THE MARIPORT GROUP LTD.

SPECIALIZED ADVISORY SERVICES FOR PORTS & THE SHIPPING INDUSTRY

ST. JOSEPH RIVER

ACTION PLAN

Main Report

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October 2001

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CREDITS

The consultants have been fortunate to have had the guidance and input, not only from the Steering Committee lead by Nancy Kagan of the Southwestern Michigan Commission, but also from the St. Joseph River Harbor Board. Individual members, notably Jack Kinney, have given freely of their time and knowledge. In particular we would also like to recognize the contribution of the late Herb Quade - Harbormaster extraordinary relative to ships and cargo data. Berrien County Planning Department (Dennis Shuh & John Burt) have been very helpful with aerial photography and lot plotting. Gary Soper, St. Joseph City Engineer, provided some exceptional imagery as well as essential information on river crossings. Lee Scherwitz at Southwest Michigan Regional Airport enthusiastically assisted us over dredging issues, as did Pat Klever at the Grand Haven office of the Corps of Engineers. Phyllis Dowsett, President of Southwestern Michigan Tourist Council found very helpful information for us on visitor numbers to the region.

CONSULTANT TEAM

The St. Joseph River Action Plan was undertaken by a team that was managed by The Mariport Group Ltd. Much of the survey work and local contact activity was coordinated by Kim Gallagher of St. Joseph Today, and property research was undertaken by Metropolitan Title. Engineering estimates and outline drawings were prepared by Mariport's associate, E7 Engineering.

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- Michigan Department of Transportation
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1. EXECUTIVE SUMMARY

Introduction

The Main Report is the final of three reports delivered to Southwestern Michigan Commission relative to the St. Joseph River Action Plan. Earlier reports were Inception in July and Interim in September.

Companion documents to the main report are a Summary Report, which provides a brief overview of the results of the study and a set of Annexes that contain supporting information.

Findings

- The port of St. Joseph fulfils an essential shipping function within Berrien County and SW Michigan. In 2000 the port handled over 700,000 tons of bulk cargo. This quantity, more than in any of the last 30 years, could be doubled within five years.
- Over 80% of cargo is delivered within a 50-mile radius of the port, and 40% of all cargo is delivered in SW Michigan.
- Two of the three remaining dock operations in the port are held by private family trusts and leased for cargo operations. Should these be sold for development the port will cease to be an effective commercial harbor. It will not then be possible to persuade Corps of Engineers to maintain the channel, with serious implications for the small boat community.
- The port can expand its cargo volumes, but the two trust owned waterfront parcels need to be in public rather than private ownership. The two docks that should be acquired are in need of upgrade work to make them more acceptable for shipping, and to obtain better utilization. The cost of this work should be in the range $2.5-3 million. About 20-30 acres of additional land would be desirable.
- New business opportunities for the port include:

  i) Increased stone, sand and gravel
  ii) Major increases in salt movement
  iii) Small asphalt terminal
  iv) Specialized metal stockholding
  v) Lumber reload facility
  vi) High speed passenger-only ferry to Chicago
  vii) Cruise ship port of call.

- There are other possibilities that could be developed, but the previous list represents opportunities that can be realized in the short term.
- To realize these opportunities the port needs a full time manager who can work with users and shipping companies to ensure efficient operation, and can market the port to new users.
- In recent years the Harbor Board has been key in ensuring continuation of navigation, despite problems over dredging and disposal. It needs to continue its role to ensure that St. Joseph remains at the forefront of Corps of Engineers'

budgeting for dredging, and that disposal issues at the SW Michigan Regional Airport are resolved.

- Channel deepening to a 23' project could result in freight cost savings of about $1m based on year 2000 quantities. These savings would make the port more competitive and enable users to increase their sales.
- The port is a major small boat center with an estimated 1,600 slips. These need to be marketed effectively on a regional basis to bring in additional out of state boaters, reduce vacancies and improve their benefit to the community.
- The wave surge problem in the channel, and at the Coast Guard Station can be corrected. Probable solutions would involve removing the pier face on the south side of the channel, and replacing it with a sloped bank protected by armor stone. A pile supported dock face would be carried over this bank. Further reduction in wave height could be achieved by creating approximately 200' long armorstone pockets in the channel faces further towards the lake.
- Because of the number of different waterfront development studies that have been undertaken independent of each other within the last six months, it is essential that the proponents meet to determine how best to rationalize different visions, and ensure that an overall strategy for St. Joseph and Benton Harbor can be put into place.

Action Plan

1. The lands that should be acquired are the McCoy Dock and the Consumers Dock. In addition to Consumers, the motel property should also be acquired. Enquiries should be made to obtain a right of first refusal on the Lafarge Dock if there was any intention of not selling to a cement operator.
2. Determine which entity would own and operate the port lands, if and when acquired. We would recommend Berrien County. At this point it may be desirable to nominate a qualified person as Port Manager designate to coordinate negotiations.
3. Once a determination is made, commence discussions with the beneficial owners of the waterfront parcels that would form the core of the port. The intent should be to actively pursue acquisition with a view to eventual operation against a thoughput charge.
4. Presuming that the waterfront lands can be acquired at a value that shows a positive cost/benefit relationship, commence discussions with Enderprize Developments, Whirlpool and others regarding land parcels, and access, to provide desirable back land.
5. Also at this stage, commence detailed engineering relative to the waterfront parcels so that upgrade work can be commenced promptly.
6. Coordinate negotiations with Indiana DOT to determine how, and under what conditions, a waiver – or annual license – could be acquired for heavy trucks on US-31 to the Toll Road.

7. Depending on responses from principals relative to backland acquisition, begin active marketing of the port to potential users and in particular work with possible salt shippers to rebuild the port's role as a major salt distributor. The lumber reload opportunity should also be actively explored.
8. Commence work with Corps of Engineers regarding deepening the channel to a 23' project. This activity presumes that all issues regarding dredgeate disposal at the airport have been resolved, including the new dewatering facility and feed pipe. A solution to the wave surge issue should also be discussed at this time.
9. Within all of this activity it will be essential to determine availability of state and federal programs that could be accessed for all, or part, of the investments needed.

Background Studies

1. It would be desirable to have a comprehensive economic impact study undertaken to set acquisition and upgrade costs into perspective. We have suggested that, at current levels of operation, the cost benefit of the port to the region solely on delivered price of goods is in the region of $5-6m per annum. This excludes any consideration of employment benefits, or the impact of Marinas on the communities.
2. Work will also be needed relative to the Asphalt Terminal and the high speed passenger ferry. This will be primarily to determine market and define costs and pricing for the service.

LAFARGE DOCK

CONSUMERS DOCK (far center)
McCOY DOCK (right hand side)

BENTON HARBOR CANAL

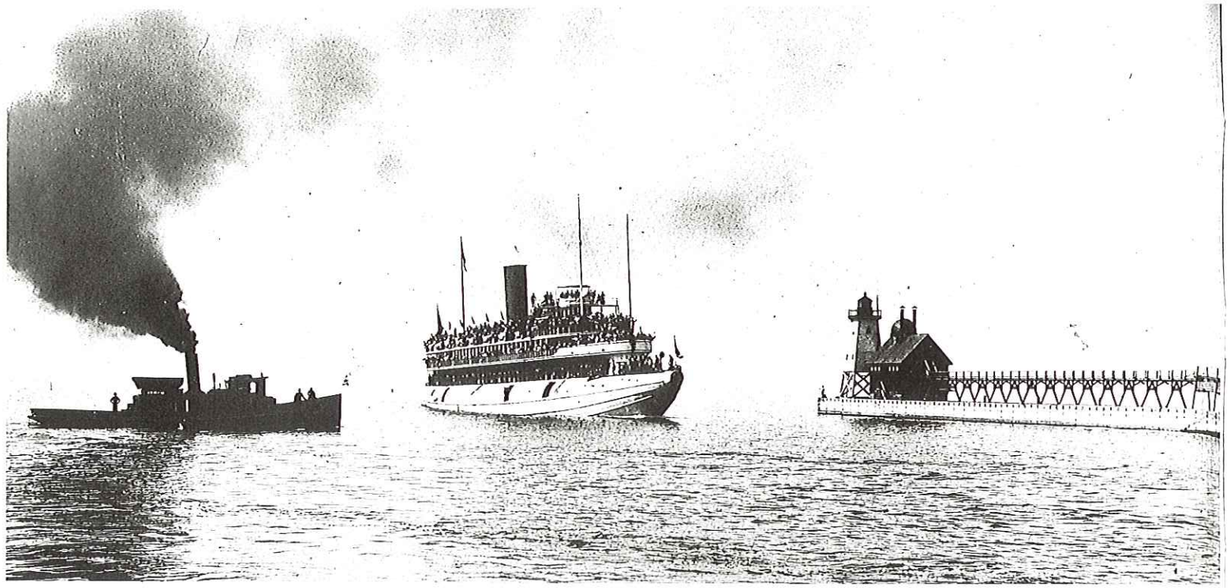
2. HISTORY

St. Joseph and Benton Harbor have been working ports for 150 years and the channel and entrance has been established for over a century. However, waterfront land used for commercial purposes has always been in private ownership, and this situation continues today.

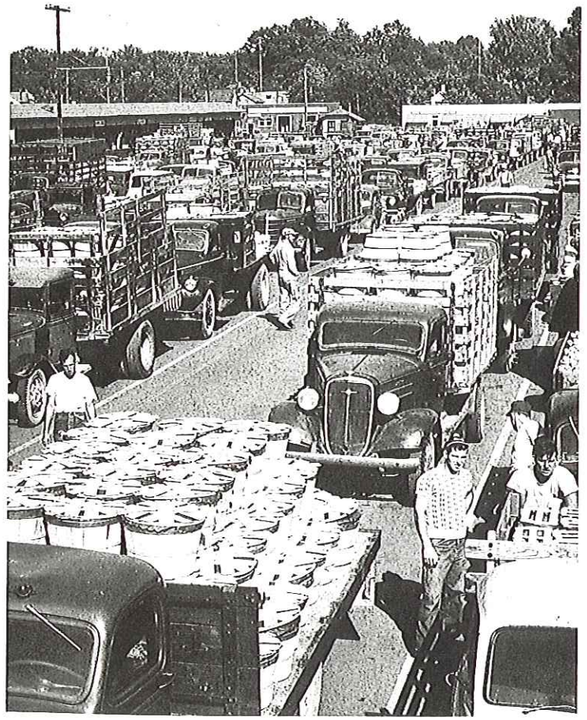
The port's commercial activities commenced, in the mid-19th century, with soft fruit movement by schooner into the Chicago market. People also came from Chicago to take advantage of the beaches in the area, and up until World War Two the Silver Beach Amusement Park and the Shadowland Ballroom were popular attractions. The whale back excursion steam "Christopher Columbus" arrived regularly, the "City of Benton Harbor" and the "Theodore Roosevelt" brought Midwest vacationers to the town. The "Roosevelt" docked on the St. Joseph River at what is now the Kinney property. Many passengers then proceeded to the House of David, which was a major attraction in Benton Harbor. The excursion boats also carried freight and fruit from the area which was shipped to the Rush Street market in Chicago. Cruise ships also called and the "North" and "South American" of the Georgian Bay Line visited frequently and docked just west of the CSX bridge on the south bank, next to Silver Beach.

The primary commercial role of the port, other than as a vacation destination, was as a distribution point for sand, gravel, cement and liquid fuels. The 1986 outline of the port, Fig.2.1, shows some of the companies that used to be involved in moving cargo through St. Joseph and Benton Harbor. Aerial photos from the 1940's (see section 5) show stone storage, not only at the Horan Readimix site, but also where the Arboretum is now, and with a rail spur to it. In addition, stone was landed upriver on the Benton Harbor Canal, opposite the Paw Paw River, as well as almost covering the end of Marina Island where the McCoy operation is today. At that time the cement silo site was a waterlot which was not developed until the 1950's.

Cargo volumes have fluctuated, as has the cargo mix, see Fig. 2.2, but as companies found that their activities no longer met a commercial need, land was sold and the property turned over to other activities (usually non-industrial). For example, the Ready Mix operation on the south bank below the rail road bridge is now condominiums with an associated marina. The Enterprise Oil operation is now vacant, but is surrounded by marina activities. The radio station on the Morrison Channel is now Pier 33, and the island itself has gone from being called Radio Island to Marina Island. In a similar vein, Industrial Road is now Anchors Way.



A whaleback excursion steamer at the entrance to Saint Joseph Harbor (circa *1898). Originally grain ships, these whalebacks were converted to carry passengers. They carried thousands at a time, far in excess of safe capacity, but no one of them ever met disaster while in passenger service. The steamer shown is the* Christopher Columbus, *the greatest of its kind, 1,511 gross tons, 360 feet by 42. It was built in 1892, scrapped in 1936.*
News-Palladium, Benton Harbor



Scene in Benton Harbor's fruit market—the largest cash market for small fruit in the world.
News-Palladium, Benton Harbor


CITY
OF
BENTON HARBOR

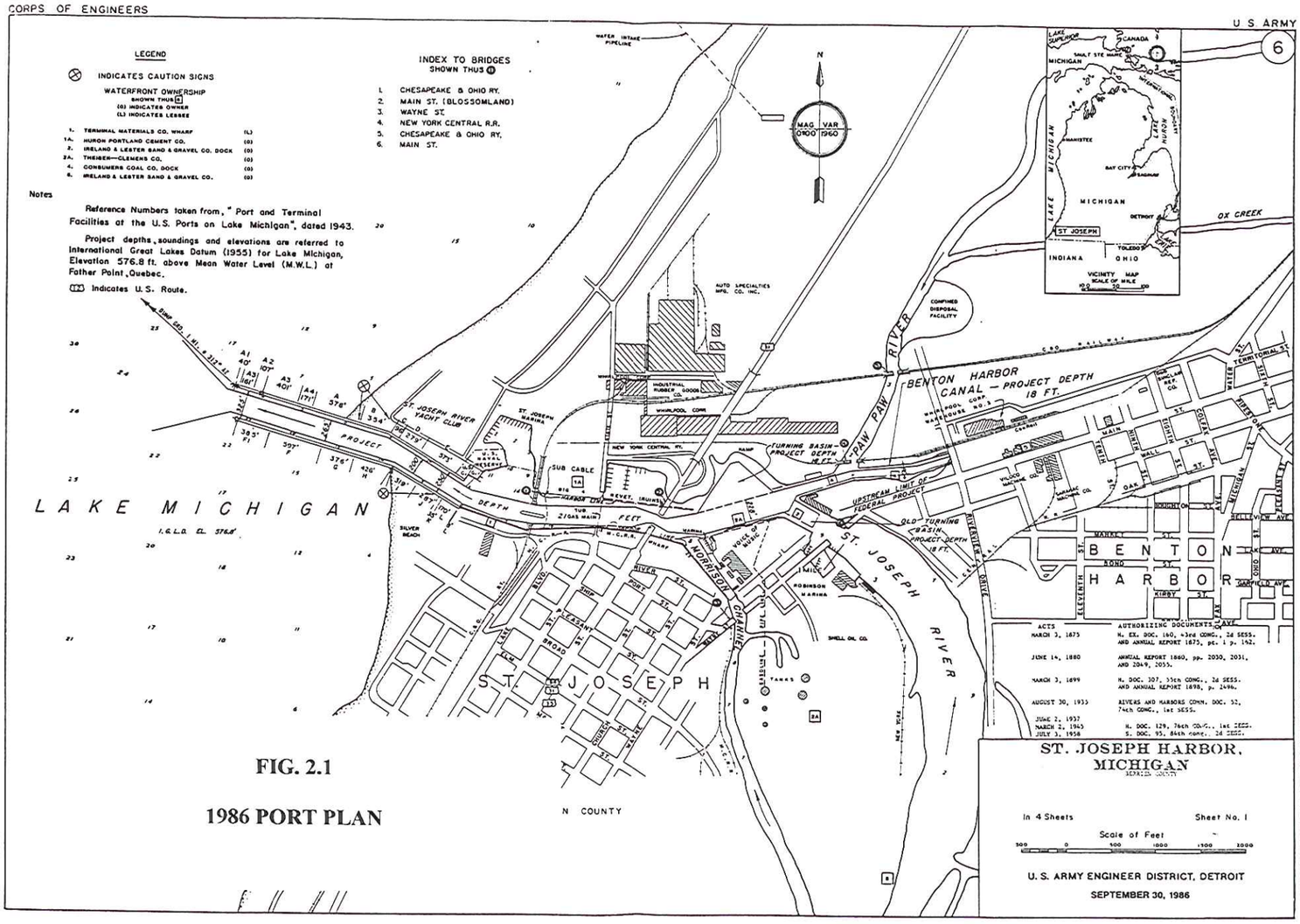


FIG. 2.2

PORT TRAFFIC 1970-2000

1970-2000
St.Joseph River Harbor Activity
Import Commodity in Tons

Year	Petro	LimeStone Sand, Gravel Stone, Aggregate	Lime and Fertilizer	Cement	Salt	Lumber	Miscellaneous	Total
1970	80,696	281,716	-	109,515	45,879	-	15,000	532,806
1971	80,459	282,682	-	134,230	50,000	-	-	547,371
1972	71,250	287,931	-	85,983	6,500	-	-	451,664
1973	26,510	308,889	-	75,822	22,973	-	-	434,194
1974	14,501	226,222	-	92,802	42,130	-	-	375,655
1975	6,923	168,028	-	72,728	-	-	4,000	251,679
1976	20,338	110,066	23,063	70,978	29,199	-	-	253,644
1977	53,161	183,593	-	69,159	28,691	-	-	334,604
1978	50,000	205,956	17,727	77,186	105,901	-	-	456,770
1979	29,102	264,155	30,428	97,797	32,613	-	-	454,095
1980	19,893	236,547	10,633	92,816	68,488	-	7,924	436,301
1981	48,292	111,295	12,400	96,061	130,700	-	-	398,748
1982	12,938	138,003	16,700	98,782	97,460	-	-	363,883
1983	16,104	128,496	14,460	98,528	40,000	-	-	297,588
1984	-	192,595	17,000	117,860	81,457	-	-	408,912
1985	-	155,926	12,761	113,970	91,100	16,900	-	390,657
1986	-	216,040	-	152,000	86,000	23,192	30,474	507,706
1987	-	322,477	-	122,186	55,340	-	-	500,003
1988	-	284,606	-	132,884	91,217	-	9,054	517,761
1989	-	238,226	-	143,000	68,998	-	10,992	461,216
1990	-	247,255	-	170,000	64,713	-	32,595	514,563
1991	-	187,727	-	220,717	61,809	-	-	470,253
1992	-	305,038	-	222,115	43,541	-	-	570,694
1993	-	253,283	-	227,208	-	-	-	480,491
1994	-	364,390	-	270,700	59,404	-	-	694,494
1995	-	302,813	-	243,239	14,565	-	-	560,617
1996	-	269,847	-	233,430	66,677	-	-	569,954
1997	-	391,154	-	232,090	58,527	-	-	681,771
1998	-	471,070	-	263,677	24,684	-	-	759,431
1999	-	289,491	-	228,197	35,331	-	-	553,019
2000	-	523,394	-	212,344	34,451	-	-	770,189

3. DEVELOPMENT ISSUES

3.1 Overview

Port development in the Great Lakes during the 1980's and 1990's has been one of conflict between cities and agencies seeking to utilize waterfront land for public and private projects and ports trying to maintain cargo access. Port use is not usually seen as being of great value, because the economic benefit is dispersed within the hinterland, while condominiums and other waterfront property is seen as having a more positive image for the community and generating a greater tax base for the city. The port is only appreciated after its demise, when costs of basic raw materials rise.

Where ports have a port authority, which has a degree of control over the land, these pressures can be resisted. Often there will be an accommodation between the port's mandate to maintain a commercial shipping presence, and the city's desire to gain access to waterfront land so that both parties have a degree of satisfaction. Toronto (ON) has been going through a very difficult re-evaluation of the port lands for nearly two decades and issues are currently before the courts. Duluth has its own problems associated with Harbor Place, and Cleveland also has resistance relative to redevelopment of a site for new port-related business. Such problems do not affect only the Great Lakes; riverfront land on the Mississippi and Missouri and elsewhere in North America are also under pressure from cities and developers. The keynote article in the December 2000 issue of Marine Digest, a West Coast maritime magazine, posed the question "Whose waterfront is it anyway?" and proceeded to discuss the, sometimes, uneasy balance between public and private issues, commerce and tourism, access and development in four west coast and one east coast port cities.

The difficulty to be faced on the St. Joseph River is that none of the waterfront land is owned by a port authority or, where the city is involved, the land use has already been converted from industrial to recreational/residential.

The private sector owner of a waterfront parcel may have no alternative than sale to a private developer, if there is no port authority, city or regional body committed to maintaining commercial vessel access, and prepared to make an offer for the land. This process has undoubtedly been involved with the commercial properties that have been taken over for residential/recreational use in the harbor area over the last decade.

The City of St. Joseph, and the Cornerstone Alliance, have separately prepared their vision for the redevelopment of key waterfront land parcels on the less developed north side of the St. Joseph River, and in the vicinity of the Paw Paw River and Benton Harbor Canal. How this redevelopment interfaces with shipping industry activities will need to be carefully considered, as will the nature of the redevelopment so that it does not lead to future conflicts of use that would constrain the handling of cargo. This requires buffer zones of commercial/light industry between cargo handling activities and residential use, but still permits access to the water for ship watching.

A major consideration in waterfront development for non-cargo related work is the population density to support the stores, restaurants, galleries and other activities. The downtown core in St. Joseph is successful because of the concentration of urban population within a half-mile radius. The waterfront lands north of the river do not

have any significant urban density in the immediate neighborhood. Without such support, any development could fail in the way that Toledo's revitalized downtown waterfront failed in the mid-1980's: there was good traffic at lunch time, but the area was essentially dead after 5:00pm. Such development, if it took place, could, as in Toledo, lock out other users and ultimately fail to generate the hoped for economic boost. The development also can become a substantial headache for the host community as tax revenue is not being generated and benefits may be sought that end up being a charge to the community exchequer.

