

**Environmental Assessment
for the
Kenosha Harbor Dredging
and
Kenosha Dunes Nourishing Project
Kenosha County, Wisconsin**



**US Army Corps of Engineers
Chicago District**

August 2020

FINDING OF NO SIGNIFICANT IMPACT

KENOSHA HARBOR DREDGING AND KENOSHA DUNES NOURISHMENT PROJECT KENOSHA, KENOSHA COUNTY, WISCONSIN

The U.S. Army Corps of Engineers, Chicago District (Corps) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The Environmental Assessment (EA) dated July 2020 for the Kenosha Harbor Dredging and Kenosha Dunes Nourishment Project addresses the need to support the navigability of Kenosha Harbor and to utilize clean dredged material for beneficial beach in the Kenosha County, Wisconsin.

The Final EA, incorporated herein by reference, evaluated various alternatives that would include dredging of clean sand from the channel of Kenosha Harbor and placing it in the study area. The recommended of placement along the shoreline at Kenosha Dunes includes:

- Dredge sands from the channel area of Kenosha Harbor
- Placement of material directly on shore or within the near shore of Kenosha Dunes

In addition to a “no action” plan and recommended plane, two additional alternatives were evaluated. The alternatives included placement along the shallow water area of 1st Avenue in Kenosha and placement at an undetermined upland site.

For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in Table 1:

Table 1: Summary of Potential Effects of the Recommended Plan

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action	Resource Positively affected by action
Aesthetics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Air quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aquatic resources/wetlands	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Invasive species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fish and wildlife habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Threatened/Endangered species/critical habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Historic properties	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other cultural resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Floodplains	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hazardous, toxic & radioactive waste	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hydrology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Land use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Navigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Noise levels	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Socio-economics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Environmental justice	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action	Resource Positively affected by action
Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Tribal trust resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Water quality	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Climate change	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. Best management practices (BMPs) will be implemented, if appropriate, to minimize impacts. In order to minimize impacts to threatened and endangered species, or migratory species, work will not be conducted during critical life stages (i.e. breeding or nesting).

No compensatory mitigation is required as part of the recommended plan.

Public review of the draft EA and FONSI was completed on **17 August 2020**. All comments submitted during the public review period were considered in the Final EA and FONSI.

Pursuant to section 7 of the Endangered Species Act of 1973, as amended, the U.S. Army Corps of Engineers determined that the recommended plan may affect but is not likely to adversely affect the federally listed rufa red knot or their designated critical habitat. Red knots do not nest in the area, but have the potential to use the dune area as a feeding and/or nesting site. Suitable areas for these activities are available elsewhere along the coast of the project vicinity. The Corps determined that the recommended plan is not likely to adversely affect (NLAA) the red knot. The Corps also determined that the recommended plan will have no effect on the federally listed northern long-eared bat, eastern prairie fringed orchid, whooping crane, or their designated critical habitat. The U.S. Fish and Wildlife Service was provided with these USACE determinations for their review on June 3, 2020 and concurred with the NLAA determination in an email dated July 20, 2020.

Pursuant to section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that historic properties would not be adversely affected by the recommended plan and Wisconsin SHPO concurred in a letter dated 11 August 2020. The Forest County of Potawatomi (FCP) Community reported that archeological site(s) exist in or near to the placement area. Coordination with the FCP in June of 2020 indicated that the proposed activities is not likely to affect historic or culturally significant sites. The Miami Tribe of Oklahoma also indicated that no historic properties or sites will be affected in a letter dated May 20, 2020.

Pursuant to the Clean Water Act of 1972, as amended, the discharge of dredged or fill material associated with the recommended plan has been found to be compliant with section 404(b)(1) Guidelines (40 CFR 230). The Clean Water Act Section 404(b)(1) Guidelines evaluation is found in Appendix 2 of the EA packet.

