

National Park Service
U.S. Department of the Interior



Apostle Islands National Lakeshore
Ashland County, Wisconsin

**STATEMENT OF FINDINGS
FOR
EXECUTIVE ORDER 11900 (PROTECTION OF WETLANDS)**

**Replace Devils Island Docks Waterfront and
Reconstruct Historic Boathouse**

Ashland County, Wisconsin

Recommended:

Superintendent, Apostle Islands National Lakeshore

Date

Certification of Technical Adequacy and Servicewide Consistency:

Chief, Water Resources Division, Washington Office

Date

Approved:

Director, Midwest Region

Date

Rehabilitate Waterfront at Devils Island and Boat House
Apostle Islands National Lakeshore, Ashland County, WI
Wetland Statement of Findings, PMIS 270691

National Park Service
U.S. Department of the Interior



CONTENTS

Introduction	1
Proposed Action	3
No-Action Alternative	3
Other Alternatives	3
Alternative Option 1	3
Alternative Option 2	4
Alternative Option 3	5
Proposed Action	7
Site Description	10
Wetlands	10
Lacustrine Wetlands	10
Wetland Functions and Values Assessment	12
Functions	13
Fish and Shellfish Habitat	13
Wildlife Habitat	13
Flood Flow Alteration and Sediment/Shoreline Stabilization	13
Recreation	14
Educational/Scientific Value	14
Heritage/Uniqueness	14
Visual Quality/Aesthetics	14
Functional Values	14
Justification for Use of the Wetland	14
Wetland Impacts and Compensatory Mitigation	15
Avoidance and Minimization	15
Total Temporary and Permanent Impacts	15
Compensatory Mitigation Plan	16
Conclusion	18
References	19

LIST OF FIGURES

Figure 1. Project Location	2
Figure 2. Existing Conditions Overview of Project Area	2
Figure 3: Cross-Sectional View of Alternative Option 1	4
Figure 4: Rendering of Alternative Option 1.....	4
Figure 5: Cross-Sectional View of Alternative Option 2.....	5
Figure 6: Rendering of Alternative Option 2.....	5
Figure 7: Cross-Sectional View of Alternative Option 3.....	6
Figure 8: Rendering of Alternative Option 3.....	6
Figure 9. Proposed Action: Devils Island Site Plan	8
Figure 10. Proposed Action: Sections.....	9
Figure 11. Wetland Areas	11
Figure 12. Compensatory Mitigation Location	17

LIST OF TABLES

Table 1. Summary of Wetland Functions and Values in the Devils Island Study Area	12
Table 2. Summary of Wetland Impacts at Devils Island	Error! Bookmark not defined.

INTRODUCTION

Devils Island is part of the Apostle Islands National Lakeshore (the lakeshore) within the waters of Lake Superior, in Section 15, Township 63 North, Range 3 West, Ashland County, Wisconsin. The project is located on the southwestern corner of the island. See figures 1 and 2 for the project location.

The Devils Island Marina is considered critical park infrastructure. When functional, it provides safer harbor in a remote area of Lake Superior and enables crucial park operations such as search and rescue, visitor access, and upkeep of a historic light station and other park assets. Over the years, storms have damaged the docks and breakwater rendering the harbor no longer safe for boaters escaping bad weather. Currently the safe harbor is not functional and is dangerous in its current condition.

The Devils Island Boat House was severely damaged by a storm in 2017 and subsequently dismantled. Previous documentation, such as a 2009 Historic Structures Report (HSR) developed by Anderson Hallas and 1991 Historic American Buildings Survey (HABS) drawings developed by others, have been consulted to determine the previous form and conditions. The storms in 2017 also impacted the structural integrity of the marina; marina deterioration has impacted lakeshore visitors and staff.

Devils Island has a period of significance which spans the US Coast Guard occupation of the island and Light Tower for navigational use from 1892 to 1978. Contributing structures to the 1977 Apostle Islands Lighthouses National Register listing include the boat house (constructed in 1891) and dock. These structures were important components of the island's occupation, allowing for the safe moorage of a vessel on the southern shore of Devils Island.

The purpose of the project is to provide a safer harbor for guests to Devils Island to utilize as they enjoy the Apostle Islands National Lakeshore. The National Park Service (NPS) proposes the rehabilitation of two existing dock structures, rebuilding the historic Boat House that is currently in storage, rebuilding and improving the rock breakwater, and rebuilding the rock retaining wall to re-create a safe harbor for boaters visiting Devils Island. This project would provide a safe and enjoyable harbor for visitors and NPS employees visiting and maintaining Devils Island.

Executive Order 11990 (Protection of Wetlands) requires the National Park Service and other federal agencies to evaluate the likely impacts of actions in wetlands. NPS Director's Order #77-1: Wetland Protection and Procedural Manual #77-1 provides NPS procedures for complying with Executive Order 11990. This statement of findings documents compliance with the NPS wetland protection procedures.



Figure 1. Project Location



Figure 2. Existing Conditions Overview of Project Area

PROPOSED ACTION

NO-ACTION ALTERNATIVE

Under the no-action alternative, the rehabilitation of the Devils Island Boat House, marina, and docks would not occur. If no action is taken, the existing infrastructure would continue to rapidly deteriorate, increasing public safety risk. The existing state of the infrastructure does not provide safe and reliable access to the island, either for the public or for the National Park Service. Under the no-action alternative, the rapidly deteriorating infrastructure would soon be impassable, and the docks would require closure, eliminating public access to Devils Island and the Devils Island Watercraft Campsite.

OTHER ALTERNATIVES

Different designs and treatments for the new marina structures were considered during the planning and design for this project; however, no designs with a smaller footprint were feasible due to the conditions within Lake Superior. The proposed rock revetment design ensures that the new structures to be placed in the water are small enough to avoid unnecessary fill within the wetland but large enough to create a safe harbor with adequate protection to withstand the wave actions and storm events that occur on Lake Superior. The following describes the alternative options and why they were dismissed from further consideration.

Alternative Option 1 – New wooden crib docks and armor stone breakwater and concrete wave return wall

Alternative option 1 consisted of replacing the existing dock structures in-kind and providing an armor stone breakwater with a concrete wave wall. The breakwater and wave wall would be necessary to minimize the damage to the proposed docks and to reduce the amount of wave overtopping experienced in the harbor. With this design, the significant waves inside the harbor would range from 6 inches to 1 foot 9 inches at the locations where boats would be moored. This meets the American Society of Civil Engineers (ASCE) design standard for a 50-year storm event for a small craft harbor.

