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City of Marquette
Marquette, MI

Submitted by:
AECOM
Marquette, MI
February, 2010

Presque Isle Marina – Preliminary Engineering Report

Founders Landing Marina – Master Plan

City of Marquette
Marquette, Michigan
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Founders Landing Marina – Master Plan

Draft

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Executive Summary

Presque Isle Marina - Preliminary Engineering Study

The Marquette Presque Isle Marina is located on the north side of the City of Marquette, between the City's Presque Isle Park and CCI/CNR Merchant's Dock. Few major improvements have been made to the 95 slip facility since its original construction in the late 1960's/ early 1970's. The City received a grant from the Michigan Department of Natural Resources (MDNR) Waterways Grant Program to complete a Preliminary Engineering Study of the Presque Isle Marina.

The City contracted with AECOM in April 2009 to complete the Preliminary Engineering Study. The results of the Study are discussed, in detail, within Sections 1 through 5 of this report. AECOM was assisted in the Study by the City's ad hoc Marina Steering Committee. The Committee provided invaluable insight, suggestions and reconstruction phasing recommendations. AECOM also consulted with the MDNR Waterways staff to review draft improvement recommendations and State funding options.

The Study has included an evaluation of the physical and operational condition of the existing marina facilities with a primary focus upon marina basin shoaling, boating access site, head piers and floating docks, harbor service building and shore side site conditions. Based upon the results of the evaluation, proposed improvements were recommended by AECOM and reviewed by the Marina Steering Committee. The Marina Steering Committee then prioritized the recommended improvements so a phased approach to implementation could be used due to local and State funding limitations.

An eight-phase, multi-year reconstruction program is recommended. The total estimated cost of Presque Isle Marina improvements is \$4,130,196.

Founders Landing Marina- Master Plan

The City of Marquette has acquired the 25 acre waterfront parcel located at the Lower Harbor area, near the foot of the downtown business district. Known as Founders Landing, the properties have been platted for a combination of private development and public waterfront access. In 2008, the City received MDNR Waterways Grant Program funding to undertake a Master Plan Study for the future development of marina and public waterfront access facilities, adjacent to Parcel 3.

The goals of the Study are threefold:

- Develop a marina site plan, with preliminary cost estimates, to primarily serve as a future transient boating facility;
- Develop public waterfront access and facilities, with preliminary cost estimates, to be enjoyed by the non-boating public; and
- Demonstrate the proposed reuse of the two timber piling fields, adjacent to Parcel 3, with planned marina and public access facilities.

The City contracted with AECOM in April 2009 to complete the Founders Landing Master Plan Study. The results of the Study are discussed, in detail, within Sections 6 through 9 of this report. AECOM

was assisted in the development of the Study by the City's ad hoc Marina Steering Committee. Draft site plans and cost estimates were reviewed by the MDNR Waterways staff.

This Founders Landing Study contains a review of the relationship between the City and the Landing Development Group (LDG). The LDG will be undertaking the private development initiatives on Parcel 3, adjacent to the City's proposed marina and public access facilities. The Study also summarizes the City's State bottomland lease requirements for the reuse of the piling fields, adjacent to Parcel 3. The report further contains an existing facilities survey outlining the current condition of seawalls, piling fields, bottom conditions/depths, and exposures to potential lake conditions once facilities are developed.

AECOM has provided site plans and preliminary cost estimates for future waterfront improvements at Founders Landing. The improvements are: break wall construction and promenade; marina head piers and finger docks; public timber wharf/ gathering area; public fishing pier and promenade; and kayak/ crew facilities.

A multi-year development program is recommended with the utilization of State, Federal, local, and private funding sources. The estimated cost of the Founders Landing Marina and Public Waterfront facilities is \$10,905,718.

1.0 Background and History

In the fall of 2007, the City of Marquette recognized it was at a critical crossroads regarding the community's existing recreational waterfront facilities and newly acquired public waterfront properties. The City's Park and Recreation Department, the Harbor Advisory Committee, the City's administrative managers and its City Commission were all in agreement with a two-front plan of action. The plan of action focused upon the reconstruction of existing recreational boating facilities at the Presque Isle Marina, and capitalizing upon the future development of new boating facilities at Founders Landing, within the Lower Harbor area.

The City of Marquette's first priority was to implement a preliminary engineering study for the reconstruction, reconfiguration and adjusted berthing capacity of the Presque Isle Marina.

The City's second priority was to implement a Master Plan for a future transient marina facility at the Lower Harbor/ Founders Landing area and reuse of two existing piling fields. The Lower Harbor master plan was proposed to accommodate transient craft directly adjacent to the City's central Business District.

In order to implement the City's recreational boating waterfront strategy, the City had to secure planning grant funds from the Michigan Department of Natural Resources/ Michigan State Waterways Commission. In March 2008, the City submitted a Waterways Grant Program Application for:

- A preliminary engineering study for the reconstruction and the modification of the Presque Isle Marina; and
- A master plan study for a future Founders Landing/Lower Harbor transient marina boating facility.

The estimated cost of the Presque Isle Marina Preliminary Engineering Study and the Founders Landing Master Plan is \$70,000. The City requested 50% funding from the MDNR Waterways Grant Program. The City resolved to provide its share of the planning study at \$35,000.

In June 2008, the City received a tentative grant contract from MDNR Waterways in the full Waterways amount requested for the two studies, at \$35,000. The grant contract, however, did not contain any reference to the Founders Landing/Lower Harbor Master Plan. During the period July through December 2008, the City and AECOM negotiated with MDNR Waterways for the full scope of the study to contain the Founders Landing Master Plan.

In January 2009, the MDNR Waterways staff approved the full study scope of the City's grant contract to include the Founders Landing/Lower Harbor Master Plan, along with the Presque Isle Marina Preliminary Engineering.

In April 2009, AECOM was awarded a contract by the City to complete the Presque Isle Marina Preliminary Engineering Study and the Founders Landing Marina Master Plan.

