A FEASIBILITY, MANAGEMENT AND ECONOMIC STUDY OF MARINAS ON THE TEXAS GULF COAST

by

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PREFACE

Prior to this study several statements about marinas were widely acknowledged on the Texas gulf coast:

- "Major corporations, particularly oil companies, are moving into this field."
- "Marinas change hands quickly."
- "Many marina operators have invested in them for tax write-off purposes."

Of the 29 marinas studied no major corporations were found to be operating or owning a marina on the Texas coast. They were owned by individuals or by small groups of three or four people who had formed themselves into a private company for the purpose of operating a marina. Further, no evidence was found that marinas change hands quickly. Only one marina was identified that had changed hands in the past four years. Lastly, the high depreciation, low profit, and high land appreciation of waterfront property suggest that marinas should make attractive financial investments. Unfortunately there are other factors militating against them as investments. No evidence of people being in the marina business for tax advantages was found. On the contrary, most of the marinas studied were operated by people working long and hard to earn a living from them.

In their draft report "Outdoor Recreation on the Texas Gulf Coast" the Texas Department of Parks and Wildlife identified 19 pleasure boat marinas with a total of 2,381 slips. This study identifies almost 6,000 slips at 88 marinas on the Texas coast. For purposes of enumeration, a marina in this

study is identified as any facility offering wet storage for 10 or more pleasure boats. Included were commercial facilities operated for profit; public facilities operated by public agencies; and private facilities operated by private organizations such as yacht clubs. However, the field work and subsequent conclusions drawn in the body of this report did not include private facilities. Therefore, analysis and conclusions pertain only to commercial and public marinas.

METHODS

This four-month field study was conducted from September through December, 1974. Using an open-ended interview schedule, interviews with twenty-nine marina operators in the Brownsville, Corpus Christi, Aransas, Galveston Bay, and Port Arthur areas were conducted. Four were public agency marinas. Twenty-five were commercial marinas of which 10 were small with less than 30 slips; 11 were medium-sized operations (31-399 slips) and 4 were large marinas with more than 400 slips. Operator interviews were supplemented by interviews with knowledgeable secondary sources including relators, public agency officials, biological researchers, and the local press. This study was greatly facilitated by the presence, knowledge and advice of the Marine County Extension Agents operating in the coastal counties.

INTRODUCTION

This study found that no new marinas had been developed along the Texas gulf coast in the last nine years. During this time, however, as Table 1 shows, boat sales have boomed nationally.

TABLE 1

Annual Estimated Volume of Activity
for Boats and Motors (1964-1973)[1]

(In thousands)

Year	Motor Unit Sales	Outboard Motors In Use	Outboard Boats Sold	Inboard/ Outdrive Boats Sold
1973	585	7,510	448	78
1972	535	7,400	375	63
1971	495	7,300	278	44
1970	430	7,215	276	43
1969	510	7,101	310	49
1968	500	6,988	283	42
1967	444	6,904	260	36
1966	440	6,784	266	32
1965	393	6,645	250	17
1964	390	6,564	250	12

In 1973 there were 434,142 pleasure boats registered in Texas and 121,856 were registered in the 16 coastal counties abutting directly on to the coast. By June, 1975, this figure had increased to a total of 476,313 in the State and 136,676 in the 16 contiguous coastal counties. Most of these will be relatively small boats not requiring wet slip moorings, but it seems reasonable to assume that the total increase is proportionately representative of the increase in larger boats which do require wet slip moorings.

The number of slips which have become available through expansion at existing marinas between 1971 and June, 1975 is probably less than 600; or 10 percent of the total number of slips identified. As a result there has been increasing pressure of demand on available slips. This pressure is demonstrated by the waiting lists for slip spaces at many marinas. At the Corpus Christi marina, for example, there is a waiting list of 100 with an average turnover of only three slips per month.

Between 1971 and 1974, pressure has been alleviated by two parallel developments.

ments. The first has been the extensive increase in homes or second homes located on canals with direct access to the Gulf with slips available to each home. Key Allegro, Ingleborough Cove and a series of housing developments on the western side of Galveston Island are good examples. From field study it is estimated that the total number of private slips of this type is around 5,000. This is an estimate not based on systematic enumeration. Since most of these slips have been developed in the last 10 years and virtually all in the last 20 years, these housing-related slips represent a substantial increase which has clearly absorbed some the demand pressure on marinas for wet storage.

The second development to alleviate pressure on marinas has been the massive expansion of covered dry storage facilities at a large number of locations along the coast, particularly in the Coastal Bend and Galveston Bay areas. It is estimated that the number of boats stored in these facilities numbers an additional 5,000. It could be argued that the widespread introduction of dry storage would remove the need for providing more wet slips since smaller boats of up to 24 feet in length, which are presently using wet slips, could be persuaded to use dry storage, thus vacating their slips for the larger boats. There is no doubt that this process has been occurring and has contibuted towards alleviating pressure of demand for space. Clearly, there is a limit, for this replacement process can operate only until all boats up to 24 feet are out of the water, after which this source of alleviation is exhausted. This limit has almost been reached.

The major impact of the boating boom has been the sale of small boats but many small boat owners can be expected to climb the ladder from small to big boats, changing as they grow more competent, confident and affluent. An example of this trading-up process is the increasing size of outboard motors sold in recent years. The average motor sold in 1973 produced 40.8 horsepower. This was a sharp increase over 1972's 38.1 h.p. and 1971's 35.6 h.p. With this

progressive ladder in operation, the problem of space for larger boats, which require wet slips, will grow with increasing intensity.

THE EFFECT OF A RESTRICTED SUPPLY

The immediate reaction to a restricted supply in the face of intense market demand is to assume that the present marina operators would benefit through market pressure forcing an increase in the charge for their slip rentals. There is some evidence that this is already occurring and is being assisted by the relatively inelastic nature of demand for slips, since the cost of dockage is generally small when compared to the cost of the boat. However, the possibility of a restricted supply was not enthusiastically welcomed by many of the marina operators interviewed for they believed that while there would be some short-term gains from this situation, in the long run existing marinas will not benefit. This stems from the belief that the profitable part of their business lies in the services offered rather than in their slip rentals. Hence, a greater profitability lies in an increased volume of business for those services as well as in increased slip rentals. In recent years many marinas have been dependent for survival upon increased productivity, that is, greater throughput volume of boats through the existing plant. This has been aided by the dry storage and private canal slip developments since these boats have needed servicing but have not required expensive investment in slip spaces. However, there is a realization that without wet slips there will be a constriction of the large boat market. Greater productivity has been important because in most marinas income per boat has not kept pace with overheads. Increased productivity therefore was needed to meet this shortfall.

Slip saturation, for example, occurred a few years ago in New Orleans,

the nearest major coastal metropolitan area to Houston and it caused the boat business, and consequently the marina business, to stagnate. If boating is promoted and slip space is available, people will continue to purchase boats and marina business will follow automatically. This is especially true if new facilities are provided by public agencies who will not themselves become directly involved with the repairs or services business. Thus to restrict the development of new marina berths would reflect adversely on the marina operators in the long run.

At several points along the coast, demand pressures are intense. Marina revenues, and hence subsequent expenditures, are derived from boatmen. In addition any expenditures by non-resident boatmen in a local community represent an economic gain to the community. Failure to encourage further marina development may thus mean that some coastal communities will be missing a valuable source of economic gain to the community. All of the marina operations studied were local businesses with no major corporations involved. Since much of their spending is local, their multiplier factor must be relatively high. Consequently, the local community is likely to secure high economic gains.

Finally, without dockage the whole marine industry suffers, for this is the base upon which all producers of boats, tackle, equipment, bait, and other ancillary marine products are at least partially dependent. Hence restriction of further marina development, (the reasons for which are developed later in this study), is likely to make itself felt at least partially throughout the marine recreation industries. Although the magnitude of dependence of the Texas marine recreation industries on availability of coastal wet slip space cannot specifically be elicited, some indication of the scope of the marine recreation industry in Texas is provided in Table 2.[2]

TABLE 2

The Marine Recreation Industry in Texas

Number of Boats Registered (as of December 31, 1974) (Boats required to be registered are all motor boats.)	449,063
Number of Boat Manufacturers	52
Number of Manufacturers of Motors, Boat Trailers and Marine Accessories	46
Number of Fishing Tackle Manufacturers	13
Number of Marine Dealers and Distributors	1,965

Source: Howard Larson, Vice President, Outboard Marine Corporation, personal correspondence

Intense demand for pleasure boat berths is not a new problem. There has been pressure for the last 50 years, but there has generally been a response to that pressure and the necessary additional berth facilities to alleviate it have been made available. In recent years, that response is not apparent.