The existing conditions have a wave overtopping volume of about 439 liters per second (L/s) per meter. Wave overtopping volumes greater than 10 L/s per meter is an upper threshold for small craft harbor design. Overtopping rates exceeding 10 L/s per meter are capable of sinking small craft. To reduce the wave overtopping, an armor stone breakwater with a concrete wave wall was proposed. The armor stone breakwater would require a crest width of about 10 feet and a crest elevation of 609 feet. The wave wall would extend beyond the breakwater crest up to an elevation of 612 feet and would reduce the wave overtopping to around 9 L/s per meter during storm events.

Alternative option 1 is the most expensive option considered and also provides the least resiliency in design. The concrete wave return wall was deemed detrimental to the cultural landscape of the island, and also very difficult to construct. Because of these reasons, this option was dismissed. The cross section and rendering for this option can be seen in figures 3 and 4.

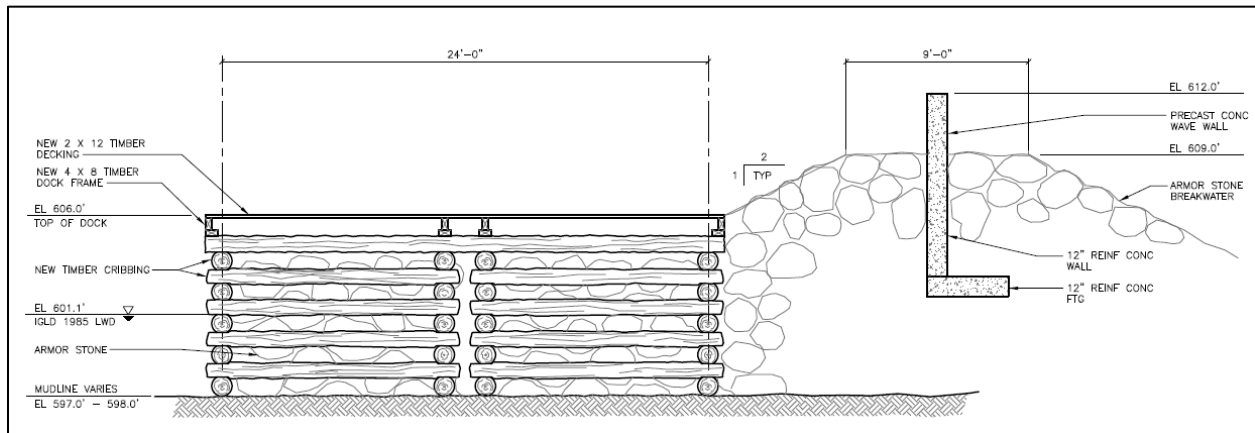


Figure 3: Cross-Sectional View of Alternative Option 1



Figure 4: Rendering of Alternative Option 1

Alternative Option 2 – New steel crib docks and armor stone breakwater with concrete wave return wall

Alternative option 2 consisted of replacing the existing dock structures with a steel crib dock structure and providing an armor stone breakwater with a concrete wave wall. The breakwater and wave walls would be necessary to minimize the damage to the proposed docks and to reduce the amount of wave overtopping experienced in the harbor. With this design, the significant waves inside the harbor would range from 6 inches to 1 foot 9 inches at the locations where boats would be moored. This meets the ASCE design standard for a 50-year storm event for a small craft harbor.

The wave analysis performed for this option yielded the same design wave conditions as the analysis performed for the alternative option 1 described above. The overtopping conditions did not change as a result of the dock structure change between options 1 and 2.

Alternative option 2 provides a higher resiliency in design; however, it is important to note that this option does not match the historic nature of the Devils Island docks. The concrete wave return wall was deemed detrimental to the cultural landscape of the island, and also very difficult to construct. Because of these reasons, this option was dismissed. The cross section and rendering for this option can be seen in figures 5 and 6.

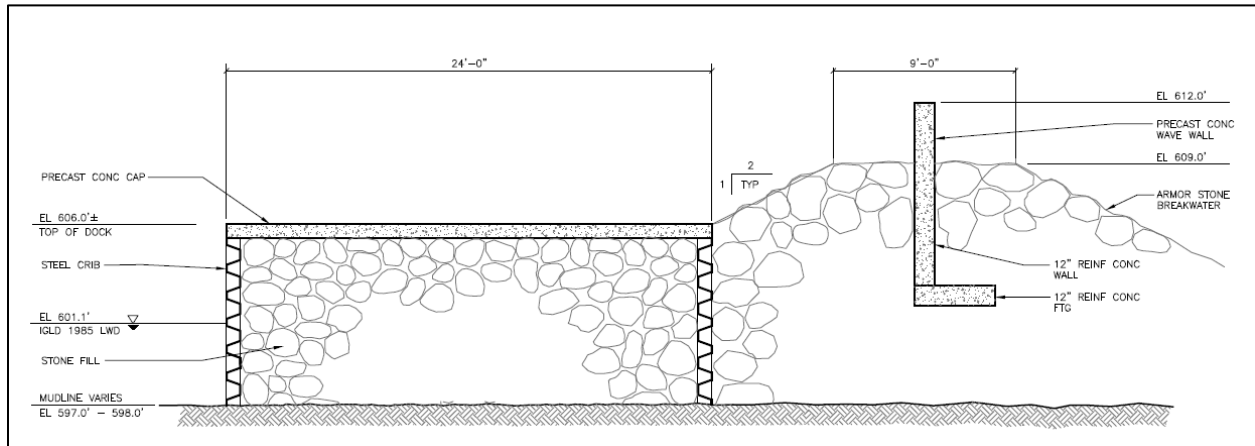


Figure 5: Cross-Sectional View of Alternative Option 2



Figure 6: Rendering of Alternative Option 2

Alternative Option 3 – New shoreside steel crib dock and armor stone breakwater

Alternative option 3 consisted of constructing an armor stone breakwater over the existing dock structures and constructing a new shoreside dock adjacent to the boat house in the harbor. This breakwater would reduce the significant wave size experienced in the harbor and provide protection for the new dock structure within the harbor. With this design, the significant waves inside the harbor would range from 6 inches to 1 foot 9 inches at the locations where boats would be moored. This meets the ASCE design standard for a 50-year storm event for a small craft harbor.

