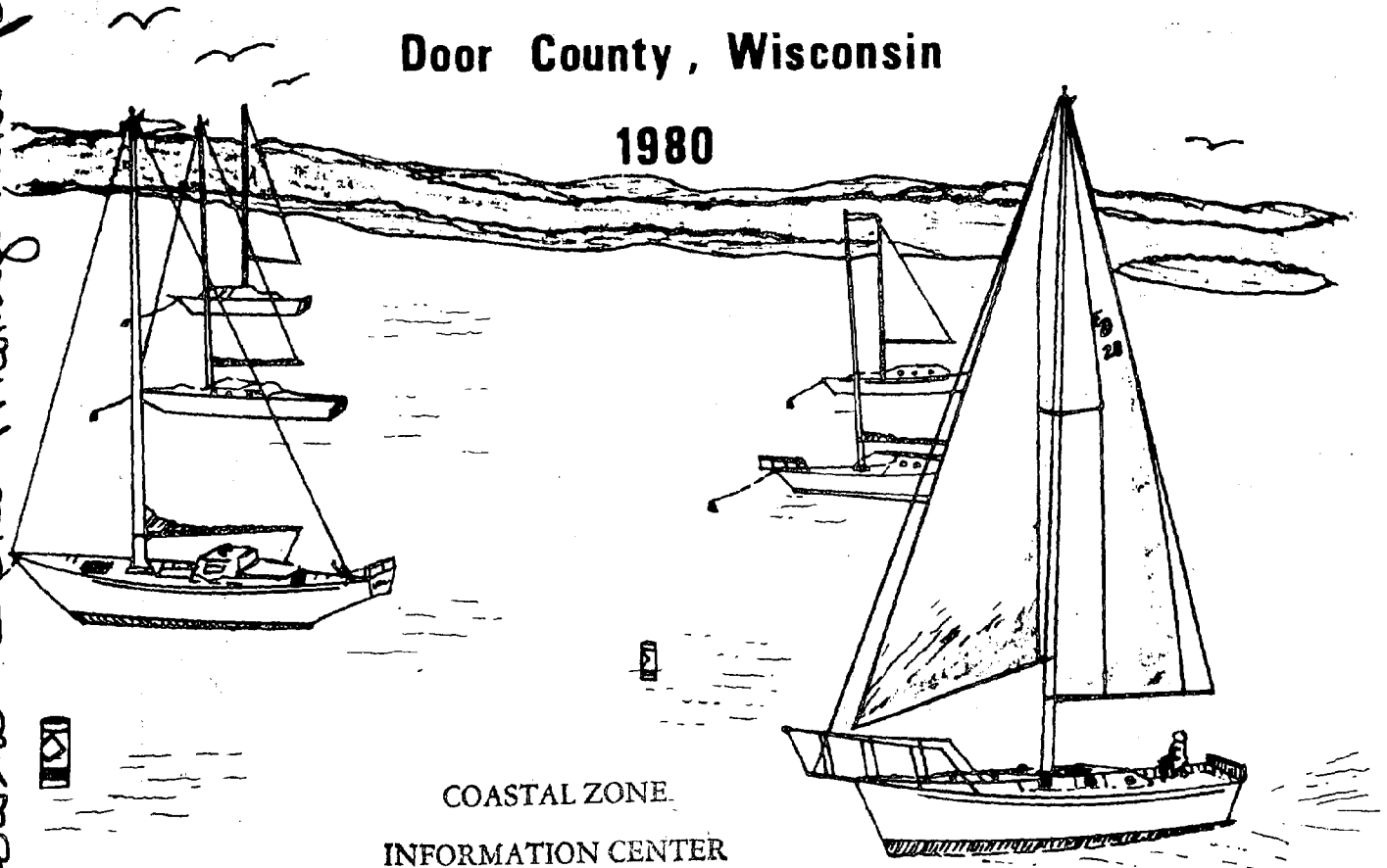


FISH CREEK HARBOR

Management Plan for FISH CREEK HARBOR

Door County, Wisconsin

1980



COASTAL ZONE
INFORMATION CENTER

TC
225
.G53
M36
1980

PREPARED BY

Foth & Van Dyke and Associates, Inc.
CONSULTING ENGINEERS - Green Bay, Wisconsin

Wisconsin Coastal Zone Management Program

MANAGEMENT PLAN
FOR
FISH CREEK HARBOR

Town of Gibraltar
Door County, Wisconsin

1980

Town Board

Mr. Charles Pelletier, Chairman
Mr. Joseph Biber, Supervisor
Mr. Norman Jarman, Supervisor
Mr. Thomas Kelly, Clerk

Harbor Commission

Mr. Mike Gray
Mr. Jeff Lundh
Mr. Ducan Thorp
Mr. Stewart Woerfel
Mr. Lynn Hanson, Dockmaster

Funding for this study was made possible through a grant from the State of Wisconsin, Department of Administration, Office of State Planning and Energy and the Coastal Zone Management Act of 1972, as amended, administered by the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration.

Prepared By

FOTH & VAN DYKE and Associates, Inc.
Green Bay, Wisconsin
March, 1980

TC225.G53M36 1980

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INTRODUCTION

Overview

The harbor of Fish Creek, Wisconsin is located within one of the numerous naturally occurring small bays which dot Door County's Lake Michigan and Bay of Green Bay shoreline. Situated on the Green Bay side of the Door Peninsula, the Fish Creek area, as with most of Door county, is a highly popular summer vacationland.

A notable factor in this popularity has been the attraction of the unique water resource offered this area by Lake Michigan. Boater recreation, both power and sail, is enjoyed by thousands of state and non-state vacationers each summer.

Being within the focal point of these boater activities, the Fish Creek harbor experiences very high levels of recreational boater use. This typically includes use from craft regularly docking in the harbor during summer months as well as area and transient boaters using the harbor to re-fuel, use sanitary facilities or patronize the commercial establishments within the community of Fish Creek.

This, compounded with equally heavy use of shore facilities, including the public bathing beach, public boat ramp, and other public facilities, has indicated to Town of Gibraltar officials and residents a growing need for greater management efforts within the harbor and associated shore area.

Concerns over congestion, safety and property rights of land owners are some of the factors which have prompted the Town to seek corrective actions to the situation. Also, with many area residents deriving at least a portion of their livelihoods from the recreation industry in the area, the maintenance of a safe enjoyable and continually attractive boating resource is important to the long range economic vitality of the area.

Thus, with the recreational resource the harbor provides as well as its integral role within the local economy, town officials subsequently sought assistance from the Wisconsin Coastal Zone Management Program to develop a management strategy concerning the harbor. Assistance was provided in the form of a financial grant to the Town of Gibraltar. The monies were provided to allow further study of the problem, formulation of a management approach to the areas of concern and development of implementation efforts for the maintenance and further enhancement of the Fish Creek harbor and associated resources.

With this broad goal in mind, the Town of Gibraltar selected a professional consultant to assist in the formulation of a harbor plan.

Begun in 1979 and completed in 1980, this document and specifically the maps, illustrations and narrative which follow represents a significant portion of this effort.

Purpose and Scope of the Plan

A generalized statement on the purpose of this plan could be summarized as the "Formulation of a management strategy for the best use of the harbor and associated shore facilities at Fish Creek". However to accomplish a relatively broad goal such as this, a generally thorough analysis of the character of the resource and the problems and potential problems is required. Also upon formulating such a plan techniques of implementation are typically required to bring plan recommendations into reality. This may consist of efforts including public awareness and education, enactment of a local ordinance regulating such use or possible capital improvement efforts which may directly or perhaps indirectly implement plan recommendations.

Of these basic areas of consideration, perhaps central to the reader's understanding of the plan's purpose, is an awareness of the specific problems being experienced in the harbor. The opening remarks within the introductory overview noted the heavy recreational use of the harbor and shore areas at Fish Creek.

However one particular type of activity, namely mooring of vessels within the harbor, has been a principal concern. The number of boats mooring each summer along with the immediate outlook of sailboat useage has steadily added to the importance of appropriate action.

Problems associated with improper or unsafe placement of mooring anchors in the harbor, disregard for mooring ownership, safe navigation to and from mooring areas and problems associated with use of dinghies to travel between shore and moored boats are the types of concerns the town is seeking to address.

In doing so, a systematic approach to analysis and synthesis is required. Efforts to not only eliminate problems but also enhance existing conditions will be strived for. This includes both the harbor area as well as the immediate shore areas since the two are so integrally connected.

Toward this end, six basic areas of discussion are considered. These include introductory remarks, which this narrative is a portion, existing character of the harbor and immediate shore areas, outlook for future boating at Fish Creek, formulation of a harbor plan, development of implementation tools and finally discussion and recommendations pertinent to legal implications surrounding managment efforts.

Plan Goals

A key consideration in the preparation of any plan study is the identification or redefinement of the goals which reflect the collective values and attitudes held pertinent to the topic of consideration. These goals are intended to represent a collective statement expressing what is felt desirable and worth striving for relative to the scope of study.

These goals are not always easily recognized and different opinions relative to the directions desired may exist. Also, some goals may be foregone values which are often unconsciously thought of.

What is important however is that the goals be identified or in the instance of existing goals, reconfirmed. Such goals then form a basic foundation on which to structure the planning approach.

The following goal statements have been identified:

- Goal: To preserve, protect, develop and enhance the natural resource which is represented by the waters and adjacent lands of the Bay of Fish Creek and Bay of Green Bay.
- Goal: Seek to maintain and enhance the safe, enjoyable and fulfilling experience of recreational boating and associated activities in the Fish Creek Harbor.
- Goal: Promote greater local management capabilities of the harbor resource and seek to promote greater meaningful public education and government coordination over the proper use of the harbor.
- Goal: Further seek to enhance the quality of the living environment around and in proximity of the Fish Creek Harbor.
- Goal: Strive to maintain and promote the economic opportunities afforded by the recreational use of the harbor and surrounding environs.

Such goals form a guidance framework on which plan recommendations can be based. Such goals should not be considered rigid and non-flexible. Goals should be continually re-evaluated and, as appropriate, modified. In turn, such changes in local desires may warrant plan changes to reflect attitude shifts. With the review and subsequent approval of this plan, so should come a final review of goals. With time, periodic review should be made to ensure a continuing appropriate reflection of local feelings.

THE EXISTING CHARACTER OF THE HARBOR

Locational Perspective

The harbor at Fish Creek is located on the western shore of the Door County peninsula. Situated within a small natural bay facing on the much larger Bay of Green Bay, Fish Creek lies some 65 miles northeast of the City of Green Bay and approximately 22 miles northeast of the City of Sturgeon Bay.

Considering the harbor for a moment from a regional standpoint reveals that it is situated in Northeastern Wisconsin, with the harbor encompassed by lands within the Town of Gibraltar. As a civil division within Door County, the Town of Gibraltar is within the eight-county Bay-Lake Region which comprises some 5,325 miles. Plate Number 1, Locational Perspective, shows the town in relation to its geographic setting in the state.

The Bay-Lake Region, as illustrated on the map, had an estimated population for 1979 of 476,485 persons. Of this total, it is estimated that Door County contributed the sixth largest county share within the region with some 24,567 residents.

While Door County is one of the lesser populated county's in the region, these figures only reflect permanent population. Of notable significance to the county are the seasonal or non-permanent populations resulting from use of summer homes and cottages as well as tourists vacationing in the area. This population, at least during summer months, dramatically raises the actual number of persons within Door County.

The community of Fish Creek which adjoins the harbor along its western and southern shorelines has a small residential and commercial sector.

Being an unincorporated settlement within the Town of Gibraltar, the township represents the local governmental unit for the harbor and surrounding shore development.

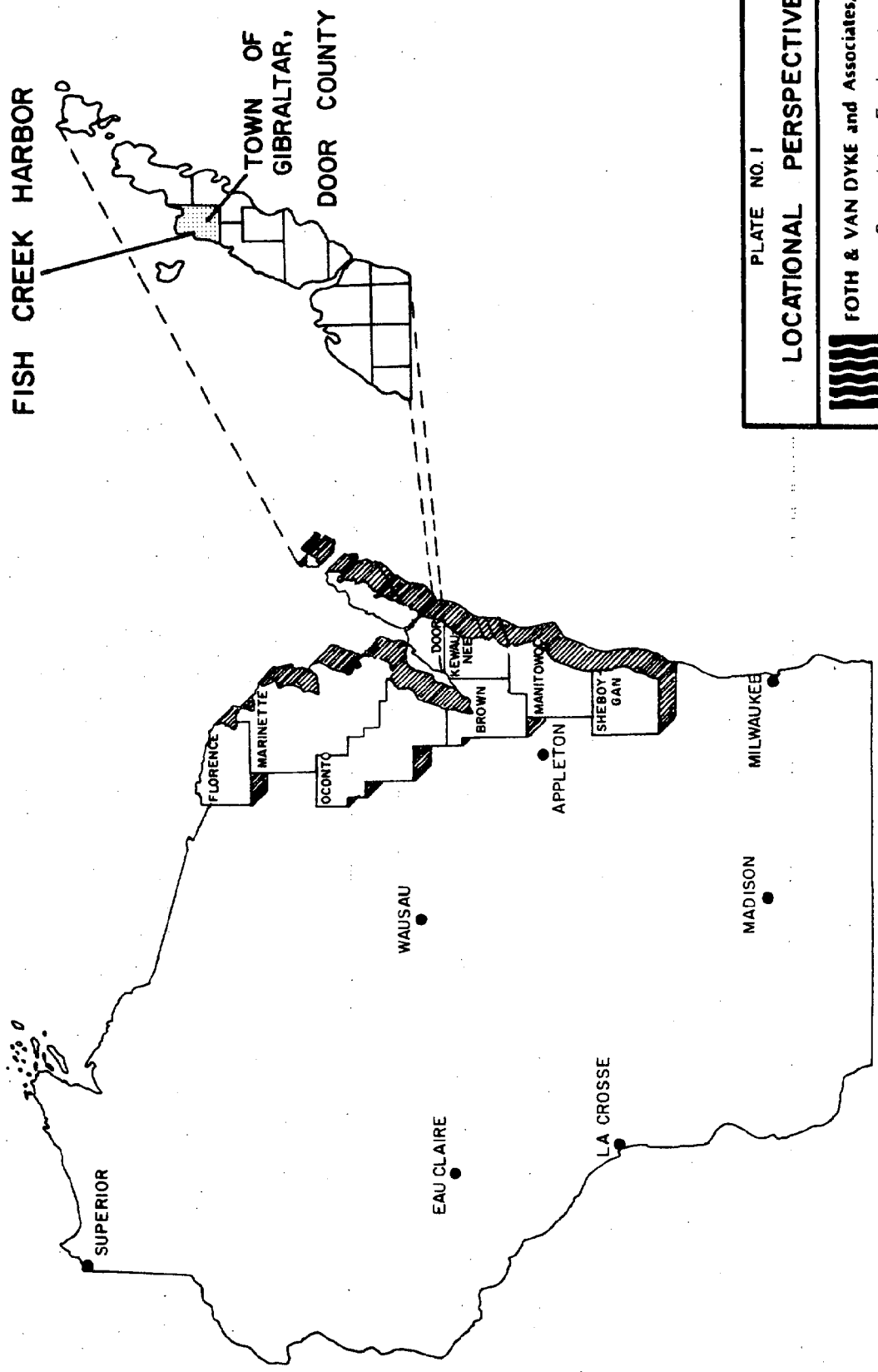


PLATE NO. 1

LOCATIONAL PERSPECTIVE



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Consulting Engineers
 Green Bay, Wisconsin 54303

As the most concentrated development within the township, Fish Creek's local economy is integrally tied to the recreation industry which is a dominant factor in this sector of the county.

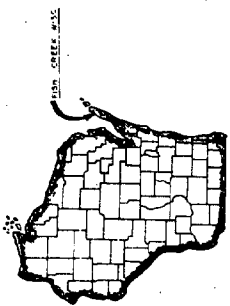
S.T.H. "42" which passes through Fish Creek receives heavy summer use by tourists traveling to and from vacation destinations. One attractive force of this use is the Peninsula State Park which borders the harbor on its eastern shore. With a land area of over 3,765 acres, this heavily utilized park offers a wide variety of recreational activities, both land and water oriented.

This facility coupled with the numerous private resorts and campgrounds, summer homes and rental cottages permits a large summer compliment of seasonal residents to enjoy the excellent land and water resources available in this area. In turn, this excellent resource base places a very heavy demand on land and harbor facilities at Fish Creek by those seeking leisure time enjoyment.

Physical Character of the Harbor

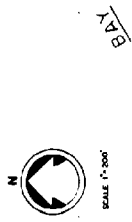
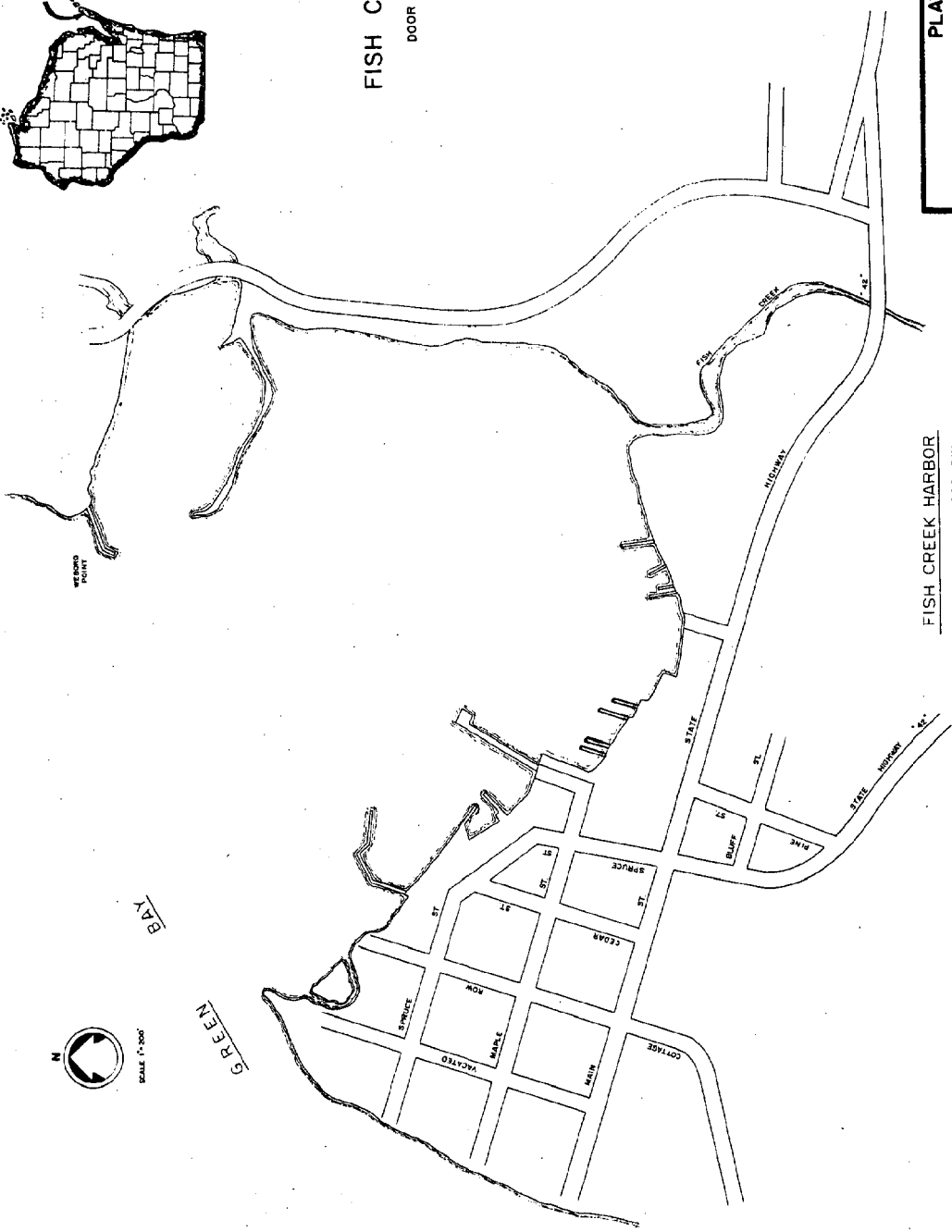
Configuration and Physical Setting. Situated within Section 29 of Township 31 North, Range 27 East, the Fish Creek Harbor encompasses approximately 98 acres of water surface. However of this total, approximately 11 acres is contained within a shallow and partially marshy confine along the north-eastern shore of the bay. Plate Number 2, Harbor Configuration, illustrates the shore configuration and its locational relationship to the nearby road system. Also principal dock structures are shown on the map. From the drawing it can be seen that the shoreline is fairly regular except for the small confine noted as well as man made shoreline alterations along the west shore with a retaining wall constructed along much of it.