Both the Presque Isle Marina and Founders Landing studies sought maximum public input from citizens, boaters, and a variety of City boards and committees. Public recommendations and suggestions were received from a community-wide survey and two public hearing sessions conducted by the City Commission in July and August 2009. City boards and committees involved in the

planning process included: the Planning Commission, Brownfield Committee, Parks and Recreation Board, and the Harbor Advisory Committee. Private sector organizations were consulted and appraised during the planning process. Those organizations/firms included: Cliffs Natural Resources (formerly CCI), and owners of the Presque Isle Ore Dock; and the Landing Development Group, owners of a portion of the landward side of Founders Landing, Parcel 3.

In September 2009, the City Commission appointed the ad hoc Marina Steering Committee to assist AECOM with the prioritization of reconstruction project phases at the Presque Marina and developing a Master Plan for the proposed Founders Landing Marina. The Marina Steering Committee met during the period October 2009 through February 2010 in assisting AECOM's development of the Presque Isle and Founders Landing studies.

In January 2010, AECOM staff also met with the MDNR Waterways staff in Lansing to review the progress of the Presque Isle Marina Preliminary Engineering phasing plan and the Founders Landing Marina Master Plan, as proposed by the City. The meeting provided the MDNR staff the opportunity for comment, suggestions and further input prior to the finalization of the Draft study and recommendations.

This report contains two (2) major portions:

- *Presque Isle Marina - Preliminary Engineering Study/ Report; and*
- *Founders Landing Marina - Master Plan Study/ Report.*

2.0 Presque Isle Marina- Background and History

2.1 Background and Scope of the Study

The Presque Isle Marina was constructed in the late 1960's and jointly funded by the Michigan State Waterways Commission (MSWC), the Upper Great Lakes Regional Commission (UGLRC) and the City of Marquette. The 97 slip boating facility contains three (3) main head pier systems, electric service, potable water, gas and diesel fuel facilities, sanitary pumpout, boating access site, and Harbor Master's building containing restrooms, showers, laundry and office facilities. Originally, 87 slips were designated for seasonal craft with 10 slips reserved for transient vessels.

The site of the Presque Isle Marina, adjacent to the City's Presque Isle Park, was selected in the 1960's as it was the only publicly owned parcel available to the City at that time. Dedicated in 1971, the marina is also adjacent to the Lake Superior & Ishpeming Railroad Ore Dock (owned by Cliffs Natural Resources) and the Wisconsin Electric Generating Plant (WE and UPPCO). The marina remains a popular boating facility for general recreational boaters, both power and sail, sport fishermen, and boating access site users.

The 40 year old Presque Isle Marina is in poor condition. Presque Isle Marina facilities have deteriorated due to age and environmental conditions. The scope of the report focuses upon the condition of existing facilities, justification for renovations/ improvements, and an eight (8) phase plan for improvements and renovations. The Presque Isle Marina- Preliminary Engineering study recommends preliminary design redevelopment, reconstruction and/ or modification options.

2.2 Regional Analysis

The City of Marquette is located on the south shore of Lake Superior in the central region of the Upper Peninsula. The City of Marquette and Marquette County are the most populous in the Upper Peninsula with 20,714 city and 64,600 county residents. The City, and its regional residents, are dependent upon the Lake Superior waterfront for its livelihood, recreation and quality of life. Marquette's waterfront is the community's identity with unsurpassed access to recreational boating and sport fishing opportunities.

To meet the demand for access to Lake Superior, the City operates two (2) MDNR Waterways grant-in-aid marina facilities: the 97 slip Presque Isle Marina; and the 101 slip Cinder Pond Marina located in the lower harbor near the central business district. The Cinder Pond Marina was constructed in the mid-1990's to meet demand for transient and seasonal slip space.

The Presque Isle Marina is the only Marquette boating facility capable of accommodating large, deep draft transient vessels.

2.3 Other Marina Facilities in Proximity to Marquette

The City of Marquette's recreational boating facilities at Presque Isle (upper harbor), and Cinder Pond (lower harbor), serve the Lake Superior boating community as an essential "harbor-of refuge". The nearest safe harbor facilities to the City of Marquette, on the south shore of Lake Superior, are: Munising Bayshore Marina, 50 miles to the east of Marquette; and Big Bay Marina, 25 miles to the northwest of Marquette.

2.4 Marina Slip Analysis

When constructed and occupied in 1971, the Presque Isle Marina had a total inventory of 47 finger piers providing a maximum vessel occupancy of 95 seasonal and/or transient craft. Over the past four decades, age and deterioration on head pier and finger piers systems have reduced the total number of usable slips from 95 slips to 68 slips. *A total 27 slips/ berths have been lost representing nearly 30% of the Presque Isle Marina's slip capacity.*

Over the past decade, seasonal vessel occupancy at the marina has annually averaged between 50 to 55 seasonal craft berthed at the facility. Transient access and seasonal occupancy have been negatively impacted by shoaling conditions within the marina basin and the deteriorated condition of the three pier systems.

3.0 Presque Isle Marina- Inventory and Condition Survey of Existing Facilities

The following sections include an inventory of the existing facilities at the Presque Isle Marina and Boating Access Site. In addition to the results of the AECOM conditions survey, comments received from various City of Marquette boards, committees and City employees have been included. The ad hoc Marquette Marina Steering Committee offered the greatest number of high value comments, suggestions and recommendations on the existing facilities.

The Presque Isle Marina facilities surveyed and the proximity of the neighboring/ adjacent properties are illustrated in the Existing Site Map, contained in Appendix A.

3.1 Overview of Existing Facilities

The City of Marquette's Presque Isle Marina has seen few updates since the facility first opened in 1971. Updates have included some reconstruction/ repair work on selected bin walls and dredging of portions of the marina basin in 2001.

The current facility contains approximately 68 serviceable boat slips (out of 95 original slips) ranging in size from 24' to 60'; three (3) bin wall head pier systems; Middle Pier System with fuel and sanitary pumpout service dock; 500' rubble mound/ armor stone break wall; Harbor Service Building with restrooms, showers, mechanical, office and storage; marina parking lots; and a Boating Access Site containing two (2) launch ramps, three (3) piers, parking facilities and restrooms.

Adjoining property owners are: City of Marquette (east and north) containing the Presque Isle Park facilities; and Cliffs Natural Resources (west) with the Merchant's Dock and LS&I Ore Dock.