The existing conditions have wave overtopping amounts of about 439 L/s per meter. Because design option 3 does not have a dock structure immediately behind it, the threshold for the wave overtopping

discharges was increased to 50 L/s per meter. To be within this limit, the crest of the armor stone was set at elevation of 611 feet, which resulted in an overtopping rate of about 43 L/s per meter. Note that a wave wall was not required for this design option.

Alternative option 3 is a lower cost alternative and also provides the highest resiliency in design compared to the other alternative options. This option also most closely matches the historic and cultural landscape of the infrastructure at the site. This option was considered, but there were additional opportunities to reduce the impacts to the lake-bottom and natural resources; therefore, it was dismissed. The cross section and rendering for this option can be seen in figures 7 and 8.

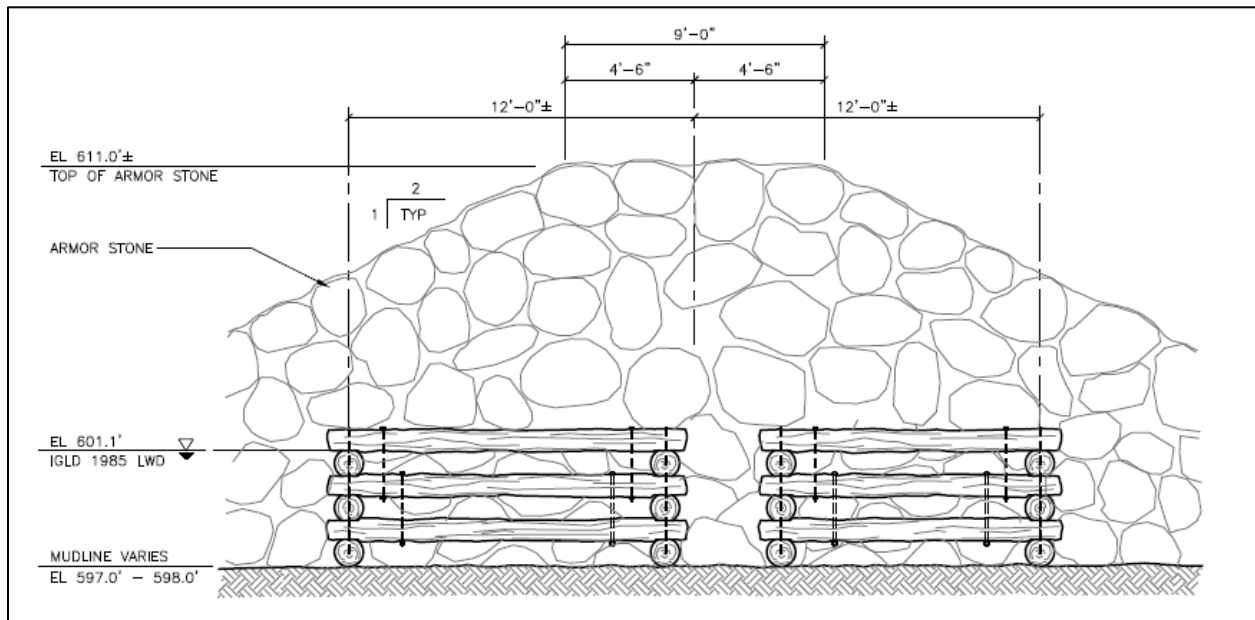


Figure 7: Cross-Sectional View of Alternative Option 3.



Figure 8: Rendering of Alternative Option 3

PROPOSED ACTION

Under the proposed action, the National Park Service would undertake rehabilitation of the Devils Island marina and reconstruction of the Boat House. The essential form and function of the existing dock and breakwater structures would remain but would be improved. The existing breakwater is heavily deteriorated and is no longer providing protection for the docks in the project area; the proposed rehabilitation includes installing new rip rap around the project site as well as rebuilding the rock retaining wall at the site. In addition to rehabilitating the dock structures and repair of the breakwater, other project features include new gravel paths, installation of large flat stones to act as a ramp for NPS landing craft, and reconstructing the former Boat House that has been dismantled and placed in storage to protect it from further damage. See figures 9 and 10 for drawings of the proposed action.

Debris in the water from the failing docks and breakwaters would be removed before construction. Portions of the existing timber crib structure would remain in place and be expanded to repair the docks. The new crib structure would be tied into the existing crib structure and pinned to the bedrock. The voids of the timber crib structure would be filled with stone. A new wooden dock structure would be built on top of the timber crib structure. The existing damaged rock retaining wall to the west of the dock would be repaired in a way that mimics the current aesthetic of the existing rock wall. The rock wall would aid in the protection of the docks and shoreline from damage.

The current east and west rock breakwater would be repaired using approximately 1,642 cubic yards (cy) of riprap that would be placed below the ordinary high-water mark (OHWM) of elevation 605.0 feet starting at the mudline (mudline varies from elevation 595.0 feet to 601.0 feet). The east and west breakwater would be repaired and expanded, with both breakwaters cresting at elevation 608.0 feet with a 2:1 slope. The breakwaters would protrude out into the water starting at the dock approximately 20 feet. This would occur for both dock sections. Large flat stones would be installed on the western side of the project site on the land side of the dock to provide a safe and stable area for NPS employees to land their landing craft and unload material for maintaining the island and its facilities. A gravel path would also be installed on the western side of the project site coming off the western dock and heading northeast. The Boat House would be reconstructed to the immediate north of the large flat stones.

In 2023, during the Design Development Review the design team found the design, which was intended to provide Safe Harbor for boaters may have too large of a footprint (breakwater stone) and too much of a visual impact (wave wall and height of breakwater). The team revisited the safe harbor requirements and determined that providing a level of safety significantly greater than the previous condition that balanced the cultural and natural resource impacts was preferable to the size and scale of what is required to meet the safe harbor classification.

It is anticipated that the contractor may need to stage/store materials within the bay. An additional 0.5 acres of temporary wetland impact is thus assumed to accommodate a staging area.