One principal stream enters the harbor along the southeastern shoreline, that being Fish Creek. This stream drains a relatively small watershed with the drainage course apparently originating from Button Marsh approximately two miles southeast of the harbor.



FISH CREEK HARBOR


DOOR COUNTY, WISCONSIN
1980



FISH CREEK HARBOR
FISH CREEK, WISCONSIN

PLATE NO. 2

HARBOR CONFIGURATION



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Green Bay, Wisconsin 54303

Water elevations within the harbor and immediate bay area must be viewed in terms of area wide elevation measurements because of the lack of local data. The U.S. Corp of Engineers, Kewaunee Office maintains a N.O.A.A. monitoring station at Kewaunee which measures lake elevations. Located approximately 47 miles south of Fish Creek, the information can provide a general indicator of water elevations. However it must also be noted that the Bay of Green Bay is susceptible to elevation fluctuations primarily due to wind action. Strong surface winds force the water to "pile up" thereby temporarily raising the elevation in a particular locale. This sloshing effect can cause notable localized variations which return to normal as winds dissipate.

Elevations are typically referenced in terms of the International Great Lakes Datum (IGLD) with a reference elevation of 576.8 feet. The maximum lake elevation, as reported at the Kewaunee monitoring station was 580.0 feet in August of 1979 with a minimum of 578.2 feet in February of 1979. These compare with an overall mean elevation of 577.9 feet.

For additional comparisons, the IGLD elevations can be converted to USGS datum by adding approximately 1.3 feet.

Bottom Contour. Maximum depth in the harbor is approximately 16 feet (as charted in November, 1979) however a significant portion is under six feet in depth. Plate Number 3, Harbor Countour Map, reflects water depth contour information which was generated as a portion of this study. A breakdown of harbor acreage by depth shows that of 87 acres, 37.6 acres (43.3 percent) is under six feet, 24.4 acres (28.0 percent) is between six and 12 feet of water, and 25.0 acres (28.0 percent) is between 12 and 16 feet in depth.

Shallower depths are typically encountered along the eastern and southern shores while the western shore has a fairly steep bottom gradient. This condition is primarily attributable to harbor orientation relative to wind and current action.



FISH CREEK HARBOR

DOOR COUNTY, WISCONSIN
1980

HARBOR DEPTH MEASUREMENTS
TAKEN NOVEMBER 1979.

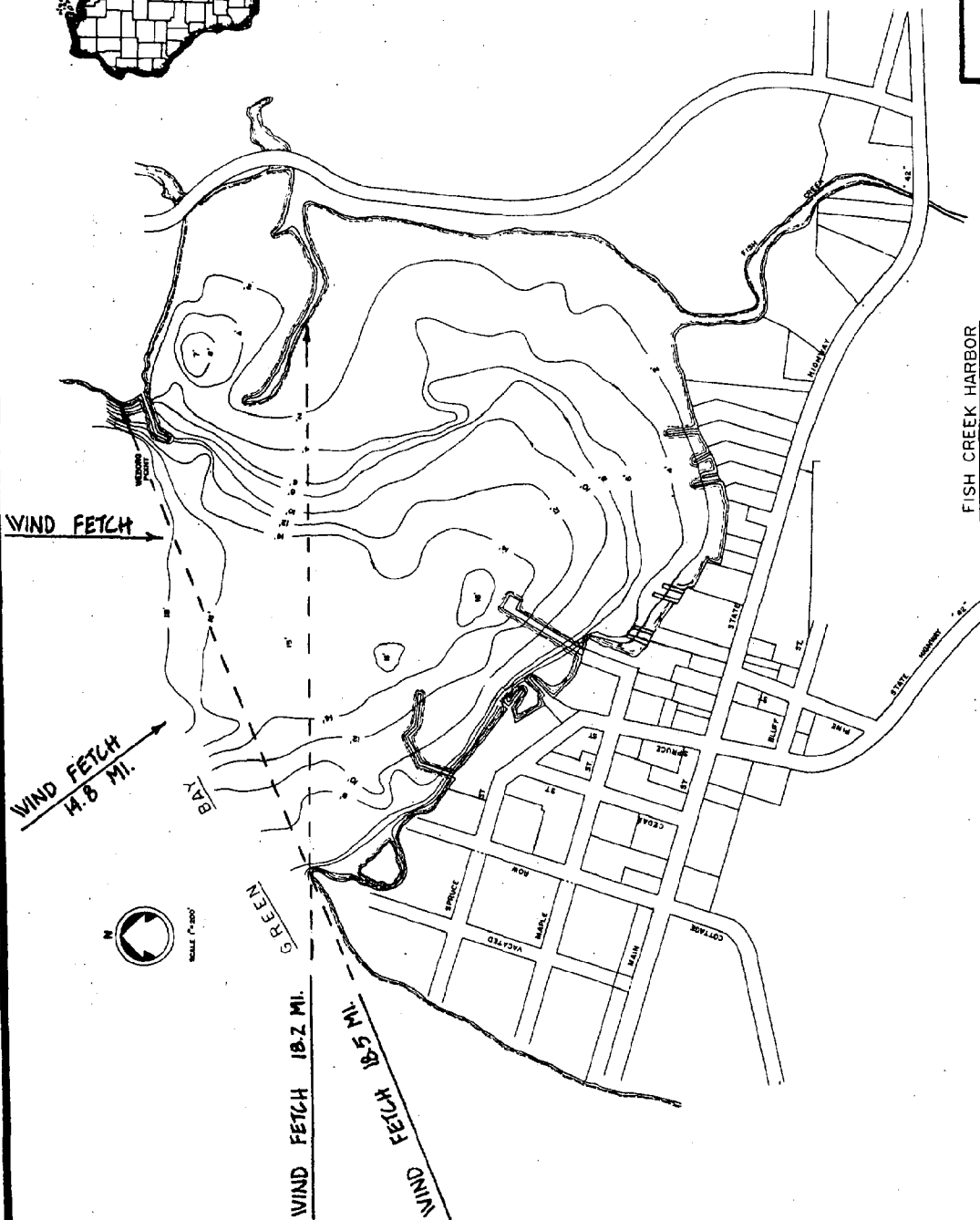
LAKE MICHIGAN ELEVATIONS:

MAX. 580.23 (I.G.L.D. 1974)

MIN. 575.40 (I.G.L.D. 1964)

MEAN 577.90 (I.G.L.D.)

AS RECORDED AT KEVALINE
WI., U.S.A.C.E. MONITORING
STATION.



FISH CREEK HARBOR
FISH CREEK, WISCONSIN

PLATE NO. 3

HARBOR CONTOUR MAP



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Green Bay, Wisconsin 54303

Bottom conditions are primarily sand and gravel and a public bathing beach is located on the southern shoreline of the bay.

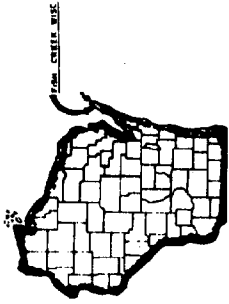
Harbor Facilities. The Town of Gibraltar currently owns and maintains a public boat launch ramp and public pier for use by boaters. Sale of gasoline to boaters as well as dock tie-up space is provided. Thirty-one docking slips are available on the pier for rental from the Town. Demand for use of the slips has kept them fully occupied each season. In addition the town provides electricity, water, sanitary disposal, and public shower facilities for use by the boaters.

In addition to the town pier, Baudhuin Yacht Harbor, a private boating concern has docking space available for rent. This facility is located in a private marina development approximately 700 feet northwest of the town pier. Similar supporting facilities are also available at this location including, electricity, water, sanitary disposal and showers.

The remainder of the dock facilities are typically held for private use by the property owners along the shore. This includes several small docks located along the primarily residential southern shoreline. Refer to Plate Number 4, Dock Facilities, which shows the various dock locations.

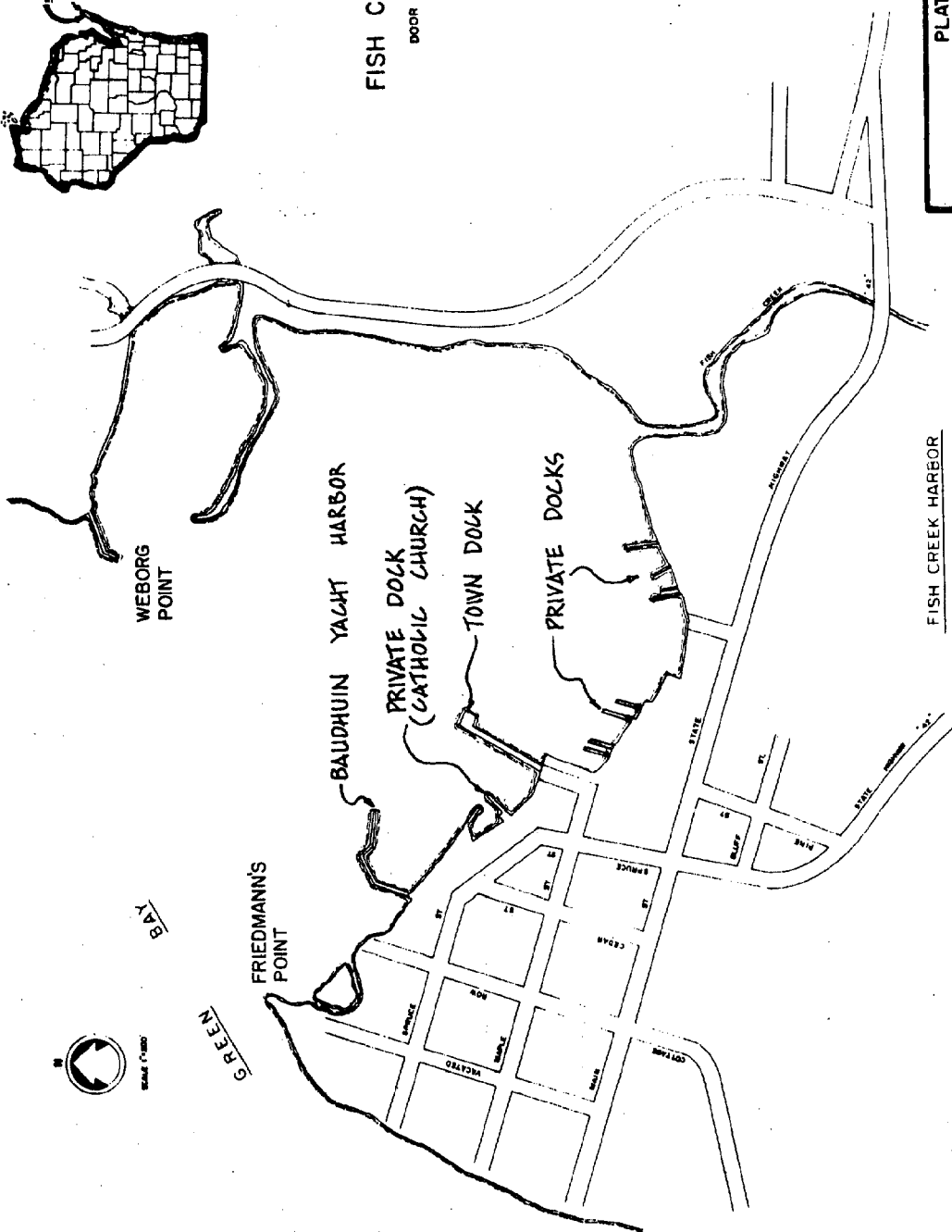
Shore Property Land Use. Three principal classes of land use can be identified within the surrounding shore area. These include the three general categories of residential, commercial and public lands. However, because of the recreational nature of the area, several instances of combined residential and business uses as well as motel/resort and cottage rentals having a mixed land use character are evident.

Thus to provide a means of generally categorizing existing uses, five categories of land use were employed. It can be noted that in a few instances uses did not clearly fit just one particular category. However for the purpose of examining the general land use character, the system employed is sufficient. Refer to Plate Number 5, Existing Land Use Character, for an illustration of land uses surrounding the harbor.



FISH CREEK HARBOR

DOOR COUNTY, WISCONSIN
1960



FISH CREEK HARBOR
FISH CREEK, WISCONSIN

PLATE NO. 4

DOCK FACILITIES



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SCALE 1" = 200'

GREEN BAY

FRIEDMANN'S POINT

BAUDHUIN YACHT HARBOR

PRIVATE DOCK (CATHOLIC CHURCH)

TOWN DOCK

PRIVATE DOCKS

STATE

MAIN

CEDAR

SPRUCE

MAPLE

PINE

BIRCH

WALNUT

ELM

OAK

HICKORY

ASH

SYCAMORE

POPLAR

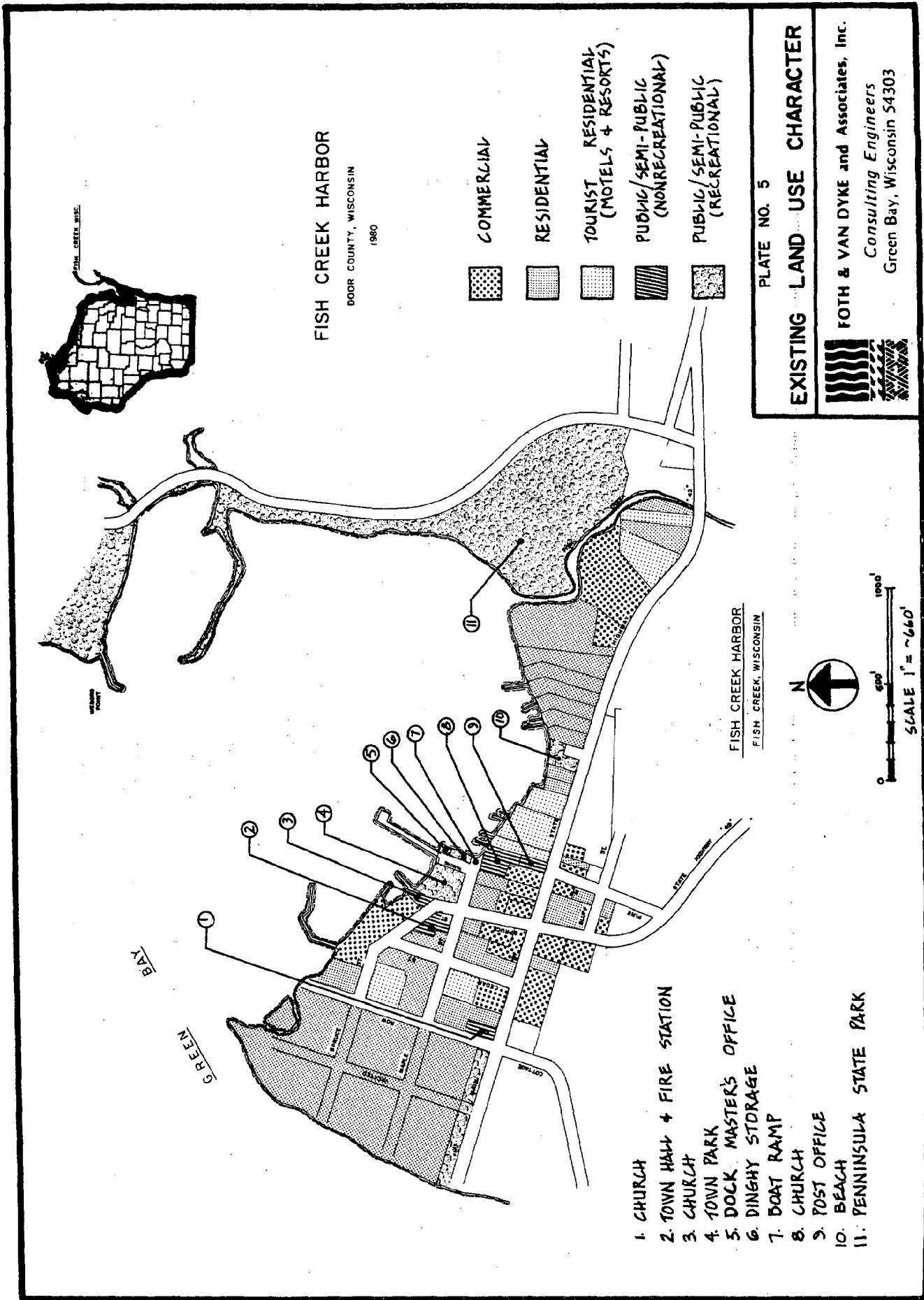
WILLOW

COTTONWOOD

REDWOOD

CYPRESS

JUNIPER



FISH CREEK HARBOR

DOOR COUNTY, WISCONSIN
1980

- COMMERCIAL
- RESIDENTIAL
- TOURIST RESIDENTIAL (MOTELS & RESORTS)
- PUBLIC/SEMI-PUBLIC (NONRECREATIONAL)
- PUBLIC/SEMI-PUBLIC (RECREATIONAL)

PLATE NO. 5

EXISTING LAND USE CHARACTER

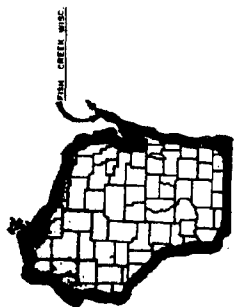
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Consulting Engineers
Green Bay, Wisconsin 54303

- 1. CHURCH
- 2. TOWN HALL & FIRE STATION
- 3. CHURCH
- 4. TOWN PARK
- 5. DOCK MASTERS OFFICE
- 6. DINGHY STORAGE
- 7. BOAT RAMP
- 8. CHURCH
- 9. POST OFFICE
- 10. BEACH
- 11. PENNINSULA STATE PARK



SCALE 1" = 660'

FISH CREEK HARBOR
FISH CREEK, WISCONSIN



The five categories include commercial, residential, tourist residential which would typically include seasonal motel and resort cottage rentals, public non-recreational and public recreational uses.

As evident from Plate Number 5, the primary area of commercial development is along or in close proximity to S.T.H. "42". Uses are typically of a basic retail sales and service type and are oriented toward the summer seasonal residents and vacationers. Such uses include retail grocery and merchandise, clothing, novelty and gift, restaurants, gasoline service stations, and marina facilities.

Residential use was divided into two categories in an effort to distinguish between conventional residential uses and seasonal use of rental units in the community. While some parcels were difficult to clearly categorize because of the specific use or a combination use, a general scheme of development can be depicted.

These two use categories are generally dispersed within Fish Creek. The south shore of the harbor is fronted by such development with a mix of both permanent residential and seasonal cottage use.

The final two divisions both reflect public and semi-public use with one being of a non-recreational type while the other is recreation oriented. Such uses have also been identified on Plate Number 5. Because of their public use, a direct listing is also included within the illustration. Of the recreational type, the three principal uses include the town park and dock facility, town swimming beach and Peninsula State Park which borders the entire eastern shore of the harbor. Non-recreational uses include the townhall and fire station, post office and church property.

One classification which is typically included within most generalized land use maps is a category depicting undeveloped or idle use areas. However because of the nature of the area with its generally limited size, such a designation is not applicable in this instance. Essentially no undeveloped acreage exists within close proximity of the harbor.