PROFITABILITY

Traditionally along the Texas gulf coast most marinas have been ' mom and pop' operations owned and operated as a full-time occupation by a single family. The operation of their facility is the only life style they have known and they would not consider any alternative kind of work. Even at larger marinas managers are frequently older men who have accepted a lower level of financial renumeration than was available to them elsewhere in order to manage a marina because they are enthusiastic boaters and enjoy their work.

This life-style argument can be extended to some of the major marina developers. It is said that Bob Smith, the multi-millionaire developer, reportedly noted prior to his redevelopment of the Galveston Yacht Basin that, "I can stand

on my ear and make more money than I can in this marina operation." Even with this knowledge he proceeded with the development, and it is doubtful whether it can ever repay even the interest charges on the $6 million which he invested into the facility.

It was the unanimous opinion of the marina operators interviewed that no new marina could be constructed in today's financial climate and be a viable proposition. A large majority of the marinas studied were not making a profit in the accepted sense of the term, that is, showing a return on investment over and above salaries paid for work done. Most operations were making sufficient money to allow the operator to take a salary out of the business. The two most notable exceptions were both large marinas. One was making a marginal profit after having consistently lost large amounts of money in recent years. The second was making a reasonable profit because it had no debt charges to meet. This marina has been long established and both capital and interest charges had been repaid some time ago.

All operators interviewed worked full-time at the marina but several of the smaller operators found that they could not survive by storing and servicing pleasure boats. For this reason they had diversified either into shrimping or into replacing part of their pleasure boat slips with commercial boat slips. Even in those instances where commercial boat slip rentals are lower than pleasure boat slip rentals, the profits on the 200-300 gallons of fuel each vessel uses per week, and the commision on shrimp and landings which the marina receives, more than compensate for the lower slip rentals. Pleasure and commercial uses are reasonably complementary in the smaller marina since pleasure boats operate primarily on weekends while commercial boat usage is more concentrated Monday

through Friday.

In light of this evidence the only type of marina likely to be promoted by private enterprise is one that is associated with real estate development. Even here there are still major legislative obstacles to be surmounted. This type of marina is essentially a loss leader, used to attract property buyers to the resort, create an image, and provide a marketing prop to aid the resort's promotion. The cost of such marina development and operation is underwritten by all the other components in the resort complex. However, some of the potential of these marinas is lost as many are for the exclusive use of the resort property owners.

Thus the primary restriction upon future development of marinas along the Texas gulf coast is the unsatisfactory level of return on capital invested. It is important that we examine the reasons for these poor returns and identify how the situation might be ameliorated.

REAL ESTATE AND INTEREST CHARGES

The value of waterfront real estate varies widely depending upon its envisaged use, acreage involved, location in relation to populated areas, the extent to which land has been promoted and developed, the clientele of the area and numerous other factors, but as a general guideline "average" waterfront real estate on the Texas coast is now valued at around $1 per square foot.

To be economically viable, a pleasure boat marina requires dry storage capacity and a full range of services in addition to its wet storage slips. It also requires sufficient car parking space to accommodate large numbers of trailered boats which use the marina's facilities for boat launching and

for fuel, repairs, restaurant and other services. In general, operators indicated that they were unable to achieve a reasonable return on their marina investment because they were constrained by site limitations and consequently unable to offer a full range of services. Their consensus suggests that the minimum land requirement for a pleasure boat marina is probably around five acres. At $1 per square foot the investment in real estate alone would require something in the region of $200,000.

While it is difficult to gauge increased cost of real estate over recent years, an estimate of 100 percent increase in the last five years is likely to be conservative. This rise in land prices, and particularly their present high level, represents one of the major factors restricting development of new marina facilities.

The high price of real estate and interest charges is also a threat to the continuance of some of the marinas now operating without any debt charges, particularly the smaller marinas. Field study revealed, for example, a small marina which started 27 years ago as a bait stand and now has 25 slips with some commercial shrimp boat dockage. It is located on 2-3 acres of land with an adjacent upper class housing subdivision. This waterfront land is thus prime real estate. After 27 years the owner and his wife want to retire and sell the business which has no debts of any kind and has a steady trade in bait, tackle and refreshments in addition to slip rental income. To obtain maximum price for the business, the owner is seeking to sell the marina as a flourishing, going concern so that he receives a price which reflects the added value of the existing assets, trade and good will, rather than a price which reflects only the real estate values. Herein lies the crux of the problem facing any small marina operator who wishes to sell his marina today. With

prime interest rates currently* at 10 to 10 1/2 percent and the commercial rate for a high risk project such as a marina likely to be 14 percent or 15 percent, an investor cannot hope to achieve a return on his money, for the business will not generate sufficient operational profit to meet it.

The dilemma would appear to be that the small operator is reluctant to sell at less than what he conceives to be the real value of the business; but the investor cannot afford to buy at that price because of the impact of interest charges. This impasse is possibly a contributing factor towards the lack of turnover of marinas along the coast, for only one of those studied had changed hands in the last 4 years. It persuades the seller to remain in operation, but unless the financial situation changes, the ultimate result must be the elimination of the small marina and conversion to real estate development or other uses. If this analysis is accurate then the conclusion must be that ' mom and pop ' operations are essentially a function of yesterday's costs and prices and must therefore disappear with the passing of time. Under existing financial and environmental constraints this suggests not merely that there is likely to be an inadequate growth in the number of new slips to accommodate the demand for new boats, but rather that the existing supply of slips is actually likely to fall. This is an unfortunate conclusion for clearly marinas are more dependent on a land-water interface than industrial or urban usage and, as will be suggested later in this paper, they are less disturbing to the environment.

Lending rates on investment capital for a marina project will vary according to the prevailing economic conditions which currently fluctuate substan-

*currently refers to the time the field work was undertaken, i.e. December, 1974.

tially over short periods of time. Geographical location, prospects of the investment, degree of risk, and numerous other factors are involved, but generally lending will be related in some way to the government's prime interest rate which has changed dramatically over the last few years. In 1974, the prime interest rate fluctuated from a low of 8.75 percent in March, to a high of 12 percent in July, and currently stands at 10.5 percent. Until around 1967 it was consistently around 4 percent increasing to 7 or 8 percent by 1969 and 1970. Since a marina is likely to be considered by lending sources as a high-risk business, money is likely to cost 4 or 5 percent over the prime rate. While 5 years ago the cost of a loan from a commercial bank may have been 11 percent, today it is likely to be 14 or 15 percent. However, 5 years ago the Small Business Administration may have guaranteed 90 percent of the loan so that risk to the bank would have been minimal, in which case the loan would have been available at perhaps 1 or 2 percent above the prime rate or 8 percent or 9 percent rather than 11 percent. Today the prime rate operates above the ceiling level within which the S.B.A. is authorized to work and in many states it also approaches the limit permitted by usury laws. Thus S.B.A. would not be able to guarantee the loan; but essentially this is an academic point because with the prevailing tight money situation, money is not available for the small business to borrow at any price.

This dramatic rise in interest charges effectively means that marine profit has to be considerably greater than it was 5 years ago to service the debt charges.

At the present time there is a 40-slip marina available for sale in the study area at around $300,000. In 1969/1970, if the earlier estimate of a 100 percent increase in the value of real estate since that time is used,

the marina's value was probably around $150,000. When this increase in the cost of the marina is linked to the increase in the cost of money, then the marina purchaser is not only paying twice as much for his land, but also almost twice as much for his money; so that his overhead costs for debt servicing are almost four times as great as they were in 1969. Thus, in 1969, his debt payments on a 20-year loan would be 9 percent of $150,000, together with a principal component of almost $3,000, giving an annual total of $16,500; while in 1974, they would be 15 percent of $300,000, together with a principal component of almost $3,000, totalling $48,000, which represents an increase of $31,500. This increase may represent somewhere between 15 percent and 50 percent of the gross volume of the business, which, in the light of the marginal profit levels described earlier, is an impossible extra burden for a marina to absorb and still remain viable.