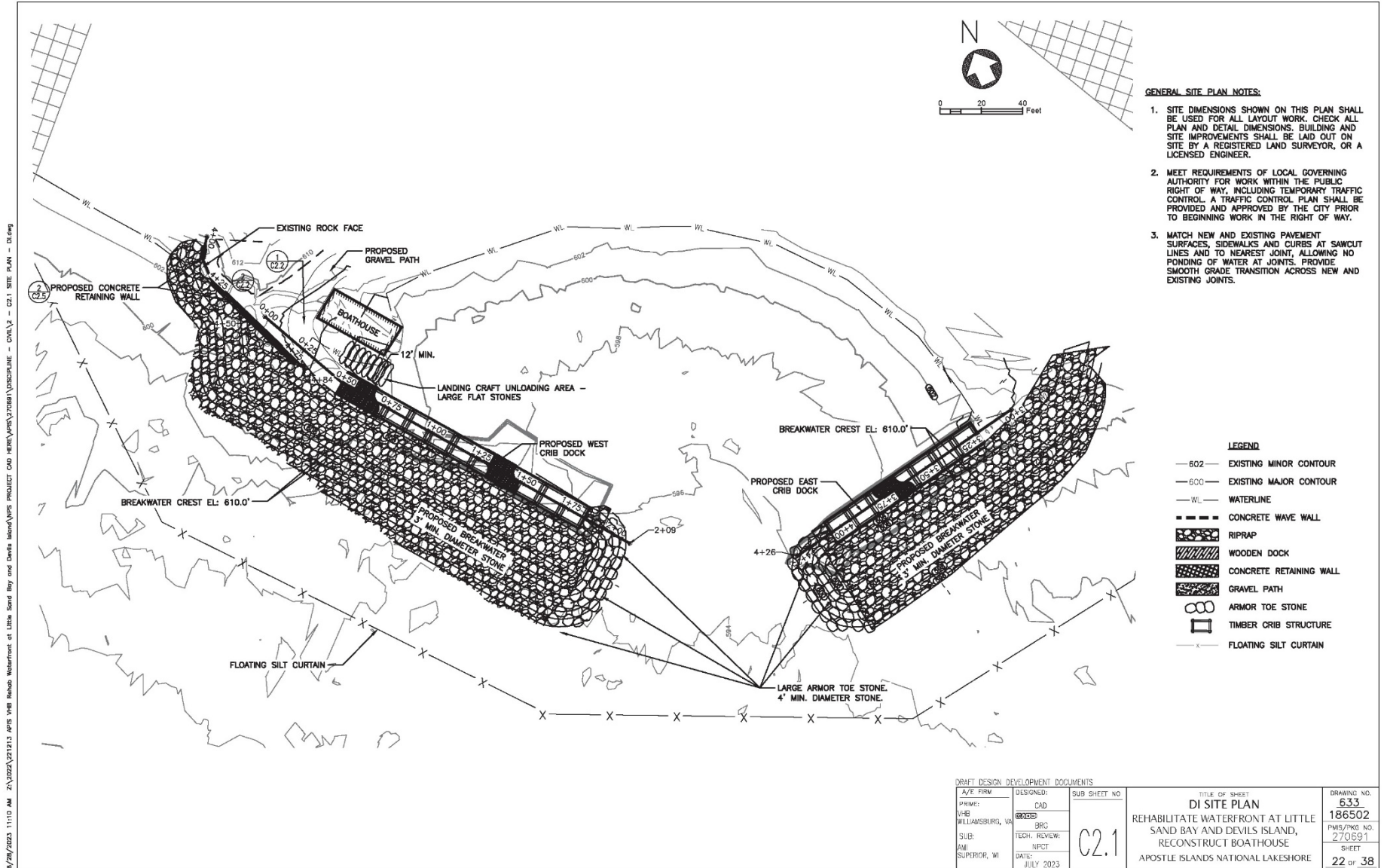
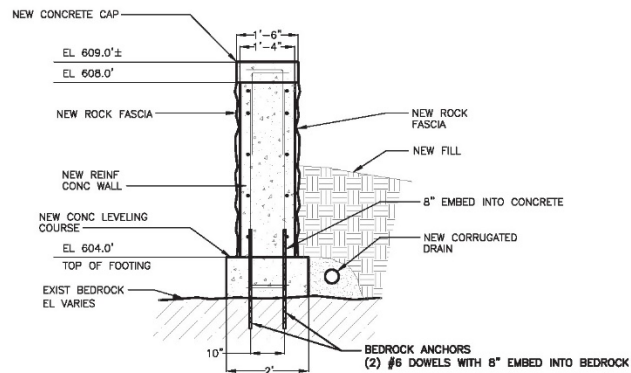
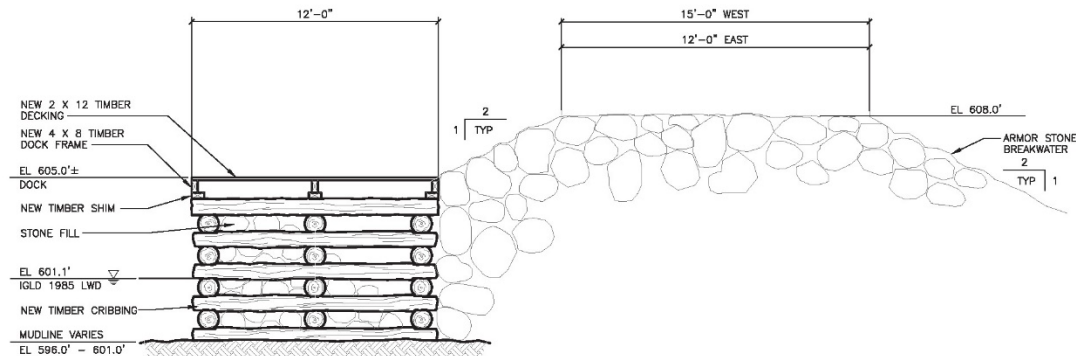


Figure 9. Proposed Action: Devils Island Site Plan

8/29/2023 11:10 AM 2/2023/27213 JWS VHB Rebuild Waterfront at Little Sand Bay and Devils Island\NPS PROJECT CAD FILES\NPS\270691\DISCIPLINE - MARINE STRUCTURAL\3 - CT2.1 DETAILS - Detail