3.2 Shoaling and Sediment Accumulation within the Marina Basin

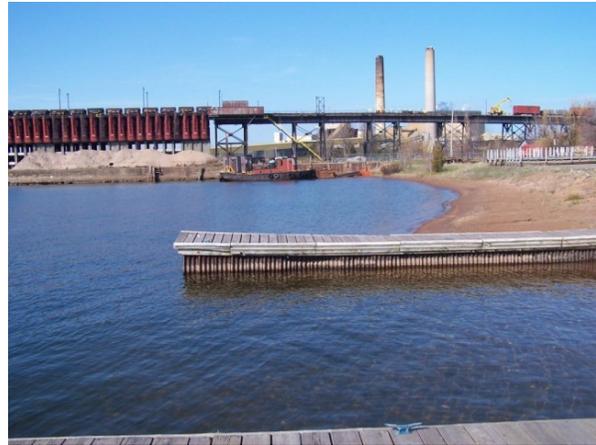
As stated in the previous section, the marina basin was dredged in 2001. Over the past nine year period, shoaling, sediment accumulation and draft issues have returned as major impediments within the basin.

Several interrelated factors have contributed to the shoaling, draft and access issues within the marina basin:

- The mouth of the Dead River is located approximately 1,500' southwest of the Presque Isle Marina. In 2003, the Silver Lake Dam, at the headwaters of the Dead River, collapsed and deposited an undetermined amount of sediment into Lake Superior, at the river's mouth. Since 2003, littoral drift has moved the sediment into the LS&I Ore Dock and Merchant's Dock areas and the Presque Isle Marina basin;
- Littoral drift has most likely entered the marina basin from the harbor entrance, located at the southwest corner of the marina; and from under the LS&I Merchant Dock, which sets on timber pilings, located directly adjacent to the marina basin; and
- From approximately 2006 through early 2009, Lake Superior encountered near record low water level conditions which greatly ranged between +599.8' and +601.9' 1GLD 85.

The combination of the above factors, in AECOM's opinion, has contributed to the draft, access and sediment issues within the marina basin.

The following photos provide an overview of the marina entrance, proximity of the Merchant's Dock, evidence of shoaling at the Boating Access Site and at the break wall's circulation culvert.



In May 2009, AECOM performed a bathymetric survey of the marina basin, the area south of the marina entrance/ break wall, and the area between the LS&I Merchant's Dock and the Ore Dock. It was determined that 15,000 cubic yards of sediment material/ spoils has to be removed from the marina basin/ harbor entrance in order to achieve a depth of 8' below low water datum. The results of the bathymetric/ hydrographic survey are illustrated in Appendix A.

3.3 Break Wall/ Harbor Entrance

The marina is protected, at the south quadrant, with a 500' rubble mound/ armor stone break wall. A 100' wide harbor entrance, at the southwest corner of the marina, lies between the west terminus of the break wall and the Merchant's Dock.



The armor stone break wall is in good condition. The harbor entrance, however, has a southwest exposure to Lake Superior and does impact the marina under certain weather conditions. The break wall also has a circulation culvert, in the south east corner of the marina. The culvert has permitted sediment to enter the marina basin from that point.

3.4 Head Pier and Finger Dock Systems

The marina contains three bin wall head pier systems. The North head pier is 270' in length with floating finger docks. The Middle head pier is 300' in length with bin wall finger docks. The South head pier system is 390' in length with floating finger docks. The bin wall head pier and finger dock system consists of soldier piles with stringers creating a wall face. The interior of the bin walls are filled with aggregate and capped with concrete.

The nearly 40 years of exposure to water, air, and ice have taken their toll on the bin wall stringers, especially where water levels fluctuate.



Varying degrees of bin wall deterioration is evident through all three bin wall head pier and finger dock systems.

3.4.1 South Pier System/ Slips 56-95

The South Pier System is 390' in length and was originally constructed to accommodate 19 floating finger docks/ 38 slips. At present, the nearly one-half of the head pier is no longer safe for public use due to severe deterioration of the head pier bin walls.



Of the original 19 floating finger docks and 38 slips installed in 1971, only seven (7) finger docks accommodating 14 vessels are permitted on the South Pier System. Water and electric services at the active slips remain functional. Approximately 195' of the South Pier has been condemned for use eliminating the use of 12 finger docks/ 24 slips.

The floating finger docks at the South Pier System, and the North System, utilize an early version of floating docks. The docks on both the North and South Pier Systems do not function well in fluctuating

lake level conditions and require modification depending upon lake level height. The floating finger docks at Presque Isle have far outlived their expected service life of twenty years.



3.4.2 Middle Pier System/ Slips 33-55/ Service Dock

The Middle Pier System is 300' in length and was originally constructed to accommodate 11 fixed finger pier docks/ 22 slips. The Middle Pier System contains bin wall type construction on both the head pier and finger systems.



All 11 fixed finger piers, accommodating 22 boat slips remain serviceable and are actively utilized. Deterioration, however, is evident with the bin wall structures at the head pier and finger systems. Similar to the South Pier System, deterioration is occurring on the head pier system at the bin wall face exposed to fluctuating lake levels.

The fixed finger piers on the Middle Pier System have also been impacted with ice damage, causing a majority of the finger docks to “tip” toward the south.



The marina's Service Dock is located at the terminus of the Middle Pier System. The 30'x 8' Service Dock contains a gasoline and diesel fuel dispenser, sanitary pump out facilities and potable water. AECOM interviews with marina staff indicated the location of the Service Dock has presented some access problems.



The Service Dock's fueling and sanitary pump out facilities have received upgrades since the original construction of the marina. The fueling and sanitary facilities at the Service Dock are in good condition. The marina's fuel tanks and monitoring systems were replaced in the 1990's and currently meets MDNRE codes and regulations.

AECOM's primary concern with the fuel and sanitary pump out facilities is with the distribution lines within the interior of the 300' Middle Pier's head pier system. Deterioration of the head pier system's bin walls is causing the loss of aggregate material, thereby increasing the potential for severing of fuel and/or sanitary lines from shore to the Service Dock.

3.4.3 North Pier System/ Slips 1-32

The North Pier System is 270' in length and contains 16 floating finger docks accommodating 32 slips. The North Pier System's head pier consists of bin wall type construction. All 16 finger docks are currently in use.