This problem may be lessened if a corporation rather than an individual or partnership is investing in a marina venture, for the corporation may concern itself with long-term appreciation. However, the individual owner and operator, who is typical of the Texas gulf coast, must be primarily concerned with immediate cash flow. He cannot afford the luxuary of the long-term view.

While money is expensive in the private sector, it is relatively inexpensive in the public sector. During the past 12 months, when the prime rate has fluctuated from 8.75 percent to 12.00 percent, municipal bonds have only fluctuated from 5.5 percent to 7 percent. This suggests that the primary funding source for future marinas might have to be public agencies. As pointed out earlier, marina investments are considered high-risk. This is largely because they are a highly specific investment, that is, they cannot be used for any other purpose. The lending source will frequently require collateral

additional to the marina investment, for if the marina should fail it is unlikely that the lending source will be able to recover the full value of its loan from the marina. The real estate components could be recouped; but the investment in dredging, bulwarking, piers, structures, etc. might not be recoverable; hence the lending source may require external collateral.

Restriction of funds for expansion purposes has been particularly frustrating to some smaller marina operators who have already invested in and paid for major cost centers such as land, dredging and bulwarking, and require relatively small amounts of additional funds for revenue-producing components such as additional piers for wet slips, haul-out equipment, etc. The additional investment into the facility would not have to cover the early high overheads but would produce a better return than the initial investment and significantly increase the overall profitability of the marina.

Another source of financial problems has been the unfortunate timing of some of the construction and development work that has been done. For example, a major marina constructed over 200 new slips which were completed in October. This was at the beginning of the winter, the off season when there was no demand for new slips. The marina therefore had to absorb the $14,000 annual debt charge for a 6-month period before any slip rental began to accrue in the following April.

CONSTRUCTION COSTS

Costs of construction must inevitably vary from one site to another but because the Texas coast is primarily wetlands, dredging rather than the more expensive rock-blasting is required.

In addition to land costs, increased costs of construction are a major

constraint not only on new marinas but also on expansion of existing marinas. These increased costs of construction are well illustrated by the expansion of a large public marina in 1972 and in 1974. In 1972, two wooden piers providing 80 new slips were constructed at a total cost of $97,000, or approximately $1,200 per slip. In 1974 in the same marina, another contract to build two additional piers containing 80 slips of almost identical design and specification was let at $184,000, or approximately $2,200 per slip. The cost almost doubled in the two-year period; an increase which would obviously require a substantial rise in slip rentals in a commercial marina for the cost to be amortized over a reasonable period.

Construction costs, however, do vary from one marina to another, for a commercial marina surveyed recently completed new slips at a cost of $700. per slip. The reason for the cost difference do not appear to be due wholly to physical site differences, but rather seem to reflect better awareness of what the boater regards as essential and what he regards as marginal in terms of facilities provided. The commercial operation appears to have been more concerned with the former which kept costs to a minimum. The marina operator should not necessarily provide "the best" facilities for the boater but rather the level of facility which will keep his expenses in line with the rental income he can reasonably expect to receive.

STORAGE AND PRICING STRATEGIES

Nearly all marinas surveyed charged by slip length or area rather than by length of boat docked in the slip. This assures that the marina secures a full return on its slips irrespective of the size of the boat which uses it. This policy has been accepted and, indeed, some inexperienced boaters prefer to rent a larger slip than their boat requires because it provides

them with more space for maneuvering in and out of the slip.

In recent years there has been both an increase in the length of boats and a significant increase in beam. Previously adequate slips of 14 to 15 feet width are now required to be 16 to 17 feet wide. Effectively, this means that fewer boats can be moored in the available space so that return from slip rentals based on a slip length criterion is reduced. To meet this development some marinas now price slip rentals on a square foot basis rather than a length basis. For example, two of the largest marinas in the Clear Lake area now charge 11 cents per square foot per month.

Slip rentals in Texas are among the lowest in the nation. They are, for example, about 70 percent lower than those in California, but in Texas no blasting is involved, land costs are lower, and there are no tidal problems or floating docks. Thus capital development costs are significantly lower than elsewhere and direct comparison invalid.

Marina slip rentals are influenced by the length of the season and hence the amount of use which the owner is able to obtain from his boat. Length of boating season is usually considered to be that period of time that affords reasonable temperatures to make boat use reasonably comfortable. This period probably ranges from 6 months in the Port Arthur area in the north to year round use at Port Isabel in the south. However, 83 percent of all boaters in Texas use their boats at least occasionally for recreational fishing.[3] The onshore south-east winds effectively limit sport fishing, and consequently a large proportion of boaters, to a maximum of 100 days per year. Outside this period wave action is too substantial for good fishing. In the large shallow bays along the coast, a 15 m.p.h. wind, which is fairly frequent, generates 3-foot waves, while in the Gulf this windspeed generates waves in excess of 7 feet. The 1974

season was particularly windy and some operators believed that the effective boating season was less than 50 days. These same winds which adversely affect the fisherman serve to encourage the sailboater. The sailing season extends beyond these limits, encouraged by the organization of a year-round racing program. Further, the large sailboats docked in wet slips are not inhibited by the wave sizes generated in the bays.

In addition to influencing the level of slip rentals, the limited season influences other revenue centers of marina operations. Every marina has a different emphasis, offering a differing range of services and equipment so that generalizations on profit centers are of limited value. However, as a 'rule of thumb', for the marina to be a viable operation the income from slip rentals should be sufficient to meet debt charges, insurance, labor overheads associated with slips, and power and utility costs, that is, the major investment costs of the marina. The profit components of the marina should be repairs, services and in the larger marinas revenues from boat sales. Each extra facility gives the marina an additional opportunity for increasing income and each facility should itself generate a profit so that the marina as a whole is not supporting a loss leader. If the season is short owing to the weather, boaters will not generate business for the marina in terms of services and repairs.

Generally there are two philosophies towards achieving financial success. The first suggests that the key to success lies not in providing slip space for larger boats which may never leave the harbor (even though they may pay higher slip rentals), but rather in providing for more smaller boats. This latter policy should mean that a greater number of boats leave the marina and thus generate more repairs and services trade. The second philosophy is

antithetical, advocating that slip rentals are much more lucrative as the boat size increases because the cost of the last 20 to 30 feet of catwalk is substantially less than the first 20 to 30 feet. Further, large boats carry more equipment and are far more difficult for the owner to paint and repair himself thus providing business to the marina.

If a facility could sustain the same volume of boats through its services and repairs without providing wet slips, this would probably be an optimum arrangement. The facility would then be providing only the profitable repairs and services components and discarding the high investment, minimum return, wet slip storage areas. Unfortunately for the operator, the boater frequently wants the repairs and services offered at the place where his boat is docked so that in most cases it would not be judicious to separate the two functions.

As indicated earlier, the boom in dry storage has alleviated some of the pressure in recent years for wet slips. There is no doubt that this trend will continue because more people are living in condominiums or apartments away from the coast without facilities for boat storage and there is convenience in not having to trail the boat to and from the home for each time it is used. In addition to logistical reasons, dry storage has a number of intrinsic advantages summarized by one operator's advertisement which states: "No refinishing, no sun fading, no collection growing on the bottom of your boat, no expensive cover to buy, no messy ropes, no dew, frost or blowing rain, no bugs, birds or dust; your boat locked in every night so you can leave life preservers, skis, ropes and personal belongings aboard without worry." Finally, in the case of boats with outboard motors, corrosive electrolysis reaction of the salt water on the motor can be avoided.