3.2 City of St. Joseph Waterfront Study

The city waterfront study interacts with the present study in two areas: the area between the CSX railway bridge and M63, and a major tract bordering the turning basin and the Paw Paw River. See Fig. 3.1.

The first area is mainly occupied by the Arboretum, and suggestions have been made to establish guest boat slips along this wall. Potential conflicts could exist with boats on the dock wall interfering with commercial traffic. As long as boaters moored to this wall are warned that wash and surge could be a problem from commercial traffic heading through the M63 bridge, then their physical presence will not encroach on the channel. However, should floating docks be built, then there could be a major problem to both boaters and the city because of wash damage.

The second area that could see some conflict is the turning basin and also on the land opposite the Consumers Dock. We are given to understand by the city's consultants that the area facing the Benton Harbor Canal is being considered more for parkland and light commercial activity, rather than residential. We would have concerns for marina slips in this area as the canal is quite narrow and small boats could be damaged by manouvering ships or tug/barge units. Slips up the Paw Paw River above the old New York Central Railway bridge abutments would not create problems. Suggestions have been made that guest slips for boaters might be created in the turning basin. This is definitely not desirable as such boats could be damaged by turning ships in an already too small area. Creation of a dock wall in this area would improve ship side safety, and also enhance any trails that may be created. See Fig. 3.2.

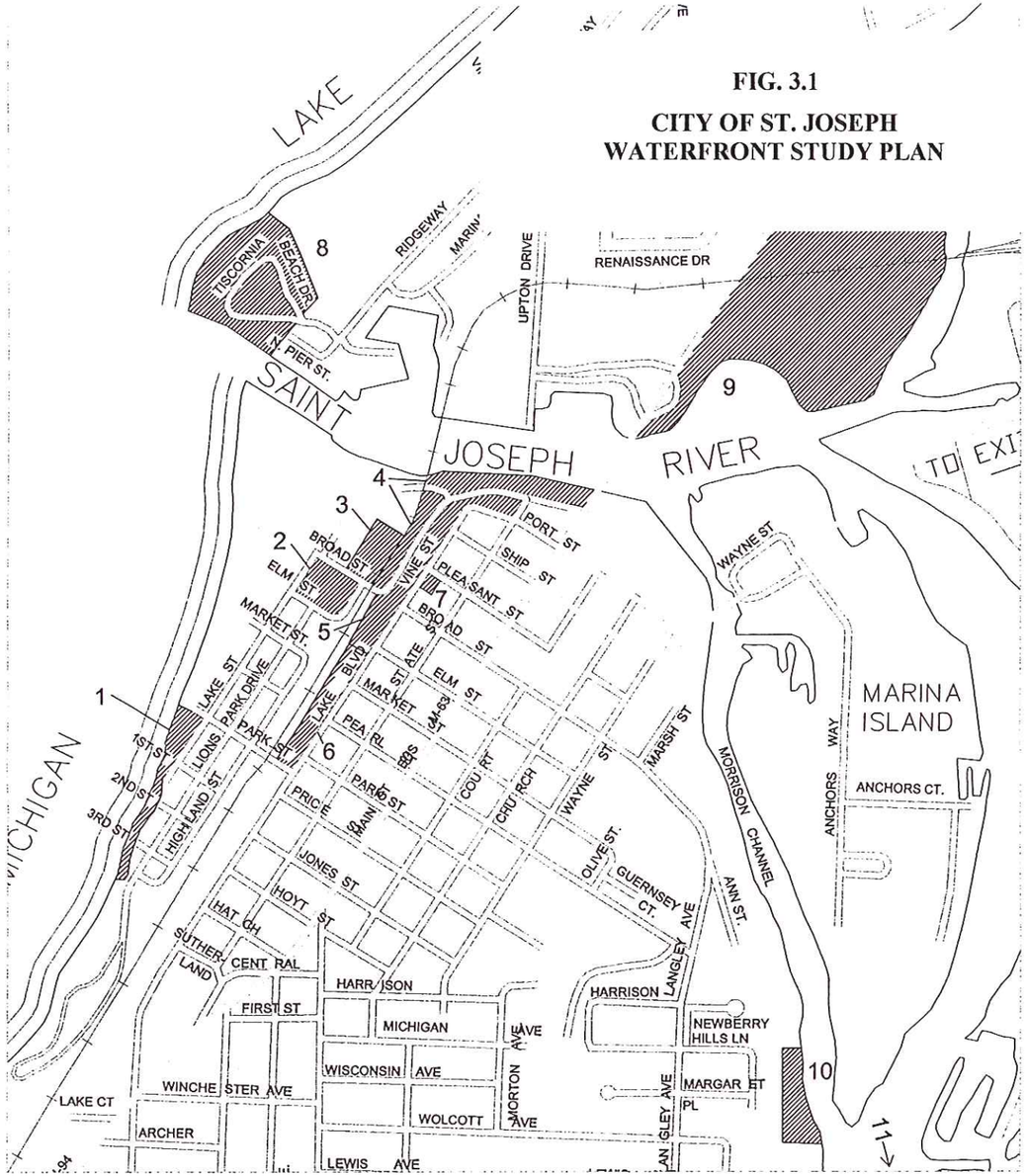
3.3 Cornerstone Alliance

The results of the study were announced on 6th September, and we were provided with a copy of the text of the report without supporting documentation. While the report does state that continued commercial use of the harbor is critical to maintain dredging by Corps of Engineers (page 8, para 7), a number of elements of the plan would work against this. For example, in Page 8, para 5, the report discusses a transient marina landing in the turning basin. There is, in this part of the report, a proposal to maintain the Kinney (Consumers) Dock as a working dock, but the proposed development for the surrounding areas would make it difficult. In fact the comprehensive plan appears to show an "Entertainment Area" on this site.

While we have strong reservations about some of the plan details, the concept for development of Benton Harbor articulated in the summary and first few paragraphs of the analytical conclusions are entirely achievable within the context of a vibrant port.

FIG. 3.1

CITY OF ST. JOSEPH
WATERFRONT STUDY PLAN



1. Shoreline between Silver Beach and Lion's Beach
2. Whirlpool Field
3. Leco Property
4. Arboretum
5. Depot Area
6. Bluff Park
7. Carousel
8. Tiscornia Park
9. Edgewater Riverfront
10. Channel Property
11. Riverview Park

No Scale

CITY OF ST. JOSEPH
WATERFRONT STUDY AREAS
MARCH, 2001

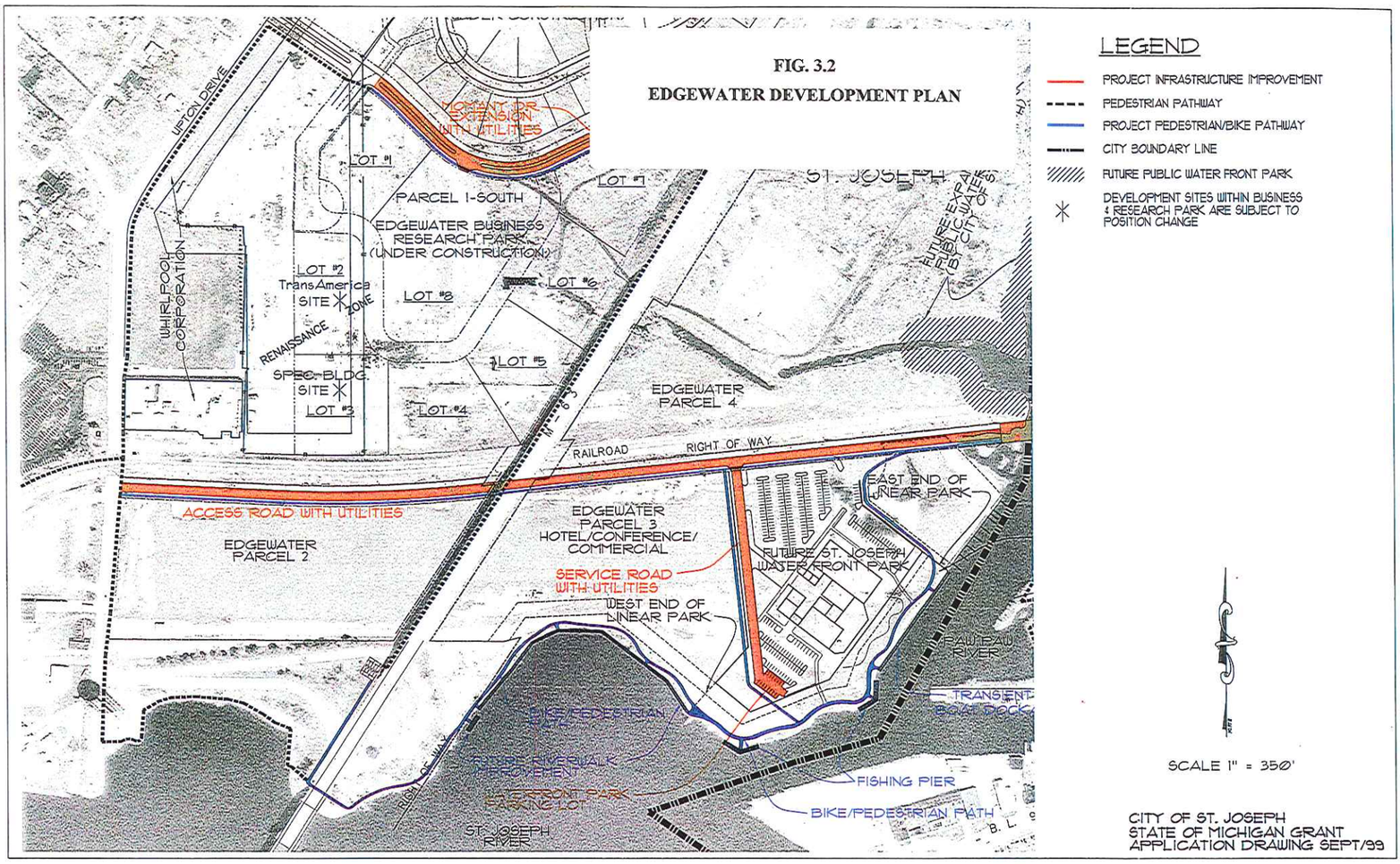


FIG. 3.2
EDGEWATER DEVELOPMENT PLAN
LEGEND
PROJECT INFRASTRUCTURE IMPROVEMENT
PEDESTRIAN PATHWAY
PROJECT PEDESTRIAN/BIKE PATHWAY
CITY BOUNDARY LINE
FUTURE PUBLIC WATER FRONT PARK
DEVELOPMENT SITES WITHIN BUSINESS & RESEARCH PARK ARE SUBJECT TO POSITION CHANGE
SCALE 1" = 350'
CITY OF ST. JOSEPH
STATE OF MICHIGAN GRANT
APPLICATION DRAWING SEPT/99
UPTON DRIVE
CURRENT DR EXTENSION WITH UTILITIES
LOT #1
PARCEL 1-SOUTH
EDGEWATER BUSINESS RESEARCH PARK (UNDER CONSTRUCTION)
LOT #2
TransAmerica SITE
ZONE
LOT #8
LOT #6
LOT #7
ST. JOSEPH
FUTURE EXPANSION FOR CITY OF S
WHIRLPOOL CORPORATION
RENAISSANCE
SPEC. BLDG. SITE
LOT #5
LOT #3
LOT #4
EDGEWATER PARCEL 4
RAILROAD
RIGHT OF WAY
ACCESS ROAD WITH UTILITIES
EDGEWATER PARCEL 2
EDGEWATER PARCEL 3 HOTEL/CONFERENCE/ COMMERCIAL
EAST END OF LINEAR PARK
FUTURE ST. JOSEPH WATER FRONT PARK
SERVICE ROAD WITH UTILITIES
WEST END OF LINEAR PARK
PAW PAW RIVER
TRANSIENT BOAT DOCK
BIKE/PEDESTRIAN PATH
FUTURE RIVERWALK IMPROVEMENT
WATERFRONT PARK PARKING LOT
FISHING PIER
BIKE/PEDESTRIAN PATH
ST. JOSEPH RIVER

4. PHYSICAL PARAMETERS

4.1 Approach and Port Access

The approach to St. Joseph is via a fairly typical (for Western Michigan ports) fan-shaped dredged approach area leading to the heads of protective piers that form the channel into the port. These piers were originally rock filled timber cribs. At various times, starting in the early 1950's through to the early 1970's, they were sheet piled and capped to maintain the integrity of the of the entrance channel.

The piers are somewhat unusual in that:

- The north pier is 160' longer than the south pier. (Presumed to help limit the littoral drift of beach sand from North to South.)
- The entrance channel between the piers narrows from 265' at the entrance to 200', with a course change needed of around 20° on entering the narrow section.
- There is a further course change needed on passing the end of the entrance channel.
- Project depth from 650' East of the end of the North Pier is 21' up to about the center of the Paw Paw River confluence with the Benton Harbor Canal. Beyond this point and in the turning basin, project depth is 18'. The "required" depth in the approach fan and the entrance to the channel is 23'.

4.2 Bridges

The CSX railroad swing bridge has a reported a 94' opening on the north side, which is the preferred channel for ships. This channel leads directly to the Lafarge dock on the north side of the river. For ships heading to the McCoy or Consumers dock, the M63 bridge has to be negotiated, with a reported 100' clear opening that is at a substantial angle to the main channel. This requires ships to execute a course change in a very limited space and once clear of the bridge they have to reverse the course as they are then heading directly for the Pier 33 Marina.

By the time a ship is ready to discharge at the McCoy dock, it will have made five course changes, all of them in very tight situations.

4.3 Water Crossings

Although early plans show a submerged cable just up stream of the CSX railway bridge, most crossings are concentrated in the line of the old State Street swing bridge. There is limited information regarding depths and the precise location. However the following has been advised:

- Ameritech[1] Fibre optic cable "15-20' below river bottom".
- Gas Utilities High pressure gas line at 549.6' when laid in 1957[2]

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[1] They also have cable crossings at Business 94 and upstream in the St. Joseph River.
[2] The IGLD datum for the Lakes has changed since 1955, and the 1985 low water datum is 577.5 vs 576.8. The datum change is due to continued structural changes in the Great Lakes basin with rebound following

- City of St. Joseph 12" force main sanitary sewer
  12" water main
  20" water main
  The water tower on the north side of the river was positioned to serve the industrial needs of the old Whirlpool plant. Even though the plant has gone, the cost of reorganizing water mains is too high for the city to consider moving the tower in the immediate future. Burial depths for the lines is not known and as built drawings for the current lines do not exist. Depth is though to be at least as good as earlier lines laid in the 1930's. These lines were buried to a 547' datum, and should have about 6' overburden at current river bed depths.

4.4 Dredging

Disposal of dredgeate from the St. Joseph River has been a major problem since the cessation of open lake disposal in the 1980's. Under new, stricter, guidelines for disposal, only the sand that accumulates in the entrance channel may be disposed of as beach replenishment, and the last open lake disposal from St. Joseph was in 1983. Table 4.1 shows recent dredge quantities and the Corps of Engineers estimates annual maintenance dredging in the region of 30,000 yards, with 70% for beach replenishment. All other dredgeate must go to a facility that can accommodate the minor pollution present. This pollution is understood to be primarily caused by agricultural chemical run off in the St. Joseph and Paw Paw River watersheds.

TABLE 4.1

Annual maintenance dredging and methods of disposal at St. Joseph Harbor 1982-1990

Quantities (CY)

Year	Beach Nourishment	Upland	Open Water
1982	-	-	152,981
1983	-	-	140,040
1984	63,533	17,010	-
1985	37,701	15,466	-
1986	17,000	20,814	-
1987	-	27,547	-
1988	43,725	-	-
1989	18,745	-	-
1990	58,314	-	-

Source: USACE 1990 Reconnaissance Report

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the last ice age. The 21' datum for the channel is 556.6' today, or 555.8' relative to the 1955 datum. Thus, provided the line has not floated, there should still be 6' of overburden assuming a 21' channel. In reality the channel in this location is at 24' according to April 2001 soundings. This suggests that there is, at best, 3' over the high pressure gas line.

To a great extent, and despite the siltation that occurs in the harbor area, St. Joseph has been able to maintain a "business as usual" approach without dredging due to high lake levels that persisted through to the early 1990's. Lake Michigan water levels since 1968 are provided in Annex 1 which shows that high and low levels have been cyclical during this period. The extreme lows from 1999 onwards are not consistent with the previous 30 years. Hot dry summers, coupled with winters that have not developed the usual snow pack depth in the upper Great Lakes watershed, have conspired to successively lower all lake levels. Michigan and Huron, which are contiguous, have suffered the most, and levels today are some 4' below the historical peak of 1986.

Recent peak seasonal levels relative to datum, which typically occur during June and July, have been as follows:

1992	+1' 8"	1997	+3'11"
1993	+3'0"	1998	+2'11"
1994	+2'7"	1999	+1'4"
1995	+2'2"	2000	+5"
1996	+2'9"	2001	+2"

The critical nature of this year's dredge program, and the potential damage caused to commercial interests by delays in undertaking the emergency dredging are thus put into perspective.

The enormous loss of water within the Great Lakes basin will likely take years to recover, even if the higher ambient temperatures that have been the norm for the last five years are not corrected. Thus the importance of the new dredge disposal facility at the Southwest Michigan Regional Airport cannot be understated, particularly as we understand that Whirlpool Corporation are no longer prepared to make the existing dewatering/CDF site available in the future. A list of sites that have been considered is at Annex 2. Advantages of the Airport site (see Fig. 4.1) are:

- It is within the airport perimeter and access is therefore closely controlled and the general public may not enter.
- There is a location that can be used as a dewatering facility without further excavation. Capacity is unknown at present, but considered to be in excess of 100,000 yards.
- The dewatering site can be accessed by a permanent hydraulic line, reducing future dredge costs.
- With excavation of a glory hole and refilling, in the order of 300,000 yards can be readily accommodated.
- Runway extensions, improved aircraft run off areas and an aviation industrial park with taxiway will absorb significant quantities of fill over the next decade.

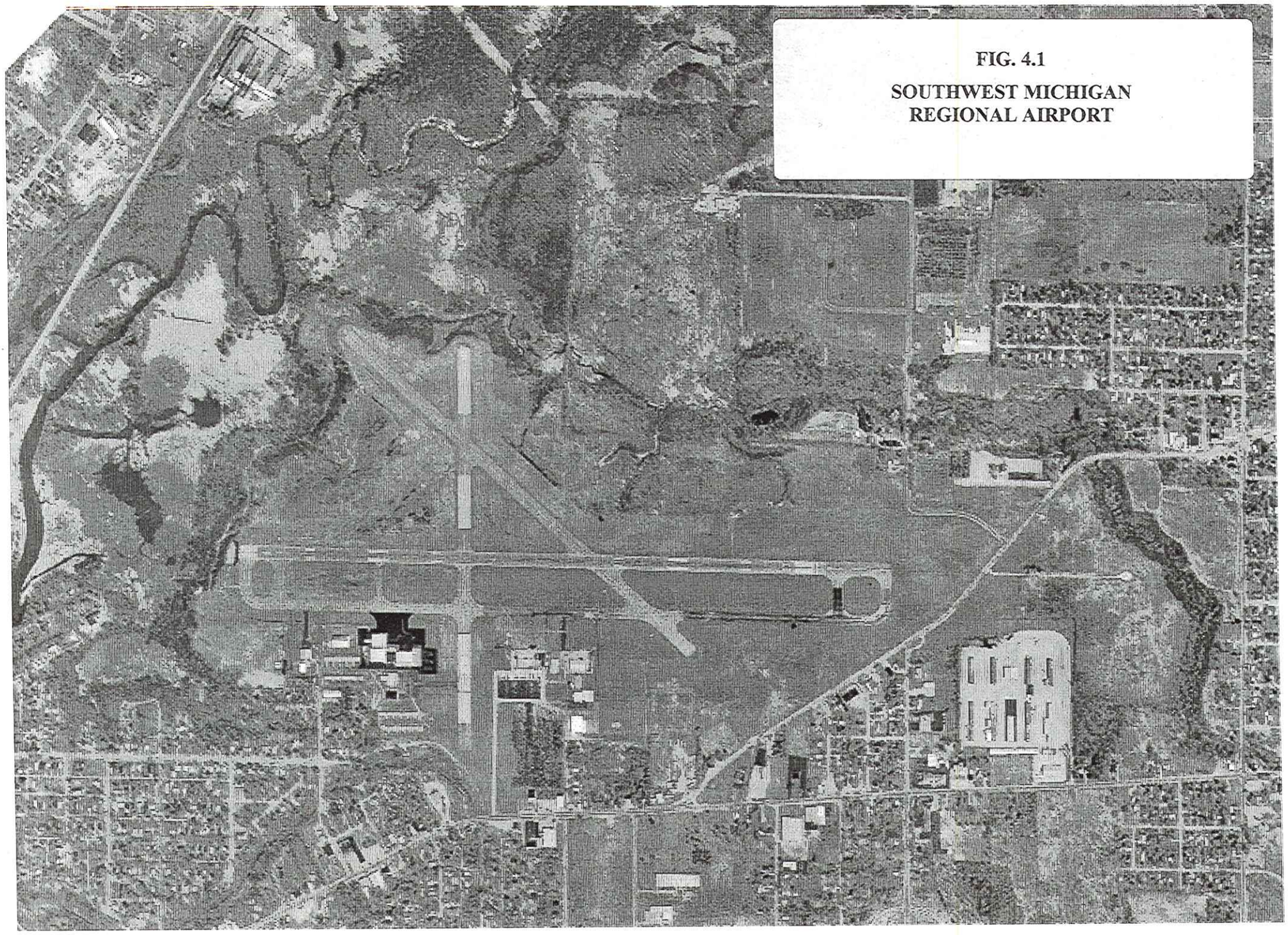


FIG. 4.1

SOUTHWEST MICHIGAN REGIONAL AIRPORT

4.5 Channel and Harbor Wave Climate

The shoreline in this area of Lake Michigan is totally exposed and subject to significant winds and waves, as is the case for many ports on the east shore. The entrance to St. Joseph Harbor opens directly into Lake Michigan. As a consequence, high open water waves can travel directly up the entrance channel into the outer harbor. Waves within the harbor channel are a serious and potentially dangerous problem for small craft and can be a problem for large commercial vessels. Analysis of the wave climate and conditions has been undertaken and is as follows. Wind and wave data is given in Annex 1.