As with the South Pier System, the North System's floating finger docks do not function well in varying lake levels and have also outlived their useful life. The North System's head pier bin walls are also in various stages of deterioration and with aggregate loss and concrete cap settling.



3.5 Interior Shore Protection Structures

The east shoreline of the Marina Basin is protected by a 525' stone rubble/ armor stone revetment wall partially covered with steel plating. The armor stone and steel plating are anchored with wooden soldier pilings and cable tie-backs.



The shore protection structure at the east shoreline has experienced some deterioration, especially with the wooden soldier pilings. The structure, however, appears to be stable with little or no evidence of settling at the revetment's concrete cap.

3.6 Harbor Service Building/ Parking Lots

The Harbor Service Building is located on the east shore of the marina, at the foot of the Middle Pier System. The 45'x 25' structure contains men and women's restrooms and shower facilities, mechanical room, storage, and Harbor Master's office.

The Harbor Service Building's Existing Floor Plan illustrated in Appendix A.

The Harbor Service Building, circa 1960's, does not meet current ADA access standards for restrooms, showers or access to the Harbor Master's office. The existing structure is of sound condition and has been well maintained.

The marina's vehicle parking area is located on the entire east shoreline of the marina. Access is from the Presque Isle Park Road. The parking area is approximately 500'x 60'. The parking area appears to be of original construction with a deteriorated asphalt surface. The parking area, as per marina employees, is more than adequate to meet the parking needs of the marina.

3.7 Boating Access Site

The Presque Isle Marina's Boating Access Site is located at the northern parcel of the marina. The existing Boating Access Site contains: two (2) launch/ retrieval ramps, fixed and floating docks, 300' x 100' vehicle/ trailer parking and circulation area, and a restroom facility. Access is from the Presque Isle Park Road.

The following series of photos shows: the South Ramp; the fixed pier dock; and the North Ramp.



The South Ramp has experienced considerable shoaling and sediment accumulation, which at times, have prevented use of the ramp by most vessels. The North Ramp is less affected by shoaling and is predominately used by boaters/ fishermen. Shoaling in the west third portion of the marina basin has limited use of the Boating Access Site. The Presque Isle access site remains to be a popular launch site for the region's sport fishermen.



The Boating Access Site's facilities are a patchwork of docks, deteriorating launch ramps, outdated restroom building, parking/ access in poor condition, and a limited traffic circulation plan within the site for vehicle parking/ launch/ retrieval.

4.0 Presque Isle Marina- Recommendation of Improvements

4.1 Presque Isle Marina Improvements

The following sections describe the proposed improvements for the Marquette Presque Isle Marina, their associated costs and a proposed reconstruction phasing plan. AECOM's recommended improvements took into account results from the existing conditions survey; input received at public comment sessions; comments received from the community survey; recommendations from the ad hoc Marina Steering Committee; and comments received from the MDNR Waterways staff from their preliminary review of the draft reconstruction plan.

Marina Reconstruction Site Plan and the Eight (8) Phase Construction Cost Estimates are attached in Appendix B.

4.2 Marina Basin Dredging

The May 2009 Bathymetric/ Hydrographic Survey of the marina basin indicated a need to remove 15,000 cubic yards of sediment material. Removal/ dredging of the marina basin is recommended to provide a depth of 8' at low water datum. As of the 2009 boating season, sediment drift and shoaling has impacted vessel access to the marina basin and limited the use of the Boating Access Site.

As an essential operational issue, AECOM recommends dredging of the marina basin the first improvement project effort to:

- Permit larger deep draft vessels access to seasonal and transient slips, docks and services;
- Allow full use of the Boating Access Site's launch ramps; and
- An essential precursor to succeeding reconstruction project phases.

The estimated cost of dredging the marina basin is \$491,000. This cost is based upon the assumption that the sediment is clean from contamination and that the material could be hauled to a local disposal site.

4.3 Harbor Entrance/ Break Wall Modifications

A considerable effort was dedicated by AECOM and the Marina Steering Committee (MSC) to determine the most practical and economical method of limiting sediment drift into the marina basin. The 100' wide harbor entrance, at the southwest corner of the marina, was initially earmarked as the primary entry point for sediment drift into the basin. Five (5) draft break wall modifications were studied and reviewed as a means of limiting sediment drift into the basin.

The estimated cost of the break wall modifications studied and reviewed ranged from approximately \$500,000 to \$1.0 million.

AECOM further determined sediment may also be migrating into the marina basin from under CCI's Merchant's Dock. The Merchant's Dock, which sets on pilings, borders the complete southwest side of the marina basin.

With sediment drift into the marina basin, from multiple locations, AECOM and the MSC, along with concurrence of the MDNR Waterways staff, recommends deferring Harbor Entrance or Break Wall

modifications. Break Wall modifications, included within the eight phase reconstruction plan, are deferred to a future reconstruction phase as:

- The marina basin has never received a complete removal of all sediment, to a depth of 8' below LWD, since its original construction in the late 1960's. The extent of sediment drift into the basin, on an annual basis, is unknown;
- During the period 1971 through the late 1990's sediment accumulation within the marina basin did not significantly impact access to the marina or access from the Boating Access Site;
- Major sediment accumulation, access and draft issues occurred : 1) After the 2003 Dead River Flood, which deposited a large, unknown quantity of sediment material near the Presque Isle Marina; and 2) During the period 2005 through 2008, Lake Superior's water levels were at near historical low levels; and
- It is not known to what extent the Dead River Flood sediment will have on the marina basin in the future.

Therefore, it is AECOM's recommendation to defer modifications to the Harbor Entrance Break Wall and allocate initial resources to dredging of the marina basin as the most prudent use of scarce resources. AECOM further recommends the City to monitor basin sediment accumulation over the next four to five year period.

If, over the next five year period, it can be accurately determined that:

- Significant sediment from the Dead River Flood is still impacting the marina basin; and
- If the entry point for the sediment can accurately be identified at that time, modification to the Harbor Entrance may be necessary.

The estimated cost of Harbor Entrance Break Wall modifications is estimated at a minimum of \$500,000.

