



City of Neenah Parks: Shoreline Improvements Final Report

Neenah, Wisconsin
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PURPOSE

The purpose of this Final Report is for Edgewater Resources to conclude the observations and recommendations for the City of Neenah regarding shoreline improvements at Doty Park and Kimberly Point Park. Broad goals for the parks include repairing or replacing existing structures that are failing, naturalization of the shoreline wherever possible, increasing public safety and access to the water, and improving overall aesthetics of shoreline structures. Additionally, goals for Kimberly Point Park include hardening the shoreline for protection against ice shove, and goals for Doty Park include improving stormwater drainage in the southern portion of the park. Active and passive recreation, events both casual and formal, photo opportunities, and simple people-watching and lake viewing are prominent park uses, so it is important to improve user safety and enhance the shoreline and other park features without significantly changing the site character that is so loved by the community.

Edgewater Resources met with the Neenah Shoreline Task Force on August 3, 2023, to present concept diagrams for both Doty Park and Kimberly Point Park. Preliminary feedback was obtained, and the concepts were further refined to those included in this report.

PROJECT SITE INFORMATION AND BACKGROUND

Both parks flank the Neenah Channel, which connects the Fox River to Lake Winnebago. **Doty Park** is located on the north side of the channel at 701 Lincoln Street. The 9.25 acres of land were donated to the city in 1922 and the park was officially dedicated in 1928. The park consists of primarily grass and trees, with many mature trees and a few ornamental planting mounds. Significant features include the historic Doty Cabin, two stone arch bridges connecting to the island, tennis and pickleball courts, a playground, a gazebo, and a location for weddings and other events. The park is triangular shaped with approximately 1200 feet of shoreline along the Neenah Channel to the southeast and residential on the other sides. The park is bordered by 5th Street to the west and Lincoln Street to the north. The boat launch parking lot to the west of the park has approximately 15 typical parking spaces and 12 trailer spaces. The parking lot and boat launch surfaces are in moderate condition. There are two launch ramps. The following nomenclature will be used to avoid confusion because it is not clear if they have official titles. It is understood that Doty Park is located on Doty Island. To easily identify the smaller island on the park grounds, it will be called Doty Park Island in this report. The small channel that splits Doty Park is referred to as Doty Channel in this report.

Kimberly Point Park is located across the channel from Doty Island, at 290 Lakeshore Avenue. This 4-acre plot of land was added to Neenah's park system in 1929 and the Kimberly Point Lighthouse was erected in 1944 for sailors to recognize the mouth of the Fox River. The lighthouse is now considered a historical feature and it also provides restrooms for the park. The fishing boardwalk at the lighthouse is a high-traffic fishing area for walleye, perch, bass, catfish, and carp. The park is roughly rectangular shaped, with Lake Winnebago to the northeast and southeast, and residential to the southwest and northwest. It has approximately 830 feet of shoreline. Lakeshore Avenue, with angle parking, parallels the shoreline through this park. The space between the parking area and the water's edge varies from approximately 50' – 120'. In 2022, an 8' wide concrete sidewalk was added, which parallels the shoreline. There are several benches



along the new walkway. A raised crosswalk was also constructed to separate the one-way and two-way traffic on the east and west sides of the park, respectively. It was noted that the space is often used as a “drive-through” park, meaning visitors often stay in their cars and drive by or sit in their cars in a parking spot to have their morning coffee or lunch while enjoying the views of the lake.

The park locations are shown on the map below (Figure 1).



Figure 1. Site map indicating park locations and existing shoreline features.



CONCERNS

The primary objectives for the parks include restoring and protecting the shoreline while maximizing water access and visitor safety, while incorporating or enhancing the beauty with naturalized solutions wherever possible.

Doty Park

Doty Park has a number of issues to address to meet the established objectives. These include:

1. The timber seawall along the majority of the shoreline has significant erosion on the landward side of it, creating a safety hazard for visitors.
2. Stagnant water in Doty Channel is a concern, primarily in the summer.
3. The bioswale in the southwestern corner of the park has poor drainage and is a popular destination for geese.
4. Goose droppings make the southwestern section of the park unappealing to visitors.
5. The park has two stone bridges to access Doty Park Island. These bridges have historical value to the park, but their steep slopes prohibit ADA access. Either altering a bridge or an additional bridge will be needed to provide access to Doty Park Island.





Kimberly Point Park

In this park, the City desires to include safe water access “touch points,” to encourage visitors to exit their vehicles and explore the shoreline with its broad panoramic views and to gain more direct access to the water’s edge. To do so, the following issues to address were identified:

1. Kimberly Point Park needs a promenade adjacent to the lighthouse that can withstand the forces that ice exerts upon it.
2. The promenade needs an improved design than what has previously been employed, because it continues to be ravaged by ice each winter, requiring multiple rebuilds in the past decade.
3. The existing concrete and asphalt scrap armored revetment is only marginally effective as shore protection and discourages safe water access. A properly constructed revetment will be more functional and aesthetic for the park.





