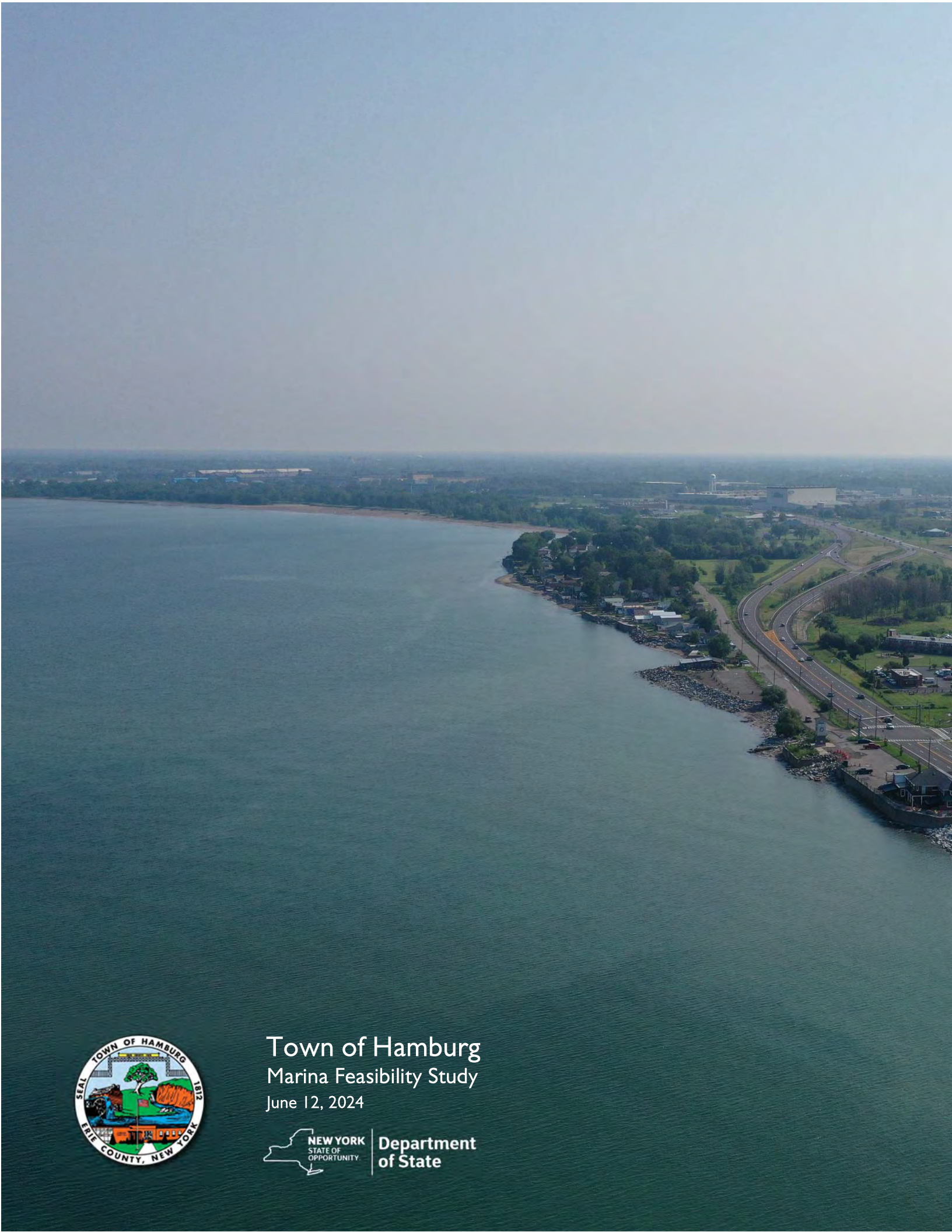

Town of Hamburg

Marina Feasibility Study

June 12, 2024

NEW YORK STATE OF OPPORTUNITY | Department of State

TOWN OF HAMBURG
MARINA FEASIBILITY STUDY

June 12, 2024

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NEW YORK STATE OF OPPORTUNITY. Department of State

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INTRODUCTION and PROJECT GOALS

The goal of this study is to determine if the establishment of a marina on Lake Erie along the shores of the Town of Hamburg would be both physically and economically feasible, while also serving to protect the shoreline, expand public access to the waterfront, and revitalize the Town of Hamburg shoreline. The revitalization of the shoreline and potential addition of a marina has been identified as a key strategy to improve the quality of life for both residents and visitors, and a marina that would also allow for an increase in public access to the waterfront and low-cost boating access to the Lake Erie shoreline would benefit the whole community. This effort included an assessment of physical conditions of the site shoreline, potential marina sites throughout the Hamburg shoreline area, and an assessment of the local and regional marina market to identify boater preferences, market rates, occupancy, and likely demand for a marina facility. The information gathered became the basis for selection of a potential marina site, and the development of multiple concept alternative plans for that site. These plans were refined into a single consensus master plan, with cost estimates, funding strategies, and implementation plans. Specific objectives include:

- Determination of the best sites for a new marina facility
- Review of potential impacts to threatened or endangered species, and/or historical/archeological resources
- Analysis of wave climate and storm events, and their potential effects on the siting of a marina
- Analysis of sedimentation patterns potentially affecting the siting of a marina
- Review of existing jurisdictions over navigable waters and submerged lands
- Identification of trends in the local and regional market that will guide the future development, size, amenities, and configuration of the facility
- Incorporation of current design standards and codes, such as the ADA standards for Recreational Boating, current electric shock drowning safety standards, and electrical codes
- Development of concept alternatives, and refinements to establish a Consensus Master Plan
- Construction Requirements Analysis
- Recommendations and cost estimates for future development
- Final Feasibility Analysis

PROCESS

The process for completing this study involved investigation of potential marina sites along the shoreline of the Town of Hamburg, including field investigations, aerial drone survey, site visits, and consideration of available online resources including Google Earth Aerial photography, NOAA navigation charts, and LIDAR bathymetry. The shoreline of Lake Erie was explored for possible marina sites, along with upland areas adjacent to Lake Erie that may offer the potential of construction of a protected internal basin marina. The cost and potential environmental impacts of construction of an offshore harbor were evaluated as the primary option due to the lack of suitable sites for internal basin facilities. Conversations with local boaters, fishermen, engineers, landowners, and marina operators provided additional background context on local site conditions, boating patterns, and navigation and weather issues that could affect the development of a marina in the area. Additional conversations with local organizations, environmental groups, volunteers, and municipal stakeholders identified broader community issues and

opportunities that were considered in the development of this study. This process resulted in the identification of two marina sites with high potential, and ultimately the selection of a single preferred location.

In parallel with the site investigation effort, a detailed marina market analysis was performed that included local marinas within the Hamburg and eastern Lake Erie region, including facilities as far west as Holiday Harbor in Dunkirk and as far north as Sugarloaf Marina in Port Colborne, Ontario. The marina market analysis included site visits to six facilities, interviews with boaters and operations staff, and extensive online research and documentation of marina condition, amenities, rate structure, occupancy, seasonal/transient slip ratio, slip size and mix, and market offerings (wet slips, dry rack slips, service, rentals, etc). This information is summarized and organized to provide an understanding of the local and regional boating market, and further utilized in the development of the economic analysis included herein.

Upon identification and selection of the primary study site, the planning team developed a series of concept alternatives that explored multiple options for the development of each site. These alternatives explored both traditional and more innovative marina design strategies, as well as different configurations of wet slip facilities. Each alternative was analyzed from the perspective of potential environmental impacts, estimated construction costs, public access and overall accessibility, size and capacity, and overall potential physical and financial feasibility. The best elements of the various concepts were then integrated into draft master plans, and then further refined to create the consensus master plan outlined herein following feedback from the Town of Hamburg Waterfront Advisory Committee and other stakeholders.

The concept alternative plans were also reviewed with relevant regulatory agencies, including the US Army Corps of Engineers, New York Department of Environmental Conservation, Department of State, and Office of General Services. The feedback from these agencies was incorporated into the consensus master plans and informs the implementation strategy proposed.

The evaluation of the concept alternate plans and development of the consensus master plans included preliminary assessments of potential revenue generation and operational expenses to evaluate the financial performance of the facilities in context with construction costs. This analysis provides the basis for the outline of the public private partnership scenarios outlined herein that will be necessary for the proposed facility to be implemented. The implementation strategy includes potential grant funding sources and strategies for engaging private partners in the implementation of the marina.

SITE RECONNAISANCE

The process for completing this study involved investigation of potential marina sites along the shoreline of the Town of Hamburg, including field investigations, aerial drone survey, site visits, and consideration of available online resources including Google Earth Aerial photography, NOAA navigation charts, and LIDAR bathymetry. The shoreline of Lake Erie was explored for possible marina sites, along with upland areas adjacent to Lake Erie that may offer the potential of construction of a protected internal basin marina. The cost and potential environmental impacts of construction of an offshore harbor were evaluated as the primary option due to the lack of suitable sites for internal basin facilities. Conversations with local boaters, fishermen, engineers, landowners, and marina operators provided additional background context on local site conditions, boating patterns, and navigation and weather issues that could affect the development of a marina in the area. Additional conversations with local organizations, environmental groups, volunteers, and municipal stakeholders identified broader community issues and opportunities that were considered in the development of this study. This process resulted in the identification of five initial sites for consideration, which were then narrowed to two sites for further investigation.

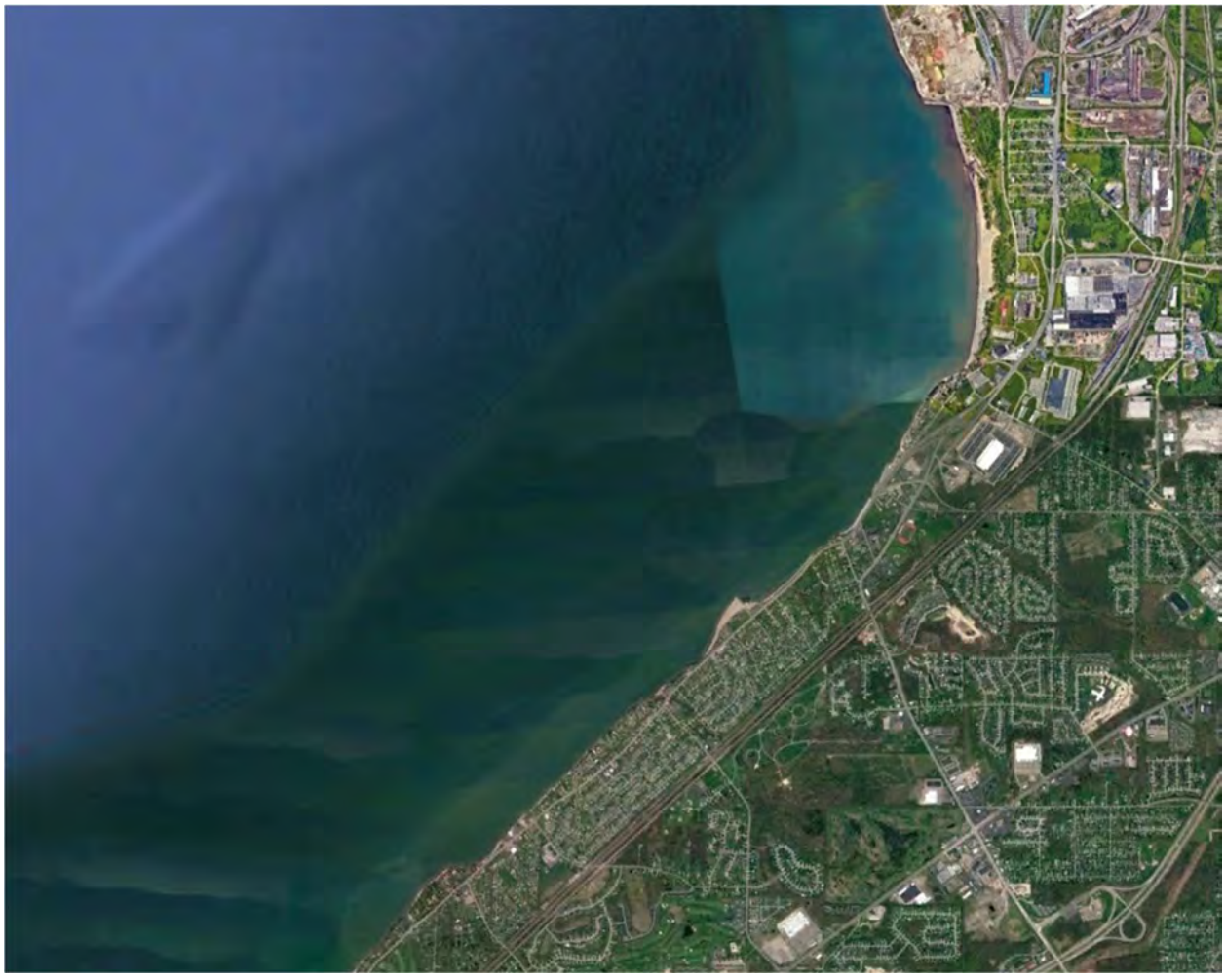

Figure 1 - Google Earth Aerial Image, May 8, 2022

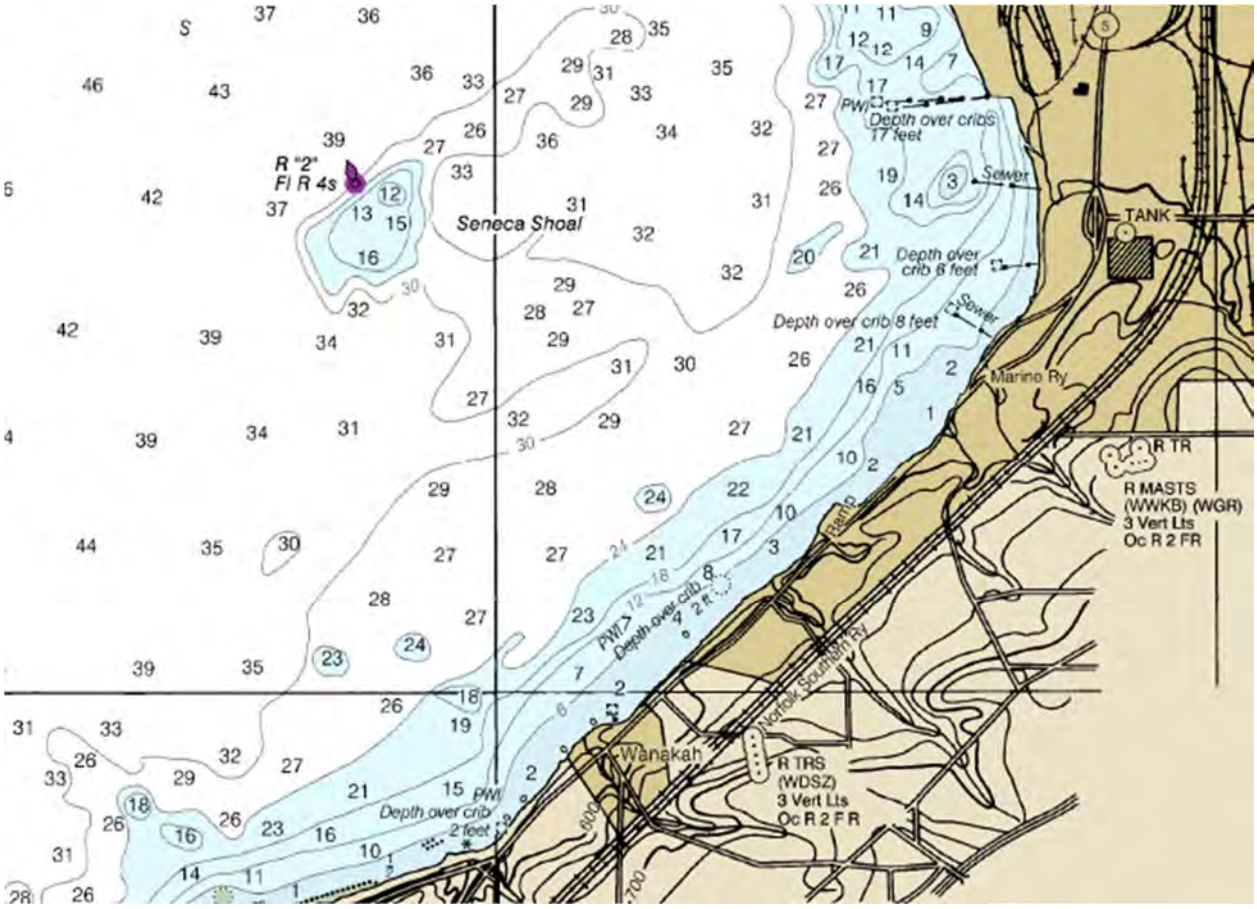

Figure 2 - NOAA Navigation Chart

The selection criteria for locating a new marina include the following:

- Navigable Depths / Dredging Requirements
- Environmental Quality and Impacts
- Proximity of Access to the Town of Hamburg
- Upland Infrastructure / Developable Area

Navigable Depths / Dredging Requirements

The nearshore waters of Lake Erie are generally shallow and not suitable for navigation by deep draft vessels requiring five feet or more of draft, except in areas specifically dredged and maintained for navigation. The natural movement of sediments along the Lake Erie shoreline in this area will require careful management of sedimentation, navigation channels, and maintenance dredging.

Environmental Quality and Impacts

In general, it is preferred to locate marina facilities within areas already developed and/or disturbed by human activity over undisturbed natural areas in order to minimize impacts to habitat. The shoreline of Hamburg is a mix of residential and commercially developed areas along the shore, with more natural areas located to the northeast along Woodlawn Beach and immediately south of the more developed industrial shoreline of the City of Buffalo.

Proximity of Access for Transient Boating

For this marina facility, an important part of the target market includes transient cruising vessels transiting east and west, or those vessels seeking a safe harbor during storms. The most desirable location to serve these vessels would be as close as possible to the upland attractions of the Town of Hamburg, with easy vehicular access to the broader region.

Upland Infrastructure / Developable Area

All marina facilities require some minimum amount of upland area to support landside activities such as boater services buildings, parking, and emergency access. Where an inland basin marina is proposed, sufficient land area for excavation of a suitable marina basin is required in addition to the elements listed above. Other elements considered include the presence of wetlands or other special habitat features, geotechnical conditions, brownfield or potential site contamination issues, and the presence of appropriate utility infrastructure such as electrical capacity, potable water, and sanitary sewer. Finally, elements such as proximity to public transportation, bike paths, and nearby attractions such as shops, restaurants, grocery stores, bars, and entertainment are very important to transient boaters.

LAKE LEVEL ANALYSIS

U.S. Army Corps of Engineers (USACE) maintains the record water level of the Great Lakes that dates back over 100 years. The water level of Lake Erie varies as much as 6.5 ft over decades long periods of time. Annually, the water level is highest in the summer and is lowest in the winter.

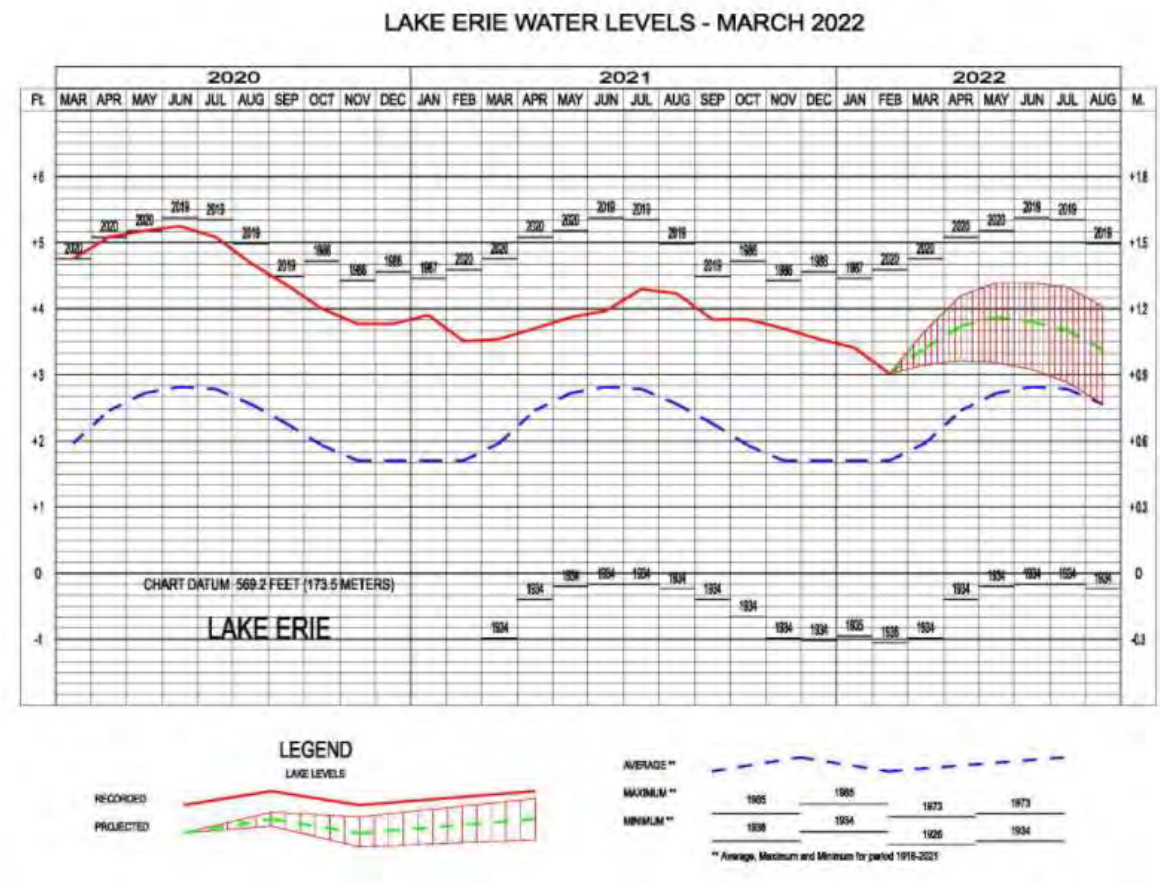

Figure 3: USACE previous two years of average water level data with average monthly historical highs and lows

Due to the shallow nature and elongated shape of Lake Erie, it is particularly susceptible to a unique hydraulic condition known as seiche. Seiche events are short term (hours or days scale) increases in water level that often led to shoreline erosion. Water is pushed up on one end and then will oscillate back and forth for a period of time, usually days. It can occur in any semi or fully enclosed body of water when strong winds and rapid atmospheric pressure changes push water from one end of the body of water to the other end. Because the long axis of the lake is East-West, the seiche effect is especially amplified. Seiche can increase the lake level at Hamburg as high as 7-8 ft for durations of 24 hours or more.

MARINE CLIMATE

The coastline in this area is fronted by a relatively flat nearshore and low bluffs. The area experiences severe flooding and associated wave induced damage whenever strong winds blow from the west down the axis of Lake Erie. Sedimentation of harbors is particularly troublesome due to the magnitude of unidirectional potential sediment transport associated with these hydraulic conditions.

SEICHE

Due to the shallow nature and elongated shape of Lake Erie, it is particularly susceptible to a hydraulic condition known as seiche. Seiche is a large-scale displacement of water within the lake caused by wind pushing water in one direction over a many hours, very similar to the movement of water back and forth in a bathtub after being pushed to one side. It can occur in any semi or fully enclosed body of water when strong winds and rapid atmospheric pressure changes push water from one end of the body of water to the other end. Because the long axis of the lake is East-West, the seiche effect is especially amplified. Seiche can increase the lake level at Hamburg as high as 7-8 ft for durations of 24 hours or more[2].

DEEPWATER WAVE CONDITIONS

Deepwater wave statistics are available for various virtual sampling locations circumscribing the lake. For concept level analysis of expected conditions influencing the Hamburg sites, Wave Information Studies (WIS) Station ST92001 was selected as representative[3]. Based on the orientation of the Hamburg shoreline, only the northwestern hemisphere of waves impact the shoreline. This half wave rose is presented and reveals that waves equal to, or even exceeding 10 ft in height are experienced. Further, the data reveals that the preponderance of wave activity is from the southwest to due west direction. This correlates with the strong longshore sediment drift behavior moving toward the northeast occurring at the shore.

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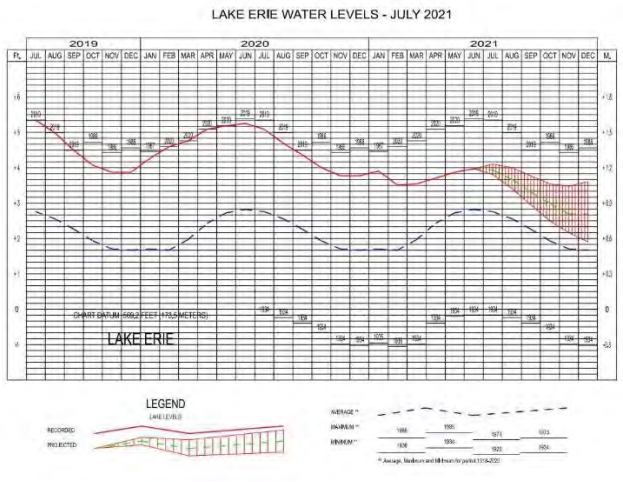
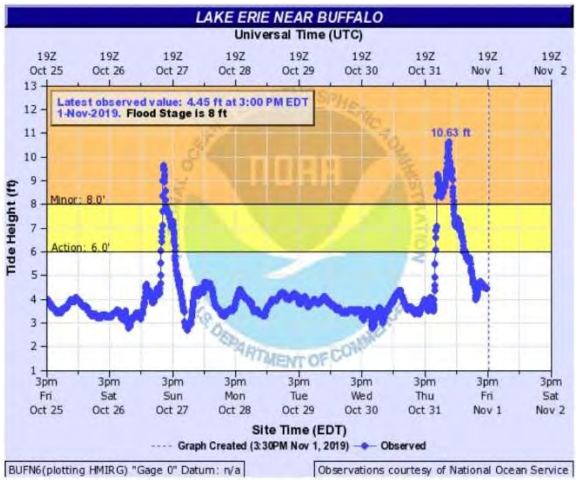
[1] USACE monthly bulletin

[2] NOAA

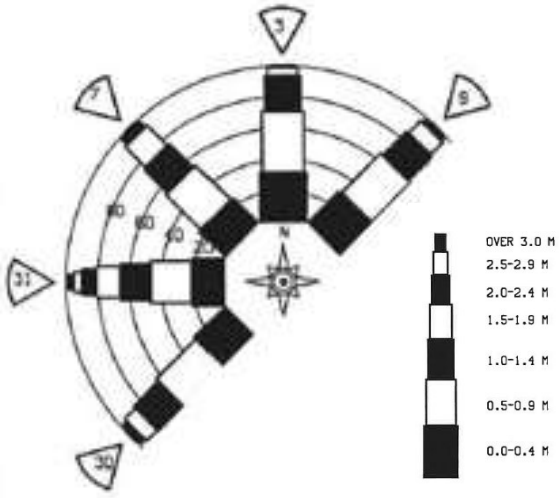
[3] USACE Wave Information Studies (WIS) Data



Lake Erie Water Level History

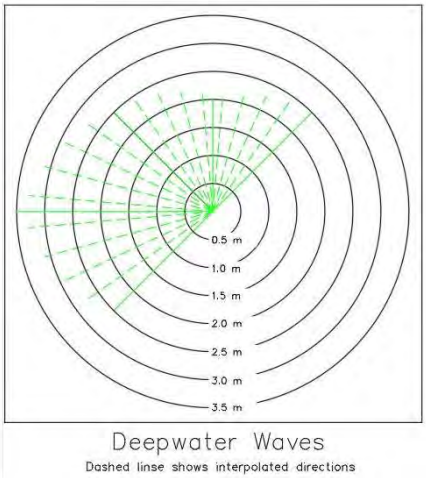


Example Seiche Events at Buffalo, NY

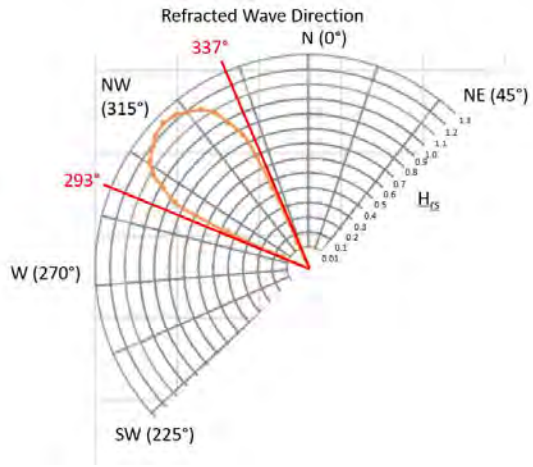


Northwest Wave Climate Station E21, WIS, 1991

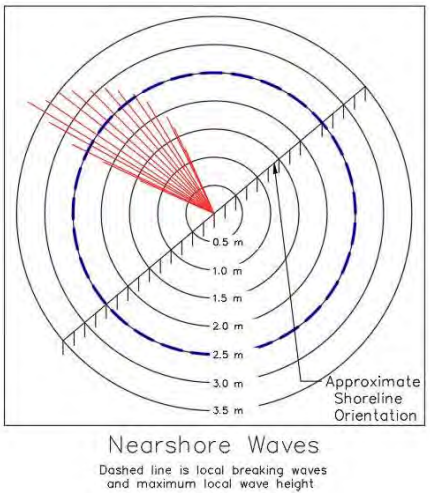
Net Sediment Transport Pattern



Height Proportioned Wave Rose



Combined Refraction and Shoaling Transformation Operator



Simple Monochromatic Transformed Wave Rose

NEARSHORE TRANSFORMED WAVE ENVIRONMENT ANALYSIS

The deep-water wave statistics were linearly interpolated to populate waves for regularly interspersed wave directions as shown. These are done without regard to percentage time of occurrence. Then using simple linear wave theory assuming a wave period of 10 seconds, with an offshore water depth of 38 meters and a nearshore depth of 3 meters, the equivalent wave height and directions were found. Note, the 3-meter depth was selected as the minimum depth for a safe navigable marina entrance. The calculations were based on simple monochromatic wave shoaling and refraction assuming straight and parallel depth contours.