A water quality certification pursuant to section 401 of the Clean Water Act will be obtained from the Wisconsin Department of Natural Resources prior to construction. In a letter dated **28 July 2020**, the Wisconsin Department of Natural Resources stated that the recommended plan appears to meet the requirements of the water quality certification, pending confirmation based on information to be developed during the pre-construction engineering and design phase. All conditions of the water quality certification will be implemented in order to minimize adverse impacts to water quality.

A determination of consistency with the Wisconsin Coastal Zone Management program pursuant to the Coastal Zone Management Act of 1972 will be obtained from the State of Wisconsin Department of Administration (DOA) prior to construction. The initial consultation process began on June 16, 2020 with submission of the USACE determination of consistency to DOA and is undergoing internal review with that agency. It is expected that DOA will concur with USACE's findings. All conditions of the consistency determination shall be implemented in order to minimize adverse impacts to the coastal zone.

All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed.

All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

17 August 2020

Date



Aaron W. Reisinger
Colonel, U.S. Army
District Commander

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Chapter 1 – Purpose & Need

1.1 – National Environmental Policy Act and Related Procedures

The National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.), the Council on Environmental Quality (CEQ) NEPA regulations (40 CFR Parts 1500 to 1508), and the US Army Corps of Engineers' (USACE) NEPA implementing regulations (33 CFR Part 230) require that the USACE consider the potential environmental effects of a proposed action before making a decision on the proposed action. This Environmental Assessment (EA) includes the direct, indirect, and cumulative effects of dredging clean sand from Kenosha Harbor area along with placing the dredged material in a near shore area, or at on shore dune sites. This EA provides the USACE, other decision makers, and the public with the information needed to make an informed decision about the dredging and placement activities.

1.2 – Project Locations

Kenosha Harbor is an authorized Federal navigation harbor located in Kenosha, Wisconsin on the western shore of Lake Michigan (Figure 1). The harbor is located approximately 30 miles south of Milwaukee and 45 miles north of Chicago. The harbor supports mainly recreational navigation and also serves as a harbor of refuge. Approximately two miles south of the harbor within the Chiwaukee Prairie State Natural Area are the Kenosha Dunes located partially within Kenosha, WI and partially in Pleasant Prairie, WI. The shore and nearshore areas of the dunes are the proposed locations for placement of the dredged material.

1.2.1 Dredging Location

The harbor is comprised of six main areas: the lake approach channel, an approach channel, the entrance channel, an inner basin, a northern channel extension, and a recreational boat harbor (not a part of the federal project). The existing Federal navigation project at Kenosha Harbor was authorized by the River and Harbor Act of 1899 and by subsequent amendments in 1907, 1935, 1950, 1962, and 1970. The lake approach channel is authorized to be -27 feet (LWD), the approach channel is -26 feet (LWD), the entrance channel and inner basin are -25 feet (LWD), and the northwesterly channel extension to 50th street is -21 feet (LWD).

1.2.2 Coastal Protection Location

The location for the placement of the dredged sand is the nearshore area of the Kenosha Dunes (Figure 2). Specifically, material is set to be placed between -8-foot (LWD) and the toe of the eroded bank along a 1,300 foot segment of the dunes. If enough material is present or if future dredging operations allow, the placement area will be expanded to a 2,240 foot area (includes original 1,300 feet) of the dunes.



Figure 1: Vicinity Map of the Kenosha Harbor Area



Figure 2: Aerial Map of the Kenosha Dunes and approximate area of coastal erosion protection reach

1.3 – Purpose & Need

The primary purpose of this federal action is to support the navigability of Kenosha Harbor.

The first need is to continue to dredge the harbor as needed to support current harbor use, functionality of serving as a harbor of refuge, and support transitory barge traffic. USACE performs infrequent maintenance dredging within the entrance channel area in order to maintain appropriate depths for vessels entering and exiting the harbor. The failure to continue maintenance dredging within the Harbor would result in restricting access of deep draft vessels and impacting the commercial operations that use the harbor.