Current Boater Activities at the Fish Creek Harbor. Approximately 180 boats were kept in the harbor during the 1979 boating season (May through September). This total includes the number of boats that occupied the slips available on public and private docks, in addition to those boats that were moored in the harbor. This data is presented in Table Number 1, 1979 Fish Creek Harbor Boat Use. As indicated in this table, all of the available public and private boats slips were utilized during the 1979 boating season. Of the boats moored, approximately 70 percent were reportedly in the 15 to 25 foot size range with the remaining 30 percent being greater than 25 feet in length. It is estimated that an average traffic level of between 25 and 50 boats used the harbor on a daily basis last summer.

According to this data, it is evident that the harbor currently receives a substantial level of recreational boating demand. However, to assess the future boating demand on the harbor, it will be necessary to investigate the county and regional outlook for recreational boating participation.

TABLE NUMBER 1

1979 FISH CREEK HARBOR BOAT USE

	<u>Boat Launches</u>
Registered at Town Ramp	325
Estimated amount unregistered at ramp	100
Estimated Number launches at private ramps	<u>25</u>
TOTAL	450

	<u>Boat Slips Available</u>	<u>Slips Utilized</u>
Town's pier	31	31
Private (available for rent)	56	56
Private (not available for rent)	30+	30+

	<u>Moored Boats</u>
Average Number	40
Peak Number	50

FUTURE OUTLOOK REGARDING THE SPORT OF BOATING

Overall Boating Outlook

The assessment of future Fish Creek Harbor boating use will begin with a regional analysis of recreational boating activity. From this data, the future demand for recreational boating activity in Door County, and specifically, Fish Creek Harbor can more clearly be understood.

Future recreational boating activity can be explained by changes within the following factors:

- recreational boating participation
- population
- supply of facilities (moorings, docks, ramps, etc.)
- travel

In analyzing these factors on a county-wide and regional basis, existing literature provides a wealth of information. The Kewaunee Harbor Study,¹ Impacts of Recreation on the Coastal Area: Demand and Supply of Recreation in Wisconsin Coastal Counties,² two 1975 user surveys, The Great Lakes Marina User Survey³ and The Great Lakes Boat Ramp User Survey,³ provide valuable data regarding recreational boating activity for the Upper Lake Michigan Region. The surveys were conducted at boat ramps and marinas in three Wisconsin coastal regions including Lake Superior, Upper Lake Michigan, and Lower Lake Michigan. Fish Creek, as with all of Door County, is included in the Upper Lake Michigan Region, which is also comprised of Marinette, Oconto, Brown, Kewaunee, Manitowoc, and Sheboygan Counties.

¹Kewaunee Harbor Study and Appendix; Wisconsin D.N.R., 1978.

²Impacts of Recreation in the Coastal Area: Demand and Supply of Recreation in Wisconsin Coastal Counties; Somersan and Neum, Wisconsin Coastal Management Program, February, 1977.

³Impacts of Recreation in the Coastal Zone: Economic Impact and Needs of Wisconsin Great Lakes Boaters; Somersan, Wisconsin Coastal Management Program, July, 1976.

The extent of future recreational boating participation in the Upper Lake Michigan Region depends to a significant degree on the geographic distribution of potential boating participants. Such analysis in turn can provide insights regarding the influence of travel distance for boaters to participate within a given geographic area.

The results of the Marina User Study showed that over 97% of the total users within the Upper Lake Michigan Region reside within a 24 county area of Lake Michigan coastal and near coastal counties both in Wisconsin and Illinois. This relationship is depicted within Table Number 2, Upper Lake Michigan Marina Users. The table also reveals that of the total users, 63.3 percent reside within the seven immediate coastal counties of the region.

Assuming this user pattern as typically representative of specific harbor facilities, its' application to Fish Creek would indicate a majority of the users reside within the Upper Lake Michigan Region while another significant portion reside in the large metropolitan areas of Milwaukee and Chicago.

The population base of these 24 Wisconsin and Illinois coastal and near coastal counties represents a "pool" of potential Fish Creek Harbor users. Thus, an increase or decrease of population may mean a potential rise or fall in recreational boating activity. Table Number 3, 1975 Population of Wisconsin and Illinois Coastal Counties, lists population of the 24 county coastal region of Wisconsin and Illinois. The Upper Lake Michigan Region representing seven of the 24 counties had a 1975 population of 458,370 persons whereas the total population for the entire 24 county region was 9,619,900.

The 1980 and 1985 population projections for the entire 24 county coastal area are presented in Table Number 4, Population Projections. As noted in the table, a 5.8 percent and 6.6 percent increase in population is projected for the Upper Lake Michigan portion of the area for 1980 and 1985 respectively while a 4.0 percent and 4.9 percent gain of the entire region for the same time periods is shown. Projected population increases such as these will add to the population base potentially utilizing boating facilities in the region with Fish Creek expectedly receiving a proportionate share of any future boating gains.

TABLE NUMBER 2

UPPER LAKE MICHIGAN MARINA USERS

<u>Area of Residence</u>	<u>Percent Of Total Upper Lake Michigan Marina Users</u>
Coastal Upper Lake Michigan counties (Brown, Kewaunee, Door, Oconto, Marinette, Manitowoc, Sheboygan)	63.3%
Inland Upper Lake Michigan counties (Outagamie, Winnebago, Calumet, Fond du Lac)	3.7%
Milwaukee Metropolitan Area counties (Milwaukee, Waukesha, Ozaukee, Washington)	14.7%
Lower Lake Michigan counties (Wisconsin: Racine, Kenosha, Walworth counties. Illinois: McHenry, Lake, Cook, Kane, Du Page, Will counties)	15.6%
Other	2.7%
TOTAL	100.0%

Source: Great Lakes Marina User Survey as cited in The Kewaunee Harbor
Study - Appendix, DNR, 1978.

TABLE NUMBER 3

1975 POPULATION OF WISCONSIN AND
ILLINOIS COASTAL COUNTIES

<u>Area</u>	<u>Population</u>	<u>Total Population</u>
<u>Upper Lake Michigan</u>		
Coastal Counties:		
Kewaunee County	19,580	
Door County	22,240	
Brown County	169,540	
Manitowoc County	82,990	
Sheboygan County	99,440	
Marinette County	36,980	
Oconto County	27,600	
	<hr/>	
Total (Coastal Counties)	458,370	458,370
Inland Counties:		
Outagamie County	123,930	
Winnebago County	131,020	
Fond du Lac County	87,670	
Calumet County	29,460	
	<hr/>	
Total (Inland Counties, cumulative)	372,080	830,450
<u>Milwaukee Metropolitan Area</u>		
Ozaukee County	65,230	
Washington County	77,220	
Waukesha County	261,330	
Milwaukee County	1,027,790	
	<hr/>	
Total (Milwaukee area, cumulative)	1,432,070	2,262,520
<u>Lower Lake Michigan</u>		
Racine County	177,130	
Walworth County	68,610	
Kenosha County	126,440	
McHenry County (Ill.)	122,900	
Lake County (Ill.)	394,700	
Cook County (Ill.)	5,371,900	
Kane County (Ill.)	264,100	
Du Page County (Ill.)	551,800	
Will County (Ill.)	279,800	
	<hr/>	
Total (lower Lake Michigan)	7,357,380	
		Total 9,619,900

SOURCES: Wisconsin Population Projections, Wisconsin Department of Administration, 1975; Illinois Population Projections, 1970-2025, Illinois Bureau of the Budget, Revised Ed., 1976.

TABLE NUMBER 4

POPULATION PROJECTIONS

<u>Area</u>	<u>1975</u>	<u>1980</u>	<u>1985</u>	<u>Percent Change: 1975-1980</u>	<u>Percent Change: 1980-1985</u>
Coastal Upper Lake Michigan counties	458,370	484,840	516,920	5.8%	6.6%
Inland Upper Lake Michigan counties	372,080	387,220	405,620	4.1%	4.8%
Milwaukee Metropolitan Area counties	1,432,070	1,484,000	1,554,620	3.6%	4.8%
Lower Lake Michigan counties (including Chicago metropolitan area)	7,357,380	7,645,250	8,016,460	3.9%	4.9%
TOTAL	9,619,900	10,001,310	10,493,620	4.0%	4.9%

SOURCES: Wisconsin Population Projections, Wisconsin Department of Administration, 1975.

Illinois Population Projections, 1970-2025, Illinois Bureau of the Budget,
Revised Ed., 1976.

In addition to defining the geographic distribution of potential harbor users, the Marina User Survey provides socioeconomic data concerning the typical user. This data can be useful in predicting the future participation of the typical user as the associated participation costs (i.e. fuel, price of boat, meals, lodging, etc.) continue to rise. The data shows that the average boater in the Upper Lake Michigan Region is 47 years old with a family of 3.84 persons. The occupation of the boat owner is usually professional or managerial, with a total family income in excess of \$20,000 annually. Generally it can be said that typical users are from the upper income groups. Approximately 61 percent of the marina users own inboards or inboard/outboards having a length between 16 and 38 feet. Sailboats were owned by 29 percent of the respondents.

The Boat Ramp User Survey indicated that unlike marina users, ramp users are relatively evenly distributed over different income groups. In the Upper Lake Michigan Region, the greatest majority of ramp users had a family income between \$10,000 and \$25,000 annually. The majority of the users owned outboards and indicated that fishing was the major purpose for boating.

In summary, data from the two surveys reveal that the majority of Upper Lake Michigan boaters reside in coastal counties having relatively close travel distances to Lake Michigan. Marina users are typically in upper income groups, whereas most of the ramp users surveyed are relatively evenly distributed over a broader range of income groups. Outboards and inboard/outboards are the types of boats most frequently owned.

Thus, while the recent rising costs associated with recreational boating participation may cause some decrease in the numbers of overall participants, the typical marina user represented in the survey data discussed appears somewhat more capable financially to withstand rising costs of the sport.

Another means of assessing boater use is through registration information. County boat registration totals can provide information regarding trends in recreational boating activity. While the data does not directly indicate boating participation within a given county, it does provide an indication of the popularity of boating in general as well as the types of boats used.

Changes in boat registration totals for the Upper Lake Michigan Area from 1971-1979 are listed in Table Number 5, Changes in Boat Registration Totals: Upper Lake Michigan Area. It can be seen from this table that boat registrations have been increasing since 1971, and that the Upper Lake Michigan counties in general show a greater percent increase in registrations than the total percent change for the state. In the Upper Lake Michigan counties, boat registrations have increased approximately 3.3 percent per year since 1971 compared to 3 percent for the state totals. These changes however have taken place over a nine year period and therefore do not clearly illustrate most current trends.

To more accurately analyze boat registrations for the purpose of assessing recreational boating activity in the region, changes in boat registration totals and the types of boats registered over the past three years, gives a better indication of most recent trends regarding boating activity.

Table Number 6, Changes in the Types of Boats Registered: Upper Lake Michigan Area, lists the changes in the types of boats registered in counties of the Upper Lake Michigan area since 1977. The totals for the area indicate an increase in outboards and sailboats and a significant decrease in the number of inboards registered. All of the counties exhibited a decrease in the number of inboards registered since 1977. Kewaunee and Calumet counties show significant increases in the number of sailboats registered, whereas Door, Manitowoc, and Fond du Lac show decreases. The total change in registrations for the area from 1977-1979 is a conservative 1.8 percent increase, larger than the 0.63 percent increase for the state totals for the same period of time.

In summarizing the data, boat registrations for the area have been increasing since 1971, however, recently the rate of increase has not been as rapid. Since 1977, registrations for inboards have significantly decreased, whereas registrations for sailboats and outboards continue to increase in the Upper Lake Michigan area. In reference to this data, future boat registration totals may be expected to continue to increase. However, due to rising costs

TABLE NUMBER 5

CHANGES IN BOAT¹ REGISTRATION TOTALS: UPPER LAKE MICHIGAN AREA

1971 - 1979

County	1971	1972	1973	1974	1975	1976	1977	1978	1979	% Change 1971-1979
Keweenaw	652	627	714	771	751	819	867	850	904	38.6
Door	2,061	1,886	2,078	2,264	2,083	2,265	2,451	2,278	2,447	18.7
Brown	9,537	9,063	10,346	11,482	10,986	11,973	12,922	12,356	12,944	36.2
Outagamie	8,332	8,046	9,030	9,884	9,385	10,109	10,907	10,698	11,477	37.7
Manitowoc	4,423	4,129	4,594	4,929	4,604	4,888	5,207	4,895	5,195	17.4
Calumet	1,565	1,564	1,802	1,973	1,899	2,033	2,182	2,174	2,358	50.6
Winnebago	10,092	9,357	10,551	11,428	10,623	11,373	12,317	11,813	12,395	22.8
Sheboygan	5,303	5,125	5,707	6,151	5,814	6,182	6,627	6,343	6,649	25.3
Fond du Lac	4,613	4,400	4,926	5,329	4,985	5,362	5,778	5,602	5,929	28.5

TOTAL - UPPER

LAKE MICHIGAN	46,578	44,197	49,748	54,211	51,130	55,004	59,258	57,009	60,348	29.5
TOTAL-STATE	269,129	252,005	285,883	312,102	292,268	314,729	341,039	325,756	343,218	27.5

¹Includes originals (privately owned) only. Does not include fleets.

SOURCE: DNR Licensing Division, Madison, Wisconsin

TABLE NUMBER 6
 CHANGES IN THE TYPES OF BOATS¹

REGISTERED: UPPER LAKE MICHIGAN AREA

1977-1979

	1977		1978		1979		% Change 1977-1979		Total Change 1977-1979
	O.B.	SAIL I.B.	O.B.	SAIL I.B.	O.B.	SAIL I.B.	O.B.	SAIL I.B.	
Kewaunee	760	11 96	758	14 78	810	17 77	6.5	54.5 -24	4.2
Door	2098	148 214	1968	130 180	2130	142 175	1.9	-4.2 -22.2	-0.16
Brown	12144	401 377	11643	387 326	12261	415 318	1	3.5 -18.5	.55
Outagamie	10456	252 199	10282	236 180	11030	268 179	5.4	6.3 -11.1	5.2
Manitowoc	4904	116 187	4653	92 150	4943	108 144	.8	-7.4 -29.8	-0.23
Calumet	2062	63 57	2057	70 47	2230	86 42	8.1	36.5 -35.7	8.0
Winnebago	11481	440 396	11045	444 324	11612	477 306	1.1	8.4 -29.4	.63
Sheboygan	6143	282 202	5917	256 170	6196	291 162	.86	3.1 -24.6	.33
Fond du Lac	5442	172 164	5307	157 138	5636	162 131	3.5	-6.1 -25.1	2.6
Area Totals	55481	1885 1892	53630	1786 1593	56848	1966 1534	2.4	4.2 -23.3	1.8
State Totals	323,072	9538 8429	309,637	9025 7094	326,649	9647 6922	1.1	1.1 -21.7	.63

¹Includes originals (privately owned) only. Does not include fleets.

O.B. - Outboard
 I.B. - Inboard

SOURCE: DNR Licensing Division, Madison, Wisconsin

associated with the sport, anticipated gains may not be as rapid with the use of inboards probably decreasing, whereas the number of sailboats registered will most likely continue to rise. The remaining discussion will deal with participation trends which is another principal component involved in the user analysis.

Recreational boating has been one of the fastest growing recreational activities among midwestern families. A 1972 survey⁴ found that 38 percent of midwestern families participated in some form of boating that year. Projections for 1980 showed the participation rate at 55 percent. The survey did not project participation beyond 1980, however.

Recreational boating participation projections were developed in the Demand and Supply Study for the years 1980, 1985 and 1990. The projections utilized participation data generated for the 1970 Outdoor Recreation Survey of the Department of Natural Resources as the base year data. The data includes resident and non-resident (out-of-state) participants for an average summer weekend day. Table Number 7, 1970 Boating Participation for the Upper Lake Michigan Coastal Region lists the 1970 boating participation for the Upper Lake Michigan Region.

Data from the table shows that approximately 45 percent of the recreational boating participants in Door County are non-residents. Previous discussion concerning the user surveys revealed that the Chicago Metropolitan Area is a significant contributor of this non-resident use. Local observations relative to Fish Creek would reinforce this fact with Southern Wisconsin and Northern Illinois being notable contributors in the area during summer months.

⁴Recreation Demand Survey & Forecasts, Somersan, Ayse, et. al.; Upper Great Lakes Regional Recreation Planning Study, Part 2; Recreation Resource Center, U.W. Ext. Madison, 1974.

TABLE NUMBER 7
1970 BOATING PARTICIPATION FOR THE
UPPER LAKE MICHIGAN COASTAL REGION
(Ave. Summer Weekend Day)

County	Resident	Nonresident	Total
Brown	1,084	659	1,743
Door	3,678	3,064	6,742
Kewaunee	585	294	879
Manitowoc	1,611	67	1,678
Marinette	3,605	1,271	4,876
Oconto	4,994	670	5,664
Sheboygan	608	677	1,285

SOURCE: Somersan, Ayse, Neum Michael, Impacts of Recreation in the Coastal Area: Demand and Supply of Recreation in Wisconsin Coastal Counties, Wisconsin Coastal Zone Management Program, Feb. 1977.

Participation projections based on the 1970 data are listed in Table Number 8, Boating Participation Projections for the Upper Lake Michigan Coastal Region. The projections included adjustments for changes in population, participation rates and travel. The probability to travel to a coastal county was assumed to increase by 21.47 percent over the 1970-1980 period for all coastal counties. It should be noted that because of the recent fuel shortages, the assumed probability for travel among all recreational boating participants may be somewhat high. The projections should therefore be viewed in that context. Generally, the projections show dramatic increases in participation from 1970-1990 for the entire region. According to these projections, total boating participation in Door County specifically is shown to increase 43.8 percent from 1980-1990 or approximately 4 percent per year. Resident participation is indicated to increase 4.5 percent per year.

The recently completed Outdoor Recreation Plan⁵ for Door County, is an additional source for boating participation projections for the county. The projections listed in Table Number 9, Resident Motorboating Participation Projections, are based on population changes which occurred between 1960 and 1970. Unlike the Supply and Demand Study projections, no adjustments were made for changes in per capita preferences or participation. The projections reveal an increase in resident participation of approximately 2 percent per year. Being much lower than the previous projections, which are considered to be high, these projections nonetheless represent an increase in boating participation for the County.

Thus, the two sources of boating participation projections both indicate increases in total participation. Since the projections do not take into account the most recent economic climate the data must be viewed with some degree of caution. While the trend reveals that participation is increasing, as with recent boat registrations, the rate appears to be slowing. Recent tightening in the economy could be expected to be a major contributing factor to this trend.

⁵Outdoor Recreation Plan, Door County, Wisconsin, Door County Planning Dept., July, 1979.

TABLE NUMBER 8

BOATING PARTICIPATION PROJECTIONS FOR THE
UPPER LAKE MICHIGAN COASTAL REGION
(Ave. Summer Weekend Day)

County	1980		1985		1990		Percent Total Change 1980-1990			
	Resident	Nonresident Total	Resident	Nonresident Total	Resident	Nonresident Total				
Brown	2,326	1,429	3,755	2,815	1,716	4,531	3,370	2,031	5,401	43.8
Door	7,893	6,659	14,552	9,553	8,015	17,568	11,434	9,497	20,931	43.8
Kewaunee	1,225	638	1,893	1,519	767	2,286	1,819	909	2,728	44.1
Manitowoc	3,457	147	3,604	4,184	178	4,362	5,008	211	5,219	44.8
Marinette	7,736	2,808	10,544	9,363	3,400	12,763	11,207	4,049	15,256	44.6
Oconto	10,717	1,471	12,188	12,970	1,777	14,747	15,525	2,113	17,638	44.7
Sheboygan	1,305	1,469	2,774	1,579	1,767	3,346	1,890	2,092	3,982	43.5

SOURCE: Somersan, Ayse; Neum, Michael, Impacts of Recreation in the Coastal Area: Demand and Supply of Recreation in Wisconsin's Coastal Counties, Wisconsin Coastal Zone Management Program, Feb., 1977.