ENVIRONMENTAL FORCE ANALYSIS

A wind and wave hindcast was completed using historical wind data collected from the Appleton International Airport. The data runs from 1980 to 2023. A simple return period analysis, Gumbel Distribution, and Weibull Distribution were all used to summarize the wind data from the airport. The waves generated from the wind were calculated using the Coastal Engineering Manual (CEM). The table below is a summary of the most significant wave directions.

Table I. Wave Conditions from Prominent Directions.

Direction (Degrees)	Direction		1-week	1-yr	10-yr	50-yr
45	NE	Wave Height (ft)	1.3	1.8	2.1	2.3
		Wave Period (s)	1.7	1.9	2.0	2.1
67.5	ENE	Wave Height (ft)	1.7	2.3	2.4	2.6
		Wave Period (s)	2.1	2.3	2.3	2.4
90	E	Wave Height (ft)	2.0	2.8	3.2	3.3
		Wave Period (s)	2.4	2.7	2.8	2.8
112.5	ESE	Wave Height (ft)	2.1	2.8	3.3	3.4
		Wave Period (s)	2.5	2.7	2.9	2.9
135	SE	Wave Height (ft)	2.3	3.2	3.8	4.1
		Wave Period (s)	2.6	2.9	3.1	3.1
157.5	SSE	Wave Height (ft)	3.4	4.7	5.5	5.8
		Wave Period (s)	3.3	3.7	3.9	4.0
180	S	Wave Height (ft)	0.9	1.2	1.3	1.5
		Wave Period (s)	1.3	1.5	1.5	1.6

The most prominent wave directions are Southeast and South-southeast, which primarily impact Kimberly Point Park. The wind-generated waves that Doty Park will experience should not be as severe, with the primary direction from due East. Although extreme wind-generated wave conditions are critical to the design, the boat wake impact to these parks is important to include in the analysis because boat passing is often a daily, even hourly, event.

The site experiences wake waves from passing vessels including powered recreational craft, wake sport boats, and sailboats. An analysis investigated the severity of waves generated by a sample vessel of each type. The water conditions near Doty Park have significant implications for possible wakes. Firstly, the park shoreline falls within a no wake zone. However, it cannot be assumed that this restriction is always followed. Moreover, the depth ranges from zero feet along the shoreline to nine feet within a navigation channel, with an average of 4.5'. At these shallow conditions, even vessels moving at slower speeds can generate wakes of significant height, as the waves feel the effects of the water bottom.



Typical vessels include recreational power boats, smaller wake sport craft, and sailboats. These vessels can generate wake waves with heights of 0.5 – 0.7' and wave periods of 1.6 – 2.4 seconds. These waves occur under the assumption of 400' and 800' clearance from the shoreline. The limited depth at the site means that the tallest waves occur at lower speeds of around 8.2 mph. Additionally, the sailboats travelling further from the park's shoreline in navigational channel presented the highest wave height. Calculations were based on average water depths, which means true wave heights reaching the shoreline may vary due to shoaling.

Lake ice typically forms when the surface water cools to 32°F. Data was collected for historical winter temperatures for multiple years to determine the total number of days where the temperature reaches below freezing, or below 32°F in a winter season. Using this information and a locality factor of 0.6 for Lake Winnebago (which ranges from 0.2-0.8 depending on the snow and meteorological conditions), an approximate ice floe thickness can be determined. Preliminary ice calculations determined ice floe thickness of 30". ASCE Manual 50 dictates a rule of thumb that the largest dimension of the ice likely ranges from 7 to 13 times the thickness of the ice, so in this case, 18-33' wide. These values are only used for general guidance as significant variability in snow cover or air temperatures can greatly affect ice growth. The ice thickness contributes to the size of the armor stone needed to protect the shoreline from erosion due to ice shove.



PROPOSED PARK IMPROVEMENT CONCEPTS

Doty Park

The Consensus Plan for park improvements at Doty Park is shown in Figure 2 (not to scale). An enlarged version of this graphic is attached in Appendix C.



Figure 2. Doty Park concept graphic.

Doty Park – Phase I

The primary concern at this park is the lack of safe access along the shoreline of the mainland and Doty Park Island. The erosion along the seawall is most severe along the channel-exposed side of Doty Park Island, therefore the naturalized shoreline in that location should be prioritized. Phase I shall include:

- Timber seawall demolition
- Vegetated cobble beach along Neenah Channel side of Doty Park Island
- Concrete seawall along Doty Channel
- Water circulation feature on seawall for Doty Channel



The vegetated beach or natural shoreline eliminates the use of vertical, static edge protection and instead employs vegetation and stone cobbles, with medium sized cobbles being the typical recommendation. With strategic stone placement and use of native plants, this shoreline will be resilient to waves, currents, and ice but will also provide enhanced habitat and reduced long-term cost and maintenance concerns. Natural edges take up more space and are more sensitive to harsh conditions, so they must be used carefully, or used in addition to hard features, like cobble or armor stone.