The results reveal that while waves may originate with directions spanning from the SW to the NE, at the project site, the actual wave approach directions are limited to within a restricted 45° wedge of wave angle, centered perpendicular to the shore. It also suggests the most severe waves arrive at the site at a bearing of roughly 300° TRUE (WNW). Superimposed on this is a wave breaking criteria assumed to be 60-80% of the water depth. Therefore, depending on lake and seiche conditions, breaking waves of 1.8 - 2.4 meters (5.9 – 7.9 ft) in height can be expected at the site.

Deep-Water Wave Direction (Clockwise from N)	Signficant Wave Heigth (m)	Resulting Wave Direction (Clockwise from N)	Shallow Water Equivalent Signifcaint Wave Height (m)
225	2.50	293	0.43
235	2.70	294	1.43
245	2.90	295	2.18
255	3.10	296	2.79
265	3.30	299	3.33
275	3.50	301	3.85
285	3.10	304	3.60
295	2.90	308	3.48
305	2.70	311	3.32
315	2.50	315	3.10
325	2.40	319	2.95
335	2.30	322	2.76
345	2.20	326	2.55
355	2.10	329	2.31
5	2.00	331	2.02
15	2.13	334	1.91
25	2.25	335	1.69
35	2.38	336	1.26
45	2.50	337	0.43

SEDIMENTATION ANALYSIS

Using the 40 years of deep-water wave hindcast data from the USACE Wis Station 92011, a representative year of wave data was created using a temporal data sorting program through MIKE Zero, an industry standard wave modeling program. This program runs a statistical analysis on the years of data, taking each height and period's probability of occurrence to create a single year of data with proportioned hours of each wave height bracket. This representative year of data was then used with van Rijn's sediment transport potential calculations to give the potential volume of sediment transport over that representative year (Equation 1). The equation is a function of the beach slope, sediment size, wave height at its breaking point, and the effective velocity of the current. The gross sediment transport is the potential rate of total sand movement in both directions, while the net potential sediment transport is the rate of sand movement in one direction (Equations 2 and 3). For this site, the positive direction is to the southwest, and the negative direction is to the northeast, as seen in Figure 4.

The Van Rijn equations were used at 12 locations along the potential marina site to calculate the net and gross potential sediment transport rates (Table 2). Areas of erosion, deposition, or neutrality in the shoreline behavior can be inferred from the rate of change in rates from one section the next. An decrease in rate implies that reach to be depositional, while a increase in rate implies erosional.

$$Q\left(\frac{m^3}{yr}\right) = 1 - \frac{k_{mud}(42)(P)(24)(3600)}{(\rho_{sand})(k_{swell})(k_{grain})(k_{slope})(H_{br}^{2.5})(V_{eff})} \quad (Equation\ 1)$$

where: $P = duration\ of\ storm\ events\ (days)$; $k_{mud} = fraction\ of\ mud\ in\ sediment$; $\rho_{sand} = bulk\ density\ of\ sediment$; $k_{swell} = Swelling\ Wave\ Period\ Coefficient$; $k_{grain} = grain\ size\ coefficient\ (function\ of\ sediment\ size\ d_{50})' k_{slope} = beach\ slope\ coefficient$; $H_{br} = wave\ height\ at\ breaking\ depth$; $V_{eff} = Effective\ longshore\ current\ velocity$.

$$Q_{Gross} = \sum Q_{positive} + \sum Q_{negative} \quad (Equation\ 2)$$

$$Q_{Net} = \sum Q_{positive} - \sum Q_{negative} \quad (Equation\ 3)$$

Table 1: Van Rijn Sedimentation Calculation Results

Section	Van Rijn Sediment Transport (Q)	
	Net Q (m3/yr)	Gross Q (m3/yr)
1	-210,600	211,600
2	-32,400	53,000
3	-212,300	213,500
4	-187,600	188,600
5	-191,200	192,300
6	-31,600	33,200
7	-203,800	204,800
8	-210,500	212,200

9	-215,100	216,300
10	-213,800	215,000
11	-119,800	120,900
12	-192,400	194,300

Sediment deposition can clearly be seen at Hamburg Beach and occurs to a lesser extent in pockets as the sediment moves northeast up the shore. These areas of deposition are closely followed by pockets of sediment erosion.

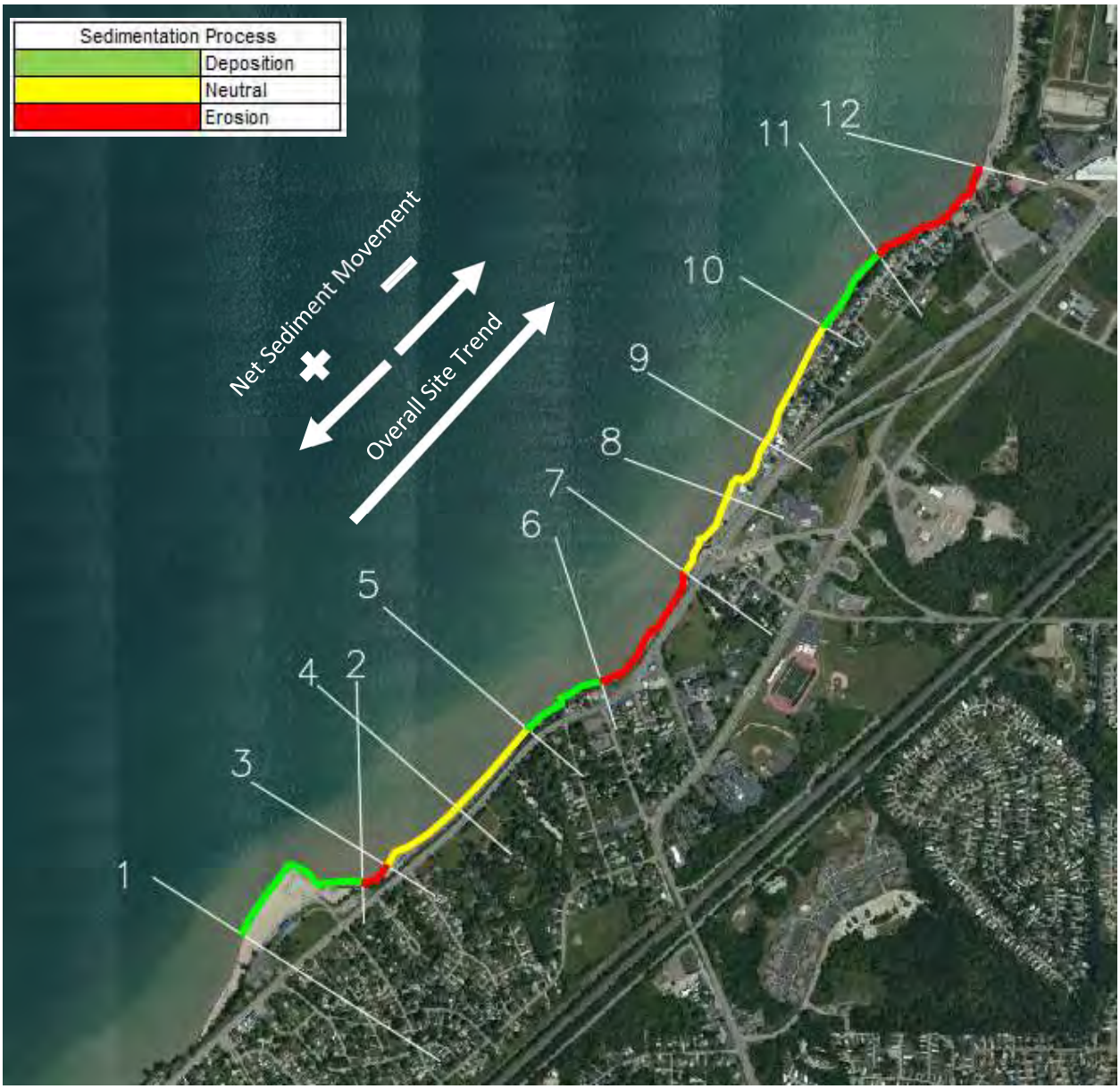


Figure 4: Calculated sedimentation potential rates across the site

SITE ALTERNATIVES ANALYSIS

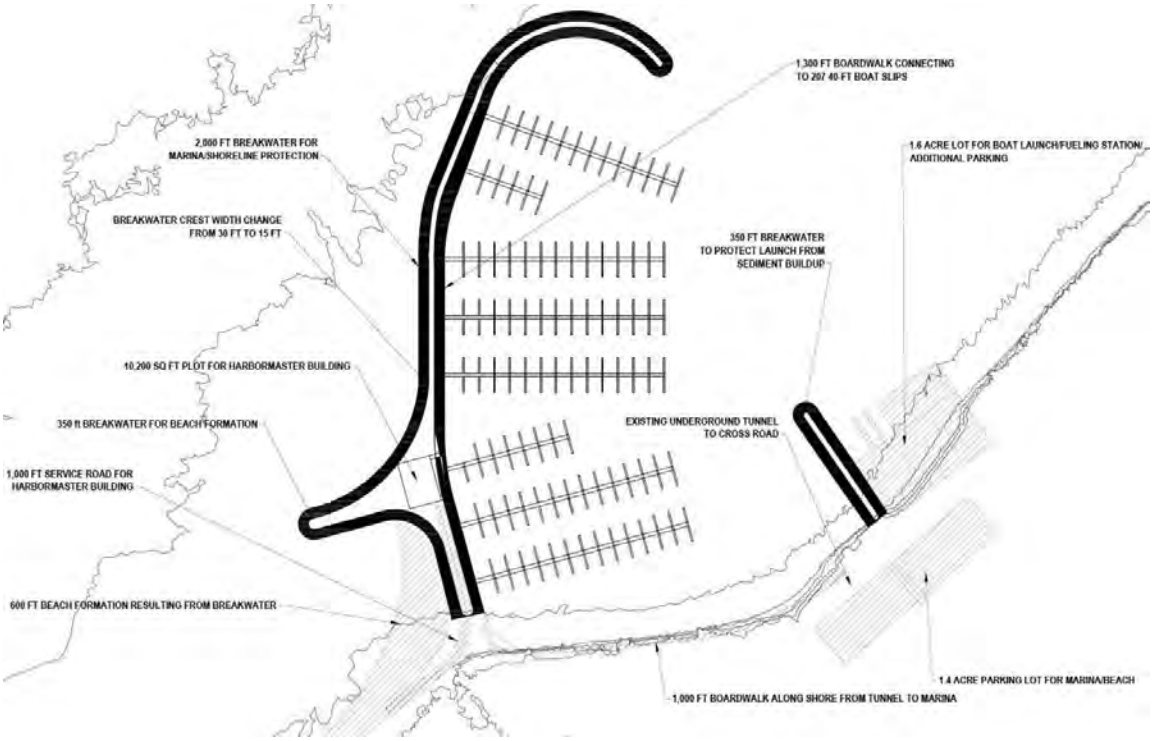
In a preliminary reconnaissance of the lakefront, four candidate locations for marina consideration were identified. The criteria for selecting these locations were based on the following qualitative factors:

- Character of the adjacent waterfront property, i.e., residential, commercial, etc.
- Proximity to marina-related attractions or amenities
- Availability of parking and ease of egress
- Dual benefit of shoreline protection
- Low risk of triggering downdrift impacts
- Proximity to navigable water depths of at least 10 ft for a marina entrance

For all cases, a target of 200 boat slips with +/- 40 ft slips is used for illustration. In addition, each alternative location is presumed to require adequate parking, existing or created, to accommodate 100 car stalls. Where possible, a fuel dock and/or potential boat launch ramp is also indicated.

No quantitative analyses were performed at the reconnaissance stage. However, engineering principles were employed to inform various design considerations.

Figure 5 – Candidate Site Location Map



AMSDELL ROAD ALTERNATIVE ONE

AMSDELL ROAD ALTERNATIVE ONE
FEATURES:

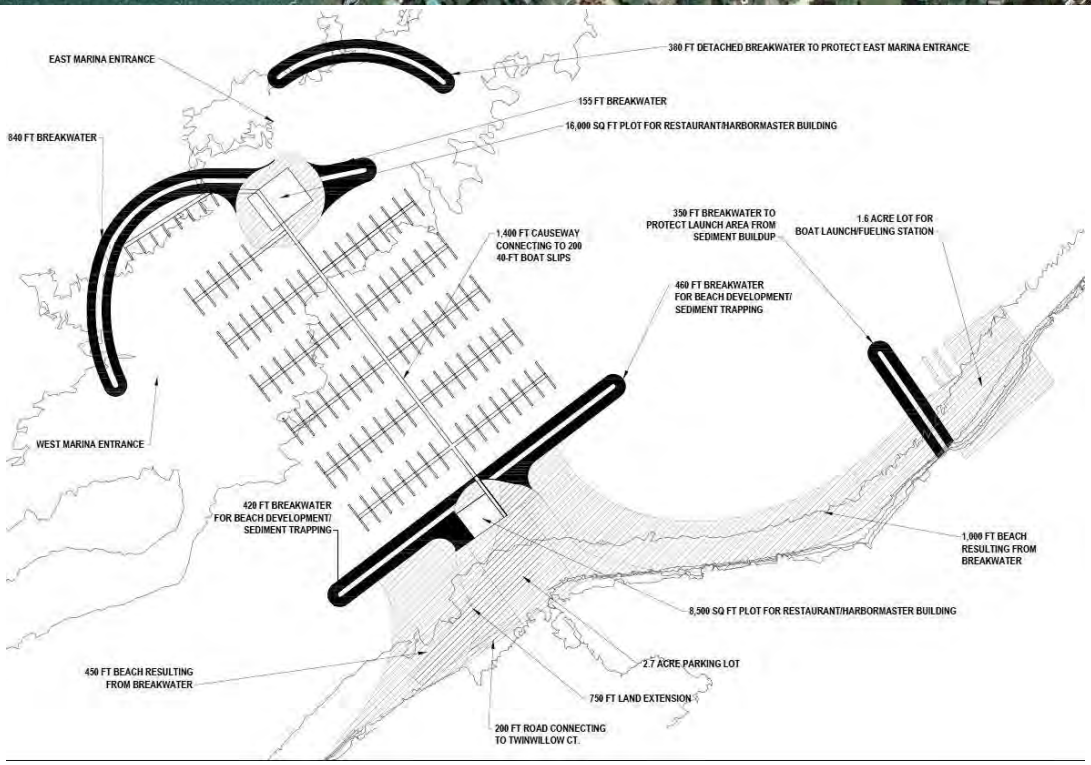
- Mooring of approximately 207 slips of average 40-ft size
- Fuel dock
- Public boat launch
- Public pocket beach created by breakwater
- All fairways comply with ASCE Manual 50 Planning & Design Guidelines for Small Craft Harbors, with the fairways between the 2nd and 3rd pier constriction point being 71.5 wide, and the fairway between 5th and 6th pier constriction point being 70' wide.

PROS:

- Possible new development in area surrounding the existing trail building/on the path to the marina.
- Utilizes existing underground tunnel for crossing road
- Possible observation deck/fishing pier on western branch of breakwater
- Located near existing commercial area

CONS:

- Long distance offshore to navigable water
- Possible residential view impact issues
- Long distance for foot travel from parking
- Fill required for boat launch/fuel dock
- Dredging required on north end of marina for navigability



AMSDELL ROAD ISLAND ALTERNATIVE TWO

AMSDELL ROAD ALTERNATIVE TWO

FEATURES:

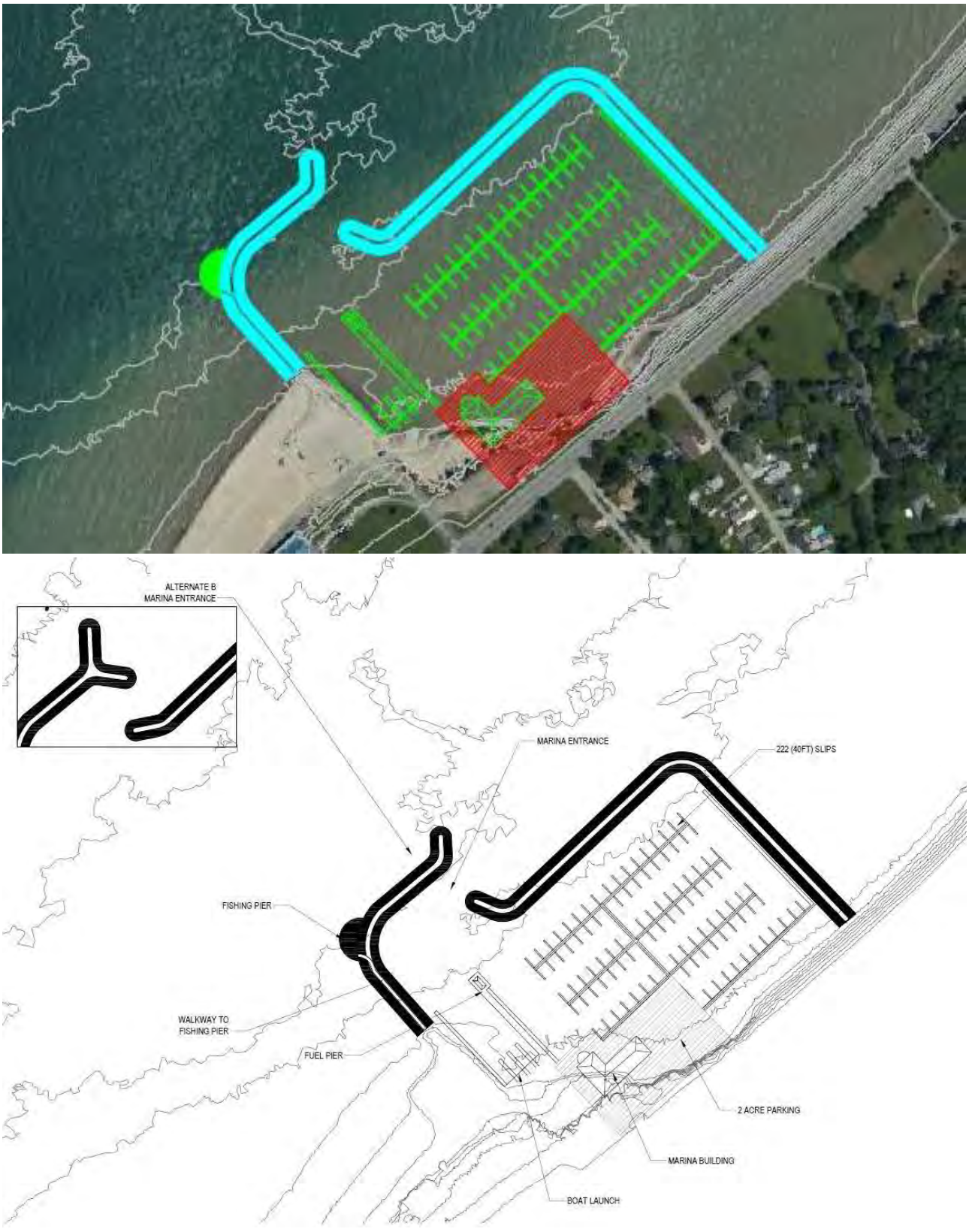
- Mooring of approximately 200 slips of average 40-ft size.
- Marina connects to island off extended coast
- Public boat launch
- Fuel dock
- Two beaches on each side of marina
- Land extension makes nearby parking lot
- Two building plots on marina for harbormaster building or commercial building

PROS:

- Land extension provides opportunities for restaurant/park at entrance to the marina.
- Parking already set for beach traffic.
- Shorter walking time to marina
- New beaches on both sides of marina
- "Destination" offshore island protection

CONS:

- Fill required for boat launch/fueling pier
- Large fill amount for land extension



HAMBURG BEACH MARINA & BOAT LAUNCH ALTERNATIVE

HAMBURG BEACH MARINA & BOAT LAUNCH ALTERNATIVE

FEATURES:

- Mooring for approximately 222 slip of average 40 ft size
- 500 ft transient side tie
- Four Lane Public Boat Launch Ramp
- Fuel Pier
- 1.5-acre harbor of refuge area
- Floating docks for variable lake levels
- Updrift sediment trapping features
- Entrance depth >10 ft MLW

PRO'S:

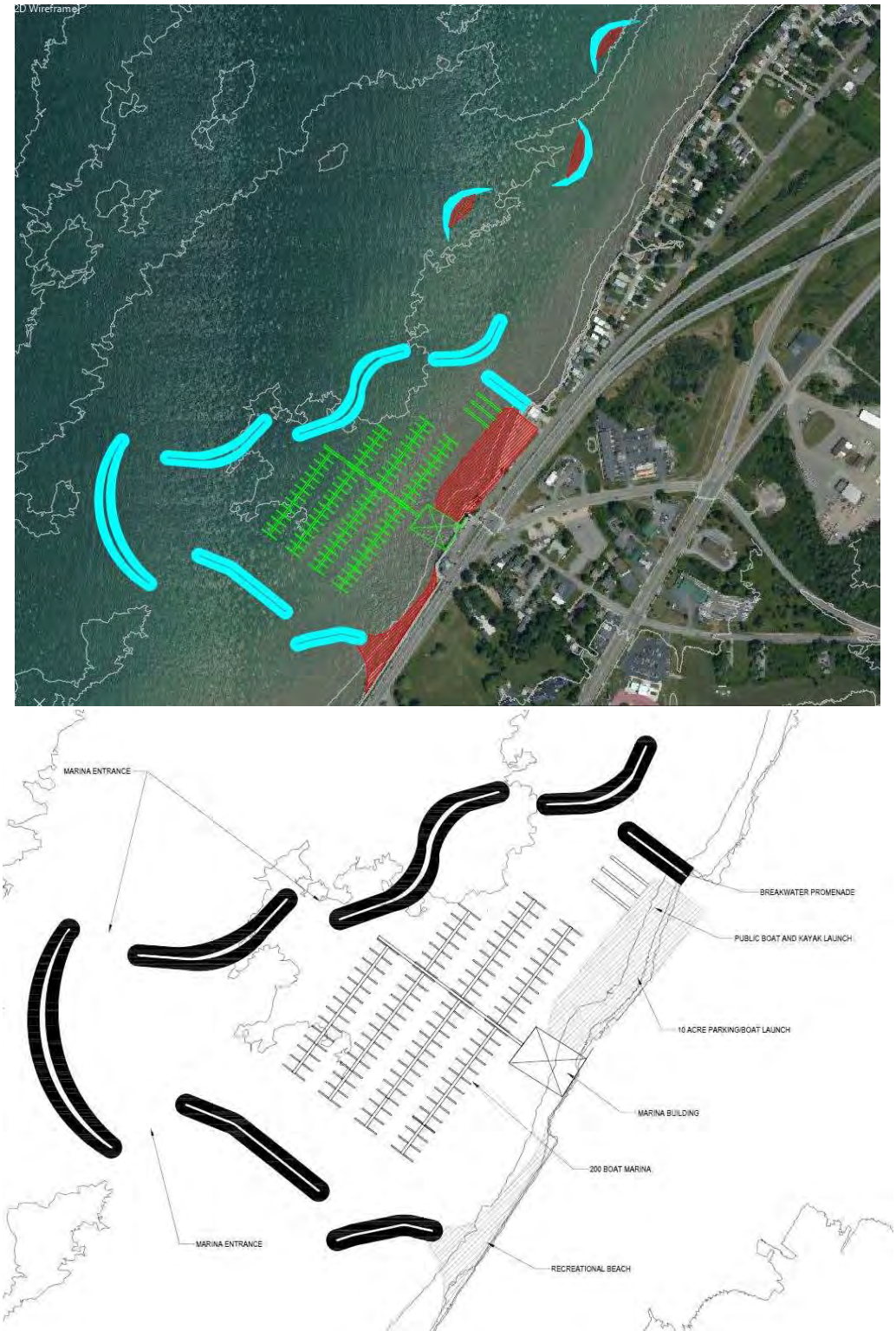
- No added down drift (east) sediment impacts due to existing revetted shoreline
- Encourages entrapment of updrift sand – increasing park beach size
- Some parking exists
- Located at existing City amenity
- Public Pier/fishing platform

CON'S:

- Limited commercial amenities nearby
- Fill required to increased parking and services

COMMENTS

- Explore entrance geometry options (ALT B) to minimize sedimentation in approach channel
- Fill required to increased parking and services could be an issue, and should be minimized if this site is selected for further design development.



BIG TREE ROAD ALTERNATIVE

BIG TREE ROAD ALTERNATIVE

FEATURES:

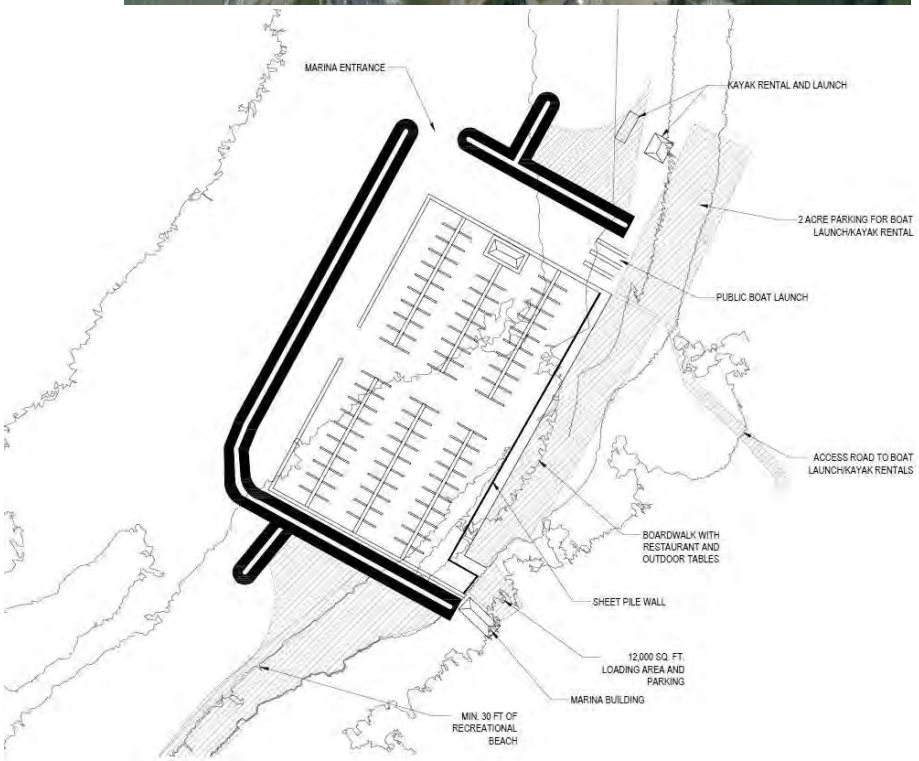
- Mooring for approximately 200 slip of average 40 ft size
- Public boat and kayak launch directed away from normal marina operations.
- Offshore islands to the north create a recreation opportunity for kayakers and aid with shoreline protection to residential properties.
- Deep and shallow water entrances
- Recreational beach and offshore beaches for kayakers
- Unique island/offshore breakwater aesthetic for marina protection instead of long continuous breakwaters

Pro's:

- Currently sites in a commercial corridor
- Takes advantage of existing parking, restaurant, and other nearby amenities.
- No change to road work needed and it is sited at an intersection already.