TABLE NUMBER 9

RESIDENT MOTORBOATING PARTICIPATION PROJECTIONS
(Ave. Summer Weekend Day as Compiled by DNR)

<u>1970</u>	<u>1980</u>	<u>1990</u>
3678	4391	5281

SOURCE: Outdoor Recreation Plan, Door County, Wisconsin,
Door County Planning Dept., July, 1979.

The future demand on Fish Creek Harbor cannot be completely determined without an analysis of current supply of moorings and marina slips in the harbor and in the region. Table Number 1, 1979 Fish Creek Harbor Boat Use, indicates that all of the available boat slips in the harbor were occupied and 40-50 boats were moored in the harbor during the 1979 boating season. A formal waiting list has not been kept of prospective slip renters, however, an unexpressed demand for dock or mooring space most likely exists.

In 1975 the Marina User Survey revealed that several Upper Lake Michigan cities and towns maintained waiting lists totaling 215 prospective slip renters thus indicating an excess demand. Using this data, the Kewaunee Harbor Plan listing a total of 1342 slips available in the region, concluded that an excess slip demand for 1980 would total 926 slips in the seven county region.

With this in mind, it can be clearly seen that the demand for mooring space and boat slips in the region outweighs the supply. Based on this data, it can be anticipated that there will continue to be a demand for mooring space and boat slips at the Fish Creek Harbor.

Outlook as it Relates to Fish Creek

The previous discussion has been intended to develop a general outlook for boating activities in the Upper Lake Michigan Region. While Door County was considered with statistical data available at the county level, it was not readily possible to specifically analyze the local situation at Fish Creek. Rather, the intention was to develop a representative profile of boating activity and its future outlook and apply that outlook, where applicable, to the Fish Creek Harbor.

Recreational boating activity and demand for use of the Fish Creek Harbor is likely to continue. Population projections from the Upper Lake Michigan region indicate a 6.6 percent increase or 1.3 percent per year rise from 1980-1985. The increase in population could be expected to bring about an increase in outdoor recreation participation. Total recreational boating participation for Door County has been projected to increase 4 percent per year from 1980-1990, with resident participation increasing 2 percent per year and 4.5 percent per year depending on the source. Boat registrations are

continuing to increase in the Upper Lake Michigan area, however from 1977-1979 a conservative 1.8 percent increase was evident. Registration indicates the use of inboard boats has been decreasing whereas the use of sailboats is on the rise in the region. While increases in the associated boating participation costs such as fuel, price of boats, meals and lodging may have a dampening effect on the numbers of participants, the majority of typical marina users are in upper income groups and are less likely to be affected by increased participation costs. Thus relating these factors to Fish Creek, it is felt that the demand for use of harbor facilities is quite strong and that the outlook seems to indicate at least some degree of growth to that demand. It is anticipated that there will be a continuing redistribution of the boating-specific types of demand with greater emphasis on sailboat and smaller outboard power boat use and a de-emphasis on larger power boat use.

FORMULATION OF A HARBOR USE SCHEME

Harbor Layout Plan

Introduction. Discussion thus far has primarily focused on an examination of existing conditions and character relative to the harbor and adjoining shore facilities as well as development of a general boating outlook which would be representative of activity at Fish Creek. Efforts now will be directed at development of a harbor use plan which will be intended to provide a guide to a more optimal and safe use of the harbor and its associated shore facilities. This will be followed by a discussion of planning strategy, efforts from which would be targeted at plan implementation.

Of principal concern within the harbor plan will be considerations relative to the mooring or anchoring of vessels within the harbor. Developing suitable provisions for such use which would be compatible with safe harbor navigation and use of private and public dock facilities as well as providing an enhancement to the sport of boating in the area will be sought. The harbor layout plan will subsequently consider designation of special mooring or anchorage areas within the harbor, identification of applicable navigational fairways and consideration of related harbor facilities.

Water Depth. To identify an optimal mooring area(s) in the harbor, several factors must necessarily be examined. A key limitation is water depth. Typically, five to six feet is considered the minimum water depth to safely accommodate small craft moorings. Plate Number 3 illustrated the water contour depths within the harbor in November, 1979. From the information it can be seen that a substantial portion of the harbor is under six feet in depth, rendering it generally undesirable for any large scale mooring of boats. This area accounts for approximately 43 percent of the harbor waters.

Also, it should be noted that the waters of Green Bay are susceptible to temporary elevation fluctuations, primarily due to wind action. This coupled

with the cyclic fluctuations of the entire Great Lakes System requires an additional margin of flexibility relative to water depth. With the lake level during 1979 being somewhat higher than the overall mean, it is felt that the six foot contour as shown on Plate Number 3 should represent the minimum depth boundary for mooring consideration.

Maximum depth in the harbor is approximately 16 feet which provides a depth range for mooring of boats of between six and sixteen feet.

Riparian Rights. Another consideration relative to designation of a mooring area is an awareness and general respect of riparian property rights of the numerous shore property owners within the harbor. While the question of riparian water rights can be a complex issue and often times controversial, the need to address such an issue is important. The Town of Gibraltar is a riparian owner within the harbor, however it is not an exclusive riparian within Fish Creek since it co-exists with numerous other property owners.

In an effort to recognize and respect the legal rights of these many private shore owners, attention to address such rights regarding a public boat mooring plan was made. A technique known as the Knitter Theory has been developed within the Wisconsin Department of Natural Resources Water Regulatory Section for the establishment of "coterminous riparian rights lines."¹ It represents a method whereby physical lines of delineation can be made resulting in the delineation of water areas principally associated with specific shore properties. While the test of legality for such a method is unclear, it does represent one rational means of examining this aspect.

In considering the riparian rights issue relative to delineating possible public mooring areas for boats, the aspect of possible infringement on such rights was included. Effort to minimize encroachment on shore properties by the mooring of boats was made. An examination of Knitter lines as they may apply to Fish Creek were viewed with consideration of providing reasonable access to and use of water areas abutting shore property.

¹ Options for Local Management of Fish Creek Harbor, Wisconsin Coastal Management Program, August, 1979, Page 16.

One advantageous aspect relative to riparian rights and the establishment of a potential mooring field is the need to stay beyond six feet in water depth, thereby eliminating the more immediate shore areas from mooring consideration. Thus, simply from water depth limitations and requirements associated with navigation, water areas in general proximity of the shore have been avoided. This typically provides a minimum separation of 200 feet and commonly 300 or more feet between the shore properties and closest mooring field boundaries.

Sheltered Waters. A third factor in this examination is protection from wind and wave action. Selection of the most suitable waters from the standpoint of affording the best protection from weather forces is important. This factor, coupled with depth restrictions and consideration of riparian rights, further limits the possible harbor acreage from which a mooring area could be delineated. The most protected areas within the harbor tend to be those most removed from the Bay of Green Bay. Logically, the closer and more exposed to the open waters of Green Bay one moves within the harbor, the more susceptibility to harsher weather conditions one encounters.

One consideration of this aspect is an examination of maximum wind fetch at various navigational bearings. Simply, this term reflects the distance at various bearings with which winds can blow across open water before reaching a given location.

In the case of the Fish Creek Harbor, the most open and exposed direction is from the northwest since the lineal axis of the harbor is oriented in this direction. At this bearing maximum wind fetch is approximately 14.8 miles. Rotating clockwise and counterclockwise from this bearing, across the mouth of the harbor, the fetch distance changes and begins to notably lengthen as more "tangent like" bearings are applied.

Since the harbor does not have any man made breakwaters which could more exactly define an area of "quiet water", such a technique offers one means of examining potential boundary limits for the mooring of boats. The actual

size of such an area would depend on the user demand or number of boats moored, with the inner harbor areas being utilized initially, especially for smaller craft. However, such a line might be used to determine the approximate holding capacity of an ultimate mooring area.

Recommended Anchorage (Mooring) Area(s). Three basic factors associated with the delineation of a mooring area have been discussed. Each discussion tended to eliminate certain areas of the harbor from consideration due to the undesirability of a particular aspect for such use.

What basically remains is an area that must provide navigational flexibility for boat traffic within the harbor as well as provide suitable area for the mooring of boats. Because the area of potential consideration is limited, a major portion must be required for such uses.

Current mooring demand has been approximately 50 craft peak per season. Allowing some degree of expansion flexibility to accommodate additional vessels dictates a mooring area sufficient to safely handle 65 to 75 boats during the short term, with reserve expansion capability desirable over the long term future.

Plate Numbers 6, 7, and 8, Mooring Area Configurations - Alternates 1, 2, and 3, illustrate three possible mooring area concepts. The intent was to provide adequate navigational leeway as well as boater access to private and public dock facilities, the boat ramp and the mooring area itself. Navigational fairways have been typically represented at 100 feet in width.

As can be seen from the various plates, the general proximity of the mooring area is the same in each instance with configuration changes incorporated for different mooring capacities as well as different navigational patterns.

From Alternates 1, 2, and 3, potential schematic representations of individual moorings within the mooring areas are shown. The illustrations use non-overlapping mooring circles with computations for circle diameters of

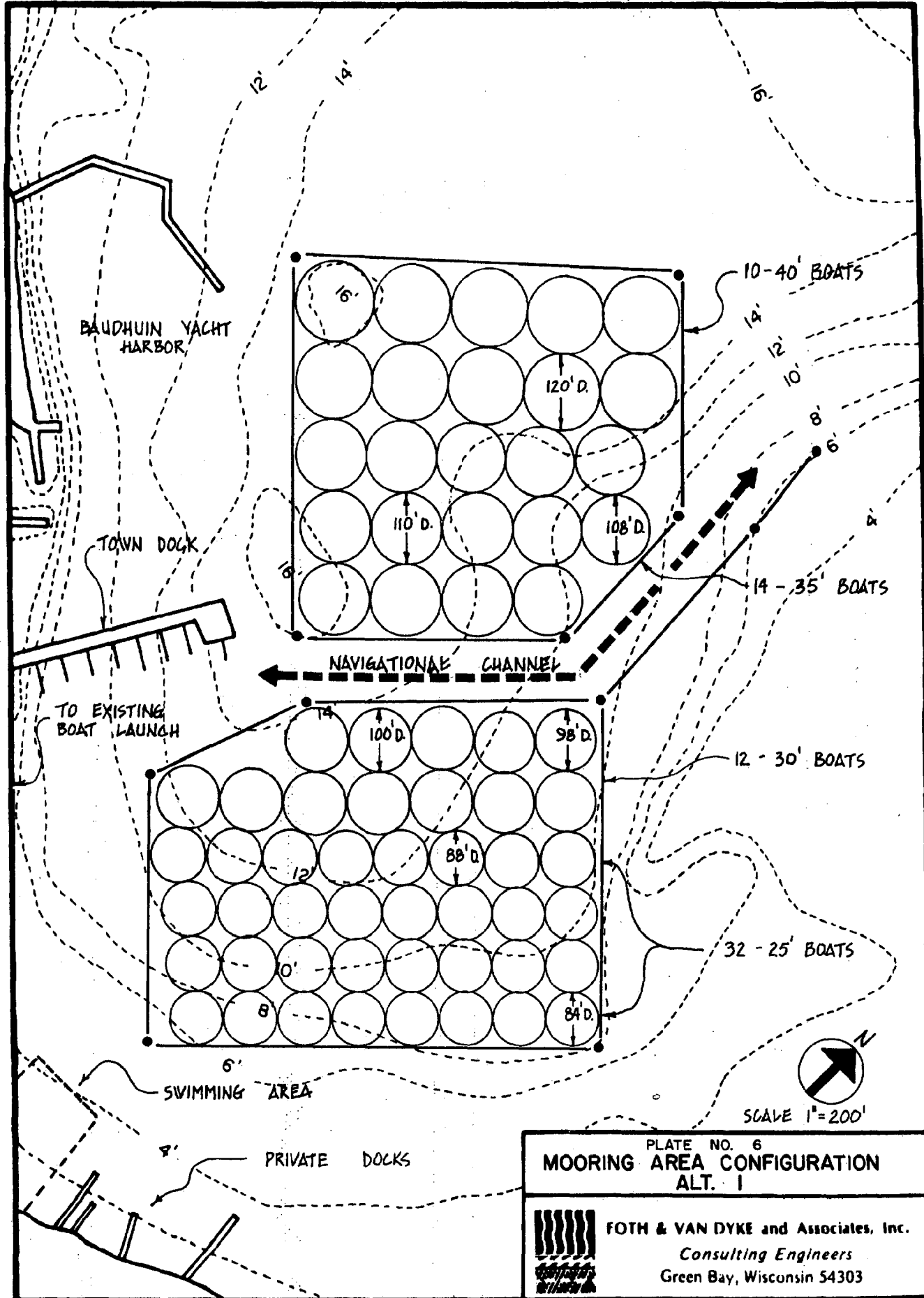



PLATE NO. 6
MOORING AREA CONFIGURATION
 ALT. 1



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 Consulting Engineers
 Green Bay, Wisconsin 54303

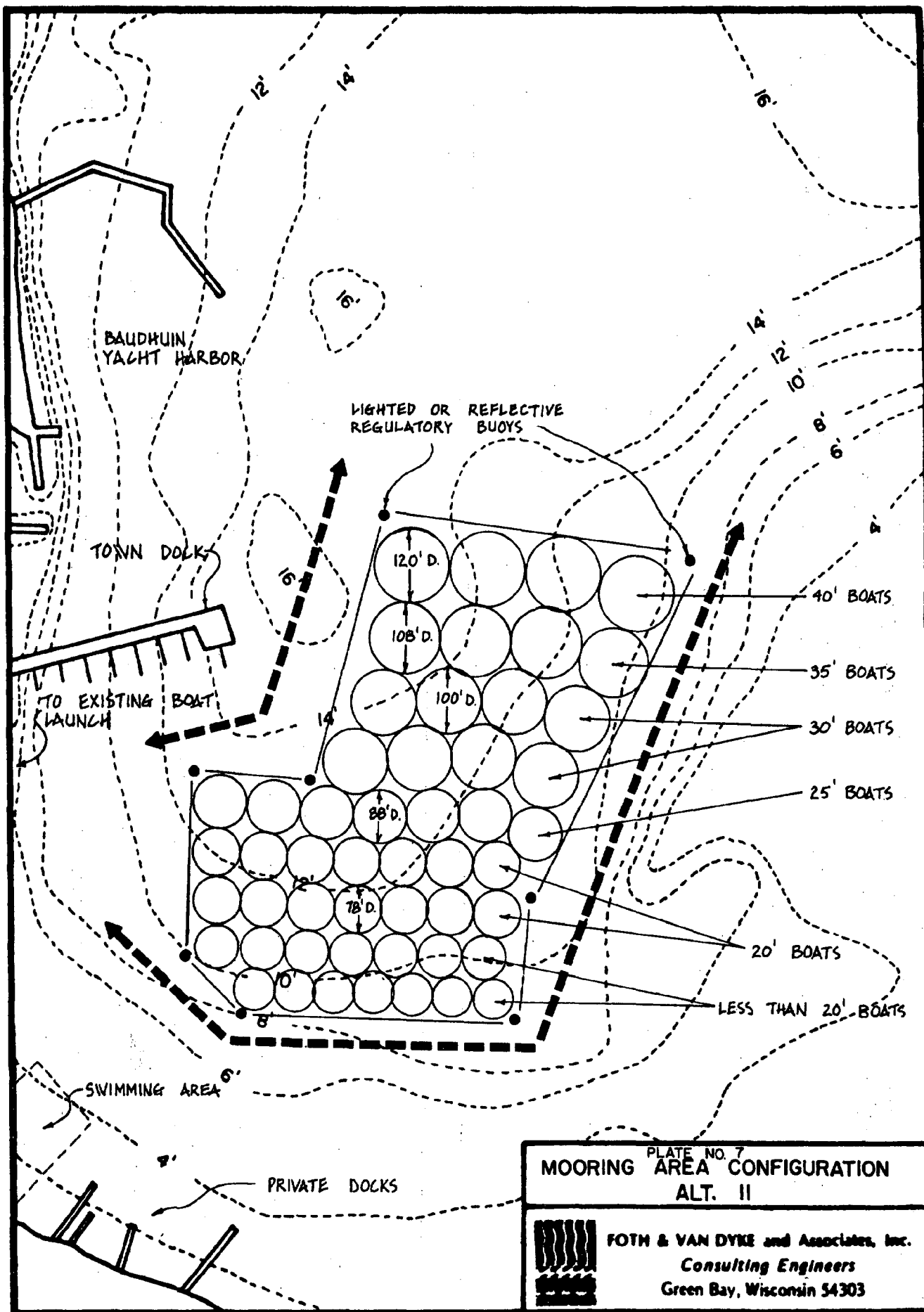



PLATE NO. 7
**MOORING AREA CONFIGURATION
ALT. II**



FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303

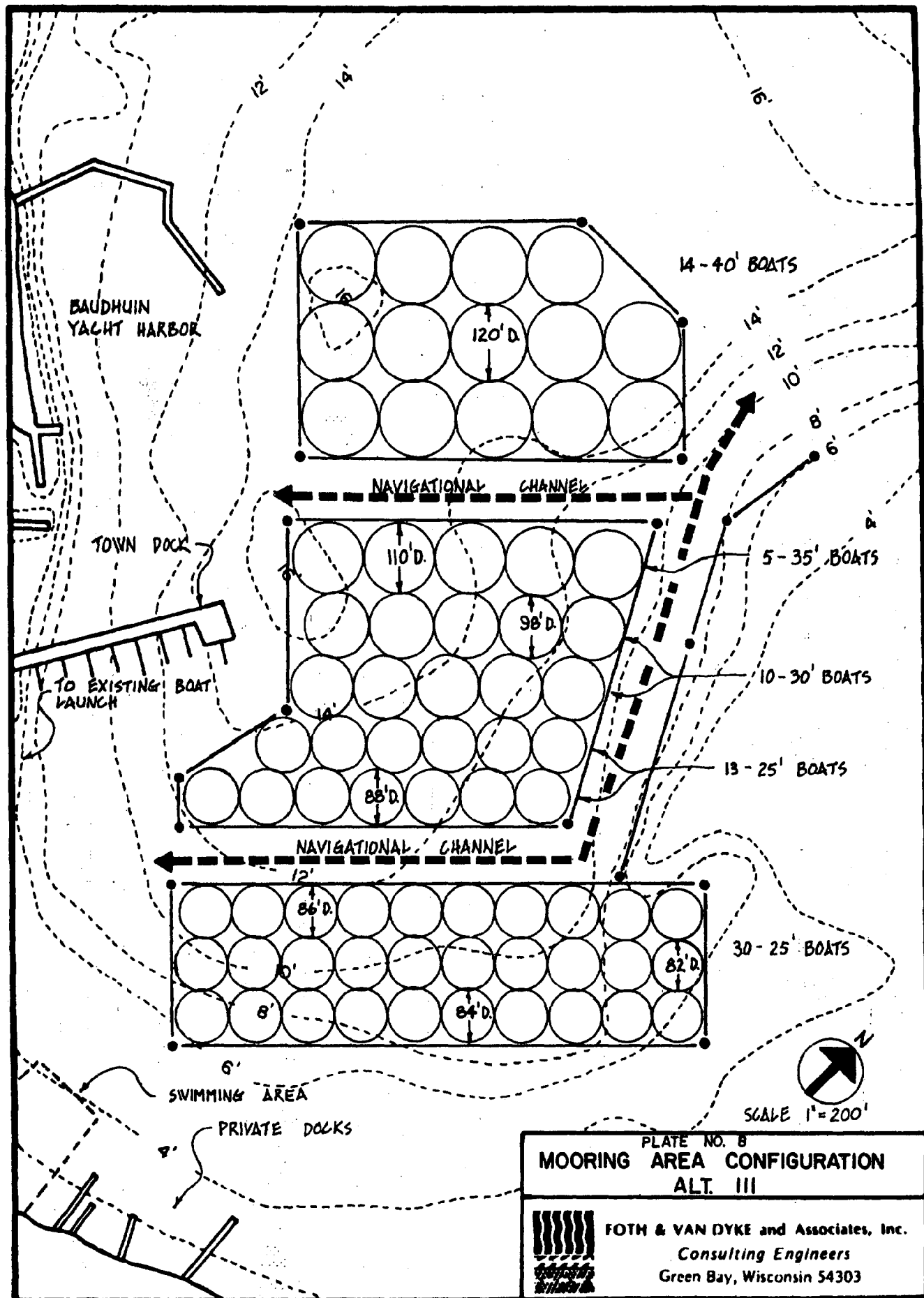



PLATE NO. 8
MOORING AREA CONFIGURATION
ALT. III

 **FOTH & VAN DYKE and Associates, Inc.**
Consulting Engineers
Green Bay, Wisconsin 54303

various sized boats shown in Table Number 10, Diameter of Boat Swing - Single Buoy Moorage.