Existing timber seawalls along the channels would be removed and replaced with a robust architecturally finished retaining wall, such as Redi-Rock® engineered walls, which better complement the stone of the historic bridges in the park. The segment of shoreline immediately adjacent to the boat launch would also receive this treatment, to accommodate broadside docking. The concrete blocks used to construct the walls have a longer design life than timber and will require little to no maintenance. The blocks interlock with each other to provide a sturdy, watertight wall, with a concrete cap on top. The wall face can also be painted to best match the colors of the stone bridges. By replacing the existing timber seawalls in Doty Channel with a similar profile, the width of the channel will not decrease significantly.

The concrete seawall is a significant cost that can be prolonged to Phase 2 if necessary. It would be more efficient to complete the demolition and restoration of the majority of the shoreline at the same time (the concrete seawall in Doty Channel and natural shoreline on Doty Park Island) but they can be done separately if there is a financial restriction.

During summer months, stagnant water becomes an issue in Doty Channel, which requires flushing or improved circulation to avoid. Various pump structures and water movers were considered to be placed adjacent to the Doty Channel to create water features and enhance flow through the channel. There are a few options to improve the water circulation, ranging largely in price. It could be as simple as small devices that pump or diffuse water to keep it moving, or it could be as extravagant as a waterfall which pumps the intake water to a higher elevation and allows the water to flow down, creating a higher flow rate through the channel. The more extravagant features will also add an aesthetic element to the park, purposely drawing attention to the running water. The most practical solution is adding a simple pump structure to be incorporated in the concrete seawall to mimic a waterfall while increasing the flow. There will be operation and maintenance costs associated with each of these pump options.

A stop log structure was considered at either end of Doty Channel to assist in dewatering when needed for channel maintenance and also to potentially support a pathway across Doty Channel (see Phase 2). This alternative was ruled out due to high construction costs and the need for mechanical assistance to remove and replace the logs. Since the Redi-Rock® contractor will already be dewatering the channel for construction of the seawall, the added cost for the stop log features is not feasible.

Doty Park – Phase 2

Once safety concerns are addressed in Phase 1, the solutions to additional concerns can be implemented. The ADA boardwalk, additional concrete sidewalk, and ADA kayak launch will improve accessibility through the park and to the water. Additionally, the natural shoreline along the northeast edge of the park will be restored and provide a seating area with views over the lake.



Phase 2 shall include:

- Boardwalk demolition
- Revetment demolition
- Wetland bioswale enhancement
- Vegetated shoreline along northeast edge of park
- Riprap reef
- ADA boardwalk
- Concrete sidewalk
- ADA kayak launch

The park's existing drainage swale would be enhanced as a functioning bioswale with soil amendments, stone cobbles, and native wetland plants and tall grasses. The swale would still empty to an overflow drain at one end to manage the water level while allowing for natural infiltration of most storm events. The native plantings provide an attractive landscape feature and also help to deter geese, which avoid areas with taller plants. When they can't easily keep an eye out for predators, geese tend to move to more open areas. The boardwalk pathway would start at this bioswale with a pedestrian bridge to pass over the swale and allow visitors to view it from above and move freely through this section of the park.

The northern edge of the park's shoreline will have a vegetated edge. This section of shoreline will be similar to the shoreline implemented in Phase I, but it will need less cobbles and stones because the riprap reef will be protecting it from large wave energy. Benches can be placed upland of the shoreline features for viewing the lake.

Strategically placed stone creates a reef to protect the northern shoreline of the park from westerly waves. This portion of the site has the longest fetch, or distance that wind and waves can travel across open water before the site is reached. The fetch is approximately 6.5 miles long across to the eastern shore of Lake Winnebago, due east of Doty Park. Aside from those easterly waves, the rest of the site is relatively protected, with the only concerns being boat wake and ice shove, which should be minimal as well. The reef will likely have 1 foot of freeboard at the typical summer water level, to maintain visibility. It will be engineered to reduce wave energy without a large footprint.

The riprap reef could be removed from the scope to cut costs if the northern edge of the shoreline were more heavily armored. Vegetation could still be prevalent, but larger stones would be needed to protect the shoreline from larger waves coming from the east and southeast across the lake. Heavier armor on the shoreline would not impede views of the lake.

