE - IT CAN BE A GOOD INVESTMENT BUT -------- Clint Chamberlain
C. A. Chaney and Assoc.

At first glance, stacked storage looks like the answer to a maiden's prayer. Well, some maidens, anyway. Very little land is required to park a lot of boats, everybody knows that the buildings don't cost very much, you just don't need any water front at all, and Boating Industry says it's a do-it-yourself project. Right? Well, I think the whole thing needs to be looked at a little more carefully. I want to discuss very briefly four things - engineering and design problems, capital investment, income from stacked storage operations, and operating problems, Let's take them in order.

Engineering and Design Problems

The first point that I would like to make is that the marina game is no place for amateurs. This applies to all kinds of marina operations and especially to the stacked storage operations. The day of the mom and pop business is over, I'm sorry to say. The three deadly sins are under-capitalization, poor managment and badly designed facilities. One of the worst mistakes that you could make when approaching the stacked storage concept is to think that you know so much that you "don't need a specialist". Take the stacked storage concept - since that's what I'm supposed to be talking about today. To design a stacked storage system it is necessary to optimize a selection from among all of the following:

- selection of minimum and maximum boat sizes and weights
- selection of the mix of boat sizes - beam, length and weight - that you will be handling
- number of boats that the facility must handle
- anticipated demands during rush hour
- size and number of holding racks and holding slips
- fees to charge
- cost and location of land
- layout of site for best traffic utilization
  a. in periods of high traffic
  b. in periods of slack demand
- size and cost of forklift, type and length of negative lift, type of fork adjustment (there are at least five reputable manufacturers, and there are a number of distributors who make "field modifications".
- type and size of building (or should you just leave the racks out in the open?) (There are 32 manufacturers - or would be manufacturers of buildings and racks in our files)
- type of storage racks - adjustable or fixed, etc.
- means for minimizing taxes and insurance (How is the Longshoremans Act affecting you?)
- design of bulkheads and waterside facilities
- type of accounting system, personnel requirements

and on, and on, and on. Now if you think you're smart enough to cope with all these, power to you. But excuse me, I'm from Missouri. And make no mistake about it, wrong decisions can wipe out your savings, put your business down the drain - and they can even kill you. At last count three people have been killed by boats that fell off the forklift, one person was crushed when the overloaded forklift toppled over on him, and one poor guy was seriously injured when a whole rack of boats just kind of gave up one day and came crashing down on him.

Jerry Jerome, who was supposed to give this talk, is one of the consultants we recommend - and I assure you that a consultant like Jerry will save you over and over the the exhorbitant fees that you think we charge you. So if you're serious about a stacked system - or any marina - pay your consultant and think kindly of him. I don't care if you are a registered everything, the specialist will still know how to save you money. I'll be showing some slides shortly of good and bad systems.

Capital Investment

Now that I've shoved you around with my consultant's diatribe (that's diatribe number three, actually), I guess we'd better take a look at capital investment. My colleague, Bill Knegendorf is the banker and can probably amplify at length on these reparks, but we find this an area of gross ignorance on the part of many people. As an example, how many marina operators do you know who are still basing their slip or stacked storage rates on the original cost of their facility, as opposed to basing it on the replacement cost? When you are talking stacked storage these numbers aren't peanuts. Forklift trucks (7,500 pounds capacity, 96" load centers) range from $40,000 to $60,000, depending on manufacturer, capacity, negative lift, choice of diesel versus gasoline and so on. Anybody been to see his friendly Tow Motor dealer lately? To look at this cost another way, this kind of price means that somewhere between $8,000 and $10,000 has to come right off the top to pay each year's principle and interest. To say nothing of taxes and insurance and such. At an equivalent charge of $2.00 in and out (this is usually buried in the rental fee) that would be an average of 90 boats per weekend, year around. You can be sure, they'll all show up on Sunday morning.

You could acquire a regular (no negative lift truck) at a savings of $4,000 or so, but the necessary dockside hoist will more than wipe that saving out.

What about the building? Current costs for buildings are running from $6 per square foot - if you live way out in the low rent district - to $10 per square foot. Add $80 to $100 for the racks themselves and the cost is now around $650 per boat. And what about the costs of land, parts inventory, service tools, taxes and so on? You can see where I'm leading. Add truck, building, equipment together and you find that a 100 boat facility will cost pretty close to $200,000 on a minimal basis, and usually it's a whole lot more. If you financed the whole thing (you father's a banker, right?) you would be coughing up on the order of $36,000 just to pay interest and principle. For the 100 slot facility which we seem to have latched on to, that's $360 per slot per year just to pay the banker.

To soften the blow though, let's look at what happens if you have a 250 slot storage facility. Building costs will increase linearly with the number of slips, and the amount of labor remains fairly constant up to this point. As a result the 250 slot facility only costs $360,000 (versus $200,000 for the smaller facility) and obviously the cost per slot has gone down. Just as obviously, there has to be a number beyond which the costs start to rise again - it's about 400 slots - but that's another ball game.

My basic point, of course, is that he who goes into a dry stack storage operation without plenty of capital (personal or borrowed) is destined for trouble.

Income

But how about income? How much should you make from a stacked storage operation? Obviously, I've been talking about the bad part--having to pay out the money--but there is a good side too.

Rental rates vary around the country, but not by as much as you may have suspected. Most owners try to charge by the footage of the boat but this doesn't take into account the fact that heavier boats require stronger racks and have to be berthed on the lower tiers of racks. Current charges in the South range from $2.25 per foot to $2.50 per foot (including launching fees). That's on a monthly basis; a practice of which I disapprove. It is our experience that yearly billing and lump sum payment are much to be desired. Of course, a customer you know could be allowed to pay quarterly for an extra charge. In the North it is more common to charge a lower annual rate--from $4.50 to $5.50 per season with the realization that many boats will be removed from the building during the winter.

A 100 boat facility will typically have boats whose average length is about 21 feet, and the facility will usually be at about 85% occupancy. This gives a basic income of around $4,000 per month and $48,000 per year. The 250 slot facility would have an income of about $10,000 per month and $120,000 per year. And that's not all the potential income. In fact, any operator who relies solely on his storage income is asking for trouble. The main sources of other income are service and sales, of course.

We would feel that any dry stack facility which did not emphasize a well stocked and efficient service business is not utilizing the full potential. In these days all major outboard, inboard and stern drive manufacturers offer service schooling and some of these manufacturers really go out of their way to help you set up an inventory accounting system (an absolute must). A well run three man service department should gross about $100,000 in labor and parts and should net about $10,000.

Hardware and accessories sales are fairly good to have, but a long look needs to be taken at the sale of motors and boats. If you are well financed, have a good relationship with your bank, and have a flair for salesmanship, then maybe you ought to look into it. The problems are many, and there's little point in trying to sell only outboards or only boats. There's a small market for replacement engines and motors, but it would be a hard way to make a living.

I'm not trying to discourage the idea of a boat and motor sales operation--quite the contrary. For many dry storage facilities, an active boat and motor sales operation makes the difference between just getting by and making a good living. But you must remember that it's a powerful dealership which manages to net much more than 5% on gros sales of boats and motors, and even that takes some careful management.

Operating Problems

Finally, we come to operating problems. By this I don't mean management problems, particularly, but a good management will have fewer operating problems. I'm sure that many of you can easily top my horrible examples, and Jerry Jerome can do even better. There's the usual run of customer problems:

-- "My boat isn't ready and I called you fifteen minutes ago."

-- "Your driver scratched my boat when he put it away." -- this for the scratches on the deck that his hobnail boots made last fall when he was drunk.

-- "Somebody stole my CB radio while it was in your storage building." -- actually, his boat has been sitting on the top tier, thirty feet off the ground, and besides, you saw one just like his, complete with those funny scratches he just described to you in the pawnshop window last week.

How they manage to survive, I'll never know. The experienced operator learns somehow to cope with them, but it's pretty hard on the beginner. The wonder of it all is that there really are enough good guys to make up for the sour apples.

Conventional marinas and boatyards have a pretty hard time with the deadbeats, but this is not so common a problem with the drystacked storage. It's pretty hard to sneak off with a boat that's stored in the secone rack. Of course, if you're dumb enough to let him take the boat out for a little trial spin when he still owes his rent, you deserve what's going to happen. The really hard one to take is the guy who has paid his bill for years and then one year just suddenly turns up among your slow pay listings. You've learned to trust him and now this.

Pay for service work is another matter. In these days, the screaming at mechanics in boatyards by the irate boat owner can be heard from here to Dallas. For some reason, the boat owner just fails to realize that his costs (and income) go up; so does everyone else's. The only solution that I can see, and the one we are recommending to our customers, is to give a fixed price quote and hope that you are smart enough to beat it.

Maintenance of equipment, buildings and grounds, as with any marina, is an absolute necessity. Cleanliness may not really be next to godliness after all, but it's certainly one of the ways to make a marina or stacked storage facility profitable. And don't tell me about the problem of keeping the heads clean after the women--I've been there too. The forklift is your source of bread and butter, the reason for your existence, and it should be nursed along like a fine airplant. And I'm not talking just about regular oil checks. Hydraulic lines should be checked for water daily, tires inspected, the full operating range exercised, and all signs of grease or rust should be removed before they show up. You would be surprised--and would share my dismay-- at the number of operators who not only have no maintenance schedule but who have never even read the instruction manual. Obviously they've got more money to burn than I have.

In summary, a stacked storage operation, in the right place, with the right mix of sizes, and good management, can be quite satisfactorily profitable. Do it wrong and you'll loose your shirt.

A

COURSE OF INSTRUCTION

IN

BASIC MARINA MANAGEMENT

WEDNESDAY

Marine Management Workshop
Marketing Your Product

I. What am I Marketing?

II. A Framework for Marketing Strategy

III. Who is my Market?

IV. Consumer Behavior and Consumer Decision Processes

V. The Offering

Product Mix

Promotion

Advertising

Publicity

Atmosphere

Sales Promotion

Personal Selling

Pricing

Location

VI. Measuring Marketing Performance

Profit and Loss Statement

Performance and Control Measures

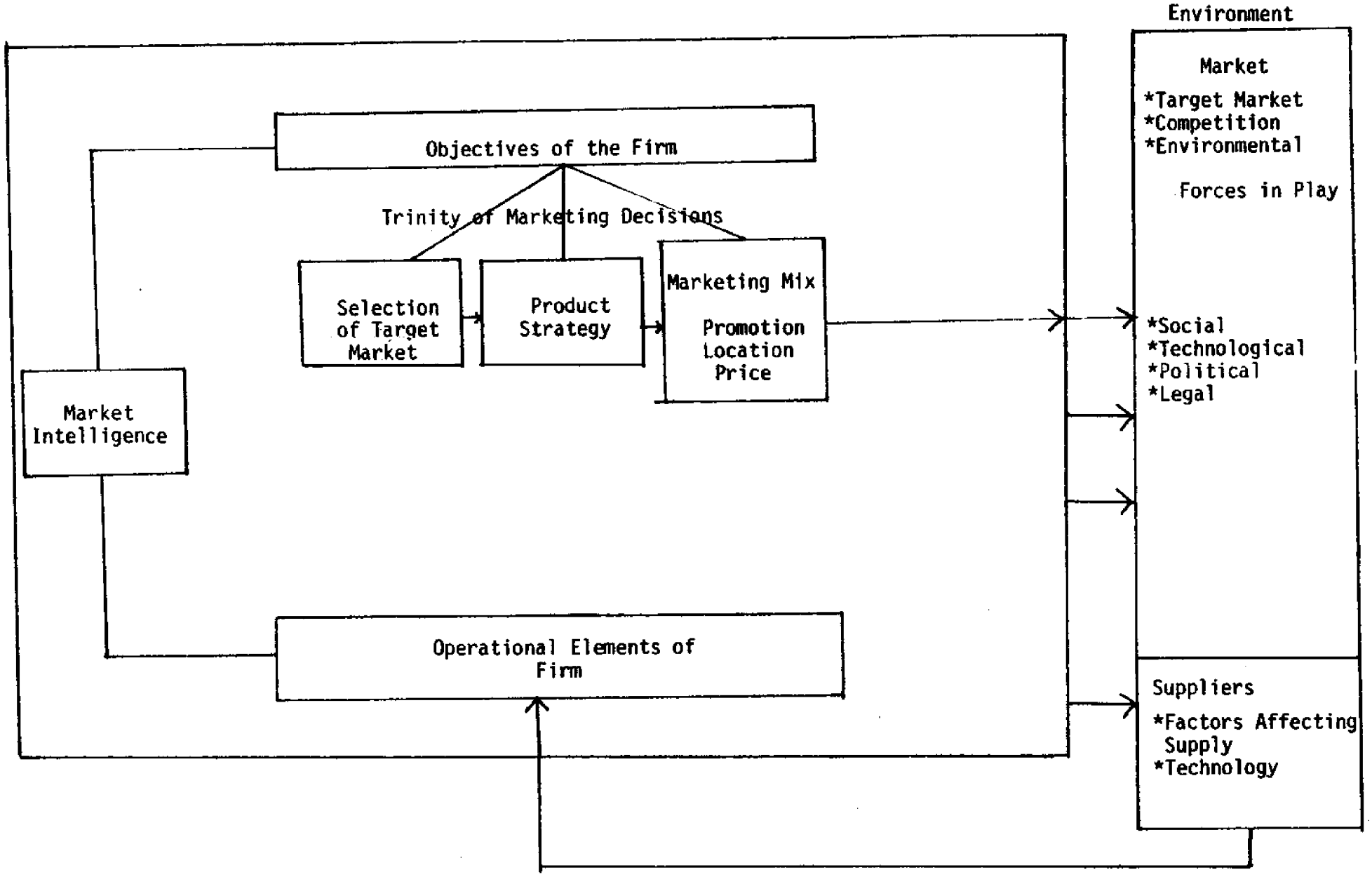
Sales Volume Analysis

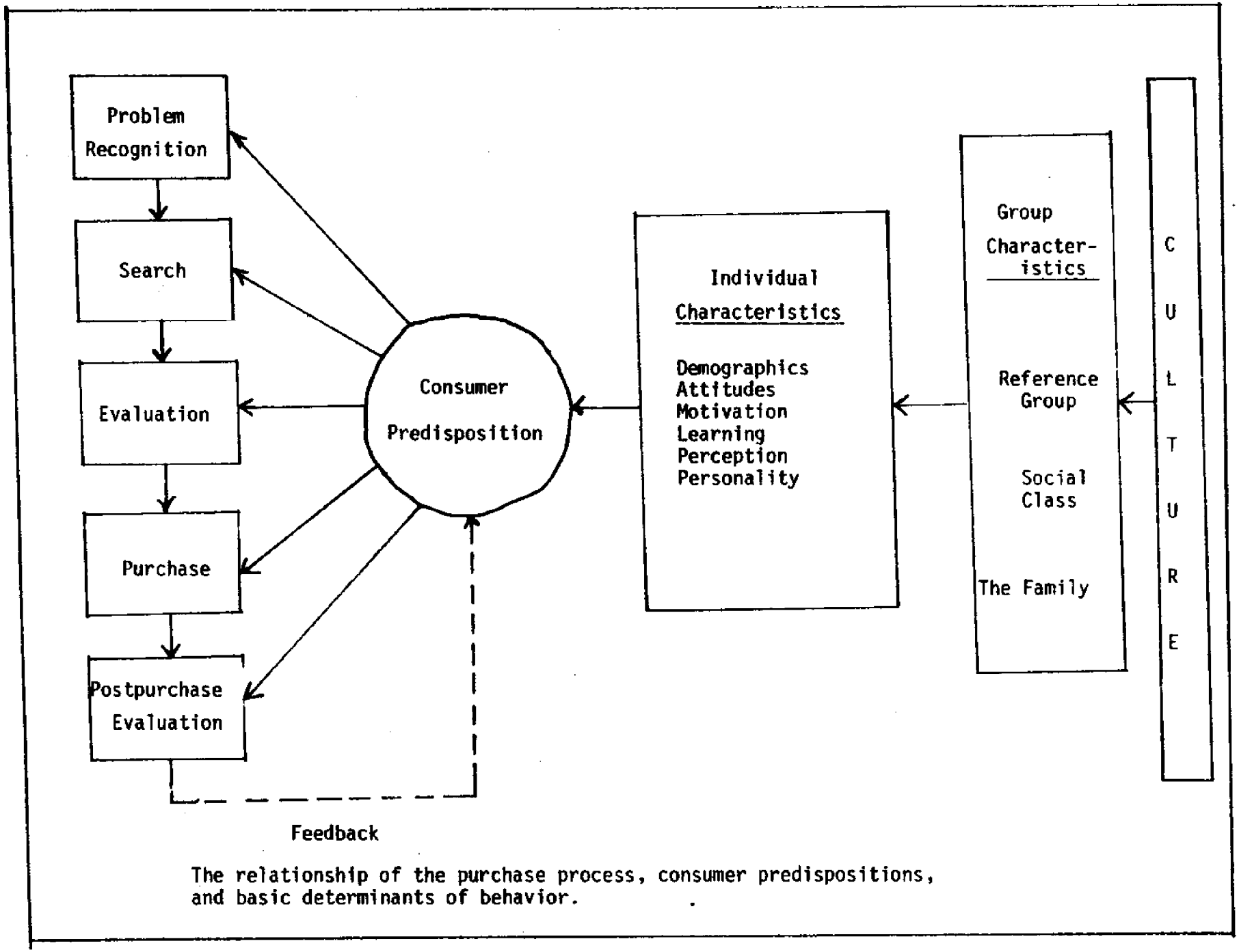
Cost Analysis

VII. The Marketing Audit

A FRAMEWORK FOR MARKETING STRATEGY

THE FIRM





The relationship of the purchase process, consumer predispositions, and basic determinants of behavior.

FIGURE 8-3 RELATION OF PROBLEM-SOLVING PROCESS, ADOPTION PROCESS, AND LEARNING (GIVEN A PROBLEM AND DRIVE TENSIONS)

Problem-solving steps	Adoption process steps	Learning steps
1. Becoming aware of or interested in the problem.	Awareness and interest	
2. Gathering information about possible solutions.	Interest and evaluation	Cues ←
3. Evaluating alternative solutions, perhaps trying some out.	Evaluation, maybe trial	↓ Reinforcement
4. Deciding on the appropriate solution.	Decision	Response →
5. Evaluating the decision.	Confirmation	

The Seven - Step Approach To Market Gridding

1. Select the product - market area that will be considered (compromising between narrowly or broadly defining the business you are in)
2. List all <u>needs</u> that all potential customers may have in this product - market area.
   (Brainstorming - creatively listing as many needs as possible)
3. Assuming that some market segments will have different needs than other, select out of the above list the most relevant for yourself, a friend, then several acquaintences from widely different demographic groups. Build up a list of needs for at least three separate groups of potential markets.
4. Review the list of needs for each market segment, and remove any that are common to all segments since these obviously are not segmenting dimensions.
   (although they may be very important dimensions to all segments.)
5. Review the remaining needs segment by segment and tentatively name each segment.
6. Determine what is already known about the needs and behavior of each segment and add any new dimensions to each list. (This may lead to splitting and renaming some segments). This process is designed to deepen your understanding of why certain market segments behave as they do.
7. Link each segment to demographic characteristics, if possible, to help determine the size of each market segment.

Major Segmentation Variables and

their Typical Breakdowns

Variables	
Geographic	
Region	Pacific; Mountain; West North Central; West South Central; East North Central; East South Central; South Atlantic; Middle Atlantic; New England
County size	A; B; C; D
City or S.M.S.A. size	Under 5,000-19,999; 20,000-49,999; 50,000-99,999; 100,000-249,999; 250,000-49,999; 500,000-999,999; 1,000,000-3,999,999; 4,000,000 or over
Density	Urban; suburban; rural
Climate	Northern; Southern
Demographic	
Age	Under 6; 6-11; 12-17; 18-34; 35-49; 50-64; 65+
Sex	Male; female
Family size	1-2; 3-4; 5+
Family life cycle	Young, single; young, married, no children; young, married, youngest child under 6; young,married, youngest child 6 or over; older, married, with children; older, married, no children under 18; older, single; other
Income	Under $5,000; $5,000-$7,999; $8,000-$9,999; $10,000-$14,999; over $15,000
Occupation	Professional and technical; managers, officials, and proprientors; clerical, sales; craftsmen, foremen; operatives; farmers, retired; students, housewives; unemployed
Education	Grade school or less; some high school; graduated high school; some college; graduated college
Religion	Catholic; Protestant; Jewish; other
Race	White; Negro; Oriental
Nationality	American; British; French; German; Eastern European; Scandinavia; Italian; Spanish; Latin American; Middle Eastern; Japanese and so on.
Social class	Lower-lower; upper-lower; lower-middle; middle-middle; upper-middle; lower-upper; upper-upper
Psychographic	
Life sytle	Swinger; status seeker; plain Joe; etc.
Personality	Compulsive; gregarious; conservative; ambitious; etc.
Benefits sought	Economy; convenience; dependability; prestige; etc.
User status	Nonuser; potential user; first-time user; regular user; ex-user
Usage rate	Light user; medium user; heavy user
Loyalty status	None; medium; strong; absolute
Readiness stage	Unaware; aware; informed; interested; desirous; intending to buy

TABLE . . A COMPARISON OF ATTITUDES AND CHARACTERISTICS . . TWO SOCIAL CLASSES

Middle class	Lower class
1. Pointed to the future.	1. Pointed to the present and past.
2. His viewpoint embraces a long expanse of time.	2. Lives and thinks in a short expanse of time.
3. More urban identification.	3. More rural identification.
4. Stresses rationality.	4. Nonrational essentially.
5. Has a well-structured sense of the universe.	5. Vague and unclear structuring.
6. Horizons vastly extended or not limited.	6. Horizons sharply defined and limited.
7. Greater sense of choice making.	7. Limited sense of choice making.
8. Self-confident, willing to take risks.	8. Very much concerned with security and insecurity.
9. Immaterial and abstract in his thinking (idea-minded).	9. Concrete and perceptive in his thinking (thing-minded).
10. Sees himself tied to national happenings.	10. World revolves around his family.

SOURCE: P. MARTINEAU, "THE PATTERN OF SOCIAL CLASSES," IN R. L. CLEWETT (ED.), MARKETING'S RACE IN SCIENTIFIC MANAGEMENT (CHICAGO: AMERICAN MARKETING ASSOCIATION, 1957), PP. 246-47.

FIGURE 6-4 DETERMINING DIMENSIONS IN THE MARKET FOR APARTMENTS (IN DALLAS, TEXAS)

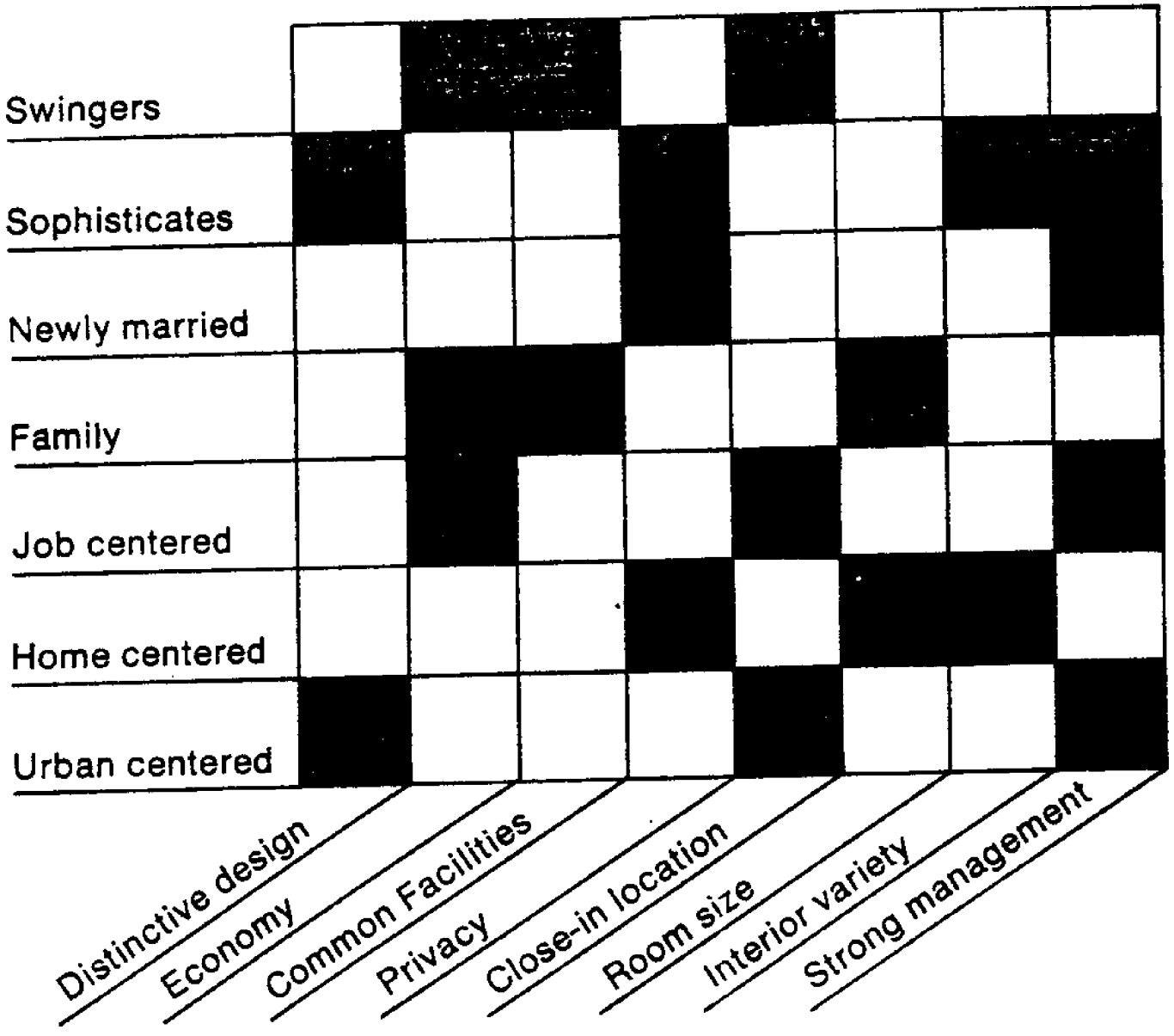
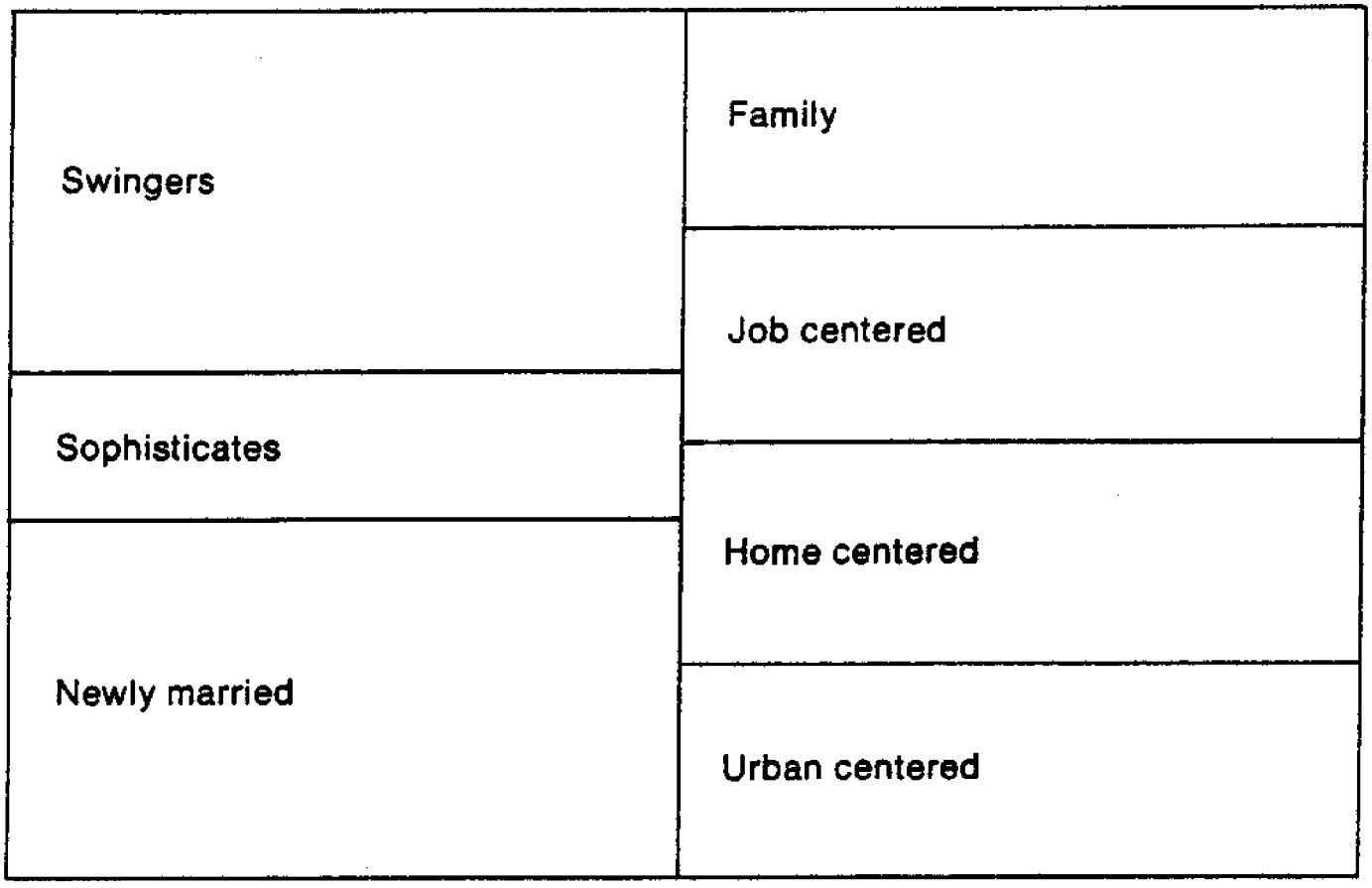


FIGURE 6-3 MARKET GRID FOR APARTMENTS (IN DALLAS, TEXAS)



SWINGERS--YOUNG, UNMARRIED, ACTIVE, FUN-LOVING, PARTY GOING.
SOPHISTICATES--YOUNG, BUT OLDER THAN SWINGERS, MORE MATURE THAN SWINGERS, MORE INCOME AND EDUCATION THAN SWINGERS, MORE DESIRE FOR COMFORT AND INDIVIDUALITY.
NEWLY MARRIED--FOCUSES ON FUTURE HOME, NOT A SWINGING PLACE. APARTMENT IS A TRANSITIONAL PLACE, NOT ENOUGH MONEY TO BUY A HOUSE. WIFE WORKS, THEREFORE ECONOMY NOT NECESSARY.
JOB CENTERED--WANT TO BE NEAR JOB, SINGLE ADULTS, WIDOWS OR DIVORCEES, INTERESTED IN ECONOMY.
HOME CENTERED--FORMER HOMEOWNERS BUT STILL WANT SOME ASPECTS OF SUBURBAN LIFE.
URBAN CENTERED--FORMER HOMEOWNERS IN SUBURBS--WANT TO BE CLOSE TO ATTRACTIONS OF CITY.
SOURCE: HOUSE & HOME, APRIL 1965, PP. 94-99.

FIGURE A-1

Operating Statement for XYZ Company For the year ended December 31, 197X

Gross sales			$54,000
Less: Returns and allowances			4,000
Net sales			$50,000
Cost of goods sold			
Beginning inventory at cost		$ 8,000	
Purchases at billed cost	$31,000		
Less: Purchase discounts	4,000		
Purchases at net cost	$27,000		
Plus freight-in	2,000		
Net cost of delivered purchases		29,000	
Cost of goods available for sale		$37,000	
Less: Ending inventory at cost		7,000	
Cost of goods sold			30,000
Gross margin (gross profit)			$20,000
Expenses			
Selling expenses			
Sales salaries	$ 6,000		
Advertising expense	2,000		
Delivery expense	2,000		
Total Selling Expense		$10,000	
Administrative expense			
Office salaries	$ 3,000		
Office supplies	1,000		
Miscellaneous administrative expense	500		
Total Administrative Expense		4,500	
General expense			
Rent expense	$ 1,000		
Miscellaneous general expenses	500		
Total General Expense		1,500	
Total Expenses			16,000
Profit from Operation			$ 4,000

STRATEGIC PROFIT MODEL

$$\frac{\text{Net Profit}}{\text{Net Sales}} \times \frac{\text{Net Sales}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Net Worth}} = \frac{\text{Net Profit}}{\text{Net Worth}}$$

PERFORMANCE AND CONTROL MEASURES

A. Markup Ratios

1. Initial Markup % = $\frac{\text{Profit + Expense + Reduction in sales - cash discount}}{\text{Net Sales + Reduction in Sales}}$

2. Maintained Markup % = $\frac{\text{Profit + Expenses - cash discount}}{\text{Net Sales}}$

3. Gross Margin % = $\frac{\text{Maintained markup + cash discount}}{\text{Net Sales}}$

B. Turnover Ratios

1. Investment turnover = $\frac{\text{Net sales at retail}}{\text{Total assets}}$

2. Stock turnover = $\frac{\text{Net sales at retail}}{\text{Average Inventory at Retail}}$

C. Profit & Leverage Ratios

1. Equity Ratio = $\frac{\text{Net Profit}}{\text{Net Worth}}$

2. Profit Ratio = $\frac{\text{Net Profit}}{\text{Net Sales}}$

3. Leverage Ratio = $\frac{\text{Total assets}}{\text{Net Worth}}$

D. Sales per square foot: $\frac{\text{Net Sales}}{\text{Total sq. ft. selling space}}$

E. Controllable profit concept (establishment, product category)
Gross Sales - Cost of goods sold = Gross Margin
Gross margin - Direct expenses = Controllable profits

Net Sales	$2,800,000	Controllable Profit	$226,000
Less cost of goods sold	2,256,000		
Gross Margin	644,000	Fixed Expenses	
Less Direct (Variable) expenses		Administrative	70,000
Markdowns	59,400	Occupancy	40,000
Selling	124,000	Buying	66,000
Receiving & Marketing	14,000	Net Profit before income taxes	$50,000
Delivery	46,000		
Installation & Warranty	80,000		
Inventory shortage	4,600		
Advertising	50,000		
Carry charge income	(50,000)		
Credit Dept. Expense	40,000		
Imputed interest on inventory	10,000		
Storage & Warehouse	40,000		
	$ 418,000		

A Systematic Marketing Audit

Part 1. The Marketing Environment Review

A. Markets

1. Who are the organization's major markets and publics?
2. What are the major market segments in each market?
3. What are the present and expected future size and the characteristics of each market or market segment?

B. Customers

4. How do the customers and publics feel toward and see the organization?
5. How do customers make their purchase or adoption decisions?
6. What is the present and expected future state of customer needs and satisfaction?

C. Competitors

7. Who are the organization's major competitors?
8. What trends can be foreseen in competition?

D. Macroenvironment

9. What are the main relevant developments with respect to demography, economy, technology, government, and culture that will affect the organization's situation?

Part II. The Marketing System Review

A. Objectives

10. What are the organization's long-run and short-run overall objectives and marketing objectives?
11. Are the objectives stated in a clear hierarchical order and in a form that permits planning and measurement of achievement?
12. Are the marketing objectives reasonable for the organization given its competitive position, resources, and opportunities?

B. Program

13. What is the organization's core strategy for achieving its objectives, and is it likely to succeed?
14. Is the organization allocating enough resources (or too many) to accomplish the marketing tasks?
15. Are the marketing resources allocated optimally to the various markets, territories, and products of the organization?
16. Are the marketing resources allocated optimally to the major elements of the marekting mix; i.e., product quality, personal contact, promotion, and distribution?

C. Implementation

17. Does the organization develop an annual marketing plan? Is the planning procedure effective?
18. Does the organization implement control procedure (monthly, quarterly, etc.) to insure that its annual plan objectives are being achieved?
19. Does the organization carry out periodic studies to determine the contribution and effectiveness of various marketing activities?
20. Does the organization have an adequate marketing information system to service the needs of managers for planning and controlling operations in various markets?

D. Organization

21. Does the organization have a high-level marketing officer to analyze, plan, and implement the marketing work of the organization?
22. Are the other persons directly involved in marketing activity able people? Is there a need for more training, incentives, supervision, or evaluation?
23. Are the marketing responsibilities optimally structured to serve the needs of different marketing activities, products, markets and territories?

A Systematic Marketing Audit

(con't)

24. Do the organization's personnel understand and practice the marketing concept?

Part III. Detailed Marketing Activity Review

A. Products

25. What are the main products of the organization? What are the generic products?
26. Should any products in the line be phased out?
27. Should any products be added to the line?
28. What is the general state of health of each product and the product mix as a whole?

B. Price

29. To what extent are prices set on cost, demand, and/or competitive criteria?
30. What would the likely response of demand be to higher or lower prices?
31. How do customers psychologically interpret the price level?
32. Does the organization use temporary price promotions. and how effective are they?

C. Distribution

33. Are there alternative methods of distributing the product that would result in more service or less cost?
34. Does the organization render adequate service along with product to its customers?

D. Personal Contact

35. Is the sales force large enough to accomplish the organization's objectives?
36. Is the sales force organized along with proper principles of specialization (territory, market, product)?
37. Does the sales force show high morale, ability, and effort? Is it sufficiently trained and motivated?
38. Are the procedures adequate for setting quotas and evaluating performances?

E. Advertising

39. Does the organization adequately state its advertising objectives?
40. Does the organization spend the right amount on advertising?
41. Are the themes and copy effective?
42. Are the media well-chosen?

F. Publicity

43. Does the organization have a carefully formulated program of publicity?

G. Sales Promotion

44. Are sales promotions used by the organization, and are they well-conceived?

MANAGEMENT AND ADMINISTRATIVE FUNCTIONS

FEE SCHEDULES, RULES AND REGULATIONS, LEASE AGREEMENTS, OVERALL MAINTENANCE

Glenn Harmes
Cimmarina
Sioux City, Iowa

It is a real pleasure for me to have the opportunity to visit with you a few minutes this afternoon about four very important facets, among the many, in the management and administrative functions of a marina operation.

Six years ago I would have welcomed an opportunity to attend a seminar such as this, to rub shoulders and socialize with people who were willing to share their experiences. At that time, I had the responsibility to design, construct, and operate a 400-boat marina with a full boat sales and service facility on the Missouri River one-half mile from the heart of downtown Sioux City, Iowa, an agriculturally oriented city of 100,000 people.

It might be appropriate at this time to give you a little background on our operation to lay the foundation for later discussion.

Cimmred, Inc., is a wholly owned subsidiary of Iowa Public Service Company. Cimmarina is a Division of Cimmred, Inc.—our unusual name was derived by taking the Cim off the front of Dimmred and adding it to the front of marina—thereby, Cimmarina.

The determination of a fee schedule for dock rent involves input from many angles.

1. Cost of Docks
2. Cost of Installation—union—non-union
3. Length of Season—we are seven months
4. Number of Docks
5. Area Available
6. Availability of Electricity, Water, and Sewer
7. Parking Facilities
8. Hard Surface Walk-Ways
9. Landscaping
10. Area Lighting
11. Security
12. Restroom Facilities
13. Maintenance
14. Insurance and Taxes
15. Depreciation Schedule
16. Miscellaneous
17. Competition

You will note that I listed competition last, not that it is the least important factor. Quite the contrary, competition is probably the most important single factor in determining your dock rent fee. The type of competition is also important.

1. Private Operator
2. Club or Association
3. Municipal
4. State
5. Federal

You will note that several of those listed above are in the tax exempt category, and, therefore, can approach the subject from a different angle.

Simplicity in your dock fee schedule is important. We have six rates to take care of boats from 8-feet to 54-feet in length. The breakdown is as follows:

1 rate $520 for houseboats including utilities
1 rate $110 for 8-foot dinghys—side tie up
1 rate $250 open slip
3 rates $340-360 and $380 covered docks, 18-, 20-, and 24-feet, respectively

It's simple when you think of it as 4 rates to remember, one of which has three steps of $20 increments.

Whether or not the dock fee schedule should be based on length of boat, investment, size of slip, etc. is open for debate. Our rates are based upon investment (modified) since our docks are divided into slips, each slip to accommodate one boat. In a marina utilizing parallel tie-up alongside a dock, then dock fee based on footage is the preferred method for obvious reasons.