From the first three alternates, it can be seen that to provide sufficient mooring capacity using recognized standards and conventional mooring methods, a major portion of the suitable harbor area must be utilized. Because of the area limitations and the desire to place moorings as remote and protected from the open waters of Green Bay as possible, another mooring concept may be considered. Plate Number 9, Star Dock Moorings, shows a schematic detail.

Commonly referred to as a free floating star dock, this method allows much greater boat density per unit area to be realized. Because of the "dock type" nature, holding vessels generally stationary in relation to other boats in the star dock, a substantial increase in the numbers of craft is possible.

The City of Chicago within their public harbor system makes extensive use of the star dock with general satisfactory results. Typical applications allow 16 boats to be docked in an area that using conventional mooring methods would essentially handle one craft.

In exchange for this dramatic increase in capacity there are some less desirable aspects. One key factor is capital cost of such facilities. While a typical conventional mooring set-up costs \$175 to \$250 per mooring², manufacturers' estimates for a typical star dock unit are approximately \$30,000 to \$40,000. While costs may be somewhat lower depending on specific location, and although such a unit could replace 16 conventional single moorings and have a substitution value of up to \$4,000, the cost difference is still very substantial.

² As listed within price listings for Rolyan Mfg. Co., Inc., Menominee Falls, Wisconsin; Price listing form 3-122 RI Effective April 1, 1979.

TABLE NO. 10

DIAMETER OF BOAT SWING-SINGLE BUOY MOORAGE

25' Boat Class

<u>Water Depth</u>	<u>Chain Length</u>	<u>Pennant Length</u>	<u>Freeboard</u>	<u>Max. Scope</u>	<u>Boat Length</u>	<u>Dia. of* Swing</u>
6'	11'	8'	4'	15.58'	25'	82'
8'	13'	8'	4'	16.70'	25'	84'
10'	15'	8'	4'	17.74'	25'	86'
12'	17'	8'	4'	18.73'	25'	88'
14'	19'	8'	4'	19.67'	25'	90'
16'	21'	8'	4'	20.56'	25'	92'

30' Boat Class

6'	11'	8'	4'	15.58'	30'	92'
8'	13'	8'	4'	16.70'	30'	94'
10'	15'	8'	4'	17.74'	30'	96'
12'	17'	8'	4'	18.73'	30'	98'
14'	19'	8'	4'	19.67'	30'	100'
16'	21'	8'	4'	20.56'	30'	102'

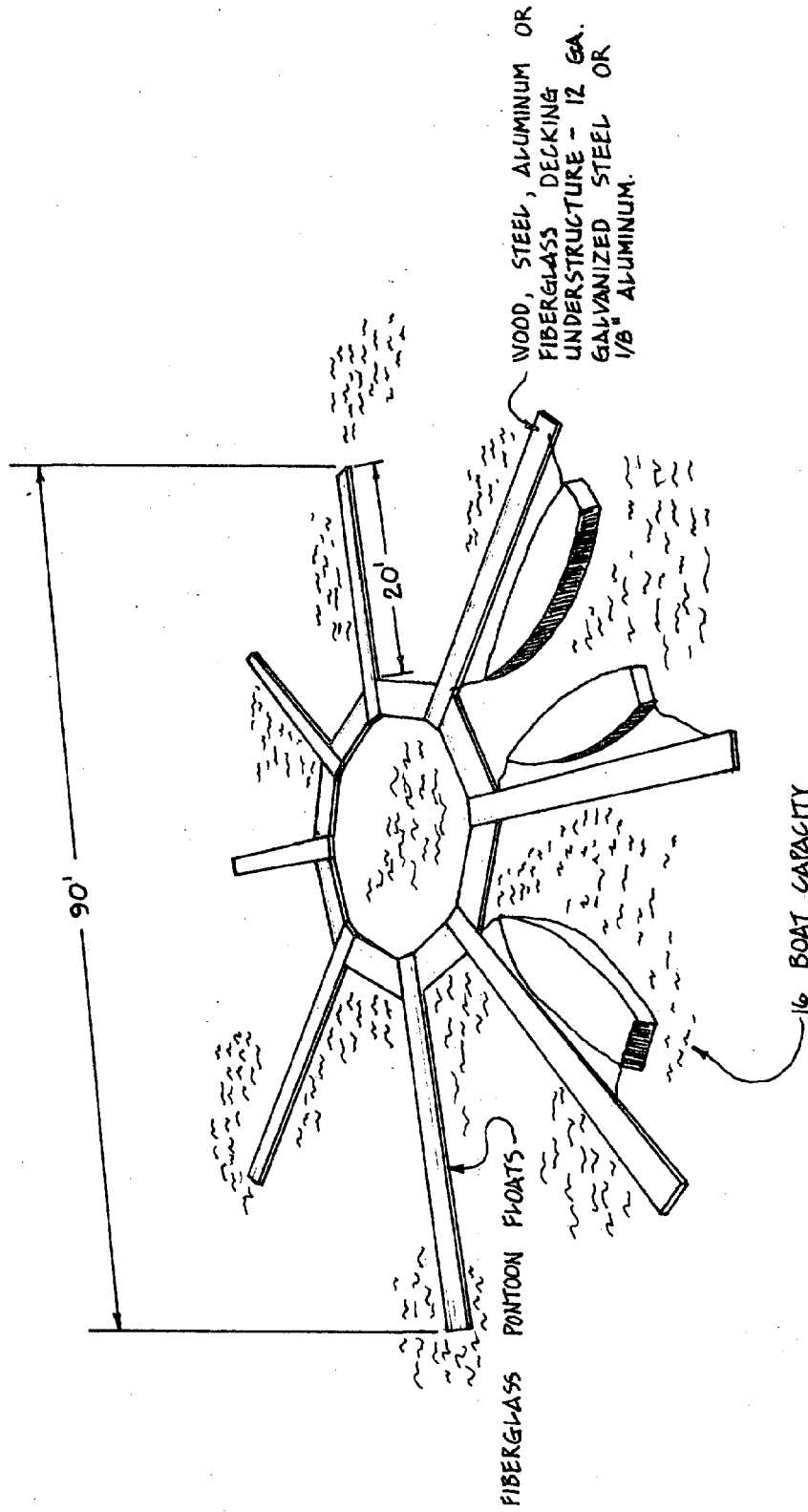
35' Boat Class

6'	11'	8'	4'	15.58'	35'	102'
8'	13'	8'	4'	16.70'	35'	104'
10'	15'	8'	4'	17.74'	35'	106'
12'	17'	8'	4'	18.73'	35'	108'
14'	19'	8'	4'	19.67'	35'	110'
16'	21'	8'	4'	20.56'	35'	112'

40' Boat Class

6'	11'	8'	4'	15.58'	40'	112'
8'	13'	8'	4'	16.70'	40'	114'
10'	15'	8'	4'	17.74'	40'	116'
12'	17'	8'	4'	18.73'	40'	118'
14'	19'	8'	4'	19.67'	40'	120'
16'	21'	8'	4'	20.56'	40'	122'

*To highest whole number



NOT TO SCALE

PLATE NO. 9

TYPICAL STAR DOCK MOORING



FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303

Another drawback involves the need for placement of star docks in relatively protected waters with limited buffeting by wave action. Also removal during winter months may be required when spring ice movement is a problem.

Finally, use of such equipment typically requires either direct public ownership and management or private commercial ownership with public control over such facilities and their use. Consequently, the use of such a unit typically requires a fairly active operational role by the local unit of government.

Thus, the use of such equipment generally involves a trade off between space saved versus capital cost. User rental fees can be applied against such cost, however the period to recoup the investment is quite lengthy.

In light of such considerations it would be felt that application of a device such as the star dock has only limited potential for use at Fish Creek. However, the use of such an option should be maintained for future consideration should space requirements become more critical or in the event other harbor improvements are realized.

In examining the other three alternates, each one represents a somewhat different variation in boat traffic circulation as well as the numbers and size of boats moored. As noted previously, each layout encompasses the same general harbor area, since suitable location flexibility is quite limited. Since the alternatives are generally variations of the same concept, no effort to select "a best" layout was made. Rather, the intent was to illustrate possible modifications using the same general concept and area location. Upon review and analysis by the Town, selection of the scheme which best meets local needs can be made. This may again require subtle refinements to best accommodate conditions at the harbor. Plate Number 10, Harbor Layout Plan, provides a large scale illustration of the harbor. (See Map Pocket). A potential mooring configuration utilizing Alternate 2 is illustrated on the map.

The remaining discussion in this section will deal with recommended considerations associated with shore facilities which will then be followed by discussion relating to management strategy and implementation approaches.

Shore Facilities Plan

Public Beach. This facility currently receives a tremendous amount of use each summer. Located along U.S.H. "42" in the center of the community, the public beach can serve as a focal point to draw tourists into the community. The existing facility, however, has an inadequate parking area that leads to congestion and safety problems during busy summer weekends. Toilet facilities and a bathhouse are also lacking. Due to its small size, approximately one-half acre, the Door County Recreation Plan, July, 1979, recommends that the beach be expanded if possible.

Although limited in size, improvements can be made to the existing site. Plate Number 11, Potential Beach Improvements, illustrates a possible layout plan for the area. The plan includes a 9,100 square foot parking area, parallel to U.S.H. "42" containing 26 stalls. This type of parking arrangement allows for one way, flow through parking that can serve to reduce the congestion caused by the existing configuration. Approximately 13,000 square feet would remain that could accommodate a playlot, bathhouse facility and general open space for lounging and sunbathing. The bathhouse should contain two toilets, (one per each sex plus one mens urinal) dressing areas and be a minimum of 260* square feet in size. Prior to construction the bath house and associated sanitary facilities will have to meet the approval of the State Board of Health. In this respect, the development of an adequate sanitary disposal system will have to be addressed.

As noted in Plate Number 11, the swimming area should be clearly marked by two regulatory buoys and delineated by barrier floats. It should not extend more than 200 feet into the harbor to ensure the safety of the swimmers.

Public Boat Ramp. Located in conjunction with the town park, the town's public boat ramp is currently the only public access point in the harbor. As noted earlier in Table Number 1, approximately 425 launches took place at the ramp during the 1979 boating season. The existing parking lot for the town dock boat ramp and park contain approximately 20 stalls for auto parking only. The dock master's office, four public toilets (two for each sex) and one shower facility are also located here.

*Using design capacity of 130 people x 2; source: Recreation Reference, U.S.D.A., Soil Conservation Service, Northeast Technical Service Center, 1977.

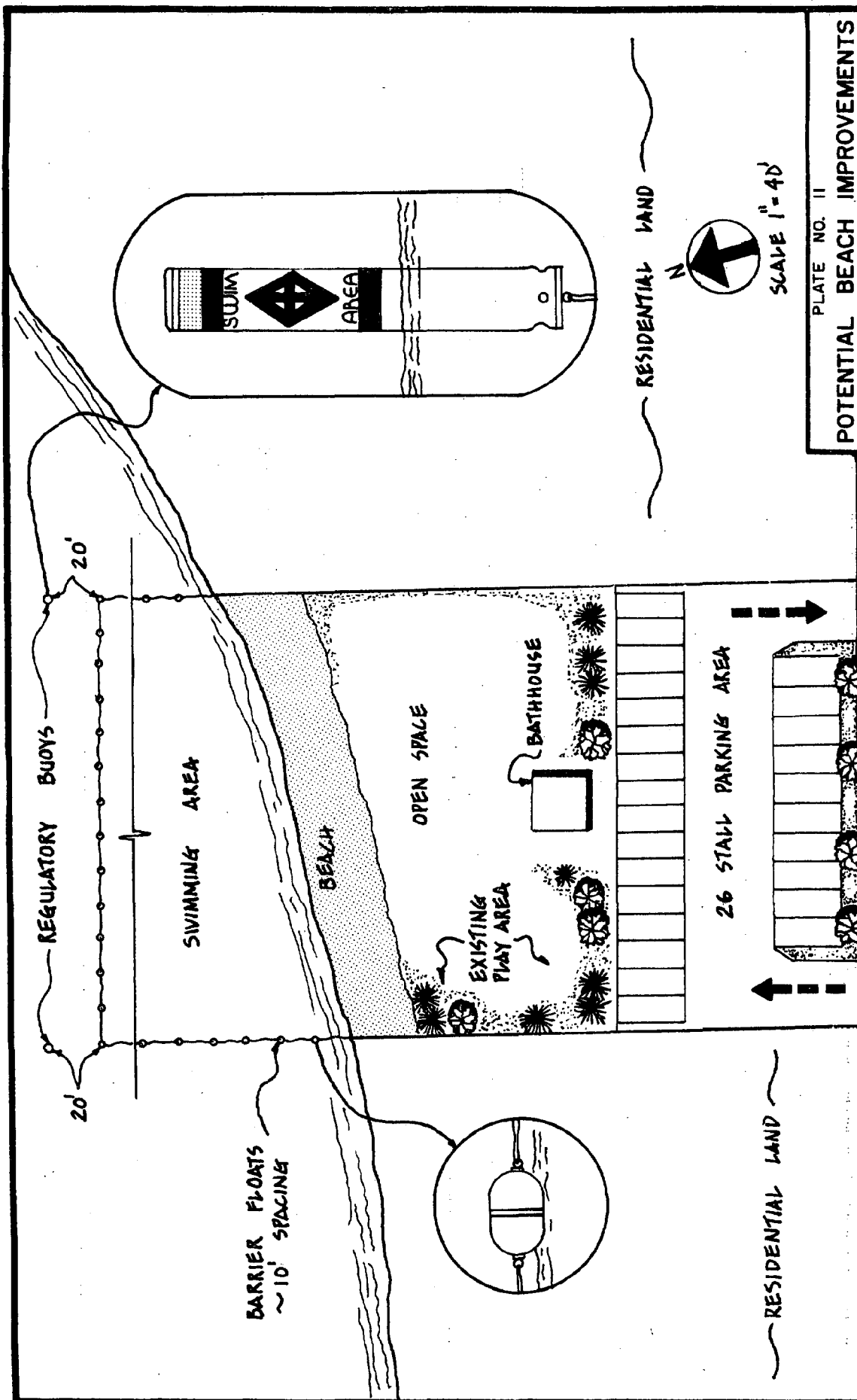


PLATE NO. II
POTENTIAL BEACH IMPROVEMENTS

FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
 Green Bay, Wisconsin 54303

U.S.H. "42"

While receiving heavy use during the season, traffic circulation problems, inadequate parking and maneuverability problems for cars launching boats typically results. Plate Number 12, Launch Area Improvements - Existing Ramp illustrates an alternative layout plan for the town's boat ramp in its existing location. The plan includes a 22 stall auto parking area in addition to an 11 stall, drive through, car trailer parking area. The one way design and recommended turn around will provide improved traffic circulation and maneuverability for those boaters utilizing the ramp. The layout includes an open space area for lounging or picnicking that could accommodate two picnic tables.* A dinghy storage area for approximately 36 dinghies located near the boat ramp is also provided.

Due to the proximity of private docks located near the existing boat ramp (see Plate Number 4) congestion and safety problems can result when launching and retrieving boats during busy summer weekends. Plate Number 13, Launch Area Improvements - New Ramp, illustrates an alternative boat ramp layout that features the relocation of the ramp from its existing location, to the northern end of the parking lot, adjacent to the town dock. At this site, a double boat ramp could be accommodated as opposed to only a single ramp at the existing launch site. This alternative includes 31 auto parking spaces in addition to 14 drive through car trailer spaces. The one way design, as in the first alternative, allows for improved traffic circulation and maneuverability for ramp users. The open space area for lounging or picnicking is suitable for up to three picnic tables.* A dinghy storage area is provided for 48 dinghies.

As an additional alternative to solving the parking problems at the Town boat launch, individuals wishing access to boats already moored in the harbor could utilize the overflow parking lot in Peninsula State park, near the Fish Creek entrance. Those wishing to use this lot, however, must first obtain a parking sticker from the park office and comply with all other general park rules. There are no dock facilities at this location at this time. Individuals in the past have brought dinghies to shore. However, if the Town wishes to construct a dock in this area of the harbor, they must petition the park's superintendent for approval. If approved, a permit

*Using a standard of 8 picnic tables per acre for rural picnicking; source: Comprehensive Plan for Wisconsin, Outdoor Recreation Plan, p. G-6.