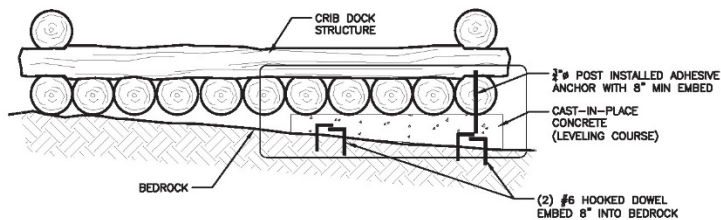


1 CONCRETE RETAINING WALL
SCALE: 3/4" = 1'

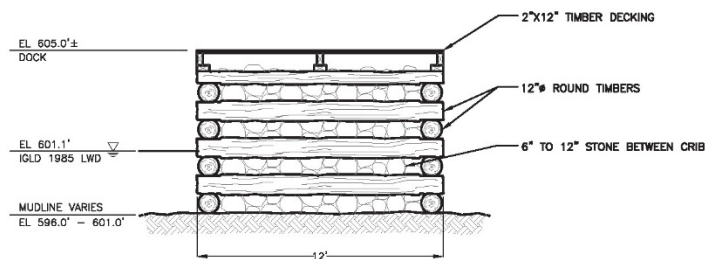


3 DOCK REHABILITATION
SCALE: 3/8" = 1'-0"

1. ARMOR STONE SHALL BE 36" MINIMUM UNLESS NOTED OTHERWISE.



2 CRIB DOCK LEVELING FOUNDATION
SCALE: 3/4" = 1'



4 TYPICAL CRIB DOCK SECTION VIEW
SCALE: 3/8" = 1'

DRAFT DESIGN DEVELOPMENT DOCUMENTS			TITLE OF SHEET		DRAWING NO.	
DATE:	DESIGNED:	SUB SHEET NO.	DI WALL AND CRIB DETAILS		633	
PROJECT:	CAD		REHABILITATE WATERFRONT AT LITTLE		186502	
BY:	BRG		SAND BAY AND DEVILS ISLAND,		270691	
SUB:	TECH. REVIEW:		RECONSTRUCT BOATHOUSE		SHEET	
DATE:	NPCT		APOSTLE ISLANDS NATIONAL LAKESHORE		28 OF 38	
DATE:	JULY 2023					

Figure 10. Proposed Action: Sections

SITE DESCRIPTION

WETLANDS

The National Wetland Inventory identifies Lake Superior to the south of the project site as the only wetland present in the area. A site-specific in-person wetland delineation was not conducted at the project site. A desktop wetland delineation was conducted within the project area encompassing the entire project site, including above and below water. NPS-approved methodologies were followed involving detailed, desktop delineation conducted by AMI Consulting Engineers. The objective of the desktop investigation and subsequent analysis was to accurately identify wetlands protected under NPS Director's Order #77-1. Data collected included soil data, topography data, aerial photography, and vegetation data within the desktop delineation study area, focusing on vegetation, soil, and hydrology data needed to verify the presence, location, and federal classification of jurisdictional resources.

The detailed desktop wetland delineation identified one wetland consisting of two wetland types along the Devils Island shoreline within the project area. The jurisdictional resources and study area are shown in figure 11 below. Descriptions of the wetlands identified within the study area are provided below.

Lacustrine Wetlands

Lacustrine Littoral Unconsolidated Bottom (L2UB2H)

The L2UB2H wetland area within the project area extends from the OHWM elevation of 605.0 feet and extends to a water depth of 8.2 feet (2.5m) or elevation of 596.8 feet. The L2UB2H wetland covers 1.12 acres of the project site. The size and location of the wetland area is depicted in figure 11. Due to the lack of vegetation and soil data for the area, a determination of the presence of a wetland was made based on hydrology of the area, predominantly the fact that the wetland is permanently flooded. The desktop wetland delineation identified the boundary of the L2UB2H wetland by identifying the OHWM of Lake Superior. According to USACE, the OHWM is indicated by a "line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (USACE 2005).

The following physical characteristics were considered when making the OHWM determination:

- Destruction of terrestrial vegetation
- Presence of litter and debris
- Shelving

Because physical indicators alone were used to identify the OHWM, at least two indicators were required to complete the determination. In this case, two of the above indicators were consistently present within the project area, resulting in a very clear line defining the OHWM and edge of the littoral zone of Lake Superior.