The advent of dry storage has assisted the small marina operator since boaters are increasingly reluctant to use launch ramps because salt water corrodes trailer bearings. Thus the boater can use the marina's haul equipment to lift the boat in and out of the water, purchase fuel and services, authorize repair work, and the marina operator is not required to invest in expensive wet slip storage. Investment cost of providing dry storage is only a fraction of wet storage costs. Yet in some areas a covered dry storage space with water and electricity (with facilities for boat, trailer and equipment) rented for $30 per month, the same as a wet slip. The size limitation on boats which can be accommodated by dry storage is determined by the length which can be trailed and the weight which the haul equipment can accommodate. The charge for each lift of a 25-foot boat in and out of the water is generally around $5. The haul equipment to do this job requires an investment of $10,000 and the volume of haul trade of some marinas enable this to be recouped in 2 years.

As a generalization, it is probably true to say that the larger the marina the better, for this enables management costs, administrative overheads and service charges to be offset against a greater number of slips, but the key to profitability is to induce boats, not just to be docked there, but to be used regularly. For example, the typical gulf fisherman leaving with a group of friends on his boat at 5 or 6 a.m. for a full day trip into the Gulf is likely to spend at the marina:

gas	$100.
ice and refershments	25.
bait	40.
tackle and hooks	25.
	$190.

Several marinas had sailboat clubs associated with them who arranged races throughout the year and thus helped to motivate boats to leave the harbor. Few operations studied appeared to consider sponsoring events like fishing tournaments, picnics, or treasure hunts.

Although there are obvious insurance problems the tighter economic situation has caused some marina operators to think more positively of the potential of boat rentals since they anticipate people are likely to consider rental or lease over purchase. One marina studied operates a leasing arrangement whereby a boat is leased to five people with each paying a share of the lease. Each lease holder may reserve the boat in advance with the marina who ensures that its use is equitably allocated. This arrangement has a major advantage over ordinary rental for the shareholder considers the boat is partially his own and therefore takes better care of it.

LOCATION

Even if capital can be raised, the investment justified, and necessary permits obtained, there is an increasing problem in identifying a suitable marina site. This appears extraordinary when it is assessed against the fact that Texas has 2,480 miles of coastal shoreline, but there are a number of constraints which drastically reduce the effective length of shoreline suited to a marina development. The prevailing wind is an on-shore south-easterly. Thus the best marina sites are located on the landward side of promontories or in bays where the south-east wind becomes an off-shore wind and boats are able to venture forth more frequently. Examples of this type of location include all the major centers such as Galveston, Clear Lake, Corpus Christi and Port Arthur. A problem with using some of the large sheltered bays is that in areas without these direct winds the mosquito may

make pleasure boating an uncomfortable proposition.

A further constraint is the need for existing infrastructure and good accessibility since much of the Texas coast is inaccessible. For example, one location surveyed appeared to be an excellent site for a marina, with off-shore winds; relatively inexpensive construction; access to Galveston Bay, and close proximity to the Houston metropolitan area. However, it had no support infrastructure and was not easily accessible.

Marinas located in basins directly abutting the Gulf Intracoastal Waterway (GIWW) suffer from vigorous wave action generated by the wakes of passing commercial boat traffic, resulting in possible damage to boats and piers. To be comfortable and safe, boat slips must be protected from waves and wakes. This means that a breakwater is really necessary. However, high cost of a breakwater is a major deterrent to marina construction because of the capital problems outlined earlier. Similar problems may occur if location is adjacent to a ship channel although these marinas will usually have breakwater protection. This latter location frequently provides a further disadvantage, because passing ships in the ship channel generate silt. The waves retain the silt while they are moving quickly but once they reach the basin and settle, the silt drops to the bed, so that the marina has to be dredged frequently.

The impact of environmental control on marina development is discussed later but the presence of large wetland areas imposes a constraint on marina development. Authorities are reluctant to allow further inroads into wetland areas and are seeking to identify sites where the impact of a marina will be most benign.

Interview results suggest that marinas should be located within 50 miles,

or within a one-hour driving time, of major population areas. While most marina operators could cite examples of users who travelled considerably further, the 50-mile radius appeared to account for 80 to 90 percent of the total demand. These constraints appear to explain the clustering of the existing marinas (clearly apparent on a marina location map). New marinas would be expected to develop as predicted according to these constraints.

At a micro level, the effort to achieve perfect location is not always rewarded. The municipal marina at Port Arthur was constructed adjacent to a number of other attractions. All were directly linked with the downtown center of Port Arthur by a bridge across the Sabine-Neches Ship Channel which separates Pleasure Island from the mainland. The adjacent attractions deteriorated and closed down. The bridge also deteriorated and was demolished. Thus today the marina is isolated from the city of Port Arthur, with no other attractions around it, since the new replacement bridge is located some miles from the previous site.

In contrast, Seabrook Shipyard was originally located adjacent to a minor farm road in a quiet fishing village relatively isolated from Houston. However, the quiet farm road developed into a busy highway and the marina has reaped the benefits of high visibility and public awareness.

One marina located on a peninsula is suffering from severe erosion and over the last 12 years has lost almost 2 acres of the original site to the sea. Under present law the marina cannot reclaim this land from the sea. Bulkheads can only be inserted at the existing shoreline and only land lost behind the bulkheads can be reclaimed. This example emphasizes the importance of considering prevailing wind directions, currents and wave action in marina location.

A constant danger facing any marina sited on the Texas gulf coast, and an important added ingredient to the risk factor from a funding viewpoint, is the threat of hurricane damage. In the past 15 years the area has been subjected to three severe hurricanes which have caused considerable damage. Because of the very high risk, insurance companies are frequently not prepared to make such insurance available, but the federal government does have a program for underwriting hurricane insurance. The Marina Association of Texas does have group insurance policies which further ameliorate the situation but these are restricted to its members. However, even with the lower rates available through the Marina Association of Texas, hurricane insurance is very expensive and for this reason many of the marinas carry only flood insurance rather than full hurricane insurance. Therefore if they are unfortunate enough to be struck by a hurricane and suffer severe damage they may be unable to recover. Operators are frequently eligible for Small Business Administration loans but even at relatively low rates of interest, if the marina has previously had no interest charges as overheads, this added burden may force them out of business.

Location of the marina may have a deterministic influence on the type of boat using the facility. For example, in the Coastal Bend area many Gulf sport fishermen from Corpus Christi prefer to leave their boats at Port Aransas where there is direct access into the Gulf. They can drive to Port Aransas from Corpus Christi in one hour whereas using a boat involves a two and a half hour trip to get out of the Bay and into the Gulf. Similarly, in Galveston Bay, Gulf sport fishermen prefer the immediate Gulf access available from Galveston Yacht Basin to the long journey from the Clear Lake marinas. On the other hand, direct access to the sheltered racing waters

of Galveston Bay provided by the Clear Lake marinas is an important factor in the sailboat emphasis of these marinas.

PHYSICAL PLANNING

A number of marinas are suffering from lack of initial planning foresight. No doubt this reflects the original desire to keep capital costs to a minimum but in the long run it has restricted the marinas' commercial potential. For example, one marina surveyed is seeking to expand its dockage but the basin is 30 feet too narrow to enable an additional two rows of 20 slips to be constructed. Only one row will be added and the cost is likely to be 70 percent of what the cost of doing two rows would have been. Some marinas have not been able to provide for the trend towards larger boats because the size of slips available is limited to 20-25 feet owing to the narrowness of the marina basin. Boats of this size can now also be kept in dry storage so that these marinas are in direct competition with dry storage operators, whereas other marinas with the space capacity have increased their slip lengths and thus avoided this competition.

Similarly, almost every operator surveyed complained that the land space available to support their marina operation was inadequate. Again, initial capital investment was probably the reason. However, the increase in storage accommodation and the greater throughput volume of boats has led to a greater demand for services, repairs and car parking space. All this usually has to be done on the original real estate acreage so that its productivity has been increased and hence the overall efficiency and viability of the operation has been enhanced. Although up to this point this enforced, rather than induced, productivity has made a significant contribution to marina viability, only limited additional productivity and

efficiency will be possible on this basis.

Lack of space has inhibited, in some cases, the development of auxiliary units such as apartments or restaurants; in other cases they simply have not been considered. Although needed expertise may be beyond that of the average marina operator, the boating atmosphere and environs provides a good opportunity for restaurant development as demonstrated by the success of one small marina restaurant whose gross revenue is $80,000 per year.