The pathway would be a timber boardwalk of approximately 8' width with edge protection to create an accessible connection from the park near the boat launch all the way to the island. This would create a fully ADA-compliant access pathway across the bioswale and to the island without detracting from or requiring modification of the park's historic stone bridges, which would require extensive ramps and resurfacing to meet the same ADA requirements. This boardwalk would extend into the river to provide a unique vantage point to enjoy the natural shoreline habitat. The boardwalk would be high enough at the south channel crossing to allow non-motorized boats to pass underneath. A similar example is shown in Figure 3.



Figure 3. Similar portrayal of natural shoreline with boardwalk.

A kayak launch can be placed adjacent to the boat launch, which would provide some protection, separated from the main flow of river traffic and directly adjacent to accessible parking. Both a sloped access point and a fully accessible kayak launch structure would be provided in this location.

The additional sidewalk provides safer access to the boardwalk and the rest of the sidewalk from the parking lot. This will prevent visitors from walking through the parking lot, which is unsafe, by providing them with a path. The sidewalk also provides access into the park and to restrooms and other amenities for boaters using the shoreline for broadside docking.



Kimberly Point Park

The Consensus Plan for park improvements at Kimberly Point Park is shown in Figure 4 (not to scale). An enlarged version of this graphic is attached in Appendix D.



Figure 4. Kimberly Point Park concept graphic.

Kimberly Point Park – Phase I

A new, more robust waterfront promenade structure near the historic lighthouse is proposed to replace the existing timber structure. This is intended to work as part of a system of shore protection devices and strategies which includes steel structures placed offshore to reduce/eliminate the potential of ice impacts on the promenade.

Phase I shall include:

- Promenade demolition
- Offshore ice breaking structures
- Steel sheet pile wall
- Concrete promenade



At the existing fishing pier by the historic lighthouse, a completely renovated structure is proposed with steel sheet pile edge. The new pier would be constructed with long-term durability in mind, and decking would be replaced with poured-in-place concrete. The combination of the ice breakers and durable abutment increases the design life significantly compared to the exposed timber pile structure. Additionally, the steel sheet pile face of the abutment (see example, Figure 5 below) will help prevent ice from being shoved underneath the decking and in turn lift the structural components out of place, which was a previous problem.



Figure 5. Sheet pile face with concrete decking.

To protect the new fishing pier structure there would be some type of ice breakers, possibly sculptural cast iron to reflect Neenah Foundry's heritage and relevance to the city. The structures would have an icebreaking geometry, positioned facing away from land to fracture the moving ice before it reaches the promenade, decreasing the force it would exert on the abutment.

Kimberly Point Park – Phase 2

The existing concrete rubble revetment serving as temporary shoreline protection will be removed and replaced with hard and soft solutions, as well as water access points.

Phase 2 shall include:

- Revetment demolition
- Terrace armor stone and concrete slab with seating – water touch point
- Armor stone revetment with concrete headwall
- Vegetated cobble beach

This edge treatment replaces the existing repurposed concrete curb and sidewalk rubble with a poured in place concrete headwall armored with interlocking stone riprap. This treatment has a buried layer of aggregate mattress stone to hold riprap in place and provides increased shoreline stability and long-term protection. The revetment reduces wave energy as it approaches the shoreline and, in the winter, ice will



either ride up the slope, or crumble against the armor stones. The exact step geometry will be selected to induce whichever outcome is preferred.

At two locations along the park shoreline, a concrete seating/viewing area is proposed. At each of these locations, benches would be installed on a concrete pad. At the water-side of this pad, the shoreline riprap revetment would transition to cut-stone slabs. These slabs serve a similar purpose as shoreline armoring but would more easily allow a visitor to use the terraced edge as large steps to walk down and directly access the water. A similar example is pictured in Figure 6.



Figure 6. Terrace stone water touch point included along a revetment.

A naturalized shoreline with strategically placed cobbles is recommended at either end of the Kimberly Point shoreline. This edge treatment is similar to that recommended for Doty Park, proposed in sections of the Kimberly Point shoreline which experience less intense ice-shove forces. The treatment employs vegetation and stone cobbles of medium to large size. The cobbles will likely be on the larger side in order to withstand some ice-shove and wave forces. With strategic stone placement and use of native plants, this shoreline will be resilient to waves, currents, and ice but will also provide enhanced habitat and reduced long-term cost and maintenance concerns. A natural shoreline is more dynamic than a fixed concrete or steel edge, but if designed with the proper slope profile and width, this treatment is a climate-resilient and visually appealing option where some flexibility of space is available. This treatment also has enhanced habitat for fish and other wildlife.



CONCEPTUAL LEVEL COST ESTIMATE

The preliminary cost estimate summary is shown in the table below. The itemized cost breakdown is shown in Appendix A. These were generated in the summer of 2023 and are subject to change as construction will likely begin at least 1-2 years from the time of this report. Edgewater added 20% contingency, which is typical to account for unknown price increases. Also, a design fee of 10% of the subtotal is included to cover final engineering costs.