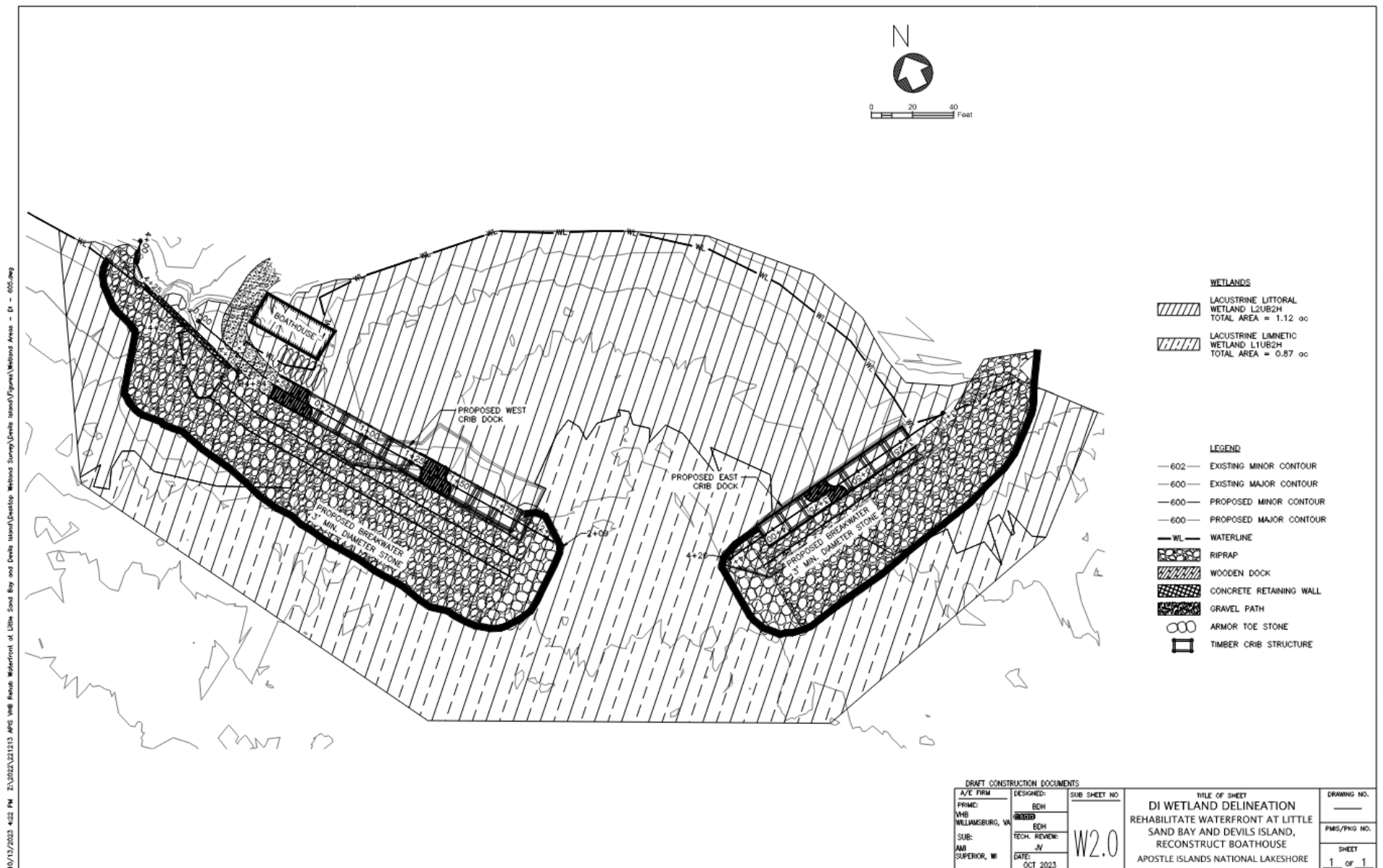


Figure 11. Wetland Areas

Lacustrine Limnetic Unconsolidated Bottom (L1UB2H)

The location and size of the L1UB2H portion of Lake Superior within the study area are depicted in figure 11 above. Limnetic wetlands are classified as deep-water wetlands with a depth greater than 8.2 feet (2.5 meters) and lacking vegetation. The delineation of the L1UB2H boundary was identified by utilizing bathymetric survey data to determine the area within the project area where the water depth exceeded 8.2 feet. The L1UB2H wetland covers 0.87 acres of the project area. Due to the lack of vegetation and soil data for the area, a determination of the presence of a wetland was made based on hydrology of the area, predominantly the fact that the wetland is permanently flooded.

WETLAND FUNCTIONS AND VALUES ASSESSMENT

An assessment of 13 wetland functions and values was evaluated for wetland resources within the study area using the *New England Highway Methodology* developed by the USACE (USACE 1995). This methodology utilizes a “descriptive approach” based on both wetland science and judgment in the field using guided questions to determine if a particular function or value is present, and then to determine if that function or value is a primary or secondary function or value. The results of the analysis concluded that eight primary functions and/or values, described below and summarized in table 1 below, are present within the Lake Superior lacustrine limnetic zone surrounding Devils Island. These include the following:

- Flood flow alteration
- Sediment/shoreline stabilization
- Fish and shellfish habitat
- Wildlife habitat
- Recreation
- Education/scientific value
- Uniqueness/heritage
- Visual quality/aesthetics

TABLE 1. SUMMARY OF WETLAND FUNCTIONS AND VALUES IN THE DEVILS ISLAND STUDY AREA

Wetland ID	Wetland Area (ac)	Wetland Functions and Values (USACE 1995)												
		GW R/D	FFA	S/T/R	NR/R/T	PE	S&S S	F&SH	WLH	ESH	REC	ED/S V	U/H	VQ/A
L2UB2H	1.12	--	P	--	--	--	P	P	P	--	P	P	P	P
L1UB2H	0.87	--	--	--	--	--	--	P	--	--	P	P	P	P
	P	Principal Function or Value						ESH	Threatened and Endangered Species Habitat					
	X	Function or Value likely provided						REC	Recreation					
	GWR/D	Groundwater Recharge/Discharge						ED/SV	Educational/Scientific Value					
	FFA	Flood Flow Alteration						U/H	Uniqueness/Heritage					
	S/T/P R	Sediment/Toxicant Retention						VQ/A	Visual Quality/Aesthetics					
	NR/R/T	Nutrient Removal/Retention/Transformation						PE	Production Export					
	S&S S	Sediment and Shoreline Stabilization						WLH	Wildlife Habitat					
	F&S H	Fish and Shellfish Habitat						ac	Acre					

FUNCTIONS

The littoral portions of Lake Superior within the study area are an important part of the transition zone between a large limnetic, deep-water system and the nearshore communities of Devils Island. This littoral zone extends from the edge of the shore of Devils Island into Lake Superior to a depth of 8.2 feet.

Fish and Shellfish Habitat

The shallow depth and clear water of the littoral zone in the L2UB2H habitats along the project area allow sunlight to penetrate all the way to the lake bottom of the project area. This increases the probability of growth for aquatic plants. However, aquatic plants are absent within the L2UB2H and L1UB2H waters inside the project area, likely due to the unconsolidated and consolidated sandy sediment being covered with stone ranging from boulders to pebbles, as well as wave action, and littoral drift. Organisms that live in the sandy substrate (such as benthic macroinvertebrates) and within the water column (like fish) remain an important part of L2UB2H and L1UB2H functionality for aquatic life. Animals within the study area may include members of the benthic family, but due to the shifting sediments due to wave action and sediment transport within the project area, the presence of benthic macroinvertebrates is unlikely. The shallow waters of the L2UB2H wetland do not provide a suitable environment for larger fish of Lake Superior like lake trout and whitefish. The deeper waters of the L1UB2H wetland provide a suitable habitat for larger fish of Lake Superior, but due to proximity to the shore and significant boat traffic in the area, their presence in the L1UB2H wetland in the project area is unlikely.

Wildlife Habitat

Shoreline wildlife habitat is found in the L2UB2H wetland, located on the unvegetated beach just above the water's edge. This beach area is very narrow with a steep slope rising up the hillside. While the L2UB2H beach is relatively narrow within the project area, it is composed of unconsolidated sand and cobble and experiences fluctuating water conditions, increasing potential for wildlife use as well as the species diversity of small organisms that live within the beach's substrate. Larger wildlife known to inhabit the lakeshore shoreline, such as the bald eagle (*Haliaeetus leucocephalus*) and common loon (*Gavia immer*), hunt for fish along the littoral zone of the island. Migratory birds also use Lake Superior shoreline habitats as a stopover point during migratory flights across North America. However, due to the small size and absence of aquatic plant life, the study area is likely used more frequently by resident birds (i.e., non-migratory) that live along the lakeshore year-round.