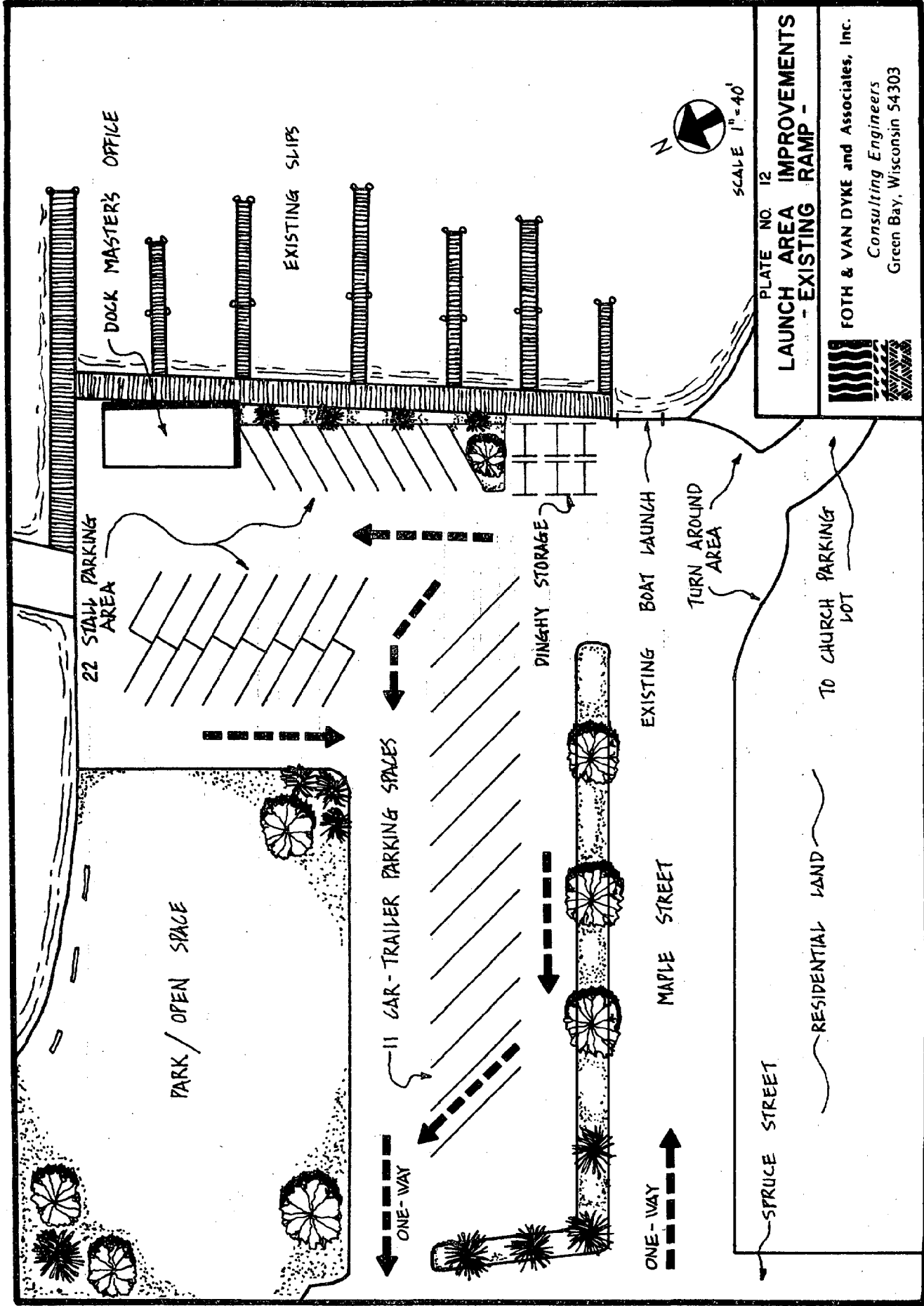



PLATE NO. 12
LAUNCH AREA IMPROVEMENTS
 - EXISTING RAMP -



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 Consulting Engineers
 Green Bay, Wisconsin 54303

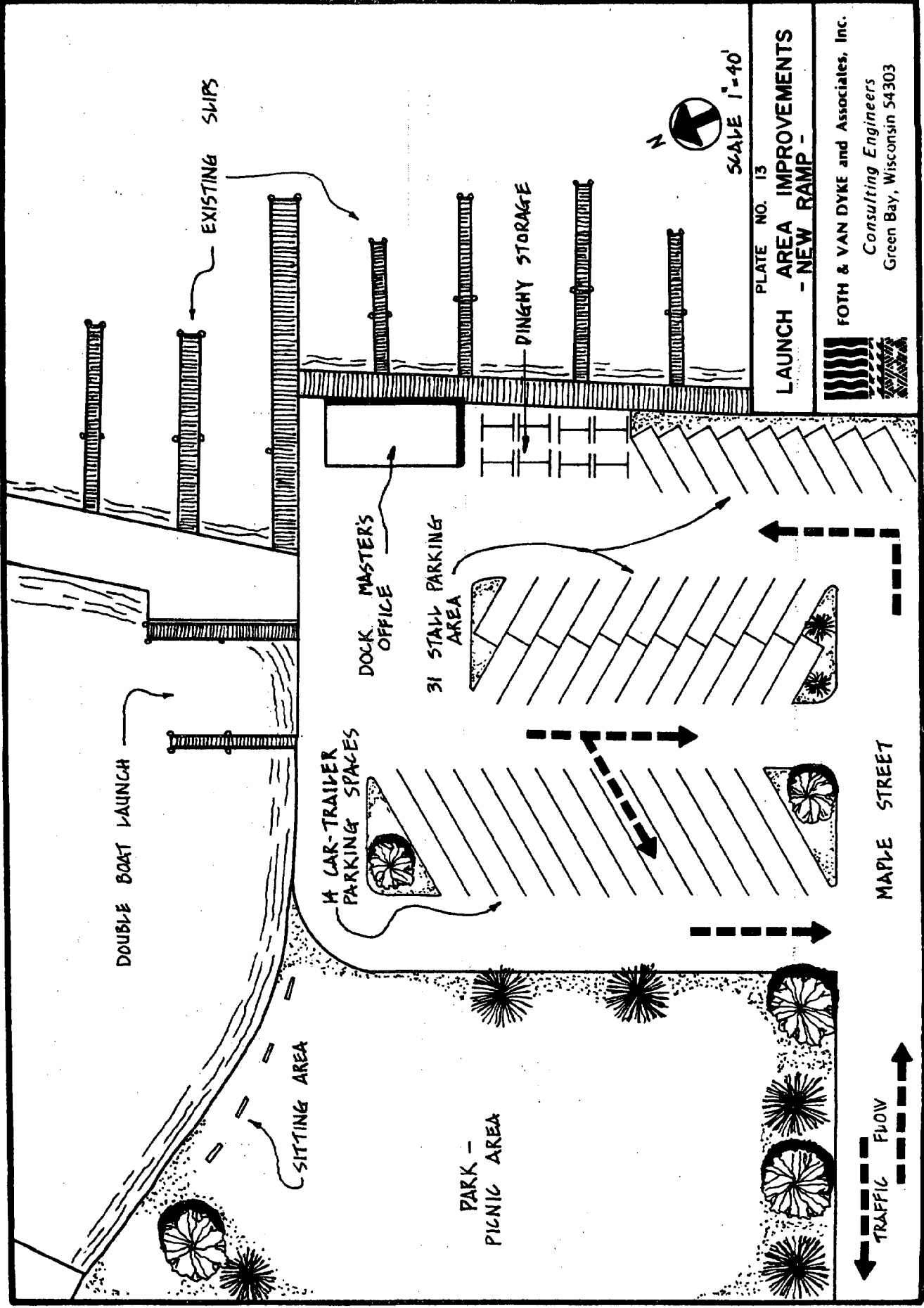


PLATE NO. 13

SCALE 1"=40'

LAUNCH AREA IMPROVEMENTS - NEW RAMP -

FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
 Green Bay, Wisconsin 54303



MAPLE STREET

TRAFFIC FLOW

←

DOCK MASTER'S OFFICE

31 STALL PARKING AREA

4 CAR-TRAILER PARKING SPACES

PARK - PICNIC AREA

SITTING AREA

DOUBLE BOAT LAUNCH

EXISTING SLIPS

DINGHY STORAGE



SCALE 1"=40'

must then be obtained from the Army Corps of Engineers for dock construction.

Other Shore Related Improvements. As the boat ramp and Town dock continue to experience increased use, additional toilets and shower facilities, a sanitary pump-out station and structural dock improvements may be desirable.

In addition to the four existing toilets and one shower currently located in the building housing the dock master's office, two women's toilets, one men's toilet and two men's urinals should be added.* At least one more shower could also be added thereby making one available for each sex. The existing building could be remodeled or an addition constructed to house these facilities. These improvements must meet the approval of the Department of Health and Social Services prior to construction. An adequate sanitary disposal system would also be required.

A sanitary pump-out station would serve as an extra convenience for Fish Creek Harbor users. Besides accommodating local users, other boaters throughout Green Bay and Lake Michigan would most likely take advantage of this convenience. The State Health Code (H80) requires the installation of a sanitary disposal system that complies with State laws if no public sewer system is available. Construction plans must also be approved by the Department of Health and Social Services.

Due to the effects of wave action and ice movement during ice breakup, structural improvements to the existing Town dock are necessary in the short term future. This maintenance work has already been initiated and primarily consists of the installation of sheet piling on the outer faces of the dock structure. This work will necessarily be continued in the future.

*Using 80 as the total number of berths in the harbor, and toilet requirements for campgrounds as listed in H78.05, Administrative Code, Rules of State Board of Health.

MANAGEMENT STRATEGY

Introduction

With the formulation of a harbor layout plan and related discussion regarding possible public improvements to shore facilities, attention can now be directed at specific aspects and considerations concerning implementation. While the layout plan outlined an approach to the spatial use of the harbor, specifics concerned with how such use should occur is another important factor.

This involves first an examination of details associated with particular uses and secondly consideration of an implementation strategy that will seek to promote the recommended plan.

Navigation and Mooring of Boats

The two principal activities of concern regarding use of the harbor are the safe and functional navigation of vessels within the harbor as well as the mooring and anchoring of small craft within the harbor. As noted in the earlier discussion a recommended layout plan addressing these activities is presented. However what must now be considered are the pertinent details surrounding such use as well as a means of causing this recommended framework for use of the harbor to become a reality.

Navigational Fairways. Within the layout plan, suggested navigational fairways are illustrated. The intent is to allow adequate boat traffic circulation as well as access to and from the numerous specific areas of use including the docks and piers, the launch ramp, shore properties and the designated mooring areas.

The designated navigational channels are intended to remain clear and unobstructed and used for navigational purposes only. Recommended fairway width is approximately 100 feet. Identifiable marking of the navigational fairway limits with appropriate channel marker buoys is recommended. (Rolyan #1148 or equivalent)

Mooring Equipment. The other major topic of concern involves the proper mooring of boats within the harbor. Earlier discussion centered on the designation of suitable mooring areas within the Fish Creek Harbor. Several factors were examined in an effort to identify areas of suitability. It was also noted that because of the physical limitations and existing demand on the harbor, extensive portions of the suitable areas would have to be utilized for mooring purposes. In an effort to remain as protected and remote from the open waters of Green Bay as possible, essentially all suitable areas within the more inner harbor area were recommended for inclusion as mooring area.

Several variations of a mooring concept were illustrated in Plates Number 6, 7, and 8. Plate Number 10, Harbor Layout Plan, shows the entire harbor area incorporating one of the mooring schemes into the layout. Upon the selection of the preferred mooring area configuration by the Town, proper identification of the area(s) will be necessary. As with the navigation channels, marking with buoys is suggested. (Rolyan #1147-R or equivalent). However, because of the more complex nature of this activity, additional considerations are necessary.

To maximize use of the mooring area(s), it is recommended that close regulation of such activity be undertaken. Control of the location of individual mooring equipment is recommended. Typically this responsibility is conveyed to the harbormaster. (The legal aspects of this regulation will be addressed within the latter discussion regarding a harbor use ordinance). However at this point, the concern deals with how it should be done rather than by who.

In the previous discussion relating to the mooring area, Table Number 10, Diameter of Boat Swing - Single Buoy Moorage, contained computations pertinent to the maximum diameters of individual moorings. Consideration of water depth and boat size were incorporated into the calculations. Using this information provides a guide for the recommended spacing of buoys. Common practice involves non-overlapping circles positioned in a grid fashion. Thus, if the diameter listed for a given water depth and boat size were 100 feet, that

would be the recommended spacing between buoys, with 50 feet being contributed as the radius of each of the two adjacent buoys.

A second related factor deals with the actual specifications of the mooring equipment. At the present time private individuals have been placing their own mooring hardware into the harbor for mooring purposes. It is recommended that minimum specifications for this equipment be used. The legal mechanism for this will be addressed within the discussion of the harbor use ordinance. At this point consideration of what such minimum standards should be examined.

Plate Number 14, Typical Mooring Gear, illustrates a side view of a conventional single mooring. A conventional single mooring is comprised of three primary equipment pieces, namely buoy, chain and anchor. A fourth equipment piece, the pennant may or may not be considered.

Individual examination of each component indicates that absolute minimum standards do not readily apply. Numerous factors impact on such standards and the extensive research of the matter seems to indicate that specifications are often based on a method of "results of past use". In such an instance, equipment applications which have proved successful in similar harbor use or from manufacturers' experience are utilized. Examining this approach, numerous contacts were made to government agencies, manufacturers' and existing harbors. A listing of contacts is contained as Appendix I of this report. A variety of information and standards were obtained from research. While there was a variation in specifications, there does seem to be some fairly recognizable parameters for these standards which can be examined.

While the mooring buoy tends to be a generally standardized piece of equipment, several configurations are available. Markings are typically blue bands over a white background with the size and weight variable depending on the application. Some buoys allow pennant or mooring line attachment directly to the top of the buoy while others recommend connection directly to the chain between the buoy and anchor. This is generally determined by cost and strength of construction. While size and design can be discretionary

$$\text{MAXIMUM SCOPE} = \sqrt{\text{PENNANT LENGTH} + (\text{CHAIN LENGTH} - 1)^2} - \left[(\text{WATER DEPTH} - \text{ANCHOR HEIGHT}) + \text{FREEBOARD} \right]^2$$

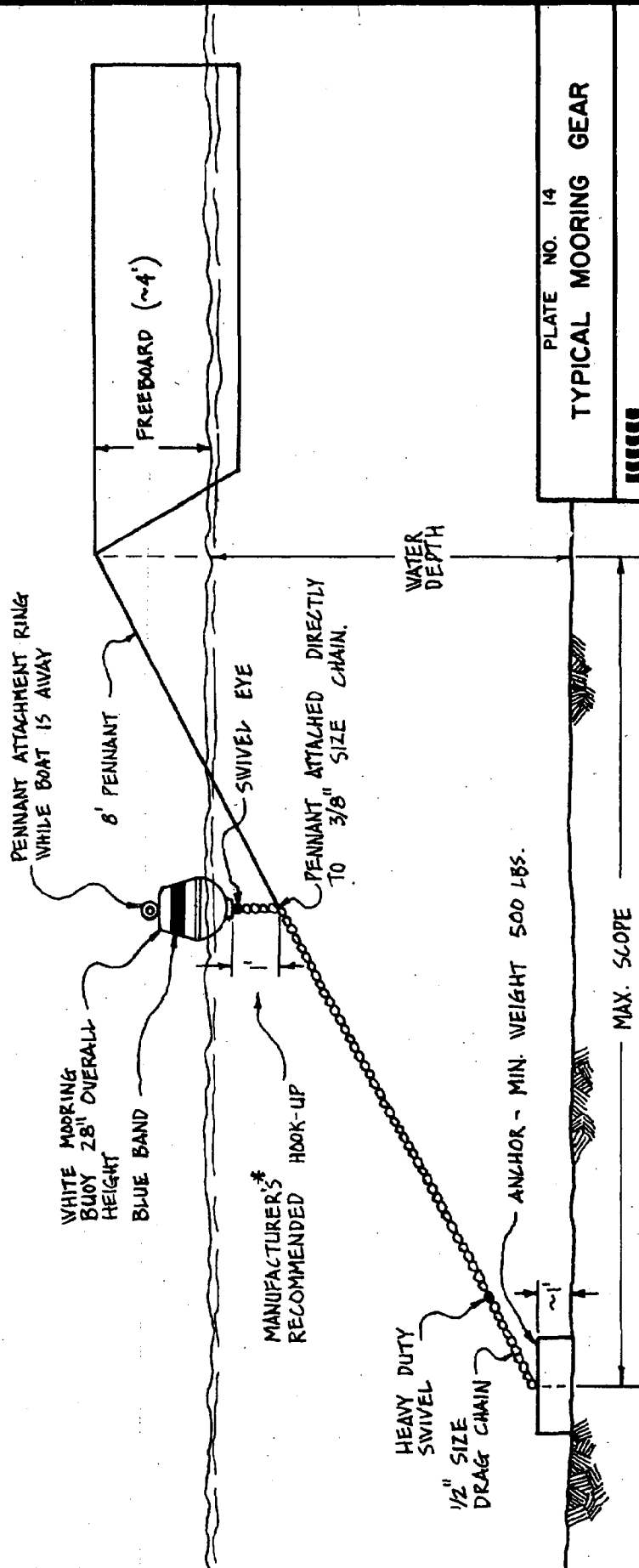


PLATE NO. 14

TYPICAL MOORING GEAR



FOTH & VAN DYKE and Associates, Inc.
 Consulting Engineers
 Green Bay, Wisconsin 54303

* ROLYAN MANUFACTURING CO. INC.
 MENOMINEE FALLS, WI.

depending on the application, it is recommended that the standard marking scheme of blue bands over a white shell be required for local harbor use. Other regulation of buoy details can be established by the harbormaster depending on specific application. The type of buoy displayed in Plate Number 14 is widely used and should prove satisfactory for use at Fish Creek.

A second component of the mooring is the chain which connects the anchor and buoy and serves as the link between the anchor and boat while moored. The two principal variables associated with the chain are it's length and it's strength which is reflected by the link size. Representative chain lengths corresponding to water depths are shown in Table Number 10, Diameter of Boat Swing - Single Buoy Moorage.

Chain link size refers to the size of individual links and ranges in size typically from one-quarter inch to three-quarter inch depending on size of boat. Often times a larger size chain is utilized on the lower portion with a reduced chain diameter for the upper portion. This, in essence, provides greater anchoring capacity for the mooring gear.

Chain size is variable with typical minimum size being three-eighths or one-half inch. In such instances, a section of heavier drag chain is employed for the final section attaching to the anchor. Under mooring suggestions by the manufacturer Rolyan Manufacturing Co., Inc. indicates that in waters up to 20 feet in depth and for generally protected moorings, a three-eighths inch proof coil chain is adequate with at least a one-half inch drag chain comprising the final foot. This seems to be generally representative of typical applications and is felt suitable as a guideline for use at Fish Creek. This, however should be weighed against past practical experience within the Fish Creek Harbor.

The final component of the typical mooring set up is the anchor. While in private applications a suitable anchor may be an engine block, railroad wheel or other heavy object, typical commercial applications generally are reinforced concrete anchors. The greatest variation regarding the anchor typically is in its weight. Rolyan Manufacturers Co., Inc. suggests at least a 300 pound (under water weight) anchor.

This translates into approximately a 500 pound dry weight. In actual applications, this appears to correlate fairly closely with use within the Milwaukee Harbor where regulated anchor weights range from 500 to 1000 pounds. To provide further consideration regarding anchor requirements, minimum off-shore mooring anchor specifications are contained within the harbor ordinance for Newport Beach, California. For applications in the size class of 20 to 35 feet the following minimums are specified:

<u>Boat Length</u>	<u>Anchor Weight</u>
20 foot boat	500 pounds
25 foot boat	650 pounds
30 foot boat	750 pounds
35 foot boat	1000 pounds

This appears to be quite analogous to practical application in the Milwaukee Harbor and in line with minimum manufacturers' suggested anchor weights by Rolyan. Such guidelines would be felt to be suitable for use at Fish Creek. However as with most other applications investigated such standards must still be weighed against local experience with adjustments made if necessary.

Mooring Gear Cost Analysis. To provide a further analysis regarding mooring equipment, representative cost information for the purchase of a mooring can be sighted. This is useful to prospective equipment purchasers and may be especially useful, should the local government elect to provide rental moorings within the harbor. Under a typical application utilizing price information supplied by Rolyan Manufacturers Co., Inc., mooring gear for

a representative set up would run approximately \$200 per mooring. This is based on the following equipment and quantity cost supplied by the manufacturer.

Mooring Buoy #1145	\$ 51.50
Anchor Chain - 20 feet of 3/8"	44.00
Anchor Chain - 1 foot of 1/2"	3.90
Anchor - (2) 300 lb. @ \$46 each	92.00
Miscellaneous Hardware	<u>7.00</u>
	\$ 198.40*

*As per Rolyan Price List Form 3-122 R1
Effective 4-1-79

This would be a representative application. In some instances less chain would be required where as in others, more anchor weight would be needed. Allowing for price increases, shipping and other miscellaneous costs it appears a typical commercially built mooring would cost between \$200 and \$250.

For comparative purposes, this can be viewed in relation to the star dock alternate of mooring which was examined under the discussion of mooring layouts. Information supplied by Aqua-Matic Piers, Inc. indicates a unit price of \$25 to \$30 per square foot. Using a typical design having eight 25 foot piers would yield approximately 1000 square feet. In this case, cost would run \$25,000 to \$30,000 per dock unit and would be capable of handling 16 boats. In comparison, 16 single moorings would cost approximately \$4,000.

With the substantial cost differential, typical application of the star dock has been in situations where mooring space is at a premium and lack of capacity might warrant large scale harbor expansion and modification.

Other Harbor Improvements

One physical limitation affecting boating within the Fish Creek Harbor is the northwesterly exposure of the harbor to open waters. The natural mouth

of the bay spans nearly 2000 feet of open water. As a result, susceptibility to wind and wave action reduces the desirability of harbor activity in substantial portions of the harbor.