Marina Concept Cost Estimate Summary	
Doty Phase 1	\$3,104,400
Doty Phase 2	\$1,355,900
Kimberly Point Phase 1	\$886,600
Kimberly Point Phase 2	\$1,136,200
Total Cost	\$6,483,100

IMPLEMENTATION STRATEGIES

Permitting

Communication with permitting agencies will be critical to successful project implementation. In the project implementation phase, the first step for design consultants should be to hold a permit pre-application meeting with Wisconsin DNR (WDNR) for any proposed work at or below Ordinary High Water.

As Lake Winnebago is under federal jurisdiction, the US Army Corps of Engineers should also be included in any of these early meetings to review construction that touches the lakebed, such as the ice breakers at Kimberly Point. Meetings are also suggested with the Winnebago County Land and Water Conservation Department and County Zoning Department to discuss proposed improvements and any needed County-level review.

Early discussions with various permitting agencies will help guide the process and prioritize construction methods and details, and also schedule, as seasonal issues such as fish spawning habitat must be considered.

Project Funding

To supplement available Capital Improvement budgets, other funding sources must be considered. A chart of relevant sources of grant funding is included in Appendix B. The chart outlines Federal, State, and local grant programs that may be applicable for various scope items in the Doty and Kimberly Point Park improvement recommendations.

To best match grant requirements and score highest in the application process, water quality and improvement of water health (reduction of goose contamination) should be emphasized over the need for



park beautification. Any proposed feature that improves park visitor experience (reduction of mosquitoes, for example) and safety is also a good match for a grant application.

Broadside docking and connection to park amenities with ADA walkways for transient boaters and kayak launch improvements at Doty Park would be good candidates for WDNR recreational boating grants. Fishing pier improvements at Kimberly Point would potentially meet United States Fish and Wildlife Service (USFWS) requirements for funding.

Federal programs such as the Great Lakes Restoration Initiative, funded through the United States Environmental Protection Agency (USEPA) and Natural Resource Damage Assessment (NRDA) review, funded through the National Oceanic Atmospheric Administration (NOAA) both have primary goals of improving water quality, which should be explored for applicable application to shoreline improvements at these parks.

In early conversations with WDNR Grant Coordinators, the recommendation is to submit the entire park package together and the WDNR will determine grant score. If the project scores high enough, the WDNR will split the project into pieces by available funding source.

Other potential funding sources include:

Grant and Philanthropy Programs

- Special gifts, contributions, or scholarships from local citizens or organizations supportive of public open space.
- Park Endowment Fund: Interest to be used for dedicated park expenses after ten years, or other established time period.

Generate Revenue

- Consider waterfront TIF (Tax Increment Financing) District to attract more use, increase efficiency, increase taxable values.
- Create revenue-generating amenities/programming at existing facilities, such as: boat rentals, event fees, etc.

Increase Taxes

- General Obligation bond issues, as supported by the community.
- Special millage, also subject to voter approval.
- Consider strategic private development opportunities to increase tax base.

Reallocate Existing Funds

- Community Development Block Grant funds eligible for capital expenditure, or other federal funds that may become available.
- General fund appropriations for projects that can be phased in predictable increments.

Partner to Share Costs

- Partner with non-profit groups, schools, Township and County.
- Private and non-profit park sponsorships (Adopt-a-Park programs).



CONCLUSIONS AND RECOMMENDATIONS

The following sequence of phases is recommended:

1. Kimberly Point Phase I
2. Doty Phase I
3. Doty Phase 2
4. Kimberly Point Phase 2

Kimberly Point Park must be addressed first, due to the concern of the existing promenade surviving subsequent winters. The next priority is the safety of park visitors at Doty Park, which can be alleviated by the restoration of the timber seawalls along the shoreline. Following that, ADA access is important to the City and it is necessary for permitting, so the ADA boardwalk and kayak launch at Doty Park will be in the next phase, increasing accessibility throughout the park. Finally, the revetment solutions to Kimberly Point Park will be constructed. The reason this phase can be saved for last is because the existing revetment is still serving its purpose for shoreline protection, it just needs to be improved for increased safety and functionality.

The parks need attention in the near future to enhance and improve their safety and quality. The above suggestions utilize the best strategies to create long-term solutions. The timing and sequence of each phase is dependent on available funding. The first priorities are safety in the parks, followed by the other necessary improvements.