Con's

- Longer distance needed to get to an adequate depth for a gap entrance resulting in more breakwaters.
- North offshore islands add more cost for stone and construction.
- North offshore islands will be in the viewshed of residential properties to the north.



BAYVIEW ROAD ALTERNATIVE

BAYVIEW ROAD ALTERNATIVE

FEATURES:

- Approximately 232 mooring slips at an average of 40 ft size
- 800 ft of side tie
- Boat launch separate from marina traffic
- Kayak rental shed and launch
- Boardwalk along shoreline with restaurant and outdoor seating
- Detached and attached breakwaters encourage sand accretion to build a minimum of 30 ft of beach along shoreline

Pro's:

- Northeast breakwater spur prevents downdrift sand depletion
- Provides approximately 3,000 ft of recreational beach southwest of marina in front of residential area
- Access road to boat launch and kayak rental separate from marina area

Con's

- Land must be acquired to provide adequate parking and to create the access road
- Additional breakwaters add more cost for stone and construction
- Proximity to wastewater treatment plant

ALTERNATIVE SITE ANALYSIS SUMMARY

The four alternative locations explore a variety of features that can appeal to both the community of Hamburg and be compatible with the surrounding environment. Each alternative supports a 200-slip marina and boat launch, and are sited to integrate with the surrounding land uses. Some also offer opportunities to increase recreational shoreline use and employ techniques to achieve better shore protection by emulating nature.

There are challenges related to each of the alternatives that are unique to each setting. Examples include the need for more land to provide the marina infrastructure, easier road access, proximity to deeper water, and aesthetics.

The Amsdell Road Concept is the most challenging because of the distance offshore to navigable waters, necessitating more dredging and breakwater structures. It is also farthest from the center of the Town of Hamburg and was the least preferred option of the Waterfront Advisory Committee.

From a pure efficiency perspective, the Hamburg Beach Marina alternative is the least invasive, likely has the least environmental impacts, and would be the lowest cost. However, the potential negative impacts in terms of congestion on the only existing public beach in the area led the Waterfront Advisory Committee to reject this alternative.

In terms of added value to the shoreline community, both in terms of shoreline protection and aesthetics, the Big Tree Road Marina is the most desirable, and was clearly the option most preferred by the Waterfront Advisory Committee. The Bayview Road option, when coupled with the updrift pocket beaches, likely addresses sedimentation issues the best because the orientation of the shoreline should reduce relative transport rates there.

Based on the physical characteristics outlined above and the preferences of the Waterfront Advisory Committee, the Big Tree Road and Bayview Road options were selected for further design development.

MARINA MARKET ANALYSIS

The goal of this marina market analysis is to determine the existing and projected demand for slips within the Hamburg market area to support well informed decisions for future planning for the proposed marina facility. Focusing on what features and management practices are most influential to the success of a marina, the market analysis provides details on:

- Availability Factors
- Marina Infrastructure Elements
- Services & Amenities

The data cited in this report was collected by Edgewater Resources directly for this effort over the summer and fall of 2021. Sources of the data include direct conversations with Harbor Masters and/or responsible staff, publicly available data, and marina websites, as well as direct conversations with boaters in the marinas surveyed. Additional data collected by Edgewater Resources for similar marina market analyses for dozens of marinas across the country provide additional relevant context on national and regional trends in the boating market.

Study Area

The primary market area for Hamburg includes eastern Lake Erie and the broader region as far west as Dunkirk, and as far north as Port Colborne in Ontario. For the purposes of this study, we focused our survey on traditional public and private marinas leasing seasonal and transient slips to the general public on a daily, monthly, or seasonal basis. We did not include privately owned condominium facilities where boaters generally own their slip directly, or lease directly from a private owner. Marinas surveyed included:

- Holiday Harbor, Dunkirk, New York
- Sturgeon Point Marina, Town of Evans, New York
- Sun Life Marina, Buffalo, New York
- RCR Marina, Buffalo, New York
- Dale's Marina, Buffalo, New York
- Erie Basin, Buffalo, New York
- Sugarloaf Marina, Port Colborne, Ontario

For each marina surveyed for this analysis, information was organized into the following categories:

- Marina Rates, Occupancy, and Waiting List
- Slip Size and Distribution
- Facility Condition and Infrastructure
- Marina Mooring Types and Storage
- Marina Amenities

Findings are summarized here in General Trends and Initial Conclusions. For more detailed information, individual information sheets for each marina surveyed are also provided in the appendices.

Figure 6 – Market Analysis Study Area

Marina Rates, Occupancy, and Waiting List

Of the seven facilities studied, two indicated 100% seasonal occupancy and two indicated very high seasonal occupancy. While both Sturgeon Point and Holiday Harbor indicated lower occupancy rates, this is primarily due to physical conditions which prevent full use of the facilities. Sturgeon Point suffers from extreme sedimentation issues, and Holiday Harbor suffers from serious wave climate issues. The four facilities closest to Hamburg indicated the highest occupancy rates, and all four of the most utilized marinas are within eight miles of the proposed Hamburg marina location.

Three of the seven facilities surveyed indicated they have active waiting lists for seasonal slips, with only Sun Life Marina, with over 1,000 slips the very largest facility in the study area, indicating very high occupancy but no waiting list. While specific data for which slip sizes are in more demand was not available, this situation generally indicates the need for more larger slips rather than smaller slips. This is because a marina can easily put a smaller boat in a larger slip, but not the other way around. Based also on our physical inspection of the facility, this appears to be the case.

Transient boating demand is generally more difficult to quantify, but again the four most utilized marinas nearest Hamburg indicated strong demand for transient slips. Conversations with marina operations staff indicated that none of the private facilities offer dedicated transient slips, meaning that the slips are set aside permanently for transient use only. These facilities generally offer the use of seasonal slips for transient use when the seasonal lessee is out of the slip for extended periods.

Marina	Rate		Slip Occupancy		Waiting List
	Seasonal	Transient	Seasonal	Transient	
Sturgeon Point	$24/LF	_	Low	_	No
Sun Life Marina	$66/LF	$65.00	High	_	_
Holiday Harbor	$56/LF	$2/LF	Low	_	No
Sugarloaf Marina	$64/LF	$1.90/LF	Moderate	_	_
Erie Basin Marina	$95/LF	$2/LF	High	_	Yes
RCR Yachts	$100/LF	$1.5/LF	Full	_	Yes
Dale's Marina	$50/LF	_	Full	_	Yes

Figure 7 Marina Rates, Occupancy, and Waiting List

Seasonal slip rates in the region generally range from the very low end $24, $50, and $56 respectively per linear foot per year at the three lowest quality facilities (Sturgeon Point, Dale's Marina, and Holiday Harbor Marina). Within the study area, only Sturgeon Point and Sugarloaf Marinas are publicly owned and operated by local municipal governments, and both of these facilities are at the lower end of the price range. This disparity in rates between public and private facilities is common across the country and does not indicate that the lower municipal rates represent the true market value of the facility. Private marinas must operate within a context that includes the true full cost of all construction, operations, maintenance, replacement funding, and profit, whereas municipal and other government funded facilities generally rely on

appropriations to cover construction costs. Further, with no imperative to be profitable, many publicly owned facilities operate at a near breakeven level and often compete directly with private facilities often close by or even adjacent to one another. While many publicly owned facilities operate at break even or at a loss and rely on future capital funding from tax funded sources for major renovations, there is a strong argument that municipal facilities should charge at minimum the same as adjacent or nearby private facilities, if not 3%-5% more. First of all, there is the question of fairness when taxpayer funded facilities compete directly with private businesses. Second, many public facilities struggle to maintain their facilities due to inadequate funding for maintenance, which can lead to unsafe conditions and higher liability. As the facility declines, it gets more difficult to raise rates, resulting in a negative downward spiral that is difficult to escape. In general, elected officials and public staff tend to defer to boaters angry about slip fees, whereas private facilities simply have no choice but to charge the actual true cost to run the facility since there is no other source of funding available.

At the higher end of the price range are three private facilities closest to Hamburg, with linear foot rates ranging in price from $66 per linear foot per season at Sun Life Marina, $95 per linear foot at Erie Basin, and $100 per linear foot at RCR Marina. Interestingly, RCR Marina and Dale's Marina are located physically adjacent to one another, and the staff at Dale's Marina were not aware that their rates are half of what their neighbor is charging. RCR is in much better condition than Dale's Marina, and the fact that Dale's is full, with a waiting list, suggests there is room for their rates to increase.

Transient slip rates in the region range from $1.50 to $2.00 per linear foot per day, or $65 per day as a flat rate. Across the country, $1.50 per linear foot per day is very common, and the $65 per day flat rate equates to $1.50 per day for a 43' boat.

Slip Size and Distribution

There are approximately 3,068 slips across the seven marinas studied, with slips ranging in size from 25' to 45'. In addition, four of the facilities offer flexible broadside mooring, with an average of 610 linear feet of flexible mooring in those facilities. The distribution of slip sizes follows a typical bell curve, with the majority of slips, roughly half, ranging in size between 30' and 35' in length, and tapering off around 45' in length. The remaining slips are found in the flexible broadside mooring, which most often support larger vessels. This slip size distribution is similar to national patterns in coastal areas, although with a somewhat higher percentage of smaller slips than usual.

A growing segment of the boating market in the Great Lakes is the superyacht market, which generally means boats 100' and longer. At the moment, there is little infrastructure in place across the Great Lakes to support superyachts, however flexible broadside mooring allows for vessels of much larger sizes than would ever be provided in traditional slip facilities. While we do not believe in "build it and they will come", it is also true that if we do not provide mooring capacity they surely will not come. There are currently more superyachts cruising the oceans of the world than there are mooring facilities to support them. There are also more linear feet of new superyachts currently under construction than currently exist, so the demand for facilities capable of supporting them is expected to continue to increase over the next ten to fifteen years. Fortunately, flexible broadside mooring is quickly becoming the preferred mooring strategy since we can as easily moor five fifty-foot boats as we can a single 250' superyacht so

long as we have sufficient depth. As most of these larger yachts cruise the Great Lakes as transients, providing flexible broadside mooring will accommodate them without impairing the flexibility of use for more common smaller boats. At the same time, visiting tall ships or research vessels, and even small Great Lakes cruise ships could potentially utilize flexible broadside mooring which is currently in very short supply in the Hamburg/Buffalo region.

Marina	Slips Total	Slips <25	Slips 25	Slips 30	Slips 35	Slips 40	Slips 45	Slips 50	Slips 55	Slips 60	Slips 70	Slips 80	Slips >80	Broadside L/F
Sturgeon Point	235	183	16	18	_	3	_	_	_	_	_	_	_	440
Sun Life Marina	1073	210	210	550	75	_	12	_	_	_	_	_	_	480
Holiday Harbor	230	4	120	97	_	_	_	_	_	_	_	_	_	270
Sugarloaf Marina	740	406	124	116	36	16	_	_	_	_	_	_	_	1250
Erie Basin Marina	493	68	42	258	_	125	_	_	_	_	_	_	_	0
RCR Yachts	174	36	6	108	8	16	_	_	_	_	_	_	_	0
Dale's Marina	123	22	_	79	_	22	_	_	_	_	_	_	_	0

Figure 8 Slip Size and Distribution

Facility Condition and Infrastructure

The quality of facilities across the region is fairly consistent, with most private facilities in good or very good condition. As noted above, three of the facilities are in poor condition and in need of significant upgrades of either their dock facilities or the harbor itself. None of the facilities stand out in particular as exceptionally special, and most facilities have the feeling of facilities that are beginning to show their age. Sun Life Marina has made recent improvements in upland facilities, and Erie Basin still feels well maintained despite its aging facilities.

While the older sections of the docks are generally well maintained, and there appears to be less in the way of recent renovations in the private facilities, it is common to find that the electrical utility systems are no longer compliant with current electrical codes and may also be under stress from ever increasing electrical demand loads of larger modern vessels. All of the facilities offer electrical service in at least some of their slips, with a traditional mix of 30amp and 50amp services. Recent changes to the National Electrical Code for marinas require a higher level of ground fault protection than in years past. All of the facilities offer potable water at slips with electrical service.

All of the facilities offer boat launch facilities, offering from one to eight lanes. We do not recommend that the proposed facility in Hamburg offer a boat launch within the marina due to constraints on upland space, however an improved new boat launch should be considered elsewhere on the waterfront where sufficient room for trailer parking is available. We do, however, recommend providing ADA compliant accommodations for launching paddlecraft such as kayaks and stand-up paddleboards as part of the proposed facility.

All but one of the facilities offer fuel and sanitary pump-out facilities. We highly recommend that the proposed facility offer sanitary pump-out facilities as an amenity for boaters and as a strategy for avoiding offshore dumping of holding tanks and maintaining water quality. Grant funding through the Clean Vessel

Act program is readily available and provides nearly all the funding necessary to provide these facilities. Fuel, on the other hand, is not necessarily critical to the operation of the facility but would be beneficial in Hamburg. This is especially true where other nearby facilities offer fuel, and the proposed site is in an environmentally sensitive area. Marine fuel facilities are expensive and time consuming to design, permit, construct, and maintain, and are often not particularly profitable. They can be critical to the success of facilities where there are no other options, but otherwise fuel facilities can better be thought of as an amenity rather than a necessity. With the nearest fuel available at least eight miles away, we recommend consideration of providing fuel facilities at the proposed facility.

Marina	Facility Condition	Boat Launch		Electric			Water	Pump Out	Fuel
		Y/N	# of Lanes	Y/N	Capacity	Paid			
Sturgeon Point	Poor	Yes	4	imite	30amp	No	No	Yes	Yes
Sun Life Marina	Very Good	Yes	8	Yes	30 amp.	No	Yes	Yes	Yes
Holiday Harbor	Poor	Yes	1	Yes	30, 50 amp.	Yes	Yes	Yes	Yes
Sugarloaf Marina	Very Good	Yes	4	Yes	15 amp.	Yes	Yes	Yes	Yes
Erie Basin Marina	Good	Yes	2	Yes	30, 50 amp.	No	Yes	Yes	Yes
RCR Yachts	Good	Yes	1	Yes	30 amp.	No	Yes	Yes	Yes
Dale's Marina	Poor	Yes	1	Y	30amp	N	Yes	_	_

Figure 9 Facility Condition and Infrastructure

Marina Mooring Types and Storage

In addition to traditional wet slips, marinas may offer swing moorings and/or indoor dry rack storage. While none of the facilities in the study area offer swing moorings or indoor dry rack facilities, dry rack facilities are a potentially profitable way to store a large number of boats in areas where cost or environmental conditions limit the feasibility of larger wet slip facilities. While traditionally dry rack facilities were more oriented to smaller boats under 30' modern forklift equipment and automated dry rack facilities are capable of storing the ever more popular outboard powered offshore center console boats up to 45' or more in length.

The key advantage to the customer of keeping their boat in an indoor rack facility is that the boat is always protected from the elements (especially the sun) when not in use. Modern rack facilities are built to appropriate local storm building codes, so they provide complete peace of mind to the boat owner.

Off season / winter storage is important in all northern marina markets, including the Hamburg marina market, however storage is available at only four of the facilities surveyed. We do not recommend incorporating any winter storage in the proposed facility in Hamburg due to the limited upland areas available for marina operations, and the potential impacts on lake views during the off season.

Marina	Swing Mooring	Dry Rack	Winter Storage		
			Indoor Heated	Indoor Cold	Outdoor
Sturgeon Point	No	No	No	No	No
Sun Life Marina	No	No	No	No	No
Holiday Harbor	No	Yes	No	Yes	Yes
Sugarloaf Marina	No	No	No	_	Yes
Erie Basin Marina	No	No	No	No	No
RCR Yachts	No	No	No	No	Yes
Dale's Marina	No	No	No	Yes	Yes

Figure 10 Marina Mooring Types and Storage

Marina Amenities and Services

Modern marinas may offer a range of services to the boater, including haul out and lift wells, and repair services that may range from engine and mechanical systems, marine electronics, fiberglass repair, painting, carpentry, and other miscellaneous services necessary to maintain recreational vessels. In general, we do not recommend that the proposed facilities offer in house service and repairs, nor do either of the proposed sites offer sufficient upland areas to support haul out facilities and major on site repairs. We recommend that the proposed facility contract with local independent technicians to complete minor on-site repairs and maintenance that can be completed entirely while the boat is on the water, with no noise, smells, or dust to disturb other boaters.

Boater services such as showers, restrooms, laundry, lounge, and wi-fi are nearly universally expected in high quality recreational marinas, and we recommend that any facility constructed in Hamburg incorporate these amenities at a very high level of quality. We have surveyed literally thousands of boaters, and the two most important amenities to the boaters are clean, high quality restroom and shower facilities, and high quality wi-fi. Neary any level of investment in these two features is warranted and will be recognized by boaters, and contribute very significantly to the overall impression and reputation of the marina.
A ship's store is a nice amenity, but not nearly as important today as it has been in the past. With the advent of overnight shipping from a wide variety of online retailers, it is more and more difficult for small local ship's store operations to be financially successful. We do recommend that any proposed facility provide a small retail operation within the boater services facility that provides only the most essential items that will otherwise ruin a day on the water, such as sunscreen, marine toilet paper and head chemicals, life jackets, ice, beer, and snacks.

The last amenity that is growing in popularity is boat rental and boat clubs, including boats ranging from paddlecraft to pontoon boats, small runabouts, and even smaller offshore center console boats. These rental offerings bring new people into the marina who may be early in their boating lifestyle and still learning, or younger people who do not yet have the financial means to purchase a boat and lease a slip. In larger regional markets, with a large local population, such as the Hamburg/Buffalo area, boat rental facilities may be especially profitable. We have worked with marinas where boat rental operations represented over half of the gross income of the facility, so they can be very important to the overall financial success and viability of the proposed facility. We recommend that boat rental or boat club operations be incorporated into any marina proposed for Hamburg.

Marina	Lift/Haul Service	Repairs	Boat Rental	Shower/ Restroom	Laundry	Boater Lounge	Ship's Store	Wifi	Other
Sturgeon Point	No	No	No	Yes	No	Yes	Yes	No	Issues with sand fill, community raised funds to keep it open. Picnic area and dry dock. 24 hour security. Stopping point for boats during storms.
Sun Life Marina	No	No	No	Yes	No	Yes	Yes	No	Restaurant, gated.
Holiday Harbor	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Another location at Chautauqua lake with indoor storage.
Sugarloaf Marina	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Dock Attendants, Concierge, Park, Retail Store, Fish Cleaning Area and more
Erie Basin Marina	Yes	Yes	No	Yes	No	No	Yes	Yes	Boat sales. Upland facilities dated. Slip rates are less for Buffalo residents. Has gardens, food stands, museum, public art displays and various shops
RCR Yachts	Yes	Yes	No	Yes	No	No	Yes	Yes	Boat sales. Pet friendly, food and transportation nearby.
Dale's Marina	Yes	Yes	_	Y	_	_	Yes	_	Boat sales.

Figure 11 Marina Amenities and Services

Market Analysis Summary

In summary, the regional marina market in Hamburg appears strong, with high occupancy and demand across all of the nearest private facilities that are similar in quality, scope, scale, and geographic relation to primary waterways. With all of the private facilities aging, the opportunity for a new facility in the local market area to offer modern marina amenities, larger slip sizes, higher quality and capacity marine electrical utilities, and high quality landside amenities is likely to attract regional and national private marina operators.

We believe a slip mix of 80% seasonal, 20% transient is a reasonable starting point which could be adjusted over time based on demand. With the lack of available slips in the immediate Hamburg market area, we believe a new high quality marina facility will attract some of the existing boats currently located at the nearby Buffalo facilities, and encourage local residents to consider buying new boats when new facilities become available. We recommend a marina development strategy that is implemented in phases to manage financial exposure and limit risk, while offering the opportunity to modify the marina design and infrastructure over time to respond to the marina market that develops as the new facilities become available.

At the macro level, recreational boating is enjoying a major renaissance in the aftermath of the Covid pandemic, with record participation in boating, boat sales, manufacturing, and boating equipment and accessory sales. Since the onset of the Covid pandemic in early 2020, the popularity of boating has increased dramatically, with the industry experiencing record high participation rates, boat sales, and occupancy for both transient and seasonal slips. According to the National Marine Manufacturers Association in a report published January 12, 2022, new US powerboat retail unit sales are expected to surpass 300,000 units for the second consecutive year, closing 2021 only four to six percent below record highs in 2020 and seven percent above the five-year sales average despite industry wide supply chain challenges.

Recreational boating in New York generates $8.4 billion in economic impacts, with nearly over 440,000 registered boats supporting 35,574 jobs and 2,369 businesses according to the National Marine Manufacturers Association. The 27th Congressional District, home to Hamburg, enjoys nearly $233 million in annual economic impacts from over 33,000 boats supporting 1,145 jobs in 88 businesses, while the 26th District (Buffalo) experiences $272.5 million in economic impacts generated by more only 16,115 boats supporting 989 jobs at 74 businesses.

This data suggests that there are many boats registered outside of the Buffalo district that are moored at marinas within the Buffalo district. With improved facilities in Hamburg, this data suggests there is significant capacity in the local and regional marina market to grow boating overall and for a portion of the regional boating market to relocate to a new high quality marina facility in Hamburg.

Figure 12 State of New York Recreational Boating Economic Impacts - NMMA

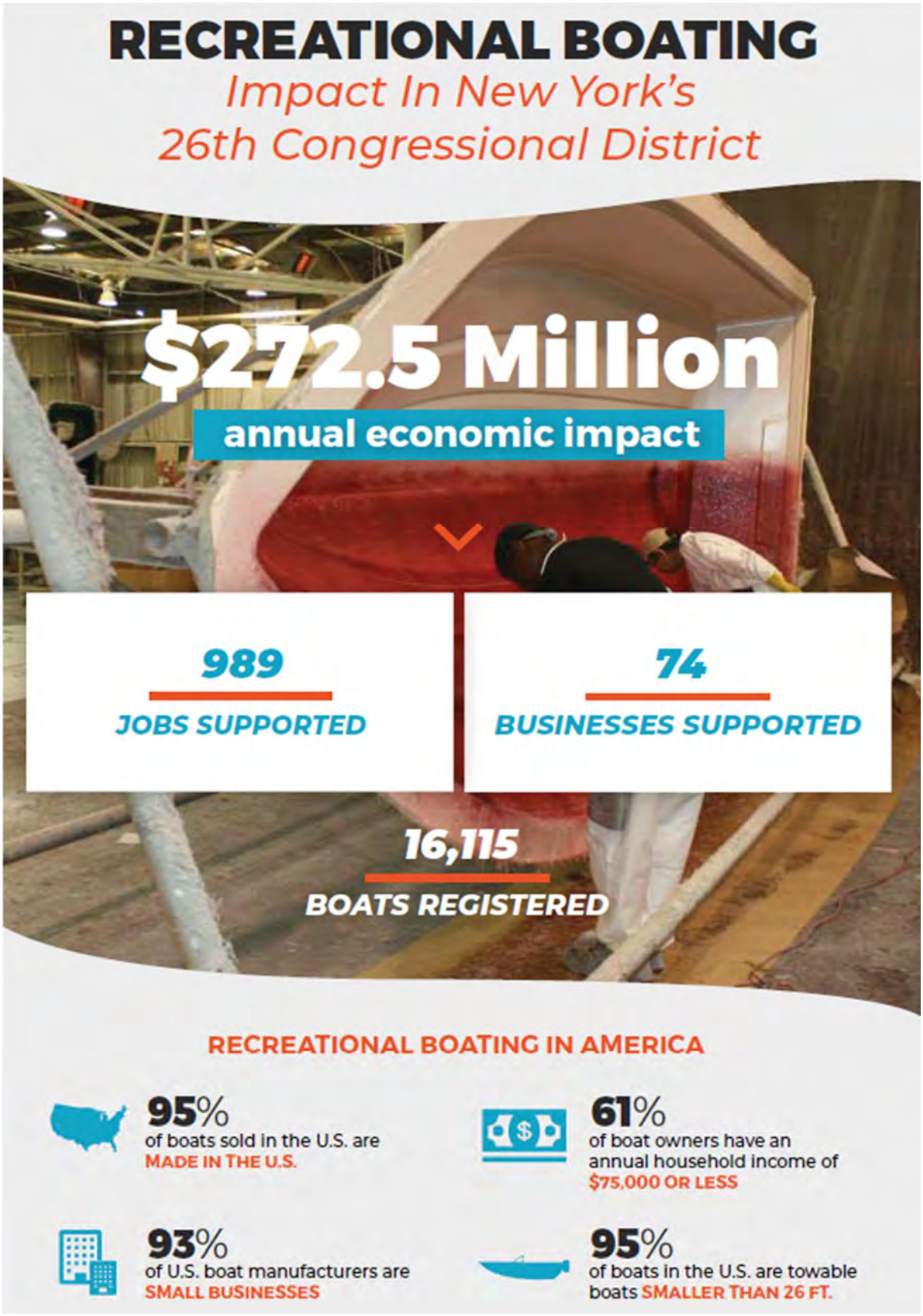


Figure 13 New York 26th Congressional District Recreational Boating Economic Impacts - NMMA

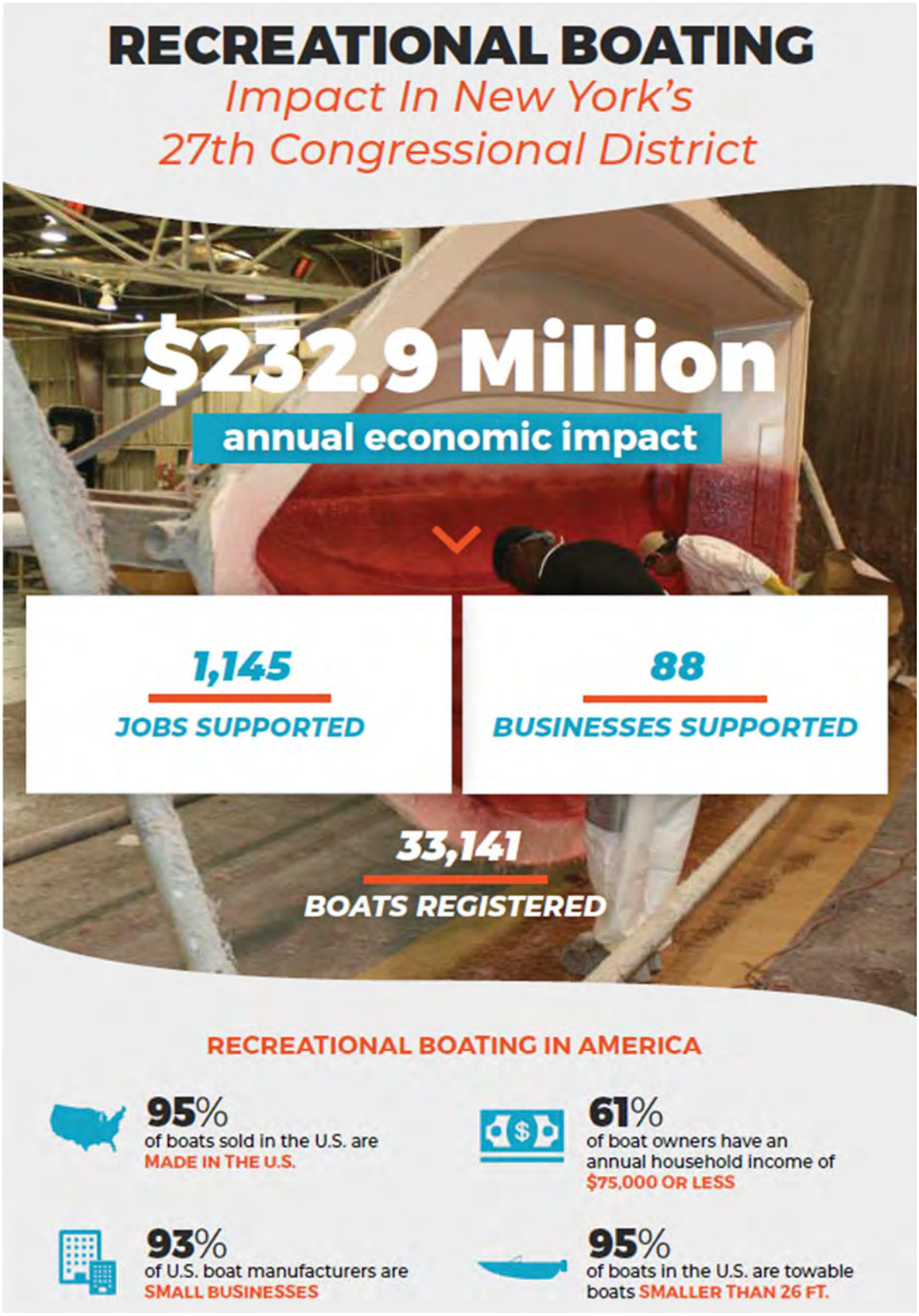


Figure 14 New York 27th Congressional District Recreational Boating Economic Impacts - NMMA

CONCEPT ALTERNATIVE DEVELOPMENT

The environmental conditions present in Hamburg require the creation of a protected harbor area capable of withstanding seiche and storm driven waves, with sufficient navigable depths at low water levels to maintain safe operation of the facility at all times. The development of a marina facility in Hamburg will therefore require significant public investment, but the proposed facility is also very suitable for private investment through a public private partnership.