In this regard, creation of an artificial breakwater across the mouth of the harbor would be beneficial in improving the quality of the harbor and in turn demand on the harbor. This could involve either a partial or complete breakwater. Several design concepts could be used ranging from the conventional rubble or tight sheeted design to that of a man made floating breakwater.

While such action could be expected to improve the quality of the harbor and greatly improve its desirability as a harbor of refuge, two other factors must also be considered.

One is the esthetic nature of the harbor and surrounding environs. Placement of a breakwater within the harbor may be considered esthetically detracting. Another factor is the limited size of the harbor in terms of ultimate potential. The relatively limited area having suitable water depths makes large scale use of the harbor questionable.

Thus, there appears to be both "pros" and "cons" surrounding such a future improvement. One certain factor of importance would be cost which could be substantial. As a result, further consideration of such action would have to be made by the Town. Clearly, considerable additional study and analysis would be required to determine cost and design considerations. Financial assistance in such feasibility work would be possible should the Town elect to pursue this action.

Financial Aids Assistance

As an aid in the consideration of various capital expenditures outlined in this study, a listing of several potentially eligible State and Federal financial assistance programs can be sited. Improvements in the way of marking buoys,

boat ramps, breakwaters, and other improvements are potential candidates in terms of assistance available.

1) Recreational Boating Facilities Funds

Wisconsin Waterways Commission

Provides up to 50 percent of cost for feasibility determination of recreational boating facilities project and up to 50 percent of the subsequent cost of project. Typically eligible: launch ramps; service piers, breakwaters and bulkheads.

2) Land and Water Conservation Fund (LAWCON)

Wisconsin Department of Natural Resources

Provides funds for the acquisition and/or development of open space, park, recreation and conservation use.

3) Upper Great Lakes Regional Commission (UGLRC)

Supplemental Assistance and Technical Assistance Aids

Assistance primarily associated with economic improvements and community services relating to local economic development and job creation and/or retention.

4) Outdoor Recreation Act Program (ORAP)

Wisconsin Department of Natural Resources

Program guidelines essentially the same as Wisconsin LAWCON program.

5) Wisconsin Coastal Management Program

Wisconsin Department of Administration

Financial and technical assistance for specific planning purposes related to Wisconsin coastal areas.

6) Farmers Home Administration Act of 1961 and 1962

Provides low cost loans for the establishment of outdoor oriented recreational facilities.

These represent some of the possible programs available to the Town should financial aids be desired. Additional information on each can be typically obtained through contact of the appropriate agency listing.

LEGAL CONSIDERATIONS OF HARBOR MANAGEMENT

Introduction

Throughout the discussion, the aspect of implementation methodology and other legal questions surrounding regulation of the harbor have been largely reserved until now.

The topics of plan implementation can primarily be viewed in terms of three areas. These are public education, capital improvements and legally compelling mechanisms such as a harbor use ordinance. While the first is perhaps the simplest, experience has shown its level of effectiveness is only marginal.

It does however represent an inexpensive and voluntary means of implementing certain plan aspects. Of perhaps chief importance is simply to make people aware of the existence and contents of such a plan. Making copies readily available for distribution by providing press coverage and by bringing the plan within the public forum will greatly aid compliance.

While such a measure is strongly recommended, its effectiveness can only be expected to carry so far. Another means of implementation can be through public capital improvements. To the extent such action will provide desirable upgraded facilities which users would voluntarily use or physically change user patterns forcing compliance, such action can be effective. However, by the very nature of a management plan, legally compelling measures have proven to be the most useful. In terms of this discussion, that would primarily consist of a local harbor use ordinance to govern activities within the Fish Creek Harbor.

While this is the most useful means of implementation, it is also the most complex. Two principal issues must basically be addressed. These include the jurisdictional question as well as the appropriate format and wording of such a legal tool. Because each is important to the analysis and the eventual success of implementation, each will be examined in this concluding portion of the study.

Harbor Jurisdiction

The issue of jurisdiction is one that has been somewhat clouded relative to harbors within a number of local communities in the State. An overlapping of authorities from the local, state and federal levels has tended to raise legal questions regarding specific points of regulation pertinent to a harbor. A mixing of legal powers and control over various aspects relating to a harbor has created "grey areas" for the jurisdictional topic. Because of this situation, it was felt necessary to address the jurisdictional matter in an effort to identify the most appropriate action relative to Fish Creek.

This was done by the Coastal Management Program staff with a copy of their summary analysis attached as Appendix II, Options for Local Management of Fish Creek Harbor: A Report to the Town of Gibraltar. A comprehensive investigation into legal mechanisms by which the Town of Gibraltar presently has or may obtain jurisdiction for harbor regulation is presented. A review of the materials reveals a number of considerations and options open to the Town.

Because of the legal implications of this matter, it is recommended that a legal opinion be obtained by the Town as to the most appropriate course of action. As would appear from the analysis, the most definitive action to establish jurisdiction would be through the lakebed grant or the somewhat analogous lakebed lease. While the lakebed grant has been quite popular for this purpose, it can be a somewhat lengthy process. The lakebed lease has the advantage of typically being quicker, yet it contains potential questions regarding riparian ownership as well as DNR involvement. See appropriate discussions within Appendix II.

As a result, it would be the recommendation of this analysis to first seek legal determination as to the Town's boundaries relative to the harbor. (Either by Town Council or Public Council, i.e. DNR or Coastal Management Council).

If jurisdiction could be established by virtue of the harbors specific inclusion within the Town's boundaries, the Town could then proceed with implementing regulatory powers.

If this is not possible or should it prove unsuccessful, the Town should proceed with definitively eliminating any jurisdictional uncertainty. Options available are noted in the previously referenced jurisdictional study prepared by the Coastal Zone Management staff.

As a minimum measure, the Town should seek a Special Anchorage Area (SAA) designation from the U.S. Coast Guard. (See Appendix II for details). In addition, to this action, the town should strongly consider seeking a lakebed grant or the similar lakebed lease. This would allow more sweeping jurisdictional flexibility with local regulation of the harbor. It also is probably the most commonly used practice to resolve this matter. By taking such actions the Town would be in a position to exercise legal authority over boat moorings as well as other harbor activities.

Throughout this discussion one issue that does not seem to be in any doubt is that authority is available to the Town, either existing or obtainable.

As a result, the final topic of this analysis is an examination of a harbor use ordinance.

Harbor Use Ordinance

To complete the discussion relative to implementation strategy, a draft harbor ordinance tailored to the Fish Creek Harbor has been prepared. While the ordinance is subject to legal counsel review and change, care was taken during preparation to help ensure comprehensive coverage of the subject. A copy of the ordinance is included as Appendix III, Harbor Ordinance - Draft.

Upon approval of harbor plan report and satisfactory resolution of any legal questions, efforts to adopt such an ordinance should be undertaken. In doing so the Town of Gibraltar will have made a notable stride in the improved use and management of its harbor.

Public Management Option for Moorings

Presently the Town of Gibraltar permits the private use of mooring equipment as the sole means of mooring vessels within the harbor. This action has created problems in the past and may be a major contributing factor in reaching a need for greater management efforts.

Throughout the plan discussion, effort has been made to accommodate this continued approach to providing mooring facilities. Yet flexibility was also sought for incorporation that would allow a more active role by the Town in providing mooring facilities. This could include either a partial or complete provision of mooring gear by the Town.

Because of the existence of private moorings within the harbor, a town decision to implement a public mooring field would require a conscientious effort by the Town. However in terms of implementing management practices within the harbor, it would offer the most meaningful and long term solution to the mooring question.

Ease of control, ensuring proper equipment and safe mooring practices would be greatly enhanced. Instituting such action would also allow costs to be recouped by the Town for services and facilities which up until now have been largely absorbed by the Town.

While capital cost would require a notable expenditure by the Town, revenues generated from rentals could provide an excellent rate of return on investment. Utilizing cost figures generated in this study for mooring equipment, a representative unit cost of \$250 can be used. If 50 moorings were initially established, an equipment cost of \$12,500 would be involved.

In return, common annual mooring fees may range from \$150 to \$250. Elmwood Township located near Traverse City, Michigan provides mooring rentals at a seasonal fee of \$225. This includes mooring, auto parking stall and dinghy storage with fees annually reviewed by Michigan D.N.R..

Thus it seems evident that rental fees could quickly pay off capital expenditures for the moorings. A portion of the fee could also cover maintenance and administration as well as other harbor expenses which may be largely attributable to such boating use.

One aspect that should be explored by the Town relative to this type of mooring arrangement is the matter of Town liability. Because of the nature of such an operation, the liability question should be investigated with the Town's legal counsel and insurance carrier.

One practice that has been utilized is a rental contract which, in addition to containing all of the pertinent information about the boat and owner, includes a set of rules and conditions which must be agreed to by the owner by signing a contract prior to mooring. This would still not negate matters of negligence on the part of the Town, but would apparently offer some means of legal protection for the Town.

To allow this option to be exercised, appropriate provisions are included within the harbor ordinance. It would be the recommendation of this study to adequately consider this option including such aspects as equipment costs, public attitude and liability concerns.

PLAN IMPLEMENTATION SCHEDULE

As an additional aid in plan implementation, an action plan outlining a possible sequence of public events is provided. The intent is to identify a rational approach for addressing the various aspects and elements associated with harbor management. Also included, where appropriate, cost estimates to provide a general indication as to monetary costs involved. These costs are expressed in 1980 dollars. Also, they were based on a limited degree of engineering details. Consequently, they should be utilized as a general indicator of cost for discussion purposes.

Suggested Implementation Schedule with Approximate Costs

<u>Action</u>	<u>Cost</u>
Phase I	
- Local adoption of Harbor Management Plan	-
- Designation of Special Anchorage Area (Intent to provide legally recognized mooring area)	-
- Seek lakebed grant from the State of Wisconsin (Lakebed lease may be substituted)	-
- Continue maintenance work on town dock.	N.A.
Phase II	
- Mark designated mooring area in conformance with harbor plan.	8 @ \$100 \$800
- Adopt local harbor use ordinance (Assuming resolution of jurisdictional matter).	-
- Begin regulatory control of harbor use	-
- Explore expanded parking use within Peninsula State Park, at the town dock and at community center.	-
- Further explore feasibility of initiating public mooring gear.	-
Phase III	
- Implementation of public mooring gear (optional)	\$10,000-\$15,000

<u>Action</u>	<u>Cost</u>
- Development of additional parking in vicinity of town dock.	\$50,000-\$60,000
- Construction of new boat ramp (optional)	\$40,000-\$50,000
- Provision of improved water access and portable dock facilities for dinghy launching from Peninsula State Park. (optional)	Unknown

Phase IV

- Upgraded sanitary facilities at the town dock. (optional)	\$5,000-\$10,000
- Beach area parking and bath house improvements.	\$30,000-\$40,000
- Construction of dock sanitary pump-out.	-

ACKNOWLEDGEMENTS

An expression of appreciation is made to the following agencies, departments, individuals and manufacturers for their efforts of assistance and valuable contributions to the preparation of this study.

Individuals and Public Agencies

Commander Robert Armacost; U.S. Coast Guard Station; Milwaukee, Wisconsin.

Mr. Tom Corcoran; Assistant Director Marine Division; Chicago Parks District; Chicago, Illinois.

Ms. Carol Cutshall; Coastal Planner; Bay-Lake Regional Planning Commission; Green Bay, Wisconsin.

Mr. Ronald Fassbender; Environmental Impact Coordinator; Wisconsin D.N.R., Lake Michigan District; Green Bay, Wisconsin.

Mr. Robert Florence; Door County Planner; Sturgeon Bay, Wisconsin.

Ms. Victoria Garsow; U.W. Seagrant Program; Green Bay, Wisconsin.

Ms. Arlene Lautner, Clerk; Elmwood Township; Traverse City, Michigan.

Mr. Ray Lawrence; Michigan Waterways Commission; Michigan D.N.R.; Lansing, Michigan.

Mr. Ed McCallum, Structural Engineer; Chicago Parks District; Chicago, Illinois.

Mr. Dale Morey; Boat Safety Section, Wisconsin D.N.R.; Madison, Wisconsin.

Mr. Don Olson; U.S. Army Corp of Engineers; Kewaunee, Wisconsin.

Mr. Mike Oltean, Harbor Master; Belmont Harbor; Chicago, Illinois.

Ms. Ayse Somersan; Recreation Resources Center, U.W. Extension; Madison, Wisconsin.

Mr. Robert Tucker; Boat Safety Section, Wisconsin D.N.R., Lake Michigan District; Green Bay, Wisconsin.

City of Milwaukee, Municipal Code Division; Milwaukee, Wisconsin.

U.S. Coast Guard Office, 8th Naval District; Cleveland, Ohio.

Manufacturers and Suppliers

Aqua-Matic Piers, Inc.; Milwaukee, Wisconsin

Hardwick Engineering and Associates; Vista, California.

Rolyan Manufacturers Co., Inc.; Menominee Falls, Wisconsin.

Trautwein Brothers Waterfront Development; Newport Beach, California.

United Flotation Systems; Columbus, Ohio.

WISCONSIN COASTAL MANAGEMENT PROGRAM

OPTIONS FOR LOCAL MANAGEMENT OF
FISH CREEK HARBOR:
A REPORT TO THE TOWN OF GIBRALTAR

Prepared by

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March, 1980

Attached is the summary excerpt, Pages 3 through 6 of
the above entitled report. For additional information,
reference to the entire report should be made.



Office of Coastal Management
Department of Administration
101 South Webster Street
Madison, Wisconsin 53702

SUMMARY

The Town of Gibraltar can employ a number of techniques to assist Town management of the Fish Creek Harbor.

In this summary, these techniques are first outlined in terms of what they can and can not do for management of Fish Creek Harbor. In the second section, a table identifies those mechanisms which might be of assistance to the Town in addressing particular problems in the harbor. The final part of this summary briefly describes three approaches to harbor management based on degree of local control, responsibility, and commitment.

This report does not describe the many alternatives available to the Town for onshore facilities development. To be sure, the extent and nature of onshore facilities are important planning questions facing the Town Board. However, since there is no legal question concerning the ability of the Town to acquire and develop harbor frontage, the report does not address those planning questions.

A. Harbor Management Techniques

Each management technique discussed in this report is briefly summarized below with a discussion of its limitations in the Fish Creek situation. For a complete description of the techniques (who to see, how to apply, etc.), review the full text and notes at the end of each section.

1. Riparian Rights: Town of Gibraltar

The Town of Gibraltar as an owner of shore property, has certain riparian rights to build docks, establish its own moorings, and "sign off" on nonriparian requests for Department of Natural Resources permits for moorings in that part of Fish Creek Harbor adjacent to Town property.

Use of this concept to establish jurisdiction for Town Management of Fish Creek Harbor is, however, extremely limited.

2. Permit Requirements for Moorings

Placing a mooring on the lakebed requires a U.S. Army Corps of Engineers Section 10 letter of permission (since 1968) and, if the mooring is not in a designated mooring area, a State of Wisconsin (DNR) Waterway Marker Placement permit. For a number of reasons, permit requirements have not been widely enforced; there are no Corps letters of permission or DNR permits on file for moorings in Fish Creek Harbor.

The permit system offers the Town an opportunity to influence the location of individual moorings on a case by case basis. It could voice its objections to applications for Department of Natural Resources waterway marker permits or it could complain to the Corps about moorings too close to other moored boats, docks, fairways or the shoreline. (Note that riparians in the Village of Egg Harbor are attempting to use the permit system to prohibit moorings entirely).

The main advantage of relying on the permit system is the Town's minimal involvement, as the state is responsible for enforcement details. Potential disadvantages include the fact that permits are given low priority by state and federal government and the Town would have to initiate State and Federal actions to enforce the permit provisions. In addition (except for the Town's riparian veto over mooring placement in waters adjacent to Town property) local government review of state and federal mooring permit applications is technically only advisory.

If a designated mooring area or special anchorage area is established, the effects of the permit system are minimized. No state permits are needed and Corps permits would be issued automatically provided the mooring presents no threat to water quality.

3. Local Government Aids to Navigation

A coastal community can request U.S. Coast Guard permission to establish and maintain "channel markers, reef or hazard warnings, or other aids to navigation." (Mooring buoys are not included under these provisions.) The aids would have to meet uniform marking standards and would have to be maintained at no expense to the U.S. Government, but they would have equal status as Coast Guard aids in terms of protection from tampering. Aids to navigation also require approval of the U.S. Army Corps of Engineers and the state Department of Natural Resources.

4. Local Regulation of Boating

Under Wisconsin Statute 30.77, local units of government may adopt local boating regulations which are consistent with State law. However, it is unclear at this time whether the Town of Gibraltar or other Great Lakes communities have jurisdiction to apply this statute. DNR legal staff would be willing to review the Town of Gibraltar boundaries to determine this. Jurisdiction could also be obtained through a lakebed grant or lakebed lease.

5. Special Anchorage Area

Special Anchorage Areas are areas designated by the U.S. Coast Guard where boats may anchor without anchor lights. Designation of a special anchorage area does not prohibit anchoring or mooring elsewhere; however, in actual practice, special anchorage areas tend to control where moorings are placed.

The Town could seek a special anchorage area designation for a portion of the harbor. The area could be designated simply as a mooring area or it could be large enough to include fairways and special areas for transient mooring.

The Coast Guard encourages local administration of special anchorage areas. However, if the Town wished to develop its own ordinances to regulate type and placement of moorings in the Special Anchorage

Area, the Town must seek jurisdiction (probably easiest through a lakebed grant or lease). Then, the federal regulations could name the Harbor Commission or Harbormaster as local administrator of the area.

6. Lakebed Grants

Lakebed grants are laws enacted by the state legislature which relinquish the state's interest in certain specifically defined lakebed areas by granting state jurisdiction over the areas to specific local units of government.

The Town of Gibraltar could request its assemblyman or State Senator to enter a bill granting the state's interest in a specifically defined part of Fish Creek Harbor to the Town for certain purposes. These purposes could be broad or narrow, but might include parks, public slips, docks, piers, small boat harbors, marinas, or breakwaters.

A lakebed grant could give the Town control over the placement of structures or fill on the lakebed and could give the Town the legal basis for regulating the type and placement of recreational moorings. The grant would also provide jurisdiction necessary for the Town to establish local boating regulations under Wisconsin Statute 30.77 or designated anchorage areas under SS 30.74.

7. Lakebed Leases

Under state law, the Board of Commissioners of Public Lands may lease submerged lands, e.g. lakebed areas, to municipalities. However, the municipality must be a riparian owner and the leased area must be used for public recreational facilities related to navigation. Before a lease is finalized, the Department of Natural Resources must determine that developments resulting from the lease are consistent with the public interest.

The Town could seek a lakebed lease from the Board for a period up to 50 years for areas of the harbor adjacent to Town owned properties. Because the lease application probably would not propose any physical changes to the lakebed, it is likely that the entire leasing process could be completed rapidly--perhaps in as little as two months. Also, if local needs change, the Town could negotiate a change in the terms of the lease or cancel it entirely.

A lakebed lease, like the lakebed grant, gives the Town the legal basis for regulating the type and placement of recreational moorings and for establishing local boating regulations.

B. Local Management of Certain Harbor Activities

The table on the following page identifies, in a very general sense, which of the management techniques discussed in this report might be of assistance in addressing particular harbor problems. In all cases appropriate state and federal officials should be directly consulted for details.