REFERENCES

- Planning and Design Guideline for Small Craft Harbors, ASCE Manual 50, 2012. American Society of Civil Engineers

ATTACHMENTS

Appendix A – Cost Estimate Breakdown

Appendix B – Potential Funding Sources

Appendix C – Doty Shoreline Consensus Plan

Appendix D – Kimblery Point Shoreline Consensus Plan

Appendix E – Future Work



APPENDIX A – COST ESTIMATE BREAKDOWN

Doty Park, Phase 1 Cost Estimate					
Item No.	Description	Unit	Quantity	Unit Price	Total
1	Mobilization	LS	1	\$ 69,600	\$ 69,600
2	Timber Seawall Demolition	LF	1820	\$ 200	\$ 364,000
3	Vegetated Cobble Beach	LS	1	\$ 46,650	\$ 46,650
4	Redi-Rock Seawall	LS	1	\$ 1,900,000	\$ 1,900,000
5	Water Circulation Feature	LS	1	\$ 8,000	\$ 8,000
				Subtotal	\$ 2,388,000
				10% Design Fees	\$ 238,800
				20% Contingency	\$ 477,600
				Total	\$ 3,104,400

Doty Park, Phase 2 Cost Estimate					
Item No.	Description	Unit	Quantity	Unit Price	Total
1	Mobilization	LS	1	\$ 30,400	\$ 30,400
2	Boardwalk Demolition	LF	300	\$ 200	\$ 60,000
3	Revetment Demolition	LF	250	\$ 231	\$ 57,750
4	Wetland Bioswale	SF	2000	\$ 50	\$ 100,000
5	Riprap Reef	LS	1	\$ 42,300	\$ 42,300
6	ADA Boardwalk	SF	3225	\$ 100	\$ 322,500
7	Concrete Sidewalk	LF	400	\$ 670	\$ 268,000
8	ADA Kayak Launch	LS	1	\$ 162,000	\$ 162,000
				Subtotal	\$ 1,043,000
				10% Design Fees	\$ 104,300
				20% Contingency	\$ 208,600
				Total	\$ 1,355,900



Kimberly Point Park, Phase I Cost Estimate					
Item No.	Description	Unit	Quantity	Unit Price	Total
1	Mobilization	LS	1	\$ 19,900	\$ 19,900
2	Promenade Demolition	LF	150	\$ 200	\$ 30,000
3	Ice Breaking Structure	EA	7	\$ 32,500	\$ 227,500
4	Steel Sheet Pile Wall	SF	2250	\$ 80	\$ 180,000
5	Concrete Promenade	SF	1500	\$ 150	\$ 225,000
				Subtotal	\$ 682,000
				10% Design Fees	\$ 68,200
				20% Contingency	\$ 136,400
				Total	\$ 886,600

Kimberly Point Park, Phase 2 Cost Estimate					
Item No.	Description	Unit	Quantity	Unit Price	Total
1	Mobilization	LS	1	\$ 25,400	\$ 25,400
2	Revetment Demolition	LF	775	\$ 310	\$ 240,250
3	Terrace Armor Stone (Water Touch Point)	TON	452	\$ 300	\$ 135,600
4	Concrete and Seating (Water Touch Point)	SF	800	\$ 20	\$ 16,000
5	Rubble Mound Breakwater	LS	1	\$ 347,500	\$ 347,500
6	Concrete Headwall	LF	400	\$ 100	\$ 40,000
7	Vegetated Cobble Beach	LS	1	\$ 68,800	\$ 68,800
				Subtotal	\$ 874,000
				10% Design Fees	\$ 87,400
				20% Contingency	\$ 174,800
				Total	\$ 1,136,200