When evaluating the financial feasibility of a marina facility, we break the overall costs into two categories: revenue generating elements and non-revenue generating elements. Revenue generating elements in a marina are those elements that are directly utilized by the boaters and generate immediate revenue to the marina operation. These elements include fixed and floating dock structures, marina utilities and pedestals, gangways, gates, parking, and boater services facilities such as restrooms, showers, lounge, wi-fi, etc. Non-revenue generating elements include structures and efforts necessary to protect the revenue generating elements such as breakwaters, dredging, and other navigation structures, but also public amenities used by both boaters and non-boaters such as parks, playgrounds, public restrooms, fishing piers, etc.

There are many examples of large public marinas that were constructed and operated entirely as a municipal operation, such as 31st Street Harbor and the entire Chicago Park District harbor system, and many examples of similar scale facilities constructed through public private partnerships, where the non-revenue generating infrastructure was funded with public investment and the revenue generating infrastructure was funded by a private entity, such as Racine Harbor in Racine, Wisconsin. These funding structure options for the proposed facility in Hamburg will be explored in greater detail in the implementation section of this study, however the development of the concept alternatives that follow is based on the following guiding principles:

Hamburg's new marina will:

- *Incorporate public elements that make the water accessible to everyone in the community regardless of age, income, or physical ability.*
- *Minimize impacts to sensitive environmental features wherever possible, and leverage the design of necessary structures to expand and protect habitat for both aquatic and terrestrial species as much as possible.*
- *Leverage the design of the harbor breakwater structures to provide shoreline protection from storms and reduce the potential for upland flooding, while improving long term coastal resilience.*
- *Expand access to boating and the water for everyone in the community through public piers and affordable boat rental opportunities including paddlecraft, boat rental, boat clubs, and a variety of boat storage options.*
- *Incorporate innovative flexible broadside mooring strategies that allows the facility to accommodate boats of many sizes and respond to the seasonal and transient boating market as it evolves over time with no need to make significant changes to the marina infrastructure.*
- *Incorporate modern marina codes and standards to achieve the highest level of safety while reducing operational expenses through reduced energy demand, more durable low maintenance materials, and resilient design strategies to prepare for increased storm intensity.*

Key Design Strategies

The concept design alternatives that follow consider and incorporate the following key strategies to achieve the guiding principles outlined above.

Community Access

Fundamental to any waterfront project that requires significant public funding for non-revenue generating infrastructure is the need to design the facility to incorporate as much access for the general public as possible and leverage those infrastructure elements to serve as many public needs as possible.

31st Street Harbor, Chicago, Illinois

31st Street Harbor is a 1,025 slip, $103 million marina owned and operated by the Chicago Park District and located on the shores of Lake Michigan on Chicago's south side. The design of the upland marina infrastructure includes many features that are dual use and combine marina activities with public access. For example, the development of 350 parking spaces was incorporated into a green roof covered parking structure that provides expansive views of Lake Michigan and flexible open green play lawns rather than a sea of asphalt parking. The site's vehicular circulation was reorganized to eliminate three separate crossings of the Lakeshore Bike Trail by cars, greatly improving safety and efficiency. A new $2.5 million regional playground replaced a dilapidated traditional play structure, and a new island within the lake was incorporated into the breakwater system to provide a public amphitheater for movies in the park and other concerts and activities. With the exception of the floating docks themselves, essentially every part of the "marina" is open to the public and serves the adjacent neighborhood as a waterfront park. The best part is the entire project was funded through revenues generated by the boaters renting the slips rather than the traditional capital outlay of tax revenues.

Resilient Soft Shorelines

Preserving soft beach edges, removing invasive species, and intentionally supplementing existing functioning ecosystems are important elements in managing shoreline erosion, maintaining water quality, and minimizing reflection of wave energy that causes erosive damage and impairs safe navigation.

Offshore Segmented Habitat Island Breakwaters and Passive Sediment Management

Where hardened breakwater strategies are necessary to protect critical marina and shoreline infrastructure from storms and high waves, we recommend utilizing an innovative new strategy of a series of smaller segmented offshore breakwater structures rather than the traditional monolithic structures of the past. This approach is much more in tune with nature and utilizes currents and wind driven waves to passively direct sediments away from areas where navigable depths need to be maintained and accumulate in areas where supplemental shoreline materials are beneficial for supporting habitat and preventing flooding.

Fort Pierce City Marina Habitat Island Breakwater, Fort Pierce, Florida - Image by Captain Kemo

If this approach is implemented, detailed numeric and physical wave modelling will be required to complete the design process. Specific considerations to be considered in the modelling will be wave height and storm dynamics at the full range of water levels, including severe wind setup/seiche conditions. Additionally, water quality and sediment circulation will need to be confirmed. Finally, the design of the stone size and angle of the slope of the islands will need to be established to redirect the force of ice shove contacting the islands. A slope of approximately 1.5H to 1V has been documented to resist ice shove by forcing the ice sheet to lift and break, which disperses the force applied to the structure.

The segmented island structures vary in size and shape and are designed as an integrated system to intercept wave energy while maintaining water circulation and quality. By directing sediments to beneficial areas and away from navigable areas, this approach reduces maintenance dredging and the expense and environmental impacts associated with dredging activities. The islands are composed of materials dredged during the initial construction of the navigable portion of the harbor, greatly reducing dredging costs and minimizing the impacts of hauling dredged materials.

Computer Sediment Modeling and Aerial Photo of Sediment Transmission on Site

Physical Modeling of Structure Design in the Wave Tank

Larger islands are designed to incorporate a series of habitat "layers" for different targeted local species, which may include everything from macroinvertebrates to shorebirds, and even specific vegetation for the benefit of native fish and birds. The islands are formed and protected with armor stone specifically sized for the anticipated wave climate, but also with smaller pockets of different stone sizes specifically designed to accommodate spawning habitat for targeted species. Where appropriate, local native stone is utilized to ensure the invertebrates and submerged aquatic vegetation have the same native conditions they evolved to rely on.

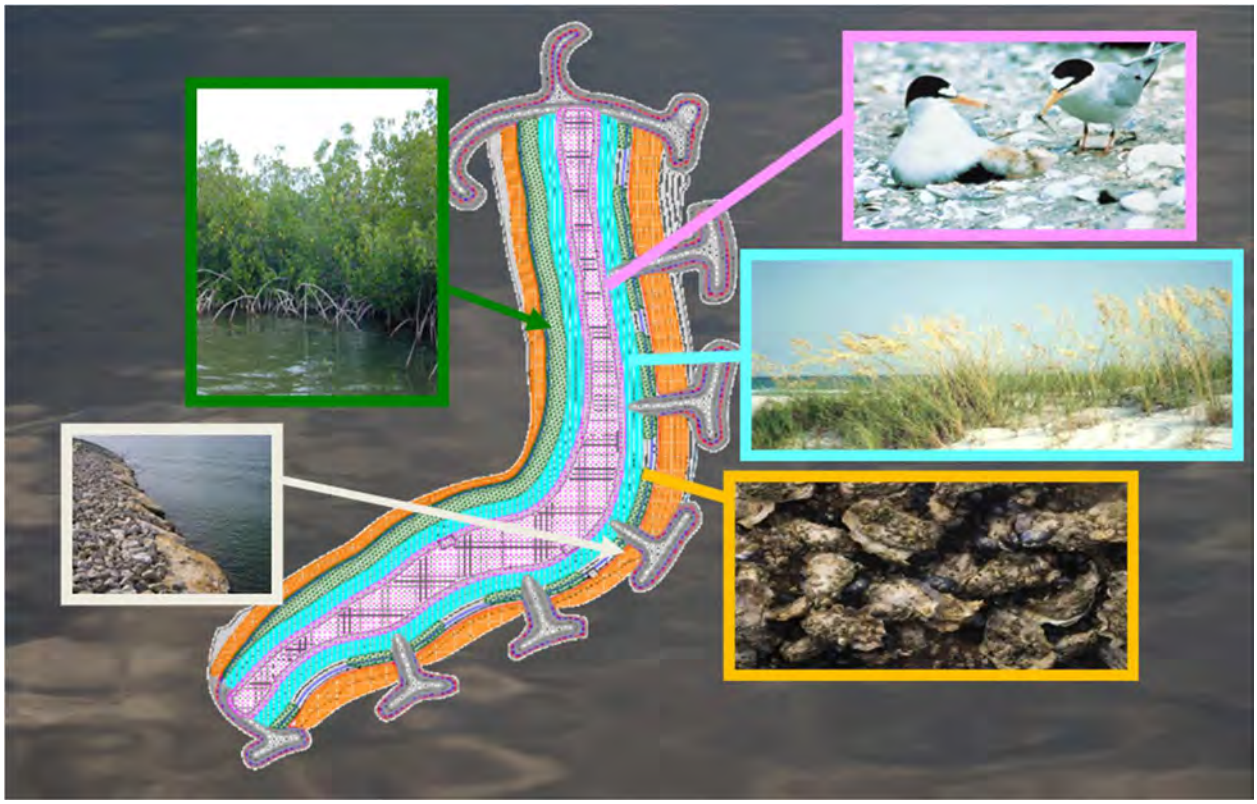


Diagram of Habitat Layers

When incorporated into an overall shoreline management strategy, systems of this type also protect the soft shorelines described above, allowing them to thrive and suffer less damage during storms. By protecting the shoreline and reducing flood damage, these systems also protect critical upland infrastructure from large storm events. This level of planning for future resilience led to over $18 million in funding for the Fort Pierce Florida system shown above, or nearly 90% of the total cost through the Federal Emergency Management Agency's Pre-Disaster Mitigation program.

Another layer of benefits of this system is that by creating protected areas for fish and wildlife, the facility also creates protected areas for paddling, kayaking, and fishing for local residents, so these systems could also form a public marine park. When combined with low-cost boat and paddlecraft rental and ADA compliant launching facilities, this approach creates shoreline infrastructure that serves the whole community in addition to local and visiting boaters. By leveraging the investment to provide multiple beneficiaries, opportunities for partnerships and grant funding for implementation are greatly expanded.

Flexible Broadside Mooring

Flexible broadside mooring is a marina design strategy that replaces traditional slips of specific sizes (40', 50', 60', etc) with long interrupted lengths of dock that allow boats of any length moor alongside. This approach offers a number of advantages that have seen this style of docking become more and more popular across the country.

First of all, this approach is particularly effective in growing and evolving markets like Hamburg, where determining anticipated specific demand and slip counts for particular slip sizes – especially larger slips – is challenging. It is far better to offer flexible broadside mooring where four 50' boats can be accommodated in the same area as six 30' boats, three 60' boats, or two 90' boats - or any combination thereof - rather than committing to a set of specific slip sizes only to find out that the market is not ready to absorb all of the dedicated slip sizes constructed. Second, in transient markets, many boaters cruise with friends in small groups of three to five boats. The various boats are rarely all the same size, so when they arrive at a traditional marina, they may be separated among different sized slips all over the marina. With flexible broadside mooring, they can all moor next to one another and be near their friends no matter the difference in boat size.

Finally, this approach is simply more space and cost effective. Careful planning of the marina utility systems allows for fewer pedestals to be shared among more boats, resulting in less wire, less equipment, less cost, and less overall environmental impact. These longer docks are easily accessed by golf carts, providing convenient and quick access for the boaters to shore.

Google Earth Aerial of the Charleston Mega Dock, Charleston, South Carolina

Marina Concept Plan Alternative Development

Utilizing the strategies outlined above, a series of initial concepts were prepared for the Big Tree and Bayview Road sites. Since these two sites bookend the Hoover Beach Neighborhood, and a key element of the plan is protection of the Hoover Beach shoreline, the concepts for the two sites were merged into a single plan. This plan was reviewed with the Waterfront Advisory Committee and a Joint Evaluation Meeting with staff from a variety of state and federal regulatory agencies including USACE and New York State Department of Environmental Conservation, Office of General Services, and Department of State.

The review committees provided extensive and thoughtful feedback on the proposed plans, including:

- Consider long-term maintenance of all facilities proposed.
- Include the removal of the existing seawalls along the Hoover Beach neighborhood once the homes are protected by the new structures and the walls are no longer needed.
- Move the proposed boardwalk back to the property line between the existing private properties and the new public beach to help distinguish between public and private property.
- Ensure that the adjacent property owners are aware that the new beach in front of their homes will be public and open to any resident of the State of New York or other visitors.
- Address riparian rights issues with adjacent homeowners.
- Focus on habitat improvements and expansion of public access to the lake and public trust areas.
- One marina is preferred over two.
- The west marina site (Big Tree Road) is the preferred location of the two marinas shown
- Move the boat launch farther east, to the Woodlawn Neighborhood, where more upland area is available for parking.

Upland Concept Plan Alternative Development

Recognizing the importance of the interaction between the waterfront marina facilities and the potential for the marina to be a major economic catalyst for the transformation of the Town of Hamburg Waterfront, and the potential for the upland development to help fund the long term maintenance of the marina and public waterfront elements in turn, the planning process also explored a series of upland development concepts as a way to integrate this study into the Local Waterfront Revitalization Program (LWRP) study also currently underway.

As the upland concepts are formally outside the scope of this marina feasibility study, the level of study and detailed design for these elements will be explored in greater detail through the LWRP process. The upland concepts are presented and summarized here to express their potential relationship to the marina development.

PRELIMINARY CONCEPT MASTER PLAN

The concept master plan proposes the development of an integrated network of shoreline features that initially included two marinas linked by a network of offshore segmented habitat island breakwaters that form the offshore Hamburg Marine Park and protect an extensive new public beach in front of the Hoover Beach neighborhood.

Key features of the plan include:

A) An interconnected network offshore segmented breakwater islands that will create the new Hamburg Marine Park with habitat islands that direct sediment flows around the marinas and deposit sand to form and stabilize a new public beach
B) A new marina at Big Tree Road that is home to up to 249 slips and 485lf of flexible broadside mooring on a floating dock system, a fully public fixed pier with viewing platform, and a floating service pier for boat and paddlecraft rentals
C) Upland boater services building
D) Marina Parking and vehicular drop off
E) New lakefront pedestrian promenade linking existing trail networks
F) Dredged materials to create the marina basin will be utilized to pre-nourish the new public beach
G) A new marina at Bayview Road that is home to 224 slips and 1,028lf of flexible broadside mooring on floating docks, boater services, parking, and a floating service pier for boat and paddlecraft rentals

Advantages:

- This approach provides a broad range of public uses and expands access to Lake Erie for the broadest range of local residents and tourists for a wide range of uses.
- This approach leverages innovations in offshore sediment management to reduce long term maintenance dredging needs while expanding habitat and protecting the shoreline without a hardened shoreline edge as currently exists. This approach allows for a soft beach edge, and once stabilized, no downstream negative impacts due to interruptions to the littoral drift patterns.
- This approach creates the opportunity for the marina to serve as an economic catalyst for broader upland improvements to the Town of Hamburg, while leveraging those improvements to help fund long term maintenance and operations for public access.
- Contributes to long term shoreline protection and minimizes flooding.
- Creates the broadest range of public community benefits, which despite the cost makes this approach the most financially viable way to implement the marina.

Disadvantages

- This approach is both expensive and has significant environmental impacts, however we believe that on balance, the project will be a net positive for the environment and financially feasible. The primary impacts will include dredging, fill materials within the lake (stone for the habitat islands), installation of pile supported structures, and floating docks. A comprehensive analysis of these impacts is beyond the scope of this study, and will be addressed during preliminary engineering and the SEQRA process.

Legend

- A. HABITAT BREAKWATER
- B. HARBOR ENTRY
- C. FLOATING DOCKS
- D. FIXED PUBLIC ACCESS PIER
- E. COMMUNITY ACCESS DOCK
- F. EXPANDED BEACH
- G. ISLAND ACCESS
- H. WATERFRONT PLAZA/ PROMENADE
- I. HAMBURG WATERFRONT VILLAGE
- J. PARKING
- K. REALIGNED LAKE SHORE ROAD
- L. BOATER SERVICES
- M. NEW PUBLIC PARK
- N. GREENWAY TRAIL CONNECTIONS
- O. MULTI-FAMILY RESIDENTIAL
- P. RESIDENTIAL
- Q. LIGHT INDUSTRIAL/ COMMERCIAL BUFFER

Hamburg Marina Feasibility Study

Hamburg, NY

Concept Masterplan

May 2024

0 200' 400'

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The proposed design includes a marina with seasonal and transient slips protected by a series of detached breakwaters doubling as habitat islands. The marina and surrounding breakwater stretch along about 1,200 ft of the shoreline beginning westward at the intersection of Highway 5 and Lasalle Ave. The breakwaters surrounding the marina overlap to provide protection against waves like a traditional fully connected breakwater. Further along the coast, the proposed offshore island breakwaters will function to protect the residential parcels from continued erosion.

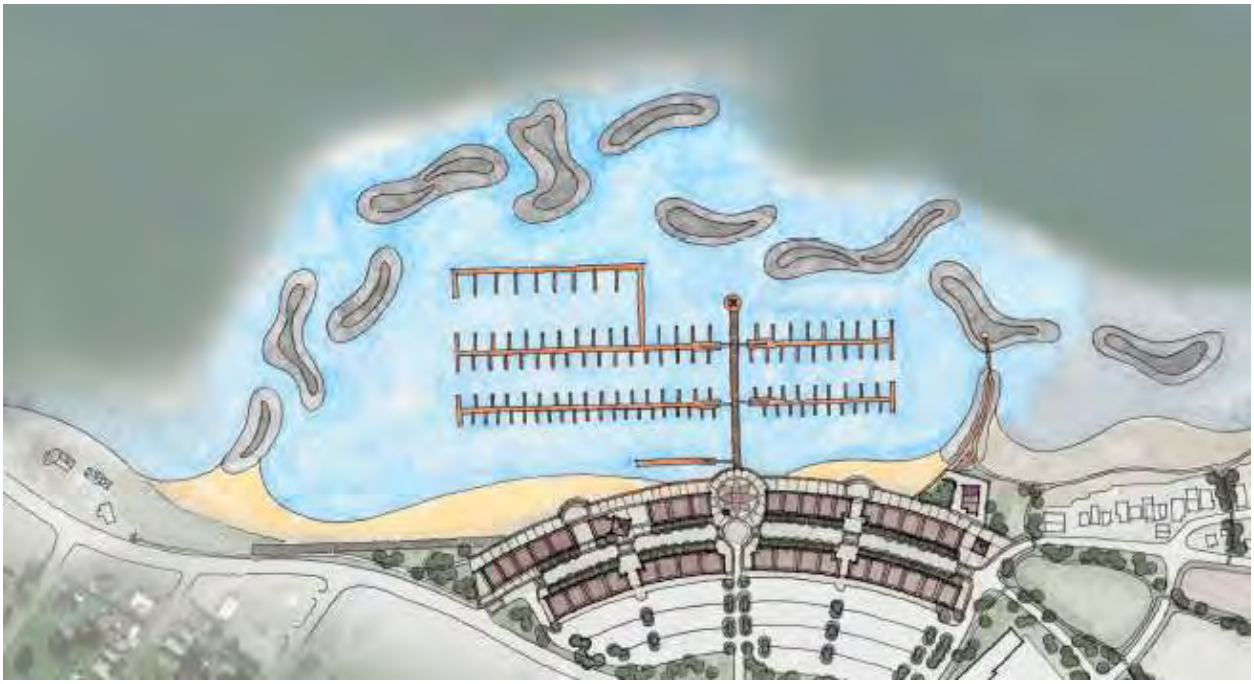
The marina breakwaters will be oriented to limit the sediment deposition at the marina entrances, reducing the operational costs of continued dredging. The expectation is that sand will accumulate on the southwestern side of the marina over time. The marina's location is also in an area where this is no beach and high rates net sediment transport. As a result, the marina's location will not overlap with any existing beach and is ideally located to minimize downdrift sediment impacts.

The offshore breakwaters are sized and located to lock the existing sand in place in areas northeast of the marina. This technique has been used successfully in the Great Lakes at numerous project locations. On Lake Erie, this technique was used at Presque Isle State Park and continues to work as intended to this day. If there are budget constraints or only a portion of the offshore breakwaters can be constructed, Edgewater would recommend starting with the islands closest to the marina and work progressively northwest. The sediment potential calculations show that the sand beach is more stable the more northwest along the coast. This observation is consistent with aerial photographs of the coastline.

CONCEPT MASTER PLAN PHASING AND COST ESTIMATES

Due to the scale of the Concept Master Plan, the project was broken down into three separate phases. Concept level construction cost estimates were prepared for each phase and are outlined on the following pages. Note that the cost estimates cover only the marina and waterside elements only, along with the immediately necessary upland marina program elements including the boater services buildings and parking. Additional upland developments, including road realignments and neighborhood improvements are not included in these estimates.

PHASE 1 - CONCEPTUAL COST ESTIMATE					
#	DESCRIPTION	UNITS	QTY.	UNIT PRICE	EXTENDED PRICE
1	Mobilization	LS	1	$1,717,607	$1,717,607
2	West Floating Docks	SF	41,900	$80	$3,352,000
3	West Fixed Pier	SF	4,400	$100	$440,000
4	West Dredging	CY	105,185	$8	$841,481
5	Gangways	EA	5	$50,000	$250,000
6	West Marina Breakwater Islands	LS	1	$22,457,843	$22,457,843
7	Dock Utilities West	/SLIP	250	$8,000	$2,000,000
8	Site Utilities West	LS	1	$600,000	$600,000
9	Pump Out	LS	1	$50,000	$50,000
10	Marina Fuel	LS	1	$600,000	$600,000
11	Boater Services Building Allowance	LS	1	$1,125,000	$1,125,000
12	Parking Lot West	LS	1	$1,000,000	$1,000,000
				Sub-Total	***$33,433,932***
				Design/Engineering/Construction/Permitting Contingency (20%)	***$6,686,786***
				Phase 1 Total Cost	***$40,120,718***



Concept Master Plan – Phase One

PHASE 2 - CONCEPTUAL COST ESTIMATE					
#	DESCRIPTION	UNITS	QTY.	UNIT PRICE	EXTENDED PRICE
1	Mobilization	LS	1	$550,962	$550,962
2	Hoover Beach Breakwater Islands	LS	1	$10,103,802	$10,103,802
3	Concrete Beach Path	SF	32,560	$12	$390,720
				Sub-Total	***$11,045,484***
				Design/Engineering/Construction/Permitting Contingency (20%)	***$2,209,097***
				Phase 2 Total Cost	***$13,254,581***

Concept Master Plan – Phase Two

PHASE 3 - CONCEPTUAL COST ESTIMATE					
#	DESCRIPTION	UNITS	QTY.	UNIT PRICE	EXTENDED PRICE
1	Mobilization	LS	1	$1,399,144	$1,399,144
2	Gangways	EA	1	$50,000	$50,000
3	East Floating Docks	SF	46,300	$80	$3,704,000
4	East Dredging	CY	87,407	$8	$699,259
5	East Marina Breakwater	LS	1	$17,530,101	$17,530,101
6	Dock Utilities East	/SLIP	224	$8,000	$1,792,000
7	Site Utilities East	LS	1	$600,000	$600,000
8	Pump Out	LS	1	$50,000	$50,000
9	Marina Fuel	LS	1	$600,000	$600,000
10	Boater Services Building Allowance	LS	1	$1,125,000	$1,125,000
11	Parking Lot East	LS	1	$500,000	$500,000
				Sub-Total	***$27,549,505***
				Design/Engineering/Construction/Permitting Contingency (20%)	***$5,509,901***
				Phase 3 Total Cost	***$33,059,405***

Concept Master Plan – Phase Three

CONSENSUS MASTER PLAN

Based on feedback from the Waterfront Advisory Committee and the regulatory staff at the Preliminary Review Meeting, the Concept Master Plan was refined into the Final Master Plan that follows.

A) Hamburg Marine Park

Hamburg Marine Park is a collection of offshore segmented habitat islands spread across an area immediately offshore from the Hamburg Clocktower. The habitat islands form a protective breakwater structure that will reduce flooding and storm damage to the Hamburg shoreline, while also protecting the new deep-water marina facility. The islands will be shaped and carefully placed to direct natural sediment flows away from navigation channels and toward areas where accumulation of sediments will improve shoreline protection and habitat creation. The islands themselves will be composed of dredged materials generated by the creation of the marina and armored with native stone. The design of the armor stone will incorporate special habitat features such as "fish fingers" and "fish alleys" that provide protection for juvenile fish and support appropriate submerged aquatic vegetation. A series of habitat layers will be incorporated into the islands to support a variety of wildlife, including birds and food sources and cover for other native species.

B) Hamburg Marine Park Community Center

The Marine Park Community Center will be a covered structure at the end of the public Marine Park Pier and near the intersection with the gangways to the floating transient docks. The community center will offer restrooms and basic boating supply concessions for public kayak, paddleboard, boat rental, and community sailing programs, as well as a covered outdoor classroom for the community sailing program, environmental education seminars, kayaking and paddling lessons, and other relevant educational opportunities intended to expand community access to the water and Hamburg Marine Park.

C) Marina Entry Channel

A navigable channel providing a minimum depth of 8' at low water for deep-draft vessels will be created to link the marina facilities to deeper navigable waters of Lake Erie.

D) Floating Docks

Seasonal and transient mooring will be provided on a system of floating docks utilizing a mix of traditional slips and flexible broadside mooring. Access from the fixed pier to the floating docks will be accommodated by ADA compliant gangways. Appropriate potable water, sanitary pump-out, and ground fault protected code compliant electrical utilities will be provided.

E) Marine Park Pier

Marine Park Pier is a public 18' wide fixed pier linking the trail and parking to Hamburg Marine Park and the Community Center. The pier will be open to the public, providing views of the lake and sunsets, while providing access to affordable public boating opportunities.

F) Paddlecraft Rental Pier

The Paddlecraft Rental Pier will support public rental activities for kayaks and stand-up paddleboards, as well as ADA compliant paddlecraft launching.

G) Boater Services Building

The boater services building located at the intersection of Marine Park Pier and the multi-use trail will offer restrooms, showers, a boater lounge, community information, laundry, and marina/harbormaster offices.

H) Parking

Parking for the marina and Marine Park use is provided, along with pick up and drop off for local car services.

I) Hoover Beach Public Park

The Hamburg Marine Park breakwater structures will extend to the northeast, and be shaped to direct naturally occurring sediments towards shore. This, coupled with initial beach nourishment from the dredging of the marina basin, will create an extensive new public beach separated from the Hoover Beach neighborhood by the multi-use trail. This beach, combined with the offshore structures, will provide significantly improved shoreline protection, coastal resilience, and soft shoreline habitat that will be for more beneficial to the community, environment, and adjacent homeowner than the current system of walls.

J) Multi-Use Trail

A multi-use trail is proposed to link up with the wider Hamburg bicycling network to make it easier for visitors to explore the community.