Table 4.2

Wave Analysis at the west end of the north pier at St. Joseph Harbor with potential to enter Harbor (N.W. to S.W. directions)

Frequency	Season			
Wave Height	Dec.- Feb.	Mar. - May	June- Aug.	Sept.-Nov.
> 1.0'	42%	24%	22%	34%
> 3.0'	35%	12%	12%	26%
> 4.5'	24%	6%	5%	17%
> 6.0'	13%	2%	4%	7%

Table 4.3

Wave Analysis for the outer section of the St. Joseph Harbor Entrance Channel allowing for orientation and length of the entrance piers

Frequency	Season			
Wave Height	Dec.- Feb.	Mar. - May	June- Aug.	Sept.-Nov.
> 1.0'	37%	21%	20%	31%
> 3.0'	30%	11%	11%	23%
> 4.5'	21%	5%	5%	15%
> 6.0'	12%	2%	3%	7%

Table 4.4

Wave Analysis for the inner section of the St. Joseph Harbor Entrance Channel allowing for reduction in frequency and wave heights due to channel side side and bottom friction, wave reflection and shoaling.

Frequency	Season			
Wave Height	Dec.- Feb.	Mar. - May	June- Aug.	Sept.-Nov.
> 1.0'	21.0%	11.7%	11.3%	17.4%
> 2.6'	17.2%	5.9%	5.9%	12.9%
> 3.9'	11.7%	2.8%	2.5%	8.2%
> 5.2'	6.5%	0.9%	1.4%	3.7%

At the Harbor entrance and channel
Waves > 3.0' will present some difficulties to small craft.
Waves > 4.5' will present some difficulties to small commercial vessels.
Waves > 6.0' will present some difficulties to large commercial vessels.

Analysis

The climatic data has been analyzed to relate to St. Joseph Harbor and the particular configuration of the harbor entrance and piers. The entrance is formed by two steel sheet pile piers 325 feet apart running approximately 2400 feet into the lake, perpendicular to shore, form the entrance channel. At the south shore line, the channel narrows to 250 feet, turns 20 degrees south and continues 940 feet to the first basin at the Coast Guard Station.

Table 4.2 shows the expected wave height frequency just offshore the piers at the harbor entrance. The analysis only includes waves generated by winds from the North West (NW), the West (W) and South West (SW) directions which will have a significant impact on navigation. Waves from the north will not enter the entrance channel and the fetch length to the south in not enough to generate waves greater than 2 feet.

Wave heights are established by considering wind speeds and direction, wind duration and gusts, fetch length, water depth, air and water temperature, latitude and climatic data. The method used to predict wave heights and characteristics is as detailed in the US Army Corps of Engineers, Shore Protection Manual.

The offshore wind wave analysis is broken down into convenient wave heights which are related to historical wind data. The tables indicate frequency or probability that a particular wave height will be exceeded. Waves much greater than 6.5 feet will occasionally occur and will have an effect on the harbor. Wave period and length were calculated in the analysis. Wave period (T) for a 6 foot wave is approximately 5 seconds and the deep water wave length (L_0) is 128 feet.

Table 4.3 indicates the expected wave height frequency just inside the entrance to the harbor, between the two piers. The values are adjusted from the previous table by consideration of the harbor entrance configuration and pier orientation.

Table 4.4 indicates the expected wave heights at the east end of the entrance piers west of the Coast Guard Station. The wave heights and frequency values show the effect of wave energy loss due to channel bottom and side friction, and wave reflection off the sheet pile wall.

At the first turn in the channel its width decreases approximately 24% and the wave energy is concentrated. However, because of the direction change in the channel, the wave height will not be increased by the same ratio. A reduced factor, which considers wave reflection back out the entrance channel and wave refraction around the inside corner of the turn, is used in the analysis. Most of the wave front will bounce off the north wall toward the south side of the channel.

Despite the channel turn of 20 degrees to the south, portions of the first basin at the Coast Guard Station are still exposed to waves moving directly up the entrance channel without significant loss. The installation of small rock breakwaters at the Coastguard Station, and at the entrance to the marina are in response to the impacts of these waves.

Commentary

Navigation through the existing harbor entrance when waves exceed 3.0 feet will be a challenge for most small vessels. Commercial bulk cargo vessels probably will not experience difficulties until waves exceed four feet. High waves can impact the navigation of large vessels through the channel by the loss of draft as the ship moves up and down with the waves. Large vessels can also experience navigation difficulties in narrow channels due to cross winds and waves in combination.

Ideally, navigation channels should be four or five times the width of the largest vessel's beam. The St. Joseph Harbor entrance channel narrows to 200' at the east end of the piers. The maximum beam of self unloading ships that generally access the harbor is 76'8", therefore the ratio is less than 3:1.

Periods of high wind in combination with waves will probably make the harbor inaccessible 11% of the time during the March to November shipping season.

There is little that can be done to mitigate wave conditions at the harbor entrance without creating an offshore breakwater.

The type of construction materials used for the piers has an impact on the waves travelling up the entrance channel. Steel sheet pile and other solid face walls reflect most of the wave and wave energy up the channel and the existing pier walls are an example of this effect. Wave height and energy is somewhat reduced by friction on the channel bottom and sides which, according to original construction drawings, are constructed from rip rap and armor stone.

Prior to sheet piling to protect the original piers, it is unlikely that waves were a such a problem in the channel and harbor, as the rock-filled timber cribs that were used for the entrance would have dissipated much of the wave energy.

Improvements at the inner end of the harbor entrance channel by the construction of rip rap and rock armored revetments and shore protection has reduced the impact of waves from entering the dock area. A significant improvement in wave conditions could be obtained at the turn in the channel by the reconstruction of the south pier wall east of the turn. The dock on the south side of the channel would be reconstructed as a pile supported concrete dock constructed over a sloped revetment bank appropriately protected with armor stone. The effect would be to absorb the reflected and refracted waves east of the channel turn while maintaining a berthing face.

The wave heights and energy can also be reduced further out the channel by the creation of rip rap pockets in the existing piers. The rip rap pockets would require a portion of the existing pier walls to be removed and replaced with wave and energy absorbing rock. To be effective we estimate that the pockets should be at least 200 feet long.

Detailed coastal analysis will be needed to determine the most cost effective solutions to the wave problems in St. Joseph Harbor.

4.6 River Currents

Ship masters report serious maneuvering problems in the turning basin after heavy rain. Apparently the St. Joseph River has very little retention capability as currents can pick up appreciably over a few hours. Greater depth would help, but some hydraulic modelling could suggest structures that would help alleviate the problem, which is not helped by the St. Joseph River being the major watershed in Michigan.

4.7 Cross Winds

Analysis of wind data supports concerns expressed by masters regarding cross wind situations. High winds from the north and south, although not frequent, will present ships from entering or laving due to safety concerns in the narrow confines of the harbor.

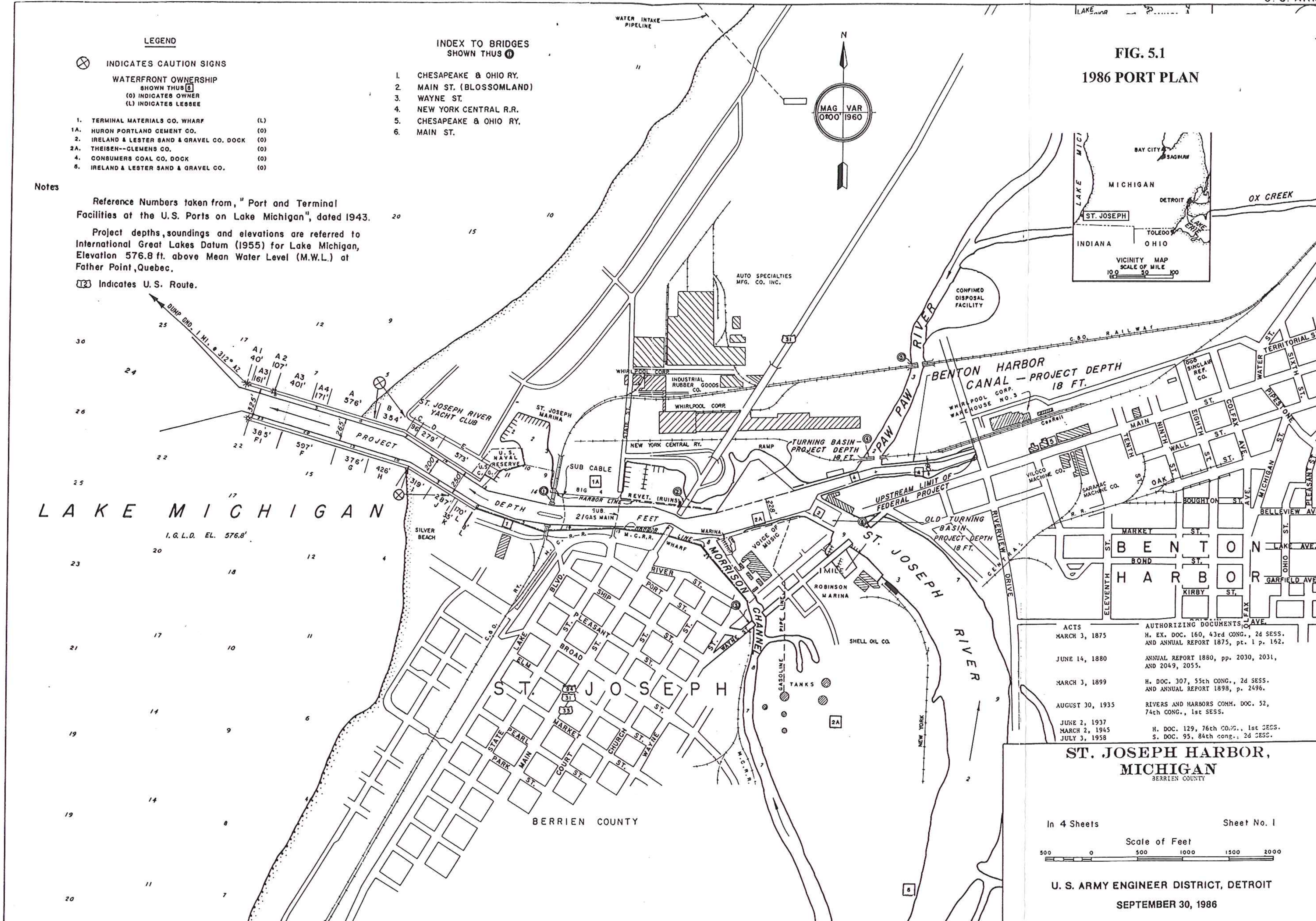
5. CARGO HANDLING FACILITIES

5.1 Historical

Historically St. Joseph had a substantial number of docks that, through their ownership and sale, have been taken out of commercial service. Most of these changes have happened since the mid 1980's. See Fig. 5.1 for map.

- **Horan Readimix** Maintained stone and sand piles on the south side of the channel, west of the CSX swing bridge. In 1986 this was known as the Terminal Materials Wharf. This dock operated for many years and is evident in old photographs and paintings of Silver Beach and the Channel. See Fig. 5.2.
- **Huron Portland Cement** built the silos on reclaimed land just east of the CSX swing bridge on the north side of the channel. This terminal was built in the 1950's amidst much opposition. Today it is one of the neatest and lowest impact operations on the St. Joseph River. See Fig. 5.3 for the original lot.
- **M.C.R.R. Wharf** A small dock existed where the Arboretum is today, upstream of the old State Street swing bridge, on the south bank of the River. It appeared to handle salt and lumber and had rail service by the Harbor Line. See Fig. 5.4.
- **Ireland & Lester Sand & Gravel Co. Dock** This occupied most of what is now known as the McCoy Dock, but has gone through several operators, including Blue Water Contractors and Ozinga Concrete. A small marina was in existence in the mid 1980's, as well as the Voice of Music Radio Station. See Fig. 5.5.
- **Thiessen-Clemens Co.** also utilized this dock to deliver oil to the tank farm upstream on what was then Radio Island. Shell Oil also had a facility on the island although it is not known whether the pipelines served Shell as well.
- **Consumers Coal Co. Dock** Now Consumers, or Kinney, Dock, but originally the St. Joseph Terminal for the "Theodore Roosevelt" passenger steamer service between St. Joseph and Chicago. See Fig. 5.6. Note stone piles upstream of this dock on the Benton Harbor Canal.
- **North Bank Benton Harbor Canal** Although not shown on the 1986 map at Fig. 5.1, the north bank of the Benton Harbor Canal has also been used for cargo operations. In 1985 & 1986 small quantities of lumber were brought in, and the barge ramp still exists. This land, in addition to the adjacent properties, was owned by Kinney interests until 1994. It is now owned by Whirlpool. See Fig. 5.7.

FIG. 5.1
1986 PORT PLAN


LEGEND
INDICATES CAUTION SIGNS
WATERFRONT OWNERSHIP SHOWN THUS
(O) INDICATES OWNER
(L) INDICATES LESSEE
1. TERMINAL MATERIALS CO. WHARF (L)
1A. HURON PORTLAND CEMENT CO. (O)
2. IRELAND & LESTER SAND & GRAVEL CO. DOCK (O)
2A. THEISEN--CLEMENS CO. (O)
4. CONSUMERS COAL CO. DOCK (O)
5. IRELAND & LESTER SAND & GRAVEL CO. (O)
INDEX TO BRIDGES SHOWN THUS
1. CHESAPEAKE & OHIO RY.
2. MAIN ST. (BLOSSOMLAND)
3. WAYNE ST.
4. NEW YORK CENTRAL R.R.
5. CHESAPEAKE & OHIO RY.
6. MAIN ST.
Notes
Reference Numbers taken from, " Port and Terminal Facilities at the U.S. Ports on Lake Michigan", dated 1943.
Project depths, soundings and elevations are referred to International Great Lakes Datum (1955) for Lake Michigan, Elevation 576.8 ft. above Mean Water Level (M.W.L.) at Father Point, Quebec.
Indicates U.S. Route.
WATER INTAKE PIPELINE
MAG VAR 0°00' 1960
LAKE MICHIGAN
I.G.L.D. EL. 576.8'
DUMP GND. 1 MI. @ 312° AZ
PROJECT DEPTH 21 FEET
ST. JOSEPH RIVER YACHT CLUB
ST. JOSEPH MARINA
U.S. NAVAL RESERVE
SUB CABLE
HARBOR LINE
REVET. (RUINS)
SUB. GAS MAIN
SILVER BEACH
AUTO SPECIALTIES MFG. CO. INC.
WHIRLPOOL CORP.
INDUSTRIAL RUBBER GOODS CO.
NEW YORK CENTRAL RR.
RAMP
TURNING BASIN—PROJECT DEPTH 18 FT.
PAW PAW RIVER
CONFINED DISPOSAL FACILITY
BENTON HARBOR CANAL — PROJECT DEPTH 18 FT.
WHIRLPOOL CORP. WAREHOUSE NO. 3
UPSTREAM LIMIT OF FEDERAL PROJECT
OLD TURNING BASIN PROJECT DEPTH 18 FT.
VILOCO MACHINE CO.
SARAMAC MACHINE CO.
SINCLAIR REF. CO.
OX CREEK
C. & O. RAILWAY
MORRISON CHANNEL
VOICE OF MUSIC
ROBINSON MARINA
SHELL OIL CO.
TANKS
GASOLINE
PIPE LINE
ST. JOSEPH RIVER
ST. JOSEPH
BENTON HARBOR
BERRIEN COUNTY
MICHIGAN
BAY CITY
SAGINAW
DETROIT
TOLEDO
INDIANA
OHIO
LAKE ERIE
VICINITY MAP
SCALE OF MILE

ACTS	AUTHORIZING DOCUMENTS
MARCH 3, 1875	H. EX. DOC. 160, 43rd CONG., 2d SESS. AND ANNUAL REPORT 1875, pt. 1 p. 162.
JUNE 14, 1880	ANNUAL REPORT 1880, pp. 2030, 2031, AND 2049, 2055.
MARCH 3, 1899	H. DOC. 307, 55th CONG., 2d SESS. AND ANNUAL REPORT 1898, p. 2496.
AUGUST 30, 1935	RIVERS AND HARBORS COMM. DOC. 52, 74th CONG., 1st SESS.
JUNE 2, 1937 MARCH 2, 1945 JULY 3, 1958	H. DOC. 129, 76th CONG., 1st SESS. S. DOC. 95, 84th cong., 2d SESS.