4.4 Reconstruction of the Boating Access Site

The Boating Access Site at the Presque Isle Marina was identified as an important community boating facility. The MSC recommended the Access Site's reconstruction as a priority reconstruction project phase.

AECOM recommends the complete reconstruction and reconfiguration of the Boating Access Site. The MSC also recommended the Boating Access Site's reconstruction to take place within the early reconstruction phases. The Access Site's reconstruction proposal includes: vehicle/ trailer parking, relocation and construction of new launch ramps/ skid piers, new restroom facility meeting ADA standards and installation of utilities for a future fish cleaning station.

The estimated cost of reconstructing the Boating Access Site is \$402,000.

4.4.1 Canoe/ Kayak Launch Dock

Included within the Boating Access Site's preliminary engineering plans, is a Canoe/ Kayak Launch Dock. With the ever-growing popularity of canoeing and kayaking on Lake Superior, a Canoe/ Kayak

Launch Dock, at the Boating Access Site, is an essential element in meeting demand for waterfront access. The cost of the Canoe/ Kayak Dock is included within the Boating Access Site cost estimate.

4.5 Marina Head Pier and Finger Dock Replacement

As documented within Section 4.0, Existing Facilities Survey, the three pier systems within the marina are in various stages of deterioration. The existing pier systems, North, Middle and South, all contain bin wall head piers and either bin wall finger docks or floating finger docks.

AECOM is recommending replacement of the three pier systems with floating head piers and floating finger docks. The preliminary site plan and cost estimates provides for the complete replacement of all head piers and finger docks to equal that of the original 95 slip facility. Prior to final design of each pier system, the community can determine current and/ or future need and adjust head pier length and slips accordingly. The site plan and cost estimates in this study reflect full replacement of head piers and finger docks. The cost estimates include full replacement of electric and water utilities.

Finger dock/ slip sizes to be determined at final design stage.

It is also noted that the MSC conducted lengthy discussions on the feasibility of installing floating pier structures at the Presque Isle Marina. AECOM recommended that the final design stage of the pier replacement project examine specific site and winter ice conditions to determine appropriate anchoring systems and winter performance of the floating piers. Once site conditions, specific to Presque Isle, are identified, de-icing systems may or may not be necessary.

4.5.1 South Pier System

As documented in Section 4.4.1, Existing Facilities Survey, the South Pier System is in most need of replacement. Approximately 195' of its head pier has been fenced off to prohibit public use. Only 7 finger docks, out of an original 19 finger docks, remain in use.

AECOM recommends replacing the existing bin wall head pier and floating docks with a 350' floating head pier system and floating finger piers. The proposed South Pier System replacement would accommodate 38 boat slips.

The estimated cost of replacing the South Pier System, to match the original slip capacity, is \$629,000.

4.5.2 North Pier System

As document in Section 4.4.3, Existing Facilities Survey, the North Pier System is in need of replacement as the head pier bin wall is deteriorating and floating finger docks are far outdated and impractical. The current 270' head pier and finger docks are recommended to be replaced with a 270' floating head pier system and 16 floating finger docks. The proposed North Pier System replacement would accommodate 32 boat slips.

The estimated cost of replacing the North Pier System, to match the original slip capacity, is \$481,000.

4.5.3 Middle Pier System/ Service Dock

As documented in Section 4.4.2, Existing Facilities Survey, the Middle Pier System is in need of replacement as the head pier and finger dock bin walls are deteriorating. The Middle Pier System, with the Service Dock containing the fuel and sanitary facilities, is in the best condition as compared to the North and South Pier Systems. The existing 300' head pier and 11 finger docks are recommended to be

replaced with a 300' floating head pier system and 11 floating finger docks accommodating 22 boat slips.

AECOM recommends replacement of the Middle Pier System as a later reconstruction phase. The Middle Pier System is most likely able to function in its full capacity for several more years.

The Middle Pier System will be the most expensive to replace as the Service Dock and the distribution lines/ dispensers for the fuel and sanitary pump out facilities must be replaced.

The estimated cost of replacing the Middle Pier System, to match the original slip capacity and Service Dock facilities, is \$1,035,000.

4.6 Harbor Service Building Renovations

As documented in Section 4.6, Existing Facilities Survey, the Harbor Service Building does not meet ADA access standards. AECOM and the MSC discussed two options for the Harbor Service Building: reconstructing a new facility; or renovating the existing facility. AECOM determined the existing facility is of sound construction and, within the existing footprint, renovations could be accomplished. Interior renovations of the building will include handicap accessible restrooms, showers and office.

AECOM recommends Harbor Service Building renovations as the most practical and economical option to upgrade the facility and comply with ADA access requirements.

The estimated cost of renovating the Harbor Service Building is \$491,000.

4.7 Site Improvements

The marina's existing parking area is approximately 500'x 60'. Given the current over-capacity of the parking area, AECOM recommends eliminating the west parking spaces, in both the north and south lots, and returning those areas to a green space buffer between the parking area and the marina's east shoreline. New and renovated sidewalks, to permit pedestrian access to the marina's piers, are also recommended.

The estimated cost of Site Improvements is \$136,500.

5.0 Presque Isle Marina- Reconstruction Phasing Recommendations

5.1 Phasing Recommendations

Limited funding resources, on both the local and State levels, has required the Presque Isle Marina reconstruction to occur in recommended multi-year project phases. The MDNR Waterways Grant-In-Aid program funding, for municipal boating facilities, has been substantially reduced. The Waterways-Harbor Development Program is anticipated to have minimal funding capabilities for several years to come. Furthermore, the City of Marquette is also limited in what it can realistically fund, as its dollar match, toward the reconstruction of the Presque Isle Marina.

In November 2009, the Marquette City Commission directed its administrative staff to limit Presque Isle Marina's reconstruction phasing to a total of \$2.5 million. The City Commission's directive is in anticipation of what it believed the City could reasonably fund over the next several years. In January 2010, AECOM met with MDNR Waterways staff in Lansing to review the draft multi-year reconstruction phasing plan for the Presque Isle Marina. The MDNR Waterways staff agreed the reconstruction phasing plan is practical, given the State's limited funding capabilities.

AECOM's Presque Isle Marina Preliminary Engineering Study, as reflected in this document, has included the full scope of all recommended improvements and cost estimates.