A copy of the 1978 Cimmarina slip rent schedule has been provided for you showing the type, size, and price.

We hope to have time for a question and answer period at which time we can discuss specific questions you might have.

The following method was used back in 1973 to establish a foundation upon which we base the slip fees.

First, we will discuss the 9' x 16' open slips on Pier D.

$12,500 invested in 24 slips = $521 per slip	
$521 amortized over 20 years	$ 26.05
Maintenance - 3 percent	15.62
Parking - one stall allocated	20.00
Insurance	7.00
Taxes $521 x 0.27 = 141 x 145 miles	20.45
Utilities	15.00
Interest - 9 percent	46.89
Administration	3.00
Contingencies	2.00
	$156.01

You recall I stated previously that we based our slip rent on investment (modified). Here is the method and thinking behind our modification. We did at this time have competition for open docks, one-fourth mile down river on the Nebraska shore. Their docks were made of wood—only 14 feet long, very unstable, and requred a long walk to reach the boat. Their rate was $160 per season for the open docks. With our first rate facility—and MEECO docks are first rate—we felt we could get $185 per season; remember, this was in 1973. We had a beautiful spring, the economy of the area was good, and we filled every dock and started a waiting list which, incidentally, we still maintain, and there are 54 names on that list; in subsequent years, we have had the following increases in slip rent: 1974 - $195; 1975 - $200; 1976 - $215; 1977 - $225; 1978 - $250.

The primary reasons for the slip rent increase during that period was the increased cost of new dock installations, general inflationary cost, and demand.

Perhaps if I get more specific you will have a better overall picture. We have a total of $540,700 invested in the harbor and docking facilities. The 1978 slip fee schedule will generate $114,200 in revenue—this is a return of 21.2 percent on investment.

The following computations are for 9' x 18' covered slips on Pier D:

$28,000 invested in 28 slips = $1,000 per slip	
$1,000 amortized over 20 years	$ 50.00
Maintenance - 3 percent	30.00
Parking - one stall allocated	20.00
Insurance	10.00
Taxes $1,000 x 0.27 value = $270 x 145 miles	39.15
Utilities - best estimate, sewer, water, elec.	20.00
Interest - 9 percent	90.00
Administration	3.00
Contingencies	2.85
	$265.00

At that time, we had no competition for covered slips. Subsequent increases were: 1974 - $277; 1975 - $290; 1976 - $300; 1977 - $315; 1978 - $340.

Originally we did not anticipate the need for security other than that provided by the gas dock attendant. We now employ a security guard service from May through September from 10:00 p.m. to 6:00 a.m. One-half this cost is charged to docks and one-half to boat sales and service. This amounts to about $1 per month per slip and is covered in the contingencies.

We have also provided a mooring agreement which has over the last six years been devised, revised, up-dated, rearranged, changed, condensed, etc. My attorney feels this instrument is adequate for our use. I would suggest that you obtain a copy from several marinas and have your attorney help design one for your specific use. Most states have laws which are unique to that state with regard to liability and responsibility, and the primary function of a mooring agreement is to establish liability. You should attempt to keep this agreement as brief as possible. Use common language so the layman can understand what he is signing. Be certain each customer signs. You should provide adequate space to record all the pertinent information about each customer and his boat.

The experienced marina operator will have definite ideas about the operation of his marina and, with the aid of legal counsel, should translate these ideas into rules or regulations which should be made available to each customer at the time he signs the mooring agreement. Posting rules on a bulletin board is also a good idea.

Each of the 14 rules covered in Cimmarina Harbor's regulations have in the past made the management of the marina less difficult. You may encounter situations unique to your marina and wish to add to this list. One word of caution—keep the rules simple; avoid words and terms that could lead to a misunderstanding. I feel that the rules and regulations should serve two purposes: protect boats and boaters and add to the enjoyment and convenience of boating.

The care and storage of boats during the winter months can be a very desirable segment of your total marina operation, especially north of the Mason-Dixon line. You have an excellent opportunity to increase your cash flow and utilize manpower during the off-season by performing the many services associated with "laying-up" the boat for winter.

A typical example of the activity that can be generated by an 18-foot and I/O boat from slip to winter storage would be as follows:

Lift-out of water—included in winter storage fee
($10 if boat is loaded on trailer)
General tune-up—plugs, points, etc., $60 labor and parts
Change crankcase oil—1 hr. @ $15, $1 a quart oil, plus filter

Change outdrive oil—½ hr. @ $7.50 plus $6.50 for oil
Clean bottom of boat—$30 labor plus acid used
Propeller rebuild—varies

We have provided you with a copy of the letter sent to all potential winter storage customers. The bottom portion of this letter helps organize the work and provides a permanent record.

If this activity is not in your present plan of operation, I would suggest that you give it some serious thought.

The following facts are those to be considered in establishing a winter storage fee:

1. Cost and availability of land
2. Type of construction
3. Type of system—on trailer—stack storage
4. Special equipment required—or available
   a. fork lift
   b. overhead crane
5. Total cost of construction
6. Special zoning laws
   a. fire sprinkling system
   b. limits on heights and type of construction
7. Availability of utilities
8. Maintenance
9. Insurance—taxes
10. Deprecation schedule
11. Miscellaneous
12. Competition
    a. other marinas
    b. county fair ground building
    c. local warehouse facilities

At Cimmarina Harbor, we stack boats four high in each bay, using a pipe rack system. The 12,000 pound forklift will stack boats 17 feet high maximum. The forklift is used 70 percent of the time in the marina operation and 30 percent of the time in the winter storage program. In these times of high construction cost, you might explore the possibility of leasing existing facilities at a near location. This approach will eliminate the need to tie up capital investment and still provide cash flow.

Overall maintenance of the facilities will depend upon many factors. This is an ongoing problem and can be controlled somewhat in the design stages of a marina.

1. Wood Docks—Piling Support. If you operate in an area where pile driving equipment is readily available and ice is no problem, you might explore this type dock. You should be prepared to do a lot of painting. Horizontal wood surfaces exposed to the elements require a

great deal of renailing, bolt tightening, scraping and painting due to swelling and drying. Generally speaking, this type of dock is much more difficult to maintain.

2. Floating Docks—Steel, Styrofoam, and Light-Weight Concrete. This type appears to be much easier to maintain. A few paint chips in the steel uprights will require touch-up twice a year. This can be accomplished with a little sandpaper and a can of spray paint. The styrofoam is certainly not indestructable. However, in five years, we can see no immediate problems. Light-weight concrete decking has many advantages—non-slip surface, remains attractive over a long period, the deck is sectionalized for easy repair or replacement. The floating dock is somewhat portable and, therefore, could be relocated at some other area of the marina, thereby facilitating expansion or redesign.

Most boaters are particular about the condition of their boat. Your docks should be well bumpered, and you should make a periodic inspection to see that the bumpers are all in place and in good condition. The 3 percent we allow for maintenance is more than adequate at the present time. However, as the docks age, this maintenance expense will accelerate.

The collection and disposal of garbage in and around a marina is a big problem. We attempt to present a "Disneyland" image, and this involves:

1. The strategic placement of adequate containers—approximately 1 55-gallon drum, well-painted, and clean, for each 25 slips.
2. The collection of garbage twice daily.
3. Adequate enclosed holding facilities so that garbage does not get wet. I must emphasize the importance of good housekeeping to eliminate odors, flies, etc.

Garbage pick-up service cost can vary with different locations. We pay $480 per year.

As General Manager, I feel that maintenance is so important that I personally supervise this activity including the lawn, tree and shrub care as well as general safety condition of the docks and equipment.

cimmARINA HARBOR
PORT OF SIOUX CITY
BOX 25, 1100 LARSEN PARK ROAD, SIOUX CITY, IOWA 51102 • (712) 277-2917

February 6, 1978

Ahoy Mate!

All the crew here at Cimmarina has been busy this past winter rigging new boats and assembling new trailers. Also doing service work on client's boats.

If your boat is not in "Ship Shape Condition", now is a good time to get in touch with Tony, so that he and his men can have your boat and motor ready for a summer of safe boating pleasure.

As in the past, slip assignments at Cimmarina Harbor will be made March 1, 1978 on the following basis:

1. All 1977 slip assignments in effect October 31, 1977 will have first choice for re-assignment for the 1978 season.

2. Balance of slip assignments will be determined from the waiting list on file in the Cimmarina office.

To be eligible for slip assignment March 1, 1978, we need a completed and signed Mooring Agreement from you and a minimum deposit of $100.00 by February 28, 1978, with the balance due April 1, 1978.

Sincerely,

Glenn E. Harmes
Manager

CIMMARINA HARBOR
PORT OF SIOUX CITY
BOX 25, 1100 LARSEN PARK ROAD, SIOUX CITY, IOWA 51102 • (712) 277-2917

February 6, 1978

Ahoy Mate!

All of us at Cimmarina Harbor wish to say thank you for allowing us to take care of your boating needs. Also, we would like to introduce you to our beautiful new boats and accessories. Please join us for cocktails

****

from 5:30 P.M. to 7:30 P.M. on Saturday, February 18, 1978

****

While you're here you might find it convenient to make your docking arrangements for the coming season.

Please try to join us!!!

If unable to attend, we would appreciate a call at 277-2917.

Sincerely,

Glenn E. Harmes

Glenn E. Harmes
Manager

Check In Slip

BERTH _____ YACHT NAME _____ FOOT _____

OWNER _____

ADDRESS _____

CITY _____ STATE _____ ZIP CODE _____

GUEST _____

DATE OF ARRIVAL _____ PLAN TO DEPART _____

PIG TAIL _____ TELEPHONE _____ TV CABLE _____

ASST. BY _____ SIGNATURE OWNER OR CAPT. _____

TELEPHONE _____

ALL YACHTS MUST CLEAR THE HOTEL AND MARINA BEFORE DEPARTURE.

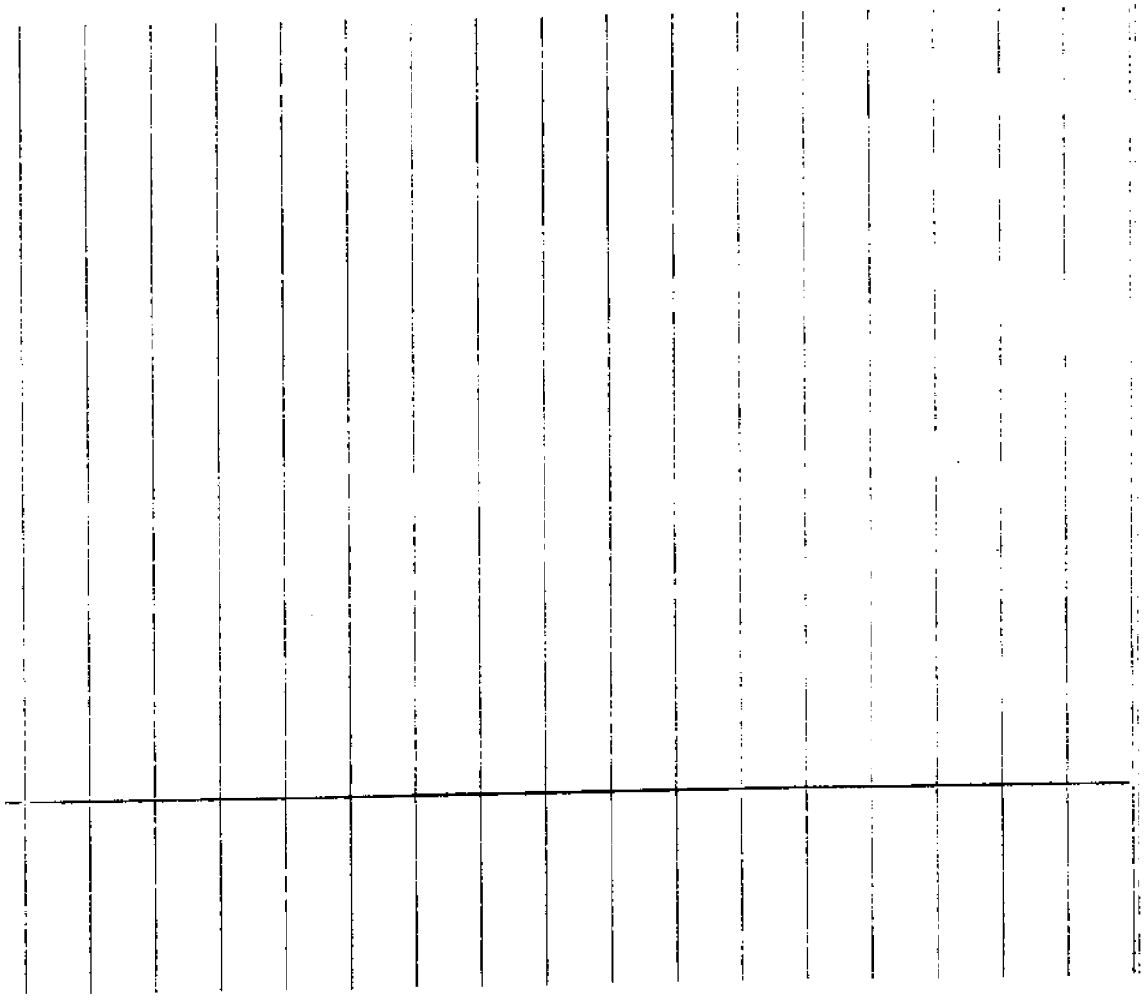
Check Out Slip

BROADWATER BEACH MARINA

NAME

Date

SLIP NO.



NIGHT WATCHMAN REPORT

DAY _____ DATE _____

Slip	Yacht	Slip	Yacht	Slip	Yacht	Slip	Yacht
1		41		69		112	
2		42		70		113	
3		43		71		114	
4		44		72		115	
5		45		73		116	
6		46		74		117	
7		47		75		118	
8		48		76		119	
9		49		77		120	
10		50		78		121	
11		51		79		122	
12		52		80		123	
13		53		81		124	
14		54		82		125	
15		55		83		126	
16		56		84		127	
17		57		85		128	
18		58		86		129	
19		59		87		130	
20		60		88		131	
21		61		89		132	
22		62		90		133	
23		63		91		134	
24		64		92		135	
25		65		93		136	
26		66		94			
27		67		95			
28		68		96			
29				97			
30				98			
31				99			
32				100			
33				101			
34				102			
35				103			
36				104			
37				105			
38				106			
39				107			
40				108			
				109			
				110			
				111			

CHARGE SALES

CASH SALES

REMARKS

Signature _____ Time _____

Sand·Sun  Food·Fun

BROADWATER BEACH MARINA

APPLICATION FOR DOCKAGE

From _____ To _____

Name _____ Boat Name _____

Street _____ Mfg. _____

City & State _____ Model _____ Year _____

Business Affiliation _____ Length _____ Beam _____

Business Capacity _____ Draft _____ Sail ( ) Power ( )

Telephone: Home _____ Business _____

Electrical Requirements: 110 or 220 volts _____, Amperes _____

In order to aid us in our efforts to accommodate you — please supply the following information:

How many people will be normally living aboard? Please check.

( ) Yourself ( ) Wife ( ) Captain ( ) Crew ( ) Children

Will the boat be left unattended at any time?

( ) Yes ( ) No For how long? _____

Name of Bank _____

Type of Account _____

Please check the following credit cards that you have: ( ) Phillips Petroleum Co. ( ) American Express

( ) Diners ( ) Other Major Oil Co. Company _____

Credit Card Number _____

Signature _____ Date _____

This application will be given immediate consideration and every effort will be made to accommodate you. Please note however, that no reservation is valid until you receive our formal acceptance in writing.

AUTHORIZATION CARD FOR FRONT OFFICE CASHIERS

BROADWATER BEACH MARINA

NAME _____

ADDRESS _____

CITY _____ ZIP _____

(Only Person Authorized To Take Charge)

GUESTS:

(Indicate By Asterisk If Authorized To Make Charges To Craft)

_____

_____

_____

BOAT NAME: _____

SLIP NO. _____ DATE _____, 19____

Approved _____
Harbor Master

NAME
STREET
CITY STATE ZIP

YACHT LENGTH

REMARKS		CHARGES	CREDIT	BALANCE

BROADWATER BEACH MARINA

BROADWATER BEACH
MARINA ON THE GULF
Biloxi, Mississippi

DOCKAGE AGREEMENT

REGISTRATION and
FOLIO NO. 1749
Date _____

Agreement between Broadwater Beach Marina, herein called "Marina", and the undersigned boat and/or owner, herein called "Owner".

(Print all information)

Owners Name _____ Boat Name _____

Street _____ Registration No. _____

City and State _____ O.A. Length _____ Beam _____ Draft _____

Power [ ] Sail [ ] Home Telephone _____

Slip No. ____ Rate _____ Length of Stay _____ PHONE: Yes [ ] No [ ]

1. Marina shall have a lien against the above described boat, her appurtenances and contents, for unpaid sums due for use of dock facilities or other services, or for damage caused or contributed to by above described boat or by Owner to any docks or property of Marina or any other person at Broadwater Beach Marina.

2. This agreement is for the use of pier space only, and such space is to be used at the sole risk of Owner. Marina shall not be liable for the care or protection of the boat (including her gear, equipment and contents) or for any loss or damage of whatever kind or nature to the boat, her contents, gear or equipment whether due to the sole negligence of Marina or otherwise. Owner indemnifies and holds Marina harmless against any loss, cost, suit or claim arising out of use of pier space or any handling of the boat in connection therewith whether or not such loss, cost, suit or claim is based upon the sole negligence of Marina or otherwise.

3. HURRICANES: In the event of a tropical storm warning, the Broadwater Beach Marina will be cleared of all vessels. The dock master shall determine when this will be necessary. It is the responsibility of the boat owner, prior to evacuation time, to make arrangements for a safe anchorage for his vessel. Unattended boats will be towed to another anchorage at the owner's expense and risk.

4. This agreement shall be in effect, unless sooner terminated in accordance with the following conditions, to wit:
   (a) By destruction of the anchorage facilities by fire, storm or other calamity.
   (b) In the event Owner shall make a bona fide sale of the boat listed in this agreement.
   (c) By breach or default as provided in paragraph (5) below.

5. Owner agrees to comply with all posted rules and regulations on the reverse side, as fully as though they were set forth herein, and should breach of this agreement or violation of posted rules and regulations occur, this rental agreement shall terminate immediately, and Marina may remove the boat from her mooring space at the Owner's risk and expense and retake possession of the mooring space.

6. Waiver of any conditions by Marina shall not be deemed to be a continuing waiver.

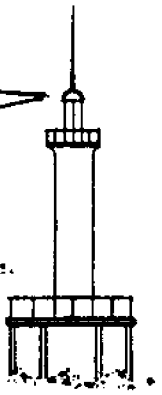
Signature _____
Owner

Checked in by _____
For Broadwater Beach Marina

STATEMENT

THE BROADWATER BEACH MARINA

P. O. Box 127 Biloxi, Miss.



REMITTANCE ENCLOSED

$_____

DETACH AND ENCLOSE WITH REMITTANCE

DATE	REFERENCE	CHARGES	CREDITS	BALANCE

THIS STATEMENT IS FOR DIRECT MARINA CHARGES ONLY. ISSUE CHECK PAYABLE TO BROADWATER BEACH MARINA

Charges for room, food, beverage, golf, telephone calls, etc. will be billed by Broadwater Beach Hotel.

PLEASE DISREGARD STATEMENT IF BALANCE HAS BEEN PAID

THE BROADWATER BEACH MARINA

ON THE GULF OF MEXICO EST'D 1945 PHONE 388-3683

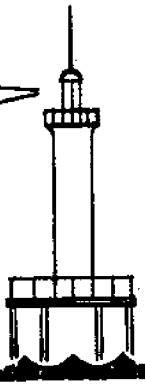
P. O. Box 127

Mrs. Joe W. Brown

Biloxi, Mississippi 39533

THE BROADWATER BEACH

MARINA



ON THE GULF OF MEXICO BILOXI, MISSISSIPPI PHONE 388-3683

CIMMARINA HARBOR
PORT OF SIOUX CITY
BOX 25, 1100 LARSEN PARK ROAD, SIOUX CITY, IOWA 51102 • (712) 277-2917

September 1, 1977

Dear Fellow Mariner:

It's been a great year for us at Cimmarina and we thank all our patrons for making it possible.

Autumn is fast approaching and we are making ready to winterize and store boats for the winter season.

We recommend that your maintenance and repair work be completed during the upcoming winter months. You will be billed at current labor and material rates and your boat will be ready for the water next spring.

AN EARLY RESPONSE WILL ASSURE YOU WINTER STORAGE! We urge you to stop by the Cimmarina in order to sign your Winter Storage Agreement.

Very truly yours,

Glenn E. Harmes
Manager

PLEASE COMPLETE THE FORM BELOW AND RETURN TO CIMMARINA HARBOR

Winter Storage _____ Rebuild Propeller _____

Winterize _____ Fiberglass Repair _____

General Tune Up _____ Paint Bottom _____

Change Crank Case Oil _____ Clean Bottom _____

Change Out-Drive Oil _____ Other _____

PLEASE NOTE: All Keys must be left in your boat.

Signed _____

Date _____

Telephone No. _____

CIMMARINA
1100 Larsen Park Road
P. O. Box 25
Sioux City, Iowa 51102

Mooring Agreement

Agreement between Cimmred, Inc. and the undersigned owner of the following described boat for mooring facilities within the Cimmarina Harbor, Port of Sioux City, Iowa.

Owner's Name _____

Address _____

Business Phone _____ Home Phone _____

Name of Boat _____ Engine No. _____

Registration No. _____ State _____ Year _____

(To Be Completed by Harbormaster)

The rate for the space allocated to your boat, season, 19____, is _____

Pier No. _____ Rate _____ Deposit _____ Date _____

Slip No. _____ Tax _____ Balance _____ Date _____

Total _____ Paid _____ Date _____

1. This Agreement is for the use of mooring space only, and such space to be used at the sole risk of Owner.
2. In the event of an emergency during the owner's absence, the Harbormaster is authorized to attempt, if practical and possible, to provide preparation and damage prevention service, and to charge the costs to the owner. However, the owner is solely responsible for his boat, and the management does not assume any responsibility for said protection and/or damages to the owner's boat.
3. All reasonable precautions will be taken by Cimmarina to ensure the property and safety of its patrons. However, Cimmred, Inc. assumes no responsibility for the safety of any boat docked in the Cimmarina and will not be liable for fire, theft, or damage to any boat, equipment, or property in or on said boat, however arising.
4. This Agreement is subject to the "Cimmarina Regulations", as the same may be amended from time to time. A copy of the Regulations is posted at the Harbormaster's Office, and a copy is enclosed.
5. Mooring Agreements are not transferable.
6. If it is considered by the Harbormaster to be in the best interest of the marina, and/or its patrons, Cimmred, Inc. reserves the right, after ten (10) days notice, to cancel this Agreement, with the Owner removing his boat forthwith. Proportional reimbursement will be made for the mooring fee.

Date _____ Owner's Signature _____

Date _____ Accepted _____

Cimmred, Inc.
Harbormaster

CIMMARINA COPY — GREEN

CUSTOMER COPY — YELLOW

CINMARINA HARBOR
1100 Larsen Park Road
Sioux City, Iowa 51102

WINTER STORAGE RATES
1977-1978

INSIDE STORAGE

Under 18'	$100.00
18' - 20'	$115.00
21' - 23' (single engine)	$150.00
23' - 26'	$170.00

Includes handling of boat into winter storage only

==========

OFF PREMISES

Under 18'	$ 70.00
18' - 20'	$ 90.00
21' - 26'	$125.00

**ALL UNITS TO BE DELIVERED TO THE DESIGNATED WAREHOUSE ON DATE AND TIME SPECIFIED

**WINTERIZING, BATTERY REMOVAL ETC. TO BE OWNERS RESPONSIBILITY

==========

OUTSIDE STORAGE

Houseboats	$100.00

NOTE: Houseboat Lift --$50.00-- Per Lift

All the above rates subject to 3% Iowa Sales Tax

CIMMARINA HARBOR
1100 Larsen Park Road
Sioux City, Iowa 51102
Phone: 277-2917

SLIP RENT SCHEDULE
1978 Season

LOCATION	TYPE	PRICE
Pier A & E	Houseboats	$ 520.00
Pier B	(10 by 24 Covered)	$ 380.00
Pier B	(10 by 20 Covered)	$ 360.00
Pier C	(10 by 24 Covered)	$ 380.00
Pier C	(10 by 20 Covered)	$ 360.00
Pier D	(9 by 18 Covered)	$ 340.00
Pier D	(9 by 16 Open)	$ 250.00
Pier D	(9 by 18 Open)	$ 250.00
Pier A & E	(9 by 18 Open)	$ 250.00
Pier A & E	Parallel to Walkway	$ 250.00
Dinghy (under 10')	Parallel to Walkway	$ 110.00

Transient---$5.00 per night

Weekly---$25.00

Monthly---$75.00 (open)

THE ABOVE PRICES ARE SUBJECT TO 3% SALES TAX

P. O. B O X 25

Sioux City, Iowa 51102

W I N T E R S T O R A G E A G R E E M E N T

Agreement between Cimmred, Inc. and the undersigned owner of the following described boat for winter storage.

Owner's Name _____

Address _____

Business Phone _____ Home Phone _____

Name of Boat _____ Engine No. _____

Registration No. _____ State _____ Year _____

(To Be Completed by Harbormaster)

The rate for the space allocated to your boat, season, 19 ____, according to length of _____ ft. is, $_____.

Rate _____ Tax _____ Total _____ Paid _____ Balance _____ Date _____

1. This Agreement is for the use of Winter storage only, and such space to be used at the sole risk of Owner. Winter storage season shall commence October 1 and terminate May 1.

(A) If an owner has also reserved mooring space at Cimmarina, the Harbormaster at his discretion may transfer the boat from storage to the owner's boat slip prior to May 1. Owner will be notified of the transfer.

(B) If an owner requests boat removal prior to storage season termination, the owner will pay all costs associated with the requested storage removal.

2. In the event of an emergency during the owner's absence, the Harbormaster is authorized to attempt, if practical and possible to provide damage prevention service, and to charge the costs to the owner. However, the owner is solely responsible for his boat, and the management does not assume any responsibility for said protection and/or damages to the owner's boat.

3. All reasonable precautions will be taken by Cimmarina to ensure the property and safety of its patrons. However, Cimmred, Inc. assumes no responsibility for the safety of any boat stored and will not be liable for fire, theft, or damage to any boat, equipment, or property in or on said boat, however arising.

4. This Agreement is subject to the "Cimmarina Regulations", as the same may be amended from time to time. A copy of the Regulations is posted at the Harbormaster's Office, and a copy is enclosed.

5. Winter Storage Agreements are not transferable.

6. If it is considered by the Harbormaster to be in the best interest of the marina, and/or its patrons, Cimmred, Inc. reserves the right, after 10 days notice, to cancel this Agreement, with the Owner removing his boat forthwith. Proportional reimbursement will be made for the storage fee.

Date _____ Owner's Signature _____

Date _____ Accepted _____

Cimmred, Inc.

CIMMARINA HARBOR REGULATIONS

The following regulations are provided for the assistance and protection of persons using the Cimmarina. Your cooperation in observing the regulations will be appreciated.

1. When a boat enters the Cimmarina premises, it is subject to the directions of the Harbormaster and the general jurisdiction of the management.

2. Boats shall not be operated in excess of five miles per hour within the harbor. Operation of boats above the speed limit shall be cause for revocation of harbor privileges.

3. In the event of an emergency during the owner's absence, the Harbormaster is authorized to attempt, if practical and possible, to provide damage prevention service, and to charge reasonable costs to the owner. However, the owner is solely responsible for his boat, and the management does not assume any responsibility for said protection and/or damages to the owner's boat.

4. Swimming, water skiing, or fishing shall not be permitted in the harbor.

5. Advertising or soliciting shall not be permitted on the premises, nor shall "For Sale" signs be placed on the boats without the written permission of the management.

6. The Cimmarina mooring docks are reserved for the use of the boat owners having rented mooring space therein. Only the owners, their representatives, guests and invitees, and the employees, guests and invitees of management shall be authorized on the mooring docks, piers and finger piers.

7. All usual precautions will be taken by Cimmarina to protect the property and safety of its patrons. However, management assumes no responsibility for the safety of any boat on the premises, and will not be liable for any loss or damage to any boat, equipment or property, however arising.

8. The owner (and guests for whom he is responsible) shall conduct himself at all times when at the harbor premises, or on any boat moored in the harbor, so as to create no annoyance, hazard or nuisance to Cimmred, Inc., or to other patrons.

9. Only pleasure boats, in good condition, under their own power, shall be admitted to the mooring areas.

10. The owner shall notify the Harbormaster's Office whenever his boat shall be removed from the mooring area over 24 consecutive hours.

11. Boat owners shall not store supplies, materials, accessories, or debris on the docks or finger piers, and shall not construct thereon any lockers, chests, cabinets or similar structures, except with written approval of the Harbormaster. The extent of any and all repairs and maintenance within the Cimmarina's premises shall be at the discretion of the Harbormaster.

12. Subleasing of slips, transfer of boats between slips, or from one slip to another slip, shall not be allowed except with the approval of the Harbormaster. The owner agrees that in case of emergency as determined by the Harbormaster, the boat may be removed from the particular space rented to any other mooring facility.

13. The owner shall have his boat insured by complete marine coverage, including liability. Each owner will be held responsible for damage he may cause to other boats in the Cimmarina or to the structures or facilities thereof.

14. Violations of the above regulations, or amendments thereto, shall constitute cause for immediate removal from the Cimmarina Harbor of the boat in question.

CIMMRED, INC.

Date_____ By_____

Harbormaster

COASTAL SMALL-CRAFT HARBORS REGULATION ORDINANCE

Submitted by
California Marine Parks and Harbors Association

An Ordinance regulating the use of–harbors and maritime facilities; setting penalties for violations of any of the provisions hereof.

This model ordinance is designed for use along ocean shores and in tidal estuaries. If adapted to use in inland waters, it should be modified with respect to water surface fluctuations and certain regional or local area terminology. Unapplicable sections should be deleted and possible others should be added to meet the local area requirements.

ARTICLE I

General Provisions

Sec. 1. Short Title: This ordinance shall be known and may be cited as the "————————".

Sec. 2. Applicability: The provisions of this Ordinance and any rules and regulations adopted pursuant thereto shall be applicable, and shall govern, the harbor(s) and all other maritime facilities under the jurisdiction of————————. This Ordinance shall be subordinate to existing Federal and State regulations governing the same matters and is not intended to preempt other valid laws.

Sec. 3. Invalidity of Provisions: If any provisions of this Ordinance is held invalid or inoperative, the remainder shall continue in full force and effect as though such invalid or inoperative provisions had not been made.

Sec. 4. Authority: Whenever, by the provisions of this Ordinance, a power is granted to the————————or a duty is imposed upon him, the power may be exercised or duty performed by a deputy of the————————or by a person authorized pursuant to law, unless it is expressly otherwise provided.

Sec. 5. Facilities, Control of Use: The————————is vested with authority over and control of all floats, wharves, docks, and other facilities owned, leased, controlled, constructed or maintained by the————————, or constructed or maintained by a lessee in any————————harbor or any other maritime facility for the purpose of causing to be corrected any condition.

Sec. 6. Rules, Regulations and Orders: The----------shall have the power and duty to enforce the laws, ordinances, traffic and safety regulations covering usage of------- harbors and other maritime facilities, under his jurisdiction.

Sec. 7. Chief of Harbor (or Other Designation): The----------officer of the Harbor----------or authorized agent acting under the orders and jurisdiction of the----------shall have full authority in enforcement of all laws, ordinances and regulations affecting the----------harbor or other maritime facility and waterways and beaches within such harbors and facilities, and he may cite alleged offenders to appear before the----------Court.

Sec. 8. Violations: Violation of this Ordinance is a misdemeanor punishable by a fine of not more than Five Hundred Dollars ($500) or by imprisonment in the----------jail for not more than six (6) months or by both such fine and imprisonment. A repetition of continuation of any violation of any provisions of this ordinance or of any order or direction of the----------on successive days constitutes a separate offense for each day during any portion of which such violation is committed, continued, or permitted.

ARTICLE II

Definitions

Access Service Route: Shall mean any access roads and/or easements designated or identified by----------for use by authorized emergency or utility vehicles.

Auxiliary: Shall mean any vessel having both sails and either an inboard or outboard motor and which may be propelled by its sails or by its motor, or both.

Basin: Shall mean a naturally or artificially enclosed or nearly enclosed body of water where small craft may lie.

Beach: Shall mean a public or private beach area bordering the waters of a---------- harbor or maritime facility.

Camp Cars: Shall mean a vehicle with or without motor power which is designated for permanent or temporary human habitation and which contains sleeping facilities, plumbing, heating, cooking (whether attached or portable) or electrical equipment. Any such camp car shall be subject to the provisions of Article VIII, Section 66.

Carrying Passengers for Hire: Shall mean the carriage of a person by vessel for valuable consideration, whether directly or indirectly flowing to the owner, charterer, operator, agent or any other person interested in the vessel.

Commercial Vessel: Shall mean any vessel used or engaged for any type of commercial venture, including but not limited to the display of advertising or the carrying of cargo and/or passengers for hire.

Distress: Shall mean a state of disability or a present or obviously imminent danger which if unduly prolonged could endanger life or property.

Emergency: Shall mean a state of imminent or proximate danger to life or property in which time is of the essence.

Entrance Channel: Shall mean all that portion described as follows: (Insert own description.)

Facilities: Shall mean any and all facilities of a harbor or maritime facility either publicly or privately owned that are intended primarily to be used by or for the service of small craft (including ramps, hoists, parking areas, leased water areas, concessions and service facilities) located on land or in the waters of the————————under jurisdiction of the————————in either————————or————————territory.

Fairway: Shall mean the parts of a waterway kept open and unobstructed for navigation.

Fire Department: Shall mean the————————of the————————.

Float: Shall mean any floating structure normally used as a point of transfer for passengers and goods and/or for mooring purposes.

Harbormaster: Shall mean the Chief Officer of the Harbor Patrol or competent member of the Harbor Patrol that he may designate to act in his stead in his absence.

Harbor Patrol: Shall mean the organization comprising all members regularly employed by the————————as Harbor Patrolmen or Harbor Patrol Officers.

Harbor Patrolman: Shall mean a harbor policeman as referred in Section————————of the State Harbors and Navigation Code, who, when qualified, shall have the authority of "Peace Officer."

Head of Operating Agency: Shall mean the————————.

Live Bait Receiver: Shall mean a water-ventilated container immersed in water, the purpose of which is to confine live bait fish.

Maritime Facility: Shall mean any facility affecting the use and operations of pleasure or commercial vessels bordering on, concerned with, related to a protected water area of the————————ocean that is owned, managed or controlled by the————————or under the jurisdiction of the————————in either incorporated or unincorporated territory.

Moor: Shall mean to secure a vessel other than by anchoring.

Mooring: Shall mean (1) a place where buoyant vessels are secured other than a pier; (2) the equipment used to secure a vessel; and (3) the process of securing a vessel other than by anchoring.

Mooring Buoy: Shall mean an appliance used to secure to the bottom by anchors and provided with attachments to which a vessel may be secured by use of its anchor chain or mooring lines.

Operating Agency: Shall mean————————.

Public Agency: Shall mean————————.

Public Area: Shall mean all areas of any harbor except those areas under specific lease to private persons of firms or owned privately.

Regulatory Marker or Waterway Marker: Shall mean any of the waterway markers defined as "regulatory markers" in the State Administrative Code, Title————————; Article————————.

Slip: Shall mean berthing space for a single vessel alongside a pier, finger float, or walkway.

Shore: Shall mean that part of the land in immediate contact with a body of water, including the area between high and low water lines.

Shall and May: "Shall" is mandatory "May" is permissive.

State: Shall mean the State of————————.

Stray Vessel: Shall mean (1) an abandoned vessel; (2) a vessel the owner of which is unknown; or (3) a vessel underway without a competent person in command.

To Anchor: Shall mean to secure a vessel to the bottom within a body of water by dropping an anchor or anchors or other ground tackle.

Underway: Shall mean the condition of a vessel not at anchor; without moorings; and not made fast to the shore nor aground.

Waterway: Shall mean any water area providing access from one place to another, principally a water area providing a regular route for water traffic, that is owned, managed, or controlled by the————or under the jurisdiction of the————either in incorporated or unincorporated territory.

Waters of a Harbor: Means all waters of any harbor that is owned, managed, or controlled by the————or under the jurisdiction of the————in which the tide ebbs and flows, whether or not the ordinary or mean high tide line of the———— Ocean has been fixed by ordinance, statute, court action or otherwise and whether or not the lands lying under said tidal water are privately or publicly owned.

ARTICLE III

General Boating and Traffic Control Regulations

Sec. 9. Traffic Control Authority: The————shall have authority to control water-borne traffic in any portion of the waters of a harbor or maritime facility under his jurisdiction by use of authorized State regulatory markers, signal, orders or directions any time preceding, during and after any race, regatta, parade or other special event held in any portion of the waters of a harbor or maritime facility or at any time when the———— deems it necessary in the interest of safety of persons and vessels or other property, and it shall be unlawful for any person to willfully fail or refuse to comply with any authorized State regulatory marker utilized by————, or with any signal, orders or directions of the————.

Sec. 10. Basic Speed Law: The operation of any vessel within the harbor area in excess of posted speed limits or, in the absence of such limits, in a manner to create a wash which endangers persons or property, shall constitute a violation of this Ordinance; provided that special written permission may be granted to conduct and engage in water sports and regattas in specific designated areas.

Sec. 11. Permits for Races and Special Events: It shall be a violation of this Ordinance for any person to engage or participate in a boatrace, watersport, exhibition, or other special event unless especially authorized by permit from the————————who shall have authority to issue such permits and to attach such conditions thereto as, in his opinion, are necessary and reasonable for the protection of life and property.

Sec. 12. Reverse Gears: It shall be unlawful for any person to operate on the waters of any harbor or maritime facility any power or motor driven vessel that does not have a means to reverse or stop the vessel, except when participating as a contestant per Section 10. Motor vessels shall have aboard and ready for instant use a suitable anchor with chain or line affixed.

Sec. 13. Rafting or Nesting: A permit shall be obtained from————————for the purpose of rafting or nesting vessels during a regatta or boatrace. This permit must be obtained from————————at least————————hours before the regatta schedule to be held.

Sec. 14. Insurance: As a condition for granting such permit, the————————shall determine as a condition of a permit for racing whether insurance shall be carried by participants and if required shall be for the total period of time and shall be in an amount not less than $————————for bodily injury to one person; and $————————for bodily injury in any one accident; and $————————for property damage in any one accident. The policy providing such insurance shall be in the name of————————as additional insured (insureds). A certificate evidencing that such insurance is in force and will remain in force for the period of time such permit shall be in effect.

ARTICLE IV

General Regulations

Sec. 15. Liability:

(a) Boat Owner: Any person using the facilities within the limits of a harbor or maritime facility shall assume all risk of damage or loss to his property and he———————— assumes no risk on account of fire, theft, Act of God, or damages of any kind to vessels within the harbor or maritime facility.

(b) Marina Owner and/or Operator: It shall be the responsibility of the owner, licensee, lessee, or operator of any marina, anchorage, repair yard, or other marine facility, located within any harbor, waterway or other maritime facility, to maintain the physical improvements under his jurisdiction in a safe, clean, and visually attractive condition at all times, to provide adequate security and fire prevention measures and appropriate fire fighting equipment as may be directed by----------, and to rent or lease available accommodations on a first-come first-served basis without regard to color, race or creed upon payment of established fees. Failure to initiate within 30 days of receipt of written notice from----------to correct unsafe or otherwise unsatisfactory conditions and to pursue same to completion to the satisfaction of----------shall be a violation of this section.

Sec. 16. Launching and Recovery of Vessels: None other than the driver may occupy a motor vehicle while it is present upon the area known as the launching ramp located within the----------. All motor vehicles using said ramp area must securely block at least one wheel of the said motor vehicle while it is standing upon said ramp.

Sec. 17. Permits, Suspensions or Revocations: All permits granted under the authority of this Ordinance shall be valid only for such period as may be determined by----------and permits of unqualified duration of validity shall not be granted. A violation of the provisions of this Ordinance or of any other applicable Ordinance by any permittee shall be grounds for suspension or revocation of such permit or permits.