ST. JOSEPH HARBOR, MICHIGAN
BERRIEN COUNTY

In 4 Sheets — Sheet No. 1

Scale of Feet

U. S. ARMY ENGINEER DISTRICT, DETROIT
SEPTEMBER 30, 1986

☆ U.S. GOVERNMENT PRINTING OFFICE 1986-644-214

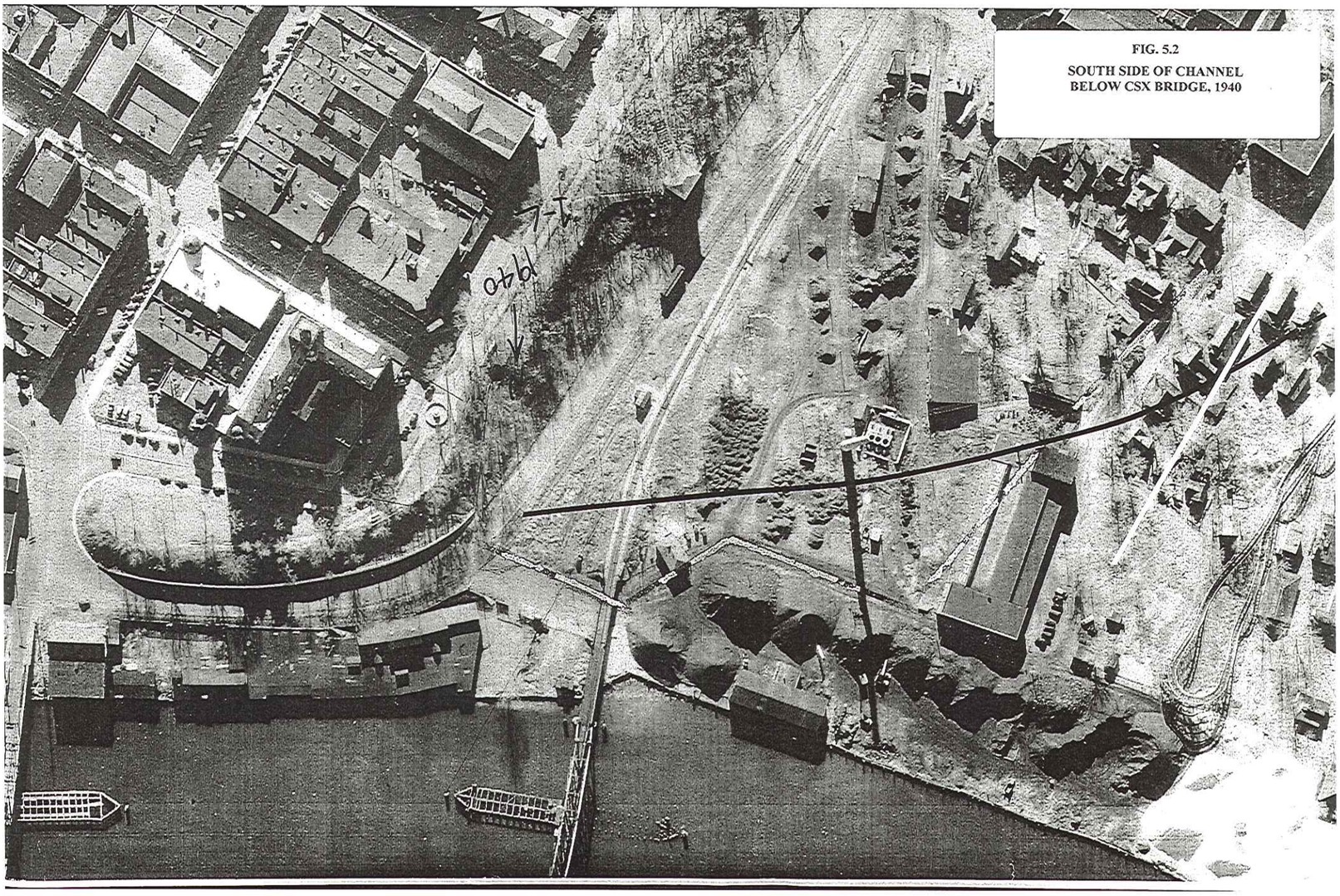


FIG. 5.2

SOUTH SIDE OF CHANNEL
BELOW CSX BRIDGE, 1940

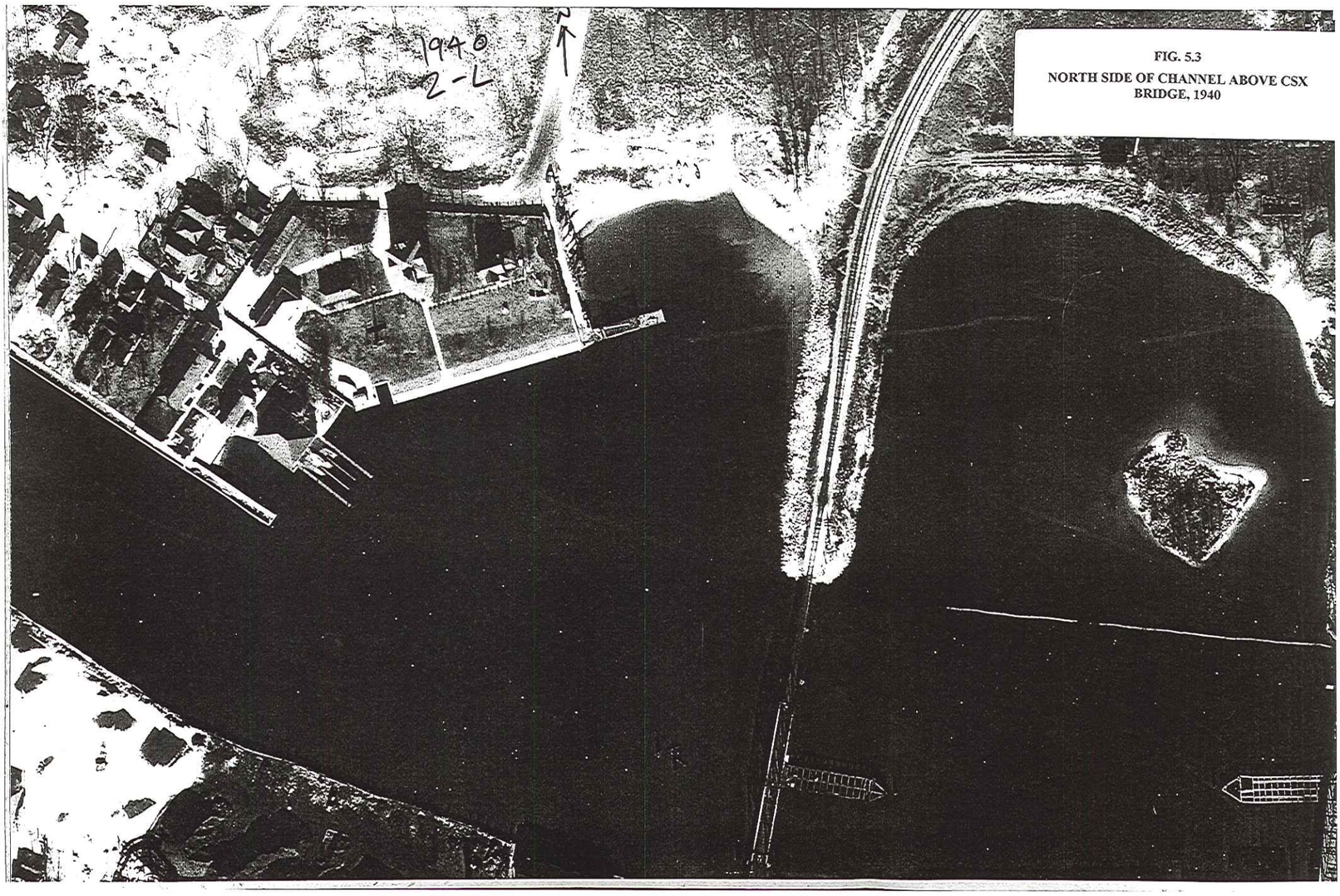


FIG. 5.3
NORTH SIDE OF CHANNEL ABOVE CSX BRIDGE, 1940

FIG. 5.4
SOUTH SIDE OF CHANNEL, EAST OF
STATE STREET BRIDGE, 1940

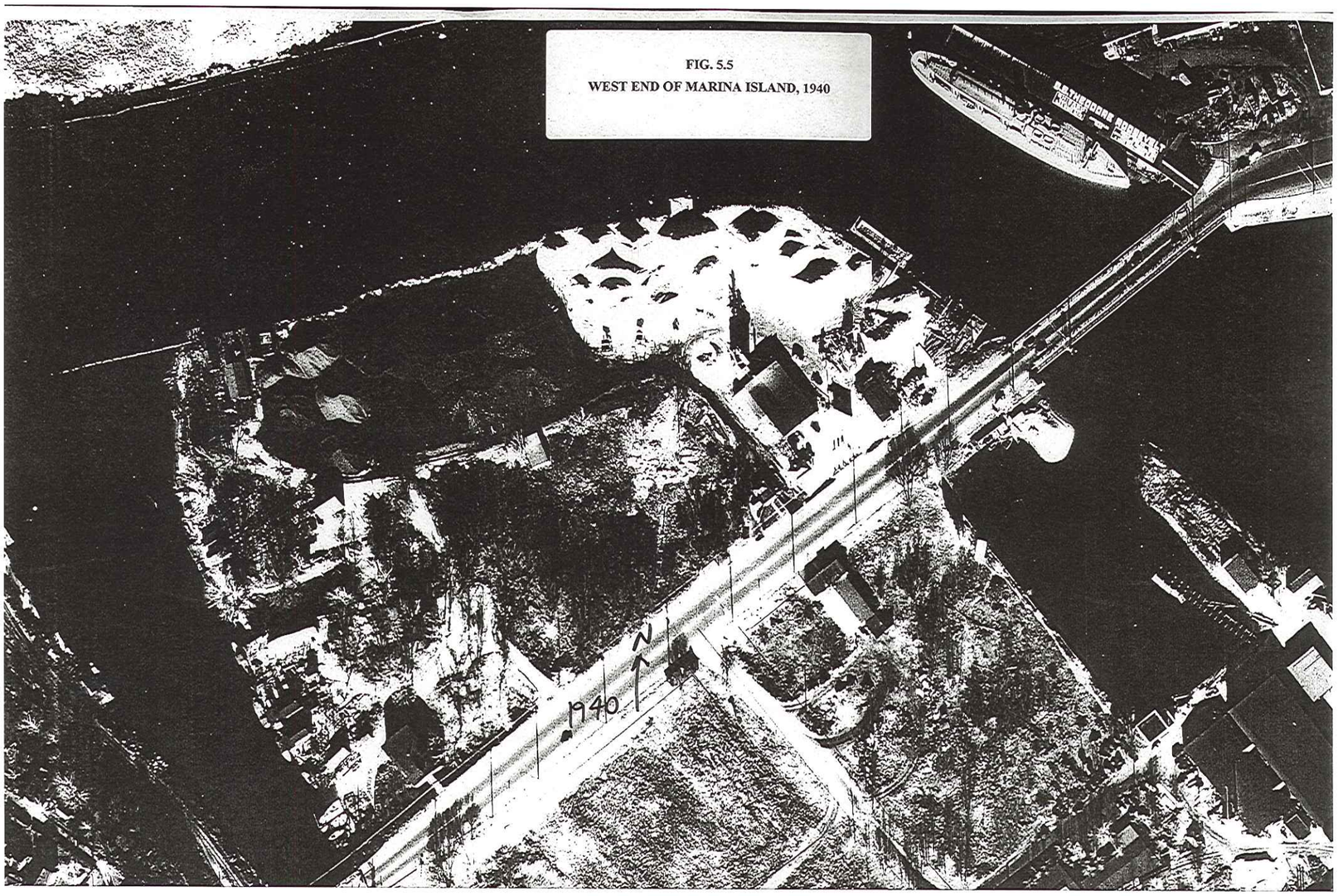


FIG. 5.5
WEST END OF MARINA ISLAND, 1940

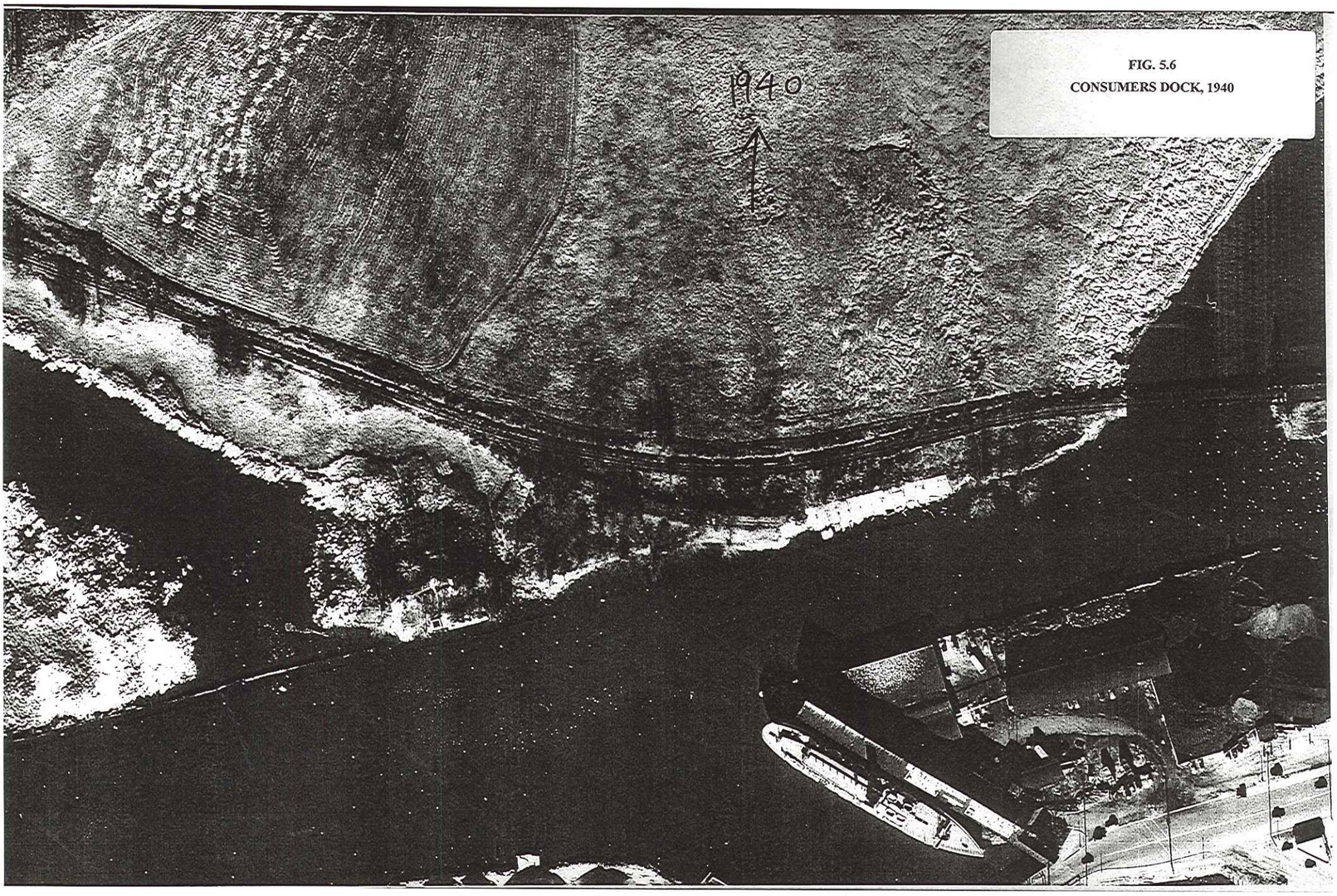


FIG. 5.6
CONSUMERS DOCK, 1940

FIG. 5.7

NORTH BANK OF BENTON HARBOR CANAL, 2000

5.2 Cargo Operations

Table 5.1 shows the development of cargo handling at St. Joseph over the past thirty years. Of note, despite the loss of oil movements and some other cargoes, is the growth in stone, sand and gravel and cement.

Fig. 5.8, following, shows the location of the current docks. The LaFarge dock handles cement, while both the McCoy and Consumers dock handle stone and sand. Salt is usually handled at the McCoy dock. A description of each dock is given in section 5.3.

The distribution of this cargo is approximately as in Table 5.2, below, although it should be noted that the base data for this table is a 1989 report, that did not cover all stone and sand.

TABLE 5.2

Cargo Distribution by Region[3]

	Stone & Sand	Cement	Salt	All Cargo
Berrien County	**24%**	**21%**	**11%**	**23%**
SW Michigan	40%	27%	22%	39%
Other Michigan	42%	36%	4%	29%
All Michigan	82%	63%	26%	68%
All Indiana	18%	37%	74%	32%
Total	100%	100%	100%	100%

The above analysis shows the importance of the port to SW Michigan for stone and cement movements. Of Other Michigan, Kalamazoo Co. is the major destination (17% of cargo), probably because of Consumers Concrete which is a major port customer. Salt movements to Indiana were primarily to the toll road.

A more detailed analysis of distribution by trucking distance showed that 80% of all cargo was delivered within a 50-mile radius of the port. The port does have an important distribution function and this is particularly so for Lafarge, where the nearest alternative marine facilities are Muskegon and South Chicago. The St. Joseph terminal is preferred over South Chicago because of congestion in the Chicago region, and the impact on trucking costs. This can be seen in the volumes moved through the silos which have been consistently over 200,000 for the past decade.

[3] 1989 Commodity Distribution Report. S.W. Michigan Commission, in house. The report notes that not all of cargo through the McCoy dock was included. However, the indicated quantities do not fit with 1989 data. There is a better fit with 1988 data, although still some discrepancies.

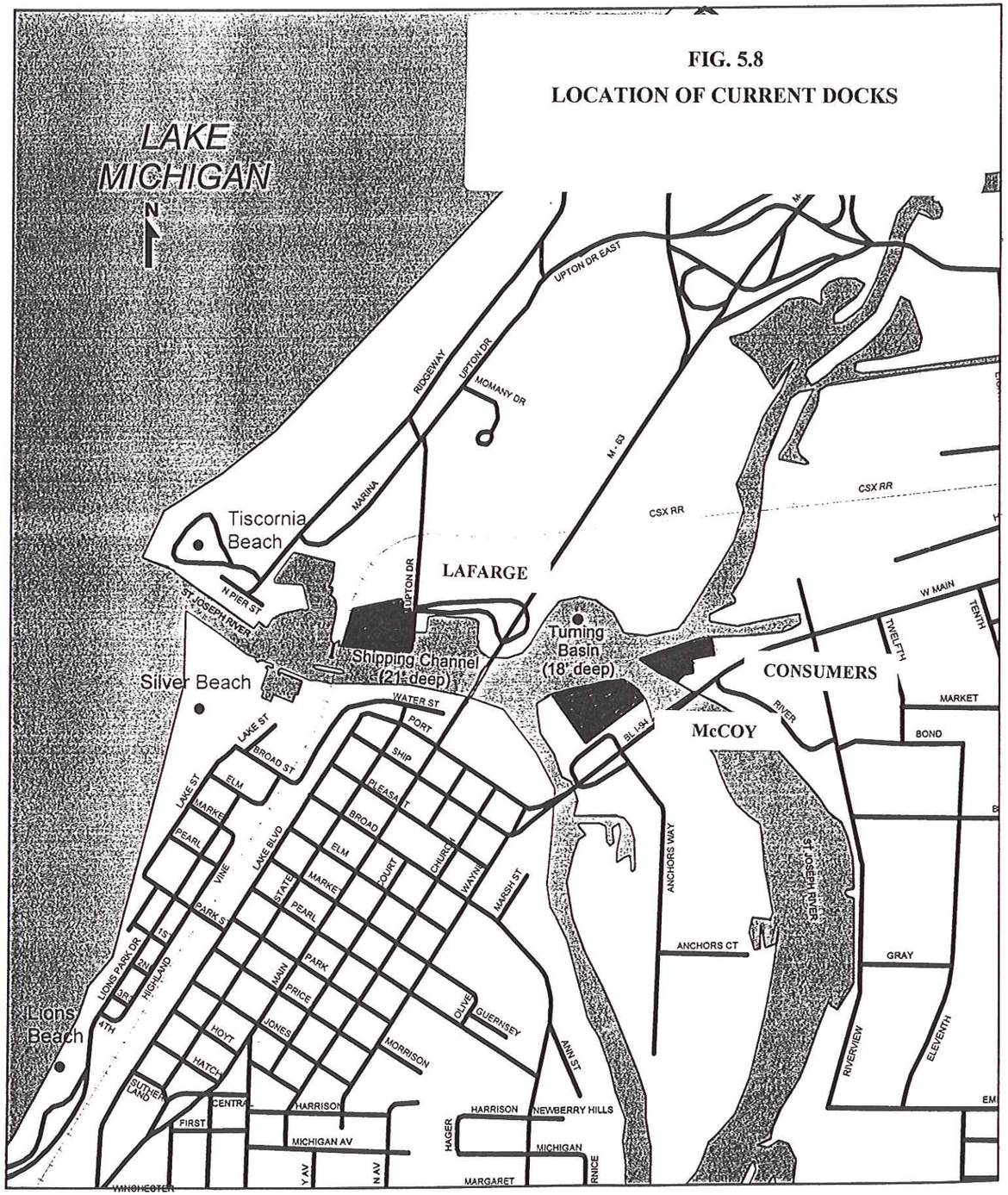
TABLE 5.1

1970-2000
St.Joseph River Harbor Activity
Import Commodity in Tons

Year	Petro	LimeStone Sand, Gravel Stone, Aggregate	Lime and Fertilizer	Cement	Salt	Lumber	Miscellaneous	Total
1970	80,696	281,716	-	109,515	45,879	-	15,000	532,806
1971	80,459	282,682	-	134,230	50,000	-	-	547,371
1972	71,250	287,931	-	85,983	6,500	-	-	451,664
1973	26,510	308,889	-	75,822	22,973	-	-	434,194
1974	14,501	226,222	-	92,802	42,130	-	-	375,655
1975	6,923	168,028	-	72,728	-	-	4,000	251,679
1976	20,338	110,066	23,063	70,978	29,199	-	-	253,644
1977	53,161	183,593	-	69,159	28,691	-	-	334,604
1978	50,000	205,956	17,727	77,186	105,901	-	-	456,770
1979	29,102	264,155	30,428	97,797	32,613	-	-	454,095
1980	19,893	236,547	10,633	92,816	68,488	-	7,924	436,301
1981	48,292	111,295	12,400	96,061	130,700	-	-	398,748
1982	12,938	138,003	16,700	98,782	97,460	-	-	363,883
1983	16,104	128,496	14,460	98,528	40,000	-	-	297,588
1984	-	192,595	17,000	117,860	81,457	-	-	408,912
1985	-	155,926	12,761	113,970	91,100	16,900	-	390,657
1986	-	216,040	-	152,000	86,000	23,192	30,474	507,706
1987	-	322,477	-	122,186	55,340	-	-	500,003
1988	-	284,606	-	132,884	91,217	-	9,054	517,761
1989	-	238,226	-	143,000	68,998	-	10,992	461,216
1990	-	247,255	-	170,000	64,713	-	32,595	514,563
1991	-	187,727	-	220,717	61,809	-	-	470,253
1992	-	305,038	-	222,115	43,541	-	-	570,694
1993	-	253,283	-	227,208	-	-	-	480,491
1994	-	364,390	-	270,700	59,404	-	-	694,494
1995	-	302,813	-	243,239	14,565	-	-	560,617
1996	-	269,847	-	233,430	66,677	-	-	569,954
1997	-	391,154	-	232,090	58,527	-	-	681,771
1998	-	471,070	-	263,677	24,684	-	-	759,431
1999	-	289,491	-	228,197	35,331	-	-	553,019
2000	-	523,394	-	212,344	34,451	-	-	770,189

St. Joseph River Harbor
Benton Harbor & St. Joseph, MI

FIG. 5.8
LOCATION OF CURRENT DOCKS



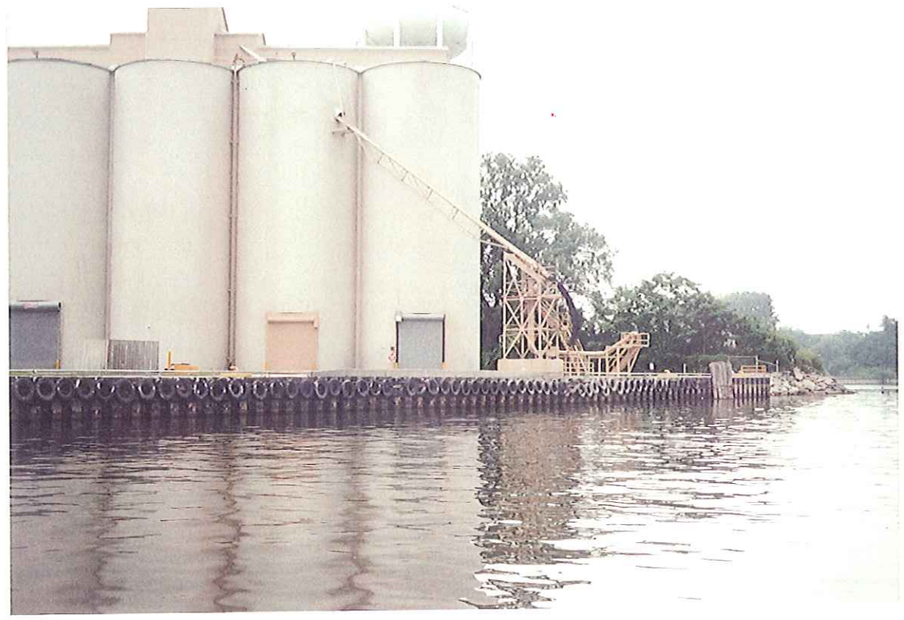
5.3 Current Docks

The three docks providing commercial service at present are (from west to east) :

LAFARGE

Name	Lafarge or cement dock
Owner	Lafarge
Operator	Lafarge
Location	North bank of the St. Joseph River, upstream of the CSX swing bridge
Coordinates	46 06 46N 86 28 53W
Cargo activities	Handling bulk cement inbound. In 2000 imported 212,344 tons cement.
Handling facilities	2 x 10" pipes
Length of dock wall	560'
Construction	Steel sheet pile with concrete cap
Bollard spacing	Approximately 50'
Restraint capability	Not known
Depth at dock wall	About 18' as of April 2001.
Height above water	6'
Fendering	Rubber tires
Land area	About 6.2 acres
Structures	14 concrete silos, office building
Water lot	None
Depth in channel	20' off dock min depth
Road access	To M-63 via short local road link
Rail access	None
Neighboring properties	Edgewater light industrial/commercial to east. Anderson Building Materials to the north. Rail tracks bound western edge of property
Condition of Infrastructure	Appears to be in good condition. Property neat and well tended. Low impact.
Environmental issues	None known. Property has been used for cement handling for many years.
Mariport commentary	The dock face is steel sheet pile, well fendered with used tires. The apron is in good condition with regularly spaced mooring bollards. We have been advised by the local manager that the dock face could not accommodate more than a 21' project, assuming a 2' overdredge. The operators did undertake some spot dredging between the channel and the dock face during 2001, and the spoil was deposited at the Southwest Michigan Regional Airport.