PHASE 1 - CONCEPTUAL COST ESTIMATE					
#	DESCRIPTION	UNITS	QTY.	UNIT PRICE	EXTENDED PRICE
1	Mobilization	LS	1	$1,702,120	$1,702,120
2	West Floating Docks	SF	41,900	$80	$3,352,000
3	West Fixed Pier	SF	4,400	$100	$440,000
4	West Dredging	CY	105,185	$8	$841,481
5	Gangways	EA	5	$50,000	$250,000
6	West Marina Breakwater Islands	LS	1	$22,457,843	$22,457,843
7	Dock Utilities West	/SLIP	260	$8,000	$2,080,000
8	Site Utilities West	LS	1	$600,000	$600,000
9	Pump Out	LS	1	$50,000	$50,000
10	Marina Fuel	LS	1	$600,000	$600,000
11	Boater Services Building Allowance	LS	1	$750,000	$750,000
12	Parking Lot West	LS	1	$1,000,000	$1,000,000
				Sub-Total	***$33,123,444***
				Design/Engineering/Construction/Permitting Contingency (20%)	***$6,624,689***
				Phase 1 Total Cost	***$39,748,133***

PHASE 2 - CONCEPTUAL COST ESTIMATE					
#	DESCRIPTION	UNITS	QTY.	UNIT PRICE	EXTENDED PRICE
1	Mobilization	LS	1	$741,055	$741,055
2	Hoover Beach Breakwater Islands	LS	1	$10,103,802	$13,640,133
3	Concrete Beach Path	SF	39,600	$12	$475,200
				Sub-Total	***$14,856,388***
				Design/Engineering/Construction/Permitting Contingency (20%)	***$2,971,278***
				Phase 2 Total Cost	***$17,827,665***

Legend

A. HABITAT BREAKWATER
B. HARBOR ENTRY
C. FLOATING DOCKS
D. FIXED PUBLIC ACCESS PIER
E. COMMUNITY ACCESS DOCK
F. EXPANDED BEACH
G. ISLAND ACCESS
H. WATERFRONT PLAZA/PROMENADE
I. PARKING
J. GREENWAY TRAIL CONNECTIONS

Hamburg Marina Feasibility Study

Hamburg, NY

Concept Masterplan

August 29, 2023

0 200' 400'

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FINANCIAL ANALYSIS

Proposed Marina Rate Structure

Projecting future revenues is dependent upon a combination of occupancy and rate structure. A summary of the regional marina market analysis indicates:

- Demand is very strong across the region, with all Buffalo marinas at 100% with waiting lists
- Average Seasonal Slip Fees $80/lf/season, with Market High at $100/lf/season
- Average Transient Slip Rate $1.75/lf/night, with Market High at $2/lf/night

Based on this regional marina market analysis, a brand new facility of the type and quality proposed at the Town of Hamburg will be highly competitive with the highest quality nearby facilities, and we recommend an average seasonal slip lease rate of $90 per linear foot per season and $2 per linear foot per day for transient stays. While this is higher than the regional average, and significantly higher than existing regional facilities of lower quality and in more remote locations, it is 10% less than the highest cost for the existing older facilities located just a few miles to the north. We believe this rate structure is appropriately conservative and achievable.

Proposed Marina Occupancy

While occupancy in the more remote, lower quality facilities is lower, occupancy rates for all the facilities within eight miles are very high, with all facilities surveyed indicating they were fully occupied with waiting lists. Therefore, we recommend a conservative occupancy rate of 90% for seasonal slips upon stabilization, and an occupancy rate of 50% for transient slips.

Operational Expenses

Operational expenses generally range from 20% to 40% of gross revenues depending on a wide range of factors, including the ratio of seasonal to transient boaters, marina size (larger facilities are generally more efficient to run than smaller facilities), complexity of operation (service and storage operations, fuel, etc), and whether or not the facility is run by a private or public entity. For planning purposes, we recommend a reasonable rate of 30% of gross revenues for operational expenses.

Marina Construction Cost

As noted earlier, for public private partnerships as proposed here, we separate the cost of revenue generating elements from the cost of non-revenue generating elements. The assumption here is that the non-revenue generating offshore segmented breakwaters and dredging comprising the Hamburg Marine Park shoreline protection system are funded through other means, potentially including a combination of grants, FEMA funding, or tax revenues generated from new adjacent development spurred by the creation of the new marina. For the assessment of the financial viability of the marina specifically, we must consider if the facility can generate sufficient revenue to support the construction, maintenance and operation of the revenue generating elements that include the Hamburg Community Pier, boater services buildings, parking, utilities, floating docks, and gangways, including mobilization and a 20% design and construction contingency. This results in a total cost of $11,402,500 in revenue generating costs the marina must support to be considered financially viable.

Bond Funding Capacity

We recognize that the Town of Hamburg may choose to bring in a third party to construct and operate the marina, or they may choose to issue a revenue bond serviced by the net income of the marina to construct the project. In either case, it can be useful to assess the financial viability of the proposed project by determining the amount of potential revenue bond funding the net revenue of the marina could support. At current interest rates, we calculate this figure by applying a 4% interest rate over 30 years, which indicates how much additional supplemental funding may be necessary to construct the project.

Marina Financial Analysis

Figure 15 below summarizes the anticipated revenues and expenses of the proposed marina, along with an assessment of the ability of the proposed marina facility to be financially self sufficient considering the factors outlined above.

Based on the market rates determined through the regional market analysis, we project the marina will generate revenues of $849,063 with the marina at 90% occupation. We anticipate operational expenses of $2254,719 at 30% of gross revenues, leaving a net revenue of $594,344. We anticipate additional revenues for fuel, boat store sales, and community boat rentals in the amount of $173,000 per year, resulting in total net revenues of $767,344.

Utilizing the revenue bond funding factors noted above, revenues of $767,344 could support a marina construction cost of $13,268,934 compared to a construction cost of $11,402,500. This leaves a surplus of $1,866,434, which indicates the marina is potentially financially feasible even before any supplemental grant funding is considered.

There are two grant programs offered by the US Fish & Wildlife Service (USFWS) that focus on marinas of this type, and the Town of Hamburg Marina is a very viable candidate for funding through both programs. The first is the Clean Vessel Act (CVA) grant, which funds marine pump-out systems found in marinas. This program is managed through the State of New York with USFWS funds, and will cover the majority of the cost of the proposed marine pumpout system. Funding is very likely to be available, and we anticipate funding in the amount of $50,000 could be reasonably expected.

The second program is the USFWS Boating Infrastructure Grant Program (BIG), which funds design and construction efforts for transient boating infrastructure such as that proposed at the Town of Hamburg. There are two Tiers of Funding. Tier I funding covers upfront feasibility and design studies up to $200,000. Tier II funding covers construction of transient boating facilities up to $1.5 million. In order to obtain maximum funding and the most successful grant application, we would recommend considering up to 30% of the marina be oriented towards transient vessels.

Other grant funding sources may be available for elements such as the ADA compliant paddlecraft launch, fishing access, and the main pier. We believe the likelihood of funding through the CVA program is all but certain, and likely for the BIG grant and ADA access programs, potentially providing another $1.75 million in project funding and increasing the budget surplus to over $3,600,000. This would make the marina very desirable for private investment, and even more valuable to the Town of Hamburg if run internally as a municipal operation.

Town of Hamburg Marina Financial Assessment

Quantity	Slip Size	Rate/LF	Slip Cost/Year	Net Revenue
63	30	$ 75	$ 2,250	$ 141,750
54	35	$ 80	$ 2,800	$ 151,200
54	40	$ 85	$ 3,400	$ 183,600
0	45	$ 90	$ 4,050	$ -
50	50	$ 95	$ 4,750	$ 237,500
0	55	$ 100	$ 5,500	$ -
19	60	$ 105	$ 6,300	$ 119,700
0	70	$ 110	$ 7,700	$ -
0	80	$ 125	$ 10,000	$ -
0	90	$ 140	$ 12,600	$ -
600	Broadside	$ 100		$ 60,000
260		$ 90		$ 893,750

Occupancy:	90%	
Gross Revenue:		**$ 849,063**
Less Operational Expenses:	30%	$ 254,719
Net Revenue:		**$ 594,344**
Other Revenues		
Boat Rentals Profit:		$ 100,000
Fuel Profit:		$ 47,000
Ship Store Profit:		$ 26,000
Other Revenues Subtotal:		**$ 173,000**
Grand Total Net Revenues:		**$ 767,344**
Revenue Bond Funding Capacity:		**$13,268,934**
Interest Rate:	4%	
Term:	30	
Monthly Payment:	$63,945	
Construction Cost:		$11,402,500
Surplus/Defecit:		**$1,866,434**

Figure 15: Town of Hamburg Marina Financial Assessment

ECONOMIC IMPACTS

As noted above, recreational boating in New York generates $8.4 billion in economic impacts, with over 440,000 registered boats supporting 37,574 jobs and 2,369 businesses according to the National Marine Manufacturers Association. The 27th Congressional District, home to the Town of Hamburg, enjoys nearly $232.9 million in annual economic impacts from nearly 33,141 boats supporting 1,145 jobs in 88 businesses, while the adjacent 26th District of Buffalo experiences over $272.5 million in economic impacts generated by more than 16,115 boats supporting 989 jobs at 74 businesses.

The Association of Marina Industries (AMI) has developed an independent marina economic impact calculator, which is a simple but powerful tool that lets a marina enter business data to calculate its impact on the marina's local economy. This tool is powered by input/output economic modeling completed by the University of Florida and the Virginia Institute of Marine Sciences (VIMS).

Using this tool, and the projected revenues described in the financial analysis section of this report, the AMI model projects the regional economic impacts the first year of stabilization for each of the proposed facilities that follow on subsequent pages. The full detailed reports are included in the appendices of this document and include more detailed analysis and data for two additional years using a consumer price index inflation rate of 3%. This data will likely be conservative given the much higher inflation rates we are currently experiencing.

In any case, this information will be helpful in communicating the broader economic value of these projects to state and federal agencies when pursuing grant funding and developing partnerships and building community support for the projects. There is an unfortunate tendency for the general public and non-boaters in general that boating is only for the wealthy, when in reality the vast majority (95%) of boaters own boats less than 26' in length. Our goal with this project is to leverage interest and investment in the marina to serve as a catalyst for the development of very affordable boating opportunities available to everyone in the community, and to communicate the broad environmental benefits that are valuable to everyone.

Finally, it is important to note that these economic impacts are only based on the actual revenues generated in the operation of the proposed marinas, and do not include the economic impacts that would be generated by the construction of either of the facilities valued at over $50 million.

Summary Economic Impacts

Impact Type	Employment (Jobs)	Industry Output	Value Added (GDP)	Labor Income
Direct	7	$1,224,000	$579,643	$296,221
Indirect	5	$915,217	$455,582	$280,716
Induced	15	$2,454,757	$1,428,933	$886,623
Total Impact	26	$4,358,394	$2,539,181	$1,370,223

State and Local Tax Impacts

Description	Tax
Dividends	$737
Social Ins Tax- Employee Contribution	$840
Social Ins Tax- Employer Contribution	$1,624
Tax on Production and Imports: Sales Tax	$89,742
Tax on Production and Imports: Property Tax	$56,156
Tax on Production and Imports: Motor Vehicle Lic	$1,728
Tax on Production and Imports: Severance Tax	$6,769
Tax on Production and Imports: Other Taxes	$7,194
Tax on Production and Imports: S/L NonTaxes	$1,127
Corporate Profits Tax	$9,423
Personal Tax: Income Tax	$20,418
Personal Tax: NonTaxes (Fines- Fees)	$4,650
Personal Tax: Motor Vehicle License	$1,472
Personal Tax: Property Taxes	$453
Personal Tax: Other Tax (Fish/Hunt)	$1,069
Total State and Local Tax	$203,395

CONSTRUCTION REQUIREMENTS ANALYSIS

The purpose of this analysis is to identify, early in the project planning process, environmental resources that may occur in the vicinity of the project and to identify the permits and approvals anticipated to be required.

Riparian Rights

New York State owns the bed of Lake Erie starting at the low water line which has an elevation of 568.6' (IGLD55). In the vicinity of the Project where the beach is proposed, the land upland of that low water line is currently owned by private residents. The proposed project includes the development of a beach in front of the land currently owned by private residents. This beach would serve as a public beach and the Town of Hamburg would have to work with private residents and the State of New York in order to acquire that land. The current waterfront landowners would need to sign over their riparian rights to the Town or whatever entity will ultimately own the proposed public beach. It is anticipated that the current waterfront landowners would want to be compensated for the loss of these rights. If a landowner was unwilling to sign over riparian rights to the Town, the Town would potentially have the option to exercise eminent domain. This would also require compensation as there is a substantial difference in waterfront property and inland property.

Water Quality Assessment

Land use upland of the proposed Project is primarily comprised of residential and commercial properties. There are no known current land uses within 1,000 feet of the proposed Project that are anticipated to result in impacts to the proposed Project or Lake Erie. A wastewater management plan exists approximately 1,020 feet from the Lake Erie shoreline and additional factories, plants, and commercial warehouses are located approximately 2,000 feet from the shoreline. However, none of these facilities are anticipated to impact the proposed Project. The most recent water quality assessment for the northeast shoreline indicates that this portion of Lake Erie is listed as impaired by the New York State Department of Environmental Conservation (NYSDEC) for fishing and primary and secondary contact recreation due to fecal coliform bacteria and polychlorinated biphenyls (PCBs). The production of PCBs was banned in 1977, but the compounds are still present in the environment (EPA, 2022). Two large storm drains empty into Lake Erie in the vicinity of the Project. These storm drains can act as pathways for bacteria. However, exceedances of fecal coliform jurisdictional guidelines are not exclusive to the northeast shoreline of Lake Erie and have been reported in Michigan and Ohio as well (Kwavnick and Mortimer, 1999).

EDR also reviewed the NYSDEC Spills Incidents and Environmental Remediation database to determine if any historical contamination is present. The databased did not have any reported history of contamination in the vicinity of the proposed Project, indicating that there are no historical land uses that are anticipated to impact the Project.

Environmental Resources

Water Resources

The project is located along the shoreline and within the nearshore area of Lake Erie in the Town of Hamburg. Lake Erie is considered a Water of the U.S. (WOTUS) and a navigable waterway, as defined by the U.S. Army Corps of Engineers (USACE). The northeast shoreline of Lake Erie, where the proposed project is located, is classified by the New York State Department of Environmental Conservation (NYSDEC) as a Class B water. The best usages of Class B waters are primary and secondary contact recreations and fishing. The most recent water quality assessment for the northeast shoreline indicates that this portion of Lake Erie is listed as impaired by the NYSDEC for fishing and primary and secondary contact recreation due to fecal coliform bacteria and polychlorinated biphenyls (PCBs). The production of PCBs was banned in 1977, but the compounds are still present in the environment (EPA, 2022). Two large storm drains empty into Lake Erie in the vicinity of the project. These storm drains can act as pathways for bacteria. However, exceedances of fecal coliform jurisdictional guidelines are not exclusive to the northeast shoreline of Lake Erie and have been reported in Michigan and Ohio as well (Kwavnick and Mortimer, 1999; Environment and Climate Change Canada and USEPA, 2021). The NYSDEC Spills Incidents and Environmental Remediation databases indicate no reported history of contamination in the vicinity of the project.

Portions of the Lake Erie shoreline, including sections of the shoreline in the vicinity of the project, are especially vulnerable to coastal erosion due to natural actions and human activities. Vulnerable coastal erosion areas can cause extensive damage to property and natural resources, which can lead to economic losses to individuals and private businesses. Portions of the Lake Erie shoreline within the project site are stable while others are undergoing sediment accretion (see Sedimentation Analysis on page 11 for additional information). Given the location of the project, protection of the shoreline and consistency with the Coastal Zone Management Act will be important factors to consider during project design and development.

Wildlife

Due to shallow waters and warmer temperatures, Lake Erie has the highest primary production, biological diversity, and fish production of all the Great Lakes (Pearsall, et al., 2012). As part of New York State's Coastal Management Program, the New York State Department of State (DOS) designates and maps specific areas of significant coastal fish and wildlife habitats for protection. There are no mapped significant coastal fish and wildlife habitats located in the vicinity of the project. The closest significant coastal fish and wildlife habitat is the Seneca Shoals area, located approximately 2.5 miles northwest of the Project.

A review of the NYSDEC Environmental Resources Mapper indicated that rare freshwater mussels and lake sturgeon (listed as threatened in New York State) have the potential to exist in Lake Erie in the vicinity of the project. The U.S. Fish & Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) also identified the northern long-eared bat (*Myotis septentrionalis)*, which is state and federally listed as threatened, as potentially occurring in the vicinity of the project. As the project is primarily within Lake Erie, there are no impacts anticipated to northern long-eared bats. Construction of the offshore rock structures and the marina have the potential to temporarily impact mussels and fish communities.

Coordination with NYSDEC will be required to determine if species-specific surveys are required, and to quantify and potentially mitigate impacts to sensitive wildlife.

Land Cover

Land cover types in the vicinity of the project were identified using the 2019 National Land Cover Database (NLCD) mapping. The land use and land cover along the shoreline in the vicinity of the project is primarily developed land. The Town of Hamburg has designated zoning districts. Waterfront Commercial and Residential Zoning Districts are the primary zoning designations in the vicinity of the project.

Scenic and Recreational Resources

EDR reviewed potential scenic and recreational resources within one mile of the project. Resources in the vicinity of the project include Hamburg Town Park, a state bicycle route, and the Great Lakes Seaway Trail, a scenic byway along State Route 5 that travels parallel with the shoreline in the vicinity of the project and Hamburg Town Park. The proposed project is designed to increase the opportunity for the public to experience the shoreline and Lake Erie through the development of a new marina and new publicly accessible beach. There are no anticipated impacts to scenic or recreational resources as a result of the project.

Archaeological Resources

There are no known archaeological resources in the vicinity of the project. However, a Cultural Resources Risk Assessment detailing the project will need to be submitted to the New York State Historic Preservation Office (SHPO). SHPO would respond with a determination of impact to cultural resources or requirement to conduct archaeological or historic resources surveys.

Permitting

The planning, design, and construction of a project of this scale will require various permits, approvals, and consultations with federal, state, and local agencies. Edgewater Resources and EDR met with various state and federal agencies in May 2022 to present the preliminary ideas and conceptual design, answer questions, and obtain feedback from the agencies. Based on the proposed project location, conceptual project details and discussions and feedback from the local municipality and state and federal agencies, a permitting assessment was conducted to determine the anticipated required permits, approvals, and/or consultations that may be required, the responsible agency, approximate timeframe for approval from submittal, and anticipated applicability. Please note that the assessment provided below is preliminary, and may require updates or revisions based on a variety of factors such as project design details, agency consultations, the results of site-specific surveys and studies, public comment, etc.

Federal Permitting

Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act – USACE

Under the federal Clean Water Act (CWA), a Section 404 permit from the USACE is required for activities that result in the placement of dredged or fill materials in Waters of the United States (WOTUS). In addition to Section 404 of the CWA, Section 10 of the Rivers and Harbor Act requires a permit from the USACE to construct any structure in or over any traditional navigable waters of the United States, as well as any proposed action that would alter or disturb these waters (such as excavation/dredging or deposition of materials). Due to the proposed location of the barrier rock reefs in Lake Erie and the proposed marina the Project will need Section 404 and Section 10 permits issued by the Buffalo District of the USACE.

The design team hosted a call with various state and federal agencies, including the USACE on May 26, 2022 to present ideas and concepts for the project and to answer questions and obtain feedback from the agencies on project design. Based on the current project design, the Town of Hamburg will need to submit a Joint Application for Permit to the USACE (along with other regulatory agencies) for both the Section 404 and Section 10 permits. The application will need to include a quantification if impacts (discharge of dredge or fill material) to Lake Erie, and avoidance, minimization and mitigation strategies. A robust alternatives analysis will also need to be included in the Joint Application for Permit. Based on EDR's experience with projects with similar offshore structures, it is anticipated that the project will also need to include an adaptive management plan that will need to include details on both the short-term and long-term maintenance activities and adaptive management techniques for structural repairs.

For a project of this scale, it is anticipated that the project would not fall under Nationwide Permit thresholds and would need an individual permit, which could take a minimum of twelve months from application submittal to permit issuance. Given the complexity of this project, the USACE should continue to be consulted throughout the project design process to discuss the design, engineering, anticipated management plans, and permitting strategy.

National Environmental Policy Act (NEPA)

NEPA requires federal agencies to assess the environmental effects of their proposed actions (e.g., proposing, approving, or funding a given action) prior to making decisions. Under the NEPA process, agencies evaluate the environmental and related social and economic effects of their proposed actions and provide opportunities for public review and comment on those evaluations. Specifically, all federal agencies involved prepare detailed statements (Environmental Impact Statements [EIS] or Environmental Assessments [EA]) assessing the environmental impact of and alternatives to major federal actions significantly affecting the environment.

The USACE must comply with NEPA prior to issuing a Section 404 and Section10 permits for the project. Typically, the USACE conducts all work necessary to comply with NEPA; however, this can be confirmed during pre-application consultation. Additionally, the receipt of federal funding will also trigger NEPA compliance. Therefore, if the Town of Hamburg is seeking or anticipates federal funding for the project, NEPA-specific consultation will be required with the respective funding agency.

The federal processes identified above will also require compliance with Section 106 of the National Historic Preservation Act and the Endangered Species Act, each of which is discussed briefly below:

- Endangered Species Act – The Town of Hamburg will need to consult with the USFWS to determine if any federally-listed species may be present in the vicinity of the project through the IPaC tool. As indicated above, NLEB could be present in the vicinity of the project. The Town of Hamburg will need to compare the habitat of the listed species to the habitat at the project. If there is potential for listed species to be present at the project and impacts to these species are possible, then species-specific surveys may be required. The Town of Hamburg should consult with USFWS to determine if these surveys are necessary. If the USFWS deems that species specific surveys are required, a survey work plan would need to be developed in consultation with USFWS. If species-specific surveys identify that the project is likely to adversely affect federally listed species, the project would be required to submit an application for an Incidental Take Permit (ITP) and prepare a Habitat Conservation Plan (HCP). See also Article 11 under State Permitting, below.
- Section 106 Consultation – The Town of Hamburg will have to initiate consultation with the State Historic Preservation Office (SHPO) and any Tribal Historic Preservation Officer (THPO) in the area. This will be done through the Cultural Resource Information System (CRIS) database and via the Cultural Resources Risk Assessment detailed above. SHPO will coordinate with any relevant Nations (anticipated to potentially include the Seneca Nation of Indians, Tonawanda Seneca Nation, and/or Tuscarora Nation) and determine if the Town of Hamburg needs to conduct an Archaeological Survey and/or a Historic Resources Survey. Those surveys would need to be submitted and obtain a Determination of No Effect. However, if the SHPO finds that the Project would impact an identified cultural resource and thereby issues a Determination of Adverse Effect, mitigation plans and memoranda of agreement would have to be established with SHPO prior to construction of the project. Depending on the level of survey required by the SHPO after the initial consultation, this process could take 3 to 6 months. (see Section 14.09 under State Permitting)

State Permitting

Article 11 – NYSDEC

Article 11 of the Environmental Conservation Law prohibits "taking" of state-listed Threatened and Endangered (T&E) species or habitat occupied by such species. “Take” is broadly defined, and Article 11 may be applied to this project if there is a possibility of disturbing a state-listed species. EDR conducted an initial on-line review of the Environmental Resources Mapper. The Environmental Resource Mapper indicated that the project is in the vicinity of rare freshwater mussels and lake sturgeon (listed as threatened in New York State). The USFWS IPaC also identified the northern long-eared bat, which is state and federally-listed as threatened as potentially occurring in the vicinity of the project. As the project moves towards permitting, the Town of Hamburg will need to submit a letter to the Natural Heritage Program (NHP) to request an official letter for documented Rare, Threatened & Endangered species in or

near the project. A response from NHP typically takes 4 to 6 weeks and remains valid for one Year. If state-listed species are identified in the vicinity of the project by the NHP, the Town of Hamburg will need to evaluate the habitat at the project site and consult with NYSDEC to determine if there is a need to develop species-specific survey work plans to determine the extent of presence (or lack thereof) of the given species. If the project has potential to result in the "take" of any state-listed T&E Species, consultation with the NYSDEC and USFWS to determine the need for this permit.

Section 401 Water Quality Certification (WQC) – NYSDEC

A Section 401 Water Quality Certification is required for any federal agency to issue a permit or license to conduct an activity that may result in the discharge into the waters of the United States. In New York State, a WQC is issued by the NYSDEC. The requirements for a WQC application include the Joint Application Form, which will also be submitted to the USACE for the Section 404 and Section 10 approval, and the WQC-1 Form Supplement, and additional materials as appropriate. Due to the size and scope of the proposed project, the WQC is anticipated to require individual determination and will not be included in blanket coverage.

The timing of approval varies based on the extent of impacts, but given the proposed barrier rock reefs in Lake Erie, it is anticipated that this approval could take between six and twelve months from the time of application submittal. The design team hosted a call with various state and federal agencies, including the NYSDEC on May 26, 2022 to present ideas and concepts for the project and to answer questions and obtain feedback from the agencies on project design. During the call, staff from the NYSDEC indicated that the application should include a robust alternatives analysis and a strong justification of the need for the project to ensure that the permitted design is the least damaging practical alternative that would achieve the goals of the project, including using as many nature-based solutions as possible.

Given the complexity of the project, the NYSDEC should be consulted throughout the design process to discuss the project design and engineering, anticipated management plans, and permitting strategy.

Article 24 and Article 15 - NYSDEC

The Freshwater Wetlands Act (Article 24 and Title 23 of Article 71 of the Environmental Conservation Law [ECL]) gives the NYSDEC jurisdiction over state-protected wetlands and adjacent areas. The Freshwater Wetlands Act requires the NYSDEC to map all state-protected wetlands to allow landowners and other interested parties a means of determining where state-jurisdictional wetlands exist. To implement the policy established by this Act, regulations were promulgated by the state under 6 NYCRR Parts 663 and 664. Part 664 of the regulations designates wetlands into four class ratings, with Class I being the highest or best quality wetland, and Class IV being the lowest. In general, wetlands regulated by the state are those 12.4 acres in size or larger. Smaller wetlands can also be regulated if they are considered of unusual local importance. A 100-foot adjacent area around the delineated boundary of any state regulated wetland is also under NYSDEC jurisdiction. An Article 24 permit is required from the NYSDEC for any disturbance to a state-protected wetland or adjacent area. An Article 24 permit is not anticipated to be required for this Project.

Under Article 15 of the ECL (Protection of Waters), the NYSDEC has regulatory jurisdiction over any activity that disturbs the bed or banks of protected streams or other watercourse. In addition, small lakes

and ponds with a surface area of 10 acres or less, located within the course of a stream, are considered to be part of a stream and are subject to regulation under the stream protection category of Article 15. According to 6 NYCRR Part 608.1(aa), protected streams include any stream, or particular portion of a stream, that has been assigned by the NYSDEC any of the following classifications or standards: AA, A, B, or C(T) or C(TS). An Article 15 permit is required from the NYSDEC for any disturbance to the bed and banks of protected streams, with special requirements applied to streams designated as supporting trout or trout spawning. Where banks are not clearly defined, the NYSDEC may extend permitting jurisdiction to 50 feet beyond the stream. Given that this portion of Lake Erie is designated as a Class B water, an Article 15 permit is anticipated to be required.

Coastal Erosion Management Permit - NYSDEC

Portions of the proposed project are located within a Coastal Erosion Hazard Area (CEHA), a Coastal Erosion Management Permit will be required to undertake any regulated activity (e.g., grading, excavating, dredging, filling, etc.) within that area. Development or other actions within a CEHA need to be undertaken in a manner that minimizes damage to property and natural protective features, other natural resources, prevent the exacerbation of erosion hazards, and to protect human life. The Coastal Erosion Management Permit will be obtained through the NYSDEC. The Town of Hamburg will include this permit request in the Joint Application for Permit submitted to NYSDEC (and other agencies).

The portions of the shoreline included in the project scope have historically had issues with shoreline damage and erosion. During the call with state and federal agencies, staff from the NYSDEC indicated that as this project would be subject to coastal erosion management regulations, the Joint Application for Permit should include a strong justification for the project including an alternatives analysis that considers the least damaging practical solution, evaluate other solutions with less of an impact to water and coastal resources, the impacts of the offshore breakwaters on downdrift beaches, and anticipated maintenance activities to ensure the project functions as designed.

State Pollutant Discharge Elimination System (SPDES) Permit for Stormwater Discharges – NYSDEC

Prior to commencing construction activities, the owner or operator of a construction project that will result in disturbance of more than 1 acre of land must obtain coverage under the State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (DEC General Permit No. GP-0-20-001). The Town of Hamburg will need to develop a Stormwater Pollution Prevention Plan (SWPPP). Preparation of the SWPPP requires close to final engineering plans (e.g., Grading Plans) Submit Notice of Intent (NOI) to NYSDEC. Once the NOI and SWPPP are submitted to NYSDEC, the permit is typically authorized within one month.