Sec. 18. Lost and Found Property: The finder of lost property within the harbor shall deliver it to the----------and report its identity and location to the----------. Unless promptly claimed by the owner, the----------may remove the property, store it, advertise and sell it or otherwise dispose of it, all at the expense of the owner in conformance with----------of ----------Code.

Sec. 19. Damage to Harbor or Other Property: It shall be unlawful to willfully or carelessly destroy, damage, disturb, deface or interfere with any public property in the Harbor area.

Sec. 20. Tampering with or Boarding Vessels without Permission: It shall be a violation of this Ordinance for any person willfully to board, break in, enter, damage, move or tamper with any vessel or part thereof, located within the harbor unless authorized by the rightful owner of such vessel. Violation of this provision shall constitute a misdemeanor, punishable by the penalties hereinabove provided for violations of this Ordinance and to additional penalties not to exceed in the aggregate $1,000 and six months imprisonment for each offense. Any person violating this provision shall, in addition, be responsible to the rightful owner of any such vessel for any damages caused by such violation and to the reasonable cost of any attorneys fees, necessarily incurred as a result thereof.

Sec. 21. Obstruction of Facilities: It shall be a violation of this Ordinance for any person willfully to prevent any other person from the use and enjoyment of the harbor facilities.

Sec. 22. Place of Abode: It shall be unlawful for any person other than one specifically authorized by permit, license or lease from the————————, to camp, lodge, sleep or tarry overnight upon any public portion of a harbor or maritime facility, or to erect, maintain, use or occupy any tent, lodge, shelter, structure, housetrailer, trailer coach, or conveyance used as a place of abode, exclusive of public waters.

Sec. 23. Signs, Erection and Maintenance: The————————may place and maintain, or cause to be placed and maintained, either on land or water, such signs, notices, signals buoys or control devices as he deems necessary to carry out the provisions of this Ordinance, or to secure public safety and the orderly and efficient use of a harbor or maritime facility. *For Sale* signs shall be limited to a size of eight and one-half inches (8 ½″) by eleven inches (11″) and must be posted on the vessel.

Sec. 24. Securing Permission for Debarkation: It shall be a violation of this Ordinance to disembark passengers or discharge cargo from a commercial vessel onto any public or privately owned float, pier or wharf within the harbor, without the consent of the owner thereof or of the————————, as the case may be, except at piers and wharfs expressly designed for commercial purposes.

Sec. 25. Protected Swimming Area: It shall be a violation of this Ordinance to operate or navigate any vessel within a designated swimming area. The————————may identify swimming areas by signs, buoys, or other means.

Sec. 26. Record of Vessels: The————————shall keep an accurate record of the number, size, type and description of all vessels within a————————harbor or maritime facility using public facilities and which remain more than————————hours, and it shall be unlawful for any person having knowledge thereof to fail or refuse to provide said information to————————on demand.

Sec. 27. Underwater Diving:

(a) Permit for skin diving or underwater diving by persons having certificates of competence may be authorized in designated areas by the————————. Such action shall otherwise not be engaged in except in cases of emergency or for the purpose of underwater inspection.

(b) When a person or persons are engaged in an underwater diving activity other than an emergency or inspection, there shall be present an attendant not less than sixteen (16) years of age who shall be on the surface of the water close over the person or persons engaged in the underwater activity, and such attendant shall conspicuously display the *Divers Flag* during diving activities. The————————shall be given prior notice of the time of all such diving operations.

Sec. 28. Swimming, a Hazard to Navigation: All swimming and bathing shall be in those areas designated by the————————for such purposes and such areas may be defined or properly marked by competent authority.

ARTICLE V

Regulations Concerning Anchoring, Mooring and Security of Vessels

Sec. 29. Placement of Private Moorings: It shall be a violation of this Ordinance to place any mooring in the harbor without a permit from the————————.

Sec. 30. Anchoring: It shall be a violation of this Ordinance to berth or anchor a vessel in the harbor without obtaining a permit from the————————, or from the berthing facility operator, except in designated anchoring areas. Vessels in distress are excepted from this prohibition, but as soon as practicable, the person in charge of any such vessel shall report the situation to the————————. Except in specially designated anchorage areas, proper anchor lights must be displayed and fog signal sounded when appropriate.

Sec. 31. Use of Harbor Facilities: It shall be a violation of this Ordinance to berth or anchor any vessel within the harbor without obtaining a permit from the————————, who will require proper ground tackle and a sighting of anchors, when used, at intervals not exceeding three (3) months.

Sec. 32. Obstructing Channels: It shall be a violation of this Ordinance knowingly or willfully to obstruct the free use of any channel or waterway within the harbor or to fail to report to the————————any collision between vessels or other accident or incident causing damage to persons or property.

Sec. 33. Abandoned Vessels: When, in the opinion of the————————, a vessel has been abandoned in the harbor, he may take custody and control of such vessel and remove it, store it or otherwise dispose of it, all at the expense and sole risk of the vessel owner. Reasonable notice of such disposal shall be publicly given.

Sec. 34. Vessels Making Fast: No person shall make fast or secure a vessel to any mooring already occupied by another vessel, or to a vessel already moored, except that a rowboat, dinghy or yacht tender regularly used by a larger vessel for transportation of persons or property to or from shore may be secured to such larger vessel or to the mooring regularly used by such larger vessel. If tied within a slip, such rowboat, dinghy, or tender shall not extend into the fairway beyond the larger vessel if such larger vessel is also occupying the slip, or otherwise beyond the slip itself.

Sec. 35. Docking or Berthing at————Facilities: A person having charge of any vessel shall not make it fast or secure it to any————jetty, breakwater, bulkhead, wharf, pier or mooring buoy without the consent of————except in an emergency, in which case such person shall forthwith report the emergency to the————and thereafter act in accordance with the————instructions.

Sec. 36. Secure Berthing and Anchoring of Vessels: The owner of any vessel moored or anchored within a————harbor or maritime facility shall be responsible for causing such vessel to be tied and secured or anchored with proper care and equipment and in such manner as may be required to prevent breakaway and resulting damage, and shall thereafter provide for periodic inspection by————, maintenance, replacement and adjustment of anchor, mooring or tie lines at reasonable intervals.

Sec. 37. Unseaworthy Vessels Prohibited in Harbor: Exception: A person shall not moor or permit to be moored in any harbor a vessel of any kind whatsoever which is unseaworthy or in a badly deteriorated condition or which is likely to sink or to damage docks, wharves, floats or other vessels or which may become a menace to navigation, except in cases of emergency.

Sec. 38. Correcting an Unsafe Berthing: If any vessel shall be found in the judgment of————to be anchored or moored within any harbor or maritime facility in an unsafe or dangerous manner, or in such a way as to create a hazard to other vessels or to persons or property,————shall order and direct necessary measures to eliminate such unsafe or dangerous condition. Primary responsibility for compliance with such orders and directions or————shall rest with the owner of the improperly anchored or moored vessel or his authorized agent; in the absence of such owner or agent, said responsibility shall rest with the authorized operator of the facility at which the vessel is anchored or moored. In an emergency situation and in the absence of any such responsible person,————shall forthwith board such vessel and cause the improper situation to be corrected, and the owner of the vessel shall be liable for any costs incurred by————in effecting such correction.

Sec. 39. Removal and Custody of Illegally Berthed or Abandoned Vessels: If any unattended vessel shall be found to be anchored or moored illegally within a harbor or maritime facility, or if————————has reasonable grounds to believe that a vessel has been adandoned within a————————harbor or maritime facility, the————————may assume custody of such vessel and cause it to be removed and held or placed in storage. ————————or his————————shall not be held liable for any damage to such vessel nor liable to its owners before or after assuming custody. Vessels so taken into custody shall be released to the owner by the————————only after satisfactory proof of ownership has been presented and full reimbursement made to————————for all costs incident to recovery, movement and storage as set forth in Article V, Sec. 40. If proof of ownership cannot be established within a reasonable amount of time, said vessel shall be dealt with in accordance with Article IV, Sec. 18.

Sec. 40. Fees Incidental to Recovery, Movement and Storage: Charges imposed by————————for recovery and/or movement of vessels shall be in accordance with the "Schedule of Charges for services rendered and supplies Furnished by the Harbor Patrol" as approved by the————————or as subsequently amended, and whenever a vessel is impounded or held for safekeeping there shall be in addition a charge for storage at the rate of————————.

Sec. 41. Obstructions of Fairways, Channels or Berthing Spaces and Removal of Sunken Vessels:

(a) It shall be unlawful to tie up or anchor a vessel in a————————harbor or maritime facility in such a manner as to obstruct the fairways or channels or to prevent or obstruct the passage of other vessels; or to voluntarily or carelessly sink or allow to be sunk any vessel in any channel, fairway, berthing space; or to float loose timbers, debris, logs or piles in any channel, fairway, or berthing space in such a manner as to impede navigation or cause damage to vessels therein. It is understood that wrecked or sunken vessels within a harbor are subject to the published rules and regulations of the United States Coast Guard and any applicable State law, rules or regulations.

(b) Whenever the navigation of any waters within————————harbor or maritime facility, including anchorages and berths therein, shall be obstructed or endangered by any sunken vessel or other obstruction and the obstruction or danger has existed for a period of more than ten (10) days, the vessel or obstruction shall be subject to removal, sale or other disposition in accordance with Article 4, Section 18. The owner or owners of such vessel or other property causing said obstruction or danger shall be liable to the————————for all costs incident to said removal and disposition, and the————————, its employees, agents, and officers, shall not be liable for damages of any nature whatsoever arising out of or in any way connected with removal, sale or disposition of such vessel or other property.

Sec. 42. Dangerous or disabled Vessels: Any vessel that may enter a————————harbor or maritime facility in a disabled condition, or any vessel within a harbor or maritime facility which may for any reason be rendered disabled, shall immediately become subject to the orders and directions of the————————and it shall be unlawful for any person to fail or refuse to comply with his orders or directions with regard to the disposition of such vessel.

Sec. 43. Unseaworthy Vessels: No person shall secure or permit to be anchored or moored in a harbor, waterway, or maritime facility a vessel of any kind whatsoever which is unseaworthy or in a badly deteriorated condition, or which is likely to sink or to damage docks, wharves, floats, and/or other vessels, or which may become a menace to navigation. Such vessels shall be removed from the water and/or be otherwise disposed of as directed by————————.

ARTICLE VI

Regulations Concerning Commercial Activity

Sec. 45. Vessels for Hire—Passenger Information: The owners, master or person in charge of or operating any vessel using and————————harbor or maritime facility————————be required to furnish to————————information regarding the number of passengers carried and the charges or other considerations paid by such passengers. Failure to provide such information to the————————on demand shall be a violation of this article.

Sec. 46. Soliciting: Soliciting is prohibited within the harbor, except as may be specially authorized by permit issued by the————————, and subject to terms and conditions prescribed in such permit.

Sec 47. Bait Receivers: Non-Conforming: Removal of:

(a) All unattended live bait receivers in the waters of a————————harbor or maritime facility shall have a screen, solid cover, or lids which shall fit closely over the well of the receiver, unless the receiver is within and completely enclosed by a larger structure.

(b) Storage of bait in any receiver not conforming to the requirements of this Article is prohibited; non-conforming bait receivers may be sealed, removed, stored, sold or otherwise disposed of by————————at his discretion without liability for any damage to receivers or death or loss of bait, and the owner of such non-conforming receivers shall be liable for any cost incurred by————————in effecting removal, storage, sale, or other disposition.

Sec. 48. Commercial Bait Tanks: Bait tanks on commercial vessels containing bait shall, when said vessels are in the waters of a————————harbor or maritime facility, be covered by a screen cover or other cover which shall fit closely over the top of all said bait tanks except while bait is actually being transferred to or from said tank, and the operators of such commercial vessels shall at all times have aboard a covered can, box or other additional receptacle for dead bait.

Sec. 49. Bait, Transfer: No person shall transfer live bait from one vessel to another within the limits of a————————harbor or maritime facility except when all vessels involved are anchored or berthed, or such vessels are outside navigational channels.

Sec. 50. Sale of Live Bait: No person shall sell live bait from a vessel within the limits of a————————harbor or maritime facility. This section shall not apply to the delivery of live bait by vessel to a commercial live bait receiver which has been authorized by————————lease or written permit of————————to dispense live bait.

Sec. 51. Water Taxi and Rental Vessels: No person shall operate a water taxi within a harbor or maritime facility without first obtaining a permit from the————————and complying with any rules and regulations of Ordinances of the————————including any licensing requirement.

Sec. 52. Disposal of Bait in Harbor Prohibited: No person shall put, place or allow live bait to be put or placed in the waters of the harbor, except when the same is actually used for the purpose of fishing, and at no time, for any purpose, shall any person put dead bait or any portion thereof in the waters of the harbor unless the same be attached to a hook or hooks in the act of fishing.

Sec. 53. Commercial Vessels Providing Sleeping Accommodations—Watchman Required: Whenever any person other than the owner or members of the regular crew is allowed or permitted to sleep in or otherwise occupy accommodations aboard a commercial vessel or vessel regularly carrying passengers for hire, it shall be the duty of the owner or other person in charge of such vessel to maintain on duty a competent watchman, guard, or crew member, and failure to so maintain such a watchman, guard, or crew member on duty while the accommodations of such vessel are so occupied shall be a violation of this Ordinance.

ARTICLE VII

Sanitation Regulations

Sec. 54. Discharge of Refuse: It shall be a violation of this Ordinance to discharge or permit the discharge into the waters of the harbor of any refuse or waste matter, petroleum or petroleum matter, paint, varnish or any other foreign matter, including dead animals, fish and bait.

Sec. 55. Toilet Fixtures:

(a) Vessel's Toilet Fixtures Not to be Used: No person shall operate the toilet fixtures of a vessel within a harbor or maritime facility at any time so as to cause or permit to pass or to be discharged into the waters of such harbor or maritime facility any sewage or other waste matter or contaminant of any kind.

(b) Acceptable Devices: Upon application to the————————, persons operating, maintaining or possessing vessels using a————————harbor or maritime facility may be authorized by————————to use and operate toilet fixtures equipped with approved and acceptable devices that will prevent contaminants from entering the waters of such harbor of maritime facility.

(c) Toilet fixtures of a vessel which are equipped with a device or devices for the purpose of preventing contaminants from entering into the waters of a harbor or maritime facility shall not be used for the disposal of sewage or other contaminants unless a permit in writing has first been issued by————————.

Sec. 56. Use of Vessel as Abode: Living aboard vessels in the harbor is prohibited except as may be specially authorized by permit issued by the————————. For the purpose of this Section, the term "living aboard" means the continuous use of a vessel for a period in excess of three days, including use of the vessel for overnight lodging.

Sec. 57. Responsibility for Sanitation of Facilities: The lessee, agent, manager or person in charge of a facility or water area under lease from the————————harbor or maritime facility shall at all times maintain the premises under his charge in a clean, sanitary condition, free from malodorous materials and accumulations of garbage, refuse, debris and other waste materials. Should————————find that any facility or water area under lease is not so maintained, he shall in writing notify said lessee, agent, manager or other person in charge of said facility or area to immediately commence and diligently prosecute to completion the necessary correction of the unsanitary condition to the satisfaction of————————. Failure to do so with reasonable dispatch shall be a violation of this Article, and the————————may then cause condition to be corrected and the cost of such correction shall be charged to said lessee, agent, manager or person in charge.

ARTICLE VIII

Safety and Maintenance

Sec. 58. Welding and Burning: Except at specially designated areas, open fires are prohibited within the harbor, except for stoves or fireplaces permanently installed onboard

and below decks on vessels or hibaches or barbeques used for cooking and/or heating purposes. Repairs to vessels requiring welding or other open flame devices may be performed only upon special authorization by the————————and within the time period stipulated in such authorization.

Sec. 59. Flammable and Combustible Liquids and/or Materials: Within a———————— harbor or maritime facility no person shall sell, offer for sale, or deliver in bulk any class of flammable liquid or combustible material, nor dispense any flammable or combustible liquids into the fuel tanks of a vessel except when in compliance with all requirements of the N.F.P.A. *Fire Code* and any other laws or regulations applicable thereto.

Sec. 60. Obstruction to Walkways: Obstructing walkways within the harbor by mooring lines, waterhoses, electrical cables, boarding ladders, permanently fixed stairs or any other materials is strictly prohibited. Dinghys may not be left on the floats and piers, but may be stored only in areas designated for that purpose.

Sec. 61. Defective or Dangerous Conditions: Whenever any buildings, structures or floating facilities within a harbor or maritime facility either on land or water are found to be defective or damaged so as to be unsafe or dangerous to persons or property, it shall be the duty of the owner, agent, lessee, operator or person in charge thereof to immediately post a proper notice and/or fence or barricade and at night to adequately light such unsafe area or areas, and such unsafe area or areas shall be kept posted and lighted and/or fenced or barricaded until the necessary repairs are made. In the event an owner, agent, lessee, operator or person in charge fails or neglects to repair or to put up fences or other barriers to prevent persons from using or going upon the unsafe area or areas,————————may then take such measures as he may deem necessary for the protection of the public and charge the cost of same to such owner, lessee, agent, person or persons having charge of the buildings, structures, or floating facilities that are defective or dangerous.

Sec. 62. Time, Fees and Permit Requirements for Use of Mooring or Slip:

(a) Permission may be granted by the————————for a private vessel to use a————————mooring or slip for————————without charge and for up to———————— without charge if it is determined the vessel may be secured or moored for such longer time without using space otherwise needed. Private vessels moored at————————facilities for a period in excess of————————shall pay mooring fees as hereinafter provided.

(b) Visiting Vessels–Transients: A vessel will be considered transient if the vessel remains in the slip or at the dock designated for such transient for not more

than————————calendar months. A person shall not berth or dock a vessel, except on official business, for more than————————hours in any————————slip or mooring unless the————————says that vessel may be berthed or moored for a longer time without using space otherwise needed, in which case he may be granted permission for a longer stay without paying the transient fees. Total time shall be at the discretion of the————————but not to exceed————————hours. The transient rental fees shall be as follows:———————— upon entering a harbor, owner or operator of vessel shall proceed directly to harbor headquarters in order that he may be assigned a berth. Berthing fees are usually payable in advance.

(c) Subletting of Berthing Space: The owner of any vessel having space shall not sublet said space to another user or boat owner; however by agreement between the————————and the transient, another boat owner may use the slip, provided the original transient pays the fee or fees and has requested permission from the————————to berth said vessel.

Sec. 63. Vessel Extending Beyond Slip:

(a) No part of any vessel shall extend more than————————feet beyond the end of any slip without permission of————————including but not limited to boats with davits, booms, boomkin, or bowsprit.

(b) No part of any vessel shall extend over the main walkway so as to be a hazard.

Sec. 64. Mooring at Termini of Main Walks: Vessels may be moored or secured at the terminus of any main walk within a basin, except that any such vessel shall not extend into the fairway more than————————measured at right angles from the pierhead line of a basin. Any such vessel shall be secured parallel to such pierhead line.

Sec. 65. Commercial Sportfishing Activities Allowed Only at Specific Areas: No owner or operator of any commercial sportfishing boat or any other boat, licensed or unlicensed, shall conduct, maintain, or engage in any sportfishing activity for hire from any premises within————————except from those leaseholds specifically permitted to conduct such activities, nor shall any lessee or any boat mooring operator in————————permit, authorize, or allow the operation of a commercial sportfishing activity from within the area of their control or tenancy unless specifically authorized by written permit of———————— or by terms of their lease.

Sec. 66. Parking of Camp Cars and Boat Trailers: Camp cars herein defined shall park in an area set aside for such purpose and no other except they may be parked for a period not to exceed----------hours in the regular parking areas provided they not be used for eating, sleeping, cooking, preparation of foods or personal toilet. Boat trailers used for carrying a boat shall be parked only in the areas set aside for such parking. They may be parked for a reasonable period of time on the public streets or other parking areas not to exceed----------hours for the purpose of removing a boat from such trailer or placing a boat upon such trailer.

LEASE OF SLIP RENTAL

The _____, hereinafter called the "Lessor," hereby leases to _____ hereinafter called the "Lessee," the use of slip and/or slips located on (body of water) for the term of one _____ from and after the date hereof, to be used by Lessee for the docking of Lessee's boat within said space, in consideration of the payments of the rental agreed upon.

It is agreed that this agreement with all its provisions and covenants shall continue in force from month to month; provided, however, that either party hereto may terminate the same at any time by mailing the other party thirty (30) days' notice.

Said Lessee hereby further agrees to indemnify and hold harmless the (name of company) and each of its tenants from any claim or demand on account of the liability herein by him assumed.

The Lessee agrees to abide by such rules as may be established from time to time by the (name of company) covering the use of said docking space.

The Lessee agrees that it will not assign this agreement without the written consent of the (name of company).

/Date/ /Signatures/

SAMPLE

YACHT HAVEN

Wallace Street, Shippan Point
Stamford, Connecticut

Tel. (203) 327 - 1414

Date _____ 19

Welcome to Yacht Haven!

We hope you enjoy your stay. If you have any suggestions concerning the improvement of service, please let us know.

LEASE AGREEMENT FOR MOORING FACILITIES

Owner's Name _____

Business Address _____

Home Address _____

Business Phone _____ Home Phone _____

Name of Boat _____ Registry Number _____

Type of Boat _____ Length OA _____ Beam _____ Draft _____

Engines _____ H.P. _____ Type Fuel _____

Tank Capacity: Fuel _____ Water _____ Cooking Fuel & Type _____

Amperage Required _____ Tender Identification/Name _____

Note: Use of electric heaters and air conditioners prohibited except by special permission with an agreed rate.

The rate for space allocated to your boat, Season 19 ____ is $ _____

	Date	Amount
Total	_____	_____
Deposit	_____	_____
Balance	_____	_____
Paid	_____	___

SCOTT-PAINE MARINE CORPORATION

A typical lease agreement for mooring facilities. (front)

TERMS OF AGREEMENT

1. The word "Marina" is used here to indicate any person authorized to represent the Scott-Paine Marina Corporation, operators of Yacht Haven, Stamford, Connecticut. The word "Tenant" is used here to indicate the owner (or his authorized representative) of any boat moored in Yacht Haven.

2. a) Slip rentals shall be strictly in accordance with published schedules and shall be paid in advance to cover a full season. Slip rentals shall not be cancelled unless a suitable replacement tenant can be obtained promptly, in which case proportional reimbursement for the unused seasonal rental, or if slip rental is for a portion of the season, actual rental received, less a 5% service charge, will be made to the original tenant.

   b) If it is considered by Yacht Haven to be in the best interest of the Marina and/or its tenants, the Marina reserves the right, after 10 days notice, to cancel this contract, with the tenant removing his boat forthwith. Proportional reimbursement will be made for the docking fee.

   c) Slip rentals are non-transferable.

3. To be admitted and to continue as a tenant of Yacht Haven, a boat must be:
   a) Used for pleasure only;
   b) Registered, identified, marked, equipped and maintained as required by law and safe practice;
   c) Subject to periodic inspection by the Marina to determine the maintenance of proper safety conditions.

4. The tenant agrees to have his boat insured by complete marine coverage including liability. Each tenant will be held responsible for damage he may cause to other boats in the marina or to the structures or facilities thereof.

5. When a boat enters YACHT HAVEN, it immediately comes under the jurisdiction of the Marina and shall be berthed only where ordered and manoeuvered as directed. Vessels entering Yacht Haven under emergency shall be reported immediately by their owners to the Marina.

6. When a Tenant expects to have his boat out of a slip for an extended period, he shall so notify the Marina in advance, who may lease the slip for other purposes during this period. No sub-leasing of slips or transfer of boats between slips will be allowed except on prior permission of the Marina.

7. All boats shall be secured in their berths in a manner acceptable to the Marina, or the Marina, after notice to the Tenant, will adequately secure the boat and assess a service fee.

8. Tenants will provide the Marina with a set of main door or hatch keys and ignition keys. The boat will only be entered by the Marina for possible periodic inspection or for emergency service, otherwise only with the authority of the Tenant. No other person will be allowed on the boat without the Tenant's permission.

9. All reasonable precautions will be taken by the Marina to ensure the Tenant's property and safety. However, the Marina assumes no responsibility for the safety of any vessel docked in the Marina and will not be liable for fire, theft or damage to said vessel, its equipment, or any property in or on said vessel, however arising.

10. The Tenant (and guests for whom he is responsible) agrees to conduct himself at all times when on the property of Yacht Haven, or on any boat moored therein, so as to create no annoyance, hazard or nuisance to the Marina or to the other Tenants. This involves observance of good housekeeping and sanitation practices and the use of garbage receptacles.

11. Tenders and skiffs shall be stored on board larger vessels when possible. Otherwise they must be kept off the docks or moored at the tender float at $15 per season. Their identification marks or name are required to be recorded with the Marina. No dock boxes, steps, etc., can be installed without permission from Yacht Haven.

12. No "outside" contractors or service organizations or individuals will be permitted to undertake any work on boats in Yacht Haven without the approval of the Marina. Such approval will not be granted unless the Service Division of the Marina cannot properly undertake the work themselves.

13. Houseboats, commercial fishing boats and other types of commercial craft will not be admitted to the Marina.

14. a) Sec. 2324 General Statutes of Connecticut — Prohibits discharge or deposit of any rubbish, waste material or refuse material of any kind or description into the waters of any river, stream, pond or tidal waters. Penalty $100 fine or imprisonment of three months or both.

   b) Owners and their guests are to use the Marina's shore side toilets and all garbage and other refuse must be placed in the receptacles provided by the Marina.

15. Noise shall be kept to a minimum at all times. Persons shall use discretion in operating engines, generators, radios and television sets, so as not to create a nuisance or disturbance.

16. Advertising or soliciting shall not be permitted in any part of Yacht Haven.

17. Swimming, diving or fishing shall not be permitted from the docks or finger piers.

18. Boat owners shall not place supplies, materials, accessories or debris on walkway, and shall not construct thereon any lockers, chests, cabinets or similar structures, except with written approval of the dockmaster.

19. Laundry shall not be hung on boats, docks or finger piers in the Marina, nor shall "for sale" signs be put on boats.

20. Definitely no charcoal fires or open fires of any kind will be allowed within the confines of the Marina.

21. Dogs will be admitted to Yacht Haven only under leash and must not run loose on the grounds or other people's boats.

22. Young children should be accompanied by adults at all times

23. Wherever practical the Tenant is asked to purchase his marine supplies from the Marina.

24. When entering or leaving the Marina, boats must be under power, not sail.

25. In the event of severe storm or hurricane the Marina will attempt, if practicable and possible, to provide preparation and damage prevention service, the costs for which will be prorated over all the boats. However, the owner or his agent is still solely responsible to take all emergency measures possible, and the Marina does not assume any responsibility for said protection and/or damages to the owner's boat.

26. Any infraction of the above rules and regulations of the Marina by the Tenant shall, at the option of the Marina, cancel this contract upon 10 days notice, and the Tenant shall forthwith remove his boat.

DATE _____ APPLICANT'S SIGNATURE _____

DATE _____ ACCEPTED _____

For Yacht Haven
SCOTT-PAINE MARINE CORPORATION

A typical lease agreement for mooring facilities. (back)

Managing A Public Marina

PETER M. WILSON
Assistant Secretary,
National Association of
Engine and Boat Manufacturers

MARINA development is a slow process. After weeks, months, sometimes years of arduous research, restudy, revision and review, the community planner may be so distracted by the variety of elements with which he is working that the reality of having to sell the idea and concept to the public may become submerged. To protect against many oversights in development, an organization should be created to manage the affairs of the marina from the planning stage through construction into the longest period of all, its operation and maintenance. This step is best taken when the first probings of sand, dirt, pebbles and water get under way.

A special reason for shaping the organization early is the opportunity it affords to prepare in advance a means of gaining favorable public opinion. Unfortunately, every community has its share of people who are opposed to everything new. And, there are usually other citizens with pet projects who will stand against anything which could be considered a threat to or distraction from their own interests. These factors place additional weight on management to create a sound public relations program.

Most opposition to a local project is for monetary reasons. A first step toward overcoming these objections is to establish a picture in the public mind of marina income sources. As noted in Section 3 of "The Modern Marina" (listed among the references) no two operations are alike and income volume from facilities and services varies; however, Table 1, based upon reports from 190 marinas scattered in all sections of the country, may be helpful background. The "Profit Ratio" column reflects the average percentage of net profit made on each operation after deducting the costs of labor, merchandise and other charges specifically incurred by that facility. The "Gross Income" column averages out the amount in cents that each facility contributed to every dollar taken in.

Table 1—Average Marina Income Sources

Facility	Profit Ratio	Percent of Gross Income
Slip Rentals	39.2	19.4
Winter Storage	27.4	10.0
Repairs, Overhauling	26.7	11.7
Sales:		
New Boats, Motors	16.4	10.5
Used Boats, Motors	8.8	8.2
Marine Supplies	22.8	13.1
Petroleum Products	15.1	10.1
Boat Rentals	15.2	4.2
Restaurant and Bar		4.4
Groceries, Ice Coin Venders		2.1
Bait, Tackle		3.7
Boatel Units	14.9	2.6

Acquiring Funds

All the alternative methods of acquiring funds should be carefully studied well in advance of the inevitable "who's going to pay for it?"

Banks are not yet a good source of capital for marina development since this concept of investment is still comparatively new to them. However, the boat loan is becoming more popular with banking institutions making it worthwhile to at least check the possibility of a mortgage if local laws permit.

A more certain way to obtain funds is through a public bond offering. Here again the importance of competent management can be measured by its willingness to recognize the four basic concepts of sound public relations as good will, promotion, publicity and advertising. The fact that a marina is being contemplated is news, and from that point on there will be endless opportunities to make news. In each step of the planning there is no better way to establish good will than by letting the citizenry know what is going on.

Since the idea is to persuade the public to assume the financial responsibility for local marina construction, it may be appropriate to show them through the newspapers how other communities have obtained attractive, well-filled, busy waterfront facilities. This can be done with photographs as a subtle supplement to shots of progress on the local scene. Unlike many public projects, the marina can be a healthy source of revenue to offset the bonded indebtedness.

A COURSE OF INSTRUCTION IN

BASIC MARINA MANAGEMENT

"ACCOUNTING PROCEDURES"

INSTRUCTOR

J. DONNIE HOUSTON
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A COURSE OF INSTRUCTION IN BASIC MARINA MANAGEMENT

"ACCOUNTING PROCEDURES"

CONTENTS

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A COURSE OF INSTRUCTION IN BASIC MARINA MANAGEMENT

"ACCOUNTING PROCEDURES"

Introdúction

As a part of this course on Basic Marina Management you will discuss management, marketing, and financing of your operations. Today we want to discuss a tool used in the decision making prosesses for all three of these major functions. That tool is accounting. Some may ask, "What is accounting?" The Committee on Terminology of the American Institute of Certified Public Accountants has defined accounting in the following manner:

"Accounting is the art of recording, classifying, and summarizing in a significant manner and in terms of money, transactions and events which are, in part at least, of a financial character, and interpreting the results threrof."

The underlying purpose of accounting is to provide financial information about your Company. This information is needed by management to help plan and control the activities of the organization.

As pointed out in the definition, accounting extends beyond the process of creating data. The ultimate objective of accounting is

the use of these data, their analysis and interpretation.

An accounting system is built around an effective system of internal control. What is internal control? The Committee on Auditing Procedures of the AICPA broadly defines internal control as follows:

"Internal Control comprises the plan of organization and all the coordinate methods and measures adopted within a business to safeguard its assets, check the accuracy and reliability of its accounting data, promote operational efficiency, and encourage adherence to prescribed managerial policies."

This definition covers both accounting controls and administrative controls. Accounting controls dealing with the safeguarding of assets and the reliability of records are expressed in the form of systems of authorization and approval, separation of duties concerned with record keeping and reporting from those concerned with operations and asset custody, physical controls over assets, and internal auditing. Administrative controls dealing with operational efficiency and adherence to managerial policies are expressed in the form of statistical analyses, time and motion studies, performance reports, employee training programs, and quality controls.

The two key elements of the definition of accounting controls are safeguarding of assets and the reliability of financial records. Safeguarding of assets refers to protection against loss arising from intentional and unintentional errors in processing transactions

and handling the related assets. Intentional errors include, defalcations and similar irregularities including falsification of records for the purpose of causing improper computation of commissions and other payments based on the recording of other trasactions. Unintentional errors include understatement of sales through failure to prepare invoices or through incorrect pricing or computation, overpayments to vendors or employees arising from inaccuracies in quantities of materials or services, prices or rates, or computations, and physical loss of assets such as cash, securities, or inventory. In some situations, unintentional errors might also include improper allocations of certain costs, which would result in failure to recover these costs from customers.

The system of internal control must be developed with regard to the size and nature of your operation. Its design should provide the maximum benefits considering the situation and the cost of providing the controls.

The marina I will use for discussion purposes is located on Lake Sidney Lanier in the State of Georgia. It has boat sales and service, a retail ship's store, and dock facilities. It is in the 1 - 5 million dollars gross annual volume catagory and leases its land from the Corps of Engineers. There are three girls which handle all of the accounting functions as well as dock rentals and secretarial duties. The marina does not have a controller.

Over the past five years the marina has gone from an accounting system which was usually behind and of no management use to an

on-line computer system with daily reports on receivables, payables, and inventory records, just to mention a few.

The internal control of the Company is built around the three girl office. Separation of duties are accomplished to the extents possible with three people processing the work.

Now let's discuss the various types of transactions and how these transactions are processed and controlled.

Boat Sales

Boat sales are usually the bread and butter department of the retail sales phase of the business. The basic accounting entry is to credit sales and debit cash, and to debit cost of sales - boats and credit boat inventories for the cost of the boat. Other information which could be entered from the boat sale invoice include; sales by make of boat, maybe down to size or model name, salesman making the sale, commission due, sales tax, and if financing was arranged - recording of finance income, insurance commission, etc.

In relieving the inventory and charging cost of sale, make sure all the information and cost are in on the boat. For example, if the service department is to install a depth finder and marine radio, be sure this cost is considered. Another cost is the prep and conditioning cost. This can be done on a flat charge basis depending on the size of the boat or on actual cost. If the boat being sold is a used boat an amount may be added to the cost of the boat to cover future warranty cost and retain a warranty reserve

account to charge actual warranty cost against.

If there is a trade-in involved, how is the boat sale transaction handled? Usually the trade-in allowance shown on the sales invoice is not the true value of the boat coming into inventory. This amount usually includes an overallowance on the trade-in. This overallowance has to be adjusted back against the sale price to record the used boat at its true wholesale value. The boat deal file should have a trade-in appraisal form taking the book value of the model and adjusting for condition of boat and accessories. The use of this appraisal form gives you a true gross profit on the new unit sold and a base to work from on arriving at the sales price and gross profit when the used boat is sold.

Service Sales

Service invoices are harder to control than invoices of other departments because they don't flow in numerical order through the accounting system. When a customer calls in for repair work on his boat a repair order is written. Depending on the nature of the work the repair order may be completed in 2 days or 2 weeks. To control these repair orders, a service log can be produced as the R/O's are issued. The date, R/O number and customer name should be recorded. When the job is complete the log should be updated to reflect completion date. An inventory of R/O's in progress should be taken periodically which should correspond to the service log on incomplete R/O's. Any differences should be investigated.

A record of the invoices processed in accounting should be maintained and this should also be compared to the inventory of R/O's in progress. This process provides control by the service department over R/O's received and work completed and provides a check by the accounting department that they have received all completed R/O's for processing.

The service invoice should contain as much information as possible. For example:

(1) Breakdown of the sale into labor, material, gas and oil, sales tax, etc.

(2) Breakdown of the cost of sales into the same catagories.

(3) The servicemen and number of hours he worked on the job.

(4) The type work performed - for example, engine or hull work and in addition to this a further breakdown by cruisers, houseboats, and other boats may also be useful.

If a flat rate system is used to compensate the service department employees, a weekly report of the number of hours billed should be prepared by the accounting department and compared with the service department's records. Our client's system accumulates this information and a report is generated each week. This provides a double check to insure compensation is based on the correct number of hours.

Warranty service work for manufacturers would be handled the same as a retail R/O.

Internal services invoices can be handled either at cost or with a profit allowed for the service department. The choice of methods depends on the way your organization is set-up. If each department is thought of as a profit center and internal service is a fair amount of the volume of the service department, then that department should recognize a profit on the work performed. The internal service invoice would be posted to the specific unit in the inventory account.

Dock Rentals

Dock slips are usually rented monthly, quarterly, or annually with the dockage payable in advance.

To get a true picture of income, these rentals can not be recorded as income at time of billing. They should be recorded as a credit to a deferred dockage income account (a liability account on the balance sheet). Each month a calculation of the dockage earned for that month would be calculated with an entry to debit deferred dockage income and credit the dockage income account.

If you bill your dock tenants for electricity on something other than a monthly basis, this should be considered in arriving at income each month. For example, if electricity is billed to tenants on a quarterly basis and you are being billed on a monthly basis by the power company an entry is needed each month to reflect unbilled electricity to tenants. We use an average KWH billing rate per dock times the KWH used for the month by dock. The entry

would be to Debit Unbilled Electricity (an asset account) and Credit Electricity billed (an income account).

Other useful information which could be maintained would be total slips, total available for rent,and total slips held for the sales department.

For billing control over dock rental a system should be established to insure each and every slip has been accounted for. For example, we bill either quarterly, semiannually, or annually, depending on the tenants preference. All billing dates are on the quarterly billing cycle. When the quarterly billing is done each dock slip is considered. If a billing is not due it is so marked indicating the due date of the billing. The dock and slip number is used for the invoice number to provide a numerical control over the billing.

Store Sales

There are two primary concerns when a retail store is operated - control over cash and inventory. To maximize control over both would be an expensive process. A good cash register which will record each transaction, accumulate individual amounts and total should provide control over the cash. Also by not allowing paid outs to go through the cash register, shortages can't be blamed on failure to obtain an invoice for purchased items. Overrings and refunds should be approved by an authorized person to insure control over cash.

The register should be cleared at least daily and all funds,

along with the transaction tape and a sales report, sent to accounting. The receipts clerk will write a receipt for the cash and this cash will be verified back against the sales report.

The store sales should be costed by some method. The most practical way for the bulk of the inventory to be costed is the use of a percentage of sales. For the larger dollar items, such as electronics or furniture, actual cost could be used. Where actual cost is used, this would mean a sales ticket would have to be generated giving the description of the item sold in order to cost it.

Regardless of the method used, a periodic inventory should be taken, I recommend monthly, and at a minimum quarterly. This will enable you to determine how accurate the percentages being used to cost merchandise sold are. Variations could mean errors in pricing the merchandise for sale, pilferage, or errors in the inventory.

Maintaining the accounting records in various sales catagories would also give good information on what sells the best, what has the best profit margin, what is the best use of the limited space available in the store. For example, food, hardware, marine accessories, furniture, etc.

Parts Sales

Retail parts sales should be done by preparing an invoice for each sales transaction and costing these sales by using actual cost. Sales should be turned into accounting on a daily basis. Accounting will verify that cash agrees with the invoices and all invoices are present.

Gas Dock Sales

Gasoline sales should be reported on a daily basis. The pump meters for gallons and dollars should be read daily to verify the amount of sales for that day. A daily inventory of gasoline is recommended, but a minimum of immediately before and after each gasoline delivery, as will as an inventory of the truck before the drop and after the drop to make sure you get what you are paying for.

Receipts

Monies will be received through cash sales of merchandise daily, collections of accounts receivable by customers bringing the payment in, or through the mail.

The best control over receipts is to have a set procedure for handling all receipts. With everything processed in the same manner the likelihood of error is reduced. All monies received should be worked up daily and taken to the bank if possible.

Disbursements

The disbursements journal is a record of the checks written. The accounting entry is a credit to the bank account and a debit to the appropriate account. With the use of an accounts payable system, most of the checks written will be for payments to vendors (a debit to accounts payable).

The person writing the check should have an approval for payment with the invoices which are to be paid. When the check is written

the invoices should be marked paid with the date and check number. If a voucher check is being used, a copy of the check should be attached to the invoices being paid.

Whenever possible, I prefer to have all checks signed by the marina owner or general manager. This gives him an opportunity to review what is being paid and provides him an opportunity to raise questions on unusual items.

Payables System

In order for the accounting system to provide complete information to management, an effective accounts payable system is needed. This system will give management daily information on what is owed, which is invaluable for cash management.