LAFARGE DOCK

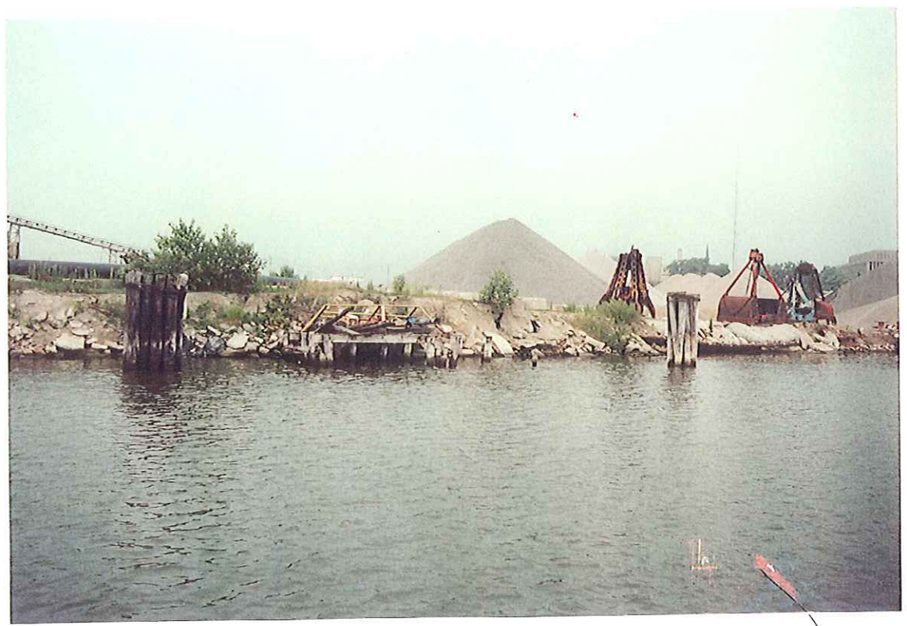


McCOY DOCK

Name	McCoy Dock
Owner	Richard D. Eastman, Revocable Living Trust (one half) Monna E. Eastman, Revocable Living Trust (one half)
Operator	McCoy Concrete Co.
Location	At west end of Marina Island, west of Main Street and bounded by south and north channels of the St. Joseph River and the turning basin.
Coordinates	42 06 44N 86 28 23W
Cargo activities	Handling stone and salt inbound In 2000 imported 217,030 tons of stone and 34,451 tons of salt.
Handling facilities	None
Length of dock wall	No wall; usable bank about 600'
Construction	Natural bank with concrete blocks to retain stone
Bollard spacing	Irregular
Restraint capability	Not known
Depth at dock wall	Varies; min 18' about 30' off bank edge as of April 2001
Height above water	About 6'
Fendering	None
Land area	About 6.2 acres
Structures	Various, mainly unused
Water lot	None, but lot lines indicate possible bank erosion
Depth in channel	Min 18' in approaches at M-63 Draw.
Road access	Direct to Main Street (Business 94)
Rail access	None
Neighboring properties	Pier 33 Marina to South West Road to South East. Water on other sides
Condition of Infrastructure	Waterside in poor condition and a section was recently lost due to ship propeller wash

Environmental issues	None known. Site used to be a shipyard
Mariport commentary	The dock has no face, although there are two old wood breasting dolphins in front of the pipeline manifolds that used to service the Enterprise Oil property east of Wayne Street. Attempts have been made to stabilize the bank in places by pouring concrete, but the overall utility of the site is reduced because of unused structures and lack of ability to stockpile close to the bank edge. Although site plans show an irregular property which is about 40% used by Pier 33 and 60% by the McCoy operation, the deeds do not adequately describe the overall extent of the property. Its utility would be significantly improved by creating a sheet pile berthing face, leveling and draining. The existing structures are of no real value, and their removal and reorganization of weighbridge and office would materially improve storage of stone, sand and salt. Some extension into the turning basin up to the channel line may be feasible and would not affect ship manouvering. This would add close to two acres of usable space, once the current unusable space is taken into account.

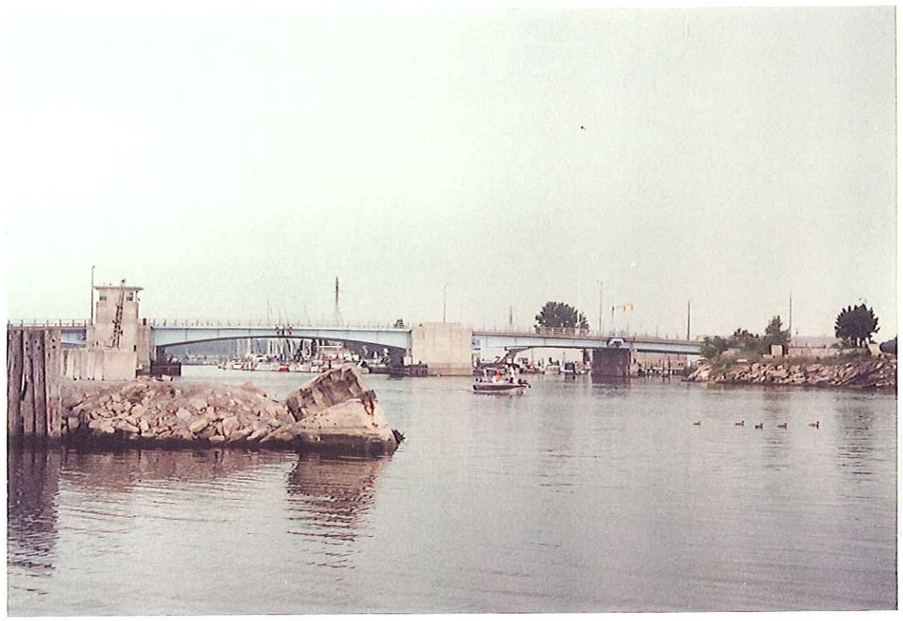
McCOY DOCK



CONSUMERS (KINNEY) DOCK

Name	Consumers Dock
Owner	Central Dock Co, LLC (note that the interests in this company are Patrick J. Kinney and the M.M. Kinney Family Trusts
Operator	Consumers Asphalt
Location	At point between North Channel of the St. Joseph River and the Benton Harbor Canal, north of the Main Street Bridge
Coordinates	42 06 47N 86 28 18W
Cargo activities	Handling stone inbound. In 2000 imported 306,364 tons of stone and sand
Handling facilities	None
Length of dock wall	700' on Benton Harbor Canal, 300' on St; Joseph River
Construction	Remains of concrete and/or timber bulkhead
Bollard spacing	Irregular
Restraint capability	Not known
Depth at dock wall	About 15' on both faces with severe shoaling where the Paw Paw River enters the Benton Harbor Canal
Height above water	About 6'
Fendering	None
Land area	About 3 acres
Structures	Small office building
Water lot	None
Depth in channel	Min 18' in approaches at M-63 draw. April 2001
Road access	Direct to Main Street (Business 94)
Rail access	None
Neighboring properties	Motel between road and stone yard. Water on other sides
Condition of Infrastructure	Waterside is in poor condition on St. Joseph River, and on Benton Harbor Canal
Environmental issues	Not known, but operation incompatible with motel location
Mariport commentary	Because of reduced water levels, the top of the original timber bulkheads has been exposed. From the angle of these bulkheads and the collapse of marginal structures in the St. Joseph River side of the property, it is probably only a matter of time before this collapses into the river. This would not necessarily affect the project channel, but the overall condition of the dock on both sides is poor. The motel property is also owned in the same manner as the dock. The piece of land between the McCoy dock and the motel site has no identifiable deed, and the property east of these two parcels is owned by Kinney Investment Co. LLC.

CONSUMERS (KINNEY) DOCK



6. MARINAS & SMALL BOAT TRAFFIC

Small boats are an essential component of the maritime picture on the St. Joseph River, which hosts a remarkable number of public and private marinas and slips. In all, it is estimated that there are 1,600 slips available in nine marinas. See Annex 3 for survey results. The number of available slips appears to have stabilized since a previous survey in 1989, which also indicated 1,600 slips available. Fig. 6.1, following, shows the location of different marinas in St. Joseph and Benton Harbor.

A concern, expressed by marina operators, in the current survey is the very low level of support that the marinas get from city or regional groups that could help promote boating in the area. Private marinas reported having to spend over $400,000 on dredging in 2001 and there was considerable antagonism towards a significant grant obtained by the city for the purpose of enhancing the municipal marina.

The West Basin Marina is, however, part of the state sponsored program to provide a safe harbor approximately every 15-20 miles. There are, reportedly, 84 such marinas funded through DNR grants. The program is administered through Dept. of Natural Resources who put out an annual directory. As far as we can discover there are no programs in place to assist private marina operators or to help promote their services.

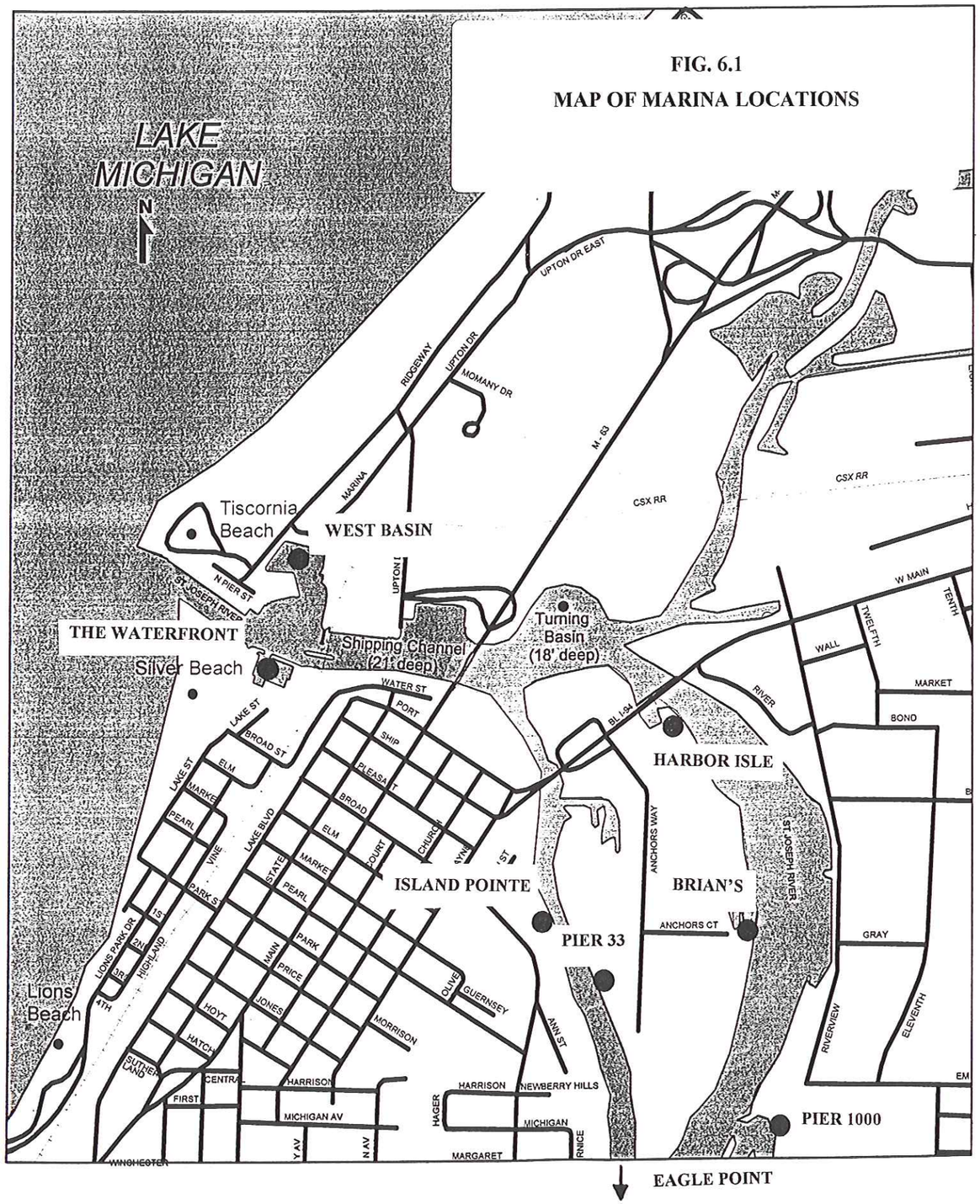
Marinas are excellent generators of local economic benefit, and after taking vacancy rates into account, over 600 of the occupied slips are used by out of state boaters, thus their spending is a net benefit to the St. Joseph/Benton Harbor economy. Spending data taken from a 10-year old study and adjusted for inflation and currency differences suggests that boaters spend about $50/head/day. Thus active promotion of the St. Joseph River as a boating center could reap significant benefits.

We have found very poor information, or none at all, on internet sites for marinas in St. Joseph. There is, surprisingly, no state-wide website that promotes Michigan marinas. Given the use of the internet today as a basic information tool, this omission needs to be rectified. Ontario marinas, by comparison, have an excellent, in depth, site that covers the province down to unique details of each marina. Examples of internet searches for St. Joseph data is provided in Annex 3. Searching for information is complex and at least one printed web address is incorrect. A major site does not appear under regular search parameters and the web address is not readily available. Also in this annex is selected information from the Ontario marinas site.

We would comment that the StJoesailing.com site should be the logical search engine site, but provides nothing more than a logo and a few photographs. This should be the gateway to marina information in St. Joseph/Benton Harbor, yet it goes nowhere.

St. Joseph River Harbor
Benton Harbor & St. Joseph, MI

FIG. 6.1
MAP OF MARINA LOCATIONS



7. SHIP CAPABILITY

7.1 Shipping Capacity, St. Joseph and Market Conditions

As noted elsewhere in this report, St. Joseph is a "tight" harbor, and cannot take larger vessels. Even if the turning basin was fully dredged, the port would still have to depend on smaller ships and tug/barge units in the Great Lakes fleet. This limitation is not necessarily as serious as it sounds, as many US ports are size limited with regard to either draft or manouvering room within the harbor area.

The port is also, like many ports on the Great Lakes, dependent on self unloading vessels. These are ships that, typically, have a hoppered bottom to the hold, belt conveyors to deliver the product to a deck boom that then places the material ashore and builds the stock pile.

Cement carriers that haul bulk cement to the Lafarge silos are specialized types of self unloaders that deliver in a completely enclosed environment to eliminate any risk of moisture contaminating the cargo, and any dust entering the atmosphere. These ships and tug/barge units tend to be much smaller than ships that carry stone, sand and salt.

The list in Annex 4 shows the current fleet of US and Canadian flag self unloaders and cement carriers that can access St. Joseph. Those ships that have visited St. Joseph are bolded. There are twenty-two US and ten Canadian flag self unloading ships and tug/barge units. In addition there are eight US and five Canadian flag cement carriers available. As will be seen, the US fleet is substantial, and port users have benefitted from the recent downturn in the steel industry that has made operators much more aggressive in pricing stone and sand movements at levels that would enable them to keep their fleets operating. Thus the reduction in available water depth has not affected port users as much as it might have done. However, two companies, Algoma in Canada and American Steamship in the USA effectively embargoed the port for part of the 2001 season because water depths had become dangerously low. This could affect salt movements through St. Joseph because the Algoma ships that bring the product in from Goderich in Canada call St. Joseph as the second port after South Chicago or Milwaukee, in order to reduce delivery costs. With salt delivery cycles to fulfill contracts, these ports have already received most of their product for the 2001/2002 winter and as a result, St. Joseph may not see as much salt this year, even though the port has now been dredged to mitigate the worst areas.

As noted above, the port has benefitted from a cyclical downturn in the steel industry. This situation is now swinging back towards better blast furnace utilization and thus higher shipping demand for coal and iron ore. Utilization bottomed out in December 2000 at around 65% of capacity and has been running at 75-80% during the second quarter of 2001. This is still well off levels in the second quarter of 2000 when rates hit 95% of capacity. A good deal is dependent on the strength of the economy, although with current expectations it is unlikely that rates in the high 90's will be achieved for the foreseeable future. Consequently, St. Joseph port users should, with completion of all maintenance dredging, be able to rebuild volume levels with attractive product pricing delivered into the port. However, maintenance of project depth is key to rebuilding confidence with shippers, and the Harbor Board will need to

keep pressure on the Corps of Engineers to ensure that emergency and maintenance dredging is done prior to season – not at the end of it.

7.2 Dimensional Envelope

Dimensions of ships entering St. Joseph are dictated, not so much by draft, but by the difficulty of manouvering in the port. The turning basin is, at present, only 600' in diameter, but even if it was fully dredged and masters could be assured of not running aground, it would not be more than 740' in diameter, provided there was no ship at the McCoy dock. Ships currently using the port are up to 650' in length and only marginal increases could reasonably be considered.

The other impediment to larger ships is the M63 bridge. The clear opening through the bascule is shown on drawings as 100', but because of the nature of an open bascule, may be less than this. If the bridge was square across the channel it would not be a problem, but it is at an angle. There are protective pile clusters both upstream and downstream that limit the clear channel. See Figs. 7.1 & 7.2 with the outline of a 650' ship imposed on the channel, which is at its narrowest here.

In order to mitigate the impact of the bridge on navigation, and improve safety, we would recommend consideration by the Corps of Engineers to a channel configuration change as shown in these figures. These would give the master more time in which to safely manouver a laden boat.

Thus if the port cannot accept much larger ships in the future due to structural impediments, the only opportunity for improved operations lies in a deeper channel. The existing channel, as long as it can be guaranteed at a consistent 21' in the future will improve the port's competitive situation, deepening would enable cargo to be delivered at considerable cost advantage to port users. There are limits imposed by service crossings at the old State Street bridge alignment, and by the existing piers and the Lafarge dock. Lafarge is far enough away from the channel that it would not be impacted, but could take some benefit of up to a 23' or 24' channel. This would fit with the current depths of 24' at State Street where dredging would not be needed.

This will give a target envelope of 650' x 72' x 22-23' draft, which would offer 1' under keel clearance, and manouvering capability should be maintained within these parameters.

FIG. 7.1

PORTION OF CORPS OF ENGINEERS
CHANNEL SURVEY 2000
WEST OF M63 BRIDGE

FIG. 7.2

PORTION OF CORPS OF ENGINEERS CHANNEL SURVEY 2000 EAST OF M63 BRIDGE

7.3 Harbor Deepening and Impacts on Freight Costs

A draft scale for the "Agawa Canyon" is provided at Fig. 7.3, which shows the dwt of the boat at different drafts. The dwt is the weight of cargo, fuel, water and stores, therefore the usable cargo quantity is less than the dwt by around 600 tons. American Steamship[4] indicated a simple cargo scale for the "Buffalo" as follows:

Draft, feet	Cargo, net tons
21	17,000
22	18,000
23	20,000
24	21,000

As will be seen, a move to a 23' draft improves cargo capacity by 18% and as overall ship costs do not materially change between these two drafts, an equivalent reduction in freight cost could be expected. To give an example, if it cost $6.00/ton to deliver cargo at 21', it should be possible to save 90¢/ton at 23'. However, most companies have been operating into St. Joseph at only 18'. At this draft, the "Agawa Canyon" could carry about 13,000 tons. At 23' draft it can carry 18,200 tons, or nearly 40% more cargo. Thus a $6.00/ton rate at 18' would translate to a $4.30/ton rate at 22' draft.

Contract savings to Sifto Salt for 2-port delivery in Lake Michigan, with St. Joseph as the second port, and based on current expectation of only 18' draft, show a saving of 65¢/ton at 20', $1.40 at 22' and about $1.75/net ton at 23'. Based on typical expectation for stone delivery costs, we would project a reduction in delivered costs of U$1.50/ton.

These savings would apply to stone, sand, gravel and salt. There would be some freight cost savings for Lafarge with their cement tug/barge "Integrity", but these would not be as great.

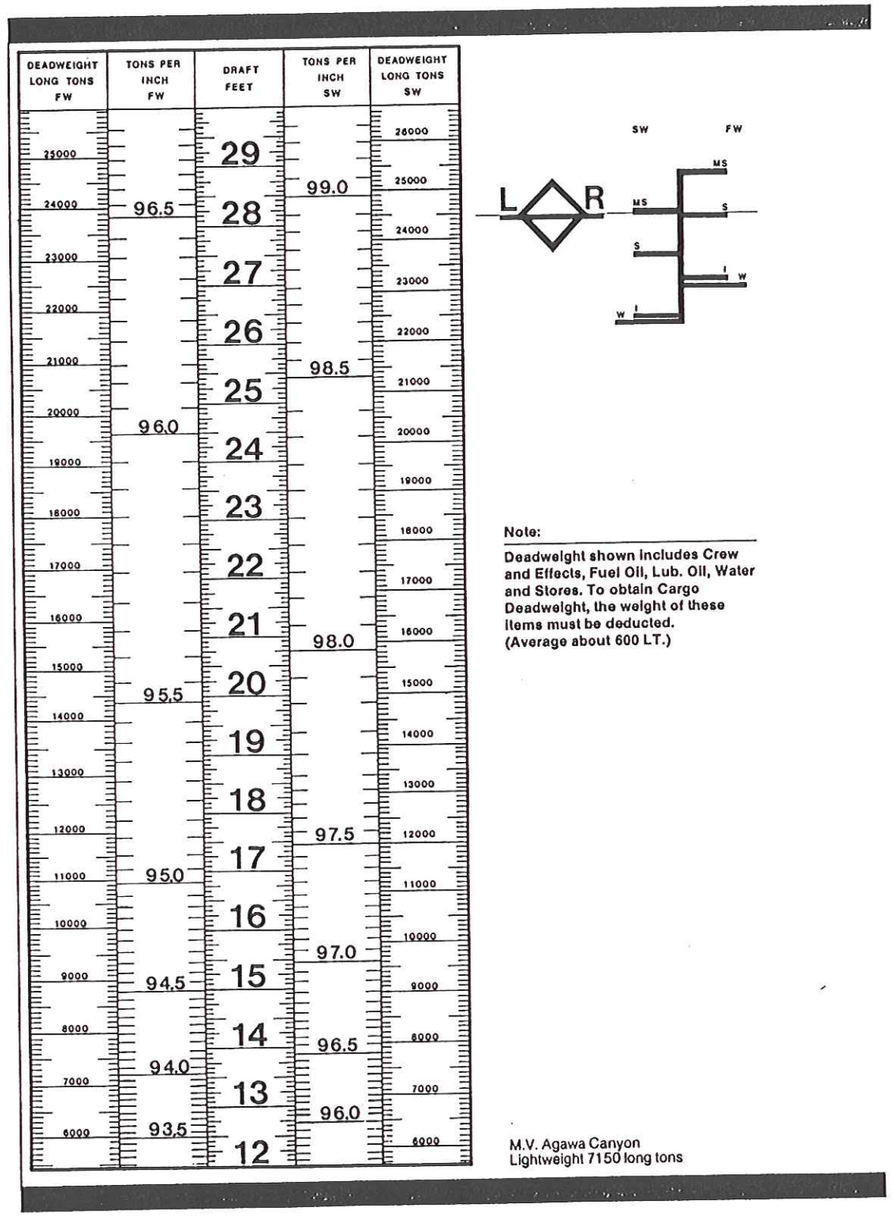
Assuming year 2000 quantities, we could expect savings of about $750,000 on stone etc, and $200,000 on cement deliveries. Just guaranteeing the current 21' project should enable local port users to see savings in the order of $300,000 (about 50¢/ton) averaged across all cargo).