Some of the larger marinas have missed an opportunity through marina myopia, that is, the designers did not look any further than the marina. One example of such myopia is a very efficient major facility, conducive to ease of management and control, and appreciated by the boat owners because of excellent dockage facilities, but it is clinical and sterile, with no more atmosphere than a city parking lot. It fails to imaginatively convey atmosphere, and the glamour, attraction, interest and image to which boating areas lend themselves. The marina is one component of a total development; but because of the sterility of its design it does not act as a focus for the development as it could have done, so that the whole development demonstrates a lack of coherence and integration. There are few interesting views available from the marina and providing efficiency has clearly been given priority over generating atmosphere, which is a very valuable and marketable commodity. Certainly, in any resort or residential development where recreational and leisure connotations are a major selling point, this ingredient of atmosphere which a marina can offer is of paramount importance. It is really a case of "selling the sizzle as well as the steak", for it is frequently the 'sizzle' rather than the 'steak' which attracts the customer.

Major cost savings can be made by careful cost analysis at the outset.

A current example is probably the continued development of covered slips which are indigenous to the South and rarely found on the Atlantic or Pacific Coasts. The cost of developing covered slips is clearly substantially greater than that incurred for open slips. The primary reason for constructing them in the past was to prevent the hot sun from warping wooden boats. Today, however, fiberglass has substantially replaced wood. Covered slips are still favored by the boater because they enable the boat to be kept more easily in showroom condition, free from any tarnishing, by protecting it from direct contact with the elements. They offer some protection for the boater from the direct heat of the sun in the summer; and they prevent metal parts of the boat from becoming very hot to the touch. All of these are enjoyable extras for the boater. However, the covered slip is no longer a necessity. In addition, the covered slip has reduced flexibility for it cannot be used for sailboats. Whereas a movement towards sailboats away from powerboats was identified by most operators, at least one large marina has a waiting list for sailing boat slips and twenty-five covered powerboat slips empty. Some marinas have removed some covers from slips to make them available for use by sailboats, but this is done reluctantly because it clearly reduces the asset value of the slip. In today's financial climate the development cost of covered slips cannot be recovered and it seems unlikely that many of them will be developed in the future.

ENVIRONMENTAL CONTROLS

In recent years it has been increasingly difficult for marina operators to secure the necessary permits to initiate construction primarily because of the concern over destruction of wetlands. Wetlands must be recognized as serving important functions relating to fish, wildlife, and recreation.

As environmentally vital areas, they constitute a productive and valuable public resource the unnecessary destruction of which is clearly contrary to the public interest.

On the Texas coast it would appear that depending on precise requirements, either one or two permit authorizations are required before an operator can proceed with marina construction. Permits must be secured from the U.S. Army Corps of Engineers and in some cases from the Texas School Land Board.

The Corps of Engineers has jurisdiction over navigable waterways and is responsible for preserving and protecting those waters, protecting shorelines from erosion; dredging channels, basins and slips; and disposing of the dredged material. Its permit decision must consider all relevant factors, including the effect of the proposed work on navigation, fish and wildlife, conservation, pollution, aesthetics, ecology and the general public interest. The Corps also considers the structural stability of the proposed structure and its ability to withstand wave action and other forces.

When the Corps receives a permit application it is required to publicize it and solicit comment from all interested parties including non-governmental bodies. In Texas approximately 15 federal and state agencies are informed by the Corps of a permit application. While appraisal of the effect the proposed marina will have on an area of wetlands is co-ordinated by the Corps, major inputs are requested from U.S. Fish and Wildlife Service, National Marine Fisheries Service, Environmental Protection Agency, Soil Conservation Service, and Texas Parks and Wildlife Department. The U.S. Fish and Wildlife Service, in accordance with the provisions of the Fish and Wildlife Co-ordination Act (48 Stat. 401 as amended 16 U.S.C. 661 et seq.),

must consider the impact of the marina on fish and wildlife habitats, and frequently represents the interests of the other federal agencies. Under the National Environmental Policy Act of 1969, it is likely that all new marina projects will be required to submit an Environmental Impact Report before they can be approved for construction since a federal permit from the Corps of Engineers is involved and the Corps will have to prepare an Environmental Impact Statement. Under Texas State legislation similar approval has to be gained from the Texas Parks and Wildlife Department.

The Corps is required to consider all objections which are brought and to request the applicant to meet and resolve these objections with the objectors. If they are submitted by individuals or non-statutory groups or organizations, it is possible that after due consideration the Corps may consider the objections to be invalid, insignificant, or outweighed by the benefits of the project. However, in cases where the structure is unobjectionable to the Corps but where other federal or state authorities decline to give their consent to the work, it is not usual for the Corps of Engineers to issue a permit. In such cases the applicant is usually informed that the structure is unobjectionable and that the permit would be issued were the consent of the other authorities also forthcoming. The applicant then has to meet with the dissenting agencies to explore whether a compromise position can be negotiated. If the applicant is successful in these negotiations a new permit application should elicit the necessary permit. A permit granted by the Corps has to be activated within three years after which time a new application has to be submitted and the process repeated with the possible requirement of revising the Environmental Impact Statement as appropriate.

If a permit is granted by the Corps, the work may proceed unless the

structure is to be on state land. If this is the case, a permit application must be made to the Texas School Land Board. No such permit is required for structures or excavations located wholly on private land, even though covered by public waters.

Under the Submerged Lands Act (Stat. U.S. May 22, 1953, ch. 65, Title II 7, 67 Stat. 32) Texas and the Gulf Coast of Florida were granted a three-league belt of submerged lands (10.35 miles) while other coastal states were given a three-mile belt of submerged land. In Texas these lands have been dedicated to sustain the permanent school fund and the School Land Board is responsible for administering them. The Board is assisted by the planning division and other staff of the General Land Office which make specific management recommendations. The Board consists of three Commissioners, one of whom is the Commissioner of the General Land Office.

A marina proposal involving public submerged land is considered by the planning division of the General Land Office in terms of its physical compatibility, public desirability, and adherence to the framework of the Coastal Public Lands Management Act (Art. 5415e-1 - Vernon's Annotated Revised Civil Statutes of the State of Texas). Even though the Corps of Engineers may have carefully considered environmental impact in consultation with other federal agencies and issued a permit, there is no requirement that the General Land Office planning division must concur with their decision. They may review the same environmental impact evidence and arrive at different conclusions. The application is also considered by the leasing division of the General Land Office which negotiates the length, terms and conditions of a lease with the developer. Both branches make independent recommendations, which may conflict, to the School Land Board Commissioners who must rule on the application.

Dredging operations create totally new wildlife habitats from an original habitat. Before such changes in topography or bathymetry are permitted, it is desirable to demonstrate that changes in overall biological productivity would be minimal or that mitigating measures could be introduced to create equivalent wildlife habitats. Before making recommendations to the Corps, the U.S. Fish and Wildlife Service and other federal agencies frequently request the developer to provide evidence that the dredging program will not destroy valuable and irreplaceable wildlife habitat.

This policy reflects growing awareness of, and concern for, environmental issues which have arisen in recent years, and the increased pressure on developers to recognize and resolve them. In order to develop marinas, developers are effectively required to make substantial additional investment to provide compensatory habitat and to modify structures to accommodate fish and wildlife requirements. While these represent positive environmental gains, there are also negative repercussions.

One marina developer has been trying to secure the necessary permits for one and a half years and, having recently secured a permit from the Corps, is now at the final stage with an answer due as to whether his application to the School Land Board is approved. The cost of producing all the information requested for this proposed 400-slip marina is estimated by the developer at $40,000. During the period of delay the effective development cost of the venture probably increased fifty percent. The return on investment of a marina is mediocre at best and these additional costs must serve to discourage other potential marina developers.

To surmount all of the other problems which the potential marina developer must face, only to be subjected to long delays through complex inter-

agency investigations and continual agency discouragement is unfortunate in view of the existence of a supply shortfall. The agencies have a responsibility to disseminate information and positive developmental guidelines to potential marina developers to ensure that the developer does not incur abortive cost in pursuing unacceptable options. They have a further responsibility to avoid delay and give the developer a rapid response to a permit request.