A payables system starts out with purchase orders. When something is going to be purchased a purchase order is drawn to describe the item, how many, and from whom. A price should also be obtained if possible. The purchase order number will be supplied to the vendor which he will put on his invoice to you.

A approval process should be established so the person in charge of the purchase orders knows the purchase has been approved by a supervisor or department head.

After the goods are received, the receiving report, the purchase order, and the vendor invoice will be matched together. The vendor invoice will be checked for quantity, price, extentions and footings. It will also be classified by account number, such as parts inventory,

store inventory, truck expense, etc.

The vendor invoice will now be processed by a debit to the proper account classification and a credit to accounts payable. There will also be a subsidiary ledger to accumulate the balance due each vendor. This records the purchase into the accounting records. The invoices should then be maintained by payment due dates until they are ready to be paid.

At the end of the month when the vendor statement is received, it should be checked against your records and any differences investigated. At payment date, payment must be made by invoice, not by statement, to insure a complete and accurate payables system.

Monthly Journal Entries

With all the daily activity covered, there are certain journal entries which will be necessary to get the books and records complete for the preparation of financial statements. Entries must be made to record monthly depreciation, insurance, taxes, interest, and other expenses which have to be allocated each month. The accrual of salaries and bonuses earned but not yet paid must be reflected.

These types of entries complete the monthly accumulation of financial data which will be summarized into financial statements.

Departmental Financial Statements

Monthly financial statements are a must in today's economy. It is imperative you know what has happened in your business as

soon as possible after it happens. If something goes wrong, action can be taken to correct the situation.

These monthly financial statements are for management use and should contain as much detail as possible. Sales and expenses should be reflected by departments with administrative expenses allocated to departments on some justified basis. Departments could include new boat sales, used boat sales, service, parts, store, gas dock, and dock rentals. All income and expenses which can be linked to a specific department should be charged to that department.

Accounts such as accounts receivable, inventories, accounts payable, floorplan notes, warranty factory claims should have aged schedules supporting the balances in these accounts.

The financial statements and the supporting schedules should be studied and analyzed to locate potential problem areas, excessive overhead based on sales volume, breakeven points, inventory levels, and proper profit percentages.

Projections

Forecasting of income and expense for the future months is very important in planning and controlling your company's operations. The forecast of future sales and expenses are developed from past history and from changes in operations which management has made. It records what management believes to be the obtainable objectives of the company. It provides the roadmap by which actual operating

results can be compared. Variations in forecast and actual prove an excellent starting point for analyzing the financial statements.

These forecasts should be developed for a year on a month to month basis. Set the goals which you feel the company is capable of and strive to obtain them. Variations should be fully discussed to ascertain whey they occurred.

By establishing in advance the sales level of your operations, the groundwork has been laid to determine expansion needs as they relate to facilities, equipment, and personnel.

You should go one step further in your projections. From the forecasts which have been formulated, a cash needs projection should be developed. With consideration to peak inventory needs, accounts receivable collection cycles, terms extended by vendors for pre-season buying, and payments for existing and anticipated debt service, the cash needs projection can be prepared which will tell you how feasible your plans for the future are.

Financial Statement Review

A thorough review of the financial statements should be made each month. First a general review to determine if everything appears reasonable. Do the gross profit percentages for each department appear in line with year to date percentages and to percentages per the projected financial statements? Are variable expenses in line with the sales volume for the month? Do fixed expenses appear normal? How do the month and year to date figures

compare with projections?

A review of the balance sheet accounts should be made next. What is the current cash position? What is the balance of accounts receivable? How much of this balance is past due? Are proper collection procedures being followed to collect these past due accounts? How much are inventories and what are the related floor-plan loans? How much are accounts payable and what are the due dates? What short term notes are outstanding and what are their due dates?

These outline some of the questions to be considered in reviewing each financial statement. An in depth study of the statements will produce a lot of useful information for management's use in the decision making process.

Conclusion

This discussion of account procedures for marina operations has been of a very general nature. I think you can derive from our discussion the importance of an effective accounting system to your overall operations. You should always strive to improve your system to provide better information and more detailed information in critical areas of the operation.

Your accounting system can give you the facts needed to make management decisions which will maximize your return on investment.

DRAFT

PETER'S LANDING MARINA
OPERATING INCOME AND EXPENSES AT FULL DEVELOPMENT
(In 1977 Dollars)

OPERATING INCOME	
Boat Slips: 9,400 lin. feet @ $4.00/foot/month @ 98% occupancy	$442,200
Overhang: Average of 1.5 feet, 300 slips @ $4.00/foot/month @ 98% occupancy	21,200
Main Channel Premiums: 1,500 lin. feet @ 25¢/foot/month	4,500
Dinghy Racks: 50 @ $5.00/month — Cal Jurist ? —	3,000
Liveaboard Fees: 8 boats @ 40 feet @ $1.50/foot/month	5,800
Boat Broker: 1.5% of $1.5 million gross plus 200 lin. feet @ $4.00/foot/month	32,100
Total Operating Income	$508,800
OPERATING EXPENSE	
Dockmaster: full-time	$ 16,500
Assistant/Maintenance Man: half-time	6,600
Security Patrol: full-time man	11,000
Office Staff: half-time allocated	4,400
Professional Fees	1,200
Office Supplies, Telephone, Miscellaneous	1,500
Advertising: $2,000 first year; $500 thereafter	500
Janitorial	2,500
Insurance	8,000
Electricity, Area Lighting	2,400
Water	1,000
Maintenance and Repair Materials and Services	15,000
Office Rent: 500 square feet @ 60¢/foot/month	3,600
Miscellaneous and Contingency	12,000
Subtotal	$ 86,200
Property Taxes, Improvements: $925,000 x 25% x $10.60 per $100	24,500
Property Taxes, 5.32 Acres @ $3.00/square foot x 25% x $10.60 per $100	18,400
Rent: Lease from State for Marina and Channel Area	16,400
Total Operating Expense	$145,500
NET OPERATING INCOME (Before Debt Service, Depreciation and Income Taxes)	$363,300

Source: Williams-Kuebelbeck and Associates, Inc., September 1977. See text following for explanation.

OPERATING INCOME

Berth Rates

Berth rates at Orange County harbors, as of September 1977, were as follows:

	Range	Typical Rate
Dana West Marina	$3.12 to $3.82/ft./mo.	$3.20/ft./mo.
Dana Point Marina	$2.82 to $3.29/ft./mo.	$3.00/ft./mo.
Newport Bay	$3.25 to $4.50/ft./mo.	$3.50/ft./mo.
Huntington Harbour		$3.00/ft./mo.
Sunset Aquatic Park	$2.00 to $2.55/ft./mo.	$2.30/ft./mo.

The harbors are either privately owned or operated by private enterprise on long-term leases from public agencies. The operators of Dana West Marina intend to raise the rates by 25¢ to 50¢ for 1978. The historical experience on the Southern California Coast has been that the newest harbors to open have charged the highest rates. With the exception of Newport Bay (where rates have been higher than average for two decades), Orange County harbor pricing policies have followed this pattern.

The extremely high demand for boat berths is evidenced by long waiting lists at all harbors, with over 8,000 names on the Long Beach Marina waiting list. Dana West Marina recently leased over 900 berths in less than a year, at relatively high rates, and currently has a waiting list. A recent (April 1977) survey of persons on the Long Beach Marina waiting list indicated that 25 percent would be willing to pay $4.00 per foot per month at a public marina in 1980.

Based on this strong demand, rates at Peter's Landing should be set at $3.75 to $4.25 with an average of $4.00 in 1977 dollars. Slip rates have increased at compound annual averages ranging from 4.4 percent to 12.3 percent over the past decade. A conservative increase of 6 percent should be used in projecting rate increases.

Full occupancy should be achieved within one year. A vacancy of 2 percent could result from turnover and non-payment of rent. However, advertising to develop a waiting list would result in virtually 100 percent occupancy. Assignment of

visiting boats to temporarily vacant berths, with appropriate charges, will further increase income.

Overhang

Most harbors charge on the basis of berth length or boat length, whichever is longer. In certain areas with wide fairways, boats may extend up to four feet beyond the end of the berth. For revenue projection purposes, an average overhang of 1.5 feet should be used.

End-Tie on Main Channel Premiums

End ties, particularly along main channels, command premium rates because of: the ease of docking; extreme shortage of berths over 50 feet long; and high visibility. Typical premiums are approximately 50¢ per foot per month at Dana Point and Marina del Rey anchorages.

Dinghy Racks

Secure dry storage for dinghies is a valuable service to boatowners who do not want to store their dinghy aboard at all times. In addition, many owners of large boats also own small sailboats such as Sabots, Lasers or Lido 14's. For initial planning, racks for at least 50 boats ranging from 8 to 15 feet should be provided. Typical charges are $5.00 per month.

Dock Boxes

A number of Southern California marinas provide dock boxes as part of the basic berth construction. No additional charges are made.

Liveaboard Charges

There is a significant amount of controversy in Southern California marinas over the benefits and problems of liveaboards. One generally recognized benefit is the security provided by having people in the marina at all times. The primary benefit is to the boatowners in terms of protection from theft, vandalism, fire, sinking boats, etc. The marina operator also receives some benefit from the

marina being more secure. The most appropriate number of liveaboard boats appears to be that which provides one liveaboard boat at the inboard and outboard ends of each main walkway, thus providing security from intrusion by land or water.

Charges for liveaboards range from nothing to $1.00 per foot per month, in addition to the basic berth rate at Southern California marinas. The high demand for permission to liveaboard will easily justify a rate of $1.50 per month. Current rates now permitted at Marina del Rey range from $1.25 to $1.90 per foot per month. A 20 percent surcharge is used at Dana West Marina.

Boat Dealer/Broker

A boat dealer/broker provides a service to owners of boats berthed in a marina and is also a source of income to the marina owner. Rental rates throughout the State range from .5 percent to 2 percent on sale of new boats and from 5 percent to 15 percent on brokerage commissions which are typically 10 percent of the sale price.

There are approximately 2,000 berths in Sunset Aquatic Park and Huntington Harbour, with another 1,000 expecged by the late 1980's. The potential for an additional boat dealer/broker, on the water, at Peter's Landing is excellent. Research for the California Department of Navigation and Ocean Development[1/] indicated that the average gross income for incorporated boat brokers and dealers was $509,000 in 1976. The number and high value of boats in the area should enable a major dealer/broker to gross $1.5 million a year shortly after the marina is completed. The potentially high volume could justify a percentage rent of 1.5 percent on the sale price of new and used boats. In addition, the dealer/broker will rent in-water display area. The plan should provide at least 200 feet of display dock for the dealer/broker, to be leased at standard berth rates.

1/ Marina Management Study, Vol. 2, The Economic Impact of the Boating Industry and Marinas in the State of California, Williams-Kuebelbeck and Associates, Inc., February 1977.

OPERATING EXPENSES

Salaries

In 1976, monthly salary ranges at public marinas were as follows:

Harbormasters	$900 to $1,660; mid-point $1,280	= $15,360/yr.
Assistant Harbormasters	$600 to $1,360; mid-point $980	= $11,760/yr.
Maintenance Men	$710 to $1,190; mid-point $950	= $11,400/yr.
Harbor Patrolmen	$820 to $1,280; mid-point $1,050	= $12,600/yr.

By mid 1977, most salaries should have increased by 6 to 8 percent.

In order to attract qualified, experienced personnel, salaries near the mid-point of the public agency ranges should be offered. The following staffing is suggested:

Dockmaster, full-time	$15,000 + 10% benefits	= $16,500/yr.
Assistant & Maintenance Man, half-time	$6,000 + 10% benefits	= $6,600/yr.
Security Patrol, full-time	$10,000 + 10% benefits	= $11,000/yr.
Office staff, half-time	$4,000 + 10% benefits	= $4,400/yr.

Positions shown as half-time can be filled by full-time personnel whose salaries are partially allocated to other activities in the project area.

Dockmaster and maintenance men may presently come under Federal Longshore and Harborworkers Act regarding disability and workmen's compensation insurance. Premiums are as high as 30 percent of wages. Legislation is pending to eliminate all recreational boating activities from the Federal Act.

Lessee operated anchorages at Marina del Rey have reported that wages and salaries plus management fees range from 10 to 38 percent of gross anchorage income with the average near 18 percent. The berth rates at these anchorages are lower than that proposed for Peter's Landing, thus Peter's Landing should expect a lower percentage of income to be spent on labor costs. At Dana West Marina,

labor costs are currently near 12 percent of gross anchorage income. Again, berth rates are lower and there is also less of an opportunity to allocate personnel to functions other than the marina. In view of the proposed berth rates and other sources of income, as well as the multi-use nature of the project, a labor cost of approximately 8 percent of income should be achievable.

Electricity and Water

Our survey of 14 lessee operated anchorages at Marina del Rey provided an average utility cost estimate of $44 per slip per year as of December 1973. The Consumer Price Index indicates that utility costs increased by 29.1 percent by July 1977. The new average would therefore be $57 per slip. Approximately 90 percent ($51) is believed to be attributable to electricity, with 10 percent ($6) attributable to water.

The most recent information from Dana West Marina, where slips over 35 feet are metered individually, indicates that typical monthly electricity bills are ranging from $4 to $8. Boatowners pay the electric bills directly to SCE. Meters were reported to have cost of approximately $80 each and were paid for by the lessee. Individual metering of all slips is recommended if the meter cost for Peter's Landing is near $80.

A cost of $200 per month is included for area lighting for parking lots and walkways.

Water costs at Dana West Marina are currently averaging approximately $3 per slip per year. This suggests a cost estimate of $1,000 for Peter's Landing.

Property Taxes

Property taxes on the land, water area and improvements are the single largest operating expense. Present construction cost estimates indicate an improvement value (for property tax purposes) of $925,000.

The Orange County Assessor's Office currently estimates the approximate market value of marina land and water areas to be as follows:

Dana West Marina	$1.85 per square foot
Dana Island & Cove Marinas	$2.11 per square foot
Sunset Aquatic Park	$1.34 per square foot
Newport Bay	
Bayshores Marina	$5.50 per square foot
Villa Marina	$4.65 per square foot
Balboa Yacht Basin	$3.73 per square foot
Balboa Marina	$2.63 per square foot

The Los Angeles County Assessor's Office estimates the approximate market value of marina land and water areas to be an average of $2.89 per square foot for anchorages at Marina del Rey.

An estimate of $3.00 per square foot for Peter's Landing is appropriate for financial projections. Total land and water value for the 5.32 acres of marina parking and berthing area would therefore be $695,200.

The County Assessor's Office will ultimately base the estimated value on the profitability of the project, as well as comparable marina properties. The Assessor will not necessarily separate the marina and retail portions of the Peter's Landing project, in which case an internal allocation of property taxes will be required.

Other Operating Expenses

The remaining operating expenses are based on comparable information on Dana West Marina and an allocation of overhead costs for operation of the entire Peter's Landing project. A contingency of $1,000 a month should be budgeted to cover unanticipated costs, primarily in the labor, insurance, utility and property tax budgets.

Comparison of Operating Expenses

The total operating expenses of $86,200 (before property taxes and rent) represents an annual cost of $287 per berth for approximately 300 berths. This estimate is within the range of per-berth operating costs reported by anchorages at Marina del Rey and is slightly higher than the per-berth costs currently being experienced at Dana West Marina.

A
COURSE OF INSTRUCTION
IN
BASIC MARINA MANAGEMENT

THURSDAY

A CHECK LIST FOR INFORMATION TO FURNISH ON A COMMERCIAL LOAN PRELIMINARY INQUIRY

1. LOAN AMOUNT AND TERMS DESIRED:
(Show interest rate, loan term, and any special features desired by applicant, such as - special partial release clauses, special prepayment privileges, etc.)

2. PURPOSE OF LOAN:
(Give a brief statement concerning use of loan funds, such as - (1) To provide part of construction cost, (2) To refinance existing loan, (3) To provide part of purchase price, (4) To provide additional working capital, (5) Etc.)

3. TYPE OF PROPERTY:
(Give a brief description of type of property offered as security, such as - (1) Older one story office building, (2) Modern one story warehouse building, (3) Modern one story retail store building.)

4. APPLICANT:
(Give name of applicant and state whether a corporation, partnership, individual, etc. A brief statement concerning financial strength of applicant should be furnished, along with brief information concerning applicant's background, business ability, and reputation.)

5. LOCATION:
(Describe briefly street address and whether property is outlying, close in to downtown, or in downtown area. In addition include brief comment concerning type and quality of immediate area including any major factors affecting stability and growth of area. Attach a city street map and mark the location on the map. An occupancy map of the immediate area is helpful but not always necessary for a preliminary inquiry.)

6. LAND DESCRIPTION:
(Give site dimensions, square foot area of land, street location. If possible, attach a plot plan showing location of improvements on lot and relationship to streets.)

7. BUILDINGS AND IMPROVEMENTS:
(Give age of buildings, type of construction, condition of buildings, description of improvements other than buildings. Include gross area figures, rentable area figures if appropriate, parking area figures; normally furnish area figures in square feet. Preliminary sketch plans should be attached for proposed buildings or photos for existing buildings.)

8. OCCUPANCY, INCOME, & EXPENSES:
(Give names of tenants, type of business, approximate net worth, area occupied, annual rentals, lease term, expense obligations of tenant. In properties such as office buildings with multiple occupancy, rent roll could be attached setting out most of this information. For expenses, a breakdown should be given showing applicant's building expenses - these can usually be broken down as to taxes, insurance, and operating expense. If proposed construction, expenses will be estimated and on existing construction actual expenses should be furnished.)

9. VALUATION: (Tentative Only)
(Give your opinion of land value and reproduction cost of buildings and improvements. Where actual cost of improvements is known, it can be shown.)

10. GENERAL COMMENTS:
(Cover here any points not previously mentioned that may have a bearing in considering the loan.)

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FINANCING MARINAS
TEXAS A&M UNIVERSITY
February 23, 1978

I. Introduction to subject

II. Preparation of loan submission

1. Brevity but concise information
2. See attached form--discussion
3. Include:

a. Detailed cost of project
b. Estimated income & expense
c. Borrower's statement of assets and liabilities
d. Statement of assets and liabilities of lessee (if any)

III. Sources of Loans

1. Commercial Banks

a. City banks
b. County banks
c. Possibilities and handicaps with each

2. Savings and loan associations

a. Those in nearby communities
b. Those in larger cities
c. Participations of more than one
d. Need to teach them
e. Advantages to associations

3. Mortgage bankers

a. Number of investors

4. Mortgage brokers

a. Primarily New York

5. Life Insurance companies

a. Plethora of funds
b. Fears based on past experience
c. Underwriting of loan

6. Mutual savings banks

7. Union and corporate pension funds

a. Funds available

V. General comments

1. No glib talk and unrealistic figures

2. Investors expect return of investment with interest, dividends, and/or profits

3. Institutional investors pay interest or dividends to stockholders, policyholders, or depositors

4. Payments must be made whether or not project is profitable.

5. Need to "market your product" (tomorrow's discussion) when presenting a loan.

6. Mortgage underwriter must be able to answer any questions of his finance committee

7. Mortgage underwriter will ask what he would do if project fell into his hands.

8. More deals lost by inability to finance than by nearly any other means

VI. Floor Plan for Financing Boats, Motors, Trailers, Equipment, etc.

1. Sources of Loans

   a. Banks

   b. Finance companies

   c. Manufacturer or seller

2. Know your market

   a. Estimating volume

   b. Location - Drawing power

      (1) Seasonal
      (2) Year 'Round

   c. Income range of prospective customers

3. Financial Information

   a. Assets and Liabilities

   b. Estimating Income and Expense

   c. Signer of Note and other Interested Parties

   d. Lender must know how it will get back what it lends.

4. Floor Plans

   a. 90% to 100%

   b. Terms - 365 Days ??

c. Pay Backs

(1) When sold

(2) 10% per month

(3) 10% per quarter

d. Cost - Prime Plus

e. May require Repurchase agreement from manufacturer

f. Insurance to protect lender

g. May require retail financing

h. Compensating Balances

5. Retail Financing

a. By floor plan lender

b. By others

VII. Summary

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TABLE OF PERCENT NEEDED TO AMORTIZE A PRINCIPAL AMOUNT, CALCULATED ON A MONTHLY BASIS.

DIVIDE BY 12 TO DETERMINE AMOUNT OF MONTHLY PAYMENTS.

RATE / YEARS	3 1/2	3 5/8	3 3/4	3 7/8	4	4 1/8	4 1/4	4 3/8	4 1/2	4 5/8	4 3/4	4 7/8	5	5 1/8	5 1/4	5 3/8	5 1/2	5 5/8	5 3/4	5 7/8	6	6 1/8	6 1/4	6 3/8	6 1/2	6 5/8	6 3/4	6 7/8	7
1	24.05	24.12	24.19	24.26	24.34	24.41	24.48	24.55	24.62	24.70	24.77	24.84	24.92	24.99	25.06	25.13	25.21	25.28	25.35	25.43	25.50	25.58	25.65	25.72	25.80	25.87	25.95	26.02	26.10
2	12.75	12.82	12.89	12.96	13.03	13.10	13.17	13.24	13.31	13.38	13.45	13.52	13.59	13.66	13.73	13.80	13.87	13.94	14.01	14.08	14.15	14.22	14.29	14.36	14.43	14.50	14.57	14.64	14.71
3	8.81	8.88	8.95	9.02	9.09	9.16	9.23	9.30	9.37	9.44	9.51	9.58	9.66	9.73	9.80	9.87	9.94	10.01	10.08	10.15	10.22	10.29	10.36	10.43	10.50	10.57	10.64	10.71	10.78
4	6.67	6.74	6.81	6.88	6.95	7.02	7.10	7.17	7.24	7.31	7.38	7.46	7.53	7.60	7.67	7.74	7.82	7.89	7.96	8.03	8.11	8.18	8.25	8.33	8.40	8.47	8.55	8.62	8.69
5	5.32	5.40	5.47	5.55	5.62	5.70	5.77	5.85	5.92	6.00	6.07	6.15	6.22	6.30	6.37	6.45	6.53	6.60	6.68	6.76	6.83	6.91	6.99	7.06	7.14	7.22	7.30	7.37	7.45
6	4.43	4.50	4.58	4.66	4.73	4.81	4.89	4.97	5.04	5.12	5.20	5.28	5.36	5.44	5.52	5.60	5.68	5.76	5.84	5.92	6.00	6.08	6.16	6.24	6.32	6.40	6.48	6.56	6.64
7	3.79	3.87	3.95	4.03	4.11	4.19	4.27	4.35	4.43	4.51	4.59	4.67	4.75	4.84	4.92	5.00	5.08	5.17	5.25	5.33	5.42	5.50	5.58	5.67	5.75	5.84	5.92	6.01	6.09
8	3.32	3.40	3.48	3.56	3.64	3.73	3.81	3.89	3.98	4.06	4.15	4.23	4.32	4.40	4.49	4.58	4.66	4.75	4.84	4.93	5.02	5.10	5.19	5.28	5.37	5.46	5.55	5.64	5.73
9	2.96	3.04	3.12	3.21	3.29	3.38	3.47	3.56	3.64	3.73	3.82	3.91	4.00	4.09	4.18	4.27	4.36	4.45	4.54	4.64	4.73	4.82	4.92	5.01	5.11	5.20	5.30	5.39	5.49
10	2.69	2.77	2.86	2.94	3.03	3.12	3.21	3.30	3.39	3.48	3.57	3.66	3.76	3.85	3.94	4.04	4.13	4.23	4.32	4.42	4.52	4.61	4.71	4.81	4.91	5.01	5.11	5.21	5.31
11	2.46	2.54	2.63	2.72	2.81	2.90	2.99	3.08	3.17	3.27	3.36	3.46	3.55	3.65	3.75	3.84	3.94	4.04	4.14	4.24	4.34	4.44	4.54	4.65	4.75	4.85	4.96	5.06	5.17
12	2.27	2.35	2.44	2.53	2.63	2.72	2.81	2.91	3.00	3.10	3.20	3.30	3.39	3.49	3.59	3.70	3.80	3.90	4.01	4.11	4.22	4.32	4.43	4.54	4.65	4.76	4.87	4.98	5.09
13	2.11	2.20	2.29	2.38	2.48	2.57	2.67	2.76	2.86	2.96	3.06	3.16	3.26	3.37	3.47	3.58	3.68	3.79	3.90	4.01	4.12	4.23	4.34	4.45	4.57	4.68	4.80	4.91	5.03
14	1.98	2.07	2.16	2.26	2.35	2.45	2.55	2.65	2.75	2.85	2.95	3.06	3.16	3.27	3.38	3.48	3.59	3.70	3.82	3.93	4.04	4.16	4.27	4.39	4.51	4.63	4.75	4.87	4.99
15	1.87	1.96	2.05	2.15	2.25	2.35	2.45	2.55	2.65	2.76	2.86	2.97	3.08	3.19	3.30	3.41	3.52	3.64	3.75	3.87	3.99	4.11	4.23	4.35	4.47	4.59	4.72	4.84	4.97
16	1.78	1.87	1.97	2.07	2.17	2.27	2.38	2.48	2.59	2.70	2.81	2.92	3.03	3.14	3.26	3.37	3.49	3.61	3.73	3.85	3.97	4.09	4.22	4.34	4.47	4.60	4.73	4.86	4.99
17	1.70	1.80	1.90	2.00	2.10	2.21	2.32	2.43	2.54	2.65	2.76	2.88	2.99	3.11	3.23	3.35	3.47	3.59	3.72	3.84	3.97	4.10	4.23	4.36	4.49	4.62	4.75	4.89	5.02
18	1.64	1.73	1.83	1.94	2.04	2.15	2.26	2.37	2.49	2.60	2.72	2.83	2.95	3.07	3.19	3.32	3.44	3.57	3.70	3.83	3.96	4.09	4.22	4.36	4.49	4.63	4.77	4.91	5.05
19	1.58	1.68	1.78	1.88	1.99	2.10	2.21	2.32	2.44	2.56	2.68	2.80	2.92	3.04	3.17	3.30	3.43	3.56	3.69	3.82	3.96	4.09	4.23	4.37	4.51	4.65	4.79	4.93	5.08
20	1.53	1.63	1.73	1.84	1.95	2.06	2.17	2.29	2.41	2.53	2.65	2.77	2.90	3.02	3.15	3.28	3.41	3.55	3.68	3.82	3.96	4.10	4.24	4.38	4.53	4.67	4.82	4.97	5.12
21	1.48	1.58	1.69	1.80	1.91	2.02	2.14	2.26	2.38	2.50	2.63	2.75	2.88	3.01	3.14	3.27	3.41	3.54	3.68	3.82	3.96	4.10	4.25	4.39	4.54	4.69	4.84	4.99	5.15
22	1.44	1.54	1.65	1.76	1.87	1.99	2.11	2.23	2.35	2.48	2.60	2.73	2.86	2.99	3.13	3.26	3.40	3.54	3.68	3.82	3.97	4.11	4.26	4.41	4.56	4.71	4.87	5.02	5.18
23	1.40	1.51	1.62	1.73	1.84	1.96	2.08	2.20	2.33	2.45	2.58	2.71	2.84	2.98	3.11	3.25	3.39	3.53	3.68	3.82	3.97	4.12	4.27	4.42	4.58	4.73	4.89	5.05	5.21
24	1.37	1.47	1.58	1.70	1.81	1.93	2.05	2.18	2.30	2.43	2.56	2.69	2.83	2.96	3.10	3.24	3.38	3.53	3.67	3.82	3.97	4.12	4.28	4.43	4.59	4.75	4.91	5.07	5.24
25	1.34	1.44	1.55	1.67	1.78	1.90	2.03	2.15	2.28	2.41	2.54	2.68	2.81	2.95	3.09	3.23	3.38	3.52	3.67	3.82	3.97	4.13	4.28	4.44	4.60	4.76	4.92	5.09	5.26
26	1.31	1.42	1.53	1.64	1.76	1.88	2.00	2.13	2.26	2.39	2.52	2.66	2.80	2.94	3.08	3.22	3.37	3.52	3.67	3.82	3.98	4.13	4.29	4.45	4.61	4.77	4.94	5.11	5.28
27	1.29	1.39	1.51	1.62	1.74	1.86	1.99	2.11	2.24	2.38	2.51	2.65	2.79	2.93	3.07	3.22	3.37	3.52	3.67	3.83	3.98	4.14	4.30	4.46	4.62	4.79	4.96	5.13	5.30
28	1.27	1.37	1.49	1.61	1.73	1.85	1.98	2.11	2.24	2.37	2.51	2.64	2.78	2.93	3.07	3.22	3.37	3.52	3.68	3.83	3.99	4.15	4.31	4.47	4.64	4.80	4.97	5.14	5.32
29	1.25	1.36	1.47	1.59	1.72	1.84	1.97	2.10	2.23	2.36	2.50	2.64	2.78	2.92	3.07	3.22	3.37	3.52	3.68	3.84	4.00	4.16	4.32	4.49	4.65	4.82	4.99	5.16	5.34
30	1.23	1.34	1.46	1.58	1.71	1.83	1.96	2.09	2.23	2.36	2.50	2.64	2.78	2.93	3.07	3.22	3.37	3.53	3.68	3.84	4.00	4.17	4.33	4.50	4.67	4.84	5.01	5.18	5.36
31	1.22	1.33	1.45	1.57	1.70	1.82	1.96	2.09	2.22	2.36	2.50	2.64	2.78	2.93	3.08	3.23	3.38	3.53	3.69	3.85	4.01	4.17	4.34	4.51	4.68	4.85	5.02	5.20	5.38
32	1.21	1.32	1.44	1.56	1.69	1.82	1.95	2.08	2.22	2.35	2.49	2.64	2.78	2.93	3.08	3.23	3.38	3.54	3.69	3.85	4.02	4.18	4.35	4.52	4.69	4.86	5.04	5.21	5.39
33	1.20	1.31	1.43	1.55	1.68	1.81	1.94	2.08	2.21	2.35	2.49	2.63	2.78	2.93	3.08	3.23	3.38	3.54	3.70	3.86	4.02	4.19	4.35	4.53	4.70	4.87	5.05	5.22	5.40
34	1.19	1.30	1.42	1.54	1.67	1.80	1.94	2.07	2.21	2.35	2.49	2.63	2.78	2.93	3.08	3.24	3.39	3.55	3.71	3.87	4.03	4.20	4.37	4.54	4.71	4.88	5.06	5.24	5.42
35	1.18	1.29	1.41	1.53	1.67	1.80	1.93	2.07	2.21	2.35	2.49	2.63	2.78	2.93	3.08	3.24	3.39	3.55	3.71	3.87	4.04	4.20	4.37	4.55	4.72	4.89	5.07	5.25	5.43
36	1.17	1.28	1.40	1.53	1.66	1.79	1.93	2.06	2.20	2.35	2.49	2.63	2.78	2.93	3.09	3.24	3.40	3.56	3.72	3.88	4.04	4.21	4.38	4.55	4.73	4.90	5.08	5.26	5.44
37	1.16	1.27	1.39	1.52	1.65	1.79	1.92	2.06	2.20	2.34	2.49	2.63	2.78	2.93	3.09	3.24	3.40	3.56	3.72	3.88	4.05	4.21	4.38	4.56	4.73	4.91	5.09	5.27	5.45
38	1.15	1.26	1.38	1.51	1.64	1.78	1.92	2.05	2.20	2.34	2.49	2.63	2.78	2.93	3.09	3.24	3.40	3.56	3.72	3.89	4.05	4.22	4.39	4.56	4.74	4.91	5.09	5.27	5.46
39	1.14	1.25	1.37	1.50	1.64	1.77	1.91	2.05	2.19	2.34	2.48	2.63	2.78	2.93	3.09	3.24	3.40	3.56	3.73	3.89	4.06	4.22	4.39	4.57	4.74	4.92	5.10	5.28	5.46
40	1.13	1.24	1.36	1.49	1.63	1.77	1.91	2.04	2.19	2.34	2.48	2.63	2.78	2.93	3.09	3.24	3.40	3.57	3.73	3.90	4.06	4.23	4.40	4.57	4.75	4.92	5.10	5.28	5.47
41	1.12	1.23	1.35	1.48	1.62	1.76	1.90	2.04	2.19	2.33	2.48	2.63	2.78	2.93	3.09	3.24	3.40	3.57	3.73	3.90	4.07	4.23	4.40	4.58	4.75	4.93	5.11	5.29	5.47
42	1.11	1.22	1.34	1.47	1.61	1.75	1.90	2.04	2.18	2.33	2.48	2.63	2.78	2.93	3.09	3.24	3.41	3.57	3.74	3.90	4.07	4.24	4.41	4.58	4.76	4.93	5.11	5.29	5.48
43	1.10	1.21	1.33	1.46	1.60	1.75	1.89	2.03	2.18	2.33	2.48	2.63	2.78	2.93	3.09	3.24	3.41	3.57	3.74	3.91	4.07	4.24	4.41	4.59	4.76	4.94	5.12	5.30	5.48
44	1.09	1.20	1.32	1.45	1.59	1.74	1.88	2.03	2.18	2.33	2.48	2.63	2.78	2.93	3.09	3.24	3.41	3.57	3.74	3.91	4.08	4.25	4.42	4.59	4.77	4.94	5.12	5.30	5.49
45	1.08	1.19	1.31	1.44	1.59	1.73	1.88	2.02	2.17	2.32	2.48	2.63	2.78	2.93	3.09	3.24	3.41	3.57	3.74	3.91	4.08	4.25	4.42	4.60	4.77	4.95	5.13	5.31	5.49
46	1.07	1.18	1.30	1.43	1.58	1.73	1.87	2.02	2.17	2.32	2.48	2.63	2.78	2.93	3.09	3.24	3.41	3.57	3.74	3.91	4.08	4.25	4.43	4.60	4.78	4.95	5.13	5.31	5.50
47	1.06	1.17	1.29	1.43	1.57	1.72	1.87	2.02	2.17	2.32	2.48	2.63	2.78	2.93	3.09	3.24	3.41	3.57	3.74	3.91	4.08	4.26	4.43	4.61	4.78	4.96	5.14	5.32	5.50
48	1.06	1.17	1.29	1.42	1.57	1.72	1.86	2.01	2.17	2.32	2.48	2.63	2.78	2.93	3.09	3.24	3.41	3.57	3.74	3.91	4.08	4.26	4.43	4.61	4.79	4.96	5.14	5.32	5.51
49	1.05	1.16	1.28	1.42	1.56	1.71	1.86	2.01	2.16	2.32	2.48	2.63	2.78	2.93	3.09	3.24	3.41	3.57	3.74	3.91	4.08	4.26	4.43	4.61	4.79	4.97	5.15	5.33	5.51
50	1.05	1.16	1.28	1.41	1.56	1.71	1.86	2.01	2.16	2.32	2.48	2.63	2.78	2.93	3.09	3.24	3.41	3.57	3.74	3.91	4.08	4.26	4.43	4.61	4.79	4.97	5.15	5.33	5.52

FACT SHEET

August, 1975

502 LOAN PROGRAM

WHAT IS A DEVELOPMENT COMPANY LOAN (502 LOAN)?

A "502 Loan" is a loan made to a Local Development Company (LDC) or an Industrial Foundation, and the loan funds are, in turn, used to assist a Small Business Concern (SBC) in the acquisition of FIXED ASSETS.

WHAT IS AN "LDC"?

An "LDC" is a state-chartered organization (either profit or non-profit) formed for the purpose of furthering the economic development of the Area which it serves. The "LDC" should be a COMMUNITY undertaking, having at least 25 members, and the ownership control must be vested in individuals who reside in the Area to be served.

WHAT IS AN "SBC"?

A small business concern for the purpose of receiving financial or other assistance from development companies is a concern which:

> Together with its affiliates, is independently owned and operated; is not dominant in its field of operation; does not have assets exceeding $9 million; does not have net worth in excess of $4 million; does not have an average income, after Federal income taxes, for the preceding 2 years in excess of $400,000 (average net income to be computed without benefit of any carry-over loss); and meets normal SBA eligibility requirements.

PERTINENT FACTORS RELATIVE TO AN "LDC" LOAN:

1. Purpose of Loan and Use of Proceeds:

   a. To finance construction, modernization, or expansion of proposed or existing plants.
   b. Purchase land, construct buildings, purchase machinery and equipment.
   c. None of the loan proceeds can flow to the SBC to be used as debt payment or working capital.

2. The LDC is generally required to provide from its own resources a reasonable percentage of the project cost.

Population of community under	5,500	10% of project cost
Population of community from	5,000-10,000	15% of project cost
Population of community over	10,000	20% of project cost

   a. The injection by the LDC can be in the form of cash, land buildings, or machinery and equipment that is part of the project cost.
   b. A portion of the required injection can be borrowed funds.

PROJECT EXAMPLE

Land	$ 10,000
Building	150,000
Equipment	40,000
Total	$200,000

GUARANTEE PLAN

Local Development Company	$ 20,000	(10%)
Bank or Savings & Loan	180,000	(90%)
	$200,000	

The bank loan to LDC is guaranteed up to 90% by SBA.
Bank sets terms and interest rates.

FIRST MORTGAGE PLAN
(Subject to available SBA funds)

LDC	$ 20,000	(10%)
Bank	110,000	(55%)
SBA	70,000	(35%)
	$200,000	

Bank loan has first mortgage on all collateral with terms and interest negotiated. SBA takes second position up to $350,000-up to 25 years. Interest rate 6 5/8%. SBA exposure limited to 35% of project.

3. The loan must be so secured as to reasonably assure repayment. The collateral will normally consist of a first mortgage on real estate and first lien on machinery and equipment acquired with the project funds.

4. Interest rate on SBA's share is 6 5/8% (if a Direct or Immediate Participation Loan). Private lending institutions or banks participating with SBA in loans may charge any reasonable legal rate on their share.

5. Loan Maturities and Amount:

   a. Maturity may not exceed 25 years.
   b. SBA's exposure is limited to $350,000 for each SBC to be assisted.

6. The LDC contracts for the SBC's USE OF THE FACILITY by any of the following:

   a. By leasing the completed facility to the SBC with or without an option to purchase. PREFERRED.
   b. By lending the SBC the funds with which it constructs the facility and by accepting the firm's promissory note, adequately secured.
   c. By selling SBC the completed facility and taking back a note, adequately secured.

7. Although the loan is made to the LDC, the SBC being assisted is expected to provide sound management, adequate working capital and investment capital, an established market, and marketable product so as to insure a successful operation.

FOR FURTHER INFORMATION ABOUT THIS PROGRAM AND HOW IT CAN ASSIST YOUR COMMUNITY, CONTACT YOUR SMALL BUSINESS ADMINISTRATION OFFICE.