The Corps of Engineers estimated that for a 3' channel deepening, 76,000 yards of material would have to be moved, of which 46,000 was in the outer harbor, and 30,000 in the inner harbor, turning basin and Benton Harbor Canal. The outer harbor cost indication is $4.00/yard, and disposing of the inner harbor material to the airport is estimated at $6.00/yard exclusive of capital costs. The total costs would be in the order of $300,000 plus amortized capital and annual maintenance dredging. This suggests a very robust cost/benefit relationship.

[4] Letter to the Corps of Engineers, April 9, 1990.

FIG. 7.3

"AGAWA CANYON" DRAFT SCALE



Note:

Deadweight shown includes Crew and Effects, Fuel Oil, Lub. Oil, Water and Stores. To obtain Cargo Deadweight, the weight of these items must be deducted. (Average about 600 LT.)

M.V. Agawa Canyon
Lightweight 7150 long tons

8. FUTURE OPPORTUNITIES

This section of the report is based primarily on an extensive telephone survey activity conducted by the consultants of companies within a 50-mile radius of the port. The companies were derived from business registers (Thomas Register), Yellow Pages and other directories and resources. They were classified into groups that, in the consultants' opinion, should be able to benefit from commodities shipped through the port. The headings were as follows:

Concrete products
Concrete ready mix
Feed & grain dealers
Fertilizers
Lumber
Metal fabricators
Pallet & skid companies
Newspaper manufacturers
Oil distribution
Paper products
Paving contractors & construction
Pipe
Publishers, books
Sand & gravel
Scrap metals.

About 550 companies were identified and a target list of about 100 selected where size was known, or the company appeared to have a number of branch operations. A one-page questionnaire was developed to obtain information that would be useful for port development.

The results were somewhat mixed, and for many companies we were unable to get past the company voicemail, or the caller was refused access to relevant personnel by receptionists/secretaries. In a number of instances where we did get through to someone, messages were left on voicemails and never returned. Details are provided in Annex 5.

An early realization was that many of the companies in the area, which were in metal manufacturing, were highly specialized and would never be in a position to use a port. Only companies using steel coil in large quantities might find port access of value. The specialist companies could, however, benefit from the presence of a Metal Supermarket in St. Joseph/Benton Harbor. Contact details and an explanation of the company operation is also provided in Annex 5, and a short discussion at x) below.

Following are the candidate operations considered relevant to the future of the port.

8.1 IMMEDIATE PROSPECTS

i) RELAXATION OF INDIANA WEIGHT RESTRICTIONS ON US 31

Regulations in Indiana regarding truck weights are much more restrictive than in Michigan: 80,000lbs Maximum Gross Vehicle Weight (MGVW) versus 164,000lbs, depending on number of axles and their spacing. Truck combination lengths can also be a problem, but probably not for bulk deliveries. The limits on the I-90 toll road are very much less restrictive at 127,400lbs for a tractor/trailer/trailer combination. It would appear from Indiana State guidelines to truckers that a permit for overweight is available, but could cost about U$100 for a single trip. This is subjectively supported by local interests who indicated that the permit is prohibitively expensive. This cost is incurred regardless of the trip length, and while it is eminently reasonable for a cross state move of a heavy piece of project cargo, it is much less reasonable for short haul movements of bulk commodities.

The Michigan state boundary, south of St. Joseph, is separated from the toll road by a 1.8 mile stretch of US 31, which is effectively at interstate standards in this area. There are no on or off ramps in Indiana on US 31 prior to the toll road, and the nearest Michigan ramp is Highway 12, about 5.6 miles from the toll road.

Moving bulk commodities out of St. Joseph, but particularly salt, would benefit in terms of overall costs if the maximum weight for the Toll Road could be carried through from the state border without the need for a special permit. Such an arrangement could benefit Indiana DOT, and the Toll Road, relative to salt deliveries in the toll road corridor by enabling deliveries to be made at a lower cost than at present. Other users of stone, cement and asphalt could also benefit from the cost reductions of extra cargo on the truck.

Negotiations of such an arrangement would probably need to be by Berrien County with the support of port users and, possibly, Michigan DOT. We have no way of knowing whether such an approach would be considered and an option might be for the port of St. Joseph to hold a special annual permit for any cargo handled through the port. We are aware of a precedent between the Port of Toledo and the State of Ohio, where about a ten mile stretch of I-75 from the Michigan border, and link roads into the port were approved for use by higher weight vehicles. We also understand that steel trucks out of Gary, IN have special weight privileges on US-12. Thus it would seem that an agreement could be achieved.

ii) LUMBER DISTRIBUTION & RELOAD

The vicinity of St. Joseph has a remarkable number of lumber manufacturing operations, which produce boxes and skids. There are also, because of the major cities within reach of the port, a large number of lumber wholesale operations. Although most lumber is railed or trucked into the area, there are some cross lake movements from Canada by tug and barge into Detroit. Here pre-packaged lumber is unloaded from the barge and loaded onto rail cars for further distribution.

St. Joseph did handle some barged lumber in 1985 & 1986 and, depending on the interest of lumber users in the area, could see demand in the future. Generally lumber wholesalers and others indicated that mode of delivery was up to their supplier, but several large operators expressed an interest in learning more about the possibilities. For example, one manufacturer consumes a B Train of lumber per day.

There could also, with the CSX rail line and sidings, be an opportunity to target the Chicago market with a new reload center.

We contacted Buchanan Forest Products of Thunder Bay, who handle the lumber into Detroit. They were interested in a new site with marine and rail access that could offer them min. 10, max. 20 acres of laydown area. There was some concern regarding the port entrance and the tug operator stated that he was not in favor of any port on the west shore of Michigan because of narrow entrances and adverse weather conditions. A representative of the company visited St. Joseph on September 6th, and discussions are ongoing. The consultants have also provided Buchanan with mapping information.

There are other lumber companies in Northern Ontario and barge companies that could have an interest in this kind of operation. For example, there is a major Canadian tug/barge company based in Sault Ste. Marie, and lumber operations inland from them around Hearst. Exploration of contacts in this area could be beneficial if Buchanan were not interested.

iii) ASPHALT TERMINAL

Background

It is estimated, by industry operators, that within the 50-mile radius of St. Joseph some 250,000 tons of asphalt are used annually. Asphalt is trucked in to St. Joseph at transportation costs varying from $12.50 to $17.00/ton. The lower cost is from Whiting (IN), while the higher cost is from Lemont, (IL). Trucking distances to St. Joseph are approximately 68 and 92 miles respectively. Both sources work out at about 18¢/ton mile.

Proposal

Asphalt is delivered around the Lakes by ships and tug/barge units and marine generally is the lowest cost transportation mode. A number of companies contacted about business opportunities for asphalt through the port expressed an interest in not only reducing costs, but also improving the overall planning of projects by having a substantial local supply available to them. The concept therefore was to look at the creation of a small (100,000 bbl) capacity, state of the art terminal that could serve the region and be barge fed at regular intervals. The terminal would not need to be on water, only have pipeline access to a barge berth.

Preliminary Costs

Inward barge costs for lake delivery, based on a 35,000 bbl full barge load, was indicated at $1.00/bbl or about $5.50/ton. Local trucking would probably not exceed $1.00/ton, although costs would increase based on distance. The big cost would be the terminal. A preliminary cost and layout - see Fig. 8.1 - has been

provided by ECF, who specialize in asphalt terminals and are building a similar one in the Bay area at present. Their base cost is about $3m, excluding land, with a nominal contingency. As the terminal would most probably be remote from the dock, a higher cost should be presumed. Assuming $500,000 pa operating budget plus an R.O.I. of 10% on $3.5m, throughput and storage costs should be about $3.50/ton for a total local delivered cost of $10.00/ton.

At this stage none of the potential principals have been formally contacted. Koch, Amoco, BP and Marathon all supply asphalt, and international supply from Venezuela is feasible. About 100,000 tons of offshore asphalt was brought into the USA through the Seaway in 2000, and another 100,000 tons was shipped from Canadian ports. Thus an independent terminal could seek least cost suppliers and further reduce costs on paving and related projects.

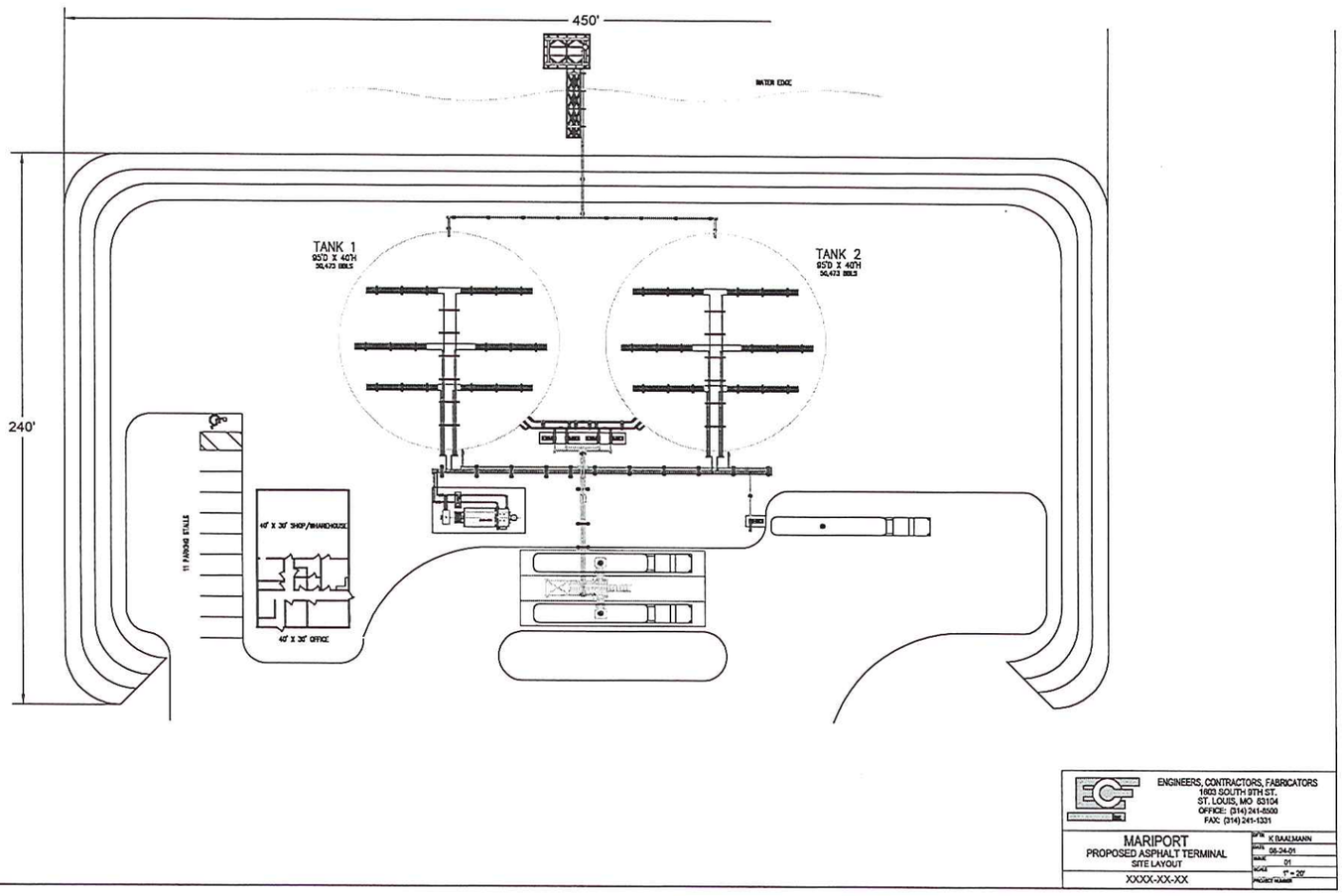
Added value is possible with blending and additives as well as different asphalt grades.

Conclusions

The margins on an asphalt terminal appear to be acceptable to justify further analysis to define both the market and the overall costs. An aspect that does need further work is the "value" of the local delivery opportunity that a Southwest Regional Terminal would create. Such a benefit may not accrue to the asphalt but to the contractor in reduction in delays, reduced overtime etc in keeping a paving project operating smoothly.

FIG. 8.1

PLAN OF SMALL ASPHALT TERMINAL



Project: Marlport - St Joseph
Date: 08/24/01

Item No.	Description	Description	Quantity	Units	Unit Cost	Extended Cost	Sub-Total	Total
1	**Permits and Engineering**							
	Local and Federal Permitting	Local Firm	1	lot	$ 50,000	$ 50,000		
	Electrical Drawings	ECF	1	lot	$ 5,000	$ 5,000		
	Facility Design Drawings	ECF	1	lot	$ 7,500	$ 7,500		
	Testing	Tank and Pipe X-Rays	1	lot	$ 5,000	$ 5,000		
	Supervision	ECF	1	lot	$ 20,000	$ 20,000		
	Total Permits & Engineering						$ 87,500	$ 87,500
2	**Site Work**							
	Geotechnical Assessment		1	lot	$ 5,000	$ 5,000		
	Survey		1	lot	$ 2,500	$ 2,500		
	Site Preparation		1	lot	$ 30,000	$ 30,000		
	Dock Work		1	lot	$ 30,000	$ 30,000		
	Paving		1	ea	$ 25,000	$ 25,000		
	Total Site Work						$ 92,500	$ 92,500
3	**Concrete**							
	Foundations							
	Tank Foundation							
	95 x 40		596.6	ft	$ 200	$ 119,320		
						$ -		
	Hot Oil Heater/Boiler Building		60	yd	$ 300	$ 18,000		
			1	yd		$ -		
	Containment		750	yd	$ 40	$ 30,000		
	Pipe Supports		100	yd	$ 125	$ 12,500		
	Load Rack		5	yd	$ 300	$ 1,500		
	Pump Foundations			yd		$ -		
	Rail Pumps			yd		$ -		
	4-Pump Skid			yd		$ -		
	2-Pump Skid		2	yd	$ 450	$ 900		
	1-Pump Skid		2	yd	$ 450	$ 900		
	Light Pole Foundations		2	yd	$ 300	$ 600		
	Total Structural						$ 183,720	$ 183,720
4	**Tanks**							
	95x40 Tanks - 50,000BBL		100000	BBL	$ 5	$ 500,000		
	Tank Hydrotest					$ -		
	Heating Coils			ea		$ -		
	40" Fin Tube Sections	Fin-Tube Coils	168	ea	$ 205	$ 34,440		
	Level Gage	Varec	2	ea	$ 1,576	$ 3,152		
	Thermowells		10	ea	$ 60	$ 600		
	Tempurature Gage		10	ea	$ 105	$ 1,050		
	Sample Valve	Strahman	2	ea	$ 350	$ 700		
	Total Tanks						$ 539,942	$ 539,942
5	**Structural Steel**							
	4" I-Beam		1200	ft	$ 2.56	$ 3,072		
	6" I-Beam		1400	ft	$ 2.96	$ 4,144		
	8" I-Beam		400	ft	$ 2.96	$ 1,184		
	10" I-Beam		480	ft	$ 2.96	$ 1,421		
	1/8" Plate 4'x8'		12	ea	$ 32	$ 384		
	1/4" Plate 4'x8'		4	ea	$ 62	$ 248		
	3/8" Plate 4'x8'		4	ea	$ 92	$ 368		
	1/2" Plate 4'x8'		4	ea	$ 123	$ 492		
							$ 11,313	$ 11,313
6	**Piping**							
	Pipe Valves and Fittings		1	lot	$ 100,000	$ 100,000		
	Mechanical Labor		1	lot	$ 300,000	$ 300,000		
	Misc.		1	lot	$ 5,000	$ 5,000		
	Total Piping						$ 405,000	$ 405,000
7	**Insulation**							
	Tank Insulation		2	lot	$ 115,000	$ 230,000		
	Pipe Insulation Labor and Materials		1	lot	$ 150,000	$ 150,000		
	Removable Covers		1	lot	$ 35,000	$ 35,000		
	Total Insulation						$ 415,000	$ 415,000
8	**Tracing**							
	Labor and Materials		1	ea	$ 60,000	$ 60,000		
	Total Tracing						$ 60,000	$ 60,000
9	**Major Equipment**							
	Blender Systems		2	ea	$ 28,652	$ 57,304		
	Control System Scales/Blenders	?	1	ea	$ 10,000	$ 10,000		
	Strianers	Viking Lid-Ease	3	ea	$ 740	$ 2,220		
	Mixers	MixMor	2	ea	$ 4,415	$ 8,830		
	Hot Oil Heater	American Heating	1	ea	$ 90,000	$ 90,000		
	Hot Oil, Boiler Shed - Metal Building	?	1	ea		$ -		
	Truck Scales		2	ea	$ 45,000	$ 90,000		
	Loading Rack		1	ea	$ 15,000	$ 15,000		

Project: Mariport - St Joseph
Date: 08/24/01

Item No.	Description	Description	Quantity	Units	Unit Cost	Extended Cost	Sub-Total	Total
	Loading Arms		2	ea	$ 8,707	$ 17,414		
	Office and Lab		1	ea	$ 150,000	$ 150,000		
	Inline Mixer	Blender Mixer	2	ea	$ 2,500	$ 5,000		
	Actuated Valves	Electric Atuated	4	ea	$ 5,300	$ 21,200		
	Dock Work		1	ea	$ 120,000	$ 120,000		
				ea		$ -		
	Total Major Equipment						$ 586,968	$ 586,968
10	**Electrical**							
	Labor and Materials		1	lot	$ 150,000	$ 150,000		
	Total Electrical						$ 150,000	$ 150,000
11	**Expendables**							
	Rods, Wheels, Misc.		1	lot	$ 5,500	$ 5,500		
	Gasses		1	lot	$ 2,500	$ 2,500		
	Small Tools		1	lot	$ 1,000	$ 1,000		
	Total Expendbles						$ 9,000	$ 9,000
14	**Equipment Rentals**							
	Boom Truck		4	mo	$ 4,800	$ 19,200		
	Forklifts		4	mo	$ 2,800	$ 11,200		
	Misc. Rentals		2	lot	$ 5,000	$ 10,000		
	Toal Equipment Rentals						$ 40,400	$ 40,400
15	**Utilities**							
	Electrical		1	lot	$ 20,000	$ 20,000		
	Natural Gas		1	lot	$ 10,000	$ 10,000		
	Phone		1	lot	$ 3,000	$ 3,000		
	Water Sewer		1	lot	$ 5,000	$ 5,000		
	Total Utilities						$ 38,000	$ 38,000
Sub-Total							$ 2,619,343	

				Sub-Total	$ 2,619,343
Overhead	2%	$ 52,387		Overhead	$ 2,671,730
Freight	2%	$ 52,387		Freight	$ 2,724,117
Taxes	5%	$ 130,967		Taxes	$ 2,855,084
				Sub-Total	$ 2,855,084
			Contingency	5%	$ 2,997,838
			Contingency	10%	$ 3,140,592
			Contingency	20%	$ 3,426,100

iv) HIGH SPEED PASSENGER FERRY FROM CHICAGO TO ST. JOSEPH

Background

- Historically, St. Joseph and the Silver Beach amusement part were very popular destinations for Chicagoans, who arrived by excursion steamer to visit this attraction as well as the House of David in Benton Harbor. The town remains popular today and visitor numbers are climbing each year.
- By lake, St. Joseph is 60 miles from Chicago. By road, the route is about 100 miles, at least half of which is highly congested and can take up to 3 hours into the downtown area.
- There are about 1,600 marina slips in St. Joseph, including a number of unofficial and private slips. Only about 100 of these are guest slips and the seasonal slips are 70% occupied by out of state boaters, many of whom may be from Chicago. There is some vacancy in the seasonal slips, which varies by marina.
- The Southwest Michigan Regional Airport is positioning itself as a center for corporate and private air. The main runway is to be extended with full overrun capability and an air park is to be built. If Meig's Field in Chicago should be taken for parkland, as seems possible, then the airport could be very well positioned to pick up substantial additional business.

Traffic Base

There are no counts, or formal estimates, of visitors to the St. Joseph/Benton Harbor area, although events, like the Venetian Festival are believed to attract in excess of 200,000 people. Silver Beach reportedly attracts about 500,000 people each year of which half are out of state. The Southwest Michigan Tourist Council received 280,000 enquiries in 2000, up 70% from 1999. Estimated pleasure trip nights in Southwest Michigan were 4.3 m in 1996 and other data indicates an average stay of 1.35 nights which would extrapolate to a total visitation number of 3.2m[5]. About 60% of the visitor nights were in Berrien County, which would suggest about 2m visitors to Berrien County alone. Traveller origins were 40% from the Chicago area, which would indicate a market of at least 760,000 visitors that could be targeted by an excursion ferry. It should be noted that, at present, visitors to St. Joseph from Chicago would have to overnight, unless they were prepared to take a very long day driving around to visit. The ferry would enable day trippers to visit St. Joseph, thereby materially increasing the potential market. The market could, in time, be expanded further by offering connector coach service to other communities and attractions in Southwest Michigan.