NYS Parks, Recreation, & Historic Preservation Law, Section 14.09

Consultation with SHPO regarding a project's potential effect on historic and archeological resources is required under Section 14.09 of the NYS Parks, Recreation, and Historic Preservation Law for any projects requiring state funding or a state agency approval. As previously discussed, this consultation, along with Nation consultation, is required under Section 106 of the National Historic Preservation Act for any projects that receive federal funding or require approval by a federal agency (see Section 106 under Federal Permitting).

The Town of Hamburg will need to initiate project review through the online Cultural Resources Information System (CRIS) database. If requested by NYSOPRHP, the Town of Hamburg may need to conduct an Archaeological Survey and/or a Historic Resources Survey. Those surveys would need to be submitted and obtain a Determination of No Effect. However, if the NYSOPRHP finds that the Project would impact an identified cultural resource and thereby issues a Determination of Adverse Effect, mitigation plans and memoranda of agreement would have to be established with NYSOPRHP prior to construction of the Project. Depending on the level of survey required by the NYSOPRHP after the initial consultation, this process could take 3 to 6 months.

Coastal Zone Consistency –DOS

The proposed Project is located within the designated coastal zone of New York State. In accordance with the Coastal Zone Management Act (CZMA) Federal Consistency provision, projects located within the coastal zone must adhere to the enforceable policies of the approved state coastal management programs. Work that may impact coastal areas also needs to be reviewed for consistency with the Local Waterfront Revitalization Plan (LWRP). This review will be included in the Joint Application for Permit that will be submitted to DOS, USACE, and NYSDEC.

Staff from the DOS participated in a call with the design team and other state and federal agencies on May 26, 2022 and did not have any questions or provide any feedback on the design of the Project. Subsequently, DOS staff provided written comments on two versions of the Town of Hamburg Marina Feasibility Study. These comments were addressed in the final draft of the Town of Hamburg Marina Feasibility Study.

State Owned Lands Under Water – New York State Office of General Services (OGS)

The title of the bed of Lake Erie is held in trust for the people of New York State under the jurisdiction of OGS. Structures and utilities, including fill, located in, on, or above state-owned lands now or formerly underwater are regulated under the Public Lands Law. Permission to build on these lands will be required from OGS. An application for this approval will be submitted to OGS through the Joint Application for Permit form that will also be provided to USACE, NYSDEC, and DOS for other required permits.

Staff from the OGS participated in a call with the design team on May 26, 2022 and did not have any questions or provide any feedback on the design of the project.

Local Permits/Approvals

State Environmental Quality Review Act (SEQRA)

New York's SEQRA is a comprehensive review of potential environmental impacts of a project when a state or local government/agency approves, undertakes, or funds a project. The act establishes a process to systematically consider environmental factors early in the planning stages of actions. By incorporating

environmental review early in the planning stages, projects can be modified as needed to avoid adverse impacts on the environment.

Based on EDR's knowledge of the project, the action is anticipated to be categorized as a Type I action under SEQRA (i.e., an action that is more likely to have significant adverse environmental impacts). A Full Environmental Assessment Form (FEAF) will need to be prepared and submitted to the Lead Agency (anticipated to be the Town of Hamburg) in order for a determination of significance to be made.[1] Given the size and scale of the Project, EDR anticipates that the project would likely receive a Positive Declaration, requiring the development of an Environmental Impact Statement (EIS). The project sponsor will submit an application seeking local discretionary approval from the Town of Hamburg, along with the Part 1 FEAF to initiate the SEQRA process. We anticipate consultation with the Town of Hamburg prior to any submittals to determine the timing of the various steps in the regulatory process, and the scope and content of the various submittals. A timeframe of at least twelve months from application submittal to receipt of the final findings statement and conclusion of the SEQRA process.

Topics that may be a focus of the EIS are anticipated to include, but not be limited to, impacts to wetlands and water resources, threatened and endangered species, sound, odor, transportation and traffic, visual and aesthetic resources, cultural resources, and open space and recreation. Some of these topics will require site-specific analyses and reports that will be evaluated as part of the SEQRA process, and ultimately the scope and content of the EIS will likely be determined through a formal Scoping Process. The Town of Hamburg should identify companies that can perform these analyses early in the project planning process to identify any potential issues that may arise during permitting.

Site Plan Approval – Town of Hamburg Planning Board

The project will require Site Plan Approval from the Town of Hamburg Planning Board. The project is located in Waterfront Commercial and Residential zoning districts, as designated by the Town of Hamburg. This project is compatible with these zoning districts. The site plan will need to be submitted to the Town of Hamburg Planning Board and include information on the Applicant, Project details (location, layout, parking), utility services, grading and drainage plans, landscaping plans, a SWPPP, and zoning variances. The submittal of the Site Plan Approval will be accompanied by the relevant SEQRA documents, as described above.

Other Local Consultations

In addition to the permits/approvals listed above, depending on the direction of the final design and feedback from various agencies and/or municipal boards, the Project developer should continue to consult with local municipalities for topics listed below.

- Currently, the area of the proposed Project is a mix of Waterfront Commercial and Residential Zoning Districts, with the area of proposed road changes not having zoning. Coordination with the

[1] Please note that SEQRA process involves multiple steps prior to a Determination of Significance, including a formal identification of the Lead Agency through consultation with other involved agencies. However, a detailed outline of all SEQRA steps is not included in this summary memorandum.

Town of Hamburg and Erie County should occur to discuss the need for zoning changes and responsibility for a potential amendment to the zoning law, if required.

- At this point it is not known if there will be additional need for any additional infrastructure (sanitary, water, stormwater). If the Project will require new infrastructure or improvements to existing infrastructure, the Project developer should coordinate with the local municipalities to determine the appropriate course for permitting.
- There may be additional support during development available from the Erie County Industrial Development Agency (ECIDA). The Project developer should coordinate with the ECIDA to determine if the Project would qualify for benefits under the ECIDA.

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GRANTS and PUBLIC INFRASTRUCTURE FUNDING

The feasibility of either of the proposed marinas is predicated on public funding of the non-revenue generating infrastructure necessary to construct the Hamburg Marine Park / harbor breakwater features, with public investment costs ranging from approximately $17 million to $23 million in non-revenue generating infrastructure. While these are indeed significant investments, they are in no way out of reach for a project of this scale with the potential economic, environmental, and community benefits described herein.

There are many similar examples of public private partnerships and/or fully public marina facilities that constructed non-revenue generating costs well in excess of the budgets outlined above, including the following examples:

Racine Harbor, Racine, Wisconsin

Racine Harbor was constructed as a public private partnership in the 1980s. Racine County funded the construction of the harbor breakwater structures and all of the community parks, amphitheater, roads, parking and site utility infrastructure that form the southern and eastern edges of Racine Harbor below. A private operator funded the construction of the marina facilities and operated them privately for over twenty years, paying a yearly lease based on a percentage of marina income. The County took over operations and ownership of the facility from the private operator several years ago and is now in the process of renovating the facility for another 30 years of operation.

Racine Harbor, images by Google Earth and Elana Kovalevich

Fort Pierce City Marina Habitat Breakwater, Fort Pierce, Florida

Following the destruction of the Fort Pierce City Marina in a hurricane and dealing with major maintenance dredging issues for many years, the City of Fort Pierce, Florida partnered with the Federal Emergency Management Agency to utilize over $18 million in Pre-Disaster Mitigation Grant funding to construct this $20 million dollar breakwater structure.

Google Earth Aerial Image, Fort Pierce, Florida

Fort Pierce City Marina Habitat Island Breakwater, Fort Pierce, Florida - Image by Waterway Guide

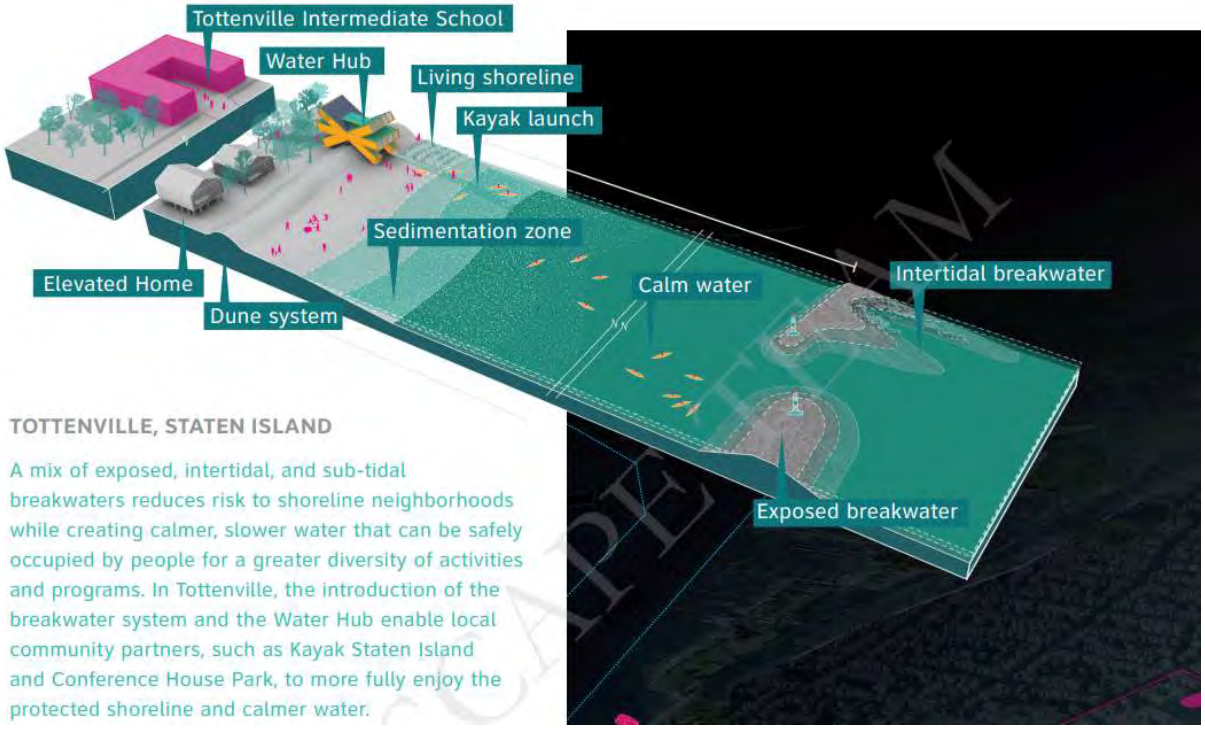
Staten Island Living Shoreline

Governor Kathy Hochul of New York recently announced the commencement of construction on the $107 million Living Shoreline project off the shores of Staten Island. The project is being implemented by the Governor's Office of Storm Recovery and is funded by U.S. Department of Housing and Urban Development (HUD) through the Community Development Block Grant – Disaster Recovery (CDBG-DR) funding as well as with funds from New York State. Construction is scheduled to begin in the fall of 2021 and be completed by the fall of 2024.

Coastal Resiliency Effort Will Protect Tottenville'sShoreline from Deadly Wave Action and Improve Water Quality in the Raritan Bay

Governor Kathy Hochul today announced the start of in-water construction of the Living Breakwaters, a $107 million effort that will provide physical, social, and ecological resiliency for the South Shore of Staten Island. The 2,400 linear feet of breakwaters, consisting of eight partially submerged enhanced stone and eco-concrete structures, will reduce the risks of storm waves and combat the long-term erosion of the beach along Conference House Park.

"The Living Breakwaters are a shining example of the state's commitment to build back better after Superstorm Sandy," Governor Hochul said. "This innovative approach to resiliency demonstrates New York is leading the way on combatting the effects of climate change and protecting Staten Islanders, their homes and communities, and the



TOTTENVILLE, STATEN ISLAND

A mix of exposed, intertidal, and sub-tidal breakwaters reduces risk to shoreline neighborhoods while creating calmer, slower water that can be safely occupied by people for a greater diversity of activities and programs. In Tottenville, the introduction of the breakwater system and the Water Hub enable local community partners, such as Kayak Staten Island and Conference House Park, to more fully enjoy the protected shoreline and calmer water.

Potential Grant Funding Sources

Grant Program	Source	Focus Areas	Deadlines	Funding Limit and Match
GREAT LAKES PROGRAMS				
Great Lakes Restoration Initiative www.glri.us/funding	Environmental Protection Agency (EPA)	Funding and initiatives for toxic substances, areas of concern, invasive species, nearshore health, non-point source pollution, habitat/wildlife protection and restoration, education/partnerships and climate change adaptation.	As funding is available	Funding Limit: $300,000
Great Lakes Fish and Wildlife Restoration Act Grants www.fws.gov/service	US Fish and Wildlife Service (FWS)	Restoration, research and regional projects to support conservation, restoration and management of fish and wildlife resources and their habitats in the Great Lakes basin. (Consult with Lower Great Lakes USFWS)	Typically in January	Funding Limit: $960,000, 25% non-federal match required
GLRI Cooperative Weed Management Areas www.fs.usda.gov	USDA Forest Service	Detect, prevent, eradicate, and/or control invasive plant species to promote resiliency, watershed stability, and biological diversity on Federal, State, or private land.	As funding is available	Minimum request: $25,000, Maximum request: $50,000; No match required

Grant Program	Source	Focus Areas	Deadlines	Funding Limit and Match
NY's Great Lakes Basin Small Grants www.seagrant.sunysb.edu	NY Sea Grant, NYS Department of Environmental Conservation (DEC)	Support stakeholder-driven efforts to restore and revitalize the state's Great Lakes region and demonstrate successful application of ecosystem-based management (EBM).	Due July 1st	Funding Limit: $50,000; No match required
Great Lakes Research Consortium Small Grants www.esf.edu/glrc	Great Lakes Research Consortium (GLRC), DEC	Funding cooperative approaches to researching and protecting the environmental quality of the Great Lakes.	Available annually	Funding Limit: $25,000; No match required
Sustain Our Great Lakes www.nfwf.org/greatlakes	National Fish & Wildlife Foundation (NFWF)	Restoring and Enhancing Stream and Riparian Habitat and Coastal Wetland Habitat, Expanding Green Stormwater Infrastructure in Great Lakes Communities, and Maintaining Habitat Restoration through Invasive Species Control.	Pre-proposals typically due in late February	Funding Limit: $1,000,000; 1:1 match from non-federal sources
NOAA Great Lakes Habitat Restoration Regional Partnership Program Grants www.fisheries.noaa.gov	National Oceanic and Atmospheric Administration (NOAA)	Planning and/or on-the-ground restoration activities to restore degraded Great Lakes coastal habitat and native riverine/lacustrine species	Typically due in January	Funding Limit: $30,000 to $30,000,000; Match funding encouraged for monitoring-related costs

Grant Program	Source	Focus Areas	Deadlines	Funding Limit and Match
NOAA Great Lakes Region Bay Watershed Education and Training (BWET) Grants https://sanctuaries.noaa.gov/bwet/greatlakes/	NOAA	Supports existing environmental education programs, fosters the growth of new programs, and encourages development of partnerships among environmental education programs.	As funding is available	Funding Limit: $100,000; No match required
GLRI Northeastern Area State and Private Forestry Grants www.fs.usda.gov	US Department of Agriculture (USDA) Forest Service	Tree planting, green infrastructure, and forest health improvement in the Great Lakes Basin.	As funding is available	Funding $50,000 to $300,000; No match required
Great Lakes Protection Fund http://glpf.org	Great Lakes Protection Fund	Supporting innovative, results oriented projects that have basin-wide impact and foster sustainable water resource management.	Ongoing	Varied amounts; customizable to projects; see more here: https://glpf.org/for-innovators/start-here/
EPA Environmental Education Grants www.epa.gov/education	USEPA	Supports environmental education projects that promote environmental awareness and stewardship.	Typically due in December	Funding Limit: $100,000; 25% non-federal match
North American Wetlands Conservation Act – Small Grants and Standard grants www.fws.gov	US Fish and Wildlife Service (FWS)	Long-term protection, restoration, and/or enhancement of wetlands and associated upland habitats for wetlands-associated migratory birds. Public-private partnerships to implement projects (1:1 match).	Small Grants due in Oct; Standard Grants due Feb & July	Small Grants- Funding Limit: $250,000; 1:1 match. Standard Grant: required 1:1 match
National Fish Passage Program www.fws.gov/program/national-fish-passage	USFWS	Restore aquatic organism passage at man-made barriers including dams and culverts; Priorities: freshwater mussels, brook trout, lake sturgeon, Atlantic salmon, American eel.	Accepted year-round	Funding Limit: $2,000,000; No match required
NYS GRANT PROGRAMS				
DEC Climate Smart Communities (CSC) Grant Program www.dec.ny.gov/energy	NYSDEC	Climate adaptation and mitigation projects related to flood risk reduction, extreme event preparation, reduction of vehicle miles, waste, etc. and certification projects that advance land use, planning, and assessment actions aligned with CSC certification.	Due July 29th, 2022, under the consolidated funding application (CFA)	50/50 matching grants; $50,000 to $2,000,000 No more than 15% may be used for design and engineering costs.

Grant Program	Source	Focus Areas	Deadlines	Funding Limit and Match
DEC Water Quality Improvement Project (WQIP) Grants www.dec.ny.gov/pubs/	NYSDEC	Non-agricultural Nonpoint Source Abatement and Control including green infrastructure, nature-based shoreline stabilization and riparian restoration; municipal wastewater treatment; land acquisitions for source water protection; aquatic habitat restoration; salt storage; and municipal separate storm sewer systems.	Due July 29th, under CFA	**Eligible Project Types & Required Match (2022)*** Eligible Project Types & Required Match (2022)* Wastewater Treatment Improvement (high priority projects 25%, general projects 60% Nonagricultural Nonpoint Source Abatement and Control (25%) Land Acquisition for Source Water Protection (25%) Salt Storage (50%) Aquatic Connectivity Restoration (25%) Marine District Habitat Restoration (25%)

IMPLEMENTATION PLAN

The implementation of a project of this scale requires a long-term commitment and a dedicated team willing to see the project through. The following steps outline the process required to move forward with the project.

Identify Lead Agency / Entity
The first step in advancing either of the proposed master plans is to identify a lead agency or entity with the authority and ability to advance the project, seek grant funding, acquire property, raise funds, and enter into partnership agreements. The most common approach would be to have the Town of Hamburg be the lead agency. Other possible entities could be a non-profit entity organized with the specific purpose of advancing the project, which would secure necessary permissions and partner with either the State or possibly the County as needed throughout the project.

Identify Partners
With the lead agency established, the next step is to begin identifying project partners that can either invest in the projects, perhaps as an investor and operator of the marina, or public entities such as the State of New York, FEMA, US Fish & Wildlife Service, or any other governmental entity that may have an interest in enhancing habitat, tourism, or shoreline resilience. Other possible partners could be local volunteer organizations working on building habitat structures, or universities seeking research projects in habitat or costal resilience. Private landowners who may benefit from the development of the marina are also potential partners. In any case, the more partners that can be identified, the better.

Establish Partnership Framework
With the partners identified, the lead agency will need to establish a clear partnership framework to ensure that all partners are pulling in the same direction, with clear, common goals and expectations.

Establish Operational Strategy
The project will require at least two organizational structures. One for the proposed Hamburg Marine Park and Hoover Beach, which will essentially be operated as a public park. We would recommend that the Town of Hamburg take the lead in the management of the Marine Park and all associated public access facilities. Actual management of the boat and paddlecraft rental programs could be by town staff, fall under the marina operator (if different from the Town), or be provided by additional vendors separate from the marina or municipal operator.

For the marina itself, there are several potential operational models that should be considered. These include Municipal Operation, Contractor to Municipality, Third-Party Operator, and Licensee/Leasehold Operator. All options under consideration are viable. The primary differences among the various operational alternatives are financial cost/benefit to the municipality, convenience, flexibility, and responsiveness.

The Municipal Operation approach is based on all elements of the marina remaining under the direct operation and ownership of a municipal agency such as the Town, or some other municipal agency such as a Port Authority. The municipality is responsible for all costs associated with the operation and is the

beneficiary of any profits generated by the operation. Similarly, the agency is responsible for all liabilities as well. All staff are usually employees of the town or agency.

Among the challenges associated with this management approach is the need for the municipal agency to hire the staff necessary to operate the facility. In some cases, municipal agencies face significant internal resistance to hiring new staff for any reason, or labor agreements may make labor costs prohibitively expensive.

Among the advantages associated with this management approach is the ability to generate an operating surplus which can be used to fund expansion or improvement of the marina or other nearby amenities. Additionally, the municipality retains a much higher level of control and flexibility in the operation of the marina and can more freely implement programs that may benefit the community or environment but conflict with the profit motive inherent in other operational alternatives with third party/for-profit operators.

In general, a properly sized and designed marina under competent management will be revenue positive during normal market conditions. They are relatively simple to operate, and staff accredited as Certified Marina Managers are reasonably available. This approach generally has the lowest total cost and highest potential return for the municipality. In many cases, full time marina management staff takes on other seasonal responsibilities within the municipality during winter such as ice rink operations. Part time seasonal staff are often college students on summer break or retired people looking for part time work.

The “Municipal Operation” alternative is well within reasonable expectations of competent municipal employees and should be the most financially beneficial approach for the municipality. This is particularly true given the relative simplicity of the proposed operation. Further, this approach provides the most flexibility and responsiveness to changing market conditions and developing environmental best practices.

The potential challenges in this approach include the hiring of additional municipal employees and liability for potential operational losses. The employment cost issues could be mitigated by minimizing full time staff and seeking out primarily part-time employees. The potential for operating losses are mitigated by several factors. First, the market study completed as part of this analysis indicates significant stable demand for slips in excess of the number of slips proposed. Second, the proposed approach to construction of the marina is to build in phases, with timing of the phases based on the rate of absorption and a “waiting list” to be developed for the “next phase” proposed. This approach will limit initial construction costs, minimize risk, avoid building beyond the market, allow existing boaters to shift to new facilities at a measured pace and allow for modifications to the amenities, program, and facilities provided to closely match market demand. Finally, as noted above, the relative simplicity of the operation minimizes expenses and operational liabilities. A summary of alternate operational models includes Contractor to Municipality, Third-Party Operator, and Licensee/Leasehold Operator.

Contractor to Municipality

The Contractor to Municipality approach is very similar to the Municipal Operation concept, except the employment status of the staff is an independent contract instead of being directly employed by municipality. Depending on the indirect costs associated with hiring employees, this option may be more or less expensive than directly hiring staff internally.

In this option, the municipality generally retains a similar level of control as the Municipal Operation, along with the benefits and liabilities associated with ownership of the project. The contract between the independently contracted marina manager spells out all costs, and generally specifies a "salary" and oftentimes includes incentive payments associated with specific financial performance targets.

Third-Party Operator

The Third-Party Operator approach involves contracting with a marina management company that provides marina management services to municipal or private owners. In this scenario, the marina management company negotiates an operating contract with the marina owner that establishes roles and responsibilities. There are no industry wide standard operating agreements, and the advantages and liabilities associated with this approach depend entirely on the final agreement.

One common approach involves the owner and third-party operator negotiating a defined management fee over and above the operating costs for the marina (regardless of whether the marina is profitable in a given year) and incentives for achieving specific financial targets. In this scenario, the costs to the municipal owner could include the management fee (and incentives), labor costs at negotiated rates, utilities, and maintenance/capital improvements.

Depending on the contract language, this approach can be quite simple for the owner to manage and be very beneficial, or possibly skewed to the benefit of the operator at the expense of the owner. There are examples in the Midwest where third-party operators return a significant budget surplus to the municipal owner, and other cases where the third-party operator returns no money at all to the municipal owner. Another element to consider is whether the operator is expected to invest in and/or construct the marina (revenue-producing components) or simply operate an existing marina paid for by the owner.

The length of the operating agreement varies by contract, generally between five and twenty years. Generally, a shorter-term agreement of five years with options to extend based on performance provide a reasonable length of contract for the operator while limiting the exposure to the owner due to poor performance or unforeseen contract issues. The longer lease is usually encountered when the operator invests in the revenue-producing components of the project. In nearly all cases, this approach will result in less revenue being returned to the municipal owner when compared to competent internal staff, simply because an additional party is involved with reasonable expectations to make a profit by providing a valuable service. Some owners find the trade-off of lower returns for fewer operational challenges in-house to be a reasonable compromise. On the other hand, the owner generally retains much of the financial risk associated with operating the marina while the potential rewards are reduced.

Licensee / Leasehold Operator

The Licensee / Leasehold Operator approach is similar to the third-party operator approach, except more of the risk is transferred to the operator. The premise of this approach is that the operator leases a specific property and constructs and operates a for-profit marina on leased public land. The owner negotiates a lease arrangement with the operator, who then does everything required to operate a successful marina. The return for the municipality is generally fixed regardless of the financial performance of the marina, but this can vary by contract. Additionally, the financial risk associated with the marina is generally shifted from the owner to the leaseholder, but in some cases payment to the owner is based on the licensee achieving certain financial metrics. The latter case can result in less financial benefit.

In some cases, the municipal owner agrees to construct certain nonrevenue-producing infrastructure elements such as breakwaters, roads, and parking as an incentive to the marina licensee. This is often the case when the marina is constructed as part of a waterfront revitalization project and the municipality is eligible for state or federal funding for infrastructure improvements that a private developer would not be eligible for. This scenario generally provides the lowest financial return and risk for the municipal owner.

Engage Community

The process of community engagement has been led by Edgewater Resources to date, and should be considered a continuous process that provides regular progress updates to the community throughout the entire life of the project. Public engagement to date has included presentations to the Waterfront Advisory Committee - which in itself represents a broad cross section of the community. Moving forward, we highly recommend a community visioning process that engages a broader range of community members in order to communicate the extensive community benefits of the proposed project that serve the whole community. This will be important, as broad community support will be critical to obtaining grant funding and completing the environmental permitting process.

Feasibility- Phase Two: Refined Planning, Design, Permitting, and Engineering

The plans generated to date represent a high-level overview of the physical and economic feasibility of the proposed projects. The nature of a study of this type is that a large number of assumptions must be made along the way, with conservative estimates of construction costs, revenues, and contingencies built into the overall feasibility assessment. At this point, we have determined that the proposed projects are potentially financially and physically feasible and outlined potential plausible funding strategies to see the project through. However, a process of adaptive project management that includes significant further efforts exploring and confirming the physical feasibility of the project are necessary for advancing the project. The result of this effort will be drawings and studies suitable for submission of a Joint Permit Application to the State of New York and US Army Corps of Engineers. The subsequent permit review process will be an interactive effort between the regulatory agencies and the design team and will involve a number of "special studies" to be determined by the regulatory agencies. These efforts are intended to confirm the preliminary assumptions made during Phase One feasibility, including all following:

- Bathymetric Survey: With the general location of the proposed facility established, a detailed bathymetric survey of the project area will be required to confirm the publicly available LiDAR data utilized in Phase One. This information will be collected by specialized vessels utilizing multi-beam sonar.