Flood Flow Alteration and Sediment/Shoreline Stabilization

Flood flow alteration and shoreline stabilization are two other primary functions of the lacustrine littoral features within the project area. Nearshore flooding does not appear to regularly affect the non-wetland environment of the project area, largely because the littoral features of the shoreline help buffer the bay along the shoreline flood zone. These functions are more important with the absence of vegetated wetlands that commonly provide flood storage and buffering protection. Storm surge protection, floodwater protection, and energy dissipation are all provided by substrate and topographic conditions in the littoral zone, where the gradually sloping lake bottom stabilizes the nearshore environment during harsh, storm-related conditions. As such, the L2UB2H zone functions not only for flood protection, but also for shoreline stabilization.

Recreation

As part of the larger Apostle Islands National Lakeshore, recreation opportunities at Devils Island are present, but only via boat. Devils Island provides hiking trails, overnight camping opportunities, and a historic light tower. Other forms of recreation include fishing, photography, and wildlife viewing.

Educational/Scientific Value

The educational and scientific values of the shoreline along the project area are important from a cultural and natural resources perspective. The lacustrine features are linked to the cultural history of the area and its surrounding facilities, such as the Devils Island Historic Light Tower located on the north side of the island. The natural resources provide examples of unique Lake Superior south shore habitats and lacustrine nearshore processes. Devils Island includes the best, and only location where boreal forest occurs in the Lakeshore. In addition to its importance in the Lakeshore, this boreal forest is considered among the highest quality in the State. The vast majority of the island is also old-growth forest. No native endangered species were noted during the desktop wetland delineation.

Heritage/Uniqueness

The project area has heritage/uniqueness values primarily due to the historical significance of the area to Lake Superior Bands of Chippewa that have treaty reserved rights, as well as the historic Boat House that would be rebuilt as part of this project.

Visual Quality/Aesthetics

The project area provides the public opportunities to access recreation on Devils Island, enjoy views of the shoreline, the open water of Lake Superior, and neighboring islands.

FUNCTIONAL VALUES

The value of the lacustrine wetlands within the study area is low in terms of recreation, educational/scientific value, heritage/uniqueness, visual quality/aesthetics, and fish and wildlife habitat.

JUSTIFICATION FOR USE OF THE WETLAND

The purpose of the project is to provide a safer harbor for Devils Island visitors to use as they enjoy the lakeshore. Improvements to the existing infrastructure would provide a safer and enjoyable harbor for visitors as well as NPS employees maintaining Devils Island. The immediate need is to rehabilitate critical infrastructure to provide safe public access to Devils Island. Upgrading and repairing the existing docks with a new timber crib structure, wooden docks, and rock retaining wall would provide safer access to Devils Island. Repairing and upgrading the existing breakwater wall would provide a safer harbor for boats in the area in case of bad weather. The installation of the new large flat stones on the west side of the project would allow NPS staff to safely and effectively load and unload materials at the site to aid in the maintenance of Devils Island. Improving and expanding the existing infrastructure would allow the old Boat House, which was taken down due to damage by storms, to be rebuilt and protected from storms in the future.

WETLAND IMPACTS AND COMPENSATORY MITIGATION

AVOIDANCE AND MINIMIZATION

The NPS considered avoidance and minimization of wetland impacts while also meeting the goals of the project. In order to provide protection of the shoreline and reestablish infrastructure to provide a safer harbor for visitors and boaters, it was determined that encroachment into the wetlands could not be completely avoided. Complete avoidance of the lacustrine wetlands was not possible because the placement of the breakwater structures and the sand fill behind these structures required that they be located in lacustrine wetlands. A total of 5,284 cy of riprap would be placed below the OHWM to repair and improve the existing breakwater to provide adequate protection for the project site during storms. To minimize impacts below the OHWM, the sheet pile wall, breakwaters, and new rock revetment were designed to ensure that new structures placed in the water were small enough to avoid unnecessary fill below the OHWM but large enough to create a safe harbor with adequate protection for visitors and NPS employees. In-water work would be limited to the minimum required to improve the existing facilities, and best management practices would be implemented during the construction.

TOTAL TEMPORARY AND PERMANENT IMPACTS

The new breakwater and stone revetments would place approximately 5,284 cy of fill below the OHWM elevation of 605.0 feet. A total area of 1.0 acres of lacustrine wetlands would be temporarily or permanently impacted by this project. The temporary fill above the OHWM would be removed after construction is complete and restored to pre-construction conditions.

Long-term impacts on wetlands would include the decrease in size of potential fish and shellfish habitat due to the breakwater structures; however, the project area is not suitable habitat for fish and shellfish due to the shifting sediments, and significant boat traffic. Substantial fish and shellfish habitat would remain in the waters outside of the project area. Therefore, the project is unlikely to have moderate or significant impact on the function of fish and shellfish habitat. During construction, the functions of the shoreline for wildlife habitat would be impacted due to noise and presence of construction activities. Wildlife may avoid the area due to this disturbance but would be expected to return after construction is complete. Because of its size and distance from the Mainland, Devils Island has a very sparse wildlife community. Functions such as flood flow alterations and shoreline stabilization would be temporarily impacted during construction. Once the construction is completed, these functions would return at a greater extent than pre-construction conditions. The values of recreation, educational/scientific, heritage/uniqueness, and visual quality/aesthetics offered by the wetlands would be limited during construction due to the presence of construction equipment and noise; however, the values would be restored after construction is complete.

As described above, the new breakwater and stone revetments would require the placement of an estimated 22,197 square feet (0.51 acres) of sand and riprap fill and a 0.5 acre of temporary impact. This would require compensation to meet the NPS policy of “no net loss of wetlands” per Director’s Order #77-1.

Mitigation will include the restoration of wetlands on Long Island through invasive species control of purple loosestrife (*Lythrum salicaria*). Long Island provides critical habitat for Federally endangered piping plover (*Charadrius melodus*), as well as important habitat for a wide range of migratory and breeding species.

COMPENSATORY MITIGATION PLAN

The total permanent and temporary impact to the lacustrine wetlands at Devils Island is 1.0 acre. Non-native invasive plant removal enhancement compensation for the impacts at Devils Island would be provided at a 40:1 ratio or 40 acres of enhancement for every acre of temporary or permanent impact. Compensatory mitigation would include enhancement of 40 acres of interdunal swales and sedge meadow wetlands through removal of invasive species (primarily the purple loosestrife) on Long Island, located in the southern portion of the park. Figure 12 shows the generalized location of an area with dense purple loosestrife coverage of over 40% that can be used for the mitigation. The specific areas for treatment will be field verified and updated during design and permitting but will be generally located within the area shown on Figure 12.