APPENDIX B: POTENTIAL FUNDING SOURCES

Grant Type		Deadlines	Funding Source	Description	Match	Notes
WDNR Stewardship Grants	Aids for Acquisition and Development of Local Parks (ADLP)	5/1	WDNR	Helps to buy land or easements and develop or renovate local park and recreation area facilities for nature-based outdoor recreation purposes (e.g., trails, fishing access and park support facilities). Applicants compete for funds on a regional basis. This grant program is part of the Knowles-Nelson Stewardship Program.	50/50 match	if there is naturally occurring beach on site, this may apply. No splash pads for these grants
	Urban Green Space (UGS)					typical schedule from application to funding is 6-12 months
	Urban Rivers (UR)					
	Acquisition of Development Rights (ADR)					
	Recreational Trails Program (RTP)	5/1	federal	Federal program, administered through State, for projects that provide outdoor recreation opportunities for the public, trail and trailhead improvements		
	Land and Water Conservation Fund (LWCF)			This is a federal program administered in all states that encourages the creation and interpretation of high-quality outdoor recreational opportunities. Funds received by the DNR for this program are split between DNR projects and grants to local governments for outdoor recreation activities. Grants cover 50% of eligible project costs.		-Any funding request over \$250,000 will need to go through the 14 day passive approval process with the Joint Finance Committee.
	Sport Fish Restoration Boat Access (SFR)	2/1	USFWS	motorboat access, ramps, parking, paths, restrooms	25% match min, max \$100k	-SFR (Boat Access & Fishing Pier programs) timeline is longer than the other programs. The average time between application deadline and grant agreement in hand for signature is 12-15 months. If this funding is being considered, it should be applied for first.
	Recreational Boating Facilities (RBF) Grants	6/1, 9/1, 11/1, 2/1	WDNR Waterways Commission	ramps, docks, harbors of refuge, breakwaters, bulkheads, support facilities including parking , dredging (must have permits before applying)	50% match of total costs, max \$300k	If the grant request is more than \$250,000, the application can only be considered in the first two quarters (June 1 and Sept. 1). This program can be competitive but not on the same scale as Stewardship.
	Boating Infrastructure Grant (BIG) Program Tier 1	6/1	WDNR/USFWS	transient tie ups	25% match min, \$200k per state, projects ranked within state	-BIG will only fund facilities that are for boats 26' or longer. There tends to be a lot of pro-ration of project costs under this program. This also has a longer timeline similar to SFR.
	Boating Infrastructure Grant (BIG) Program Tier 2	6/1	WDNR/USFWS	transient tie ups	25% match min, up to \$1.5M per project, ranked at national level	
	Pump Out Station Funding (POSF) formerly called Clean Vessel Act (CVA)	any time	WDNR	safe disposal of rec boater sewage	25% match min, max \$15k	
	Wisconsin Coastal Management Program (WCMP)	11/4	WI Dept of Administration (DOA) with WI Coastal Mngmt Council (WCMC) and Office of Coastal Mngmt (OCM)	coastal wetland protection, habitat restoration, pollution control, education, historic preservation	50-60% match depending on total amount, max \$100k	
	Trees and Flowers Grant			beautification		
	NPS Rivers, Trails, and Conservation Assistance Program			outdoor rec		
	Natural Resouce Foundation (NRF) of WI			protect resources		
	Wisconsin Parks and Recreation Association Professional Grant			parks and rec		
	Kaboom			playgrounds		
	The Bureau of Transportation Safety (BOTS)			traffic safety grants to organizations and partners that provide services that minimize the number of traffic fatalities and injuries each year.		
	Various		DOT	The U.S. Department of Transportation provides dozens of grants for establishing and maintaining safe, efficient and accessible transportation infrastructure across the country		
	HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)			aims to reduce fatalities and injuries on public road		
	FEDERAL HIGHWAY ADMINISTRATION (FHWA) BICYCLE AND PEDESTRIAN PROGRAM		FHWA	designed to promote safe and convenient walking and bicycling		
	Main Street Transportation Alternatives Program (TAP) Grant			bike and ped facilities		
	Great Lakes Restoration Initiative		USEPA	habitat restoration to improve water quality of Great Lakes		Focus Areas: 1. Toxic Substances and Areas of Concern, 2. Invasive Species, 3. Nonpoint Source Pollution Impacts on Nearshore Health (formerly Nearshore Health and Nonpoint Source Pollution FY2010-2014), 4. Habitat and Species (formerly Habitat and Wildlife Protection and Restoration FY2010-2014), and 5. Foundations for Future Restoration Actions (formerly Accountability, Education, Monitoring, Evaluation, Communication and Partnerships FY2010-2014)
	Various		NOAA	reduction of water pollution		Natural Resource Damage Assessment (NRDA) is the legal process used to evaluate impacts of water pollution

APPENDIX C: DOTY SHORELINE CONSENSUS PLAN

LEGEND

- 1 NATURAL SHORELINE WITH MEDIUM/ SMALL COBBLE
- 2 REMOVE EXISTING SEAWALL, REPLACE WITH NATURAL SHORELINE
- 3 REMOVE BOARDWALK, REPLACE WITH NATURAL SHORELINE
- 4 REMOVE EXISTING SEAWALL, REPLACE WITH REDIROCK SEAWALL
- 5 ACCESSIBLE BOARDWALK PATHWAY AND BRIDGES
- 6 BROADSIDE DOCKING BOARDWALK
- 7 WALKS TO CONNECT TO MAIN PATHS
- 8 BIOSWALE ENHANCEMENT & BRIDGE
- 9 KAYAK LAUNCH, RELOCATED
- 10 RIPRAP REEF/ShORELINE PROTECTION
- 11 WATER CIRCULATION FEATURE
- 12 IMPROVED BENCH SEATING AREAS



Doty Park

Neenah, Wisconsin

Shoreline Improvements

September 15, 2023



APPENDIX D: KIMBERLY POINT SHORELINE CONSENSUS PLAN

LEGEND

1

RIPRAP STONE REVETMENT WITH CONCRETE HEADWALL

2

NATURAL SHORELINE WITH HEAVY COBBLE

3

SEATING AREA WITH WATER 'TOUCH POINTS'