5.2 Project Reconstruction Phasing Priorities and Cost Estimates

Based upon directives from the Marina Steering Committee, AECOM is recommending an eight (8) year reconstruction phasing program for the Presque Isle Marina. The Marina Reconstruction Site Plan and detailed Construction Cost Estimates are attached in Appendix B.

The cost estimates for the recommended project phases include:

- Engineering, design, bidding and construction management;
- Construction contingency; and
- Added contingencies for smaller, multi-year phased projects.

The cost estimates are calculated in 2010 dollars. As various project phases are considered in future years, AECOM recommends a re-examination of the cost estimates as each new project phase is considered.

The Presque Isle Marina reconstruction phasing priorities are recommended as follows:

<u>Phase</u>	<u>Project</u>	<u>Estimated Cost</u>
Phase 1	Dredging of the Marina Basin	\$ 490,978
Phase 2	Reconstruction of the Boating Access Site	\$ 402,256
Phase 3	Replace South Pier System	\$ 628,978
Phase 4	Replace North Pier System	\$ 481,131
Phase 5	Break Wall/ Harbor Entrance Modifications	\$ 464,672
Phase 6	Replace Middle Pier System	\$1,034,713
Phase 7	Renovate Harbor Service Building	\$ 490,978
Phase 8	Site Improvements	\$ 136,491
Total Estimated Reconstruction Cost		<u>\$4,130,196</u>

5.3 Final Design Requirements

Upon securing funds to complete the various project reconstruction phases, the City of Marquette will be required to proceed with final design of each reconstruction phase. This will include detailed surveying and/or inspections of existing features, completing final design engineering, and preparing plans and specifications for the bidding process. The preliminary design intentions, included within this Study, were based on available information and conditions at the time of the Study. Existing conditions may change and/or worsen before each project phase is implemented. Therefore, it will be required to re-evaluate conditions prior to final design of each reconstruction phase.

5.4 Implications of Delaying the Project

As indicated within this Study, Presque Isle's marina basin, boating access site, pier/ finger dock systems, and harbor service building are all in need of improvement. The Presque Isle Marina is the only marina in a 75 mile stretch of the Lake Superior shoreline, between Big Bay and Munising, capable of providing safe harbor facilities for larger, deeper draft recreational vessels. Delaying the implementation of the proposed improvements will allow further degradation of key facilities, lost revenue from both transient and seasonal boaters and restricted public access to a vibrant recreational boating and sports fishery that exists in the Marquette area waters of Lake Superior.

5.5 Permit Requirements

The completion of the improvements proposed for the Presque Isle Marina must be constructed in accordance with a Joint MDEQ/USACE Permit. As part of AECOM's scope of services provided in this study, the Joint Application will be submitted on behalf of the City of Marquette. Upon issuance of the permit, a copy will be forwarded to the MDNR Waterways staff.

Depending upon the scope of individual reconstruction phases, the following is a list of potential permits which may be required:

- A Marquette County Soil Erosion and Sedimentation Control Permit when improvements involving ground disturbance are proposed.
- A Water System Construction Permit may be required for water system distribution improvements.

6.0 Founders Landing - Background and History

6.1 Background and Scope of the Master Plan

In 2002, the City of Marquette acquired a 25 acre parcel waterfront site, formerly known as the “South Rail Yards”, abandoned by the Canadian National Railroad. Since 2002, the City has capitalized upon State, federal, local and private funding sources for the development of the public and private areas of Founders Landing. Both the private development areas of Founders Landing and the public trust bottomlands areas, adjacent to Parcel 3 of Founders Landing, will be reviewed in this section. Location map of Founders Landing, within the City of Marquette, is contained in Appendix C.

The transformation of the City’s “lower harbor” waterfront area, the foot of the downtown business district, has been nothing less than remarkable. The lower harbor area, now including the Founders Landing parcels, has evolved from industrial use to public open space, parks, boating facilities, commercial retail, and upscale residential. The success of the City’s Cinder Pond Marina, located in the lower harbor at Matson Park, is indicative of boater preference in the lower harbor for its proximity to services and facilities desired by the transient and seasonal recreational boater.

The Presque Isle Marina has traditionally been the City’s primary recreational boating facility accommodating larger transient vessels that typically ply the waters of Lake Superior. The infrastructure needs involving the Presque Isle Marina are addressed, at length, in the preceding sections of this report. However, the lack of suitable transient boater accommodations remains for larger vessels at the lower harbor area.

In 2008, the City received MDNR Waterways Grant Program funding to undertake a Master Plan for a future transient marina facility at the lower harbor/ Founders Landing area and the reuse of the two existing piling fields, adjacent to Parcel 3. The City’s lake-ward development priorities at Founders Landing are two-fold:

- To develop a recreational boating facility to primarily serve as a transient boating facility; and
- To develop public waterfront access and facilities to be enjoyed by the non-boating public.

In April 2009, the City awarded a contract to AECOM, of Marquette, to complete the Founders Landing Marina Master Plan study.

As referred earlier in this report, the City and AECOM have sought maximum public input from citizens, boaters and variety of City boards and committees. Public hearing sessions were conducted in July and August of 2009. City boards and committees involved in providing input and suggestions included the Planning Commission, Harbor Advisory Committee, Parks and Recreation Board, Brownfield Committee, Landing Development Group and the City Commission. In September 2009, the City Commission appointed the ad hoc Marina Steering Committee to assist AECOM in developing the Founders Landing Marina Master Plan. AECOM worked with the Marina Steering Committee (MSC) from October 2009 through early February 2010. The Marina Steering Committee provided valuable input, suggestions and recommendations on the Founders Landing marine development.

The scope of the Founders Landing Marina Master Plan included:

- Examination of existing surveys, mapping, GIS data, environmental reports, and relevant hydrographic information.
- Perform a hydrographic survey of the bottomlands area proposed for development and identify littoral drift features in the area.
- Provide preliminary engineering design options and cost estimates for a break wall structure to protect the marina and other public facilities.
- Provide preliminary design options and cost estimates for the reuse of the site's piling fields to accommodate finger slips, broadside docking, public gathering spaces, public access to the waterfront, and fishing pier facilities.
- Determine a need for shore-side support facilities and provide preliminary plans and cost estimates for the support infrastructure.