The second need of the federal action is to better manage and protect Wisconsin’s public shoreline through the beneficial use of dredged material that is suitable for coastal erosion protection. Due to the current high water levels of Lake Michigan, many beaches are eroding at an accelerated rate, threatening beach habitat and local infrastructure. By placing sand on/near the beach, a buffer zone is created that may help mitigate potential damage to the shoreline caused by wave action. Additionally, the proposed erosion protection activity would address concerns of ongoing habitat loss due to high water levels by helping to restore and preserve shoreline and upland habitat along the beach front at this State Natural Area. Only suitable dredged material (suitability is defined under Section 3.1.3 - Sediment Quality) removed from the federal harbor would be placed in the nearshore area in accordance with conditions of applicable state permits/certifications to be obtained prior to project implementation.

1.4 – Related NEPA Documentation, Previous Studies & Projects

This Environmental Assessment (EA) was prepared to comply with the National Environmental Policy Act (NEPA) of 1969, as amended and includes a 404(b)(1) Evaluation pursuant to Section 404 of the Clean Water Act. This EA addresses only the shoreline protection as the dredging of the Federal navigation channels at Kenosha Harbor is covered under existing NEPA documentation. The remainder of the EA focuses on the shoreline area at Kenosha Dunes as shown in Figure 2.

- Rivers and Harbors Acts of March 3, 1899, as amended, authorized the Kenosha Harbor project which includes dredging when needed. The dredging and disposal funding comes from various USACE Appropriation Bills.
- USACE, Chicago 1974. Environmental Impact Statement, Maintenance dredging operations and combined diked disposal area for Kenosha and Racine Harbor, Wisconsin.
- USACE, Detroit 1984. Environmental Assessment. Kenosha Harbor, Wisconsin Small Boat Harbor, Section 107.
- CBC Aquasearch 1984. Kenosha Harbor Confined Disposal Facility Monitoring.
- Pranger, S. A., P.R. Schroedar. 1986. Dye tracer studies at the Kenosha, Manitowoc, Milwaukee, and Kenosha Harbors combined disposal facilities. U.S. Army Corps of Engineers, Waterways Experiment Station Rep. No. WES-MP-D-86-4. Vicksburg, MS. 113 pp.
- USACE, Detroit 1986. Finding of No Significant Impact. Repairs to the confined disposal facility (CDF) at Kenosha Harbor, Kenosha County, Wisconsin.

- USACE, Detroit 1986. Environmental Assessment. Repairs to the confined disposal facility (CDF) at Kenosha Harbor, Kenosha County, Wisconsin.
- USACE Detroit 1988. Environmental Assessment. Alterations to the confined disposal facility (CDF) at Kenosha Harbor, Kenosha County, Wisconsin.
- USACE, Detroit 1989. Finding of No Significant Impact and Statement of Findings. Repair and maintenance of detached breakwater (section H) Kenosha Harbor, Kenosha County, Wisconsin, Lake Michigan.
- USACE, Detroit 1989. Environmental Assessment. Repair and maintenance of detached breakwater (section H) Kenosha Harbor, Kenosha County, Wisconsin.
- Thermo Analytical. 1995. Kenosha Harbor Analytical Report Sediment Sampling Program, Kenosha.
- USACE, Detroit. 2006. Limited soil investigation report Kenosha retaining wall, Kenosha, Wisconsin.
- LCFPD, Chiwaukee Illinois Beach Lake Plain Restoration Project, 2010
- USACE, Detroit. 2013. Kenosha Harbor sediment sampling analysis report
- USACE, Detroit. 2014. Finding of No Significant Impact. Upland dredge material placement, City of Kenosha, Kenosha County, Wisconsin.
- USACE, Detroit. 2014. Environmental Assessment. Upland dredge material placement, City of Kenosha, Kenosha County, Wisconsin.