- Upland Topographic/Boundary Survey: The upland areas associated with the marina will be surveyed to identify property boundaries, topography, and all site features including utilities, structures, trees, etc. The bathymetric and upland topographic surveys will be combined to provide a single comprehensive base plan to facilitate more detailed design.
- Geotechnical Investigations: Geotechnical borings will be collected both onshore and offshore to assist in determining the appropriate foundation design for marina dock anchorage, fixed pier structures, offshore breakwater islands, sea walls, shoreline armoring, on shore boardwalks and structures, and pavement design. Additionally, these borings will assist in the dredge design.
- Environmental Sampling: Once the general dredge design is established based on the bathymetric survey and updated concept plans, we will need to collect sediment samples to determine the general characteristics of the dredged materials (percentage of sand, silt, etc), and the potential presence of contaminants such as heavy metals that could affect the reuse of these materials as beach nourishment. The number and location of samples that need to be taken will be determined by the requirements of New York State Department of Environmental Conservation.
- Advanced Numeric Modeling of Wave Climate: This effort will assist in the refinement of the segmented breakwater design and will consist of desktop computer modeling of the wave climate based on the refined data collected herein. The initial conceptual breakwater layout will be tested, along with a range of variations developed through the modeling process to optimize the design in terms of cost and performance.
- Advanced Numeric Modeling of Sedimentation: This effort will assist in the refinement of the segmented breakwater design and will consist of desktop computer modeling of the sediment transport characteristics based on the refined data collected herein. The initial conceptual breakwater layout will be tested, along with a range of variations developed through the modeling process to optimize the design in terms of cost and performance.
- Physical Modeling: computer numeric modeling is generally sufficient for permitting, however the final design of the structures to achieve optimal performance at the lowest cost and environmental impact will ultimately require completion of physical modeling. These efforts are completed in wave modeling tanks, where a three dimensional physical model of the shoreline and bathymetric conditions is constructed, and then the proposed breakwater structures are built and tested in various wave climate scenarios. These efforts will both confirm the design will function as intended, and allow the structures to be optimized to reduce costs and impacts.
- Habitat Studies: Should any specific threatened or endangered species be identified as present in the project area, supplemental investigations may be required to further evaluate the design to reduce or eliminate potential impacts.
- Preliminary Engineering Documents: Upon completion of the tasks outlined above, the initial concept plan will be advanced to the approximate 30% level of engineering. This level of effort is sufficient to determine the overall potential impacts of the project, such as quantity of fill materials in the lake for the breakwaters, dredge volumes, marina slip layout and anchorage design, etc. Upon submission of the Joint Permit Application, an extended period of "permit processing" will take place, which involves extensive interaction between the design/engineering team the regulatory agency staff, with the goal of avoiding impacts wherever possible, minimizing impacts when not possible to avoid, and finally mitigating any impacts.

APPENDICES

Appendix A – Individual Facility Inventories

Sturgeon Point

(716) 947-4452

Sturgeon Point Marina, which is OPEN TO THE PUBLIC, is located at the end of Sturgeon Point Road and on the shore of Lake Erie. Amenities include: wate restaurant, restroom facilities, 4 launch ramps and other amenities listed below.

https://www.townofevans.org/departments/marina.html

Availability Factors

Slip Size	Slips	Rate		Occupancy		Waiting List	Swing Mooring	Dry Rack	Win
		Seasonal Slips	Transient Slips	Seasonal	Transient				Indoor Heated
<25	183	480	_	_	_	_	_	_	_
25	16	600	_	_	_	_	_	_	_
30	18	720	_	_	_	_	_	_	_
35	_	840	_	_	_	_	_	_	_
40	3	960	_	_	_	_	_	_	_
45	_	_	_	_	_	_	_	_	_
50	_	_	_	_	_	_	_	_	_
55	_	_	_	_	_	_	_	_	_
60	_	_	_	_	_	_	_	_	_
70	_	_	_	_	_	_	_	_	_
80	_	_	_	_	_	_	_	_	_
>80	_	_	_	_	_	_	_	_	_
Broadside	440	_	_	_	_	_	_	_	_
Total/Average	235	$24/LF	_	Low	_	No	No	No	No

Marina Infrastructure Elements

Facility Condition	Boat Launch		Electric			Water	Pump Out
	Y/N	# of Lanes	Y/N	Capacity	Paid		
Poor	Yes	4	Limited	30amp	No	No	Yes

Services & Amenities

Lift/Haul Service	Repairs	Boat Rentals	Shower/Restroom	Laundry	Boater's Lounge	Ship's Store
No	No	No	Yes	No	Yes	Yes

Photos & Additional Info

Issues with sand fill, community raised funds to keep it open. Picnic area and dry dock. 24 hour security. Stopping point for boats during storr

Sun Life Marina

716.828.0027

Home to more than 1,000 slips and a first-class restaurant, as well as a bait shop and storage facilities, Sun Life Marina welcomes all boaters and non boaters al to experience the magic of Lake Erie.

Availability Factors

Slip Size	Slips	Rate		Occupancy		Waiting List	Swing Mooring	Dry Rack	Win
		Seasonal Slips	Transient Slips	Seasonal	Transient				Indoor Heated
<25	210	$1,620.00	$65.00	_	_	_	_	_	_
25	210	$1,850.00	$65.00	_	_	_	_	_	_
30	550	$1,940.00	$65.00	_	_	_	_	_	_
35	75	$2,250.00	$65.00	_	_	_	_	_	_
40	_	$2,646.00	$65.00	_	_	_	_	_	_
45	12	$2,910.00	$65.00	_	_	_	_	_	_
50	_	$3,307.00	$65.00	_	_	_	_	_	_
55	_	_	_	_	_	_	_	_	_
60	_	_	_	_	_	_	_	_	_
70	_	_	_	_	_	_	_	_	_
80	_	_	_	_	_	_	_	_	_
>80	_	_	_	_	_	_	_	_	_
Broadside	480	_	_	_	_	_	_	_	_
Total/Average	1073	$66/LF	$65	High	_	_	No	No	No

Marina Infrastructure Elements

Facility Condition	Boat Launch		Electric			Water	Pump Out
	Y/N	# of Lanes	Y/N	Capacity	Paid		
Very Good	Yes	8	Yes	30 amp.	No	Yes	Yes

Services & Amenities

Lift/Haul Service	Repairs	Boat Rentals	Shower/Restroom	Laundry	Boater's Lounge	Ship's Store
No	No	No	Yes	No	Yes	Yes

Photos & Additional Info

Restaurant, gated.

Holiday Harbor

(716) 366-1774

Holiday Harbor at Chadwick Bay in Dunkirk, NY on Lake Erie with over 200 full service slips. We have been in business since 1946, offering all the services and make your boating experience enjoyable. Including a full service yard with haul out service available up to 40 ton, ship store, showers, restrooms, fuel dock upholstery shop. Holiday Harbor has inside storage facilities for 450 boats as well as outside storage.

https://www.holidayharbor.net/holiday-harbor-rates/

Availability Factors

Slip Size	Slips	Rate		Occupancy		Waiting List	Swing Mooring	Dry Rack	Win
		Seasonal Slips	Transient Slips	Seasonal	Transient				Indoor Heated
<25	4	1000-1300	40	_	_	_	_	_	_
25	120	1000-1300	50	_	_	_	_	_	_
30	97	1000-1900	60	_	_	_	_	_	_
35	_	_	70	_	_	_	_	_	_
40	_	_	80	_	_	_	_	_	_
45	_	_	90	_	_	_	_	_	_
50	_	_	100	_	_	_	_	_	_
55	_	_	110	_	_	_	_	_	_
60	_	_	120	_	_	_	_	_	_
70	_	_	140	_	_	_	_	_	_
80	_	_	160	_	_	_	_	_	_
>80	_	_	_	_	_	_	_	_	_
Broadside	270	_	_	_	_	_	_	_	_
Total/Average	230	$56/LF	$2/LF	Low	_	No	No	Yes	No

Marina Infrastructure Elements

Facility Condition	Boat Launch		Electric			Water	Pump Out
	Y/N	# of Lanes	Y/N	Capacity	Paid		
Poor	Yes	1	Yes	30, 50 amp	Yes	Yes	Yes

Services & Amenities

Lift/Haul Service	Repairs	Boat Rentals	Shower/Restroom	Laundry	Boater's Lounge	Ship's Store
Yes	Yes	Yes	Yes	No	No	Yes

Photos & Additional Info

Another location at Chautauqua lake with indoor storage.

Sugarloaf Marina

+1 905-835-6644

Canada's finest Bass and Walleye fishing, Scuba Diving to dozens of historic shipwrecks and some of the country's best sailing all waits for you in Port Colborn provides all the on-shore amenities to make your visit enjoyable whether you stay for a day, a week or the entire season.

https://www.portcolborne.ca/en/recreation-and-leisure/sugarloaf-marina.aspx

Availability Factors

Slip Size	Slips	Rate		Occupancy		Waiting List	Swing Mooring	Dry Rack	Win
		Seasonal Slips	Transient Slips	Seasonal	Transient				Indoor Heated
<25	406	$655-1255	$38.00	–	–	–	–	–	–
25	124	$1,555.00	$47.50	–	–	–	–	–	–
30	116	$1,915.00	$57.00	–	–	–	–	–	–
35	36	$2,305.00	$66.50	–	–	–	–	–	–
40	16	$2,555.00	$76.00	–	–	–	–	–	–
45	–	–	–	–	–	–	–	–	–
50	–	–	–	–	–	–	–	–	–
55	–	–	–	–	–	–	–	–	–
60	–	–	–	–	–	–	–	–	–
70	–	–	–	–	–	–	–	–	–
80	–	–	–	–	–	–	–	–	–
>80	–	–	–	–	–	–	–	–	–
Broadside	1250	–	–	–	–	–	–	–	–
Total/Average	740	$64/LF	$1.90/LF	Moderate	–	–	No	No	No

Marina Infrastructure Elements

Facility Condition	Boat Launch		Electric		Paid	Water	Pump Out
	Y/N	# of Lanes	Y/N	Capacity			
Very Good	Yes	4	Yes	15 amp.	Yes	Yes	Yes

Services & Amenities

Lift/Haul Service	Repairs	Boat Rentals	Shower/Restroom	Laundry	Boater's Lounge	Ship's Store
Yes	Yes	No	Yes	Yes	Yes	Yes

Photos & Additional Info

Dock Attendants, Concierge, Park, Retail Store, Fish Cleaning Area and more

Erie Basin Marina

(716) 851 - 5238

The Erie Basin was once just a breakwater and commercial slip at the mouth of the Buffalo River at Lake Erie, designed to prevent the build up of sand within t Canal and to lessen the impact of storm surges. Having gone unused as the Great Lakes manufacturing and shipping industries waned, it was rebuilt under a m in the early 1970s to help revitalize the waterfront as a place for city residents to enjoy and harbor personal watercraft. Today, it caters to tens of thousands summer months.

Availability Factors

Slip Size	Slips	Rate		Occupancy		Waiting List	Swing Mooring	Dry Rack	Win
		Seasonal Slips	Transient Slips	Seasonal	Transient				Indoor Heated
<25	68	1300	40	_	_	_	_	_	_
25	42	_	50	_	_	_	_	_	_
30	258	2125	60	_	_	_	_	_	_
35	_	2900	70	_	_	_	_	_	_
40	125	3800	80	_	_	_	_	_	_
45	_	_	_	_	_	_	_	_	_
50	_	_	_	_	_	_	_	_	_
55	_	_	_	_	_	_	_	_	_
60	_	_	_	_	_	_	_	_	_
70	_	_	_	_	_	_	_	_	_
80	_	_	_	_	_	_	_	_	_
>80	_	_	_	_	_	_	_	_	_
Broadside	0	_	_	_	_	_	_	_	_
Total/Average	493	$95/LF	$2/LF	High	_	Yes	No	No	No

Marina Infrastructure Elements

Facility Condition	Boat Launch		Electric			Water	Pump Out
	Y/N	# of Lanes	Y/N	Capacity	Paid		
Good	Yes	2	Yes	30, 50 amp	No	Yes	Yes

Services & Amenities

Lift/Haul Service	Repairs	Boat Rentals	Shower/Restroom	Laundry	Boater's Lounge	Ship's Store
Yes	Yes	No	Yes	No	No	Yes

Photos & Additional Info

Boat sales. Upland facilities dated. Slip rates are less for Buffalo residents. Has gardens, food stands, museum, public art displays and various

RCR Yachts

(716) 572-2312

RCR Yachts has been a fixture on the Great Lakes sailing scene for over 49 years. We are one of North America's most experienced and respected full-service earning numerous awards over the years for sales and service excellence. We sell new and used sailboats and powerboats, operate several boat yards and n service and repair work.

Availability Factors

Slip Size	Slips	Rate		Occupancy		Waiting List	Swing Mooring	Dry Rack	Win
		Seasonal Slips	Transient Slips	Seasonal	Transient				Indoor Heated
<25	36	2000	30	_	_	_	_	_	_
25	6	2500	37.5	_	_	_	_	_	_
30	108	3000	45	_	_	_	_	_	_
35	8	3500	52.5	_	_	_	_	_	_
40	16	4000	60	_	_	_	_	_	_
45	_	4500	67.5	_	_	_	_	_	_
50	_	_	_	_	_	_	_	_	_
55	_	_	_	_	_	_	_	_	_
60	_	_	_	_	_	_	_	_	_
70	_	_	_	_	_	_	_	_	_
80	_	_	_	_	_	_	_	_	_
>80	_	_	_	_	_	_	_	_	_
Broadside	0	_	_	_	_	_	_	_	_
Total/Average	174	$100/LF	$1.5/LF	Full	_	Yes	No	No	No

Marina Infrastructure Elements

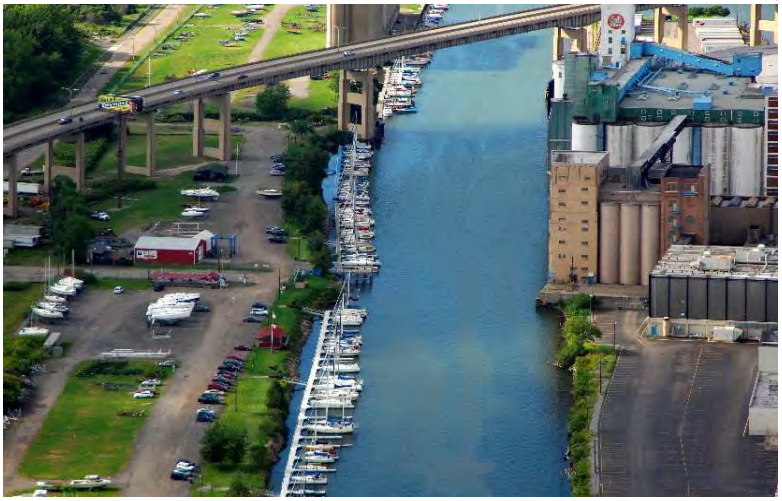
Facility Condition	Boat Launch		Electric			Water	Pump Out
	Y/N	# of Lanes	Y/N	Capacity	Paid		
Good	Yes	1	Yes	30 amp.	No	Yes	Yes

Services & Amenities

Lift/Haul Service	Repairs	Boat Rentals	Shower/Restroom	Laundry	Boater's Lounge	Ship's Store
Yes	Yes	No	Yes	No	No	Yes

Photos & Additional Info

Boat sales. Pet friendly, food and transportation nearby.



Dale's Marina

(716) 387-1906

Dale's Marine Service offers boat repair, upgrades, service, modifications, you name it! Also storage, launching and more...

Availability Factors

Slip Size	Slips	Rate		Occupancy		Waiting List	Swing Mooring	Dry Rack	Win
		Seasonal Slips	Transient Slips	Seasonal	Transient				Indoor Heated
<25	22	1000	_	_	_	_	_	_	_
25	_	1250	_	_	_	_	_	_	_
30	79	1500	_	_	_	_	_	_	_
35	_	1750	_	_	_	_	_	_	_
40	22	2000	_	_	_	_	_	_	_
45	_	2250	_	_	_	_	_	_	_
50	_	2500	_	_	_	_	_	_	_
55	_	2750	_	_	_	_	_	_	_
60	_	3000	_	_	_	_	_	_	_
70	_	3500	_	_	_	_	_	_	_
80	_	4000	_	_	_	_	_	_	_
>80	_	_	_	_	_	_	_	_	_
Broadside	0	_	_	_	_	_	_	_	_
Total/Average	123	$50/LF	_	Full	_	Yes	No	No	No

Marina Infrastructure Elements

Facility Condition	Boat Launch		Electric			Water	Pump Out
	Y/N	# of Lanes	Y/N	Capacity	Paid		
Poor	Yes	1	Y	30amp	N	Yes	_

Services & Amenities

Lift/Haul Service	Repairs	Boat Rentals	Shower/Restroom	Laundry	Boater's Lounge	Ship's Store
Yes	Yes	_	Y	_	_	Yes

Photos & Additional Info

Boat sales.

Appendix B – Economic Impact Studies

(https://marinaeconomicimpact.org/)

50 Water Street
Warren, RI 02885
Phone: (866) 367-6622

MENU

Marina Economic Impact Calculator

This calculator tool estimates the economic impacts of marinas using regional economic multipliers.

Calculator (https://marinaeconomicimpact.org/calculator/)

Edit Account (https://marinaeconomicimpact.org/edit-account/)

Log Out (https://marinaeconomicimpact.org/wp-login.php?action=logout&_wpnonce=ade53fef0b&redirect_to=https://marinaeconomicimpact.org/)

VIMS | William & Mary

Virginia Institute of Marine Science

Select the state for your business, and the calculator will show the appropriate region for analysis. Then enter values for annual gross revenues in each of the marina activity categories, for up to three years. After clicking the “Run Calculation” button, calculated impacts for your region will be shown in the tables below.

Please enter full, unabbreviated, US dollar amounts. **Examples: 1,500,000** or **800000**.

All Other Activities may include Slip rentals, Boat charters, Boat lift, Boat ramp fees, Dockage, Electricity, Haul out/launch, Interest/non-operating income, Late fees, Laundry service, Licenses, Lockers, Maintenance services, Moorage, Pump out service, and Rigging.

Calculator Results

Year 1 Year 2 Year 3

Annual Revenue Regional Comparison

Activity	Your Revenue	Revenue Percentage	Regional Revenue Percentage	Percentage Difference
Boat Sales	$0	0.00%	2.40%	-2.40%
Fuel Sales	$300,000	19.35%	9.40%	9.95%
Merchandise Sales	$100,000	6.45%	4.00%	2.45%
Boat Storage	$0	0.00%	3.30%	-3.30%
Lease Revenues	$850,000	54.84%	2.80%	52.04%
Boat Rentals	$300,000	19.35%	7.00%	12.35%
Food & Beverage Services	$0	0.00%	4.20%	-4.20%

Boat Service	$0	0.00%	0.80%	-0.80%
All Other Activities	$0	0.00%	66.00%	-66.00%

Summary Economic Impacts

Impact Type	Employment (Jobs)	Industry Output	Value Added (GDP)	Labor Income
Direct	7	$1,224,000	$579,643	$296,221
Indirect	5	$915,217	$455,582	$280,716
Induced	15	$2,454,757	$1,428,933	$886,623
Total Impact	26	$4,358,394	$2,539,181	$1,370,223

- Industry output represents sales revenues.
- Employment represents fulltime and part-time jobs.
- Value added is equivalent to Gross Domestic Product (GDP) and represents labor income, other property income and business taxes.
- See the table below for a detailed listing of local/state and federal tax impacts.
- Note that these economic measures are independent and should not be added together

Economic Impacts by Major Industry Group

Impact Type	Employment (Jobs)	Industry Output	Value Added (GDP)	Labor Income
Agriculture, Forestry, Fisheries	0	$19,868	$9,083	$5,633
Mining	0	$41,447	$24,983	$12,346
Utilities	0	$92,080	$31,249	$10,961
Construction	1	$272,776	$94,275	$90,717
Manufacturing	0	$233,672	$56,073	$31,874
Wholesale Trade	0	$126,212	$77,979	$43,331

Retail Trade	2	$256,995	$155,653	$106,478
Transportation	0	$80,554	$38,566	$29,468
Information and Communications	0	$138,403	$63,783	$27,819
Finance and Insurance	1	$233,466	$101,976	$66,619
Real Estate and Rentals	9	$1,683,036	$1,149,046	$287,378
Professional and Technical Services	1	$202,402	$108,079	$98,309
Management of Companies	0	$35,782	$18,919	$16,922
Administrative and Waste Services	1	$126,401	$79,785	$68,542
Education	0	$24,534	$13,195	$13,026
Health Care and Social Services	2	$251,714	$141,077	$142,293
Arts, Entertainment and Recreation	0	$32,381	$15,998	$10,484
Accommodation and Food Services	1	$102,699	$51,999	$40,690
Other Services	1	$89,088	$52,017	$50,538
Government and non-NAICS	3	$314,888	$255,454	$216,803
Total	26	$4,358,394	$2,539,181	$1,370,223

State and Local Tax Impacts

Description	Tax
Dividends	$737
Social Ins Tax- Employee Contribution	$840
Social Ins Tax- Employer Contribution	$1,624
Tax on Production and Imports: Sales Tax	$89,742
Tax on Production and Imports: Property Tax	$56,156
Tax on Production and Imports: Motor Vehicle Lic	$1,728
Tax on Production and Imports: Severance Tax	$6,769

Tax on Production and Imports: Other Taxes	$7,194
Tax on Production and Imports: S/L NonTaxes	$1,127
Corporate Profits Tax	$9,423
Personal Tax: Income Tax	$20,418
Personal Tax: NonTaxes (Fines- Fees)	$4,650
Personal Tax: Motor Vehicle License	$1,472
Personal Tax: Property Taxes	$453
Personal Tax: Other Tax (Fish/Hunt)	$1,069
Total State and Local Tax	$203,395

Federal Tax Impacts

Description	Tax
Social Ins Tax- Employee Contribution	$76,308
Social Ins Tax- Employer Contribution	$65,213
Tax on Production and Imports: Excise Taxes	$14,203
Tax on Production and Imports: Custom Duty	$5,882
Tax on Production and Imports: Fed NonTaxes	$1,495
Corporate Profits Tax	$78,679
Personal Tax: Income Tax	$86,979
Total Federal Tax	$328,757

Total Local, State & Federal Tax	$532,152

Annual Revenue Regional Comparison

Activity	Your Revenue	Revenue Percentage	Regional Revenue Percentage	Percentage Difference

Boat Sales	$0	0.00%	2.40%	-2.40%
Fuel Sales	$320,000	19.44%	9.40%	10.04%
Merchandise Sales	$106,000	6.44%	4.00%	2.44%
Boat Storage	$0	0.00%	3.30%	-3.30%
Lease Revenues	$900,000	54.68%	2.80%	51.88%
Boat Rentals	$320,000	19.44%	7.00%	12.44%
Food & Beverage Services	$0	0.00%	4.20%	-4.20%
Boat Service	$0	0.00%	0.80%	-0.80%
All Other Activities	$0	0.00%	66.00%	-66.00%

Summary Economic Impacts

Impact Type	Employment (Jobs)	Industry Output	Value Added (GDP)	Labor Income
Direct	7	$1,298,656	$615,458	$314,931
Indirect	5	$970,205	$482,994	$297,651
Induced	15	$2,605,021	$1,516,425	$940,900
Total Impact	27	$4,624,388	$2,694,409	$1,454,704

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Economic Impacts by Major Industry Group

Impact Type	Employment (Jobs)	Industry Output	Value Added (GDP)	Labor Income
Agriculture, Forestry, Fisheries	0	$21,083	$9,640	$5,979
Mining	0	$43,976	$26,511	$13,098
Utilities	0	$97,649	$33,145	$11,624
Construction	1	$289,268	$99,984	$96,199
Manufacturing	0	$247,941	$59,503	$33,817
Wholesale Trade	0	$133,987	$82,794	$45,999
Retail Trade	2	$272,831	$165,261	$113,046
Transportation	0	$85,493	$40,936	$31,274
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Education	0	$26,038	$14,004	$13,824
Health Care and Social Services	2	$267,135	$149,739	$151,006
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Government and non-NAICS	3	$334,122	$271,092	$230,045
Total	27	$4,624,388	$2,694,409	$1,454,704

State and Local Tax Impacts

Description	Tax
Dividends	$780
Social Ins Tax- Employee Contribution	$893
Social Ins Tax- Employer Contribution	$1,724
Tax on Production and Imports: Sales Tax	$95,296
Tax on Production and Imports: Property Tax	$59,631
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Tax on Production and Imports: Other Taxes	$7,639
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Corporate Profits Tax	$9,991
Personal Tax: Income Tax	$21,684
Personal Tax: NonTaxes (Fines- Fees)	$4,937
Personal Tax: Motor Vehicle License	$1,563
Personal Tax: Property Taxes	$481
Personal Tax: Other Tax (Fish/Hunt)	$1,134
Total State and Local Tax	$215,967

Federal Tax Impacts

Description	Tax
Social Ins Tax- Employee Contribution	$81,031
Social Ins Tax- Employer Contribution	$69,241
Tax on Production and Imports: Excise Taxes	$15,082
Tax on Production and Imports: Custom Duty	$6,246
Tax on Production and Imports: Fed NonTaxes	$1,588

Corporate Profits Tax	$83,421
Personal Tax: Income Tax	$92,367
Total Federal Tax	$348,975
Total Local, State & Federal Tax	$564,942

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Marina Economic Impact Calculator

This calculator tool estimates the economic impacts of marinas using regional economic multipliers.

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Select the state for your business, and the calculator will show the appropriate region for analysis. Then enter values for annual gross revenues in each of the marina activity categories, for up to three years. After clicking the “Run Calculation” button, calculated impacts for your region will be shown in the tables below.

Please enter full, unabbreviated, US dollar amounts. **Examples: 1,500,000** or **800000**.

All Other Activities may include Slip rentals, Boat charters, Boat lift, Boat ramp fees, Dockage, Electricity, Haul out/launch, Interest/non-operating income, Late fees, Laundry service, Licenses, Lockers, Maintenance services, Moorage, Pump out service, and Rigging.

