Introduction:
Mercer Island Beach Club (MIBC), celebrating its 67th year (est. 1954), is a non-profit, family-oriented, multi-use recreational club located on the Southeastern tip of Mercer Island. In total the club covers about 7.5 acres and approximately 675 feet of Lake Washington shoreline and offers a clubhouse, swimming pool, swim beach, tennis courts, sports courts, picnic areas, moorage facilities and boat ramp and picnic areas. The club offers 500 family memberships to Mercer Island residents and has a sizable waiting list to join. MIBC has a positive, long-standing reputation as a good neighbor and is sensitive to both local community and environmental issues.

For this project MIBC plans a reconfiguration and replacement of the 50+ year old portion of the existing marina and swim dock as soon as permitting will allow. The MIBC Marina is a cherished amenity of the club and is also an important and unique asset of the Mercer Island community having likely provided moorage to over 1000 island families over its lifespan.

MIBC is a non-profit organization and will maintain this status. Our motivation for pursing this project is four-fold: 1) Retaining member (and member-guest) access to Lake Washington within the boundaries of club property, 2) providing a facility that is safe and in good condition for all who use it, and 3) improving the fishery habitat for which the club maintains stewardship, and 4) making significant improvements to the environmental conditions in and around the club's moorage facility.

Current Challenges:*(see photos at end of this document)*

- The existing structures are far past their expected lifespan and are quickly failing. There is significant wood rot, pile failure (decay/leaning/breaking), and overall instability & warping of the structures.
- Safety is becoming an increasing concern as the facility deteriorates. One entire moorage dock has already been permanently closed for safety and liability concerns.
- Over the last few years MIBC has faced significant and increasing failures of the marina structure, and currently must invest significant volunteer time to take proactive steps to keep the remaining structure viable for ongoing Summer use. As an example, in 2018 70 feet of the outer/lakeward "day dock" broke free and floated away during a winter storm.
- Exposure to wave action: Due to the loss of 70 feet of the lakeward "day dock" in 2018 much of the marina is directly exposed to lake wave action including storms, and large amplitude waves from yachts and wakesurf boats. This exposure is expediting the failure of the marina structure, as well as causing damage to member watercraft, and increased shoreline erosion.
    - The remaining "day dock" structure is progressively losing buoyancy and has only one or two inches of structure above the water surface. For safety reasons the dock has been closed for all use. This resulted

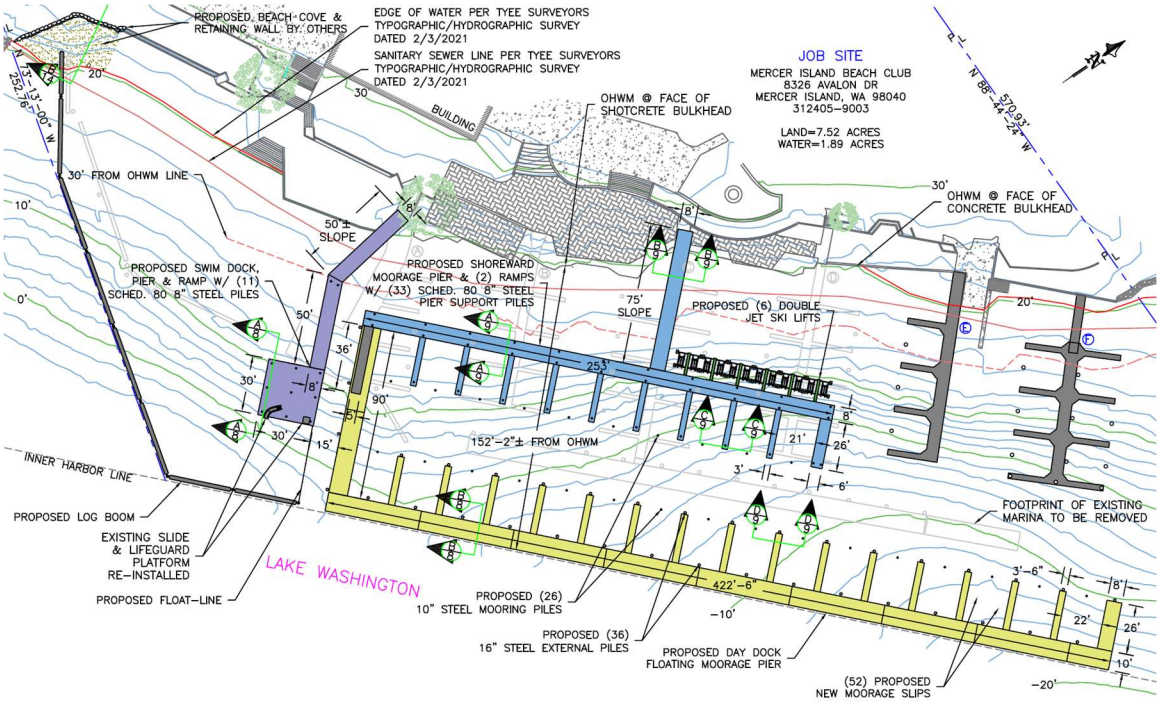
in the loss of transient watercraft moorage and pickup/drop-off access.