1.5 – Dredging History at Kenosha Harbor

Historically, between 1957 and 1969 the outer harbor was dredged every year and dredged material was placed in an open water area. Starting in 1976, dredged material removed from Kenosha Harbor by the USACE was placed in the Kenosha CDF. Dredging operations took place in 1976, '77, '80, '82, '84 (twice), '86, and '99. The CDF occupied an in-water area of approximately 29 acres on the south side of the harbor entrance. The CDF was last used in 1999 and is no longer available because there is no further capacity and the site has been developed into a park. The next dredge operation at Kenosha harbor that the USACE conducted was in 2014 (approximately 24,800 cubic yards) with dredged material placed at Pennoyer Park in Kenosha, to provide a more level recreational area. The City of Kenosha dredged approximately 14,000 cubic yards in 2019 and placed it into an approved shoreline site along 1st Street in Kenosha.

Chapter 2 – Proposed Alternatives

This Environmental Assessment evaluates alternatives for the placement of dredged material from Kenosha Harbor. Alternatives to address the chronic shoreline erosion will be considered in a USACE study of long-term erosion solutions (such as off-shore breakwaters to reduce wave energy at the shore) at the Kenosha Dunes.

2.1 – No Action

Under the no action alternative, USACE would cease dredging operations in and around Kenosha Harbor. The no action alternative would not adversely impact cultural and archaeological resources and would not impact upland structures. Physical, biological, and social resources could be impacted in that if dredging were stopped the channel would continue to accumulate sand, potentially reducing employment, business and recreational activity in the area by limiting the recreational, commercial, and transportation capabilities of the harbor. Without placement of materials at Kenosha Dunes, the beach would continue to erode landward impacting dune and swale environment that would typically be protected by the beach. Ultimately, threatening habitat types that several species rely on at various life history stages.

2.2 – Alternatives Considered

Historically, dredged material had been placed in a confined disposal facility (CDF) in Kenosha, WI just south of the harbor channel. The CDF is now closed, is longer accepting dredged materials, and has been developed into a park. Due to high lake levels, beach and littoral placement of dredged materials has often been used as a way to replace materials that have been lost due to wave action. Beach/littoral placement involves the placement of dredged material directly onto a beach under the ordinary high water mark or into the shallow water (< five feet water depth) near the shore by hydraulic pumping. Suitable dredged material is typically sand or fine sand, and may only stay on the beach for a limited time before being entrained into the littoral drift. Approximately 12% of Great Lakes dredged material is beneficially used for beach and littoral placement.

2.2.1 Shoreline at Kenosha Dunes

The Kenosha Dunes is an area of dune and prairie habitat that is owned and managed by the state of Wisconsin. It is approximately 2 miles south of Kenosha Harbor and has been subject to significant erosion due to higher than average lake levels. This alternative would include placing clean littoral sands along at least a portion of the beach, maximizing sustainability of this resource and providing shoreline protection for the threatened dune habitat.

2.2.2 Shoreline along 1st Avenue in Kenosha

Approximately 1 to 2 miles south of the harbor is a site along 1st Avenue that has been proposed for dredged material placement. This site has limited capacity and if a large quantity of dredged material is removed from the harbor, this site would not have sufficient capacity for said material.

2.2.3 Upland Placement

Dredged material would be placed in an upland location, away from the waterline. This material would be trucked to the site(s) designated for disposal. Material was most recently placed upland at Pennoyer Park in 2014. However, at this time, no suitable site(s) within a reasonable distance have been identified.

2.3 – Kenosha Dunes Placement as the Preferred Alternative

The preferred alternative plan would be to place dredged materials along the shoreline at Kenosha Dunes. The shoreline along 1st Avenue, remains viable as an alternate contingency shoreline site in the event that a smaller quantity of dredging were planned or if additional material were needed/desired at the 1st Street Site. As the 1st Street site was addressed under the NEPA and Section 404 of the Clean Water Act in 2019 when the city used it, this EA will not further address the 1st Street Site. If in the future, the USACE proposes to place material in the 1st Street Site, it would require a new state permit and a revision to the existing NEPA documentation as appropriate.



Figure 3: Kenosha Dunes Placement location view looking south along shoreline.