Proposal

A modern high speed catamaran or monohull ferry, see Fig. 8.2, could offer a 2-hour ride from Navy Pier to St. Joseph and tap into the Chicago market, as well as providing local residents from a wide radius in Southwest Michigan and Northern Indiana an easy route into downtown Chicago. Business travel, with car rentals

[5] For reference, Warren Dunes State Park received 1.37m visitors in 1996 Data relative to travel numbers has come from information supplied by the Southwest Michigan Tourist Council.

FIG. 8.2

TYPICAL HIGH SPEED CATAMARAN
PASSENGER FERRY

available on arrival in St. Joseph, could also benefit into Grand Rapids, Kalamazoo and Battle Creek.

As a passenger-only ferry, no significant dock construction would be needed, and it could operate from the south wall of the channel at Silver Beach, and/or in the Municipal Marina on the North Shore.

Preliminary Costs

A modern 28kn catamaran ferry, 100' long, 32' beam, with a capacity of 300 passengers and seating areas, sun deck and full galley was available for lease in mid-2001 at about $50,000/month depending on the duration of the charter. Fuel consumption was indicated at 160 gph at cruise speed.

A preliminary daily budget would be as follows (based on 200 day season plus 20 days position/reposition in/out of the Lakes):

Lease	$2,000
Insurance	$ 250
Crew	$1,500
Fuel	$2,000
Dockage etc.	$ 250
Position/reposition	$ 600
Sales & marketing	$ 400
	$7,000

This would cover a summer schedule of three round trips per day, say:

dep Chicago	0730	arr St. Joseph	0930
dep St. Joseph	1000	arr Chicago	1200
dep Chicago	1230	arr St. Joseph	1430
dep St. Joseph	1500	arr Chicago	1700
dep Chicago	1730	arr St. Joseph	1930
dep St. Joseph	2000	arr Chicago	2200

We would expect that a fare of $15.00 each way would be attractive, compared with Amtrak of $21.00 each way. The Amtrak schedule is geared more to Michigan residents going to Chicago than vice versa, so day trippers are unlikely to use the service to get to St. Joseph. By offering round trip and family fares, ridership could be rapidly developed.

Assuming 50% of travellers would be round trip at, say, $25.00 per adult, and allowing for an overall family mix of 2 adults and 2 children at a family fare of $50.00 RT for the balance, the net revenue per person will be about $10.00 each way. At this revenue daily costs would need 700 passengers to cover, or a 39% load factor. If on board sales are included, then the load factor drops further.

Conclusion

The ferry would need about 18% of the existing market to break even at the indicated costs and revenues. On this basis the concept has feasibility and should be considered for further investigation, particularly relative to passenger survey data to determine ridership, season length and price points. The economic benefit

to St. Joseph of the ferry could be considerable. At a nominal $10.00 per person spending level, the direct benefit could be in the $1-2m range.

v) CRUISE

St. Joseph, through the support of the Berrien County Harbor Board, City of St. Joseph, Southwest Michigan Tourist Council and St. Joseph Today, is a sponsor of a cruise promotion and marketing agency – Cruising the Great Lakes Inc. Specialist promotional materials have been developed, and work has been done over the past year in making cruise companies operating on the Great Lakes aware of the attraction of St. Joseph as a cruise port of call, together with shore excursion opportunities for passengers in Southwest Michigan.

Because of the cruise planning cycle this work tends to be long lead time as itineraries are often determined two years ahead. However, there is some hope that Delta Queen Coastal Voyages will schedule one of their ships into St. Joseph in the 2003 season. Their itinerary planner has visited the town and been suitably impressed with the attractions. Work is ongoing with other cruise companies to achieve visits and recognition of the passenger attractions. The economic benefit to a community from a cruise passenger is considerable, and a visit of 4-6 hours will result in an average of $50.00 spending per person. This is partly on shore excursions and partly on discretionary spending in stores and restaurants.

vi) SALT

St. Joseph has handled varying quantities of salt over the years, from a low of zero to a high of 130,000 tons in 1981. While the ability of the port to attract salt movements is dependent on which company gets the bid for Michigan and Indiana salt, the availability of land on which to store the salt and adequate water depth in the port will also be key issues.

The primary bidders on salt for winter road application are:

IMC (Sifto Salt)	out of Goderich
Cargill	out of Cleveland
Morton	out of Chicago
Detroit Salt	who buy from Windsor Salt, a Morton company.

Generally, IMC have offered the lowest bid prices due to the company's very large marine volume - over 3m tons - and a very wide range of ports to which they deliver in Lake Michigan. This has enabled them to fully load one of the class of small ships that they use and deliver an initial cargo to a deep draft port (South Chicago or Milwaukee), and then offload the balance in St. Joseph at reduced draft. As a result their savings from increased draft (or a consistent 21') in the port will not be as great as, say Cargill, who would have to deliver a full cargo from their Whiskey Island loader in Cleveland, which is draft limited to the same extend as St. Joseph. Morton have a salt operation at Fairport (OH) but have not, so far as we are aware, shipped to Lake Michigan from this port. The Fairport berth is also draft limited to around 21'.

Local salt consumption in the Southwest Region - which, for Michigan purchasing purposes, comprises Allegan, Barry, Berrien, Branch, Calhoun, Cass, Kalamazoo

and Van Buren – is 120,120 tons in a combination of early "season fill up" and "seasonal back up" quantities. M-DOT contracts with local governments to cover Interstate requirements, so no quantities are shown separately for I-94 or I-196. The quantity shipped to M-DOT garages is 56,900 tons with the balance to local government drop points.

In terms of pricing in the last bid period, IMC from Goderich were generally the low bidder, therefore St. Joseph should be in a good position to handle much of this material.

Indiana State information with regard to toll road (I-89/90) and neighboring counties within the effective trucking radius of St. Joseph indicates that St. Joseph could capture about 23,000 tons for delivery to the toll road (about milepost 37.5 to 87.1), plus a further 90,000 tons for the La Porte, South Bend, Mishawka, Elkhart area. In 1988/89 St. Joseph moved 60,000 tons of salt to the Toll Road and surrounding areas. Morton and Detroit Salt appeared to be the low bidders for Indiana contracts, but comparing these bids with the Michigan contract values, IMC should be able to beat the current Indiana levels. It is therefore entirely feasible that with a guarantee of at least 21' project, St. Joseph could achieve a much higher level of salt thoughput. Increasing project depth, and reducing freight costs, will expand the potential volume. However, what is needed is a dedicated salt pad that has about six acres of space available for storage, retrieval and delivery.

Based on the quantity information above, in excess of 200,000 tons of salt could be moved through the port.

vii) CEMENT

The Lafarge terminal in St. Joseph moves a remarkably high quantity of cement for its size, roughly a 10:1 inventory turn over in a typical year. This is mainly due to the position of St. Joseph relative to high population areas and easy road access. Lafarge have said that the terminal is preferred over one in South Chicago because of the lack of congestion.

With the high throughput, Lafarge is now limited in volume by their ability to schedule cement deliveries by ship and thus the accessibility of the channel. They are less limited than other port users because ships are smaller, and only need to navigate the CSX bridge and can then back out into the lake.

Lafarge are turning part of the capacity over to slag cement and therefore ship delivery becomes much more important. In order to maximize throughput they have moved the local bagging operation to Muskegon, which is much lower volume, and warehouse bagged cement for local delivery at the St. Joseph terminal.

Unless there is expansion of the Lafarge terminal, or unless a new cement manufacturer was interested in coming into St. Joseph, it is unlikely that volumes could be materially increased in the future. However, it should be noted that the terminal has moved 270,000 tons in the past, 25% more than in 2000.

viii) STONE, SAND & GRAVEL

It is not possible to indicate how much material might be moved through St. Joseph as a result of guaranteed depths and possibly enhanced depths at a 23' project. However, companies with whom we have spoken were very positive about the possibilities and Consumers Concrete of Kalamazoo definitely predicted greater volumes.

Although an imprecise measure, an indication of possible volumes can be derived from a typical cement mix of three parts stone, two parts sand and one part Portland cement. On this basis, and taking the 1994 cement volume through the port of 270,000 tons, there should be a demand for about 810,000 tons of stone and 540,000 tons of sand. In 2000, total stone and sand through the port was 523,394 tons. As local sandpits can probably provide much of the sand needed, it would be unlikely to see stone and sand volumes going over 1m tons, but there should be healthy expansion opportunities to around 750,000 tons of stone, sand and gravel.

ix) MERCHANT STONE

While there are a number of large stone, sand and gravel users that ship through the port (Consumers Concrete takes 150,000 tons per year alone), there are many more that do not have a big enough demand to justify ship-load lots through the port. A "port authority" could manage merchant stone and gravel piles by buying in shipload lots and selling by the truck load.

8.2 OTHER PROSPECTS

The following prospects are either low priority or are non-port related, but are possible distribution or service opportunities for St. Joseph/Benton Harbor.

x) METAL STOCKHOLDING

Although not oriented to port use, the analysis of businesses within a 50-mile radius of St. Joseph showed a very high number of small to medium metal fabricating companies that utilized a range of specialty products. These companies are not listed in the Annexes as they would not be port users, but it was felt that Berrien County could benefit from the establishment of a specialty metal stockholder such as Metal Supermarket. This company claims to be the largest micro distributor of metal in the world and is well established in USA, Canada and the UK. The only Michigan operation is in Livonia. See Annex 5 for details.

xi) NEWSPRINT/PAPER WAREHOUSE

Business surveys have shown a considerable concentration of printing operations within a 50-mile radius of St. Joseph with newsprint consumption well in excess of 100,000 tons per year. While there is a possibility that marine movement would be attractive, it must be recognized that ships no longer move newsprint on the Great Lakes, and most bulk movements are by rail. It is feasible that a newsprint warehousing operation in St. Joseph could be successful.

xii) FOOD & FEED GRAINS EXPORT TERMINAL

The Southwestern Michigan Regional Planning Commission undertook an assessment of the potential for St. Joseph as a grain export port in 1982. Data was generally for 1978 and covered production and consumption for livestock feed to prove a "surplus" for export. It was recognized that available surpluses were shipped through established terminal elevators in South Chicago, Gary, Toledo and Saginaw. There was also consumption, which was not quantified, for major cereal makers Kellogg and Post in Battle Creek.

The Michigan counties covered by the 1982 survey were:

West Central (Lake, Mason, Muskegon, Newaygo and Oceana, Mecosta, Montcalm, Osceola)

Southwestern (Allegan, Berrien, Cass, Kalamazoo, Kent, Van Buren, Barry, Branch, Calhoun, Ionia and St. Joseph)

All Northern Indiana – 27 counties in all.

1978 PRODUCTION, bu x 10^6 **1978 SURPLUS**

	Michigan	Indiana All North	North Central	Michigan	Indiana All North	North Central
Corn	78.4	244.7	83.8	49.7	193	39.6
Oats	4.8	4.5	1.1	2.5	1.1	(.4)
Wheat	5.8	9.8	2.3	5.8	9.8	2.9
Soy	-nd-	52.9	15.0	-nd-	529	15.0

1980 PRODUCTION bu x 10^6 **1980 SURPLUS**

	Michigan	Indiana All North	NW Central	Michigan	Indiana All North	NW Central
Corn	90.0	214.3	72.8	62.1	158.5	45.9
Oats	5.0	3.5	.7	2.5	.8	(1.0)
Wheat	8.4	19.8	6.3	8.4	19.8	6.3
Soy	-nd-	63.9	18.6	-nd-	63.7	18.6

We have, in the current review, taken a more restricted look at production and potential capture by a facility at St. Joseph. However, for overall comparison the following data is helpful to assess changes over the past 20 years.

1999 PRODUCTION bu x 10^6

	Michigan	Indiana All North	Indiana[6] North Central	Target Area[1] Production
Corn	90.4	294.2	98.7	189.1
Oats	1.1	- nd -	- nd -	1.1
Wheat	7.6	10.1	2.8	10.4
Soy	20.3	89.3	30.2	50.5

Surplus figures cannot be readily assessed from current data as livestock and local demand is not calculated.

The North Central group of counties in Indiana would be the prime target for a facility in St. Joseph. The Northeast counties would truck down I-90 to Toledo, OH, while the Northwest counties would go to Gary or South Chicago.

Comparing the data from 20 years ago with the more recent information strongly suggests that surplus product volume has at last been maintained, and may have increased. Corn production is up, oats is still a minor crop, wheat is about the same, while soy production in Indiana has materially increased. No data was provided in the 1982 study for Michigan soy production, but in Indiana this was shown as being all surplus. Soy is an oil seed and tends to go to a seed crusher, who then ships the oil, with the residue going back to the farm, or feed companies for livestock.

Corn production in the Indiana counties that might be targeted will be destined for a major ethanol plant in South Bend that consumes about 30m bu/year. This plant did not exist when the earlier study was done.

Assuming a reasonably stable livestock population and that cereal production in the Battle Creek area consumes 10m bu/year (we have been unable to get a figure for use from either company), this would give a potential surplus as follows:

	Bu x 10^6	Tons x 10^6
Corn	94.3	2.6
Oats	Nil	Nil
Wheat	10.4	.3
Soy	50.5	1.52

While the quantities – particularly of the corn – may make a terminal operation feasible, the lack of support we were getting from feed grain or farm cooperatives in our surveys suggests that much more basic work is needed before even a pricing exercise could be undertaken. An additional factor is that the lack of depth available in St. Joseph, even with dredging to a greater project depth, would prevent economic freight rates being achieved for the larger international flag bulk carriers

[6] 2000.

that would be needed to make the concept workable. However, corn could be a cross lake barge commodity for furtherance to the Mississippi.

Although a seed crusher may exist in SW Michigan, we did not find a reference. It would be worth investigating such an operation to utilize the soy crop as the edible oil that could be shipped in tankers either within the Lakes or overseas. Parcel sizes in these cargoes are small enough that the port should be workable for ships involved.

9. DIRECTIONS FOR THE PORT

While it is not exactly correct to say that "if you build it they will come" it is possible to say that, provided cargo access can be maintained in St. Joseph, then the cargo will be there and volumes can be expanded.

There have been several visions for the port in the past, and two of these are given in Fig. 9.1 & 9.2.

The basic problem facing the port is that all land for cargo use and ship access is in private rather than public hands. Consequently the decision relative to that land is to private benefit not public good. However if land can be retained for cargo use, and additional land dedicated to cargo activities, then Berrien County, and Southwest Michigan will see economic benefit continue and expand. The cities of St. Joseph and Benton Harbor will see some direct benefit, but as noted elsewhere, benefit tends to be dispersed in the port hinterland and is only recognized if the port no longer functions, and costs rise. A measure of benefit can be seen from the way in which cargo is distributed. Twenty three percent is to Berrien County, thirty nine percent to South West Michigan and a similar percentage to other Michigan counties. Over eighty percent of all cargo is delivered within a 50-mile radius of the port.

Because the port lands have been in private hands, there has been no real impetus to maximize throughput and bring in other users, although this is not to downplay the importance of the Harbor Board in coordinating activities, particularly relative to dredging issues. However, if the port is to grow in the future, then it does need a full time manager to work with the Board and to promote and market the port and show regional businesses how to benefit from the port. The limited exercise undertaken by the consultants demonstrates that there are opportunities, if they are sought. This person would also maintain close contact with shipping companies to ensure they are aware of development and can plan accordingly.

Waterfront

The port currently operates from three parcels, two with about six acres and one of three acres (see Fig 5.8). If the port were to be organized for maximum benefit, with publicly held land that had effective sheet pile faces, concrete copes, effective bollards for safe tie-up then we would suggest as follows (see Fig 9.3):

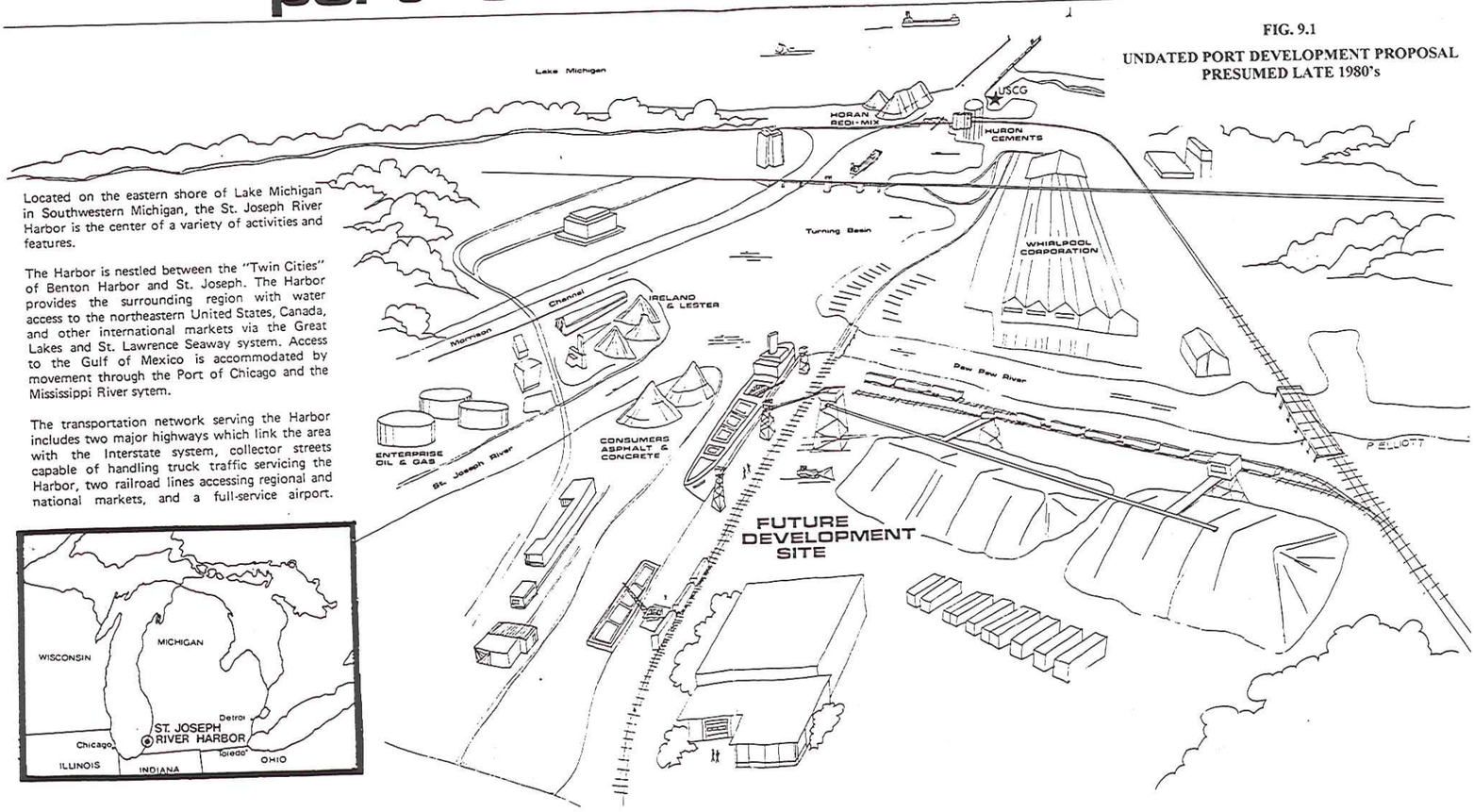
Lafarge Dock: Remains as is, in private hands. However, a right of first refusal should be discussed with Lafarge if there is any consideration of selling the property out of cement use.

McCoy Dock: Negotiations should be commenced to acquire the property and upgrade it. Sheet pile face 700' on turning basin at project depth. Possibly also sheet pile face on the St. Joseph River side 200' at river depth. Demolition of buildings and reorganization, fill and drainage to expand useable space to about 8 acres. Consolidating this property would also be a benefit relative to the turning basin as material would no longer slump into it and have to be dredged out. A configuration drawing is given at Fig. 9.4 and detailed preliminary engineering costs are in Annex 7. Probable cost, exclusive of land, $1.2m. This dock would be used for stone, sand and gravel.

southwestern michigan's port of the future

FIG. 9.1

UNDATED PORT DEVELOPMENT PROPOSAL
PRESUMED LATE 1980's

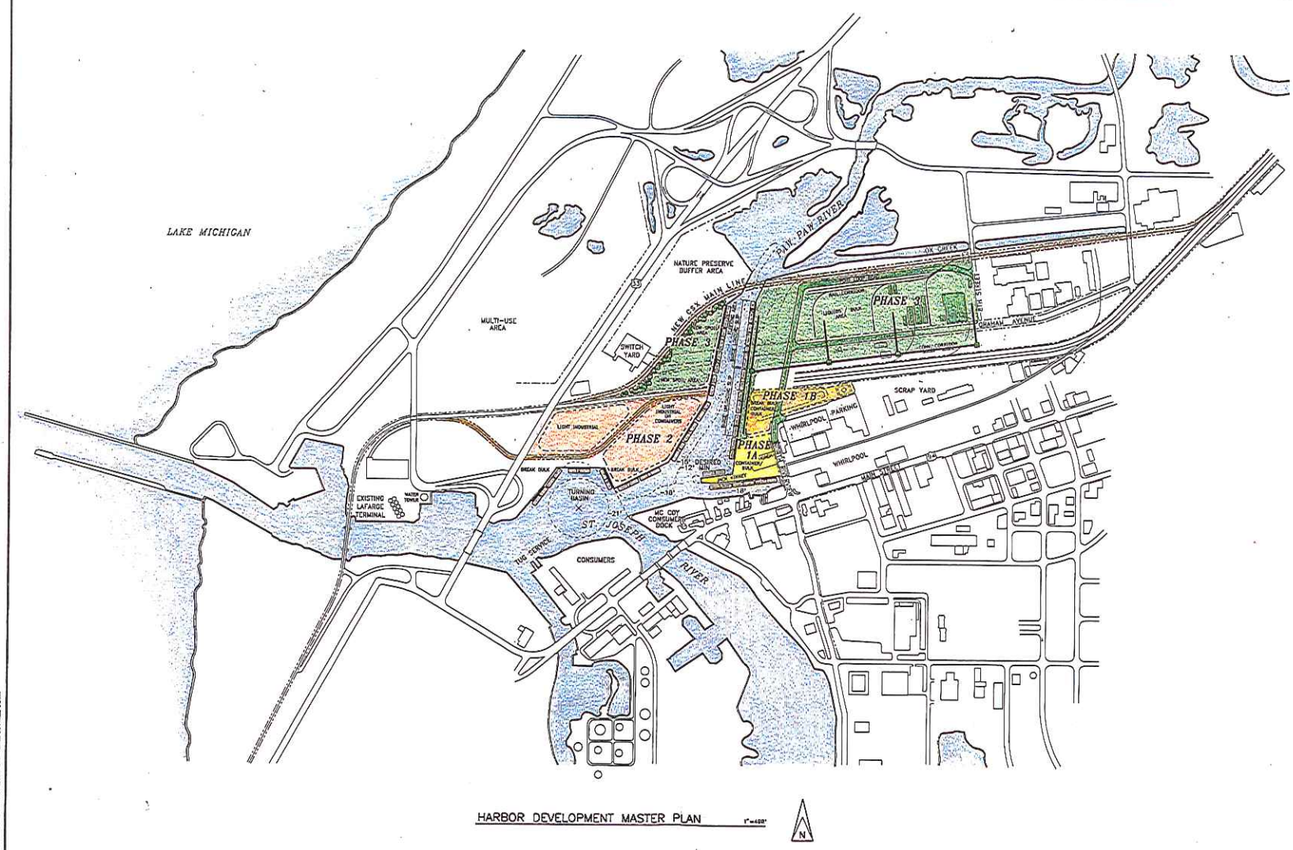


Located on the eastern shore of Lake Michigan in Southwestern Michigan, the St. Joseph River Harbor is the center of a variety of activities and features.