The permit process as now constituted could not be pursued by the small marina developer since he is unlikely to have either the financial resources or the mental stamina to pursue such a long, tedious and hazardous route. Without a rationalization of the process, establishment of better communication channels, and positive agency encouragement it seems unlikely that there will be any further significant marina development along the Texas coast.

The marine recreation industry, in general, and the boater, particularly, appreciate the importance of wetlands, for 83 percent of all boaters in Texas use their boats at least occasionally for recreational fishing.[3] They generally recognize that erosion of wetlands leads to reduction of fishing quality. Further, almost all of the commercial fisheries landings along the Gulf Coast of both finfish and shellfish are of wetlands-dependent species.[4] Thus wetlands are a principal source of organic food production, and their destruction is a matter of concern. At the same time they are frequently the only remaining tracts of undeveloped land along the Texas coast that are within a reasonable distance of the major urban-suburban regions. Giannio and Wang suggest that the maintenance of organic food production and development of marinas are not incompatible:

> "although marshes should be preserved wherever possible, a small boat marina could be constructed in marsh areas to be compatible with marsh environment."[5]

Their suggestion is supported by the work of Nixon, et al. [6], who concluded after their experimental work in Rhode Island that "in terms of delivery of food, the marshes and marinas may be compatible systems".

After identifying the major possible impacts of marinas on wetlands, Giannio and Wang[7] stated that the major impact would be in the areas of biological production and water quality control. If these could be simulated then a marina would be a viable usage for marsh development. They suggest two methods of matching the biological production of a marsh in a marina development:

> "The first method requires that dredge spoil from marina construction be placed in estuarine waters in such a way that a new marsh re-establishes itself on the organically rich spoil. The second method requires tailoring the marina environment to make it attractive to biological production by fouling communities, an alternative to marsh grass as a source of food. The marina is made attractive by flushing out pollutants with each tidal cycle, maintaining high water quality by waste collection, and providing a surface on which the organisms can prosper and multiply."

Explicitly, the principles which Giannio and Wang advocate to maximize biological production in a marina are:

- flush the marina to promote water circulation which cycles nutrients and prevents eutrophication
- use dredge spoils from the marsh to establish new productive marshes elsewhere
- provide contact area within the marina so fouling communities, an organic food source, can prosper and multiply
- control water quality so that estuarine species can thrive in the marina
- provide an equal amount of organic food in the marina to make up for the loss of food from displaced marshland.[8]

All agree that a policy to conserve wetlands is necessary, but there is a need for a balanced approach. Wetlands are a prime fundamental resource

for the fishing industry, but marinas may be similarly considered a basic resource whose development is necessary for the continued economic health of the boating industry. The boating industry is likely to be impaired if no further marinas are developed just as the fishing industry is likely to be impaired by erosion of wetlands. In addition to the previously mentioned design considerations, there is a need to bring together the criteria for marina siting using wetland productivity mapping efforts that are underway, to determine marina development zones and sites where impacts will be most benign. In fact, a new locational constraint (environmental impact) is being added to an already complex mix.

LABOR CONSTRAINTS

Marinas employing labor face at least two constrictions which restrain them from realizing their maximum economic potential. The first is the difficulty of recruiting craftsmen of the necessary caliber for skilled repair work. For example, most of the few remaining shipwrights are elderly men and few marinas are able to attract, train, and retain younger men in this field. The basic problem is that they are not able to pay wages sufficiently attractive to younger trainees. At the moment no marinas face the problem of not being able to fill available jobs but several indicated that this was a likely problem in coming years as their existing craftsmen retired.

The second and more immediate constraint arises out of the Longshoremens' and Harbor Workers' Compensation Act Amendments of 1972, which became law in October, 1972. Under the terms of this Act a worker when injured receives 66 2/3 percent of his average weekly wage. The concern arose because longshoremen have an injury frequency four times the average for manufacturing operations. This level of benefit is substantially greater than that in other

occupations and the high level of benefits means that instead of the 6 percent insurance premiums normally paid, employers have to pay 22 percent.

There is some confusion as to whether this Act is being interpreted to include marinas. The confusion arises out of an initial definition in the Act which states, "The term 'employee'means any person engaged in maritime employment including any longshoreman or other person engaged in longshoring operations, and any harborworker including a ship repairman, shipbuilder, and shipbreaker, but such term does not include a master or member of a crew of any vessel, or any person engaged by the master to load or unload or repair any small vessel under eighteen tons net."

While it was not intended that the Act should apply to pleasure boat marinas, a number of insurance companies have advised that under its present wording at least some marina employees are entitled to claim benefits under the Act. This Act was a contributing factor to at least one major marina leasing out all of its services, because lessees do not have to pay longshoreman insurance (since they are not marina operators). With over 70 people employed at this marina, this higher insurance requirement could represent the difference between viability and bankruptcy.

In a marina with a full-range of services full-time employees are required, because maximum use of slips and storage areas occurs in the summer while there is a maximum demand for boat repairs in the winter. However, the labor force must be flexible and prepared to turn its hand to many tasks for this to be successful.

MANAGEMENT CONSTRAINTS

Many of the marinas on the Texas gulf coast are constrained by the quality of the management operating them. One marina surveyed was developed by

businessmen who were avid boaters. In an interview in the local press one of the principals stated "This is the largest privately owned yachting center in the world". Later in the interview he went on to say "We take turns managing the marina in our 'off' hours." Not surprisingly, that marina lost large sums of money in its first years of operation and was saved from bankruptcy only because another investor bought into the venture and brought with him an extended credit line. He also invested in professional management and the transformation has been rapid. In 1973, it lost $60,000, while in 1974 it returned a small profit of $7000.

In another venture a marina was bought in 1970 by a senior executive with a major company. He had been a boat owner for many years and had decided to opt for a preferred life style. In 1970 the gross volume of business was $49,000. In his first year as owner the gross was increased to $95,000; in year two, $130,000; in years three and four, $160,000, and this probably represents the ceiling figure, in real terms, which the business can hope to generate within the limitations of its present size constraints. The marina now returns an operational profit which is approximately equal to the gross volume under the previous management and this profit is used to retire the debt and to pay the owner's own salary. This success story could be repeated elsewhere.

As emphasized earlier, the small marina does not yield sufficient profit to make it a viable proposition for an investor and, as a consequence, it must be owner-operated. The owner thus requires two distinct and unrelated skills to maximize the potential of the marina. First, he needs to be knowledgeable and skilled in the practical maintenance and repair areas of both the marina and the boats. Second, he needs to be a skilled entrepreneur and business-

man with ability to identify and monitor cost and profit centers; and to evaluate fully the needs of his market.

To find both these skills in one man is unusual and hence the business is unlikely to realize its optimum profit levels. In the majority of cases, operators are very capable, experienced, pragmatic men with strong practical backgrounds but without the business experience and training to complement the practical background. By nature, the marina operator is self-sufficient and independent. Any offer to teach this additional expertise in traditional form is likely to be resisted. However, an advisory service utilizing people with a proven record of success in the marina field would be valuable in increasing the potential of many operations.

The generic term 'marinas' means many things to many people. Frequently, operators do not segment their market or define carefully the equipment and services which they specifically require, so that investment is made in assets which are under-utilized or not optimum for the market requirements and hence do not maximize profit. Some boaters conceive their boat as a second home which never leaves the marina basin; some are interested only in sailboats; some tie up smaller boats which are used solely for bay fishing; some larger boats are used only for Gulf fishing; some see a marina as a place to haul in and service a boat, with its wet storage capacity being irrelevant. Each of these segments of the boating market make different demands on the type of marina location, design, and services they require. To maximize profit the marina must define its market carefully. In time, like tends to gravitate to like, so that, for example, certain marinas specialize in large yachts and others in relatively small bay-fishing craft. The market gradually segments itself. To attempt to meet the varying demands of all segments of the

market, unless the marina is sufficiently large to handle a large throughput volume of each segment, is likely to lead to a failure to optimize return on investment.