A

COURSE OF INSTRUCTION

IN

BASIC MARINA MANAGEMENT

FRIDAY

FEDERAL AGENCIES SPONSORING PROGRAMS WHICH MAY PROVIDE AID AND ASSISTANCE IN DEVELOPING SMALL-CRAFT FACILITIES

Information Staff
Farmers Home Administration
Department of Agriculture
Washington, DC 20250

Director
Office of Business Economics
Department of Commerce
Washington, DC 20230

Information Service
Department of Housing and
Urban Development
451 Seventh Street SW
Washington, DC 20410

Department of Interior
Conservation Education Office
Bureau of Sport Fisheries and Wildlife
18th and C Streets, NW
Washington, DC 20240

Division of Information
National Park Service
Interior Building
Washington, DC 20240

Commissioner of Reclamation
Department of Interior
Washington, DC 20240

Office of Public Affairs
National Oceanic and
Atmospheric Administration
6010 Executive Boulevard
Rockville, MD 20852

U.S. Army, Corps of Engineers
Department of the Army
Washington, DC 20314

Division of Information and Education
Forest Service
Department of Agriculture
Washington, DC 20250

Office of Administration and
Program Analysis
Economic Development Administration
Main Commerce Building
Washington, DC 20230

Environmental Protection Agency
1626 K Street, NW
Washington, DC 20460

Office of Information
Bureau of Land Management
Department of Interior
Washington, DC 20240

Organization Division
Bureau of Outdoor Recreation
Interior Building
Washington, DC 20240

Office of Water Resources
Department of Interior
Washington, DC 20240

Department of Transportation
400 Seventh Street, SW
Washington, DC 20590

U.S. Coast Guard
400 Seventh Street, SW
Washington, DC 20590

STATE AGENCIES HOLDING JURISDICTION OVER MATTERS CONCERNING SMALL CRAFT AND SMALL-CRAFT FACILITIES

Department of Conservation
Water Safety Division
Montgomery, AL 36104

Coordinator, Game and Fish Department
2222 West Greenway Road
Phoenix, AZ 85023

State of California Resources Agency
Dept. of Navigation and Ocean Development
1416 Ninth Street
Sacramento, CA 95814

Director, Boating Commission
Department of Environmental Protection
State Office Building
Hartford, CT 06115

Department of Natural Resources
Division of Marine Resources
Larson Building
Tallahassee, FL 32304

Department of Transportation
Harbors Division
PO Box 397
Honolulu, HI 96809

Department of Conservation
605 State Office Building
400 South Spring Street
Springfield, IL 62706

Superintendent of Waters Section
State Conservation Commission
300 4th Street
Des Moines, IA 50319

Department of Fish and Wildlife Resources
State Office Building Annex
Frankfort, KY 40601

Department of Public Works
Division of Water and Harbors
Pouch Z
Juneau, AK 99801

Information and Education Division
Game and Fish Commission
Little Rock, AR 72201

Chief Warden
Game, Fish and Parks Department
6060 Broadway
Denver, CO 80216

Department of Natural Resources and
Environmental Control
Dover, DE 19901

Coordinator, Special Services
State Game and Fish Commission
Trinity-Washington Building
Room 710
Atlanta, GA 30334

Idaho Department of Parks
Statehouse
Boise, ID 83707

Enforcement Division
Department of Natural Resources
606 State Office Building
Indianapolis, IN 46209

Field Services Division
Forestry, Fish and Game Commission
Box 1028
Pratt, KS 67124

Department of Public Safety
State Office Building Annex
Frankfort, KY 40601

Supervisor of Revenue
Wildlife and Fisheries Commission
Wildlife and Fisheries
400 Royal Street
New Orleans, LA 70130

Bureau of Watercraft
Registration and Safety
State Office Building
Augusta, ME 04330

Chief, Boating Division
Department of Chesapeake Bay Affairs
1825 Virginia Street
Annapolis, MD 21401

Director, Marine and Recreation Division
100 Nashua Street
Boston, MA 02114

Department of Natural Resources
Stevens T. Mason Building
Lansing, MI 48926

Department of Natural Resources
Centennial Office Building
St. Paul, MN 55101

Mississippi Boat and
Water Safety Commission
Robert E. Lee Building, Room 403
Jackson, MS 39201

Missouri Boat Commission
PO Box 603
Jefferson City, MO 65101

Department of Fish and Game
Helena, MT 59601

Nebraska Game and Parks Commission
2200 North 33rd Street
PO Box 30370
Lincoln, NB 68503

Department of Fish and Game
1100 Valley Road
Reno, NV 89510

Department of Safety
Division of Safety Services
Concord, NH 03301

Supervisor Motorboat Numbering
Department of Environmental Protection
PO Box 1889
Trenton, NJ 08625

State Park and Recreation Commission
141 East DeVargas Street
Santa Fe, NM 87501

New York State Parks and Recreation
State Campus, Building 2
Albany, NY 12226

Wildlife Resources Commission
Box 2919
Raleigh, NC 27602

North Dakota State Park Service
Ft. Lincoln State Park
Route 2, Box 139
Mandan, ND 58554

Department of Natural Resources
Division of Watercraft
1350 Holly Avenue
Columbus, OH 43212

Director, Lake Patrol Division
Department of Public Safety
PO Box 11415
Oklahoma City, OK 73105

Pennsylvania Fish Commission
PO Box 1673
Harrisburg, PA 17120

Wildlife Resources Department
Division of Boating
15 Lockwood Boulevard
Charleston, SC 29401

Tennessee Game and Fish Commission
Ellington Agricultural Center
PO Box 40747
Nashville, TN 37220

Boating Chief
Division of Parks and Recreation
1596 W. North Temple Street
Salt Lake City, UT 84116

Commission of Outdoor Recreation
8th Street Office Building
803 E. Broad Street
Richmond, VA 23219

Chief, Law Enforcement Section
Department of Natural Resources
State Office Building
Charleston, WV 25305

Game and Fish Commission
Cheyenne, WY 82001

Ports Authority
GPO Box 2829
San Juan, PR 00936

State Marine Board
Agriculture Building
Salem, OR 97310

Division of Coastal Resources
Veterans Memorial Building
83 Park Street
Providence, RI 02903

Department of Game, Fish and Parks
Pierre, SD 57501

Texas Parks and Wildlife Department
John H. Regan Building
Austin, TX 78701

Agency of Environmental Conservation
Department of Water Resources
Montpelier, VT 05602

Washington State Parks and
Recreation Commission
PO Box 1128
Olympia, WA 98504

Department of Natural Resources
PO Box 450
Madison, WI 53701

Harbor Master
Metropolitan Police Department
Harbor Precinct
550 Main Avenue, SW
Washington, DC 20024

Ports Authority
Maritime Division
Charlotte Amalie
St. Thomas Island, VI

PRIVATE ORGANIZATIONS OFFERING INFORMATION

American Boat & Yacht Council, Inc.
15 East 26th Street
New York, NY 10010

Boating Industry Association
401 North Michigan Avenue
Chicago, IL 60611

National Association of Engine & Boat Manufacturers
537 Steamboat Road
Greenwich, CT 06830

Outboard Boating Club of America
401 North Michigan Avenue
Chicago, IL 60611

American Wood Preservers Institute
1651 Old Meadow Road
McLean, VA 22101

Marine Accessories & Services Association
401 North Michigan Avenue
Chicago, IL 60611

National Recreation & Park Association
1601 North Kent Street
Arlington, VA 22209

Portland Cement Association
Old Orchard Road
Skokie, IL 60076

MARINE PRODUCT MANUFACTURERS

1. Floating Piers, Gangways, Docks and Docking Systems.

American Marina Engineering Co.
3233 SW 2nd Avenue
Fort Lauderdale, FL 33315

Armco Steel Corp.
1001 Grove Street
Middleton, OH 45042

C.M. Beuthe Co.
120-B Cloverdale Avenue
Concord, CA 94518

Dock Masters Inc.
PO Box 1687
Huntington Beach, CA 92647

Hardwick Engineering and Associates
729 East Willow Street
Long Beach, CA 90806

Hallsten Supply Co.
PO Box 41036
Sacramento, CA 95841

Harbor Host Corp.
1027 East Algonquin Road
Arlington Heights, IL 60005

International Marina Systems, Inc.
PO Box 7531
Tulsa, OK 74105

Koppers Company, Inc.
Forest Products Division
750 Koppers Building
Pittsburgh, PA 15219

Marina Products Manufacturing, Inc.
221 SW 14th Court
Fort Lauderdale, FL 33315

MEECO Marinas, Inc.
PO Box 66
Carrollton, TX 75006

Pacific Gangways
Pacific Pipe Co.
PO Box 4011, Bay Shore Station
Oakland, CA 94623

Poly Sintering, Inc.
Commercial Flotation Division
1624 15th Avenue West
Seattle, WA 98119

Steel-N-Foam Docks, Inc.
PO Box 737, 501 South Valley
Kansas City, KA 66119

Tomlinson Industries, Inc.
13700 Broadway
Cleveland, OH 44125

Trautwein Bros.
2410 Newport Boulevard
Newport Beach, CA 92660

United Flotation Systems
2400 Fairwood Avenue
Columbus, OH 43207

2. Perimeter Protection, Erosion Control.

Cathage Mills Inc.
Erosion Control Division
124 West 66th Street
Cincinnati, OH 45216

Construction Techniques, Inc.
1111 Superior Building
Cleveland, OH 44114

Griffolyn Company, Inc.
PO Box 33248
Houston, TX 77033

Kaiser Aluminum & Chemical Sales, Inc.
Kaiser Center, 300 Lakeside Drive
Oakland, CA 94604

Macafferri-Gabions of America, Inc.
One Lefrak City Plaza
Flushing, NY 11368

Macafferri-Gabions of America, Inc.
2470 Westlake North
Seattle, WA 98109

3. Electrical Components, Corrosion Control.

The Arrow-Hart & Hegeman Electric Co.
Hartford, CT 06106

Harvey Hubbell Inc.
Bridgeport, CT 06602

Kiekhaefer Mercury
Division of Brunswick Corp.
Fond du Lac, WI 54935

Occidental Coating Co.
7755 Deering Avenue
Canoga Park, CA 91304

Pennwalk Automatic Power
213 Hutcheson Street
Houston, TX 77003

The Pyle-National Co.
1334 North Kostner Avenue
Chicago, IL 60651

Wide Lite
PO Box 191
Houston, TX 77001

4. Slings, Hoists, Lifts and Winches.

A. C. Hoyle Co.
Box 589
Iron Mountain, MI 49801

Acme Marine Hoist, Inc.
658 Rockaway Turnpike
Lawrence, Long Island, NY 11559

Clark Equipment
Industrial Truck Division
Battle Creek, MI 49016

C. M. Hoist
Division, Columbus McKinnon Corp.
Freemont Avenue
Tonawanda, NY 14150

Electrolift, Inc.
204 Sargeant Avenue
Clifton, NJ 07013

Midland-Ross Corp.
RPC Division
PO Box 490
Roxboro, NC 27573

Midwest Industries, Inc.
Marine Division
Ida Grove, IA 51445

Minuteman Sales & Service
PO Box 1
Plymouth, MA 02360

5. Wood Products.

J.H. Baxter
1700 South El Camino Real
San Mateo, CA 94402

The Dow Chemical Co.
Designed Products Department
Midland, MI 48640

Koppers Company, Inc.
Forest Products Division
750 Koppers Building
Pittsburgh, PA 15219

Permapost Products Co.
25600 SW Tualatin Valley Highway
Hillsboro, OR 97123

6. Sanitary Pumpout Systems.

American Marina Engineering Co.
3233 SW 2nd Avenue
Fort Lauderdale, FL 33315

Kenton Equipment Co.
Marine Division
3280 Kurtz Street
San Diego, CA 92110

Sani-Station
Sta-Rite Industries, Inc.
Delavan, WI 53115

7. De-Icing Systems.

Sta-Rite Industries, Inc.
Delavan, WI 53115

Schramm, Inc.
Aeration Division
612 North Garfield Avenue
West Chester, PA 19830

8. Dredging Equipment.

Ellicott Machine Corp.
1615 Bush Street
Baltimore, MD 21230

National Car Rental System, Inc.
Mud Cat, Hydro-Soil Division
5501 Green Valley Drive
Minneapolis, MN 55431

Pneuma Dredging Equipment
Civil & Marine Engineering Co., International
90 Broad Street
New York, NY 10004

Sauerman Bros., Inc.
620 South 28th Avenue
Bellwood, IL 60104

Vortex-Hydra
Ewing Sales Agency
18106 Redbud Circle
Fountain Valley, CA 92708

Public Law 91-190
91st Congress, S. 1075
January 1, 1970

An Act

To establish a national policy for the environment, to provide for the establishment of a Council on Environmental Quality, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "National Environmental Policy Act of 1969"

National Environmental Policy Act of 1969.

PURPOSE

SEC. 2. The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.

TITLE I

DECLARATION OF NATIONAL ENVIRONMENTAL POLICY

SEC. 101. (a) The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

Policies and goals.

(b) In order to carry out the policy set forth in this Act, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may—

(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(2) assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;

(3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;

(5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(c) The Congress recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

Administration.

SEC. 102. The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall—

(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by title II of this Act, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations;

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on—

(i) the environmental impact of the proposed action,

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) alternatives to the proposed action,

(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of title 5, United States Code, and shall accompany the proposal through the existing agency review processes;

Copies of statements, etc., availability.

81 Stat. 54.

(D) study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(E) recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(F) make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(G) initiate and utilize ecological information in the planning and development of resource-oriented projects; and

(H) assist the Council on Environmental Quality established by title II of this Act.

Review.

SEC. 103. All agencies of the Federal Government shall review their present statutory authority, administrative regulations, and current policies and procedures for the purpose of determining whether there are any deficiencies or inconsistencies therein which prohibit full compliance with the purposes and provisions of this Act and shall propose to the President not later than July 1, 1971, such measures as may be necessary to bring their authority and policies into conformity with the intent, purposes, and procedures set forth in this Act.

SEC. 104. Nothing in Section 102 or 103 shall in any way affect the specific statutory obligations of any Federal agency (1) to comply with criteria or standards of environmental quality, (2) to coordinate or consult with any other Federal or State agency, or (3) to act, or refrain from acting contingent upon the recommendations or certification of any other Federal or State agency.

SEC. 105. The policies and goals set forth in this Act are supplementary to those set forth in existing authorizations of Federal agencies.

TITLE II

COUNCIL ON ENVIRONMENTAL QUALITY

Report to Congress.

SEC. 201. The President shall transmit to the Congress annually beginning July 1, 1970, an Environmental Quality Report (hereinafter referred to as the "report") which shall set forth (1) the status and condition of the major natural, manmade, or altered environmental classes of the Nation, including, but not limited to, the air, the aquatic, including marine, estuarine, and fresh water, and the terrestrial environment, including, but not limited to, the forest, dryland, wetland, range, urban, suburban, and rural environment; (2) current and foreseeable trends in the quality, management and utilization of such environments and the effects of those trends on the social, economic, and other requirements of the Nation; (3) the adequacy of available natural resources for fulfilling human and economic requirements of the Nation in the light of expected population pressures; (4) a review of the programs and activities (including regulatory activities) of the Federal Government, the State and local governments, and nongovernmental entities or individuals, with particular reference to their effect on the environment and on the conservation, development and utilization of natural resources; and (5) a program for remedying the deficiencies of existing programs and activities, together with recommendations for legislation.

Council on Environmental Quality.

SEC. 202. There is created in the Executive Office of the President a Council on Environmental Quality (hereinafter referred to as the "Council"). The Council shall be composed of three members who shall be appointed by the President to serve at his pleasure, by and with the advice and consent of the Senate. The President shall designate one of the members of the Council to serve as Chairman. Each member shall be a person who, as a result of his training, experience, and attainments, is exceptionally well qualified to analyze and interpret environmental trends and information of all kinds; to appraise programs and activities of the Federal Government in the light of the policy set forth in title I of this Act; to be conscious of and responsive to the scientific, economic, social, esthetic, and cultural needs and interests of the Nation; and to formulate and recommend national policies to promote the improvement of the quality of the environment.

SEC. 203. The Council may employ such officers and employees as may be necessary to carry out its functions under this Act. In addition, the Council may employ and fix the compensation of such experts and consultants as may be necessary for the carrying out of its functions under this Act, in accordance with section 3109 of title 5, United States Code (but without regard to the last sentence thereof).

5 USC 416. Duties and functions.

SEC. 204. It shall be the duty and function of the Council—

(1) to assist and advise the President in the preparation of the Environmental Quality Report required by section 201;

(2) to gather timely and authoritative information concerning the conditions and trends in the quality of the environment both current and prospective, to analyze and interpret such information for the purpose of determining whether such conditions and trends are interfering, or are likely to interfere, with the achievement of the policy set forth in title I of this Act, and to compile and submit to the President studies relating to such conditions and trends;

(3) to review and appraise the various programs and activities of the Federal Government in the light of the policy set forth in title I of this Act for the purpose of determining the extent to which such programs and activities are contributing to the achievement of such policy, and to make recommendations to the President with respect thereto;

(4) to develop and recommend to the President national policies to foster and promote the improvement of environmental quality to meet the conservation, social, economic, health, and other requirements and goals of the Nation;

(5) to conduct investigations, studies, surveys, research, and analyses relating to ecological systems and environmental quality;

(6) to document and define changes in the natural environment, including the plant and animal systems, and to accumulate necessary data and other information for a continuing analysis of these changes or trends and an interpretation of their underlying causes;

(7) to report at least once each year to the President on the state and condition of the environment; and

(8) to make and furnish such studies, reports thereon, and recommendations with respect to matters of policy and legislation as the President may request.

SEC. 205. In exercising its powers, functions, and duties under this Act, the Council shall—

(1) consult with the Citizens' Advisory Committee on Environmental Quality established by Executive Order numbered 11472, dated May 29, 1969, and with such representatives of science, industry, agriculture, labor, conservation organizations, State and local governments and other groups, as it deems advisable; and

34 F. R. 8693.

(2) utilize, to the fullest extent possible, the services, facilities, and information (including statistical information) of public and private agencies and organizations, and individuals, in order that duplication of effort and expense may be avoided, thus assuring that the Council's activities will not unnecessarily overlap or conflict with similar activities authorized by law and performed by established agencies.

8. Investment bankers

   a. Only for large amounts
   b. Public offering of stock
   c. Security and exchange commission

9. Individuals

   a. Difficulty of locating them

      (1) Sufficient money
      (2) Ability to speculate

   b. Expensive

10. Venture capital companies

   a. Primarily New York and Chicago
   b. Difficulty of placement

      (1) Very selective

   c. Participation

11. Financial consultants

12. Finance companies

13. Government agencies

   a. SBA
   b. Community Facilities Administration
   c. Area Redevelopment Administration
   d. Farmers Home Administration
   e. Corps of Engineers
   f. Other governmental agencies

14. Other sources

   a. Information from Trade Association
   b. State or municipal bond issues
   c. Companies selling to marinas

      (1) Oil companies, boat companies, etc.

IV. How to structure financing

1. Standard loan

2. Lease

3. Borrowing on each segment of project

4. As part of over-all land development

5. Offering participation in profits

6. Sell stock--SEC. ??

7. Sell debentures--SEC. ??

SEC. 206. Members of the Council shall serve full time and the Chairman of the Council shall be compensated at the rate provided for Level II of the Executive Schedule Pay Rates (5 U.S.C. 5313). The other members of the Council shall be compensated at the rate provided for Level IV or the Executive Schedule Pay Rates (5 U.S.C. 5315). Tenure and compensation. 80 Stat. 460, 461.

SEC. 207. There are authorized to be appropriated to carry out the provisions of this Act not to exceed $300,000 for fiscal year 1970, $700,000 for fiscal year 1971, and $1,000,000 for each fiscal year thereafter. 81 Stat. 638. Appropriations.

Approved January 1, 1970.

LEGISLATIVE HISTORY:

HOUSE REPORTS: No. 91-378, 91-378, pt. 2, accompanying H. R. 12549 (Comm. on Merchant Marine & Fisheries) and 91-765 (Comm. of Conference).
SENATE REPORT No. 91-296 (Comm. on Interior & Insular Affairs).
CONGRESSIONAL RECORD, Vol. 115 (1969):
July 10: Considered and passed Senate.
Sept. 23: Considered and passed House, amended, in lieu of H. R. 12549.
Oct. 8: Senate disagreed to House amendments; agreed to conference.
Dec. 20: Senate agreed to conference report.
Dec. 22: House agreed to conference report.

(c) A vessel used in the violation of a regulation issued pursuant to this title shall be liable in rem for any civil penalty assessed for such violation and may be proceeded against in any district court of the United States having jurisdiction thereof.

Jurisdiction.

(d) The district courts of the United States shall have jurisdiction to restrain a violation of the regulations issued pursuant to this title, and to grant such other relief as may be appropriate. Actions shall be brought by the Attorney General in the name of the United States, either on his own initiative or at the request of the Secretary.

Appropriation.

SEC. 304. There are authorized to be appropriated for the fiscal year in which this Act is enacted and for the next two fiscal years thereafter such sums as may be necessary to carry out the provisions of this title, including sums for the costs of acquisition, development, and operation of marine sanctuaries designated under this title, but the sums appropriated for any such fiscal year shall not exceed $10,000,000.

Approved October 23, 1972.

LEGISLATIVE HISTORY:

HOUSE REPORTS: No. 92-361 (Comm. on Merchant Marine and Fisheries) and No. 92-1546 (Comm. of Conference).
SENATE REPORT No. 92-451 (Comm. on Commerce).
CONGRESSIONAL RECORD:
Vol. 117 (1971): Sept. 8, 9, considered and passed House.
Nov. 24, considered and passed Senate, amended.
Vol. 118 (1972): Oct. 13, Senate and House agreed to conference report.
WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS:
Vol. 8, No. 44 (1972): Oct. 28, Presidential statement.

Public Law 92-532
92nd Congress, H. R. 9727
October 23, 1972

An Act

86 STAT. 1052

To regulate the transportation for dumping, and the dumping, of material into ocean waters, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Marine Protection, Research, and Sanctuaries Act of 1972".

Marine Protection, Research, and Sanctuaries Act of 1972.

FINDING, POLICY, AND PURPOSE

SEC. 2. (a) Unregulated dumping of material into ocean waters endangers human health, welfare, and amenities, and the marine environment, ecological systems, and economic potentialities.

(b) The Congress declares that it is the policy of the United States to regulate the dumping of all types of materials into ocean waters and to prevent or strictly limit the dumping into ocean waters of any material which would adversely affect human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities.

To this end, it is the purpose of this Act to regulate the transportation of material from the United States for dumping into ocean waters, and the dumping of material, transported from outside the United States, if the dumping occurs in ocean waters over which the United States has jurisdiction or over which it may exercise control, under accepted principles of international law, in order to protect its territory or territorial sea.

DEFINITIONS

SEC. 3. For the purposes of this Act the term—

(a) "Administrator" means the Administrator of the Environmental Protection Agency.

(b) "Ocean waters" means those waters of the open seas lying seaward of the base line from which the territorial sea is measured, as provided for in the Convention on the Territorial Sea and the Contiguous Zone (15 UST 1606; TIAS 5639).

(c) "Material" means matter of any kind or description, including, but not limited to, dredged material, solid waste, incinerator residue, garbage, sewage, sewage sludge, munitions, radiological, chemical, and biological warfare agents, radioactive materials, chemicals, biological and laboratory waste, wreck or discarded equipment, rock, sand, excavation debris, and industrial, municipal, agricultural, and other waste; but such term does not mean oil within the meaning of section 11 of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1161) and does not mean sewage from vessels within the meaning of section 13 of such Act (33 U.S.C. 1163).

Ante, p. 816.

(d) "United States" includes the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Canal Zone, the territories and possessions of the United States, and the Trust Territory of the Pacific Islands.

(e) "Person" means any private person or entity, or any officer, employee, agent, department, agency, or instrumentality of the Federal Government, of any State or local unit of government, or of any foreign government.

(f) "Dumping" means a disposition of material: *Provided*, That it does not mean a disposition of any effluent from any outfall structure to the extent that such disposition is regulated under the provisions of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1151–1175), under the provisions of section 13 of the Rivers and Harbors Act

30 Stat. 1152.
33 Stat. 921.

of 1899, as amended (33 U.S.C. 407), or under the provisions of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011, et seq.), nor does it mean a routine discharge of effluent incidental to the propulsion of, or operation of motor-driven equipment on, vessels: *Provided further*, That it does not mean the construction of any fixed structure or artificial island nor the intentional placement of any device in ocean waters or on or in the submerged land beneath such waters, for a purpose other than disposal, when such construction or such placement is otherwise regulated by Federal or State law or occurs pursuant to an authorized Federal or State program: *And provided further*, That it does not include the deposit of oyster shells, or other materials when such deposit is made for the purpose of developing, maintaining, or harvesting fisheries resources and is otherwise regulated by Federal or State law or occurs pursuant to an authorized Federal or State program.

(g) "District court of the United States" includes the District Court of Guam, the District Court of the Virgin Islands, the District Court of Puerto Rico, the District Court of the Canal Zone, and in the case of American Samoa and the Trust Territory of the Pacific Islands, the District Court of the United States for the District of Hawaii, which court shall have jurisdiction over actions arising therein.

(h) "Secretary" means the Secretary of the Army.

(i) "Dredged material" means any material excavated or dredged from the navigable waters of the United States.

(j) "High-level radioactive waste" means the aqueous waste resulting from the operation of the first cycle solvent extraction system, or equivalent, and the concentrated waste from subsequent extraction cycles, or equivalent, in a facility for reprocessing irradiated reactor fuels, or irradiated fuel from nuclear power reactors.

(k) "Transport" or "transportation" refers to the carriage and related handling of any material by a vessel, or by any other vehicle, including aircraft.

TITLE I—OCEAN DUMPING

PROHIBITED ACTS

SEC. 101. (a) No person shall transport from the United States any radiological, chemical, or biological warfare agent or any high-level radioactive waste, or except as may be authorized in a permit issued under this title, and subject to regulations issued under section 108 hereof by the Secretary of the Department in which the Coast Guard is operating, any other material for the purpose of dumping it into ocean waters.

(b) No person shall dump any radiological, chemical, or biological warfare agent or any high-level radioactive waste, or, except as may be authorized in a permit issued under this title, any other material, transported from any location outside the United States, (1) into the territorial sea of the United States, or (2) into a zone contiguous to the territorial sea of the United States, extending to a line twelve nautical miles seaward from the base line from which the breadth of the territorial sea is measured, to the extent that it may affect the territorial sea or the territory of the United States.

(c) No officer, employee, agent, department, agency, or instrumentality of the United States shall transport from any location outside the United States any radiological, chemical, or biological warfare agent or any high-level radioactive waste, or, except as may be authorized in a permit issued under this title, any other material for the purpose of dumping it into ocean waters.

ENVIRONMENTAL PROTECTION AGENCY PERMITS

SEC. 102. (a) Except in relation to dredged material, as provided for in section 103 of this title, and in relation to radiological, chemical, and biological warfare agents and high-level radioactive waste, as provided for in section 101 of this title, the Administrator may issue permits, after notice and opportunity for public hearings, for the transportation from the United States or, in the case of an agency or instrumentality of the United States, for the transportation from a location outside the United States, of material for the purpose of dumping it into ocean waters, or for the dumping of material into the waters described in section 101(b), where the Administrator determines that such dumping will not unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities. The Administrator shall establish and apply criteria for reviewing and evaluating such permit applications, and, in establishing or revising such criteria, shall consider, but not be limited in his consideration to, the following:

(A) The need for the proposed dumping.

(B) The effect of such dumping on human health and welfare, including economic, esthetic, and recreational values.

(C) The effect of such dumping on fisheries resources, plankton, fish, shellfish, wildlife, shore lines and beaches.

(D) The effect of such dumping on marine ecosystems, particularly with respect to—

(i) the transfer, concentration, and dispersion of such material and its byproducts through biological, physical, and chemical processes,

(ii) potential changes in marine ecosystem diversity, productivity, and stability, and

(iii) species and community population dynamics.

(E) The persistence and permanence of the effects of the dumping.

(F) The effect of dumping particular volumes and concentrations of such materials.

(G) Appropriate locations and methods of disposal or recycling, including land-based alternatives and the probable impact of requiring use of such alternate locations or methods upon considerations affecting the public interest.

(H) The effect on alternate uses of oceans, such as scientific study, fishing, and other living resource exploitation, and nonliving resource exploitation.

(I) In designating recommended sites, the Administrator shall utilize wherever feasible locations beyond the edge of the Continental Shelf.

In establishing or revising such criteria, the Administrator shall consult with Federal, State, and local officials, and interested members of the general public, as may appear appropriate to the Administrator. With respect to such criteria as may affect the civil works program of the Department of the Army, the Administrator shall also consult with the Secretary. In reviewing applications for permits, the Administrator shall make such provision for consultation with interested Federal and State agencies as he deems useful or necessary. No permit shall be issued for a dumping of material which will violate applicable water quality standards.

(b) The Administrator may establish and issue various categories of permits, including the general permits described in section 104(c).

(c) The Administrator may, considering the criteria established pursuant to subsection (a) of this section, designate recommended sites or times for dumping and, when he finds it necessary to protect critical areas, shall, after consultation with the Secretary, also designate sites or times within which certain materials may not be dumped.

(d) No permit is required under this title for the transportation for dumping or the dumping of fish wastes, except when deposited in harbors or other protected or enclosed coastal waters, or where the Administrator finds that such deposits could endanger health, the environment, or ecological systems in a specific location. Where the Administrator makes such a finding, such material may be deposited only as authorized by a permit issued by the Administrator under this section.

CORPS OF ENGINEERS PERMITS

SEC. 103. (a) Subject to the provisions of subsections (b), (c), and (d) of this section, the Secretary may issue permits, after notice and opportunity for public hearings, for the transportation of dredged material for the purpose of dumping it into ocean waters, where the Secretary determines that the dumping will not unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities.

(b) In making the determination required by subsection (a), the Secretary shall apply those criteria, established pursuant to section 102(a), relating to the effects of the dumping. Based upon an evaluation of the potential effect of a permit denial on navigation, economic and industrial development, and foreign and domestic commerce of the United States, the Secretary shall make an independent determination as to the need for the dumping. The Secretary shall also make an independent determination as to other possible methods of disposal and as to appropriate locations for the dumping. In considering appropriate locations, he shall, to the extent feasible, utilize the recommended sites designated by the Administrator pursuant to section 102(c).

(c) Prior to issuing any permit under this section, the Secretary shall first notify the Administrator of his intention to do so. In any case in which the Administrator disagrees with the determination of the Secretary as to compliance with the criteria established pursuant to section 102(a) relating to the effects of dumping or with the restrictions established pursuant to section 102(c) relating to critical areas, the determination of the Administrator shall prevail. Unless the Administrator grants a waiver pursuant to subsection (d), the Secretary shall not issue a permit which does not comply with such criteria and with such restrictions.

Waiver.

(d) If, in any case, the Secretary finds that, in the disposition of dredged material, there is no economically feasible method or site available other than a dumping site the utilization of which would result in non-compliance with the criteria established pursuant to section 102(a) relating to the effects of dumping or with the restrictions established pursuant to section 102(c) relating to critical areas, he shall so certify and request a waiver from the Administrator of the specific requirements involved. Within thirty days of the receipt of the waiver request, unless the Administrator finds that the dumping of the material will result in an unacceptably adverse impact on municipal water supplies, shell-fish beds, wildlife, fisheries (including spawning and breeding areas), or recreational areas, he shall grant the waiver.

(e) In connection with Federal projects involving dredged material, the Secretary may, in lieu of the permit procedure, issue regulations which will require the application to such projects of the same criteria, other factors to be evaluated, the same procedures, and the same requirements which apply to the issuance of permits under subsections (a), (b), (c), and (d) of this section.

PERMIT CONDITIONS

SEC. 104. (a) Permits issued under this title shall designate and include (1) the type of material authorized to be transported for dumping or to be dumped; (2) the amount of material authorized to be transported for dumping or to be dumped; (3) the location where such transport for dumping will be terminated or where such dumping will occur; (4) the length of time for which the permits are valid and their expiration date; (5) any special provisions deemed necessary by the Administrator or the Secretary, as the case may be, after consultation with the Secretary of the Department in which the Coast Guard is operating, for the monitoring and surveillance of the transportation or dumping; and (6) such other matters as the Administrator or the Secretary, as the case may be, deems appropriate.

(b) The Administrator or the Secretary, as the case may be, may prescribe such processing fees for permits and such reporting requirements for actions taken pursuant to permits issued by him under this title as he deems appropriate.

(c) Consistent with the requirements of sections 102 and 103, but in lieu of a requirement for specific permits in such case, the Administrator or the Secretary, as the case may be, may issue general permits for the transportation for dumping, or dumping, or both, of specified materials or classes of materials for which he may issue permits, which he determines will have a minimal adverse environmental impact.

(d) Any permit issued under this title shall be reviewed periodically and, if appropriate, revised. The Administrator or the Secretary, as the case may be, may limit or deny the issuance of permits, or he may alter or revoke partially or entirely the terms of permits issued by him under this title, for the transportation for dumping, or for the dumping, or both, of specified materials or classes of materials, where he finds that such materials cannot be dumped consistently with the criteria and other factors required to be applied in evaluating the permit application. No action shall be taken under this subsection unless the affected person or permittee shall have been given notice and opportunity for a hearing on such action as proposed.

Review.

(e) The Administrator or the Secretary, as the case may be, shall require an applicant for a permit under this title to provide such information as he may consider necessary to review and evaluate such application.

(f) Information received by the Administrator or the Secretary, as the case may be, as a part of any application or in connection with any permit granted under this title shall be available to the public as a matter of public record, at every stage of the proceeding. The final determination of the Administrator or the Secretary, as the case may be, shall be likewise available.

Public information.

(g) A copy of any permit issued under this title shall be placed in a conspicuous place in the vessel which will be used for the transportation or dumping authorized by such permit, and an additional copy shall be furnished by the issuing official to the Secretary of the department in which the Coast Guard is operating, or its designee.

PENALTIES

SEC. 105. (a) Any person who violates any provision of this title, or of the regulations promulgated under this title, or a permit issued under this title shall be liable to a civil penalty of not more than $50,000 for each violation to be assessed by the Administrator. No penalty shall be assessed until the person charged shall have been given notice and an opportunity for a hearing of such violation. In determining the amount of the penalty, the gravity of the violation, prior violations, and the demonstrated good faith of the person charged in attempting to achieve rapid compliance after notification of a violation shall be considered by said Administrator. For good cause shown, the Administrator may remit or mitigate such penalty. Upon failure of the offending party to pay the penalty, the Administrator may request the Attorney General to commence an action in the appropriate district court of the United States for such relief as may be appropriate.

(b) In addition to any action which may be brought under subsection (a) of this section, a person who knowingly violates this title, regulations promulgated under this title, or a permit issued under this title shall be fined not more than $50,000, or imprisoned for not more than one year, or both.

(c) For the purpose of imposing civil penalties and criminal fines under this section, each day of a continuing violation shall constitute a separate offense as shall the dumping from each of several vessels, or other sources.

(d) The Attorney General or his delegate may bring actions for equitable relief to enjoin an imminent or continuing violation of this title, of regulations promulgated under this title, or of permits issued under this title, and the district courts of the United States shall have jurisdiction to grant such relief as the equities of the case may require.

Liability.

(e) A vessel, except a public vessel within the meaning of section 13 of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1163), used in a violation, shall be liable in rem for any civil penalty assessed or criminal fine imposed and may be proceeded against in any district court of the United States having jurisdiction thereof; but no vessel shall be liable unless it shall appear that one or more of the owners, or bareboat charterers, was at the time of the violation a consenting party or privy to such violation.

Ante, p. 816.

Ante, pp. 1054, 1055.

(f) If the provisions of any permit issued under section 102 or 103 are violated, the Administrator or the Secretary, as the case may be, may revoke the permit or may suspend the permit for a specified period of time. No permit shall be revoked or suspended unless the permittee shall have been given notice and opportunity for a hearing on such violation and proposed suspension or revocation.

(g) (1) Except as provided in paragraph (2) of this subsection any person may commence a civil suit on his own behalf to enjoin any person, including the United States and any other governmental instrumentality or agency (to the extent permitted by the eleventh amendment to the Constitution), who is alleged to be in violation of any prohibition, limitation, criterion, or permit established or issued by or under this title. The district courts shall have jurisdiction, without regard to the amount in controversy or the citizenship of the parties, to enforce such prohibition, limitation, criterion, or permit, as the case may be.

(2) No action may be commenced—

(A) prior to sixty days after notice of the violation has been given to the Administrator or to the Secretary, and to any alleged violator of the prohibition, limitation, criterion, or permit; or

(B) if the Attorney General has commenced and is diligently prosecuting a civil action in a court of the United States to require compliance with the prohibition, limitation, criterion, or permit; or

(C) if the Administrator has commenced action to impose a penalty pursuant to subsection (a) of this section, or if the Administrator, or the Secretary, has initiated permit revocation or suspension proceedings under subsection (f) of this section; or

(D) if the United States has commenced and is diligently prosecuting a criminal action in a court of the United States or a State to redress a violation of this title.

(3) (A) Any suit under this subsection may be brought in the judicial district in which the violation occurs.

(B) In any such suit under this subsection in which the United States is not a party, the Attorney General, at the request of the Administrator or Secretary, may intervene on behalf of the United States as a matter of right.

(4) The court, in issuing any final order in any suit brought pursuant to paragraph (1) of this subsection may award costs of litigation (including reasonable attorney and expert witness fees) to any party, whenever the court determines such award is appropriate.

(5) The injunctive relief provided by this subsection shall not restrict any right which any person (or class of persons) may have under any statute or common law to seek enforcement of any standard or limitation or to seek any other relief (including relief against the Administrator, the Secretary, or a State agency).

(h) No person shall be subject to a civil penalty or to a criminal fine or imprisonment for dumping materials from a vessel if such materials are dumped in an emergency to safeguard life at sea. Any such emergency dumping shall be reported to the Administrator under such conditions as he may prescribe.

Exception.

RELATIONSHIP TO OTHER LAWS

SEC. 106. (a) After the effective date of this title, all licenses, permits, and authorizations other than those issued pursuant to this title shall be void and of no legal effect, to the extent that they purport to authorize any activity regulated by this title, and whether issued before or after the effective date of this title.

(b) The provisions of subsection (a) shall not apply to actions taken before the effective date of this title under the authority of the Rivers and Harbors Act of 1899 (30 Stat. 1151), as amended (33 U.S.C. 401 et. seq.).

(c) Prior to issuing any permit under this title, if it appears to the Administrator that the disposition of material, other than dredged material, may adversely affect navigation in the territorial sea of the United States, or in the approaches to any harbor of the United States, or may create an artificial island on the Outer Continental Shelf, the Administrator shall consult with the Secretary and no permit shall

be issued if the Secretary determines that navigation will be unreasonably impaired.

(d) After the effective date of this title, no State shall adopt or enforce any rule or regulation relating to any activity regulated by this title. Any State may, however, propose to the Administrator criteria relating to the dumping of materials into ocean waters within its jurisdiction, or into other ocean waters to the extent that such dumping may affect waters within the jurisdiction of such State, and if the Administrator determines, after notice and opportunity for hearing, that the proposed criteria are not inconsistent with the purposes of this title, may adopt those criteria and may issue regulations to implement such criteria. Such determination shall be made by the Administrator within one hundred and twenty days of receipt of the proposed criteria. For the purposes of this subsection, the term "State" means any State, interstate or regional authority, Federal territory or Commonwealth or the District of Columbia.

"State."

(e) Nothing in this title shall be deemed to affect in any manner or to any extent any provision of the Fish and Wildlife Coordination Act as amended (16 U.S.C. 661-666c).

60 Stat. 1080; 72 Stat. 563.

ENFORCEMENT

SEC. 107. (a) The Administrator or the Secretary, as the case may be, may, whenever appropriate, utilize by agreement, the personnel, services and facilities of other Federal departments, agencies, and instrumentalities, or State agencies or instrumentalities, whether on a reimbursable or a nonreimbursable basis, in carrying out his responsibilities under this title.

(b) The Administrator or the Secretary may delegate responsibility and authority for reviewing and evaluating permit applications, including the decision as to whether a permit will be issued, to an officer of his agency, or he may delegate, by agreement, such responsibility and authority to the heads of other Federal departments or agencies, whether on a reimbursable or nonreimbursable basis.

(c) The Secretary of the department in which the Coast Guard is operating shall conduct surveillance and other appropriate enforcement activity to prevent unlawful transportation of material for dumping, or unlawful dumping. Such enforcement activity shall include, but not be limited to, enforcement of regulations issued by him pursuant to section 108, relating to safe transportation, handling, carriage, storage, and stowage. The Secretary of the Department in which the Coast Guard is operating shall supply to the Administrator and to the Attorney General, as appropriate, such information of enforcement activities and such evidentiary material assembled as they may require in carrying out their duties relative to penalty assessments, criminal prosecutions, or other actions involving litigation pursuant to the provisions of this title.

Infra.

REGULATIONS

SEC. 108. In carrying out the responsibilities and authority conferred by this title, the Administrator, the Secretary, and the Secretary of the department in which the Coast Guard is operating are authorized to issue such regulations as they may deem appropriate.

INTERNATIONAL COOPERATION

SEC. 109. The Secretary of State, in consultation with the Administrator, shall seek effective international action and cooperation to insure protection of the marine environment, and may, for this purpose, formulate, present, or support specific proposals in the United Nations and other competent international organizations for the development of appropriate international rules and regulations in support of the policy of this Act.

EFFECTIVE DATE AND SAVINGS PROVISIONS

SEC. 110. (a) This title shall take effect six months after the date of the enactment of this Act.

(b) No legal action begun, or right of action accrued, prior to the effective date of this title shall be affected by any provision of this title.

SEC. 111. There are hereby authorized to be appropriated not to exceed $3,000,000 for fiscal year 1973, and not to exceed $5,500,000 for fiscal year 1974, for the purposes and administration of this title, and for succeeding fiscal years only such sums as the Congress may authorize by law. Appropriation.