The purple loosestrife would be removed using best available technologies which could include chemical treatment. The goal of this compensatory mitigation plan is to reduce the invasive species cover within the compensation area to less than 20%. The park has determined that reseeding with native vegetation is not beneficial for targeted treatment method.

Timing:

It is anticipated that mitigation would be completed within two years of closure of the project.

Monitoring and Maintenance:

It is anticipated that monitoring and maintenance of the mitigation site would occur every year for 2 years following implementation of the compensatory mitigation.

Funding:

The total cost for conducting this compensatory mitigation plan is approximately \$100,000, which would be funded through either project funds (LRF Program or ONPS funds).

Functional assessment:

The primary invasive species in the compensation area is purple loosestrife. This is an invasive plant species that prefers moist soils and shallow waters competing with native wetland plants. It has been widely planted as an ornamental where seeds spread to nearby waterways.¹ The proposed compensation area is critical habitat for the Federally endangered piping plover and provides habitat to many other native species of plants, amphibians, and other wildlife. With the removal of the invasive purple loosestrife, it is anticipated that the area will recolonize with native species consistent with other similar wetlands. This recolonization of native vegetation will provide improved habitat for utilization of amphibians and other wildlife (i.e., cover, food, and nesting areas); thus, enhancing community structure.

¹ <https://dnr.wisconsin.gov/topic/Invasives/fact/PurpleLoosestrife>

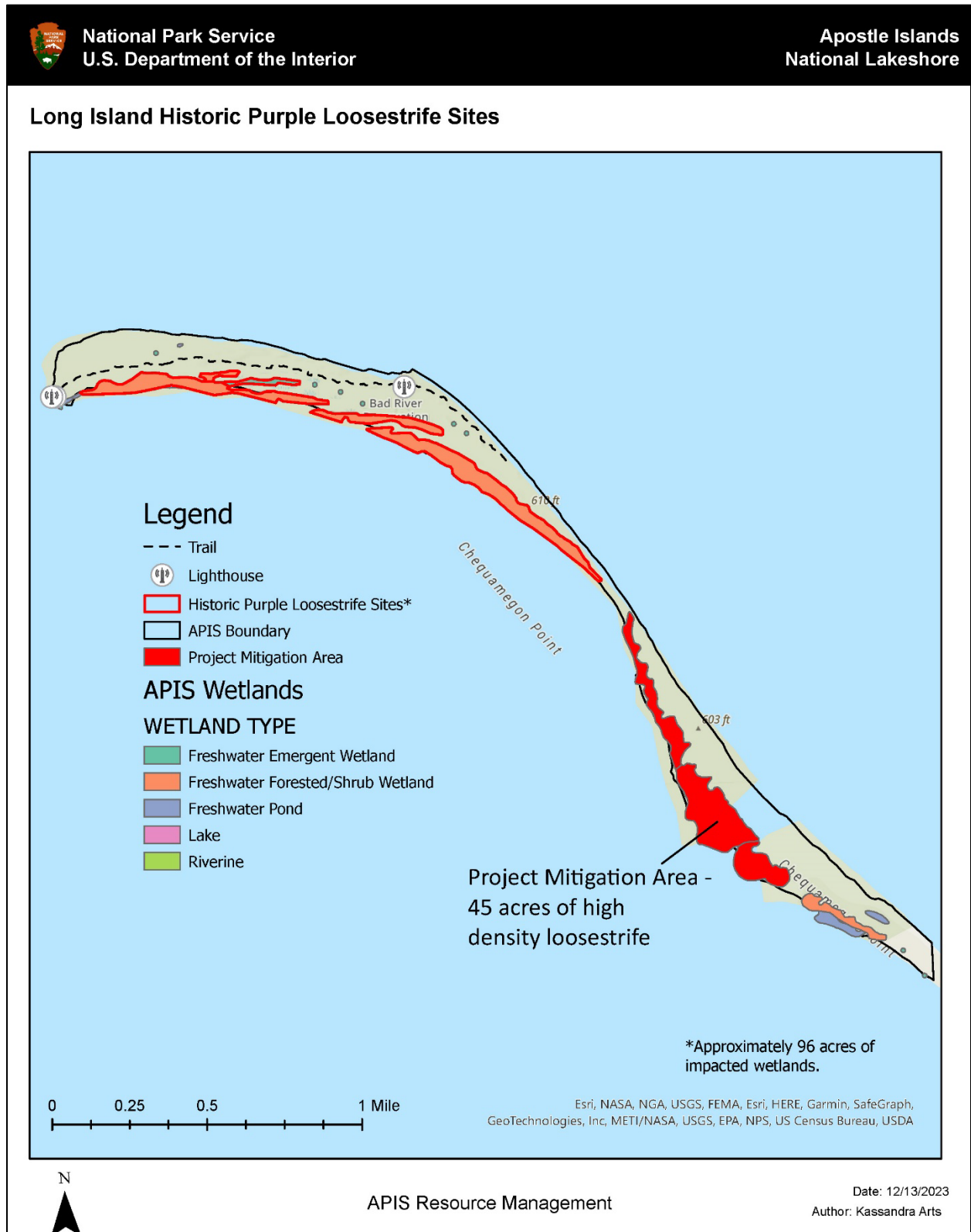


Figure 12. Compensatory Mitigation Location

CONCLUSION

Improvements and repairs to the current infrastructure are needed to provide a safer harbor for visitors and NPS staff. This work includes the rehabilitation of two existing dock structures, rebuilding the historic Boat House that is currently in storage, rebuilding and improving the rock breakwater, and rebuilding the rock retaining wall. These improvements to the marina would provide a safer and more enjoyable environment for guests and the National Park Service to utilize for many years to come. Due to the nature of the project and the location along the shore of Lake Superior, complete avoidance of wetlands was not feasible.

The National Park Service finds that the proposed action is consistent with the policies and procedures of NPS Director's Order #77- 1: Wetland Protection, including the "no-net-loss of wetlands" policy due to the benefits to the public at large in providing a safe harbor in Lake Superior.

REFERENCES

National Park Service (NPS)

2002 Director's Order #77-1: *Wetland Protection*. NPS Office of Policy.

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1995 *The Highway Methodology Workbook Supplement. Wetland Functions and Values: A Descriptive Approach*. U.S. Army Corps of Engineers, New England Division. NENEP-360-1-30a. 32pp.

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