The validity of this policy is endorsed by the attitude of management towards minority market segments in the marina. The smaller segments require as much service and attention per boat as the majority but they are frequently conceived as being less valuable to the marina than the majority market segments to which its services are oriented. Thus the manager of a large, predominantly powerboat marina says, "Sailboats are a nuisance in the marina. The slip rentals they yield are low and they spend no money. Because the wind is free they seem to think everything else should be free." However, the manager of a large, primarily sailboat marina says, "There is a waiting list for sailboats while there are 25 motorboat stalls empty. We encourage sailboats because they are a better credit risk than motorboaters." Thus, the favored end of this polarization would seem to be dependent upon the primary market segment for which the marina provides.

It is possible that careful selection of the market segment may also serve to reduce the investment risk factor in a marina. For example, catering to a bay fisherman clientele to the exclusion of other segments, may provide a hedge against the impact of a recession. To many of these people fishing is not viewed as a discretionary activity but rather as an integral part of their life-style, which will receive a high priority in any personal budget re-allocation as necessitated by a recession. This point was illustrated in a recent major survey, published in 1974, by the U.S. Fish and Wildlife Service, in which a saltwater fishing experience was valued at an average of $58.80 per day. Similarly, a marina specializing in very large boats may

not be prone to the full impact of a recession. If a boater has such a major capital investment in the boat, the amount needed to operate it is relatively small so that a recession is likely to affect this high income market segment the least.

Additional training opportunities aimed at broadening the range of the manager's personal skills could enable the marina operator to operate all necessary services rather than letting them out on concession. Concession operations must by definition receive some revenue which would otherwise come to the marina. Although in some cases they are encouraged because the marina is unable to raise the investment capital for the added service a more usual reason is because they have particular expertise which is not available to the operator. If he can gain that expertise and keep all the resulting revenues then his operation must become more profitable. For a marina to lease out components means effectively that many thousands of dollars are going out of the marina in profit to the concessionaires even though frequently the latter paid nothing towards the development costs, took none of the initial risks of development, and do nothing to attract their customers. The marina has to promote all its concessionaires for if they do not flourish, it loses a source of revenue. Clearly this is not an easy task but just as clearly the potential stakes, given the marginal profit levels of a marina, are high. Leasing also involves a loss of management control. A boat owner who is compelled to use the marina's repair service because outside mechanics are not permitted and who receives poor service, has no redress because the marina has no effective control over the lessee.

A final management constraint is the dichotomy which traditionally exists between marina operator and boat owner. The boat owner often feels he is

being exploited because of steep increases in slip rentals while the marina operator recognizes that slip rentals are in fact too low to reflect the growing levels of interest and overhead that he has to meet and is constantly seeking to increase rental rates. This dichotomy at times generates an unfortunate atmosphere of mutual distrust. Much of this lack of understanding of perspective probably arose originally from the yacht club tradition where members paid subscriptions adequate to meet operating overheads and did not have to meet additional costs of the investment charges, administrative overheads and profit margins of the commercial marina. The impact of this tradition has never really been broken as, over the years, many boaters have been accustomed to paying low rentals.

ROLE OF PUBLIC AGENCIES

At present, it is clear that commercial enterprise is unlikely to develop further marina facilities on the Texas coast. The obvious solution is for public agencies to become more involved in marina provision, but there is a danger that they will undercut the private marina. The public agency has an important advantage in that municipal bonds can be issued at 6 to 7 percent while private enterprise capital for a marina is likely to cost around 14 or 15 percent. In addition, a public agency is likely to be better able to secure some form of contributory assistance from a higher level of government than a private or commercial developer, for whom direct public assistance is seldom available. These are opportunities, but there is a danger that they could create unfair competition between the public and private sector.

One public marina surveyed has made a determined effort not to compete with private enterprise. The marina's pricing structure is assessed by regularly surveying all other charges in the area and selecting a middle range.

It recognizes that to charge less would undercut the private operator making it more difficult for him to survive and the loss of his services would be detrimental to the public interest. On the other hand, to charge more would be contrary to the underlying philosophy of public recreation services.

Nevertheless, private operators are often suspicious of public agency involvement because, in addition to their advantage of less expensive investment charges, they do not have to pay property taxes, which are a substantial operating expense of the commercial operator, nor do they have to show a commercial return on their investment, enabling them to operate with lower pricing structures. Without exception, the slip rates charged by the public agencies are all towards the lower end of the continuum. The lowest rates encountered were at a public facility where slip rentals are charged at 1 cent per foot per day or $9 per month for a 30-foot boat. The rates are so low that the marina has fallen into a state of disrepair because slip rental revenues were inadequate to sustain maintenance. These inordinately low charges are discouraging to any potential commercial operator.

Public agencies have a further inherent advantage that becomes apparent in the event of hurricane damage and is illustrated by events at one public marina surveyed. By 1970, the marina basin was showing distinct signs of deterioration. In that year, Hurricane Celia completely demolished the harbor and, as a governmental entity, a federal government grant of $100,000 was claimed which was equal to the replacement value of damage committed by the hurricane. Such federal assistance was not available to a private marina in the same area that was damaged by the same storm. Its aid was confined to a loan of $200,000 from the Small Business Administration which had to be repaid with interest.

The acceptable compromise which would remove the unfair competition ele-

ment as much as possible but secure further marina development, would appear to be that public agencies should be encouraged to develop marinas, but then lease them to private operators with private operators being involved in the development process. This brings private enterprise motivation and managerial expertise together with public sector low interest capital charges. The lease should be fixed at a level which enables the public agency to repay the debt charges incurred. Without this "pump-priming" by public agencies there can be little significant marina development in the future. Even if there is a will to "pump-prime", practical implementation will be limited simply because the amount of shoreline available for construction of public recreation facilities, such as marinas, along the Texas coast is limited. Nationally, the 1962 survey by Outdoor Recreation Resources Review Commission found that only 4 percent of the nation's shoreline suitable for recreation pursuits was actually accessible for public recreation use. There is certainly less accessible shoreline today.

ECONOMIC FACTORS

Although the data base of this study is limited for an economic impact assessment (this study was not primarily concerned with collecting quantitative financial data), it provided an opportunity to attempt a micro-approach to economic impact by aggregating field work data.

In 1974, Ingram[9] completed an economic impact study of recreation and tourism within the state, sampling all available public and private sector primary data to determine the annual cash flow to which the Texas Input-Output Model exponential multipliers were applied. In the present investigation 1) number of people employed, 2) wages and salaries, and 3) gross volume of business of marinas have been determined. This study differs

from that of Ingram in that data is limited to marinas in contiguous counties along the Texas coast. Each of these three measures is used very tentatively and with some reluctance for it relies heavily on extrapolating and aggregating from a narrow sample to the whole population. Error margin is likely to be substantial. Further, it is recognized that these three measures are not necessarily the most appropriate indices to measure economic impact, but, with the data available, they are the only useful indices which could be derived at this time. The results and conclusions drawn from this analysis, therefore, should be treated with great caution.

JOB IMPACT

Before interpreting field-work material, information published by the U.S. Bureau of Census in their publication County Business Patterns was considered. While this data has been used in other studies, it is considered inappropriate and of limited value because of the form in which it is collected and presented. Marinas form part of category 4469 as indicated in the 1967 S.I.C. manual which is entitled "Water Transportation Sources Not Elsewhere Classified". The 19 industries which comprise the definition of this category are listed below:

Boat hiring (B)

Boat livery, except pleasure (B)

Boat rental, commercial (B)

Boat yards, storage and incidental repair (C)

Boat houses, commercial (C)

Cargo salvaging from distressed vessels (A)

Marinas (C)

Dismantling ships (C)

Marine salvaging (A)

Oil spill clean-up (A)

Steamship leasing (A)

Chartering of commercial boats (B)

Marine surveyors except cargo (B)

Marine basins, renting and operating (C)

Marine wrecking: ships for scrap (A)

Ship registers: survey and classification of ships and marine equipment (B)

Marine wrecking: salvaging from sunken craft removing underwater hazards (A)

Piloting vessels in and out of harbors (A)

Yacht basins, operation of (C)

Because it is too inclusive, this classification is of little value in its present form. To improve its usefulness it is suggested that it be sub-divided into three categories. Each of the component industries in the above list has been assigned a letter in parenthesis suggesting the appropriate category to which it could be allocated. The three suggested categories are:

(A) Marine Salvage Operations

(B) Commercial Navigation

(C) Marina Operations

Some redefinition of the 19 component industries may be necessary to define more precisely to which of the three sub-divisions they should most appropriately be assigned.