The Harbor is nestled between the "Twin Cities" of Benton Harbor and St. Joseph. The Harbor provides the surrounding region with water access to the northeastern United States, Canada, and other international markets via the Great Lakes and St. Lawrence Seaway system. Access to the Gulf of Mexico is accommodated by movement through the Port of Chicago and the Mississippi River sytem.

The transportation network serving the Harbor includes two major highways which link the area with the Interstate system, collector streets capable of handling truck traffic servicing the Harbor, two railroad lines accessing regional and national markets, and a full-service airport.

FIG. 9.2
PORT MASTER PLAN OUTLINE 1996
RIVER CONSULTING

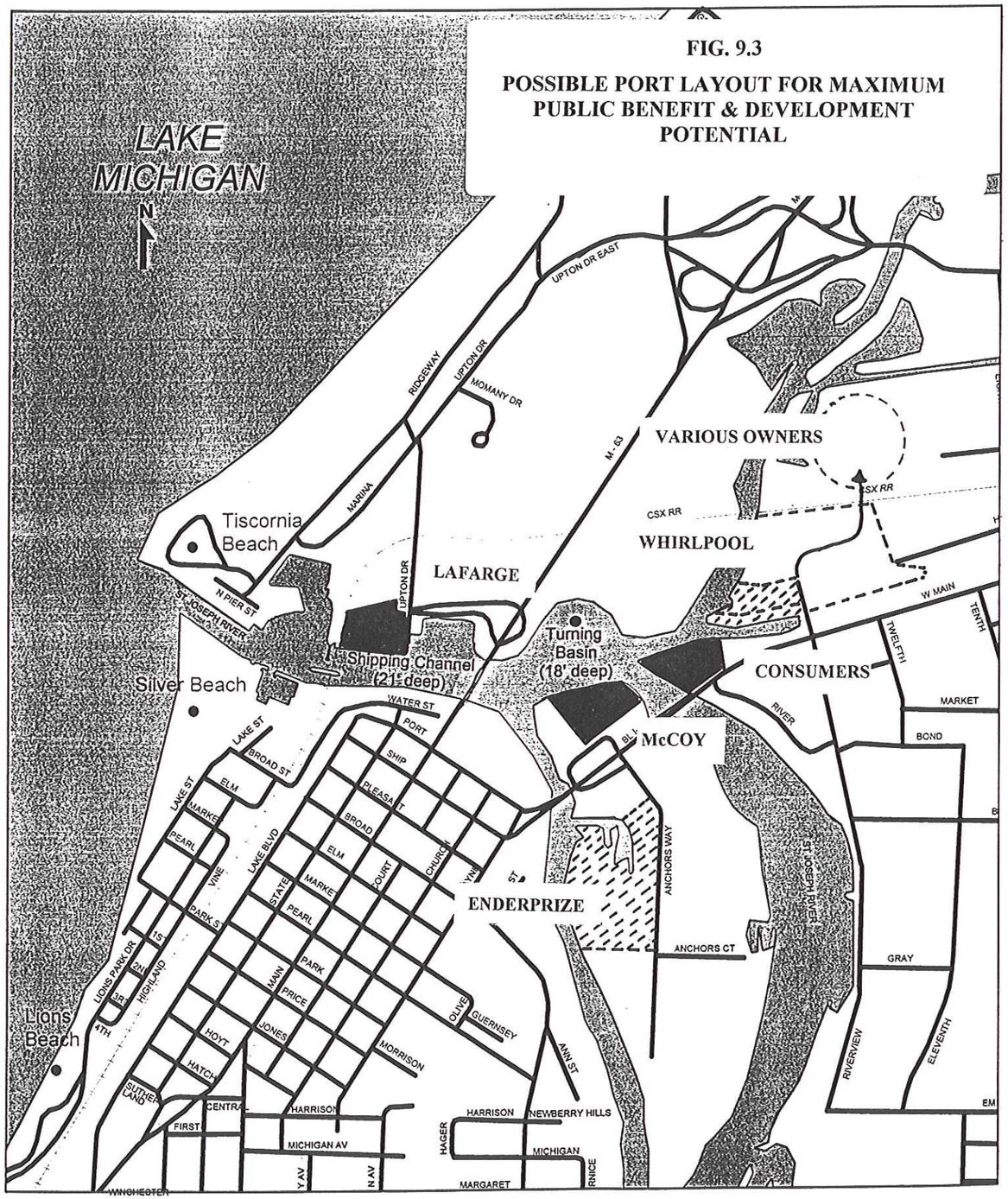


HARBOR DEVELOPMENT
FOR
BERRIEN CO. PLANNING & PUBLIC WORKS
ST. JOSEPH/BENTON HARBOR
HARBOR DEVELOPMENT MASTER PLAN

RIVER CONSULTING

PROJ. NO. 3421
DATE FEB 1996
DRAWING NO.
SP-1

St. Joseph River Harbor
Benton Harbor & St. Joseph, MI



Consumers Dock: Negotiations should be commenced to acquire the property and upgrade it. Sheet pile face 600' on Benton Harbor Canal at project, 500' on the St. Joseph River face at river depth. Absorb land up to road, remove motel and adjacent property. Probable cost, exclusive of land and property, $1.5m. We would suggest this be dedicated to salt movements, and would give about seven acres usable. A configuration drawing is given at Fig. 9.5, with detailed costs in Annex 7.

Backland: The two terminals would consolidate the bulk handled commercial activity and provide a total of about 15 acres of land. This does not permit much term storage, but does enable effective stockpile management and offsite shipping to be handled. This land base would enable St. Joseph to effectively maintain and build upon current bulk cargo of stone, sand, gravel and salt. However, to expand both volume and cargo mix, the port needs more land area. Access to rail would also be a benefit, particularly for a lumber redistribution operation. Based on the specific opportunities seen, we believe the target should be about 30 acres with port access. The ideal approach would be to create a sheet pile face on Benton Harbor Canal upstream of the Paw Paw River at 18' depth. The land immediately adjacent to the water would be the minimum needed for cargo discharge and a road corridor past the railway tracks into land beyond Graham Ave would have to be created. This corridor could also carry a pipeline and possibly a conveyor gallery at some point in the future. This activity would give the port rail access, as well as providing a laydown area for dry cargo. Approximately ten acres should be set aside for the asphalt terminal, and another twenty acres for laydown.

Additional backland is desirable, whether or not land beyond the CSX rail tracks and access to it could be obtained. We would recommend also exploring the availability of the old Enterprise Oil Property on Marina Island. This could be readily accessed by pipeline, conveyor corridor and dedicated road from the McCoy Dock. Industrial operations could be bermed to screen them from neighboring marina activities, possibly using dredgeate from the marinas. This is presumed to be a brownfield site and Enderprize Developments, the current owners, may be interested in exploring a sale that did not involve extensive remediation. We understand that some marina/condominium development is planned for this land and initial subdivision has been undertaken. However, we have no knowledge of how advanced the process is. Estimated land area is in the range 15-20 acres depending on the possibilities of consolidating some wetlands. A combination of the two areas may be feasible, depending on costs and availability. If, for example, 10 acres was available in the Enderprize parcel, then this could be acquired with a view to use by the Asphalt terminal. However, the critical need is to secure the waterfront into public ownership, probably through Berrien County, and then seek as much backland as can be economically acquired as land bank for future growth. While access to rail and the land north of Graham Avenue is desirable, it is not critical to the future of St. Joseph as a functioning port. It not available, it will constrain options for future development and in this respect some, or all of the Enderprize parcel would permit the port to expand in other areas.

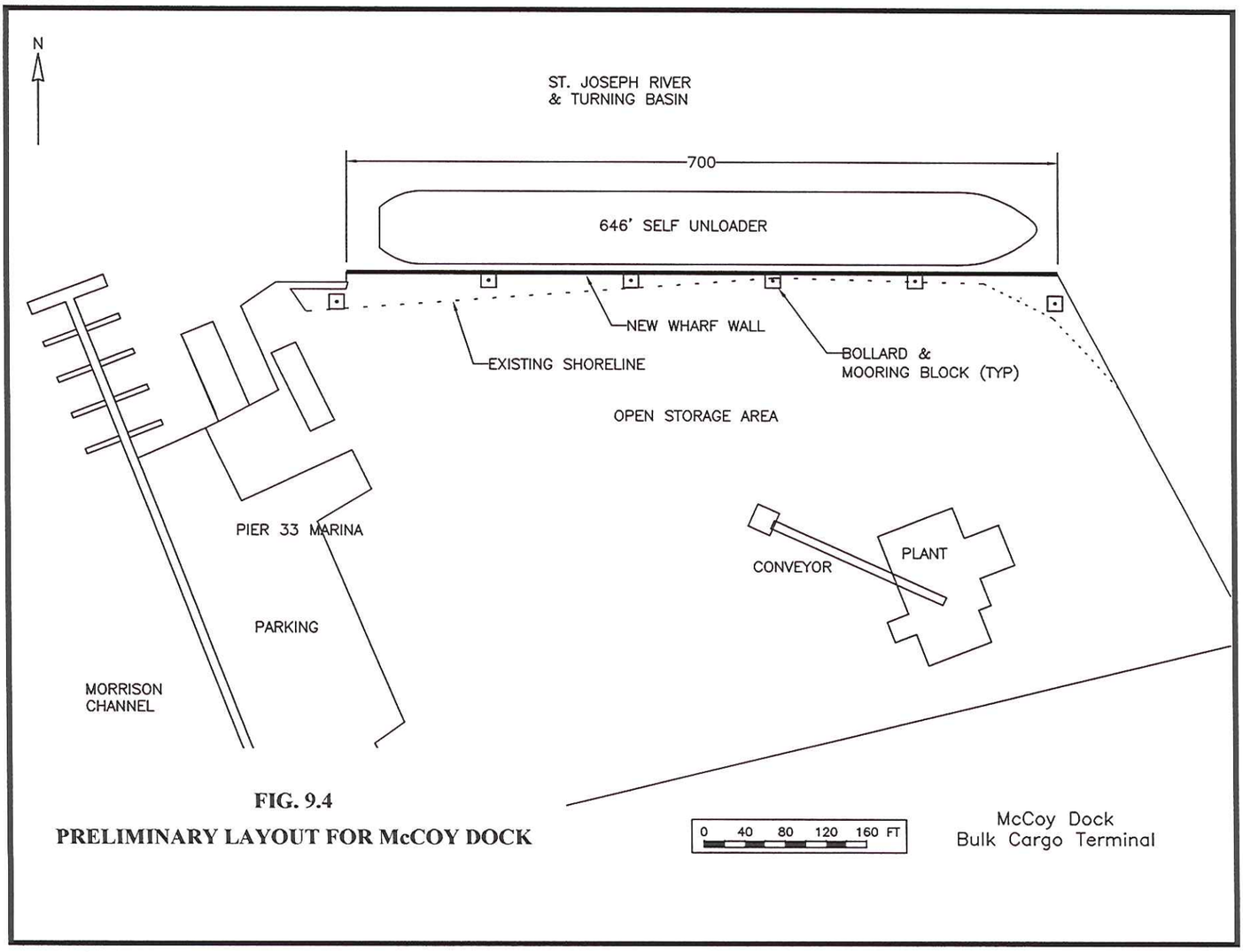


FIG. 9.4

PRELIMINARY LAYOUT FOR McCOY DOCK

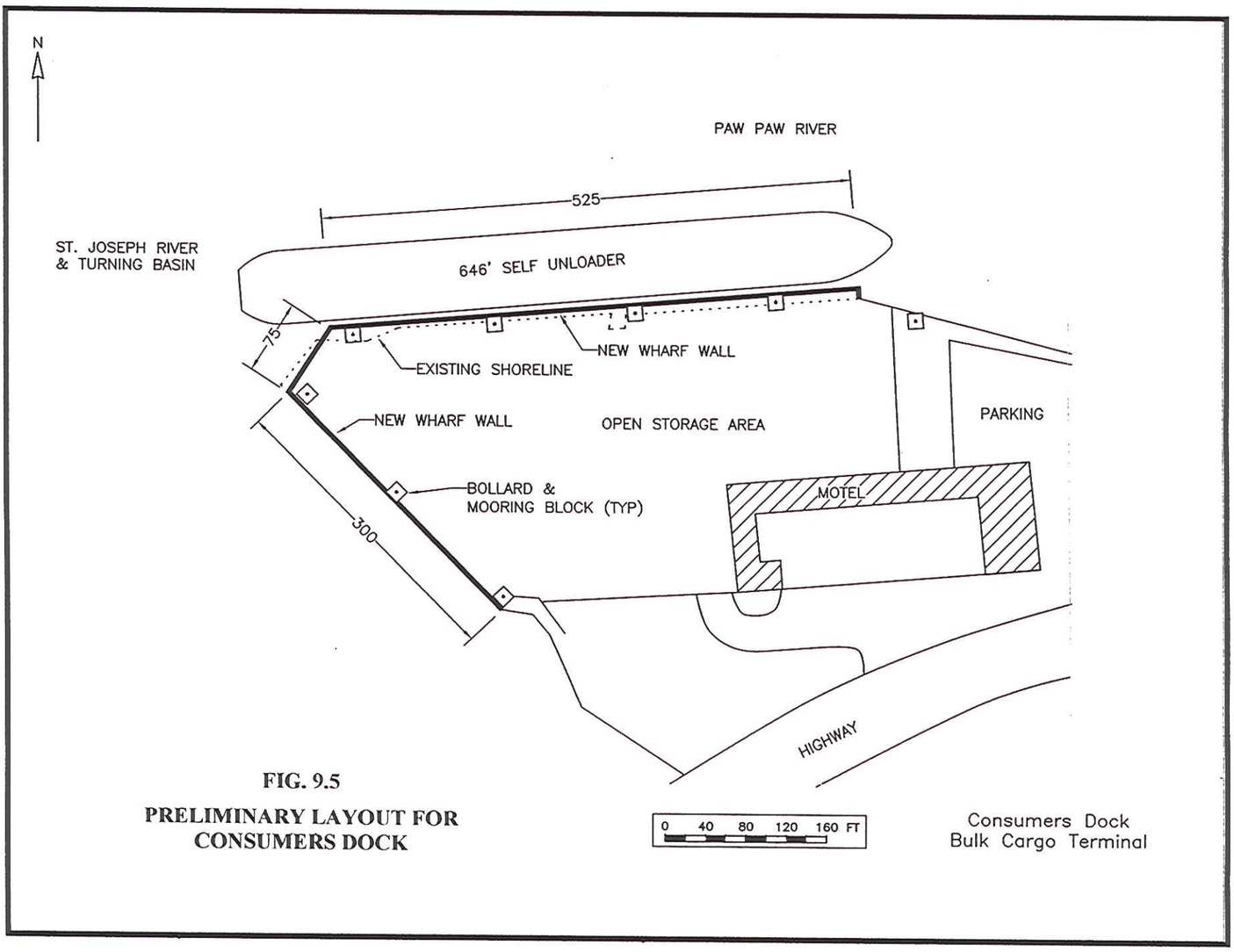


FIG. 9.5

PRELIMINARY LAYOUT FOR CONSUMERS DOCK

10. ECONOMIC IMPACT

The Port of St. Joseph will have a measurable economic impact on the cities of St. Joseph and Benton Harbor and a much more pronounced impact on Berrien County. It will have a lesser, but still important impact in Southwest Michigan and further afield. This impact will come from two main sources:

- Commercial benefits associated with the three dock operations
- Marina activities and small boat visitors from out of the region.

The benefits generated by the port are not as high as they might be because neither the commercial operations nor the small boat potential has been effectively supported and marketed to maximize use. A modest amount of promotion in both areas could realize considerable gains. The commercial side may take longer because reinvestment in facilities is urgently needed. However, effective joint promotion of St. Joseph as a small boat haven could realize measurable gains within a single season. We have no way of knowing if the wave surge problem is known to small boat owners and acts a deterrent to use of the port. Early action with Corps of Engineers to address this issue would be a positive move.

Marina Impact

Insufficient data is available to assess the overall impact at this time, but out of the 1,600 slips available, a survey undertaken as part of the Action Plan indicated that close to 40% were used by out of state boaters. Their spending would thus be a net benefit to St. Joseph and the region. Information derived from an older study[7] suggests boater spending in the region of $50.00pppd. However much more detailed work is needed to determine the actual benefit realized. The benefit of the marina activity would eventually be lost if commercial traffic was excluded from the port, and dredging by the Corps of Engineers no longer took place. The cost of privately dredging to maintain small boat access could be prohibitively costly. In 2000, the private marina operators spent a reported $400,000 just maintaining access in the river above the Main Street bridge.

Commercial Impact

The impact of commercial activities is not just local employment, which is the most visible but the least appreciated. Dockside operations in the three terminals in St. Joseph directly employ no more than ten persons. However, to give an example of the importance of their role, Consumers Asphalt has two persons to run their dock. The dependent employment at the Pipestone Road and I-94 plant is more than 20 times this number, including trucking and support personnel. The contingent employment for operations at the McCoy Dock and at Lafarge will be similar. It should also be appreciated that benefits attributable to the port brings are not just jobs, but improved quality of life by using the least polluting and safest mode of transportation - ships.

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[7] Ontario Marina Operators Association 1988 survey, published 1989. Covers food, beverages, fuel, marine supplies, accommodation, shopping. Values converted at 1988 exchange rates and updated for COLA to 2000.

While a full economic impact analysis of the port is beyond the scope of the Action Plan, a measure of the impact can be gained by considering the alternatives if the port was not available.

Stone is the largest commodity handled, and in 2000, 523,000 tons of stone and sand were imported. If the port was not available, these products might have been shipped through Holland then trucked at an additional cost of $6.00/ton. In addition to the direct cost impacts, if additional long-haul trucking is needed to move the product there are also quality of life issues. These will be relative to increased emissions, increased accident rates and loss of life, increased pavement wear and tear on roads and increased tire disposal.

Cement is another area where there would be major cost issues associated with reorganization of Lafarge logistics. The nearest alternate terminals are in Muskegon and South Chicago, both of which would materially increase delivered costs to S.W. Michigan due to distance. In 2000, 232,000 tons were handled, and least additional costs would be in the order of $10.00/ton. In the same way as stone, there are again quality of life issues to be considered.

Salt has not been a major contributor to port tonnage for a number of years, even though St. Joseph should be able to obtain all of the S.W. Michigan seasonal demand of about 120,000 tons. This has been mainly due to poor water depths available in the port, and declines in volume have closely tracked reductions in Lake levels. In 2000 only 34,000 tons of salt was handled, but re-establishment of the 21' project and its maintenance will encourage suppliers to look at moving cargo through St. Joseph again. Based on probable delivered cost savings of at least $3.00/ton for distribution through St. Joseph at current depths, there is potential.

Thus the port commercial benefit, without taking into account wage and labour issues, is in the region of $5-6m in terms of cost of supply to the users. This "benefit" does not take into account the impact of port dependent employment, which can be considerable, or environmental and other advantages of marine over truck haulage. Nor does the benefit look at the impact of boaters on the local economy or the myriad other direct, indirect and induced benefits that accrue to St. Joseph, Benton Harbor, Berrien County and S.W. Michigan region through the activity of the port.

By effective marketing and development of the port, additional benefits would accrue, which would lead to lower regional costs as well as enhanced spending from boaters and other visitors of the projects identified.

The Action Plan has identified a number of areas of opportunity for the port which could bring new business and enhance economic impact. The asphalt terminal could lead to benefits of close to $1m. A passenger ferry from Chicago could result in significant additional spending locally of $1-2m annually. Cruise activity, although likely to take time to develop, contributes $50 per passenger per day to local enterprises[8], about the same as each out-of-community boater that takes a slip at a marina in St. Joseph.

[8] Surveys undertaken by Cruising the Great Lakes Inc. of cruise passengers in 1999.

As will be seen, an active harbor is a major benefit to the towns that adjoin it, and the neighboring counties. This benefit would be lost if commercial shipping ceased through loss of key waterfront land that currently handles the cargo.