2.3.1 Description of Preferred Alternative

Approximately 20,000 to 60,000 cubic yards (as funding and availability permits) of suitable sandy dredged material would be beneficially placed as shoreline erosion protection at the eroding shoreline along the Kenosha Dunes in 2021. The placement for 2021 would be within approximately 1300 feet of shoreline along State-owned land in the middle of the 2240-foot overall placement site (Figure 4).

Future shoreline placement cycles at Kenosha Dunes may occur anywhere within the overall 2240-foot placement reach as necessary. Initially, placement will be limited to the 1300-foot reach along the State-owned land. As such, the current application for a Wisconsin Chapter 30 permit is only for the 1300-foot reach.



Figure 4: Overall 2240-foot placement reach and 1300-foot sub-reach proposed for 2021.

Dredging would be completed by either mechanical or hydraulic means. Hydraulic dredging would include a transport pipeline approximately 2 miles long to place the material at the Dunes site. A booster pump may be needed along the 2-mile pipeline route. Mechanical dredging would result in barges hauling the dredged material to the Dunes site where it could be placed either mechanically or hydraulically from the barges.

Dredged material would be placed between the 8-foot depth contour (relative to water levels at the time of placement) in the lake and the ordinary high water mark (OHWM). Placement above the OHWM (but below the eroded bluff) may occur if appropriate real estate permissions and state permissions are obtained. Dredging and shoreline placement would be planned for spring or early summer, beginning as early as approximately April 1 of any given year or as late as December 1, depending upon weather and contractor's work load. For 2021 the proposed quantity of 20,000 to 60,000 cubic yards could require anywhere from 20 to 60 days depending upon weather conditions and actual quantity dredged/placed. Future placement quantities would depend upon availability of suitable dredged material and funding levels allotted to Kenosha Harbor maintenance dredging.

Placement operations are proposed to be completed entirely from the water by hydraulic pipeline discharge, mechanical offloading of barges, or bottom dump scow. Material would be placed near one end of the placement reach to capacity (OHWM to 8-foot contour with a natural slope), then the placement activity would be advanced down the shore and the next area filled.

2.3.2 Miscellaneous Project Details

The proposed action may require the construction of temporary structures. The type and location of temporary structures and/or construction materials cannot be determined at this time, since they would be incidental to the contractor's methods for the work being performed. Examples are work and storage areas, access roads, office facilities, and mooring facilities, such as pilings. Temporary structures or fill material would be at USACE-approved locations within project boundaries or rights-of-way, outside of any wetlands, areas containing Federal or state protected species or their critical habitat, or properties listed on or eligible for listing on the National Register of Historic Places or state-listed properties. Temporary activities will include appropriate precautionary measures to prevent erosion and

sedimentation or other undesirable environmental impacts. These construction aids would be removed when no longer needed and their sites would be restored to pre-project conditions upon project completion.

All construction activities will be carried out in accordance with Federal and State laws, regulations and local ordinances. Some variation in design details may occur as a result of unanticipated design improvements, site conditions, or cost-saving measures. Any variations that result in a significant change to the project design or environmental impacts would be further evaluated under the National Environmental Policy Act. This Environmental Assessment also addresses future placement at the identified Kenosha Dunes shoreline sites

2.4 Compliance with Environmental Protection Statutes, Executive Orders, and Regulations

As discussed in detail below, the recommended plan is in full compliance with appropriate statutes, executive orders and regulations, including the National Historic Preservation Act of 1966, as amended, Fish and Wildlife Coordination Act, as amended, Endangered Species Act of 1973, as amended, Section 10 of Rivers and Harbors Act of 1899, Clean Air Act of 1963, as amended, National Environmental Policy Act of 1969, as amended, Executive Order 12898 (Environmental Justice), Executive Order 11990 (Protection of Wetlands), Executive Order 11988 (Floodplain Management), and the Clean Water Act of 1972, as amended.

Chapter 3 – Affected Environment

This Chapter identifies those environmental, cultural and social resources that could potentially be affected by the proposed placement of littoral sands resulting from maintenance dredging at the Kenosha Harbor.