6.2 Landing Development Group - Parcel 3

In October 2009, the City of Marquette sold Founders Landing Parcel 3 to the Landing Development Group (LDG). Parcel 3 is the landward area directly adjacent to the planned marina and waterfront public access facilities identified in this report. The Landing Development Group will provide for the development of all shore facilities including vehicle access and parking, revetment wall reconstruction, pedestrian access, and other marina support facilities.

In November 2009, AECOM and the MSC met with the LDG to review the LDG's proposed landward development of Parcel 3 and the City's proposals to develop the bottomlands adjacent to Parcel 3. Recommendations from the LDG and the MSC are incorporated in this report.

The Founders Landing Marina Master Plan, as contained in this report, identifies only the waterfront development proposals within the bottomlands adjacent to Parcel 3.

6.3 City of Marquette's Lease of State Bottom Lands

In February 2004, the City obtained a bottom lands lease and use agreement from the Michigan Department of Environmental Quality (MDEQ) for the two piling fields adjacent to Founders Landing Parcel 3. The lease, entitled *Agreement to Use and Occupy Unpatented Great Lakes Bottom Lands for Public Purposes*, has been recorded as #2004R-03211. The development proposed with the Founders Landing Marina Master Plan lies within the leased State bottom lands.

The bottom lands lease term was for a period of five (5) years. During the term of the lease, the City was to provide the MDEQ with plans and a schedule of redevelopment and reuse of the piling field bottom land areas. Specifically, the conditions contained within the agreement are as follows:

- To allow the City sufficient time to develop satisfactory plans for the reuse of existing structures within the bottomlands premises;
- Obtain necessary permits to develop and reuse existing structures; and
- Construct new structures in accordance with said plans and permits.

According to the agreement, if the City of Marquette failed to provide significant development plans, the MDEQ would require the City to remove the pilings within the lease area. The City has provided the MDEQ with surety via a \$500,000 letter of credit in the event that the piling fields would be dismantled.

The plat of the two leased bottom lands and piling fields, adjacent to Parcel 3, is contained in Appendix C.

The leased bottom lands include the North Piling Field/First Pier, approximately 624'x 95', extending from the north part of Parcel 3. Photos of the North Piling Field illustrated below.



The leased bottom lands include the South Piling Field/Second Pier, approximately 574'x 56', extending from the south part of Parcel 3. Photos of the South Piling Field illustrated below.



The City's 2004 MDEQ bottom lands agreement expired in February 2009. The City has been in contact with the MDEQ indicating it was in the process of completing a master plan for the submerged lands areas. AECOM has been in periodic contact, during the course of the master plan study, with the MDEQ Land and Water Division- Submerged Lands manager Thomas Graf.

AECOM recommends:

- The City submit the Founders Landing Master Plan to the MDEQ for their review and comment; and
- The City request, to the MDEQ, for an amended bottom lands use agreement for not only the piling field areas, but also the additional submerged lands between the north and south piling fields intended for marina development, as proposed in this report.

7.0 Founders Landing- Existing Facilities Survey

7.1 Existing Facilities- Overview

AECOM reviewed historical maps, drawings, previous planning documents, reports, plats and bottomland information relating to Parcel 3 of Founders Landing. Parcel 3's most recent active use was by the Canadian National Railroad. Upon the site's acquisition by the City in 2002, the City and the State conducted an environmental cleanup, mitigation and removal of structures on both the landward and lakeward sides of Parcel 3. The environmental mitigation activities were funded by the Clean Michigan Initiative Grant Program (CMI). No structures remain on the Parcel 3 site.



7.2 Parcel 3 Seawalls

Parcel 3 has two shoreline exposures with 495' at the east and 170' to the north. On the north shoreline, the sheet steel wall has collapsed due to failure of the wall's tie back anchors. The photos below illustrate the existing condition of the North shoreline structure.



The 495' east embankment of Parcel 3 contains a mix of sheet steel wall, concrete embankment, timber pilings and exposed shoreline. As with the north exposure, the sheet steel piling has failed at various locations and the remaining concrete/ timber pilings are in complete failure. The photos below illustrate the existing condition of the structures.



The north and south embankments of Parcel 3 were surveyed in this study as their reconstruction will be necessary either before or during any construction activities in the bottomland areas.

7.3 Piling Fields

7.3.1 North Piling Field

The north timber piling field extends eastward from the northeast corner of Parcel 3 into Lake Superior. The piling field is approximately 624' in length and 95' in width. The photos below illustrate the location and condition of the north field.



Within the first 200' of the North piling field, portions of fill material extend above the lake level with vegetative growth present. At the terminus of the piling field, four pile clusters, extending an additional 120', are located between the pile field and Ripley's Rock.

7.3.2 South Piling Field

The south timber piling field extends eastward from the southeast corner of Parcel 3 into Lake Superior. The piling field is 574' in length and 56' in width. The photos below illustrate the location and condition of the south field.



7.4 Bathymetric Survey

In May 2009, AECOM performed a bathymetric survey of the Lower Harbor bottom lands. The survey encompassed the area between the Association Dock (north) to the area south of the South Piling Field. Approximately 38 surface areas were covered and documented.

The Founders Landing Bathymetric Survey is contained within Appendix C.

Once the City determined the location of the proposed Founders Landing Marina, AECOM closely examined the survey data lying between the area immediately north of the North Piling Field to the area immediately south of the South Piling Field. The soundings were taken at a lake level elevation of 601' NAVD88. Bottom soundings ranged from 590', near the Parcel 3 shoreline and Ripley's Rock, to 578' at the far end of the South Piling Field.

Sufficient depths for larger recreational vessels are present within the proposed marina basin. Minor excavation of bottom material will be required for future improvements, if any. However, future installation of break wall material will be of considerable volume given an approximate water depth of 15'+/- throughout the proposed marina basin.

7.5 Existing Harbor Conditions

The proposed Founders Landing Marina development area is protected from the north by the former Soo Line Ore Dock and from the east with the Lower Harbor Break Wall.



The proposed development area is potentially exposed to damaging lake conditions originating from the southeast.