TECHNIQUES TO RESOLVE CERTAIN HARBOR PROBLEMS

<u>Problem</u>	<u>Solution</u>	<u>How Achieved</u>
A. Moored boats block traffic routes to major shore facilities	1. Mark harbor navigation lanes	a. State/federal waterway marker/navigation aids b. Fairways as part of USCG Special Anchorage Area c. Wis. Stat. 30.77
B. Moorings congested, gear inadequate, too close to shore	1. Designate mooring area; develop advisory, but recommended standard for mooring gear.	a. USCG Special Anchorage Area b. Wis. Stat. 30.77 or 30.74
	2. Designate mooring area; mandatory mooring gear standards.	a. USCG Special Anchorage Area with lakebed grant or lease b. Wis. Stat. 30.74 with lakebed grant or lease
	3. Designate mooring area with Town mooring ownership and rental.	a. USCG Special Anchorage Area and riparian rights (limited area) b. Wis. Stat. 30.77 or 30.74 and riparian rights (limited area) c. Sec. 2a, and 2b above
C. Anchored/moored too close to shore and piers	1. Prohibit nonriparian anchoring or mooring in a shoreline and pier zone	a. Wis. Stat. 30.77 b. State enforcement of waterway marker permits (mooring only)
	2. Designate mooring area out from shore	a. Sec. B above
D. Reef not marked	1. Mark reef	a. State/federal waterway marker/navigation aids
E. Not a safe harbor	1. Permanent breakwater	a. State/federal permits for structures on lakebed b. Lakebed grant or lease and federal permit
	2. Floating breakwater	a. State/federal permits

C. Three Approaches to Harbor Management

Wisconsin's coastal communities have a wide range of interest, attitude, and commitment toward harbor management. Those communities which have the greatest local control over harbor activities (and locally initiated harbor improvements) did so over many years through a sustained commitment.

This observation has special implication for the Town of Gibraltar or other communities contemplating local harbor management. Each community needs to assess its own interests, degree of public support, and staffing and financial capabilities for harbor management. If these necessary commitments, some requiring annual operation costs, are beyond the community's interests or capabilities, a less intense or more incremental approach to management should be pursued.

In the case of Fish Creek Harbor, the Town could proceed with one of a few basic approaches to harbor management.

1. Very Limited Town Involvement

The objective of this approach might be to respond to current problems as necessary, but to keep the Town's involvement to a bare minimum.

Following this approach, the Town could do such things as:

- a. Initiate USCG designation of a Special Anchorage Area, but try to avoid local enforcement (like Sturgeon Bay).
- b. Initiate complaints about moorings not having appropriate state or federal permits and then exercise the Town's review where applicable.
- c. Provide information to boaters on desired mooring areas, gear considerations, etc. as well as the permits required.

2. Local Management With Shore Facilities Improvement

The objective of this approach might be to respond to present and future problems as necessary and to assume responsibility for any resulting ongoing local management operations, but to also limit facilities improvements to those financed out of dock revenues.

Following this approach, the Town could tackle a range of management activities as follows:

- a. Initiate USCG designation of Special Anchorage Area.
- b. Seek lakebed grant or lease in order to control mooring location and gear in the Special Anchorage Area.
- c. Develop navigation lanes and other waterway markers, to be maintained by the Town, as needed to implement the harbor plan.

- d. Approve multi-year capital improvements program for onshore (or even nearshore) facilities improvements.

3. Local Management With Initiation of Major Harbor Project

The objective of this approach might be to not only to manage existing harbor activities, but to initiate major harbor development for increasing the harbor capacity or safety. This approach would require considerable time and expense over a period of several years. Much of the construction costs (of a breakwater, for example) could potentially come from other sources, but it literally takes years to get all the approvals and commitments. This approach could eventually make Fish Creek a safe harbor however, and that would have its own set of benefits and advantages for the community.

SUGGESTED HARBOR USE ORDINANCE
FISH CREEK, WISCONSIN

(Subject to Legal Review Prior to
Local Adoption)

February, 1980

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The following ordinance represents a comprehensive approach to regulating aspects of harbor use. The intent was to incorporate regulations covering a substantial number of harbor use related activities. Not all items addressed may be desired for inclusion by the Town in a harbor ordinance. Upon legal and regulatory review, the Town may wish to delete or modify items felt to be inappropriate for Fish Creek.

FISH CREEK HARBOR ORDINANCE
DOOR COUNTY, WISCONSIN

The Town of Gibraltar, Door County, Wisconsin, Pursuant to Chapter 30 of the Wisconsin State Statutes Hereby Establishes a Local Harbor Ordinance Which Reads as Follows:

ARTICLE I

General Provisions

Sec. 1. Short Title: This ordinance shall be known and may be cited as the "Fish Creek Harbor Ordinance, Door County, Wisconsin".

Sec. 2. Applicability: The provisions of this Ordinance and any rules and regulations adopted pursuant thereto shall be applicable, and shall govern, the Harbor of Fish Creek and all other shore facilities under the jurisdiction of the Town of Gibraltar, Door County, Wisconsin. 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 the Ordinance, a power is granted to the Fish Creek Harbormaster or a duty is imposed upon him, the power may be exercised or duty performed by the United States Coast Guard, Law Officer of the Door County Sheriff's Department or by other persons authorized pursuant to law, unless it is expressly otherwise provided.

Sec. 5. Facilities, Control of Use: The Fish Creek Harbor Commission is vested with authority over and control of all floats, wharves, docks, and other facilities owned, leased, controlled, constructed or maintained by the Town of Gibraltar, Door County, Wisconsin. Such authority shall be subordinate to any applicable existing Federal and State regulations governing the same matters.

Sec. 6. Rules, Regulations and Orders: The Fish Creek Harbor Commission shall have the power and duty to enforce the laws, ordinances, traffic and safety regulations covering usage of the Fish Creek Harbor.

Sec. 7. Chief of Harbor (Harbormaster): The Chief Enforcement Officer of the Fish Creek Harbor Commission or authorized agent acting under the orders and jurisdiction of the Harbor Commission shall have full authority in enforcement of all laws, ordinances and regulations affecting the Fish Creek Harbor and waterways and beaches within such harbor, and he or his duly authorized agent may cite alleged offenders to appear before the appropriate Court of Law.

Sec. 8. Violations: Violation of this Ordinance is a misdemeanor punishable by a fine of not more than Three Hundred Dollars (\$300) or by imprisonment in the Door County jail for not more than three (3) months or by both fine and imprisonment. A repetition of continuation of any violation of any provisions of this ordinance or of any order or direction of the Fish Creek Harbormaster or his duly authorized agent 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 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.

Beach: Shall mean a public or private beach area bordering the waters of the Fish Creek Harbor.

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.

Facilities: Shall mean any and all facilities of the Fish Creek Harbor 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 Fish Creek Harbor under jurisdiction of the Town of Gibraltar, Door County, Wisconsin.

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

Fire Department: Shall mean the Volunteer Fire Department of the Town of Gibraltar, Door County, Wisconsin.

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

Harbor: Shall mean the Harbor of Fish Creek which is a naturally occurring recessed water area forming a bay commonly known as the Bay of Fish Creek, this bay being a portion of the larger Bay of Green Bay, both being a portion of Lake Michigan. The boundary limit which divides the Fish Creek Harbor from open waters lying outside of the harbor is defined by a line extended

from a point on the end of the pier on Weborg Point and being on the east shore of the harbor, the location of said point being marked by a PK survey nail, with said line extending at a bearing of South 68⁰-32'-39" West for a distance of 1907.3 feet to a point marked by a ½ inch reinforcing bar and lying across the mouth of the bay on Friedmann's Point. This being on the west shore with the harbor lying south and east of this line.

Harbor Commission: Shall mean the Fish Creek Harbor Commission, a four member appointed commission established by the Gibraltar Town Board pursuant to Chapter 30.37 of the Wisconsin State Statutes.

Harbor Facility: Shall mean any facility affecting the use and operations of pleasure or commercial vessels bordering on, concerned with or related to the Harbor of Fish Creek.

Harbormaster: Shall mean the Chief Enforcement Officer of the Harbor Commission or a duly authorized agent that may be lawfully designated to act in his stead.

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

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.

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

Regulatory Marker or Waterway Marker: Shall mean any of the waterway markers defined as "regulatory markers", conforming to the Inland Waterways, Marking Regulations as specified by the United States Coast Guard.

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 the waters of the Harbor including the area between high and low water lines.

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

State: Shall mean the State of Wisconsin.

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 the Harbor by dropping an anchor or anchors or other ground tackle.

Town: Shall mean the Town of Gibraltar, Door County, Wisconsin.

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

Waters of the Harbor: Means all waters of the Fish Creek Harbor that is owned, managed, controlled or under the jurisdiction of the State of Wisconsin whether or not the lands lying under said water are privately or publicly owned.

ARTICLE III

General Boating and Traffic Control Regulations

Sec. 9. Traffic Control Authority: The Harbor Commission shall have authority to control water-borne traffic in any portion of the waters of the Harbor by use of authorized State regulatory markers, signal, orders or directions at any time when the Harbor Commission 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 the Harbor Commission, or with any signal orders or directions of the Harbormaster or his authorized agent acting as the Chief Enforcement Officer of the Harbor Commission. Such local authority shall be subordinate to applicable existing Federal and State regulations governing such matters.

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, exhibition, or other special event unless especially authorized by permit from the Harbormaster 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 the Harbor any power or motor driven vessel that does not have a means to reverse or stop the vessel. Motor vessels shall have aboard and ready for instant use a suitable anchor with chain or line affixed.

ARTICLE IV

General Regulations

Sec. 13. Liability:

(a) Boat Owners: Any person using the facilities within the limits of the Harbor shall assume all risk of damage or loss to his property. The Town of Gibraltar or its duly authorized representatives assume no risk on account of fire, theft, Act of God, or damages of any kind to vessels within the Harbor.

(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 similar facility, located within the Harbor to maintain the physical improvements under his control 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 the Harbormaster. Failure to initiate within 30 days of receipt of written notice from the Harbormaster to correct unsafe or otherwise unsatisfactory conditions and to pursue same to completion to the satisfaction of the Harbor Commission shall be a violation of this section.

Sec. 14. Launching and Recovery of Vessels: None other than the driver may occupy a motor vehicle while it is present upon the area known as a launching ramp located within the Fish Creek Harbor. All motor vehicles using said ramp areas must securely block at least one wheel of the said motor vehicle while it is standing upon said ramp.

Sec. 15. 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 this Ordinance or in the absence of specified periods by condition of the issuing authority 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. 16. Lost and Found Property: The finder of lost property within the harbor shall deliver it to and report its identity and location to the Harbormaster.

Sec. 17. 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. 18. 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. 19. 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 and Harbor Facilities.

Sec. 20. Signs, Erection and Maintenance: The Harbormaster 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 are deemed necessary to carry out the provisions of this Ordinance, or to secure public safety and the orderly and efficient use of the Harbor. For Sale signs shall be limited to a size of eight and one-half inches ($8\frac{1}{2}$ ") by eleven inches (11") and must be posted on the vessel.

Sec. 21. Protected Swimming Area: It shall be a violation of this Ordinance to operate or navigate any vessel within a designated swimming area. The Harbor Commission may identify swimming areas by signs, buoys, or other means.

Sec. 22. Record of Vessels: The Harbormaster shall keep an accurate record of the number, size, type and description of all vessels within the Harbor using public facilities and which remain more than 48 hours, and it shall be unlawful for any person having knowledge thereof to fail or refuse to provide said information to the Harbormaster on demand.

Sec. 23. Swimming, a Hazard to Navigation: All swimming and bathing shall be in those areas designated by the Harbor Commission 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. 24. Annual Registration for the Mooring of Boats: Upon the outset of each boating season for which a boat owner desires to moor his craft within the Fish Creek Harbor or upon the seasonal placement of private mooring buoys, boat owners shall notify and register with the Harbormaster providing pertinent requested information including information about the boat, its owner(s) and anticipated dates and duration for mooring the craft in the Harbor. It shall be a violation of this ordinance to moor a vessel within the Harbor without first completing mooring registration with the Harbormaster for the boating season presently underway. A reasonable fee to cover costs associated with such registrations shall be set by the Harbor Commission.

Sec. 25. Placement of Private Moorings: It shall be a violation of this Ordinance to place any mooring anchor in the harbor without a permit from the harbormaster as well as all other appropriate clearances from local, state, and federal authorities having jurisdiction over such matters.

The placement of such moorings shall take place in designated harbor mooring areas with site placement overseen by the harbormaster and shall be subject to the availability of adequate water area to safely accommodate additional vessels.

Sec. 26. Existing Moorings Located Outside of the Designated Mooring Areas: When in the event that a mooring anchor exists outside the boundaries of the special mooring area at the time of those boundary designations and such anchor is located within a navigational fairway or when in the opinion of the Harbor Commission or other state or federal authority having jurisdiction over such matters, the mooring of a boat at such anchor represents a public nuisance or hazard to the public's health, safety, and general welfare, the private owner of such mooring(s) shall be ordered to remove the mooring(s) from the harbor or at the owner's preference, move it to a new suitably designated location in the mooring area. At the option of the instructing authority, the owner may cease use of the mooring anchor(s). Cost of such removal or transfer shall be borne by the owner of the mooring.

Sec. 27. Existing Non-Conforming Moorings Located Inside of the Designated Mooring Areas: When in the opinion of the Harbor Commission or other state or federal authority having jurisdiction over such matters, the use of existing moorings at their present location within a designated mooring area represents a nuisance or threat to safety of other moored boats, their occupants or other harbor users in general or represents an inefficient configuration for mooring placement so that the number of potential boats safely moored is reduced, the private owner of such mooring(s) shall be ordered to remove the mooring(s) from the harbor or at the owner's preference, move it to a new suitably designated location in the mooring area. At the option of the instructing authority, the owner may cease use of the mooring anchor(s). Cost of such removal or transfer shall be borne by the owner of the mooring.

Sec. 28. Instituting a Publicly Owned/Managed Mooring Field: If, after due consideration, the Fish Creek Harbor Commission determines that the public's boating interests are not best being served by a continuation of the practice of allowing each boater's private mooring equipment to be utilized within the Harbor, the Commission may so determine and recommend to the Gibraltar Town Board that the Town institute a publicly owned and/or managed mooring field within the Harbor. Upon the Town Board's decision to implement such action, the Harbormaster shall notify all boaters presently owning

private mooring equipment within the Harbor of the impending action and the owner's responsibility for removal of private mooring equipment. Such notification shall take place at least thirty (30) days prior to the start of such action. In the event owner's are unknown or can not be located, the Harbormaster shall post copies of such proposed action in a conspicuous location at the Town dock as well as other locations within the Town where official public notices are generally posted. Official notice of such action shall also be placed within the newspaper receiving the greatest circulation within the Town as well as any other such newspapers felt appropriate by the Town. Such posting of notices at public locations as well as within the newspaper(s) shall be done at least thirty (30) days prior to the start of action by the Town.

Failure of private mooring owner's to retrieve said equipment from the Harbor or to notify the Town in writing of pending action to do so, shall constitute notification to the Town Board of the owner's abandonment of the mooring. In such cases and where removal is necessary to allow public mooring placement, the Town shall cause such mooring(s) to be removed and held as surplus materials by the Town to be disposed of as the Town sees fit. Claims of ownership by private parties within thirty (30) days after removal from the Harbor can be made by proving ownership to the satisfaction of the Town Board in addition to payment of costs incidental to the removal and storage of the mooring equipment from the Harbor.

Upon clearance and necessary preparation of the Harbor, the Town Board shall direct the Harbor Commission to develop a Town owned mooring field. Such field shall utilize standardized mooring equipment meeting general acceptability standards for these types of equipment. The mooring area shall be compatible with an established Harbor Layout Plan and shall be appropriately marked with buoys. Placement sighting and subsequent regulation of individual moorings shall be done by the Harbormaster. Applicable provisions of this ordinance shall govern their use in addition to the establishment of any other applicable rules and regulations deemed necessary by the Harbor Commission.

Use of the moorings shall be open to the public with associated rental fee to be determined based on cost of construction and maintenance, associated administration, as well as possible contingency costs to cover future equipment replacement and other public harbor improvements.

In the event such demand for public moorings is greater than existing supply, an equitable selection process shall be used by the Harbormaster for the rental of moorings. In no event shall such selection be made based on race, color, creed, national origin, or religious beliefs.

Sec. 29. Anchoring: It shall be a violation of this Ordinance to anchor a vessel in the harbor for periods in excess of one hour without first obtaining a permit from the harbormaster or from the facility operator in the case of a defined private marina area. Persons exercising their riparian rights as land owners abutting the harbor are exempt as is temporary emergency anchoring for repair purposes. These requirements shall however, not apply to temporary anchorage within designated mooring areas provided such anchorage does not encroach on the safe use of existing moorings. In instances of disagreement between boaters over such temporary anchorage, the harbormaster shall have the power to decide such matters and direct appropriate action to be taken.

If anchorage is desired within such designated mooring areas for periods greater than 24 hours, the anchorage will be considered comparable to a mooring in which case applicable mooring regulations and the necessity to register with the harbormaster will apply.

Sec. 30. 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 Harbormaster any collision between vessels or other accident or incident causing damage to persons or property.

Sec. 31. Abandoned Vessels: When, in the opinion of the Harbormaster, 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. 32. Vessels, Making Fast: No person shall make fast or secure a vessel to any mooring already occupied by another vessel to an unoccupied mooring the person does not own, rent, or lease (unless prior written authorization has been obtained), 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. 33. Docking, Dry-Docking, or Berthing of Public Harbor Facilities: A person having charge of any vessel shall not make it fast or secure it to any public breakwater, bulkhead, pier or mooring buoy without the consent of the Harbormaster except in an emergency, in which case such person shall forthwith report the emergency to the Harbormaster and thereafter act in accordance with his instructions. Areas designated for temporary transient docking shall be exempt. No dry-docking of vessels shall be allowed on publicly owned Town property.

Sec. 34. Secure Berthing and Anchoring of Vessels. The owner of any vessel moored or anchored within the Harbor 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 maintenance, replacement and adjustment of anchor, mooring or tie lines at reasonable intervals.

Sec. 35. Unseaworthy Vessels Prohibited in Harbor: Exception: A person shall not moor or permit to be moored in the 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, floats or other vessels or which may become a menace to navigation, except in cases of emergency.

Sec. 36. Correcting an Unsafe Berthing: If any vessel shall be found in the judgment of the Harbormaster to be anchored or moored within the Harbor in an unsafe or dangerous manner, or in such a way as to create a hazard to other vessels or to persons or property, the Harbormaster or his duly authorized agent shall order and direct necessary measures to eliminate such unsafe or dangerous condition. Primary responsibility for compliance with such orders and directions shall rest with the owner of the improperly anchored or moored vessel or his authorized agent. In an emergency situation and in the absence of any such responsible person, the Harbormaster 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 the Town of Gibraltar in effecting such correction.

Sec. 37. Removal and Custody of Illegally Berthed or Abandoned Vessels: If any unattended vessel shall be found to be anchored or moored illegally within the Harbor, or if the Harbormaster has reasonable grounds to believe that a vessel has been abandoned within the Harbor, the Harbormaster may assume custody of such vessel and cause it to be removed and held or placed in storage. The Harbormaster or his duly authorized agent 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 Harbormaster only after satisfactory proof of ownership has been presented and full reimbursement made to the Town of Gibraltar for all costs incident to recovery, movement and storage.

Sec. 38. 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 the Harbor 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 the 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 the Harbor 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. The owner or owners of such vessel or other property causing said obstruction or danger shall be liable to the Town of Gibraltar for all costs incident to said removal and disposition, and the Town of Gibraltar, 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. 39. Dangerous or Disabled Vessels: Any vessel that may enter the Harbor in a disabled condition, or any vessel within the harbor which may for any reason be rendered disabled, shall immediately become subject to the orders and directions of the Harbormaster 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. 40. Unseaworthy Vessels: No person shall secure or permit to be anchored or moored in the 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, 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.

ARTICLE VI

Safety and Maintenance

Sec. 41. Welding and Burning: 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 Harbormaster and within the time period stipulated in such authorization.

Sec. 42. Flammable and Combustible Liquids and/or Materials: Within the Harbor, 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. 43. 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. 44. Defective or Dangerous Conditions: Whenever any buildings, structures or floating facilities within the Harbor 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 to 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, the Harbor Commission 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.



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