Calculator Results

Year 1 Year 2 Year 3

Annual Revenue Regional Comparison

Activity	Your Revenue	Revenue Percentage	Regional Revenue Percentage	Percentage Difference
Boat Sales	$0	0.00%	2.40%	-2.40%
Fuel Sales	$310,000	19.40%	9.40%	10.00%
Merchandise Sales	$103,000	6.45%	4.00%	2.45%
Boat Storage	$0	0.00%	3.30%	-3.30%
Lease Revenues	$875,000	54.76%	2.80%	51.96%
Boat Rentals	$310,000	19.40%	7.00%	12.40%
Food & Beverage Services	$0	0.00%	4.20%	-4.20%

Boat Service	$0	0.00%	0.80%	-0.80%
All Other Activities	$0	0.00%	66.00%	-66.00%

Summary Economic Impacts

Impact Type	Employment (Jobs)	Industry Output	Value Added (GDP)	Labor Income
Direct	7	$1,261,328	$597,550	$305,575
Indirect	5	$942,712	$469,288	$289,184
Induced	15	$2,529,890	$1,472,679	$913,761
Total Impact	26	$4,491,392	$2,616,795	$1,412,464

- Industry output represents sales revenues.
- Employment represents fulltime and part-time jobs.
- Value added is equivalent to Gross Domestic Product (GDP) and represents labor income, other property income and business taxes.
- See the table below for a detailed listing of local/state and federal tax impacts.
- Note that these economic measures are independent and should not be added together

Economic Impacts by Major Industry Group

Impact Type	Employment (Jobs)	Industry Output	Value Added (GDP)	Labor Income
Agriculture, Forestry, Fisheries	0	$20,475	$9,362	$5,806
Mining	0	$42,712	$25,746	$12,722
Utilities	0	$94,864	$32,197	$11,293
Construction	1	$281,021	$97,130	$93,459
Manufacturing	0	$240,806	$57,789	$32,845
Wholesale Trade	0	$130,099	$80,387	$44,665

Retail Trade	2	$264,912	$160,457	$109,761
Transportation	0	$83,023	$39,751	$30,371
Information and Communications	0	$142,642	$65,739	$28,669
Finance and Insurance	1	$240,612	$105,103	$68,658
Real Estate and Rentals	9	$1,734,293	$1,184,079	$296,540
Professional and Technical Services	1	$208,569	$111,379	$101,301
Management of Companies	0	$36,888	$19,505	$17,443
Administrative and Waste Services	1	$130,220	$82,198	$70,610
Education	0	$25,286	$13,599	$13,425
Health Care and Social Services	2	$259,423	$145,407	$146,649
Arts, Entertainment and Recreation	0	$33,374	$16,488	$10,806
Accommodation and Food Services	1	$105,847	$53,596	$41,937
Other Services	1	$91,817	$53,612	$52,084
Government and non-NAICS	3	$324,504	$263,274	$223,424
Total	26	$4,491,392	$2,616,795	$1,412,464

State and Local Tax Impacts

Description	Tax
Dividends	$759
Social Ins Tax- Employee Contribution	$865
Social Ins Tax- Employer Contribution	$1,674
Tax on Production and Imports: Sales Tax	$92,520
Tax on Production and Imports: Property Tax	$57,893
Tax on Production and Imports: Motor Vehicle Lic	$1,779
Tax on Production and Imports: Severance Tax	$6,977

Tax on Production and Imports: Other Taxes	$7,417
Tax on Production and Imports: S/L NonTaxes	$1,159
Corporate Profits Tax	$9,707
Personal Tax: Income Tax	$21,051
Personal Tax: NonTaxes (Fines- Fees)	$4,793
Personal Tax: Motor Vehicle License	$1,517
Personal Tax: Property Taxes	$467
Personal Tax: Other Tax (Fish/Hunt)	$1,101
Total State and Local Tax	$209,682

Federal Tax Impacts

Description	Tax
Social Ins Tax- Employee Contribution	$78,669
Social Ins Tax- Employer Contribution	$67,227
Tax on Production and Imports: Excise Taxes	$14,644
Tax on Production and Imports: Custom Duty	$6,064
Tax on Production and Imports: Fed NonTaxes	$1,542
Corporate Profits Tax	$81,050
Personal Tax: Income Tax	$89,673
Total Federal Tax	$338,866

Total Local, State & Federal Tax	$548,548

Annual Revenue Regional Comparison

Activity	Your Revenue	Revenue Percentage	Regional Revenue Percentage	Percentage Difference

Boat Sales	$0	0.00%	2.40%	-2.40%
Fuel Sales	$320,000	19.44%	9.40%	10.04%
Merchandise Sales	$106,000	6.44%	4.00%	2.44%
Boat Storage	$0	0.00%	3.30%	-3.30%
Lease Revenues	$900,000	54.68%	2.80%	51.88%
Boat Rentals	$320,000	19.44%	7.00%	12.44%
Food & Beverage Services	$0	0.00%	4.20%	-4.20%
Boat Service	$0	0.00%	0.80%	-0.80%
All Other Activities	$0	0.00%	66.00%	-66.00%

Summary Economic Impacts

Impact Type	Employment (Jobs)	Industry Output	Value Added (GDP)	Labor Income
Direct	7	$1,298,656	$615,458	$314,931
Indirect	5	$970,205	$482,994	$297,651
Induced	15	$2,605,021	$1,516,425	$940,900
Total Impact	27	$4,624,388	$2,694,409	$1,454,704

- Industry output represents sales revenues.
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Economic Impacts by Major Industry Group

Impact Type	Employment (Jobs)	Industry Output	Value Added (GDP)	Labor Income
Agriculture, Forestry, Fisheries	0	$21,083	$9,640	$5,979
Mining	0	$43,976	$26,511	$13,098
Utilities	0	$97,649	$33,145	$11,624
Construction	1	$289,268	$99,984	$96,199
Manufacturing	0	$247,941	$59,503	$33,817
Wholesale Trade	0	$133,987	$82,794	$45,999
Retail Trade	2	$272,831	$165,261	$113,046
Transportation	0	$85,493	$40,936	$31,274
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Administrative and Waste Services	1	$134,040	$84,610	$72,680
Education	0	$26,038	$14,004	$13,824
Health Care and Social Services	2	$267,135	$149,739	$151,006
Arts, Entertainment and Recreation	0	$34,368	$16,981	$11,126
Accommodation and Food Services	1	$108,993	$55,191	$43,183
Other Services	1	$94,546	$55,209	$53,632
Government and non-NAICS	3	$334,122	$271,092	$230,045
Total	27	$4,624,388	$2,694,409	$1,454,704

State and Local Tax Impacts

Description	Tax
Dividends	$780
Social Ins Tax- Employee Contribution	$893
Social Ins Tax- Employer Contribution	$1,724
Tax on Production and Imports: Sales Tax	$95,296
Tax on Production and Imports: Property Tax	$59,631
Tax on Production and Imports: Motor Vehicle Lic	$1,834
Tax on Production and Imports: Severance Tax	$7,186
Tax on Production and Imports: Other Taxes	$7,639
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Corporate Profits Tax	$9,991
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Personal Tax: NonTaxes (Fines- Fees)	$4,937
Personal Tax: Motor Vehicle License	$1,563
Personal Tax: Property Taxes	$481
Personal Tax: Other Tax (Fish/Hunt)	$1,134
Total State and Local Tax	$215,967

Federal Tax Impacts

Description	Tax
Social Ins Tax- Employee Contribution	$81,031
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Tax on Production and Imports: Fed NonTaxes	$1,588

Corporate Profits Tax	$83,421
Personal Tax: Income Tax	$92,367
Total Federal Tax	$348,975
Total Local, State & Federal Tax	$564,942

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Select the state for your business, and the calculator will show the appropriate region for analysis. Then enter values for annual gross revenues in each of the marina activity categories, for up to three years. After clicking the “Run Calculation” button, calculated impacts for your region will be shown in the tables below.

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All Other Activities may include Slip rentals, Boat charters, Boat lift, Boat ramp fees, Dockage, Electricity, Haul out/launch, Interest/non-operating income, Late fees, Laundry service, Licenses, Lockers, Maintenance services, Moorage, Pump out service, and Rigging.

Calculator Results

Year 1 Year 2 Year 3

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Corporate Profits Tax	$83,421
Personal Tax: Income Tax	$92,367
Total Federal Tax	$348,975

Total Local, State & Federal Tax	$564,942

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Appendix C – Boat Ramp Study

BOAT RAMP STUDY

The existing boat launch at Hamburg Beach is subject to sedimentation and ongoing maintenance dredging requirements that exceed preferred frequency. As part of the overall marina feasibility study, an analysis of potential modifications to the breakwater structures at Hamburg Beach to reduce sedimentation were explored, as well as potential alternative sites for a new boat launch.

Figure AC-1 – Existing Hamburg Beach/Boat Launch

The coastal engineering team reviewed a series of circulation test models for situations similar to this location shown in Figure AC-2, and then prepared three alternative concepts shown on Figures AC-3, AC-4, and AC-5. These alternatives were reviewed with the project steering committee, and all were rejected due to cost and impacts to the existing beach activities.

At the request of the project steering committee, two additional concepts were generated for another site known herein as the Woodlawn Neighborhood 1st Street site. The location of the project site is shown in Figure AC-7, and Alternatives A and B are shown on Figures AC-8 and AC-9 respectively.

Option A was preferred by the project steering committee due to its lower cost and functionality. Option B was rejected due to cost, but also due to the proximity of existing wind turbines which overlap the parking area. This overlap was considered a safety issue and Option B was rejected.

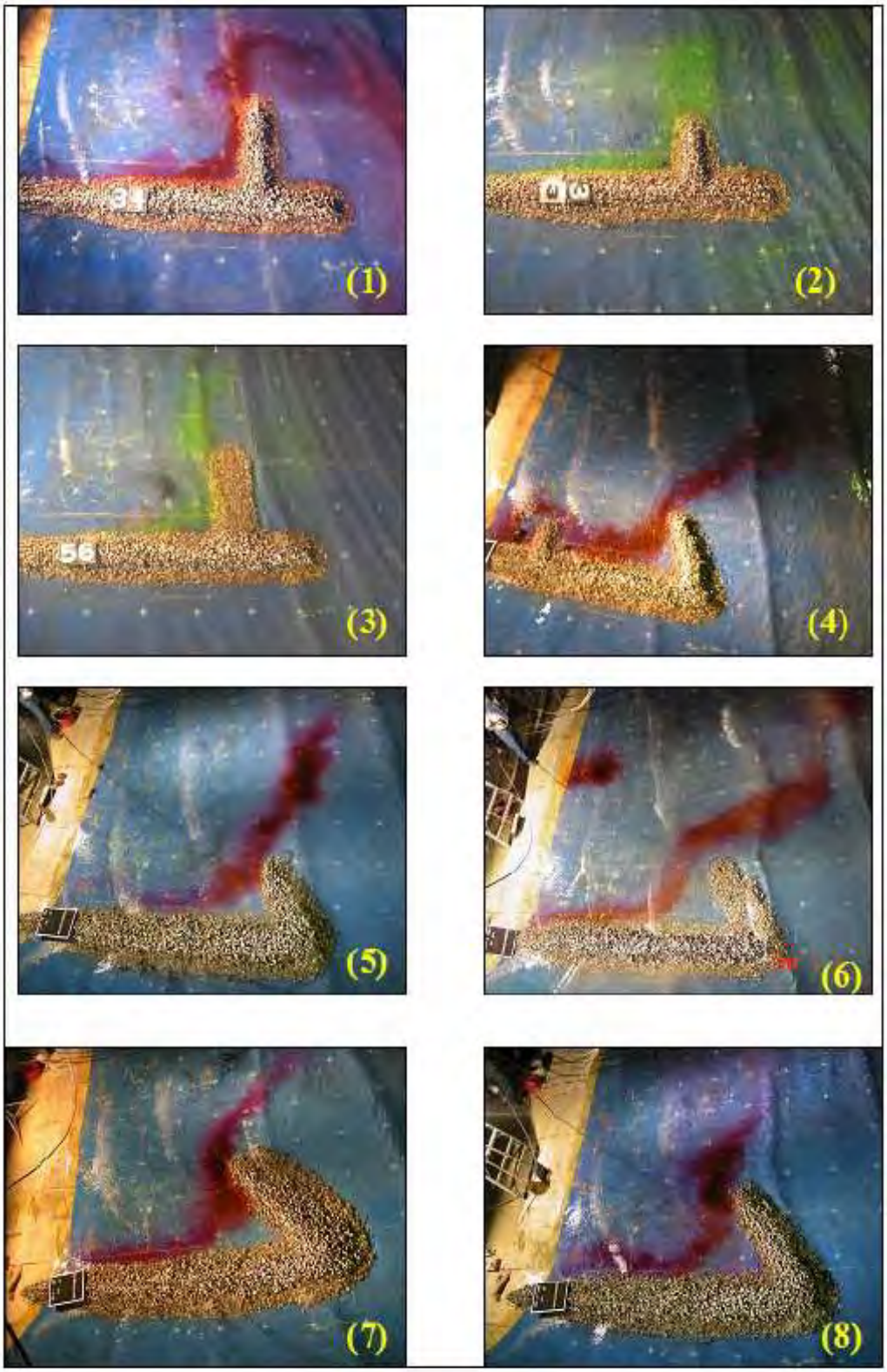

Figure AC-2 – Circulation Models

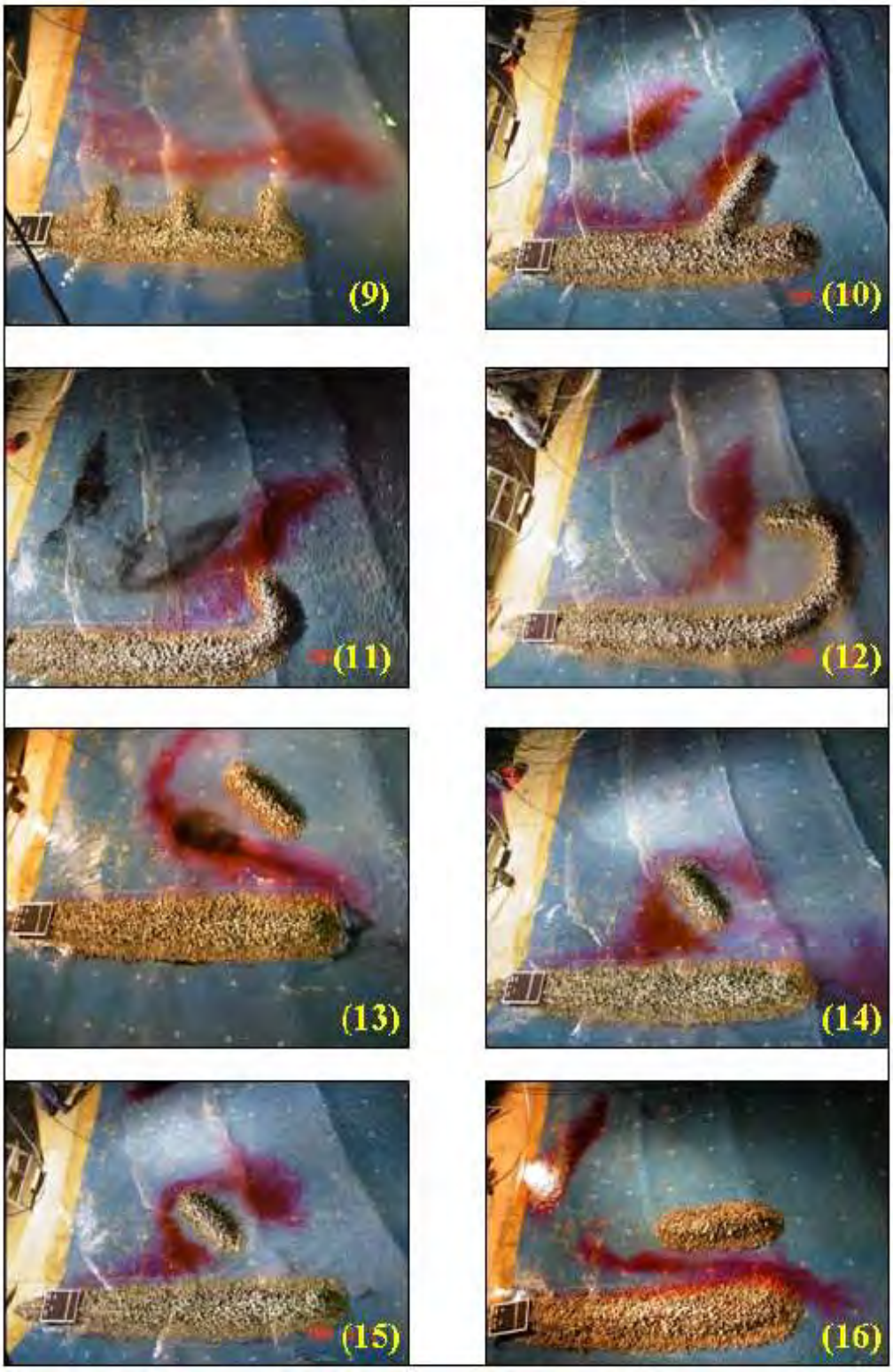

Figure AC-2 – Circulation Models

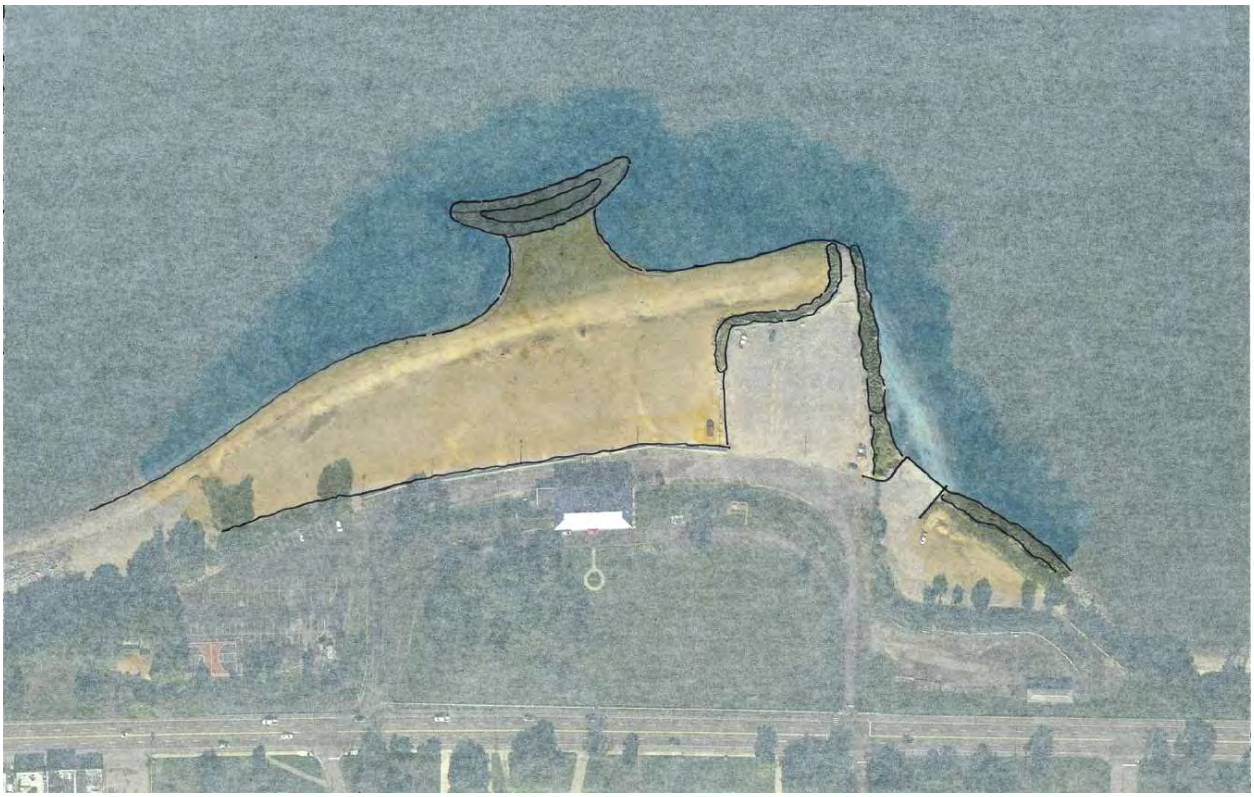

Figure AC-3 – Option A

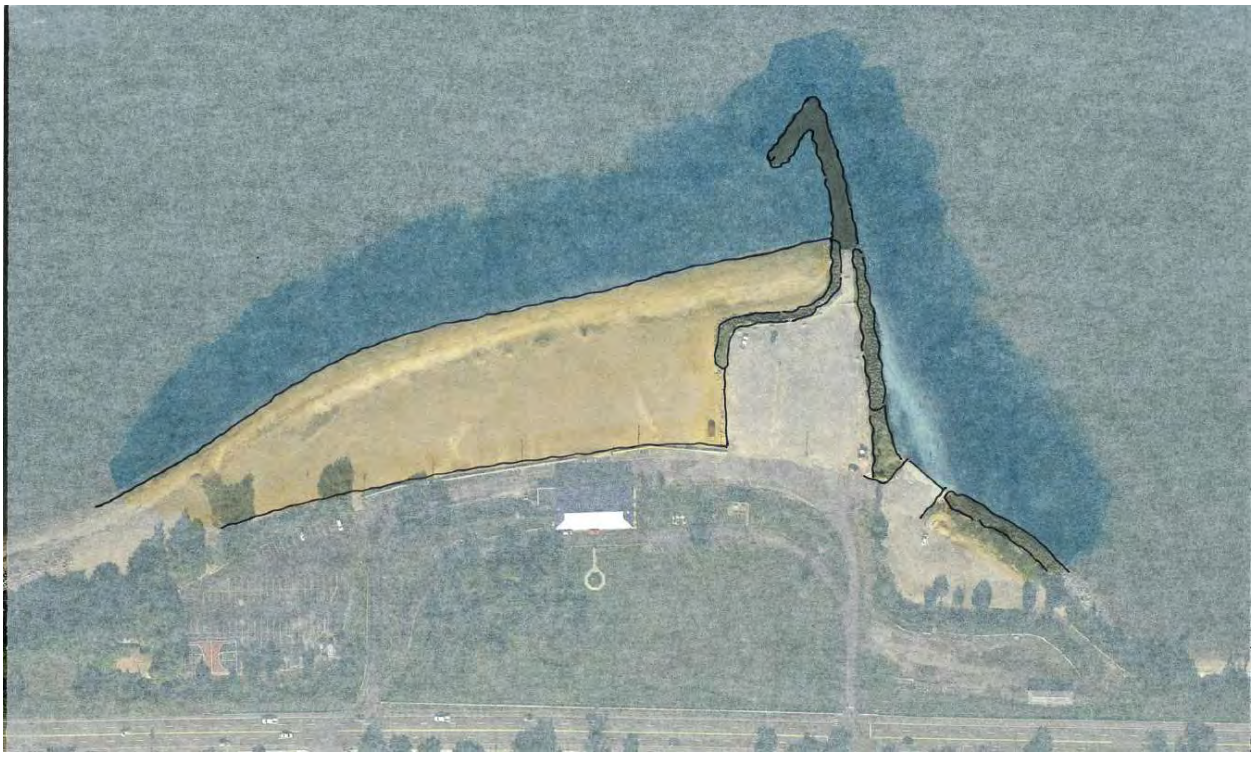

Figure AC-4 – Option B

Figure AC-5 – Option C

Figure AC-6 – Overall Site Aerial

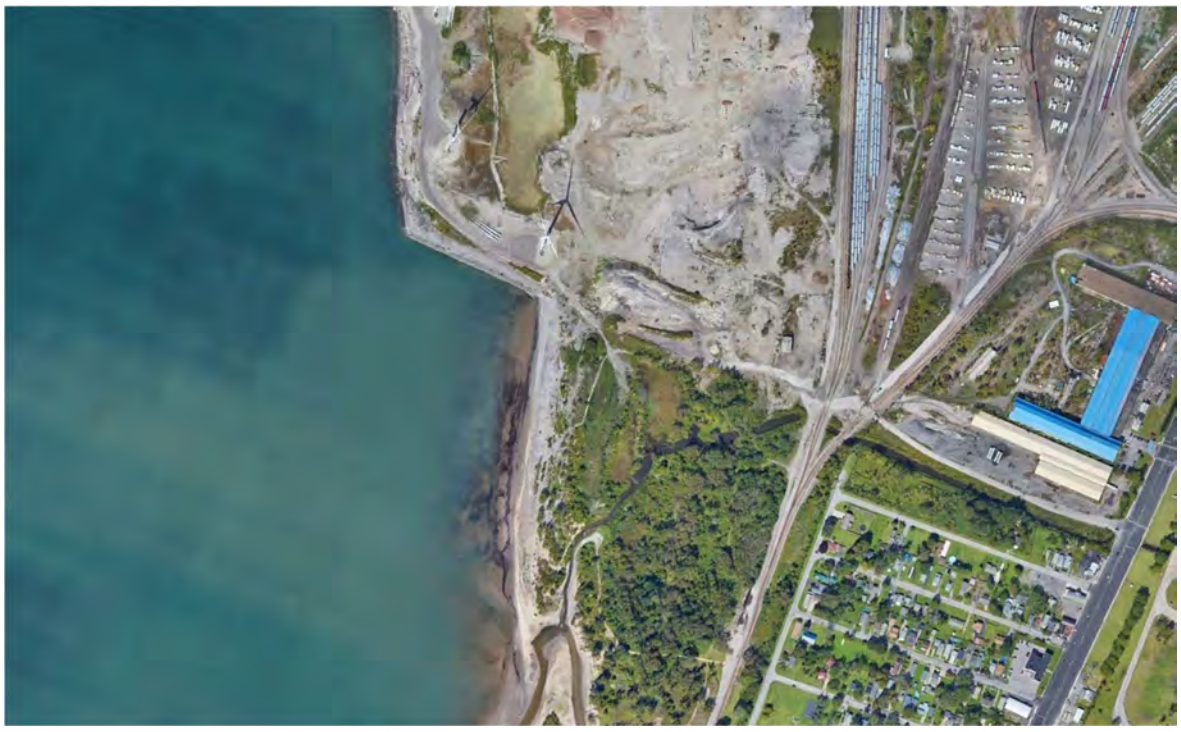

Figure AC-7 – Woodlawn Neighborhood 1st Street Alternative Site

Figure AC-8 – Alternative Boat Ramp Option A

Figure AC-9 – Alternative Boat Ramp Option B

Appendix D – Upland Development Vision

UPLAND DEVELOPMENT VISION

The initial concepts developed for the marina feasibility study proposed a significant reorganization of the existing Hamburg waterfront to help transform the community to one that has much more access to the water for all residents and visitors. While this upland concept design effort is well outside the original scope of work, it does recognize the significant cost of the offshore segmented breakwater system and provides a potential pathway to provide long term funding for the project in the event that no outside grant funding support is available.

The general concept focused on two primary development areas. The first is a new town center located directly on the waterfront centered on the Hamburg Public Pier. This town center was modeled on the scale and density of the nearby Village of Hamburg shopping district. The second area focused on the creation of a new walkable waterfront neighborhood behind the existing Hoover Beach neighborhood. The proposed neighborhood includes a mix of various densities of housing interspersed with new public parks and walking trails connecting new and existing neighborhoods to the lake and the new town center.

In order to create space for these new neighborhoods, the plan proposes to relocate the intersection of Highway 5 and Highway 75 to the southwest approximately one half mile. This 60 acre area is primarily occupied with road right of way and very little public access or development potential without significant reorganization of the roadway network. The proposed road realignment does not significantly reduce vehicle capacity.

The rationale for such a major reorganization of the waterfront is based on creating significantly more tax base for the community, increasing property values for the immediately adjacent areas, as well as increasing property values throughout the entire community by creating more waterfront access and making the Town of Hamburg a truly waterfront community.

Implementation of such a vision would require a significant public private partnership, whereby the Town and State work together to reorganize the vehicular circulation to create land available for development. The vision for new development is established through a community visioning process, and the desired outcome can be established through a Form Based Zoning code. Private developers would then bid for the right to construct the new neighborhoods, and new buyers generate new property taxes that can then be used to fund construction of the public infrastructure such as the road and utility realignments, and ultimately the offshore breakwaters. This approach has been implemented in other communities utilizing Tax Increment Financing or similar strategies.

Public Private Partnerships

Public Private Partnerships between local municipalities and private entities have become one of the most effective funding strategies to achieve shared objectives, and if the Town decides to proceed, we highly recommend that the Town lead the waterfront development process to allow the community to determine the future of the Hamburg waterfront. One of the most effective ways to leverage this approach in Hamburg is to utilize Tax Increment Financing (TIF), whereby the increase in taxable revenues over the existing taxable value (the "increment") is used to directly fund improvements, or service a longer-term revenue bond for the improvements that generated the increase in taxable value.

For example, the taxable value of the existing property is essentially zero, as road right of way properties are not taxed. When new private development occurs, all of the taxable value created would become the "increment". The increment could fund a revenue bond, which is one way municipalities borrow money. Revenue bonds are essentially like a mortgage, and paid off over a period of twenty or thirty years, with current interest rates ranging from 4%-5%, which is very low in historic terms.

For example, if an individual unit was based on a purchase price of $500,000, at 1.5% property tax rate, the yearly taxes would be $7,500. $7,500 would fund $100,000 in public improvements over 20 years at 3%, so 10 units would fund $1 million in public improvements, 100 units $10 million, and 300 units the full $30 million. Obviously current interest rates and property values would be considered in the long-term planning.

Other sources of revenue generation would occur with the land transaction from public ownership back to private ownership. In the past, a developer might purchase the property for a development for 10% of the total value of the finished development. For example, a $10 million development would generally have an upfront payment for land of $1 million. Following the Great Recession, this approach is used far less often, or upfront payments are much lower, in the 3%-5% range. We recommend an alternative approach where the Town defers payment for the land until the unit is sold by the developer to the private owner. At the closing on the property, the Town would be paid a percentage of the sale, typically 5%-8% of the sale price, and often on a sliding scale to increase the percentage paid to the Town

as the price increases. The benefit of this approach for the Town is that the public receives a fair portion of the increase in value as the value of the development increases. Another advantage to the Town is that this approach eases the financial burden on the developer early in the process, which can encourage higher quality development, or development with additional green infrastructure that might not otherwise be financially feasible. In the end, both the Town (public) and the developer win.

OVERALL DEVELOPMENT STRATEGY

If the community supports a process whereby private development is leveraged to fund community improvements, the next step in the process would be to utilize the LWRP or similar planning processes to advance the bubble diagram shown above into a more detailed community supported vision.

The next step in the process would be the development of a form based code for this specific neighborhood. Form Based Zoning is a different approach to land use zoning that focuses on defining what type of development is desired, where it is to be located, what uses are allowed, and a range of requirements describing how the buildings are to be constructed, including height, setbacks, materials, density, and other characteristics deemed necessary to achieve the community's goals. Whereas traditional zoning simply defines allowable uses, density, and setbacks, Form Based Zoning clearly communicates what is desired and expected. This is a critical difference, and one that gives the Town significantly more influence over the end result.

The final step in the process is for the Town to issue a Development Request for Proposal (RFP) offering up certain portions of the property for development. The Form Based Code would be included in the RFP as a controlling document, and we recommend that parcels be offered for development in smaller phases rather than as a single large phase. This gives the Town more control if the selected developer runs into problems or performs poorly. The inclusion of the Form Based Code provides benefits to both the Town and the Developer. For the Town, there is a high degree of confidence that the development will be delivered as the community expects. For the Developer, they know that if they follow the requirements of the Form Based Code, their project is essentially entitled. In other words, if they meet the code requirements, their project is approved nearly automatically. This means a significant savings in design and entitlement costs, as well as a meaningful saving of time during the development phase. We recommend this approach as it can truly provide a "win-win" outcome for both the community and the developer.

While Tax Increment Financing specifically is used throughout the country, there are other similar strategies that leverage property values and new tax generation that can also be considered if TIF is not desirable for some reason.