3.1 – Physical Resources

3.1.1 – Geology

Silurian Age Dolomitic Limestone – The project area is located within the Wheaton Morainal Country subdivision of the Great Lake Section of the Central Lowland Province physiographic division. The underlying regional bedrock is Silurian-age dolomite, most likely of the Niagaran Series (Willman 1971). This rock resulted from marine deposition when all of southeastern Wisconsin and much of the neighboring Great Lakes region was the floor of a tropical sea from about 440 to 410 million years ago. This member forms bedrock reefs off the coast.

Ravinia Sand Member or Zion Beach Ridge Plain – The Lake Michigan Formation consists of the surficial deposits that accumulate in modern lakes and in beaches along their shores. Extensively developed in Lake Michigan, it consists largely of silt and clay, but sand and gravel reworked from glacial deposits is abundant locally. The only part of the formation readily exposed is the sand on the modern beaches, which is differentiated as the Ravinia Sand Member (Willman 1971). Illinois Beach State Park just south of Chiwaukee Prairie, which was formerly contiguous, is part of a distinct and unique coastal landform called the Zion Beach-Ridge Plain, an expanse of coastal land formed by deposition and migration of a succession of nearly parallel beach sand ridges (CDF and MWH 2008a, b).

Dolton Member Equality Formation – This member exists directly west along the Kenosha Dunes. Member composition is primarily sand, but contains beds of silt, pebble sand and gravel. This member is exposed as beaches, sand ridges and spits, with thickness typically less than 10 feet, but can be up to 25 feet at some of the spits.

3.1.2 – Hydrodynamics & Littoral Drift

Prevailing littoral drift (movement of lakebed/shoreline material) in the vicinity of the Kenosha Harbor and Kenosha Dunes is from north to south. The fillet accumulated on the north side of Kenosha Harbor has likely reached capacity; therefore, sediment likely moves alongshore past the northern harbor jetty and deposits in the federal navigation channel. Dredging of this material to keep the navigation channel open and placement anywhere to the south would facilitate bypassing of alongshore sediment transport at the Harbor, provided the material is suitable.

Nearly all of the shoreline between Kenosha Harbor and Kenosha Dunes is rock armored shoreline with a number of groin type shore protection structures. The armored shoreline essentially cuts off any sediment supply to the littoral system that would eventually benefit Kenosha Dunes. About 500 yards to the north of Kenosha Dunes is a shore protection structure at Southport Beach that has accumulated a significant quantity of sand. This structure acts as the most immediate impact to littoral drift at Kenosha Dunes, along with several other groin structures in the vicinity. The structures at Southport Beach trap sediment and once they reach capacity, drive alongshore sediment transport further offshore. The shoreline at Kenosha Dunes is set back from the shoreline at Southport Beach, thus the further offshore alongshore transport of sand occurs, the less benefit it has at Kenosha Dunes.

The degradation of the rock revetment protecting Kenosha Dunes has led to accelerated erosional response issues primarily caused by the surrounding armored shoreline to the north, and a stemmed sediment supply to the littoral system. Kenosha Dunes has therefore become a dynamic nick-point in an otherwise stabilized reach, and now the only source of sediment supply in the area. Additionally, the orientation of the shoreline makes it most susceptible to storms/waves from the northeast direction, which is also the predominant wave direction in the area.

3.1.3 – Sediment Quality

The Federal Navigation Channel at Kenosha Harbor is sampled on a regular basis of approximately every five years. Only material that is deemed suitable for nearshore placement would be used for shoreline nourishment. Suitability for nearshore placement is determined in accordance with the Great Lakes Dredged Material Testing and Evaluation Manual, and the Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S.—Inland Testing Manual, formal Clean Water Act (CWA) Section 404(b)(1) Guidance, and all applicable State of Wisconsin and local guidelines.