SEC. 112. The Administrator shall report annually, on or before June 30 of each year, with the first report to be made on or before June 30, 1973 to the Congress, on his administration of this title, including recommendations for additional legislation if deemed necessary. Annual report to Congress.

TITLE II—COMPREHENSIVE RESEARCH ON OCEAN DUMPING

SEC. 201. The Secretary of Commerce, in coordination with the Secretary of the Department in which the Coast Guard is operating and with the Administrator shall, within six months of the enactment of this Act, initiate a comprehensive and continuing program of monitoring and research regarding the effects of the dumping of material into ocean waters or other coastal waters where the tide ebbs and flows or into the Great Lakes or their connecting waters and shall report from time to time, not less frequently than annually, his findings (including an evaluation of the short-term ecological effects and the social and economic factors involved) to the Congress. Report to Congress.

SEC. 202. (a) The Secretary of Commerce, in consultation with other appropriate Federal departments, agencies, and instrumentalities shall, within six months of the enactment of this Act, initiate a comprehensive and continuing program of research with respect to the possible long-range effects of pollution, overfishing, and man-induced changes of ocean ecosystems. In carrying out such research, the Secretary of Commerce shall take into account such factors as existing and proposed international policies affecting oceanic problems, economic considerations involved in both the protection and the use of the oceans, possible alternatives to existing programs, and ways in which the health of the oceans may best be preserved for the benefit of succeeding generations of mankind.

(b) In carrying out his responsibilities under this section, the Secretary of Commerce, under the foreign policy guidance of the President and pursuant to international agreements and treaties made by

the President with the advice and consent of the Senate, may act alone or in conjunction with any other nation or group of nations, and shall make known the results of his activities by such channels of communication as may appear appropriate.

Annual report to Congress.

(c) In January of each year, the Secretary of Commerce shall report to the Congress on the results of activities undertaken by him pursuant to this section during the previous fiscal year.

(d) Each department, agency, and independent instrumentality of the Federal Government is authorized and directed to cooperate with the Secretary of Commerce in carrying out the purposes of this section and, to the extent permitted by law, to furnish such information as may be requested.

Inter-agency agreements.

(e) The Secretary of Commerce, in carrying out his responsibilities under this section, shall, to the extent feasible utilize the personnel, services, and facilities of other Federal departments, agencies, and instrumentalities (including those of the Coast Guard for monitoring purposes), and is authorized to enter into appropriate inter-agency agreements to accomplish this action.

Federal-State cooperation.

SEC. 203. The Secretary of Commerce shall conduct and encourage, cooperate with, and render financial and other assistance to appropriate public (whether Federal, State, interstate, or local) authorities, agencies, and institutions, private agencies and institutions, and individuals in the conduct of, and to promote the coordination of, research, investigations, experiments, training, demonstrations, surveys, and studies for the purpose of determining means of minimizing or ending all dumping of materials within five years of the effective date of this Act.

Appropriation.

SEC. 204. There are authorized to be appropriated for the first fiscal year after this Act is enacted and for the next two fiscal years thereafter such sums as may be necessary to carry out this title, but the sums appropriated for any such fiscal year may not exceed $6,000,000.

TITLE III—MARINE SANCTUARIES

"Secretary."

SEC. 301. Notwithstanding the provisions of subsection (b) of section 3 of this Act, the term "Secretary", when used in this title, means Secretary of Commerce.

SEC. 302. (a) The Secretary, after consultation with the Secretaries of State, Defense, the Interior, and Transportation, the Administrator, and the heads of other interested Federal agencies, and with the approval of the President, may designate as marine sanctuaries those areas of the ocean waters, as far seaward as the outer edge of the Continental Shelf, as defined in the Convention of the Continental Shelf (15 U.S.T. 71; TIAS 5578), of other coastal waters where the tide ebbs and flows, or of the Great Lakes and their connecting waters, which he determines necessary for the purpose of preserving or restoring such areas for their conservation, recreational, ecological, or esthetic values. The consultation shall include an opportunity to review and comment on a specific proposed designation.

15 UST 471.

(b) Prior to designating a marine sanctuary which includes waters lying within the territorial limits of any State or superjacent to the subsoil and seabed within the seaward boundary of a coastal State, as that boundary is defined in section 3 of title I of the Act of May 22, 1953 (67 Stat. 29), the Secretary shall consult with, and give due consideration to the views of, the responsible officials of the State involved. As to such waters, a designation under this section shall become effective sixty days after it is published, unless the Governor of any State involved shall, before the expiration of the sixty-day period, certify to the Secretary that the designation, or a specified portion thereof, is unacceptable to his State, in which case the designated sanctuary shall not include the area certified as unacceptable until such time as the Governor withdraws his certification of unacceptability.

43 USC 1301.

(c) When a marine sanctuary is designated, pursuant to this section, which includes an area of ocean waters outside the territorial jurisdiction of the United States, the Secretary of State shall take such actions as may be appropriate to enter into negotiations with other Governments for the purpose of arriving at necessary agreements with those Governments, in order to protect such sanctuary and to promote the purposes for which it was established.

Annual report to Congress.

(d) The Secretary shall submit an annual report to the Congress, on or before November 1 of each year, setting forth a comprehensive review of his actions during the previous fiscal year undertaken pursuant to the authority of this section, together with appropriate recommendation for legislation considered necessary for the designation and protection of marine sanctuaries.

Hearings.

(e) Before a marine sanctuary is designated under this section, the Secretary shall hold public hearings in the coastal areas which would be most directly affected by such designation, for the purpose of receiving and giving proper consideration to the views of any interested party. Such hearings shall be held no earlier than thirty days after the publication of a public notice thereof.

Regulations.

(f) After a marine sanctuary has been designated under this section, the Secretary, after consultation with other interested Federal agencies, shall issue necessary and reasonable regulations to control any activities permitted within the designated marine sanctuary, and no permit, license, or other authorization issued pursuant to any other authority shall be valid unless the Secretary shall certify that the permitted activity is consistent with the purposes of this title and can be carried out within the regulations promulgated under this section.

(g) The regulations issued pursuant to subsection (f) shall be applied in accordance with recognized principles of international law, including treaties, conventions, and other agreements to which the United States is signatory. Unless the application of the regulations is in accordance with such principles or is otherwise authorized by an agreement between the United States and the foreign State of which the affected person is a citizen or, in the case of the crew of a foreign vessel, between the United States and flag State of the vessel, no regulation applicable to ocean waters outside the territorial jurisdiction of the United States shall be applied to a person not a citizen of the United States.

Penalties.

SEC. 303. (a) Any person subject to the jurisdiction of the United States who violates any regulation issued pursuant to this title shall be liable to a civil penalty of not more than $50,000 for each such violation, to be assessed by the Secretary. Each day of a continuing violation shall constitute a separate violation.

(b) No penalty shall be assessed under this section until the person charged has been given notice and an opportunity to be heard. Upon failure of the offending party to pay an assessed penalty, the Attorney General, at the request of the Secretary, shall commence action in the appropriate district court of the United States to collect the penalty and to seek such other relief as may be appropriate.

RICHARD BUFFUM

Broadside for EPA's Potty Rules

"I am now ecologically safe".

The time is rapidly approaching (Jan. 30) when the U.S. Coast Guard, rightfully proud of its daring feats of lifesaving and keeping the nation's waters safe for navigation, will be forced to add "potty patrol" to its duties.

The close of this month is when the Coast Guard must begin to enforce the federal Environmental Protection Agency's (EPA) mandate that no untreated sewage be discharged from boats in the nation's waters. Or — owing to a double standard in the impending law — vessels may be required, at the option of cities and counties to carry sewage around indefinitely in holding tanks. In that case, shoreside pump-out stations must be provided.

Commenting on the potty patrol, a Coast Guard official told me that the service is reluctant to assume it. Enforcement would be difficult because of inadequate staffing, he said.

He expected that the EPA's laws will probably be enforced by neighboring boat owners who will report violations to the Coast Guard. It is clear that the Coast Guard hopes that the boating fraternity will make officialdom's job easier by becoming stool pigeons.

This unfortunate attitude is not only demeaning, but indicates to me that the Coast Guard is less than enthusiastic about the EPA's attempt to make the nation's continental waters "ecologically safe."

Their reason is not hard to fathom. Actually, "ecologically safe" is largely a misnomer in this case. It is closer to the truth to say that the EPA's objective is to make the waters "politically safe" — for the EPA.

This is to say that the EPA has decided that it is politically popular for them to discriminate against a so-called affluent minority, the pleasure boat owner, under the guise of cleaning up the waters, when, actually, their contribution to polluted waters from overboard discharges is negligible. And it is certainly not sufficient to justify the tactics used against them.

The agency mentality seems to run along the line that the rich boat owner can afford the expensive — and in some cases dangerous — sanitary devices aboard his yacht; therefore, nobody is getting hurt.

This is a false picture. The Coast Guard estimates there are 7.2 million recreational craft in the United States with 68% of them less than 14 feet in length, 31% from 14 feet to 26 feet, and only 1% over this length.

Thus for the majority of boat owners, the complex sanitary devices to be forced upon them are not only impractical for boats of small size, but they could be injurious to the health and safety of those aboard.

The harsh chemicals and the buildup of dangerous methane gas in the devices are potential hazards; in short, they are biologically unsafe to those aboard and to the environment.

Furthermore, the EPA mentality chooses to overlook the fact that seawater averages a high 2% salt content which dehydrates and, in turn, kills harmful bacteria. This is nature's protective pattern at work which utilizes the biodegradable effluent by breaking it down by normal sea-life organisms to become a necessary part of the ocean's nutrient food chain.

As for the coliform testing methods in the upcoming rules, they include bacteria which come not only from the minority boat operators, but from his ecological neighbors — the whales, porpoises, seagulls, pelicans, fish, sharks and people living ashore, their bacteria being washed into the sea. The testing does not discriminate; the EPA does.

I hasten to add that no vessel should be permitted to discharge effluent in confined marinas where shore facilities are usually provided. On the other hand, the impractical devices are not needed, nor are informing and potty patrolling to make the water "safe."

The Santa Ana Police Department has worked hard to improve its community relationship. It has dramatically reduced the crime rate and has won national attention with its team-policing approach. It must be remembered that the attitudes of all policemen, or citizens, cannot be changed. But the community must not let an isolated, witless act of one officer overshadow what so many others have worked so hard to achieve.

Santa Ana may seem to have no connection. But they do. Perhaps the action of the Newport Beach council does not make the blood boil, as did the "Santa Coon" flyer. But it produces a more subdued, "we-expected-that" kind of disgust to what one person has termed the "arrogance of the affluent."

In both cases, however, the message of rejection was, unfortunately, all too evident.

RICHARD BUFFUM

L.A. Times 1/15/78

EPA Rules Are Pain in the Head

I've been talking to the head man. He's the Coast Guard official in Long Beach who knows as much as there is to know about heads, or, technically, marine sanitation devices (MSDs) that must be installed in vessels before the Jan. 30 deadline.

The problem is that I'm not significantly less confused over the federal regulations than when I began the conversation with a list of questions about the Environmental Protection Agency (EPA) head standards which the Coast Guard is charged with enforcing.

Naturally, I am personally concerned with the kind of Coast Guard-approved new head, one of three types and of dozens of manufacturers' models, that is most feasible for my 27-foot sloop, Herald Bird.

Unfortunately, the regulations largely militate against small sailboats like mine, and smaller ones. We have limited cabin space and a limited supply of electric power. All of the new MSDs, except the simple holding tank kind, require varying amounts of electricity to operate them.

Overall, the new regulations leave much to be desired in pleasure craft of any size, including the largest of power boats equipped with generators that would serve a small village.

The catch is that owners of these kinds of vessels are liable to install a Coast Guard-approved system that literally incinerates the effluent before discharging it in the water, only to learn to their dismay that local jurisdictions over harbors have made their particular installation illegal.

It is a case of the EPA ruling out of both sides of its mouth, with the unhappy result of the boat owner being caught squarely in the middle with his head down and out. For instance, there may be installed an EPA and Coast Guard-approved Type I or Type II MSD, only to find that it's illegal in certain local waters.

It's that way right now in Upper and Lower Newport bays, Sunset Bay island of the Pacific Coast Highway Bridge, Huntington Harbour, Mission Bay, Oceanside Harbor, Dana Point Harbor and some portions of San Diego Bay. These are designated as "no-discharge" waters. Any harbor can prevent discharging of heads of the federally approved types by simply installing a pump-out station and applying to the EPA.

The Coast Guard predicted that in the near future all of California's harbors would probably be designated as "no discharge." Furthermore, the new EPA regulations prohibit discharging untreated effluent anywhere within the three-mile limit.

Now, lest I increase the confusion unbearably, let me hasten to define the three kinds of federally approved MSDs.

Type I is a device that may or may not macerate the effluent. It involves chemical treatment before pumping it overboard.

Type II is provided with macerators that grind things up like a kitchen blender and also uses chemical or biological treatment.

Type III is a completely closed system, or holding tank, which can only by pumped out at an onshore sanitary station or released at sea beyond the three-mile limit.

There is an option, however, for those with Types I and II installations navigating in waters where only Type III is permitted. The trouble is that it is not approved by the EPA. The Coast Guard, for practical reasons, says it's OK. They can secure their heads, Types I or II, and use a portable holding tank.

The risk is that it may be rescinded overnight by the antiseptic mentality that started this charade in the first place. Landlubber minds like that would diaper the gray whales within the three-mile limit, if they could manage it, forgetting that Mother Nature knows best how to deal with such matters, cleanly and regeneratively, all without upsetting the biological balance of the sea with chemical pollutants.

"File Copy"

April 10, 1973

SUBJECT: HOLDING TANK PUMP-OUT FACILITIES

PROBLEM:

1. Effective Jan. 1, 1974, all commercial marinas are required to have pump-out facilities for holding tanks.

ASSUMPTIONS:

2. Fixed facilities, requiring the boat to get under way, will not be utilitized by the majority of boat-owners. Once they have gone through the trouble of leaving the dock, most will continue to sea, exercise the boat, pump their tanks and return, or if going cruising, will not trouble to pump out at a station but again wait till at sea.

3. Chances of accidental spills and casualties to equipment are inescapable with an unmanned facility.

4. Pumping out a holding tank is not a chore one would look forward to, especially when many of the boat-owners are only in the area on weekends and holidays.

FACTS BEARING ON THE PROBLEM:

5. Cost of the equipment and the installation will be an average of $4000 per landing. A total outlay of $16,000 for the existing company-operated marinas.

6. Loss of revenue from the dockage preempted for this use at current rates will be $7500 per year.

7. Maintenance cost of the docks and equipment is conservatively estimated at $2400 per annum.

8. Present equipment is unreliable and frequent breakdowns have discouraged people from using existing pump-out facilities.

DISCUSSION

9. Conversation with other marina operators, repair facility owners and local governmental representatives have confirmed the assumptions and facts of this study. Fixed facilities will not be utilized by the majority of boat-owners.

10. Policing and maintaining pump-out facilities that are located near centers of activity is difficult. The location of company-operated landings would be an open invitation to vandalism of equipment and poaching (boat tying up and the owner leaving).

SUBJECT: HOLDING TANK PUMP-OUT FACILITIES (Continued)

ACTION RECOMMENDED

11. Endorsement from all involved governmental bodies and agencies for a mobile facility (honey barge) that will service the boat in the slip, be manned, reducing the chance of spills, and will be used by the boat owners.

12. The plans for fixed facilities be deleted from impending reconstruction projects. The public facility at the Harbor Department is available for the barge pump-out, precluding the need for any pump-outs on company landings.

13. Formulate plans, specifications and estimates from local manufacturers for a boat that will be both attractive and practical that can be used as a work boat and will be equipped with tanks, pumps, etc., to pump out holding tanks.

14. Embody the pump-out capability in the work boat that is included in the F/Y 1973 budget.

a. Efficiency and maneuverability of the boat for the other uses (towing, lifting, hauling equipment) should not be impaired.

b. It is estimated $3000 will cover the cost of tanks, manifolds, pumps, etc., to include this capability.

CONCLUSIONS

15. Fixed pump-out facilities for holding tanks are impractical, expensive, prone to vandalism and not readily acceptable to the boating public in this area.

16. The economic advantage of the mobile unit are:

a. $16,000 saving in capital outlay and construction costs.

b. $7,500 in additional slip rental fees which will be realized the first year and each subsequent year.

17. Because of the company's multiple marina operation, a mobile facility would result in a substantial saving in capital outlay, not infringe on rentable slip space, not create a public nuisance, provide a service that boat-owners would use and possibly be willing to pay extra for, and most important, accomplish the primary goal of reducing the amount of pollutants going into the harbor and the sea.

Superior Advisory Notes

No. 6

What to do About Head-Aches - a primer on marine sanitation devices in Minnesota.

by James D. Murray & Bud G. Crewdson

Marine equipment dealers often must respond with double talk when customers ask, "What type of head should I install on my boat?" And, it's no wonder, because decisions governing marine sanitation devices (MSD'S) in Minnesota were still being made as late as July 25, 1977. For the first time in several years the major decisions have been made and the regulations on marine sanitation devices can definitely be explained.

The culprit in all this confusion is Section 312 of the Federal Water Pollution Control Act. The purpose of Section 312 is to prevent discharge of untreated or inadequately treated sewage from vessels into or upon United States waters. This is one part of the overall act, the goal of which is to eliminate the discharge of all pollutants from any source into United States waters by 1985.

Two federal agencies and the State of Minnesota had differing ideas on Marine Sanitation devices. At the federal level, the Environmental Protection Agency (EPA) and the U.S. Coast Guard disagreed on the solution. EPA took the hardline stance of not allowing any discharge of vessel wastes while the Coast Guard felt that some treated discharge should be permitted, at least until an adequate system of onshore pump-out facilities was developed. The Minnesota Pollution Control Agency (MPCA) was in agreement with EPA and also sought a no-discharge policy. A compromise was worked out between EPA and the Coast Guard which resulted in a rather complicated time table.

All vessels in United States waters are required to have Coast Guard approved marine sanitation devices. The only exceptions are those vessels without sewage systems (i.e. smaller craft, canoes). Of the 600,000 domestic vessels cited by EPA, 90% are recreational craft. Tug, tow, fishing craft and ocean-going vessels comprise only 10% of the domestic fleet. Therefore, the Coast Guard concluded that the class of recreational craft was so broad that a waiver of discharge standards would be inappropriate toward meeting the objectives of Section 312 of the Federal Water Pollution Control Act.

Enforcement Timetable

Basically, there are three approved types of sanitation devices. Type I produces an effluent with a coliform bacteria count of no more than 1000 per 100 milliliters and no visible floating solids. Type II produces a cleaner effluent with a coliform count no greater than 200 per milliliter and suspended solids not greater than 150 milligrams per liter. Type III is a holding tank or retention type device.

The timetables for these devices are complex, and vary depending on whether a vessel is "existing" (which means construction was begun prior to January 30, 1975) or "new" (construction begun after January 30, 1975).

Owners of existing boats with a Type I device installed before January 30, 1978 will probably be able to continue using it indefinitely. But if they delay installation of Type I until after that date or of any device until January 30, 1980, when standards become stricter, they will have to put in either Type II or Type III.

New boats are required to have, after January 30, 1977, either Type I, II, or III devices. After 1980, newly installed devices must be II or III. However, a Type I installed before 1980 may be used as long as it lasts.

Two types of water are designated in the regulations. In landlocked freshwater lakes, reservoirs, other freshwater impoundments and rivers not capable of being used for interstate travel by vessels equipped with marine toilets, no discharge whatsoever will be permitted. Federal laws permit the discharge of sewage in all other navigable waters, including estuaries, coastal waters, the Great Lakes and inter-connected waterways, freshwater lakes accessible through locks and other flowing interstate navigable waters by vessels equipped with MSD's.

However, in localities where "tide, currents, topography, and a very large number of boats equipped with heads combine to overstress the capacity of the water to receive even treated sewage", states and localities may petition EPA to establish no-discharge zones.

Published as a cooperative information service of the Minnesota Marine Advisory Service and the Lake Superior Basin Studies Center, University of Minnesota, Duluth

The Minnesota Pollution Control Agency applied to EPA to have all waters of the state classified as no-discharge areas because, as it stood, navigable interstate waters in Minnesota included the northern border lakes of the Boundary Waters Canoe Area, Minnesota's portion of Lake Superior and parts of the Minnesota, St. Croix and Mississippi rivers. In these waters federal regulations permitted flow-through MSD's.

On January 1, 1976 the Minnesota Pollution Control Agency required that all MSD's used aboard watercraft be of the retention type. As mentioned, the PCA petitioned EPA to have all waters classified as no-discharge waters. The state no-discharge law applied until EPA made a decision on whether or not "adequate facilities for the safe and sanitary removal and treatment of sewage from all vessels are reasonably available" for the waters which the no-discharge prohibition is to apply.

The Environmental Protection Agency has ruled on the PCA petitions and all Minnesota waters now are classified no-discharge with the exception of:

- the lower St. Croix River, from its mouth to Taylor's Falls.
- the Mississippi River from the Iowa border to Lock and Dam No. 2 at Hastings.
- Lake Superior, including Superior and St. Louis Bays. (Wisconsin has also classified Lake Superior a no discharge area.)

Therefore, these three bodies of water are the only ones in the state where Type I or Type II MSD's are allowed. However, PCA plans to appeal this ruling. (EPA has ruled that adequate pumpout facilities for recreational craft are available in these three areas).

What does it all Mean?

Except for the three exceptions to the state no-discharge law, the following rules (Minnesota Statutes 361.29 Marine Toilets) apply in state waters:

1) No person shall discharge any sewage or other wastes into the waters of the state, either directly or indirectly.

2) Toilet waters must be retained on board the craft for disposition on land by means of facilities constructed and operated according to regulations adopted by the state board of health and approved by the Pollution Control Agency.

3) If an individual has a "homemade" device the local sheriff or Department of Natural Resources officer should determine if it complies with requirements set forth in the statutes and PCA rules.

4) Sewage pumps (to pump out holding tanks) will not be allowed on board while the craft is in operation. They must be removed from the craft; not merely disconnected.

5) Portable toilets are not acceptable unless they are fitted with dockside discharge kits so that no sewage can be dumped overboard.

6) Out-of-state visitors who bring watercraft into the state are subject to the same regulations as residents, whether they bring their boat on a trailer or come by water. There are no reciprocal agreements regarding marine toilets or other equipment regulations.

Any violation of the state no-discharge law is a misdemeanor and is punishable by a fine of up to $300 and/or up to 90 days in jail. Under federal law, operating a vessel without the proper MSD in these waters is punishable by a fine of not more than $2,000 for each violation. For a manufacturer or dealer who offers a "new vessel" for sale or distribution without a Coast Guard certified MSD the penalty is a fine of not more than $5,000 for each violation.

Recommendations

For anyone planning to buy a craft that contains a marine sanitation device and operate it in Minnesota's waters, five important considerations point toward choosing the Type III retention device.

1) Only three bodies of water in Minnesota currently allow flow through Type I or II MSD's.

2) The Minnesota Pollution Control Agency plans to repetition the EPA to have these waters reclassified as no-discharge waters.

3) Different states have different regulations and they are not always reciprocal. If you plan interstate travel with your boat, you may run into no-discharge laws in other states.

4) Resale of a Type III MSD - equipped boat will probably be easier.

5) The Type III device is usually less expensive initially.

MSD information – Who has it?

Now that you know what types of devices are most suited to your needs, the next questions are "who makes them?" and once I have them, "who will pump them out?" The best source of information is the Minnesota Pollution Control Agency. By statute, the PCA shall furnish a list of the types of retention devices currently available and considered acceptable by them. Also, the Commissioner of Department of Natural Resources shall furnish the sheriff of each county a list of retention devices acceptable to PCA.

The United States Coast Guard also certifies MSD's. No-discharge MSD's certified by the Coast Guard that are acceptable to the MPCA are also included on the list. For information on Type I, II, or III Coast Guard certified devices you should write to the following office:

Commandant G-MMT 3/83
U.S. Coast Guard
Washington, D. C. 20590

The Minnesota Pollution Control Agency also maintains a list of marine toilet pumpout facilities. This list is useful if you travel around the state with your boat. Both the pumpout facilities list and the certified retention device list are available by writing:

Minnesota Pollution Control Agency
1935 West County Road B2
Roseville, MN. 55113

James D. Murray is area extension agent, marine recreation with the Minnesota Sea Grant Extension Program.

Bud G. Crewdson is an extension economist in community development with the Minnesota Agricultural Extension Service.

November, 1977

TEXAS HIGHWAY DEPARTMENT
Post Office Box 7708
Corpus Christi, Texas 78415

November 11, 1974

IN REPLY REFER TO
FILE NO.

Corps of Engineers' Permit 9740
Dredging of Channel Parallel to P.R. 22

Mr. Gene Graham
Vice President Engineering and Construction
Padre Island Investment Corporation
Post Office Box 8809
Corpus Christi, Texas 78412

Dear Sir:

In regards to Corps of Engineers' Permit No. 9740 concerning maintenance dredging of a channel parallel to P.R. 22, we wish to state we have no objections as long as the maintenance dredging stays within the limits as originally set which was no closer than 300 feet of the centerline of P.R. 22. Also within this dredging area is a shell barge docking facility which is not to be disturbed.

Shown on your permit are proposed docking facilities for your marina. One of the facilities shown is within our right of way. We do not want any docking facilities or similar facility within our right of way.

Since part of this area lies within the City Limit of Corpus Christi, we feel the City should concur with our recommendation.

Let us again state, we offer no objection to the dredging as long as the above conditions are met and are assured the finished channel will remain open to the public.

Sincerely yours

Roger Q. Spencer, Jr.
District Engineer
District 16

THB:met

cc Mr. James Lontos, Director
Department of Engineering and Physical Deve
City of Corpus Christi

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1229
GALVESTON, TEXAS 77550

25 JUL 1974

SWGGO-RP, PERMIT-9740
(This permit supersedes 5077)

Mr. Gene Graham
Vice President Engineering and Construction
Padre Island Investment Corporation
P. O. Box Box 8809
Corpus Christi, Texas 78412

Dear Mr. Graham:

The permit numbered above has been approved and an executed copy is inclosed for your retention.

Also inclosed is a copy of "Notice to Permittees" which provides important information for permit administration. Construction or work under the permit should be coordinated with the Area Engineer indicated below.

Sincerely yours,

J. E. HOLLIS
Acting Chief, Permit Branch

3 Incl
1. Copy of Permit
2. Notice to Permittees
3. ENG Form 4336

Copies furnished:
Commander, Eighth Coast Guard District (oan), 327 Customhouse, New Orleans, Louisiana 70130 w/incl 1

Director, Atlantic Marine Center, National Ocean Survey, Attn: CAM4, 439 West York Street, Norfolk, Virginia 23510

Area Engineer, Corpus Christi Area Office, P. O. Box 1421, Corpus Christi, Texas 78403 w/incl 1

SWG FL 278
13 Aug 73

DEPARTMENT OF THE ARMY

PERMIT

9764

Galveston District
Corps of Engineers
Galveston, Texas
25 JUL 1974

Padre Island Investment Corporation
P. O. Box 8809
Corpus Christi, Texas 73412

Gentlemen:

Referring to written request dated 9 August 1973 upon the recommendation of the Chief of Engineers, and under the provisions of Section 10 of the Act of Congress approved March 3, 1899 (33 U.S.C. Sec. 403), entitled "An act making appropriations for the construction, repair, and preservation of certain public works on river and harbors, and for other purposes," and, if dredging or fill is involved, Section 404 of the Federal Water Pollution Control Act, as amended, you are hereby authorized by the Secretary of the Army to construct a bulkhead and dredge an area, the dredged material to be placed on shore,

in Laguna Madre

at a location immediately north from the easterly end of the Padre Island Causeway and westerly from the Nueces County Park, approximately 16 miles southeast from Corpus Christi, Texas,

in accordance with the plans and drawings attached hereto in three sheets, sheet 1 of which is entitled "PROPOSED DREDGING; PACKERY CHANNEL & MARINA SITE, COUNTY OF NUECES, STATE OF TEXAS,"

subject to the following conditions:

(a) That this instrument does not convey any property rights either in real estate or material, or any exclusive privileges; and that it does not authorize any injury to private property or invasion of private rights, or any infringement of Federal, State or local laws or regulations, nor does it obviate the necessity of obtaining State or local assent required by law for the structure or work authorized.

(b) That the structure or work authorized herein shall be in accordance with the plans and drawings attached hereto and construction shall be subject to the supervision and approval of the District Engineer, Corps of Engineers, in charge of the District in which the work is to be performed.

(c) That the District Engineer may at any time make such inspections as he may deem necessary to assure that the construction or work is performed in accordance with the conditions of this permit and all expenses thereof shall be borne by the permittee.

(d) That the permittee shall comply promptly with any lawful regulations, conditions, or instructions affecting the structure or work authorized herein if and when issued by the Water Programs Office of the Environmental Protection Agency and/or the State water pollution control agency having jurisdiction to abate or prevent water pollution, including thermal or radiation pollution. Such regulations, conditions or instructions in effect or hereafter prescribed by the Water Programs Office of the Environmental Protection Agency and/or the State agency are hereby made a condition of this permit.

(e) That the permittee will maintain the work authorized herein in good condition in accordance with the approved plans.

(f) That this permit may, prior to the completion of the structures or work authorized herein, be suspended by authority of the Secretary of the Army if it is determined that suspension is in the public interest.*

(g) That this permit may at any time be modified by authority of the Secretary of the Army if it is determined that, under existing circumstances, modification is in the public interest.* The permittee, upon receipt of notice of modification, shall comply therewith as directed by the Secretary of the Army or his authorized representative.

(h) That this permit may be revoked by authority of the Secretary of the Army if the permittee fails to comply with any of its provisions or if the Secretary determines that, under the existing circumstances, such action is required in the public interest.*

(i) That any modification, suspension or revocation of this permit shall not be the basis for a claim for damages against the United States.

(j) That the United States shall in no way be liable for any damage to any structure or work authorized herein which may be caused by or result from future operations undertaken by the Government in the public interest.

(k) That no attempt shall be made by the permittee to forbid the full and free use by the public of all navigable waters at or adjacent to the structure or work authorized by this permit.

(l) That if the display of lights and signals on any structure or work authorized herein is not otherwise provided for by law, such lights and signals as may be prescribed by the United States Coast Guard shall be installed and maintained by and at the expense of the permittee.

(m) That the permittee shall notify the District Engineer at what time the construction or work will be commenced, as far in advance of the time of commencement as the District Engineer may specify, and of its completion.

(n) That if the structure or work herein authorized is not completed on or before the thirty-first day of December , 19 77 , this permit, if not previously revoked or specifically extended, shall cease and be null and void.

(o) That the legal requirements of all Federal agencies be met.

(p) That this permit does not authorize or approve the construction of particular structures, the authorization or approval of which may require action by the Congress or other agencies of the Federal Government.

(q) That all the provisions of this permit shall be binding on any assignee or successor in interest of the permittee.

(r) That if the recording of this permit is possible under applicable State or local law, the permittee shall take such action as may be necessary to record this permit with the Registrar of Deeds or other appropriate official charged with the responsibility for maintaining records of title to and interests in real property.

(s) That the permittee agrees to make every reasonable effort to prosecute the construction or work authorized herein in a manner so as to minimize any adverse impact of the construction or work on fish, wildlife and natural environmental values.

(t) That the permittee agrees that it will prosecute the construction of work authorized herein in a manner so as to minimize any degradation of water quality.

(u) That the permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the authorized structure or work, shall, without expense to the United States, at the direction of the Secretary of the Army and in such time and manner as the Secretary or his authorized representative may direct, restore the waterway to its former condition. If the permittee fails to comply with the direction of the Secretary of the Army or his authorized representative, the Secretary or his designee may restore the waterway to its former condition, by contract or otherwise, and recover the cost thereof from the permittee.

(v) That this permit supersedes and is in lieu of the permit dated 14 March 1961 issued to Leeco Gas & Oil Company, and later transferred to Padre Island Investment Corporation.

*A judgment as to whether or not suspension, modification or revocation is in the public interest involves a consideration of the impact that any such action or the absence of any such action may have on factors affecting the public interest. Such factors include, but are not limited to navigation, fish and wildlife, water quality, economics, conservation, aesthetics, recreation, water supply, flood damage prevention, ecosystems and, in general, the needs and welfare of the people.

By authority of the Secretary of the Army:

FOR COLONEL DON S. McCOY, DISTRICT ENGINEER:

J. E. HOLLIS
Acting Chief, Permit Branch

3 drawings attached

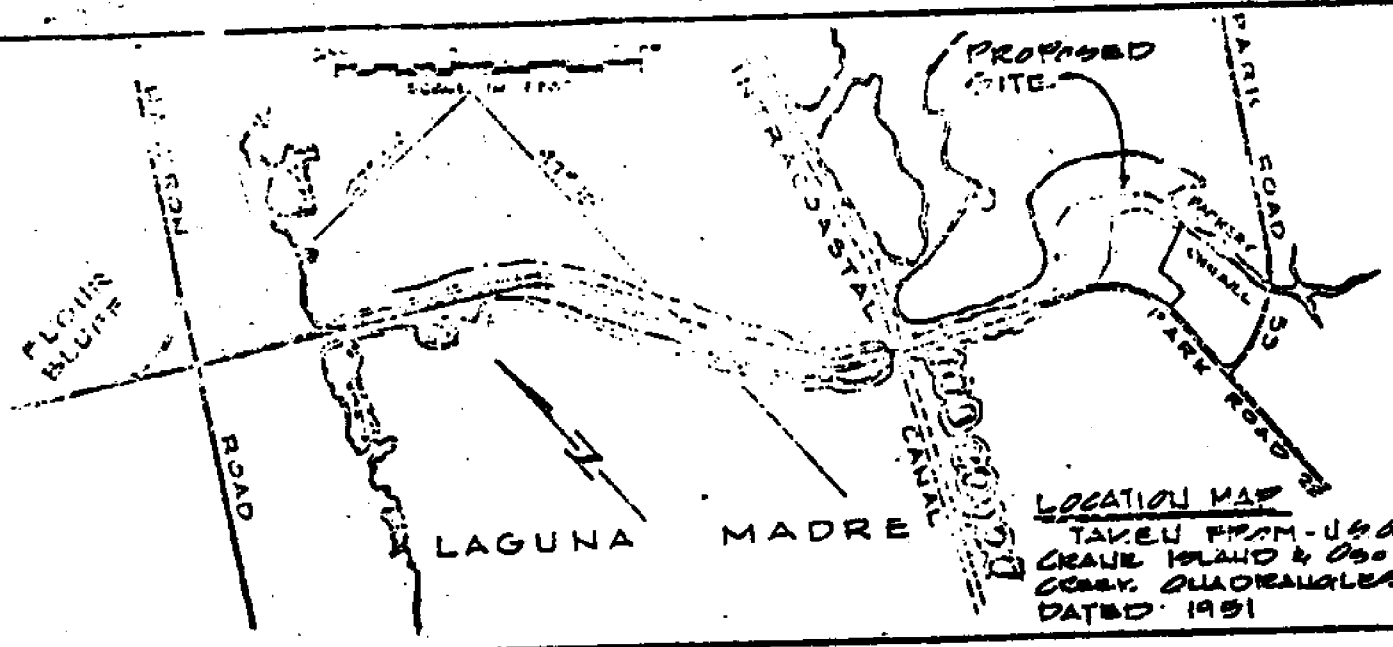
Permittee hereby accepts the terms and conditions of this permit.

July 24 1970
(Date)

(Signature)

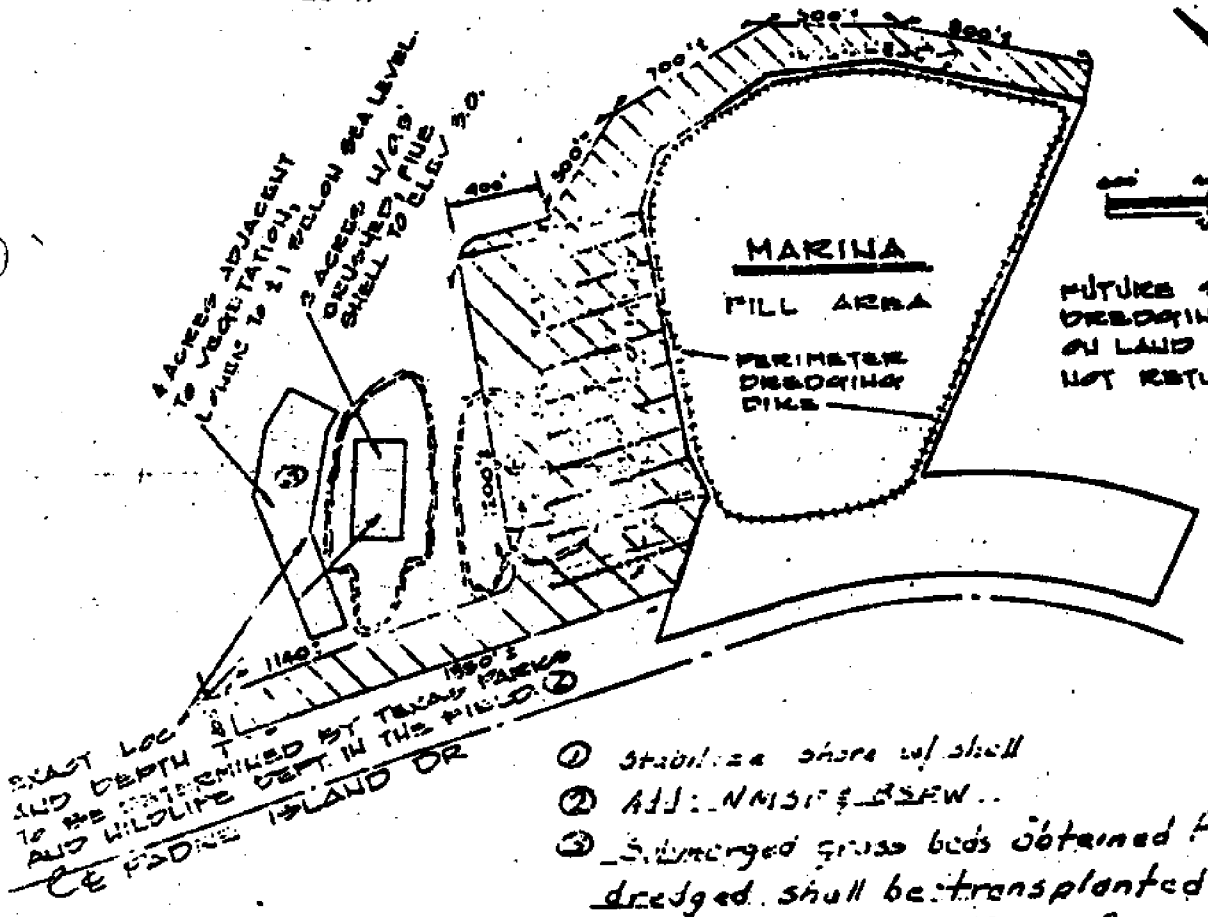
PADRE ISLAND INVESTMENT CORPORATION

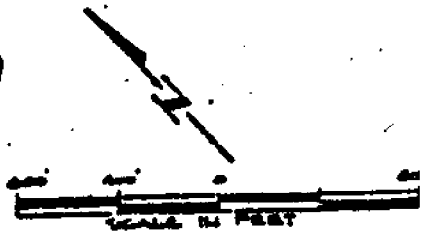
SWG Form 328b



LOCATION MAP
TAKEN FROM - U.S.G.S. CRANE ISLAND & OSO CREEK QUADRANGLES MAP DATED 1951

469,000 ± C.Y. DREDGE MATERIAL



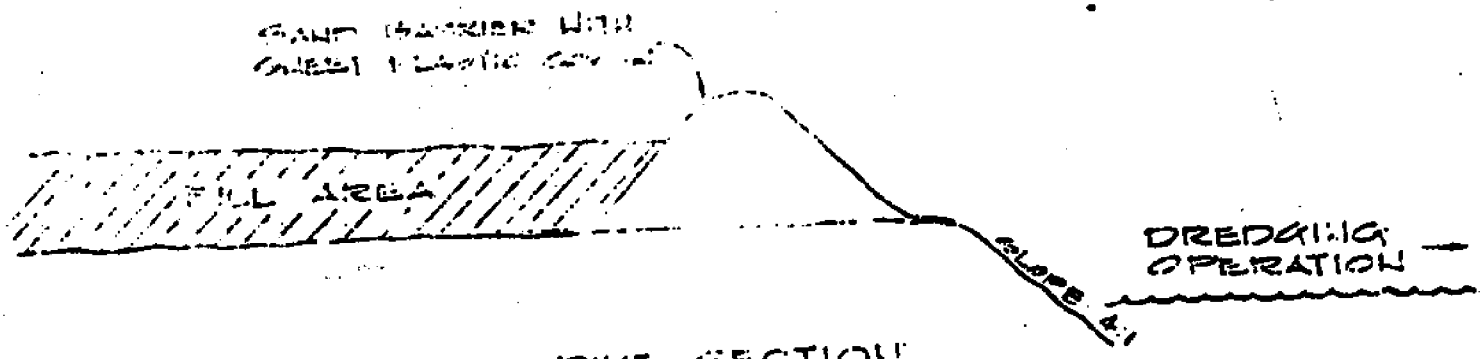


FUTURE SPOIL FROM MAINT. DREDGING WILL BE CONTAINED ON LAND ABOVE WATER AND NOT RETURNED TO WATERWAY

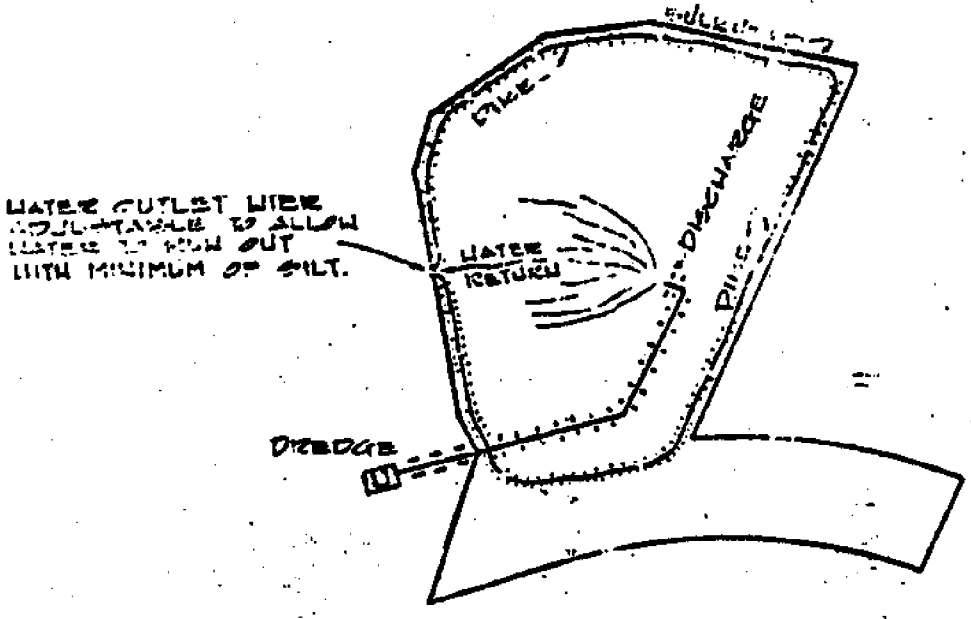
① Stabilize shore w/ shell
② All NMFS & USFW..
③ Submerged grass beds obtained from areas dredged shall be transplanted at a location as determined by Texas Parks & Wildlife Dept, NMFS & USFW personnel at project..