4

STEEL SHEETPILE SEAWALL AT NEW FISHING PIER WITH POURED-IN-PLACE CONCRETE BOARDWALK

5

ICE-BREAKING STRUCTURES



Kimberly Point Park

Neenah, Wisconsin

Shoreline Improvements

September 15, 2023





APPENDIX E – RECOMMENDED ADDITIONAL STUDY

Upon authorization of the next level of design development for shoreline improvements at Doty and Kimberly Point Parks, it is recommended that the Project Engineer (PE) complete additional data gathering and research to best evaluate current site condition challenges and develop the most successful long-term solutions. The following list outlines suggested areas of additional collaboration and/or study:

1. As a first step, the PE shall establish regular review sessions with key representatives of the Neenah Parks Commission. As these are the community members with first-hand knowledge of the parks and long-term experience with the environmental conditions to address, the PE shall continue open listening sessions to evaluate any ideas and concerns.
2. The PE shall explore the feasibility of a test section of natural shoreline. The purpose of the test section would be to evaluate reaction to the elements, including wave action, ice impact, and algae accumulation, throughout a one-year cycle.
 - a. If this option is deemed feasible, a local university may be involved to oversee environmental monitoring.
3. The PE shall identify examples of similar-scale natural shorelines in Midwestern environments. Depending on available data, these shorelines will be analyzed based on their conditions prior to the shoreline changes as well as resilience of the shoreline and vegetative condition over time. Suggested projects to be explored include but are not limited to:
 - a. Brandenburg Park, Lake St. Claire, New Baltimore, MI





b. Camp Petosega, Pickerel Lake, Alanson, MI

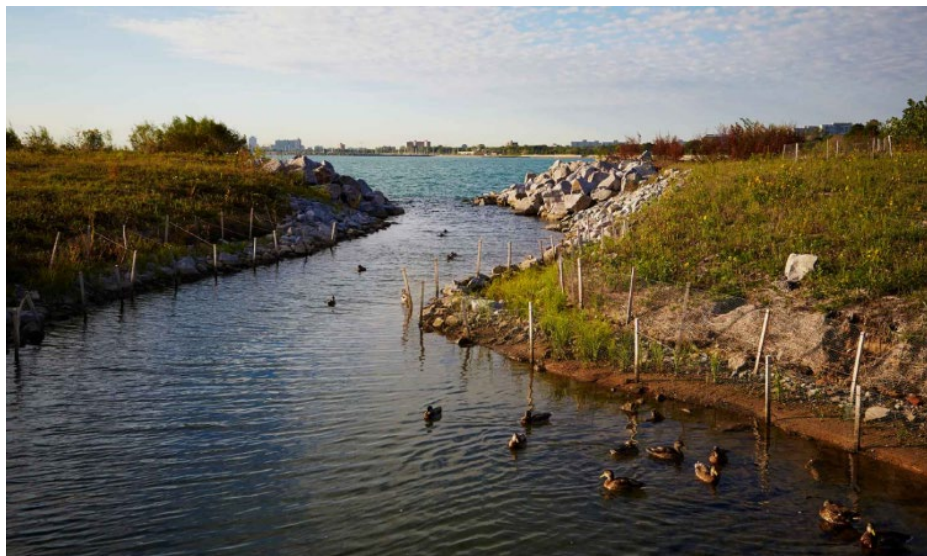


c. Grose Park, Crockery Lake, Casnovia, MI





d. Northerly Island, Lake Michigan, Chicago, IL



4. The PE shall explore operations and maintenance strategies to supplement the engineering solutions. This may involve environmental monitoring, followed by any determined action items that may arise. The issue of invasive plant management and removal, including algae and weeds such as invasive Watermilfoil, should be thoroughly evaluated. It may be determined that a harvester should be deployed throughout the year to reduce the milfoil plants that near the site that clog the Doty Park channel. Additional mitigation strategies shall be explored to address the negative impacts on water quality.
5. The PE shall determine the necessary studies to ensure the efficacy of proposed solutions. The studies may include wave modeling, flow modeling, and an in-depth review of the Lake Winnebago Water Quality Study. The results of such studies shall be utilized to solve any discrepancies in the shoreline improvement methods. For example, if algae accumulation on water touch points is a safety concern for pedestrians who may slip on the rocks, measures will be taken to ensure the features are constructed and maintained to ensure a safe walking surface. Similar applications such as the stone placed in Arrowhead Park west of downtown Neenah should be evaluated. Additionally, studies shall be conducted to determine the best plant species to interact with the cobble shorelines, which can handle ice damage in the winter and re-establish each spring.
6. The PE shall complete any needed structural calculations for the ice breaker structures at Kimberly Point Park to ensure their ability to perform the function of protecting the new fishing pier and boardwalk structure, and ability to withstand the elements throughout their established lifespan.
7. The PE shall identify potential project partners to share information and resources, with the goal of long-term improvement of water quality in Neenah's parks. Winnebago County Land and Water Conservation Department and The Fox-Wolf Watershed Alliance are two potential partners.

END OF ATTACHMENTS