8.0 Founders Landing Marina- Recommendation of Improvements

The Founders Landing Marina and public waterfront access facilities proposed in this study includes the following recommendations:

- Break wall construction with public promenade;
- Marina head piers and finger docks;
- Public timber wharf/ gathering area;
- Public fishing pier and promenade; and
- Kayak/ crew launch dock area.

AECOM, with the assistance of the City's Marina Steering Committee, evaluated several site planning concepts including the overall size of the proposed development, various configurations of the break wall structure, the timber wharf gathering area; the public promenades/ walk areas and the fishing pier access.

The Founders Landing Site Plan is contained in Appendix D.

The Founders Landing Engineers Opinion of Construction Cost Estimates is contained in Appendix D.

8.1 Break Wall/ South Piling Field

The primary structure necessary for the development of the Founders Landing Marina and public access facilities is the break wall, located upon the South Piling Field. The break wall extends from the southeast portion of Parcel 3 to Ripley's Rock and will provide the necessary protection from Lake Superior elements.

The stone rubble mound break wall is estimated at 1,030' in length, contains 107,000 tons of stone, 15' crest width, and a height of +8' at LWD.

A 195' timber bridge connects the break wall to the shoreline. The timber bridge provides pedestrian access to the break wall. The timber bridge also provides lake water circulation within the marina basin.

The break wall and timber bridge construction estimates account for over 50% of the total estimated development costs of Founders Landing. The extraordinary water depths, at the South Piling Field to Ripley's Rock, account for large volumes of stone needed to construct the break wall structure.

The estimated cost of the timber bridge and rubble mound break wall is approximately \$5.5 million.

8.2 Timber Wharf Gathering Area, Fishing Pier-Promenade/ North Piling Field

8.2.1 Timber Wharf Gathering Area/ North Piling Field

A priority heard many times over during the course of the study and the master planning process, is the need for public facilities and access to the Founders Landing waterfront facilities. The Timber Wharf

Gathering Area is included within the master plan for public access and community events. The wharf will also provide initial access to the four (4) floating head pier and finger slip systems.

The Timber Wharf is located over the North Piling with access from the northeast corner of Parcel 3. The proposed structure is 220' in length and 100' in width. The structure is proposed to be supported on pilings, substructure framing and wood decking.

The estimated cost of the Timber Wharf Gathering Area is estimated at approximately \$1.4 million.

8.2.2 Fishing Pier- Promenade/ North Piling Field

Extending eastward from the Timber Wharf is a proposed 355'x 20' Fishing Pier and Promenade. The fixed pier structure is proposed to be supported by pilings with a precast concrete deck. The Fishing Pier Promenade extends over the remaining North Piling Field.

The estimated cost of the Fishing Pier-Promenade is approximately \$500,000.

8.2.3 Removal Submerged Cribs/ North Piling Field

Four (4) submerged timber cribs are between the terminus of the North Piling Field and Ripley's Rock. This area is required to be clear of obstructions as it is proposed as the entrance to the marina basin.

The estimated cost of Submerged Cribbing Removal is approximately \$55,000.

8.3 Marina Head Pier and Finger Docks

A primary objective in the planning of the Founders Landing waterfront area is the proposed recreational boating facility intended to accommodate transient and seasonal vessels. Four (4) floating head pier systems are proposed to be accessed from the Timber Wharf and Fishing Pier-Promenade structures.

The Marina Head Pier and Finger Dock Systems are proposed to consist of the following:

- Four (4) floating head pier systems, 15' wide, ranging in length from 300' to 180'
- 38 floating finger docks, ranging in length from 35' to 60', accommodating 76 slips
- Utilities and utility pedestals

The estimated cost of the Marina Head Pier and Finger dock system is approximately \$1.0 million.

8.4 Marina Support Facilities

8.4.1 Harbor Services Building

The marina facility requires a support facility capable of accommodating the marina manager's office, restrooms, showers, and storage. The Landing Development Group has indicated it will provide the necessary space, within Parcel 3's development, for the marina office, restrooms, showers and storage.

The estimated cost of outfitting and furnishing the Harbor Services facility is \$300,000.

8.4.2 Fuel and Sanitary Pump Out Accommodations

The Cinder Pond Marina, located north of the proposed Founders Landing Marina, contains fuel and sanitary pump out facilities. Given the expense of including fuel and sanitary pump out systems in the master plan, and environmental concerns, it is recommended that the Founders Landing Marina's fuel and pump out needs be accommodated by the Cinder Pond facility.

8.5 Other Estimated Costs

The Engineer's Opinion of Construction Costs (Appendix D) also includes the following estimates:

- Bonds, Insurance, Mobilization
- Erosion Control
- Shoreline Earthwork
- Demolition and Removal
- Kayak/ Crew Launch Dock
- Engineering, Design, Permitting, Bidding and Construction Management
- Construction Contingency

8.6 Estimated Cost of Founders Landing Marina and Public Access Facilities

The probable cost of the Founders Landing Marina and Public Access facility development is estimated at \$10,905,718. The cost estimates were calculated utilizing 2010 dollar values.

9.0 Founders Landing Marina and Public Facilities - Proposed Project Funding

The Founders Landing Marina and Public Access Facilities are recommended to be financed by the:

- Michigan Department of Natural Resources/ Michigan State Waterways Commission grant-in-aid program for Harbor Development projects at 50% of total cost of marina development. AECOM recommends multi-year, phased development grant application submittals.
- Marquette Brownfield Redevelopment Authority - Founders Landing Tax Incremental Financing (TIF). The anticipated tax revenue generation from the Founders Landing Parcel 1 and Parcel 3 Brownfield TIF is \$1,700,000 annually.
- Other financing sources for the project are recommended to be pursued. Other sources may include: Great Lakes Fishery Trust Fund; Michigan Natural Resources Trust Fund; the MDEQ's Coastal Management Program; and other State, Federal and private funding sources that may be appropriate for this project.

Appendix A

Presque Isle Marina – Maps and Surveys

Appendix B

Presque Isle Marina – Redevelopment Site Plan and Cost Estimates

Appendix C

Marquette Founders Landing - Location Map, Plat and Survey

Appendix D

Marquette Founders Landing - Site Plan and Cost Estimates