APPLICATION BY:
PADRE ISLAND INVESTMENT CORP
P.O. BOX 8709
CORPUS CHRISTI, TEXAS

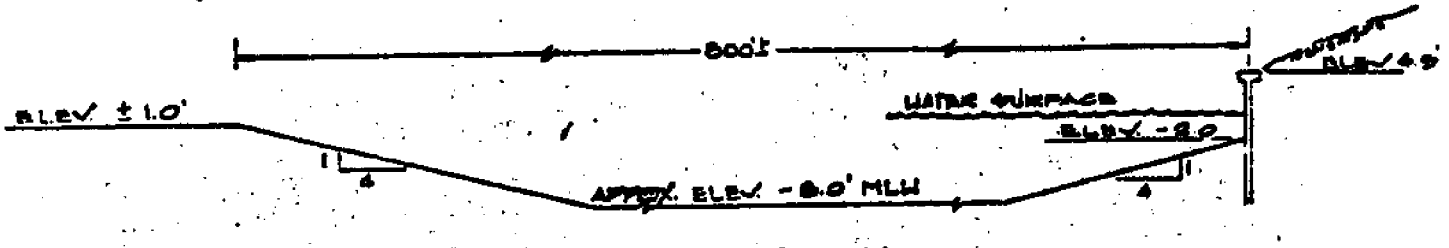
PROPOSED DREDGING:
PACKERY CHANNEL & MARINA SITE
COUNTY OF NUECES
STATE OF TEXAS



SILT BARRIER DIKE SECTION

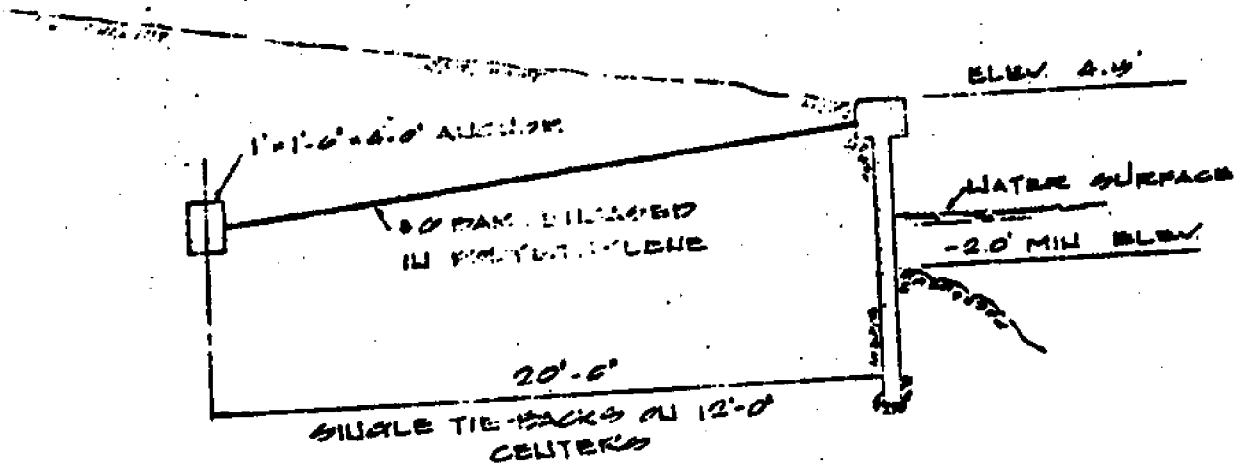


DREDGING PLAN

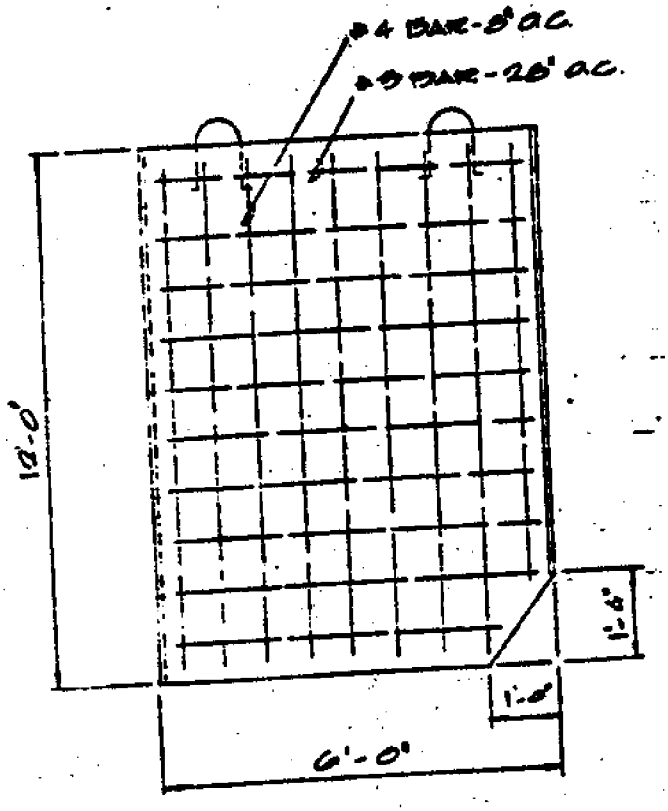


BASIN

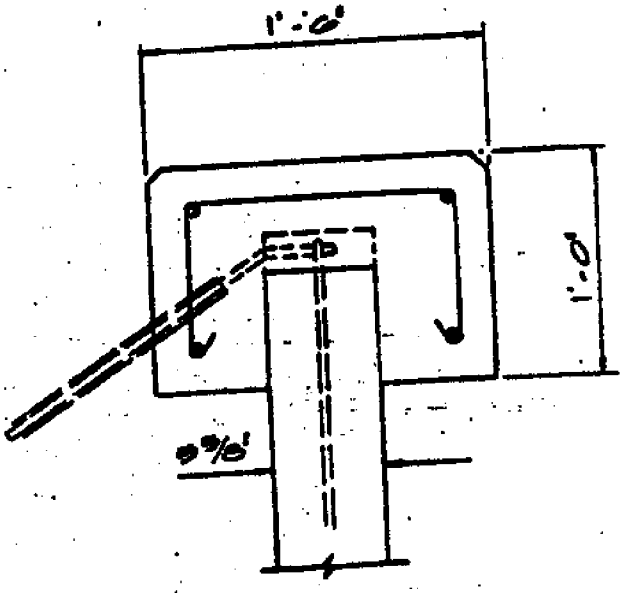
NO SCALE



SECTION



SHEET PILING DETAIL



CAP DETAIL

BULKHEAD SECTION & DETAILS

Department of the Army Permits for [illegible]

[illegible] navigable waters require attention [illegible] and policies which [illegible] unnecessary or disregarded. [illegible] possible misinterpretations [illegible] expedite procedures. Permit post-[illegible] requirements and pertinent information are outlined as follows:

1. Permits remain in effect until revoked, relinquished, or the structures are removed. An extension of time for completion of structures or work may be granted provided that a public notice is issued and that evidence is furnished of the bona fide intention of the permittee to complete the work within a reasonable time. If work or structures are not completed within the time provided in the permit, it is the permittee's responsibility to request an extension of time at least four months before the expiration date.

2. Maintenance of authorized completed structures may be done at any time without extending the completion period. It is, however, required that the District Engineer be notified prior to commencement of maintenance.

3. SPECIAL REGULATIONS GOVERN MAINTENANCE WORK INVOLVING DREDGING OR FILL. This maintenance is not authorized by the original permit and specific prior approval is required before such work is commenced in navigable waters. Your request for authorization should be submitted in time for public notice requirements and coordination with other agencies.

4. If ownership of structures or work covered by a permit is transferred, the District Engineer must be notified immediately. The notification will provide information so that permit responsibilities can be changed to the new owner or assignee.

5. Permittees are reminded that the Area Engineer must be notified as soon as possible of the time for commencement of construction or work, and immediately upon completion. If pipelines across Federal project channels are covered by the permit, the Area Engineer should be informed of the date the pipeline is to be placed in time for him to arrange for an inspector to be present.

6. All material changes in location or plans must be submitted promptly to the District Engineer for approval before construction is begun.

7. Permits should not be considered as an approval of design features of any structure authorized or an implication that such structure is adequate for the purpose intended.

DISTRICT ENGINEER
GALVESTON DISTRICT
CORPS OF ENGINEERS

DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS

NOTICE OF AUTHORIZATION

19

A PERMIT TO construct a bulkhead and dredge an area, the dredged material to be placed on shore in Laguna Madre

AT a location approximately 16 miles southeast from Corpus Christi, Texas,

HAS BEEN ISSUED TO Padre Island Investment Corp. ON 19

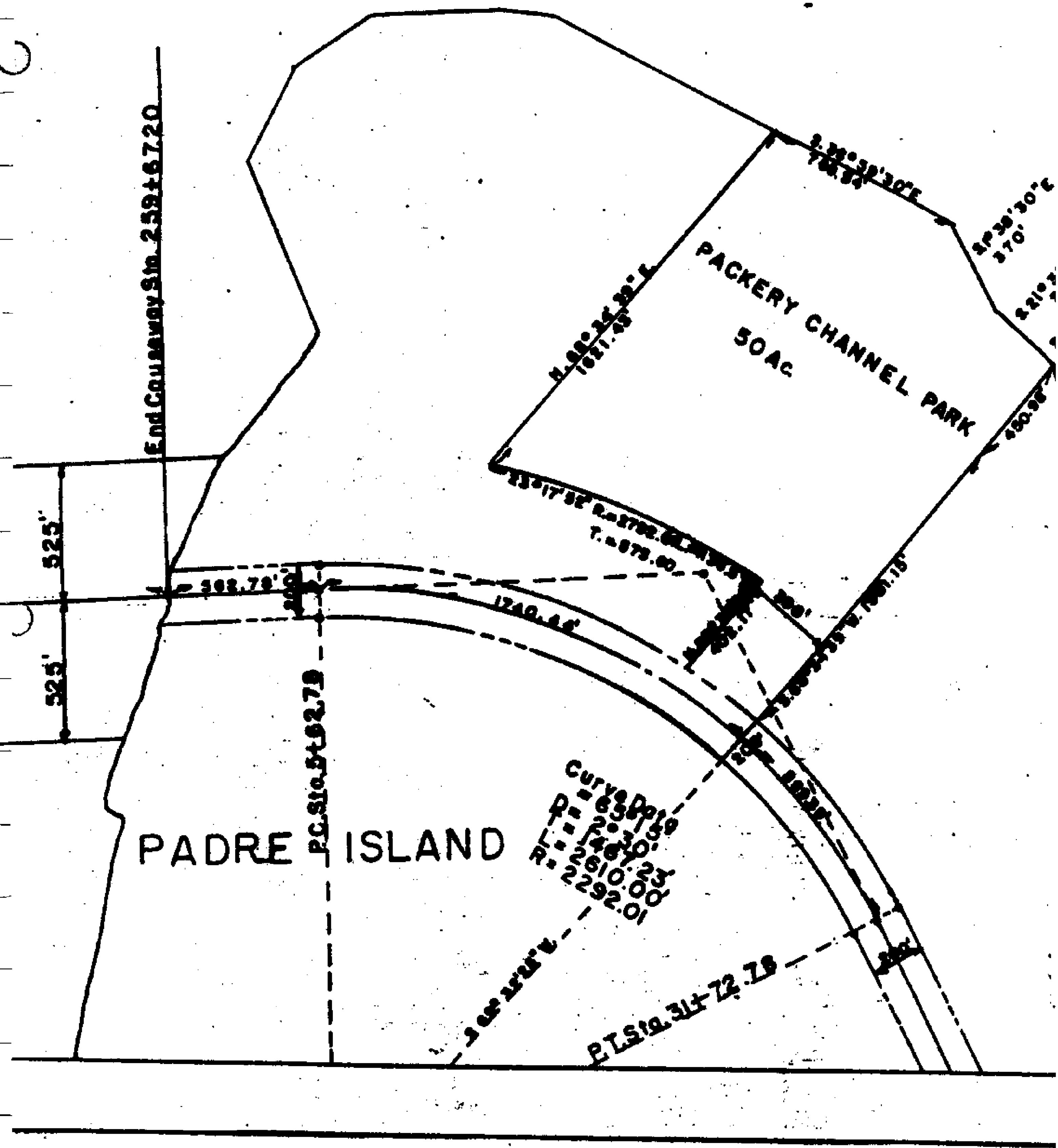
ADDRESS OF PERMITTEE P. O. Box 8809
Corpus Christi, Texas 78412

PERMIT NUMBER 9740

J. E. HOLLIS
Acting Chief, Permit Br
For Colonel Don S. McCoy
District Engineer

ENG Form 4335
Jul 70

THIS NOTICE MUST BE CONSPICUOUSLY DISPLAYED AT THE SITE OF WORK.



Copy TxD ROW. MAP
NOT PART OF PERMIT REQUEST

D R A F T

Application No. _____

Effective Date _____

Expiration Date 31 December 1986

DEPARTMENT OF THE ARMY
GENERAL PERMIT

For a permit to:

Perform work in or affecting navigable waters of the United States, upon the recommendation of the Chief of Engineers, pursuant to Section 10 of the Rivers and Harbors Act of March 3, 1899 (33 U.S.C. 403); and to

Discharge dredged or fill material into navigable waters upon the issuance of a permit from the Secretary of the Army acting through the Chief of Engineers pursuant to Section 404 of the Federal Water Pollution Control Act (86 Stat. 816, P.O. 92-500);

The General Public is hereby authorized by the Secretary of the Army to construct piers, boathouses and bulkheads that are constructed within artificial channel and/or canals within recreational/residential developments in the Galveston District (Louisiana portion of the District excluded) as follows:

1. Specific Conditions:

a. Piers must conform to the following criteria:

(1) Piers to be constructed of wood, concrete, or other non-pollution material only.

(2) All piers will be supported by pilings - no groins or other solid construction will be allowed.

Dist 1

(3) Piers shall be no wider than 10 percent of the total width of the individual lot on which the pier is constructed or 6.0 feet whichever is greater.

(4) Pier length shall not exceed one-fifth of the authorized width of the channel in which the pier is constructed.

(5) No dredging shall be undertaken during installation of any pier.

b. Boathouses shall conform to the following criteria:

(1) These structures shall not extend into any channel or canal more than one-fifth of the authorized width of the channel or canal in question.

(2) All boathouses shall be floating or constructed on pilings only. No dredging or filling will be allowed.

(3) All boathouses shall provide space for no more than 2 boats and extend over an area no greater than 500 $ft.^2$.

c. Bulkheads shall conform to the following criteria:

(1) Bulkheads shall not extend waterward more than 12 inches from the authorized width of the channel or canal on which the bulkhead faces.

(2) The amount of fill material placed landward from the bulkhead shall not exceed 1.0 cubic yards of material per linear foot of bulkhead.

(3) Any fill employed in the construction of a bulkhead shall be sand, clay, earthen material, clean bricks, concrete or other non-pollution materials.

2. General Conditions:

a. That all activities identified and authorized herein shall be consistent with the terms and conditions of this permit; and that any activities not specifically identified and authorized herein shall constitute

a violation of the terms and conditions of this permit which may result in the modification, suspension or revocation of this permit, in whole or in part, as set forth more specifically in General Conditions j or k hereto, and in the institution of such legal proceedings as the United States Government may consider appropriate, whether or not this permit has been previously modified, suspended or revoken in whole or in part.

b. That all activities authorized herein shall, if they involve a discharge or deposit into navigable waters or ocean waters, be at all times consistent with applicable water quality standards, effluent limitations and standards of performance, prohibitions, and pretreatment standards established pursuant to Sections 301, 302, 306, and 307 of the Federal Water Pollution Control Act of 1972 (P.L. 92-500; 86 Stat. 816), or pursuant to applicable State or local law.

c. That when the activity authorized herein involves a discharge or deposit of dredged or fill material into navigable waters, the authorized activity shall, if applicable water quality standards are revised or modified during the term of this permit, be modified, if necessary, to conform with such revised or modified water quality standards within 6 months of the effective date of any revision or modification of water quality standards, or as directed by an implementation plan contained in such revised or modified standsards, or within such longer periods of time as the District Engineer, in consultation with the Regional Administrator of the Environmental Protection Agency, may determine to be reasonable under the circumstances.

d. That the permittee agrees to make every reasonable effort to prosecute the work authorized herein in a manner so as to minimize any adverse impact of the work on fish, wildlife and natural environmental values.

e. That the permittee agrees to prosecute the work authorized herein in a manner so as to minimize any degradation of water quality.

f. That the permittee shall permit the District Engineer or his authorized representative(s) or designee(s) to make periodic inspections at any time deemed necessary in order to assure that the activity being performed under authority of this permit is in accordance with the terms and conditions prescribed herein.

g. That the permittee shall maintain the structure or work authorized herein in good condition and in accordance with the plans and drawings attached hereto.

h. That this permit does not convey any property rights, either in real estate or material, or any exclusive previleges; and that it does not authorize any injury to property or invasion of rights or any infrigement of Federal, State, or local laws or regulations, nor does it obviate the requirement to obtain State or local assent required by law for the activity authorized herein.

i. That this permit does not authorize the interference with any existing or proposed Federal Project and that the permittee shall not be entitled to compensation for damage or injury to the structures or work authorized herein which may be caused by or result from existing or future operations undertaken by the United States in the public interest.

j. That this permit may be summarily suspended, in whole or in part, upon a finding by the District Engineer that immediate suspension of the activities authorized herein would be in the general public interest. Such suspension shall be effective upon publication of a public notice and distribution of

same to those outlets receiving the initial public notice. The notice shall indicate (1) the extent of the suspension, (2) the reasons for the action and (3) any corrective or preventative measures to be taken by the permittee which are deemed necessary by the District Engineer to abate imminent hazards to the general public interest. The permittee shall take immediate action to comply with the provisions of this notice. Within ten days following receipt of this notice of suspension, the permittee may request a hearing in order to present information relevant to a decision as to whether his permit should be reinstated, modified, or revoked. If a hearing is requested, it shall be conducted pursuant to procedures prescribed by the Chief of Engineers. After completion of the hearing, or within a reasonable time after issuance of the suspension notice to the permittee if no hearing is requested, the permit will either be reinstated, modified, or revoked.

k. That this permit may be either modified, suspended or revoked in whole or in part if the Secretary of the Army or his authorized representative determines that such action would otherwise be in the public interest. Any such modification, suspension, or revocation shall become effective 30 days after publication of written notice of such action which shall specify the facts or conduct warranting same unless (1) within the 30-day period the permittee is able to satisfactorily demonstrate that (a) the alleged violation of the terms and the conditions of this permit did not, in fact, occur or (b) the alleged violation was accidental, and the permittee has been operating in compliance with the terms and conditions of the permit and is able to provide satisfactory assurances that this permit; or (2) within the aforesaid 30-day period, the permittee requests that a public hearing be held to present oral and written evidence concerning the proposed modification, suspension or revocation. The conduct of this hearing and the procedures for making a final

decision either to modify, suspend or revoke this permit in whole or in part shall be pursuant to procedures prescribed by the Chief of Engineers.

l. That any modification, suspension, or revocation of this permit shall not be the basis for any claim for damages against the United States.

m. That the permittee shall notify the District Engineer at what time the activity authorized herein will be commenced, as far in advance of the time of commencement as the District Engineer may specify.

n. That no attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the activity authorized by this permit.

o. That if the display of lights and signals on any structure or work authorized herein is not otherwise provided for by law, such lights and signals as may be prescribed by the United States Coast Guard shall be installed and maintained by and at the expense of the permittee.

p. That this permit does not authorize or approve the construction of particular structures, the authorization or approval of which may require authorization by the Congress or other agencies of the Federal Government.

q. That if and when the permittee desires to abandon the activity authorized herein, unless such abandonment is part of a transfer procedure by which the permittee is transferring his interests herein to a third party, he must restore the area to a condition satisfactory to the District Engineer.

r. That there shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein.

s. As of the effective date of this General Permit, all existing structures and activities in private canal developments which have been authorized by the Department of the Army and which, in the judgment of the District Engineer, are in satisfactory condition, will be considered permitted by the Department of the Army. Additionally, any activity underway as of the effective date of this permit within an authorized private canal will be considered permitted under the terms of this General Permit.

t. Each activity authorized under the terms of this General Permit shall be reported to: District Engineer, U. S. Army Corps of Enginaers, Galveston District, P. O. Box 1229, Galveston, Texas 77553. The manner of reporting shall be on forms provided by the Corps of Engineers which shall be returned to the District Engineer by the permittee.

u. This General Permit will not apply to sites within the permit area that are identified by the District Engineer as being habitat for rare or endangered species, fish spawing areas, waterfowl or shore bird nesting, feeding and resting areas or other environmentally sensitive areas.

b. Bulkheads shall be constructed prior to any backfilling thereof.

The following Special Conditions will be applicable when appropriate:

STRUCTURES FOR SMALL BOATS: That permittee hereby recognizes the possibility that the structure permitted herein may be subject to damage by wave wash from passing vessels. The issuance of this permit does not relieve the permittee

from taking all proper steps to insrue the integrity of the structure permitted herein and the safety of boats moored thereto from damage by wave wash and the permittee shall not hold the United States liable for any such damage.

ERECTION OF STRUCTURE IN OR OVER NAVIGABLE WATERS: That the permittee, upon receipt of a notice of revocation of this permit, shall, without expense to the United States and in such time and manner as the Secretary of the Army or his representative may direct, restore the waterway to its former conditions. If the permittee fails to comply with the direction of the Secretary of the Army or his authorized representative, the Secretary or his designee may restore the waterway to its former condition, by contract or otherwise, and recover the cost thereof from the permittee.

MAINTENANCE: (1) That when the work authorized herein includes periodic maintenance, it may be performed under this permit until 31 December 1986; and (2) That the permittee will adivse the District Engineer at least two weeks before he intends to undertake any maintenance.

This permit shall become effective on the date of the District Engineer's signature.

BY AUTHORITY OF THE SECRETARY OF THE ARMY:

_____ _____

DISTRICT ENGINEER
U. S. ARMY, CORPS OF ENGINEERS

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P.O.BOX 1229
GALVESTON, TEXAS 77553

REPLY TO
ATTENTION OF:
SWGCO-R

Dear Applicant:

As you probably know, many proposed activities in and immediately adjacent to the various waters of the United States, including wetland areas, require Department of the Army authorization prior to the initiation of the project. To facilitate obtaining the necessary permit(s), the Department of the Army has compiled a simple application form and a detailed instruction booklet carefully outlining the steps required. These materials are inclosed for your use. Additionally, you will find information regarding State approval of your proposal inclosed. Please note that State Water Quality Certification may be required prior to issuance of any Department of the Army authorization, but that the State of Texas has separate requirements for "structures" placed on or over public lands. Should you have any questions regarding these requirements, please contact the appropriate State office directly. Also included is a list of policies and procedures of this District regarding permit requirements that may be applicable to your proposal.

While you may feel that some aspects of the Permit Program place limitations on the concept of riparian rights, the overall purpose of the program is to protect the water resources of the United States. While considering your application for a permit, we will evaluate the probable impact of the proposed activity on the public interest, weighing the expected benefits that might be expected to accrue against reasonably foreseeable detriments. Some of the many factors that will be considered are conservation, economics, aesthetics, general environmental concerns, historic values, fish and wildlife values, flooding, land use, navigation, recreation, water supply, water quality, energy needs, safety, food production and in general, the needs and welfare of the people. While all of the above factors may not be major concerns in your particular application, many will require careful evaluations. In order to assist us in the evaluation of these factors, we are required to request and consider the views of other agencies such as the Environmental Protection Agency, the National Marine Fisheries Service and the U. S. Fish and Wildlife Service.

The basis for this program is laws passed by Congress, principally the River and Harbor Act of 1899 and Section 404 of the Federal Water Pollution Control Act as amended, and their interpretation by the Courts. Within

the framework of the applicable laws, it is our intention to make this program as responsive to the desires and needs of the public as possible. To this end, we stand ready to assist you in the compliance with our program in any way we can. Please do not hesitate to call upon my staff in the Permit Branch. They can be reached at 713-763-1211, Extension 382 or 368.

Sincerely yours,

JON C. VANDEN BOSCH
Colonel, Corps of Engineers
District Engineer

4 Incl
As stated

General
Land Office
AUSTIN, TEXAS 78701
BOB ARMSTRONG, COMMISSIONER

GENERAL INFORMATION TO APPLICANTS

Any land owner whose property abutts or is adjacent to coastal public lands who wishes to place or locate a "structure" on or over coastal public lands must receive an easement from the School Land Board, acting through the General Land Office, authorizing the placement or location of such structure on or over coastal public lands for purposes connected with the ownership of littoral property. General requirements are as follows:

1.) The owner of littoral property may construct a pier which is not for commercial purposes, without first acquiring an easement, if such pier neither exceeds 100 feet in length nor 25 feet in width and which requires no dredging or filling. However, the location and dimensions of any such pier must be registered with The General Land Office.

2.) Piers which are longer than 100 feet or wider than 25 feet or require dredging or filling or which are to be used for commercial purposes must receive an easement from the Board before construction is begun.

3.) The owner of any surface or mineral interest in coastal public lands, who wishes to construct a channel which is necessary or appropriate for the use of such interest right, must receive a channel easement from the Board before beginning construction.

4.) Any person, association, corporation, or other entity wishing to place a structure or to perform any work whatsoever on or over coastal public lands must apply for and receive the appropriate grant of interest right before performing any work on or over coastal public lands.

"Structure" means any work or improvement constructed upon, affixed to or worked upon coastal public lands: e.g., fixed or floating piers, retainging walls, levees, ramps, landfills, excavations, land canals, channels and roads.

Permit Requirement information and application forms may be obtained from The General Land Office
Coastal Section, Room 636
1700 N. Congress Ave.
Stephen F. Austin Bldg.
Austin, Texas 78701

Phone: (512) 475-4411 or
(512) 475-6326

STATE WATER QUALITY CERTIFICATION

If the activity may result in a discharge into navigable waters, certification from the appropriate water pollution control authority that applicable effluent limitations and water quality standards will be met must be obtained in accordance with Section 401 of the Federal Water Pollution Control Act as amended before Department of the Army authorization can be issued.

CERTIFYING AGENCIES IN TEXAS:

For Oil and Gas Drilling & Production

Railroad Commission of Texas
Oil & Gas Division
P. O. Drawer 12967 - Capitol Station
Austin, Texas 78711
512-475-4639

For Dredge, Fill & Discharge

Texas Department of Water Resources
P. O. Box 13087 - Capitol Station
Austin, Texas 78711
512-475-5695

CERTIFYING AGENCY IN LOUISIANA:

State of Louisiana
Stream Control Commission
P. O. Drawer FC
University Station
Baton Rouge, Louisiana 70803
504-389-5309

Channel	Authorized channel dimensions, depth in feet below mean low tide and width in feet	Minimum clearances, depth in feet below mean low tide and distance measured normal to centerline of channel
Five Mile Cut Channel	8 by 125	15 by 150
Greens Bayou Channel		
Mile 0.33 to Mile 1.54	15 by 100	25 by 125
Mile 1.54 to Mile 2.81	12 by 100	20 by 125
Gulf Intracoastal Waterway (Main Channel)		
Sabine River to Houston Ship Channel	16 by 150	25 by 175
Houston Ship Channel to Brownsville	12 by 125	25 by 150
Jewel Fulton Channel	12 by 100	25 by 125
Johnsons Bayou	6 feet deep	15 by 125
Little Bay	8 by 100	15 by 125
Mouth of Colorado River	12 by 100	25 by 125
Offatts Bayou	12 by 125	25 by 150
Oyster Creek	4 by 40	10 by 65
Port Aransas Channel	12 by 100	25 by 125
Port Isabel Side Channels	12 by 125	25 by 150
	12 by 60	20 by 85
Port Isabel Small Boat Harbor	7 by 75	15 by 100
	6 by 50	15 by 75
San Bernard River	9 by 100	20 by 125
Trinity River - Multiple Purpose Channel	12 by 200	25 by 225*

(Notes for table)
* Downstream from the Port of Liberty clearances will be required only for the 6-foot channel where the alignment of the multiple purpose channel within the river has not been definitely established.

** Applicants should be given opportunity to provide clearance of 25 by 150 feet for channel 12 by 125 feet with all widening on west side.

*** For reach dredged by local interests deep draft standards apply.

% For reach that includes hopper dredge turning basin and sea bar channel, inclusive, a depth of 41 feet to top of pipe or cable is required.

(c) Nonproject Streams. A minimum depth of two feet is required. In the more important streams, a clearance of 5 feet below the bed should be provided.

(d) Bays and Similar Bodies of Water. A general requirement for placing submarine pipelines and cables in these larger bodies of water is that they be placed a minimum of 2 feet below the bed except through shell reefs or oyster beds where they should be placed a minimum of one foot below the top of the reef or bed.

(2) Overhead Crossings. The vertical clearance to be provided by overhead telephone cables must be equal to or greater than that provided by fixed bridges across the waterway in the vicinity of the proposed crossing. If clearance standards for bridges have been established for the waterway, the clearances for cables must be as great as the bridge clearances required by the standards. If the crossing is over a Federal project channel, an additional 10 feet of clearance should be provided. If no clearance standards exist, the requirements must be studied in a manner similar to that for a bridge to be built, except the study does not need to be as thorough as a bridge study because of the protection afforded the Government by standard conditions in the permit form. For power transmission lines, additional safety clearances are required. These are outlined in the printed pamphlet, "Permits for Work in Navigable Waters," 1968 edition. For minor crossings where the service may be interrupted, less clearance may be permitted provided a special condition is included in the permit requiring the line to be removed temporarily upon receipt of notice from the District Engineer.

(3) Piers and other Structures in Project Channels.

(a) Deep Draft Channels. The minimum clearance between any structure and the near bottom edge of the channel will be not less than the limiting distance between Government dredging and structures established in the authorizing project document. In general, the minimum clearance for wharves or other mooring structures is 125 feet. The minimum distance prescribed in the authorizing document when less than 125 feet will be permitted in special cases only.

(b) Shallow Draft Channels. The minimum clearance for any structure is the same as for (a) above. The clearance between the bottom edge of a channel and any mooring structure should be greater than the beam of the widest vessel or combination of vessels to be moored to the structure.

12 October 1977

NOTICE

Listed below are additional policies, practices and procedures of the Galveston District regarding the issuance of permits for work within navigable waters and navigable waters of the United States. These are extracted from GDR 1145-2-15 dated 27 January 1972.

Clearance Requirements

(1) Submarine Pipelines and Cables.

(a) Deep Draft Channels. The Galveston District policy is to require that pipelines or cables placed beneath deep draft project channels be 15 feet below the dredged depth of the channel over the bottom width plus a distance of 25 feet on each side of the channel measured normal to the centerline. A gradient of the pipeline or cable under the side slopes must be no steeper than the theoretical channel side slope. When widening of a channel has been proposed applicants are informed of the proposed widening and given opportunity to provide the increased clearance at the time of construction rather than waiting to alter the position of the structure just prior to channel widening.

(b) Shallow Draft Channels. The shallow draft channels in the Galveston District vary in depth and importance. No single depth for submarine pipelines and cables to be placed has been established. A table of clearances has been prepared for these shallow draft project channels. Where dredging has not been required because natural dimensions are adequate, the submarine lines should be a minimum of 5 feet below the bed of the waterway. The following table gives required clearances for dredged portions of shallow draft project channels:

Channel	Authorized Channel dimensions, depth in feet below mean low tide and width in feet	Minimum clearances, depth in feet below mean low tide and distance measured normal to centerline of channel
Adams Bayou	12 by 100	20 by 125
Anahuac Channel	6 by 100	15 by 125
Arroyo Colorado (Channel to Harlingen)	12 by 125	25 by 150
Barbour Terminal Channel (Section dredged by local interests to deep draft dimensions)	16 by 100	25 by 125***

Channel	Authorized channel dimensions, depth in feet below mean low tide and width in feet	Minimum clearances, depth in feet below mean low tide and distance measured normal to centerline of channel
Bastrop Bayou (Dredged by local interests to 8 by 80 feet)	4 by 100	15 by 105
Brady Island Channel	10 by 60	20 by 85
Buffalo Bayou - Light draft extension	10 by 60	20 by 85
Cedar Bayou	10 by 100	20 by 125
Channel to Aransas Pass	12 by 125	25 by 150
Channel to Barroom Bay	6 by 60	15 by 85
Channel to Echo	12 by 125	25 by 150
Channel to Encinal Peninsula (Only 12 by 125 feet being maintained)	30 by 200	20 by 150
Channel to Liberty (R&H Act 25 Jul 12)	6 by 100	15 by 125*
Channel from Morgan Bluff to Echo	12 by 125	25 by 150
Channel to Palacios	12 by 125	25 by 150
Channel to Port Lavaca and Harbor of Refuge Channel	12 by 125	25 by 150
Channel to Port Mansfield		
Gulf of Mexico to GIWW	14 by 100	25 by 125%
GIWW to turning basin	14 by 125	25 by 150
Channel to Red Bluff	6 by 100	15 by 125
Channel to Rockport	9 by 200	20 by 225
Channel to Seadrift	9 by 100	20 by 125
Channel to Victoria	9 by 100	20 by 125**
Chocolate Bayou		
(Mile 0 to 8.2)	12 by 125	25 by 150
(Mile 8.2 to 13.2)	9 by 100	20 by 125
Clear Creek and Clear Lake	7 by 75 (Bay)	15 by 100 (Bay)
	7 by 60 (Lake & Creek)	15 by 85 (Lake & Creek)
Colorado River	9 by 100	20 by 125
Cow Bayou	13 by 100	20 by 125
Dickinson Bayou	6 by 60	15 by 85
Double Bayou		
Bay	7 by 125	15 by 150
Bayou	7 by [illegible]	15 by 125
East Bay Bayou (Hanna Reef)	4 by [illegible]	10 by 125

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NOTES

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A professional approach to hiring, training and keeping your sales personnel productive, including special job interview forms, performance evaluation charts, etc.

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A guide to more effective sales promotion, advertising (display, classified, radio and TV, etc.), publicity and special promotions.

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The important part service plays in a marine dealership and how to make your service operation more profitable.

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4. **OBC POSTER:** A 17" x 22" four-color wall poster featuring the five most important safe boating rules free.

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8. **"BOATMAN'S CHECKLIST" DECAL:** A 4¾ x 2½" vinyl decal for posting near the helm. Lists 10 important checks to be made before starting the engine. 5 cents each, $5 per hundred.

9. **FACILITIES FILE:** Reprints of articles on many phases of boating facilities construction and maintenance.

10. **BOATING FACILITIES FOR YOUR COMMUNITY:** A guide in establishing a program to obtain adequate boating facilities for the area where you enjoy boating.

11. **SOURCES OF WATERWAYS INFORMATION:** Listings of agencies and organizations where the boater can write for boating guides. Comes in five regional editions (Northeast, North Central, Southeast, South Central and West), plus Canada.

12. **REGIONAL HANDBOOKS OF BOATING LAWS:** Separation compilation for the Southern, Northeastern, North Central and Southern States of laws covering boat registration, equipment requirements, rules of the road, boat trailers and more. Write for "Shortcut to Knowledge" order form for cost and regional coverage.

13. **DIRECTORY OF ARCHITECTS AND ENGINEERS:** A list of consultants experienced in designing, planning, and supervising construction of recreational boating facilities.

14. **OMNIBUS BOATING CODE:** A compilation of model legislation, with background data, covering state boat numbering, titling equipment and operators regulations, and boat trailers and marine fuel taxes for boating.

15. **BOATER'S DAY IN COURT:** A collection of judicial decisions reflecting the boatmen's rights in such matters as invalidation of local boating ordinances, what are "navigable waters" and riparian rights.

16. **JUST BOATING LAWS:** How boatmen can organize a program to influence the establishment of sound boating legislation.

17. **BOATING—AMERICA'S TOP FAMILY SPORT:** A summary of statistics on the boating industry and sport, such as total number of recreational craft in use, number of boats and motors sold each year, major metropolitan markets, etc. Free.

18. **BOATER'S GUIDE:** A list of names, addresses and telephone numbers of state and federal boating law administrators.

LITERATURE REVIEW OF THE ENVIRONMENTAL IMPACT OF MARINAS AND THEIR BOAT*

BY

Gail L. Chmura
Rhode Island Department of Environmental Management

and

Neil W. Ross
University of Rhode Island

*Chapter II of "Areawide Water Quality Managements Plan, Preliminary Evaluation, Marinas Task" by Raytheon Company, Portsmouth, R.I. for Rhode Island Statewide Planning Program, 265 Melrose Street, Providence, R.I. 02907. January, 1978.

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University of Rhode Island
Narragansett, RI 02882

1978

CHAPTER II. LITERATURE REVIEW OF THE ENVIRONMENTAL IMPACT OF MARINAS AND THEIR BOATS

2.0 INTRODUCTION

Any alteration or change in the physiographic features of the shoreline may be assumed to have an environmental impact. Marinas are shoreside facilities for servicing recreational boats which alter the shoreline, thus are capable of causing complex impacts, both positive and negative, on a small portion of shoreline. In this report, "marina" refers to the facilities also called boat yard, yacht club, community dock, town dock, etc. serving recreational pleasure craft. Defining and measuring the impact of any marina requires that each component impact be viewed individually, then as part of the whole system.