- There is a slow natural migration of lake bed sediment into the marina area which has resulted in loss of near-shore boat slip use, and causes ecologically undesired turbulence of sediment as boats move with wave action.
- Moorage capacity is slowly decreasing as piles and other structures fail and MIBC is forced to take existing boat slips out of use. Currently three boat slips have been permanently decommissioned and a few others are unusable during late Summer and Fall due to insufficient water depth.

Project Proposal Summary:

The MIBC proposes to redesign, reconfigure, replace and upgrade most of its existing marina for watercraft moorage, and to replace and update the swim dock along with the perimeter floats/log booms which protect the swimming area. Today the existing marina consists of seven moorage docks, five of which are in scope for this project. The remaining two docks (E & F) were installed in 2005 and have sufficient life remaining.

The MIBC designed this project proposal to provide an important improvement over the existing facilities, and to result in enhanced recreational and ecological benefits. The proposal has been designed to meet state and federal requirements which limit structures within the shallower nearshore area within 30 feet from the OHWM. Among the benefits of this design is the protection of juvenile salmonids from predatory bass and perch. The proposal reconfigures all but the access walkways to the marina and swim dock 40 feet or more from the shoreline, allowing unobstructed passage of juvenile salmonids along the shoreline, safe from predator fish.



Proposal details:

- The proposed reconfiguration is to construct a single point access marina to replace the fixed A, B, C and D docks along with the floating outer "day dock" and replace those structures with a new hybrid marina consisting of a new fixed shoreward and floating seaward slip marina.
- The replacement portions of the marina configuration will include moorage for 52 boats and 12 Jet Skis. The total boat moorage capacity after project completion will be the exact same as the existing marina (70 boats).
- The existing fixed swim platform will be replaced with a reconfigured and separated platform having a narrower fixed walkway and positioned slightly further into the lake to access deeper water for safety purposes.
- A replacement log boom will be installed around the existing swim area to provide a clear delineation between boating and swimming areas for safety (particularly of children who are the predominate users of the swim area).
- The reconfigured moorage will increase overwater coverage by 1,812.7 square feet and will reduce overwater coverage within 30 feet of the shore by 602 square feet and reduce shadowing by using grated decking (as compared to the current solid wood plank construction). Boat moorage will be shifted out to deeper water but all structures will remain inside the inner harbor line boundary. The new configuration meets Washington Administrative Code criteria for freshwater marinas by creating a single point access marina in place of the existing multi-point access moorages.

Design Basis/Reasoning:

- Benefits of a hybrid dock design with fixed near shore and floating lakeward dock include:
    - The fixed near shore dock provides increased stability for people walking across the gangway to/from shore, and also reduces over water shadowing near shore as no floats are required to support the dock.
    - The floating lakeward dock will require significantly fewer support piles, and a floating structure can better handle significant wave action. Additionally, the floating pier will minimize dock and vessel damage caused by lake level fluctuation throughout the season. (Lake Washington's water level varies over two feet, sometimes with changes happening significantly over a day or two).
- Orient moored boats to point bow first into oncoming wave action to best naturally handle rough seas, and enhance boater safety.
- Moving structures deeper into the lake helps from an ecological perspective by reducing near shore coverage and by preventing turbulence of lake bed sediment by moving boats to a suitable moorage depth.
- Suspended gangways are used to access the marina and swim platform. The gangways will have no support structures near the shoreline which is done to ensure there is substantial spacing from the sensitive sewer mains that run under the near-shore lake bed.
- The vertical height of structures should remain unchanged from today, with watercraft being the highest structures in the offshore marina area (no change from today). This will prevent introducing any new vertical obstructions for adjacent neighbor views.

Project benefits:

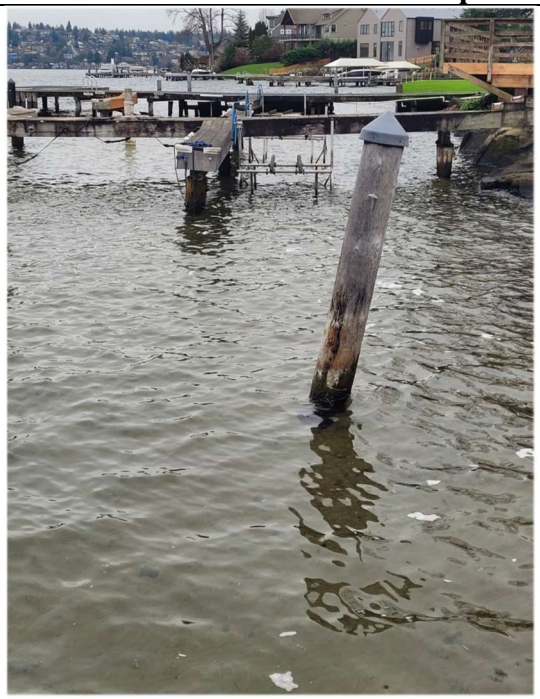
- Preserves and maintains a long-standing member and community amenity by offering a fully functional marina that will serve the residents of Mercer Island for decades to come.
- Retaining this shared neighborhood marina will prevent future increased demand for single family home moorage/dock space.
    - A shared neighborhood marina consolidates shoreline impact, and allows better enforcement of lake best practices (no fueling on the water, etc.).
- Enhance environment via:
    - Significant reduction of structures near shore that create over water coverage.
    - Vessels moved to deeper water reducing near shore coverage and preventing boats from disturbing the lake bed sediment.
    - Transition to transparent decking.
    - Remove at least 137 wood piles (creosote treated) and replace with approximately 106 piles made of approved materials. (A 22.6% decrease)
- In addition to removal of over water coverage in the nearshore, the proposal will remove 60 linear feet of rock and timber bulkhead and replace it with a

natural spawning gravel shoreline Southwest of the existing swim area (*see photo below*).

- Reduction of (over-water) access points from four to one while still serving the same number of boat slips.
- The project includes numerous human safety enhancements including:
  - Railings and handrails along access gangways
  - Enhanced fire suppression infrastructure
  - Low voltage DC LED perimeter lighting to ensure watercraft can see the dock in low light conditions
- Zero trees are expected to be removed or harmed through this project.

Existing timber bulkhead to be reconfigured to natural shoreline like conditions with spawning gravel substrate. 60 linear feet. This photo was taken during the winter when lake levels were low. During the Summer the water goes all the way to the timber bulkhead.

Examples of current marina conditions

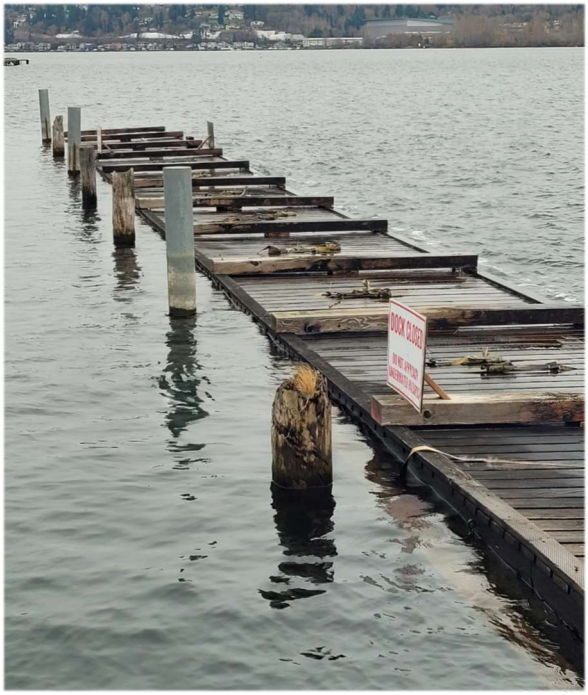


Failed mooring pile

Failed support pile

Failed lateral brace and debris skirting

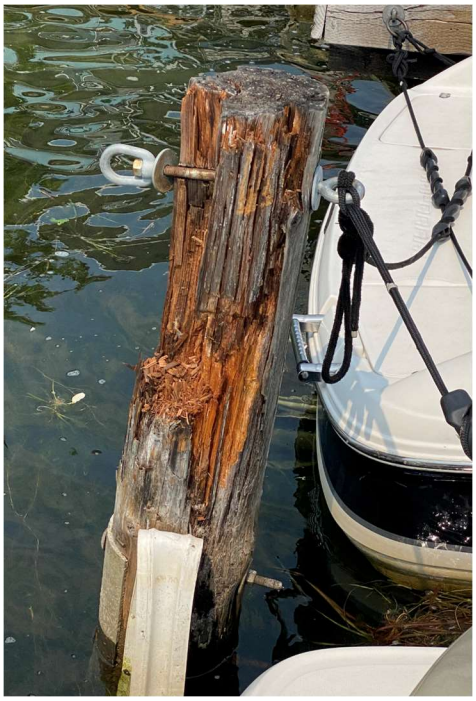
Decaying structural pile



Outer “day dock” in disrepair

Unstable/leaning finger pier

Broken mooring pile, resulting in unusable boat slip



Disintegrating mooring pile

"Day dock" is permanently closed for safety

Section of "day dock" retained from 2018 failure