In its present form, this Standard Industrial Classification is of little value since it describes three diverse and unrelated segments of water transportation. It appears they have been aggregated not because of any relationship between them but rather because they do not fit into any of the other water transportation categories. However, components do seem to fit into these three sub-divisions. Consideration should be given to submitting a recommendation to the Statistical Policy Division of the Office of Management and Budget to amend category 4469 in the Standard Industrial Classification Manual. This would in no way impair the use of this category for comparison

purposes since the new categories could simply be reaggregated to make the comparison.

One outstanding anomaly in this data appears to be the total number of marinas enumerated. In the 1971 and 1972 County Business Patterns, the total number of reporting units in the U.S.A. in the entire 4469 S.I.C. category was 2,105 and 2,195, respectively.[10] Since many of these will be Marine Salvage and Commercial Navigation operations, the number of marina businesses recorded will be substantially less. However, several national sources have indicated that there are approximately 5000* marina operations in the U.S.A. While owner-operated 'mom and pop' operations with no employees are probably not enumerated, it seems unlikely that this accounts for all the disparity.

Although the published S.I.C. data was of little value, an alternative source of employment data was obtained from the Texas Employment Commission in Austin. The data had been extracted from the original 1973 Bureau of Census data, and showed that in the coastal counties there were 354 employees in the marina industry, employed by 45 marinas. These employees were paid approximately $2.62 million in salaries and wages, or approximately $7,430. per employee. However, the accuracy and value of this data (and presumably that of S.I.C. category 4469 discussed above) is limited in several ways:

1) Employees of concession or tenant businesses who work at the marina are excluded. Thus, for example, at a major facility where there are 70 people employed on the marina, only 7 would be included in

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*For example, in Boat and Motor Dealer (1975) their Statistical and Research Department identified 5950 marinas, boat yards and yacht clubs with waterfront stations in the United States. The estimated breakdown is 4630 marinas and boat yards and 1320 yacht sales.

this enumeration because all others are employed by tenant operators;

2) An employee is defined as any person who pays unemployment insurance. Some marina owners may have this insurance coverage but most probably would not and consequently their employees would not be included in the data;

3) The data enumerates average employees over the year which possibly includes some part-time employees and consequently accounts in part for the relatively low average salary level of the employees.

The consequence of these anomalies is probably to underestimate significantly the number of marina facilities along the Texas gulf coast and the number of people employed by them.

A total of 88 pleasure-boat marinas (dockage areas with over 10 wet slips) were identified on the Texas coast. Case studies resulting from personal interviews which discuss 29 of these marinas have been developed. The number of employees at each of these 29 marinas has been established and this data together with phone calls to other operators has been used as the basis for estimating the work force of the 88 marinas identified. It has been cross-checked where possible with the Texas Employment Commission data discussed above, but generally extrapolation has been based on the number of wet slips in the marina and has followed the pattern suggested by the case studies. Every effort has been made to be conservative in assumptions made to avoid any suggestion of promotional bias. The following assessments of number of people working at pleasure-boat marina operations along the Texas gulf coast are probably underestimated:

Region No.	Description	Estimated Number of People Employed
1	Willacy and Cameron Counties	55
2	Coastal Bend Area	104
3	Calhoun County	18
4	Matagorda County	6
5	Brazoria County	77
6	Galveston Bay Area	333
7	Greater Port Arthur	4
	Texas Gulf Coast Total	597

These estimates will be amended and refined by further survey and case study work to be undertaken in the future.

GROSS VOLUME OF BUSINESS

With a few exceptions which, if included, would distort the distribution, slip rentals along the Texas gulf coast range from $30. per month to $60. per month. More probably fall towards the lower end of the continuum than the higher end. Therefore, the best estimate for slip rental average is probably between $40. and $45.

The percentage volume of turnover received from wet slip rentals will vary according to the range of other services which the marina provides. It is unlikely to be lower than 15 percent while at the other end of the continuum it is unlikely to be higher than 50 percent. Again there may be a few exceptions to this but these are not likely to have a significant impact on the resultant average estimates.

Based on these assumptions, the following estimates of the gross volume of business on the Texas gulf coast have been made:

A. Minimum Estimate

Slip Rental	$30 per month or $360 per year
Total Number of Slips on the Texas Coast	6,000
Annual revenue from wet slip rentals	$2.16 million
Assuming slips represent 50 percent of total turnover then gross volume of business is:	$4.32 million

B. Best Estimate

Slip Rental	$42 per month or $504 per year
Total Number of Slips	6,000
Annual revenue from wet slip rentals	$3.02 million
Assuming slips represent 30 percent of total turnover then gross volume of business is:	$10.1 million

C. Maximum Estimate

Slip Rental	$60 per month or $720 per year
Total Number of Slips	6,000
Annual revenue from wet slip rentals	$4.32 million
Assuming slips represent 15 percent of total turnover then gross volume of business is:	$28.8 million

The estimates reflect only direct spending at the marina and take no account of the spending induced in other marine industries as a result of the presence of the marina.

PERSONAL INCOME

As pointed out previously, data supplied by the Texas Employment Commission suggested that 354 marina employees in 1973 earned approximately $2.6 million, an average of $7430. However, this data excluded owner-operators who probably earn significantly more. In this study it is conservatively estimated that 597 people are employed in the marina industry and since this number includes owner-operators the average salary figure is likely to be significantly higher so that an arbitrary average of $10,000 has been assumed for these additional employees:

354 employed at a total salary of	$2.6 million
243 employed at $10,000	$2.4 million
Estimate of total Personal Income derived from Texas Gulf Coast marinas	$5.0 million

This is significantly greater than the minimum estimate of gross volume of business and suggests that (B) the Best Gross Volume Estimate may be too low rather than too high.

For these estimates to meaningfully reflect economic impact, some indication of the extent to which monies recirculated through the local economy is required but this is beyond the scope of this study. Studies done elsewhere suggest that the approximate multiplier is likely to be around 3[11], but clearly this varies widely from one situation to another. Therefore, in the absence of corroborating evidence, it is unreasonable to interpolate this statistic into the context of Texas gulf coast data. However, as Ingram[12] points out:

> "The Texas coastal zone has a broad, well-structured economic base which has been firmly founded in many natural resources supplying agriculture, manufacturing and mining; therefore, allowing the recreation and tourism industry dollar to stay within the area longer, actually generat-

> ing a much greater impact than in an area lacking such diversity."

Further, the marinas along the Texas coast are almost exclusively local businesses so that little investment income leaves the area and the multiplier is likely to be reasonably high.

FURTHER ACTION

As was noted earlier the problem of pressure of demand for boat slips has been around for the last 50 years. As more slips are built, more marinas developed, and dilapidated marinas are renovated, so too do more people become aware of the potential of boating. The facilities created generate a fresh wave of latent demand which, within a short time, will quickly fill the new facilities. This process has been demonstrated in at least one marina surveyed, where, each time new slips had been added, further demand had been generated because of the increased interest, activity, scope, and size of the marina facility.

Thus expansion or improvement of the existing supply base is likely to encourage more boaters to participate. The continuing expansion, particularly of the Houston metropolitan area which brings existing boaters from elsewhere to the region, and the addition of new boaters to the ranks from the existing populace, all suggest the need for a developing facility supply.

A general policy is needed to support efforts to secure the supply base, but specifically further investigation is needed to:

i) identify and articulate more precisely the problems facing marinas;

ii) disseminate that information so that all decision-makers in the financial, public agency, or political arenas are aware of the importance of marinas as a primary resource and the significance of restricting their supply base;

iii) identify possible solutions to these problems;

iv) identify the economic impact of marinas.

All other major coastal zone users outside recreation have made efforts to produce this information and in order to compete with them the marina business must be able to show similar support data.

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