In addition to environmental impacts, marinas have other impacts on society. Although privately managed, they are major public access points to recreational waters. They have economic value to local communities through employment and tax revenues, and they concentrate boating activities, storage and access, thus freeing shore frontage for other uses.

Besides providing spaces for mooring boats, the marina facilities often include other services such as:

Launching ramps
Fuel docks
Hull and engine repair shops
Sales rooms for boats, engines and accessories
Open or enclosed dry land boat storage
Boat haul-out facilities (crane, travel lift, railroad, etc)
Restrooms, showers and locker rooms

Restaurants
Groceries
Bulk ice
Bait and tackle
Propane gas
Laundry facilities
Swimming pools
Gift shops
Motels
Picnic areas
Children's playgrounds
Parking lots.

Much of the literature available today adequately describes what the components of a marina's impact on the environment are, but provide little hard scientific data to support any conclusions as to the severity of the impact. The reports "Marina del Ray: A Study of Environmental Variables in a Semi-enclosed Coastal Water" (6) and "Ecology of Small Boat Marinas" (36) are two notable exceptions. After searching for such quantitative studies, it is obvious that the qualitative discussions far outnumber the quantitative reports. In fact, there are very few scientific reports available that explore the impact of any alteration that is specifically due to the construction and use of a marina.

The purpose of this review is to summarize all aspects of marina and boat-related environmental impact. Discussion will focus on studies of each component impact, the management options needed to reduce negative impacts and expand positive impacts, and future research needs.

2.1 Marina Site Location

Effects

The location, preparation and design of marina facilities (which should include planning for vehicular traffic, access to navigable and recreational waters, fresh water supply, and utilities) are the first factors to be considered when assessing the impact of a marina. The primary negative impacts are habitat loss, pollution by storm water runoff, and aesthetic (visual) pollution. A marina's impact can also have positive features, since it provides for the concentration of shoreline development (vs. many scattered private docks) and may increase the diversity of shoreline habitat e.g., providing substrate for fouling communities.

Habitat Loss - To provide protection for its facilities and safe moorings for boats, most marinas are located on calm, sheltered shorelines. At one time, salt marshes were preferred sites for marinas because they exist on sheltered shorelines and were regarded as wastelands (42). However, people have now recognized that salt marshes are very important marine ecosystems providing valuable wildlife habitat and nursery grounds for many species. They export plant material into adjacent waters where it becomes an important link in the estuarine food chain (35). If salt marsh is removed or covered over to make room for marina facilities, this important marine habitat is lost. Loss of marsh vegetation production can be estimated, but adequately estimating losses of other components is nearly impossible. Once altered, natural habitat cannot be returned to its original condition, however, the marina does provide an artificial habitat with its own unique environment.

Runoff - The construction of land-based marina facilities may necessitate the removal of natural vegetative cover and its replacement with impermeable surfaces such as buildings and pavement, which reduce available area for stormwater percolation and cause surface runoff. This runoff can carry a variety of pollutants including sediment, pesticides, oil and other road dirt, heavy metals, and nutrients, which are all capable of degrading water quality. The environmental impacts of storm drainage on the water quality of Marina del Ray (Southern California) were studied by Chen, Bowerman and Petridis (10). Their results indicated that heavy metals, such as mercury, cadmium and lead precipitated and/or settled out of storm water within a short distance from its point of discharge. The presence of a pond intercepting one storm drain seemed to reduce the input of heavy metals into marina waters. Though Marina del Ray is one of the largest man-made marinas in the world, and its storm water discharge includes mostly urban runoff, the storm drain discharges appeared to exert little direct effect on the water quality of the marina (10).

Aesthetics - The coastal zone may be regarded as a valuable aesthetic resource (68). The presence of a marina may change the shoreline's aesthetic values by introducing sights, sounds, and smells foreign to the natural environment, and poorly maintained marinas may further degrade aesthetic values (42). Both aesthetic values and man's impact on them are difficult to measure and no studies were found which made this attempt. However, it may be assumed that a marina sited on an untouched, pristine shoreline will have a negative impact, while one placed on a developed or urban waterfront may actually improve the aesthetic value and environmental quality of the waterfront.

Management Considerations

When siting a new marina or expanding an old one, the optimal choice would be a protected area of shoreline that does not include salt marsh. Since this option is often not available, Gianno and Wang (18) have prepared guidelines for marina development in a marsh environment and offer an example of a composite design to maintain biological productivity. Their guidelines include: 1. Use dredge spoils from the marsh to establish new productive marshes elsewhere; 2. Provide adequate flushing to promote water circulation which cycles nutrients and prevents eutrophication; 3. Provide contact areas within the marina so fouling communities, an organic food source, can prosper and multiply; and 4. Control water quality so that estuarine species can thrive in the marina.

Fouling communities may actually complement neighboring salt marsh systems by serving as an important food supplement for juvenile and adult finfish, particularly at seasons when marsh nutrient export is lowest (36). Nixon, Oviatt, and Northby (36) have suggested that although fouling communities in marinas contribute to biological production, they may not adequately replace other valuable components of salt marsh ecosystems. Although mammal and waterfowl populations were not studied, Nixon, Oviatt and Northby (36) felt it was unlikely that either of these groups would rest in, or make extensive use of marinas. Some wildlife species, like Mallard ducks, which have adapted to man's presence, may be able to utilize marina areas (36). In order to maintain fish and wildlife habitat, as much marsh area as possible should be retained at the marina site.

Retaining marshland along the water margin of a marina will also provide a natural buffer to storm water runoff and pre-

vent the release of untreated runoff directly into marina and coastal water bodies (38). The report, "Coastal Facilities Guidelines" (38), also suggests that drainage systems be designed to regulate the release of water back into the environment; outfall sites be chosen so that effluents return into well flushed waters such as the mouth of a marina or adjacent open coastal water; and reduce the volume of water entering storm drains by minimizing the amount of land area waterproofed with asphalt and concrete. Two acceptable alternatives to pavement are crushed stones or shells. If a marina is designed with as much porous land surface and vegetative cover as possible, storm-water runoff and its impact may be significantly reduced.

A pleasingly landscaped and well-kept marina is also an important consideration for the management of aesthetic impacts. Ill-kept and sloppy marinas may discourage business and create safety hazards, making poor economic sense to the marina operator (42). One owner of a well-landscaped marina on Cape Cod is convinced that his investment in flowers, grass and shrubs is returned several times over in good will and sales income. Therefore, both the marina operator and local planner should be concerned with pride, planning and maintenance of marinas. A good reference which considers landscaping is Marinas: A Working Guide to Their Development and Design by Donald Adie (1).

2.2 Dredging

Effects

A wealth of literature has been published regarding the effects of dredging and dredge material disposal, but most of these studies are concerned with the dredging of rivers and

large boat harbors, rather than small, recreationally oriented marinas. For this reason, the specific effects of marina-related dredging are difficult to define and often misrepresented. The waters of many marinas are not deep enough to accomodate all recreational craft and sites are often dredged during their initial construction. However, the most common dredging practices in marinas are "spot" and maintenance dredging to remove sediments from small problem areas in boat channels or near docks.

Both the act of dredging and disposal of sediments may adversely impact the marine environment. The severity of this impact is not always the same and is dependent upon the dredging method used and characteristics of the bottom sediment and its inhabitants. Dredging may alter the marina and adjacent waters by increasing turbidity, reducing oxygen content, causing the buildup of sediments and burial of benthic (bottom-dwelling) organisms, disrupting and removing bottom habitat, creating "stagnant deepwater areas" and altering water circulation (11, 18).

Turbidity - Slotta (47) reports that most investigators conclude that temporary increases in the turbidity of local waters due to dredging activities do not represent a significant impact on the environment. This conclusion is probably derived in part because increases in turbidity generally occur in a localized area which can be avoided by pelagic species, and periodic high turbidity levels are natural occurences in estuarine systems (47).

Temporary Reduction of Oxygen Content - During the dredging of a tidal waterway, Brown and Clark (7) found the oxygen content was reduced to levels 16%-33% below normal. They proposed that this reduction was due to the oxidation of resus-

pended sediments and a decrease in the amount of light available for oxygen producing photosynthesis by local flora.

Burial of Organisms - Some burrowing organisms may withstand burial of up to 21 cm of sediment, but those benthic species which are sessile (permanently attached to a substrate) may be easily killed by such burial (45).

Disruption and Removal of Bottom Sediments and Change in Benthic Community Characteristics - Reish (40) studied the bottom communities of a boat harbor in Southern California for three years after construction, which included initial dredging of adjacent upland. He found that within one year, the soft, gray clay bottom had been colonized by communities similar to those existing in other portions of the bay.

As a result of his preliminary studies, Slotta (47) notes the possibility that in an estuary subject to repeated dredging, bottom communities may become modified into a relatively resistant community. A study by Stickney and Perlmutter (50), of dredging in the Atlantic Intracoastal Waterway in Georgia, supports Slotta's hypothesis. In a muddy bottomed area, the benthic community was completely removed by hydraulic dredging. However, little change in the sediment composition occurred and within two months, the dredged area supported a benthic community similar to the original.

Creation of Stagnant Water Conditions - Possible water stagnation in marinas with dead end canals has been monitored (11) but no specific location was cited. It is presumed that such descriptions applied only to areas with extensive Venetian canal development, commonly seen in the southeastern United States.

General Water Quality - Windom (58) studied the effect of dredging in a salt marsh estuarine environment of the southeastern Atlantic Coastal Waterway. He analyzed dissolved oxygen, chemical and biochemical oxygen demand, pH, suspended sediment concentration, mercury, iron, and phosphate in the water from the surrounding area before, during, and after dredging. The results of these analyses indicated that there was no significant change in water quality attributable to the dredging.

Dredge Material Disposal - The effects of dredge material on the environment is relative to the nature of the sediments (whether or not they contain toxic substances) and the selection of the dump site. When open water sites are selected, the benthic habitat may be drastically altered and large volumes of sediment may be resuspended in the water column (45). Disposal in wetlands can destroy these valuable habitats and disposal on upland areas may cause pollution of groundwater and hydrographic and vegetative alterations to the detriment of native wildlife (39).

In a report previously mentioned, Windom (58) examined the diffusion of heavy metals into water from polluted and unpolluted dredge spoils. His study revealed that reduced iron (which is soluble) was oxidized to iron hydroxide (insoluble), in suspended sediments during dredging. The presence of hydroxide encouraged the precipitation of heavy metals out of solution and allowed them to concentrate in sediments deposited on a salt marsh. As conditions favoring a reduction reaction again increased, the trapped metals became soluble and were released into overlying waters. On the basis of this and other phases of his study, Windom drew the following conclusions:

1. In natural and relatively unpolluted areas dredging has no significant effect on water quality whether diked or undiked (dredged material) confinement techniques are used.

2. In polluted areas in marine environments, water quality impairment caused by dredging activities does not necessarily bear any simple relation to the composition of the sediments to be dredged.

3. The time which the water mixed with other dredge material is allowed to stay in the spoil area will greatly influence the quality of the effluent from the spoil bank.

4. Dredging of polluted sediments does not necessarily impair water quality in estuarine environments.

Positive Impacts of Dredging - Dredging does not always have adverse effects, but may help to improve circulation in choked inlets, increase the availability of food to fish and shellfish and help to flush and dilute polluted waters (47). Dredge materials are sometimes suitable for use as sand and gravel for construction (47) or for use in creating artificial habitat. Dredge materials have successfully been used to build salt marshes (60) and create islands suitable for colonization by important bird species (57).

Management Considerations

Marina designers may reduce or eliminate the need for dredging (and its cost) in the planning stages. For example, slips for boats with deep drafts should be planned for the naturally deeper waters of the marina and piers and docks should be extended as far as possible into deeper waters to minimize the need for dredging around them. If maintenance dredging is expected, plans must include a choice of sites for the drying and disposal of dredge materials. They may be spread on surfaces of parking lots and storage areas, or even used to build salt marsh on, and adjacent to, the marina shoreline (59). When dredging must be employed, it should be planned to prevent dead-end Venetian channels and/or restricted inlets. Flushing should be encouraged by increasing the width and

depth of the marina channels out into navigable waters.

Bottom community and sediment characteristics should be taken into account and dredging timed so as not to conflict with critical periods in the life cycle of important animal species (11). Proper timing can also help to reduce the impact of oxygen reduction by dredging in colder months when oxygen concentrations are not a critical factor (7). In the New England area, it would seem that dredging should be done in the winter non-boating months, however, in Rhode Island, special consideration must be given to the reproductive cycle of the winter flounder, which spawns in February and March and is extremely important to both the commercial and recreational fisheries.

Most reports on the effects of dredging (47, 49, 58) stress the need for more research before accurate predictions can be made regarding the impact of dredging on a specific site. In his review, Environmental Aspects of Dredging in the Coastal Zone (58), Windom states, "The impact of dredging on coastal and estuarine environments is site specific. This means that the results of studies in one area may be quite different from those in another. It is clear...that conclusions drawn from studies of the impact of dredging on a given coastal or estuarine area cannot be applied to predict effect in another without a degree of uncertainty."

2.3 Bulkheads

Effects

Bulkheads are vertical walled structures built parallel to the shoreline to protect from erosion or to provide boat docking convenience (11). Bulkheads are usually made of stone,

concrete, sheet metal or wood. The most severe impact of bulkheads occurs when they are constructed within or along the shores of wetlands and used to hold fill deposited on the wetland (11). As well as preventing free water circulation to any wetland behind it, a bulkhead can also prevent the natural seepage of ground water into local waters (11). The vertical face of a bulkhead protects the upland by taking the brunt of wave energy, but in so doing creates reflection waves which disturbs sediments (13) and encourages scouring at the base of the bulkhead. Reflected waves may also result in increased marina maintenance costs and boater discomfort.

Heiser and Finn (20) found that bulkheads which protrude too far out into the water may increase predation on migrating salmon fry because the shallow water, which is required for protection from large predators, is absent. Thus, vertical structures which replace shallow water habitat may have similar effects on other animals adapted to shallow water.

Management Considerations

Bulkheads are expensive to build (9) and for that reason should be kept to a minimum. If erosion on the marina waterfront is a problem, a sloping rip-rap wall with underlying filter cloth is the preferrable form of shore protection. Rip-rap walls can be less expensive, provide more surface area for the growth of fouling communities, and create habitat for fish fry (20). Problems of scouring and wave reflection are less severe because rip-rap wall surfaces are irregular and sloping. Since this structure is not solid, it also allows seepage of ground water into the marina. Sloping rip-rap walls do require more space than vertical bulkheads and space limitations or specific marina services, e.g. travel lift wells, may preclude their use.

If bulkheads or rip-rap walls are deemed necessary, they should be located behind all marshland and as far upland as possible with access over wetland on piers. Features such as "weepholes" in bulkheads will allow water to pass through (11).

Where deep waters may subject young fish (or other animals which require shallow waters) to increased predation, Heiser and Finn (20) suggest that bulkheads be placed at a water level where they will be wetted more than one foot deep approximately 10% (or less) of the time during the critical migration period.

2.4 Breakwaters

Effects

Breakwaters are linear structures which extend out into the water and provide sheltered conditions for craft and marina facilities by dissipating wave energy (1). They may be composed of a wide variety of materials (stone, concrete, metal, wood, tires, fiberglass) and constructed to either sit on the bottom (fixed position), or float on the surface (movable). Since breakwaters provide calm waters, they may also increase the amount of shoreline available for salt marsh building. The fouling communities which grow on breakwaters can add to the biological productivity of the area and attract fish, however, Chen, Bowerman and Petridis (10) found that a breakwater constructed around the entrance of Marina del Ray accumulated organic debris. The breakdown of this material resulted in the depletion of dissolved oxygen in the bottom water which adversely affected the benthic fauna (10). Certainly, breakwaters can be traps for larger floating debris (bottles, boards, bags, etc.), which become an aesthetic problem as well (42).

Heiser and Finn (20) report that breakwaters can create barriers to the path of migrating juvenile salmon. Results of their study also indicated that young salmon do not readily utilize culverts installed in breakwaters in an attempt to aid fish passage.

Breakwaters can also interrupt longshore currents and the movement of sediments. Many authors (11, 13, 20, 38, 41) mention that solid (surface to bottom) breakwaters which restrict the opening for water circulation within a marina will alter sedimentation patterns and the natural flushing which can help remove pollutants from marina waters. The impact of such a disturbance is difficult to measure and probably unique to each marina, thus no reports have been published which have attempted to quantify this effect.

Management Considerations

A floating breakwater can be a cheaper and more environmentally sound alternative to the common, solid breakwater although it does not provide the same degree of protection. These may be constructed from a variety of materials, e.g., one successful breakwater is built with floating tires (43). The floating breakwater is preferred for shore protection because it allows free passage of fish, does not alter current and sediment patterns, and therefore does not have the adverse effects of a solid breakwater.

When solid breakwaters are used, their location must be planned with consideration of natural current and sediment flow, wave patterns, and overall flushing characteristics of the marina basin. Modeling studies (6, 41, 48) are useful in this regard and may be used to plan for adequate flushing of new marinas,

or to remedy problems at existing ones. From this modeling work, Richey (41) suggests that breakwaters include as many openings as possible to maximize effectiveness while allowing adequate water flow and fish passage. Sloping rip-rap type breakwaters are preferrable to vertical structures because irregular surfaces provide protective habitat for small fish passing around the structure and are more effective in dissipating wave energy.

2.5 Piers, Docks, and Wharves

Effects

Piers, docks and wharves can have detrimental effects on both salt and freshwater marshes by blocking light and water flow. As in the case of bulkheads and breakwaters, water flow within the marina basin may be altered, especially if piers are supported by closed (solid) bases.

Wood, a major component of many piers, pilings and docks, is usually treated with a preservative (such as creosote, copper napthenate, or various copper and zinc salts (9)) which discourages the establishment of fouling organisms. To be effective, these preservatives must be of a poisonous nature and of low water solubility, which results in a slow leaching rate (9). Most studies concentrate on the effectiveness of preservatives (9, 42), but not on the environmental effects. A report published by a treated wood products industry (Koppers Co.) discusses the toxicity of creosote to non-target organisms. Although these laboratory tests found that creosote was moderately toxic, by EPA standards, to selected fish species (bluegills at 990 ppb and rainbow trout at 880 ppb), toxic effects under normal field conditions were not explored.

Management Considerations

The effects of docks, piers and wharves can be minimized if they are constructed high enough above marshes to allow light to reach the surface. These structures should also extend out far enough to reach adequate water depths so that dredging will not be required for boat access. Floating docks and pile/timber piers will have the least effect on water circulation, thus should be used in preference to solid structures.

Since these structures provide additional substrate for the growth of fouling communities, marina operators should avoid painting the underwater surfaces with anti-fouling paints (36). Further studies on the environmental effects of wood preservatives are necessary, but until results are available, their use should not be banned. Meanwhile, prudent use of long lasting materials such as pressure-treated piles and lumber should be encouraged. For example, when creosote preservatives are used, the highly refined material (grade one) is preferred. Numerically higher creosote grades (2, 3, etc.) have a higher tar content and leach faster (21). A newer and increasingly popular colorless preservative (CCA salt) leaches more slowly and is estimated to be effective for approximately 50 years (21). Metal, fiberglass, or concrete can be used for docks, piles and piers, but historical use patterns, lower cost, ease of handling and availability have made wood the preferred material for marina use in the northeastern region.

Docks are most commonly kept afloat with plastic foam logs (or billets). Metal barrels, fiberglass tanks and reinforced concrete (foam or air filled) chambers are less commonly used. Many local marina owners seem to prefer the use of the more expensive petroleum-resistant polystyrene foam (Dow Chemical-orange colored) to the expanded bead foam (Cellulite-white color),

because the orange foam lasts longer, doesn't absorb water, resists burrowing by marine animals, and doesn't break apart easily. Since the white foam breaks up easier with resulting white beads floating off and accumulating along the shore, it is recommended that the orange foam be used where it is to be exposed under docks. To date, there has been no research which considers the environmental impact of various flotation materials.

2.6 Marina Use

Effects and Management Considerations

There are many activities associated with regular marina operations that may have adverse impacts on the local environment. Nearly all marinas have rest room facilities and a small number have facilities for pumping out holding tanks of boats. If municipal sewer systems are not available, the marina must have its own septic system. Overloaded or poorly located septic systems may allow sewage effluents to leach into marina waters, causing an increase in the nutrient supply and biological oxygen demand. Local shellfish beds may be affected by the possible introduction of pathogens. These problems can be avoided if septic systems are designed with adequate capacity and located in proper soils sufficiently far away to prevent the leaching of contaminants into local waters.

Fuel docks may also be a source of pollution through small, but numerous oil spills involving both gas and diesel fuel. These oil spills can be minimized by equipping fuel pumps with back pressure automatic shutoff nozzles which prevent fuel overflow. Constant maintenance of pumps, hoses and other fueling equipment by careful fuel attendants (38) will also help reduce spills. Similarly, sloppy maintenance practices may also contribute to the pollution of marina waters. For

example, when docks and other shoreline structures are painted, care should be taken to keep paint from dripping into the water. Particularly spray painting is to be avoided where it may be toxic.

Marinas are the center of boat-related activities, thus they are also centers of noise and disturbance associated with these activities. Boat engines contribute to noise levels, but this disturbance is limited to brief periods when boats leave or enter the marina. However, manufacturers should continue to develop methods for reducing the noise levels of boat engines (42). Another noise typically associated with marinas is the incessant clang of sail boat rigging which Adie (1) suggests can be remedied with a piece of string. Noise levels from outboard motors have been reported to reach a maximum of 80 decibels at 50 feet (62). This is not a high level, but the annoyance value of different types of noises is highly variable among listeners (61). Unnecessary disturbances such as loud televisions and radios, late-night parties and over-used P.A. systems, are usually the most annoying (42). Since sound travels easily across the water, marina operators should show consideration for neighbors as well as customers by posting and enforcing rules against unnecessary noise.

The R.I. Marina and Pleasure Boating Facilities Study (58) points out the exemplary operating policies of the Nantucket Boat Basin, Massachusetts. This policy is backed by strong enforcement and includes control of littering. Littering can be further discouraged by providing strategically placed and frequently emptied trash receptacles which are convenient for boater use.

Since recreational boating in R.I. is seasonal, the greatest environmental impact (aside from new construction) is likely to occur during the boating season. During winter months, the primary maintenance required at marinas is prevention of ice damage to piers and docks. Many northern marinas prevent the formation of ice by piping compressed air along the bottom and allowing it to bubble up around docks (9). Some marina owners have found that these bubbling systems reduce the turbidity of local waters and keep fouling communities on pilings active, but the actual biological effects of these systems have not been studied.

2.7 Boating Activity/Fish and Wildlife

Effects

By making secluded wildlife habitat accessible, boating can be detrimental to wildlife populations. Studies have been conducted in England (3) and the US (17) to explore the impact of boating on colonies of nesting waterfowl. Several species of duck no longer utilize a London area reservoir because of increasing boat activity (3), and Harris and Matheson (19) report that nesting success in gull and tern colonies is probably reduced by boaters passing by or visiting otherwise secluded colonies on Lake Superior.

In New Zealand, Sutherland and Ogle (51) examined the effect of jet boats on salmon (*Oncorhynchus tshawtscha*) eggs. The propulsion system and movements of jet boats create water pressure fluctuations which disturb salmon spawning areas in shallow stream beds. From laboratory and field experiments (51), it was estimated that salmon egg mortality can reach 20-40% from these disturbances.

Lagler et al. (29) were interested in the impact of motor boating on angling success. Their study was conducted on a 36-acre freshwater pond with no previous history of motor usage. For study purposes, the pond was subjected to the use of motorized boats on alternate days. Both statistical evidence and fishermen surveys showed that there was no difference in angling success between motor and non-motorized days (29). However, long-term impacts (several years) have not been studied.

Management Considerations

Impact on reproductive success can be nearly eliminated if boating is restricted from nesting and spawning areas during critical seasons (3, 19). The visible presence of humans is a critical factor in wildlife breeding success, thus regulations regarding minimum distances from wildlife nesting areas should be set to reduce disturbance by passing boats (19). The minimum distance required to prevent the disturbance of nesting bird colonies must be determined on a site specific basis, e.g., colonies which are inaccessible because of rocky cliffs or shielded by vegetation can be safely approached at closer distances than those that are more exposed. For protective menagement of herring gull colonies situated on bluffs above Lake Superior, Harris and Matteson (19) suggested that people be restricted from approaching within 100 yards during the breeding season. The number and species of nesting birds are also important factors to be considered when determining distances to restrict boat passage (3). Batten (3) further suggests that vegetation be planted in strategic places to provide screening for popular waterfowl areas.

2.8 Boat Motors

Effects

Most studies regarding the interaction of boat motors and the environment focus on the input of chemical pollutants. Little information has been published regarding the effects of boat wakes on shoreline erosion, turbulence created by propellors, or the physical disruption of benthic fauna and flora. Two notable exceptions are a study by Lagler et al. on outboard motors in relation to fish behavior and production (29) and Zieman's report of the physical damage of turtle grass (*Thalassia testudinum*) in southern Florida (67). Lagler conducted field studies on freshwater ponds with muddy bottoms and found that, although a considerable amount of bottom material was moved by outboard motors in shallow water, the turbidity was not measurably increased (29). Beds of aquatic plants helped to minimize the turbulence that was created, but plants did not develop in frequently used boat paths where motors were within 12 inches of the bottom (29). It was also found that the number of bottom organisms was substantially reduced in these shallow paths. Zieman found that regular boat use had the effect of destroying turtle grass beds in shallow water (67). In addition, there was proportionately less fine sediment, reduced pH, and a reduced oxidation-reduction potential in bottom sediments below these boat tracks (67).

Management Considerations

Physical disruption of bottom life and sediments usually occurs in shallow waters. Since most boaters would prefer to avoid the problems of manuevering in shallow waters, properly marked channels would minimize physical damage of bottom communities by accidental boat traffic.

2.9 Outboard Motor Exhaust

Effects

Motorized recreational boats are generally propelled by outboard motors, inboard/outboard (I/O) or inboard engines. Both inboard/outboard and inboard motors are four-cycle engines which burn either gasoline or diesel fuel. Little information is available on the composition or effects of their exhaust, but studies of emissions from four-cycle engines of land vehicles are well documented and might be applied to inboard motors (4). This discussion centers on outboard motors since most research on the environmental effects of boat motors has been directed towards them.

In "A Review of Outboard Motor Effects on the Aquatic Environment" (23), Jackivicz and Kuzminski provide a detailed description of the operation of a two-cycle outboard motor as it relates to pollutant emissions. By design, two-cycle engines have a major shortcoming compared to more fuel-efficient four-cycle engines. In four-cycle engines, combusted fuel is released from a cylinder before new fuel enters the cylinder on the next piston stroke, while in two-cycle engines, fuel intake and exhaust are accomplished in the same stroke. As a result of these combined steps, unburned fuel can be released with exhaust gases, decreasing fuel efficiency and adding more pollutants to receiving waters. Another important difference in the design of two and four-cycle motors is the manner of lubrication of their internal parts. Lubricating oil is admitted directly into the crankcase of four-cycle engines, but in two-cycle engines, oil must be mixed with fuel to reach and lubricate internal engine parts. Old (pre-1972) outboard motors are equipped with valves in the crankcase to discharge oils directly into receiving waters. By

1972, "scavenger" devices were developed to recycle this crankcase drainage back into the fuel system, significantly reducing the output of oil.

English et al. conducted comprehensive laboratory and field studies on the effects of outboard motor exhaust (3, 5), but their results were based on the operation of motors which were not equipped with crankcase drainage recycling devices. Two comprehenisve studies identifying the components and effects of outboard motor exhaust have been reported since the early studies by English et al. (41). Kuzminski directed a series of studies for the Division of Water Pollution Control, Massachusetts Water Resources Commission (Contract No. 15-51451), on the effect of outboard motor exhausts on water quality and associated biota of small lakes (25, 26, 27, 28). The Boating Industry Association and Environmental Protection Agency (Grant No. R-801799) jointly sponsored another study by three different research groups published under the title "Analysis of Pollution from Marine Engines and Effects on Environment" (54).

After analyzing emissions from outboard motors with and without drainage recycling devices and of varied horse-powers, the EPA researchers identified the following components and concentrations in outboard motor exhaust:

1. Carbon monoxide emissions were high compared to those generally observed from four-cycle automotive engines. The percent of carbon monoxide in emissions ranged from 4.5% at 1000 rpm, to 6.5% at 5000 rpm.

2 2. Carbon dioxide in emissions ranged from 5.4% at 1000 rpm, to 7.5% at 4000 rpm.

3. Hydrocarbon concentration (expressed in parts per thousand of n-hexane (C_6H_{14}) in emissions ranged from 7.75 ppt at 1000 rpm to a low of 4.5 ppt at 4000 rpm. The hydrocarbons in exhaust gases were found to be composed of 20-30%

olefins, 20-30% aromatics and approximately 50% paraffins. Hydrocarbon emissions were found to be approximately ten times higher than a typical four-cycle gasoline engine.

4. Kuzminski (28) reports that lead emission is most dependent on the speed of operation and prior operational history of the motor. The amount discharged in exhaust varied from 1.84-12% of the lead input with fuel (28).

Once exhausts are released into the water some hydrocarbons become suspended in the water at propellor depth, while others concentrate at the surface where they may evaporate (26). Almost all of the lead discharged eventually reaches bottom sediments (28).

Sensitivity to petroleum pollutants, such as outboard motor exhaust, may be highly dependent on the characteristics of affected organisms as well as the physical properties of the pollutant. Clark et al. (12) found that mussels (*Mytilus edulis*) were more sensitive to diluted outboard motor effluent than oysters (*Ostrea lurida*), which have the capability of closing their shells for long periods of time. The lighter, more refined petroleum products (e.g. diesel oil), are taken up more quickly by these shellfish than heavy, more viscous refined products (12). However, URI researchers (31) have discovered that in one boating harbor (Wickford, RI), concentrations of aromatic hydrocarbons (probably from petroleum fuels) actually decreased during the boating season. It was suggested by researchers that these hydrocarbons might be removed from the water by evaporation, or possibly degraded biologically or photo-chemically during the summer.

Concentrations of exhaust found in waters after normal outboard motor usage did not inhibit the growth of two species of freshwater algae (*Selenastrum capricornutum* and *Anabaena flas-aquae*) studied by Kuzminski and Fredette (25). The EPA/Boating Industry Study (54) also found that there was no

significant difference between diatom communities, zooplankton communities or organic production in control ponds compared with those subjected to outboard motor use. Both the EPA Boating Industry report (54) and a report of another general study on Lake X in Florida (22) concluded that outboard motor emissions under normal field conditions do not significantly affect aquatic systems or seriously degrade water quality.

Results of field and laboratory studies conflict regarding the quantity of fuel that can be used per volume of water before becoming noticeable in water and/or fish. After field tests, the Boating Industry Association-EPA study (54) reported that up to 110.5 gallons of fuel could be used per million gallons of water before any alteration in the taste of fish was demonstrated. In laboratory studies by Kuzminski et al. (27), one gallon of outboard motor fuel was exhausted into 400 gallons of tap water in a stainless steel tank and sub-samples at various dilutions were presented to test panels. The odor threshold concentration was found to occur at less than one-third (1/3) gallon of fuel per million gallons of water.

Management Considerations

Little can be done to reduce the impact of boat motor emissions other than reducing boating pressure. Results of boat motor exhaust studies suggest that threshold guidelines cannot be generalized, and any management of motorboat use must consider each waterway individually by reviewing the use and characteristics of each system. Obviously, more research is required on the effects of boat motor exhaust. However, research and development by marine engine manufactures aimed at reducing the pollutants in emissions, enabling the use of unleaded fuel, and increasing fuel efficiency, will be of value

in minimizing environmental impacts.

2.10 Boat Sewage

Effects

Although boat sewage can be a repulsive visual pollutant and contribute to the biological oxygen demand of marina waters (38), the primary concern is its potential for carrying disease causing pathogens. Problems may occur if boat sewage is released in the vicinity of shellfish beds or into enclosed waterways with limited flushing.

At present, total and fecal coliform counts are used as indicators of sewage pollution in waterways. During one summer boating season, Fufari and Verber (17) analyzed water, shellfish and sediment samples from a salt water cove in Rhode Island (Potter Cove) and reported that the primary source of coliforms was boat waste, although other sources were present, i.e. cows, seagulls. Cassin et al. (8) also reported that on Labor Day weekend, coliforms increased in the water column and shellfish in direct relations to a small boat population of an estuarine area on the New York coast. In a comparison study Barbaro et al. (2) sampled marina and non-marina waters during the summer boating season on a Mississippi reservoir. Marina waters contained significantly higher fecal coliform and fecal streptococci counts than non-marina waters (2). Results of a study reported by Seablood (46) may be contradictory to these conclusions. Coliform counts were taken in two small boat harbors of Washington State. During the boating season, counts increased 11% in a small freshwater inlet, but decreased 38% in a salt water embayment on Puget Sound. Boat waste studies can be confusing and inconclusive because coliform counts and other measureable effects of boat

wastes are influenced by boat densities, number of people per boat, tides, day of the week samples were taken, and other factors (16). In addition, it is difficult to determine if coliforms are from human or animal waste.

Mack and D'Itri (33) studied a freshwater marina area and found that fecal coliforms increased in the dock slips most frequently used by yachts. They also concluded that the number of coliforms was related to the number of yachts in the marina, but no gross pollution was occurring at the marina. In a subsequent study, Mack (32) discovered that the source of a large number of coliforms was actually from local streams feeding into the boating water. Other researchers have found that water quality in some areas is too variable to measure the effect of pollution due to concentrated boat use (55), or that the background levels of coliforms resulting from land-based sewage input were so high that no boating-related impact could be detected (36).

Since coliform counts in surface waters are not always a dependable measure of water pollution by boats (32), Kassebaum (24) explored the possibility of using measurements of coliform concentration in oysters to indicate the impact of boat wastes. Unfortunately, it was found that variation in coliform bacteria concentrations in the oysters was not directly related to boat usage in the marina.

There is no epidemiological evidence that boat wastes cause widespread disease, but there is the possibility that raw sewage from boats may contain organisms which, when concentrated by shellfish, might transmit disease (16). For this reason, some state health departments restrict the harvest of shellfish in areas proximate to marinas, even without proof of water contamination (5).

On the federal level, the EPA and Coast Guard have promulgated regulations requiring that vessels with permanently installed heads be equipped with marine sanitation devices (MSD) by 1980. On inland waters; all boats must be equipped with holding tanks (Type III, devices designed to prevent discharge of any sewage), but those boats on marine and "navigable waters" may utilize devices which release treated sewage (MSD Types I & II), if the effluent meets certain water quality specifications. If these regulations can be adequately enforced, raw sewage from boat wastes will no longer pose a health hazard, but related problems may exist. One of the recommended marine sanitation devices is the holding tank, but it can be too large and cumbersome for some recreational craft and is dependent on the presence of shorebased pumpout facilities (38). Boat wastes from numerous holding tanks can then accumulate at marine pumpout stations and generally are transferred to municipal sewage systems. Disinfectants, such as formalin, used in holding tanks, could become a problem by reducing the normal efficiency of sewage treatment plants (38). An alternative to holding tanks are macerator-disinfectors which release physically and chemically treated sewage. Proper maintenance of these devices is difficult to enforce (34) and chemicals used to disinfect the sewage may be a more harmful pollutant than raw sewage. Since no scientific studies have been found which investigate the effects of chemical additives from marine sanitation devices, most future research regarding boat wastes should be directed towards this problem.

Management Considerations

If Coast Guard regulations on marine sanitation devices are to be effective, the public must be made aware of the importance of using and maintaining these devices. Since the number of available pumpout facilities for holding tanks is

presently very limited, marina operators should be encouraged to provide more of these facilities. It is clear that not all boats contain permanently installed heads and those that do may use Type I and II MSDs, which do not require pumpout. Therefore, only selected marinas, in harbors with large numbers of boats containing heads, need to have pumpout facilities available. Marina experience on waterways with enforced holding tank use indicates that existing fuel docks provide the most convenient location for pumpout services.

Regulations concerning marine sanitation devices will be difficult to enforce, thus other management tools are still necessary. In marina waters where higher levels of pathogens could contaminant shellfish, boat toilet use can be reduced if marinas provide shoreside restrooms. These restrooms should be convenient to the docks, provide hot showers and wash basins, and be well maintained. Reasonable guidelines for the required number of toilets need to be established. These guidelines should be based on the capacity of the marina and its use characteristics.

Boat wastes are considered a problem primarily on enclosed inland waters and semi-enclosed coastal waters where flushing is minimal. In problem areas, boating can be monitored and regulated. The size, depth, tidal flushing and characteristics of boat use must all be considered to determine the sewage capacity of a waterway. As an example, Fufari (16) has calculated how many boats may be allowed in shellfish areas (assuming a background count of zero coliforms) to maintain standards of 70 coliforms per 100 milliliter of water. Kassebaum (24) also calculated the allowable number of boats to maintain coliform standards, but emphasizes that if such calculations are to be accurate, they must be derived for each water basin on an individual basis.

Once boats are underway and outside of the marina, any sewage discharged overboard is readily diluted, and has a negligible impact. When all boats meet MSD standards in 1980, the potential for contamination of shellfish will be sharply reduced or eliminated. Thus, current restrictions on the harvesting of shellfish from waters adjacent to marinas need to be re-evaluated in light of increasing use of MSDs. Shellfishing should be allowed during non-boating seasons and shellfish quality should be routinely monitored in marina waters to provide the basis of closure when necessary.

No studies were found on the environmental effects of "gray" water i.e., galley and shower waste water. Since some concern has been raised about the wisdom of allowing overboard discharge of "gray" water, it is briefly discussed here. This discharge of water, soap, and grime probably has considerably less impact than boat sewage and little or no threat of shellfish contamination. However, boat owners concerned about their environment can make use of non-polluting soaps for on-board washing. Until scientific research proves otherwise, boat "gray" water discharges does not need regulation.

2.11 Boat Maintenance

Effects and Management Considerations

Regular and seasonal maintenance of boats involves washing, draining bilge water, sanding and painting. All these activities may have minor, but potentially adverse effects on the marine environment. For example, the amount of detergent introduced into the water when washing boats may be small, but can cause increased nutrient levels in marina waters and eventually cause a decrease in the dissolved oxygen concentration. Whenever possible, boat owners and marina operators should limit the use of detergents, or use non-polluting detergents.

Individual boat owners can also reduce the amount of petroleum pollutants introduced into the marina when emptying bilge water. In fact, EPA and Coast Guard regulations prohibit the discharge of any oil or oily waste that causes a visible film or sheen on the surface of the water (31). This form of oil pollution can be controlled by the use of oil filtration devices on boat bilge pumps, or devices such as commercial oil-absorbent pads placed in the bilge to soak up fuel and oil before bilge water is discharged. Though pollution by visible oil may be controlled, some petroleum compounds may be dissolved in bilge water and transferred unnoticed to aquatic ecosystems (31).

Other toxic materials may also be transferred to the aquatic environment from the anti-fouling paints which are used on boat hulls, floats and buoys within the marina. After sampling both harbor and coastal mussels, Young (63, 65) found significantly higher PCB (polychlorinated biphenyls) levels in mussels located near centers for the scraping and repainting of boats. Major brands of anti-fouling paint currently used do not contain significant amounts of PCBs, but samples of old anti-fouling paint have shown concentrations as high as 10% of the dry weight of the paint (65).

Copper is the most common heavy metal used in anti-fouling paints and is found at high levels in sea-water, sediments, and fouling communities in marinas (36). Young (63, 66) found copper concentrations were significantly higher in mussels from boat harbors. It has not been estimated at what rate copper is released into the marine environment from anti-fouling paints, but Young (64) feels that an "important fraction" must be released before repainting. Although copper concentrations have been found to be significantly higher in the marine environment (36, 64), little is known about its

transfer through local food chains or long-range impact. Thus, more research is needed on the fate of copper in marina environments and manufacturers need to develop and market less toxic alternatives or copper-based anti-fouling paints (38). In the meantime, marina operators can reduce copper levels by not painting non-boat surfaces and by collecting and removing paint particles from boat scraping and painting areas (38). Until reasonable alternatives to existing anti-fouling paint are available, prudent use could continue.

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