Sediments in the Kenosha Harbor Federal Navigation Channel were sampled in 2014 by USACE and 2019 by the City of Kenosha. Additional confirmation samples were collected in May 2020 by USACE; these results are discussed in Appendix 1 and 2. Material within the Federal Navigation Channel at Kenosha Harbor has been analyzed for physical attributes, various nutrients and organic indicators, metals, organic compounds (poly-chlorinated biphenyls (PCBs), and poly-chlorinated aromatic hydrocarbon compounds (PAHs)).

Results indicate that the sediment typically consists of fine/medium sand (>90%) with small amounts of gravel and fines. The levels of metals in the material are within placement area background levels and consistent with past sampling events and with the urban nature of the harbor. Organic compounds were typically detected at low levels within placement area background levels. Overall the sediment characteristics were similar to previous results. The material is of good quality and is suitable for use in shoreline protection.

3.1.4 – Water Quality

Lake Michigan is an extremely important resource for drinking water supply, industrial water supply, fishing, recreation, and waterborne commerce. The water intake for the City of Kenosha is located north of the harbor, and off-shore in Lake Michigan. Factors potentially affecting water quality in the near shore lake zone include combined sewer overflows, stormwater discharges, tributary streams, and boat harbors. Water quality of Lake Michigan in the vicinity of Kenosha is monitored by the Wisconsin Department of Natural Resources. In general, the water quality of the near shore zone is good, although near shore issues with bacteria (*Escherichia coli*) are not uncommon on public beaches. Beach water quality issues are related to a number of factors, including the beach/shore configuration, point sources, wildlife, and human usage. These localized issues do not detract from the overall high quality of Lake Michigan water. It is noted that the Kenosha Dunes area has eroded and does not have a usable public beach along the Lake Michigan shoreline. There are no known water quality issues along Kenosha Dunes.

3.1.5 – Air Quality

The Federal Clean Air Act requires the U.S. Environmental Protection Agency (USEPA) to set national ambient air quality standards (NAAQS) for six criteria pollutants (carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur oxides) which are considered harmful to public health and the environment. Areas not meeting the NAAQS for one or more of the criteria pollutants are designated as “nonattainment” areas by the USEPA. For many years, the local air quality in Kenosha County,

Wisconsin was considered “non-attainment” for ozone under the Clean Air Act. This status was typical for the region, due to the large population living between Milwaukee, Wisconsin south through Chicago, Illinois, and into the northern Indiana industrial belt. Continued progress in controlling air emissions and improving air quality has resulted in the re-designation of Kenosha County to attainment, as of April 2020¹. Recent air monitoring data show the Kenosha area now meets the national standard set to protect public health and the re-designation was published in the federal register on April 17, 2020, but will not be finalized until after a public comment period.

Once implemented, the project itself will be neutral in terms of air quality, with no features that either emit or sequester air pollutants to a large degree, including Green House Gas emissions. During the project construction, heavy equipment would cause minor, temporary air quality impacts, however all equipment will be in compliance with current air quality control requirements for diesel exhaust, fuels, and similar requirements. A general conformity analysis was not conducted due to the short and temporary nature of any air quality impacts.

NAAQS	Area Name	Most Recent Year of Nonattainment	Current Status	Classification
1-Hour Ozone (1979) – NAAQS revoked	Milwaukee-Racine, WI	2004	-	Severe-17
8-Hour Ozone (1997) – NAAQS revoked	Milwaukee-Racine, WI	2011	Maintenance (since 2012)	Moderate
8-Hour Ozone (2008)	Chicago-Naperville, IL-IN-WI	2020	-	Serious
8-Hour Ozone (2015)	Chicago, IL-IN	2020	-	Marginal

3.1.6 – Hazardous, Toxic & Radioactive Wastes (HTRW)

U.S. Environmental Protection Agency’s EnviroMapper online tool and the Wisconsin Department of Natural Resources Bureau for Remediation and Redevelopment Tracking System (BRRTS) were used to determine whether any environmental issues attributed to unresolved contaminated sites would impact the sediment placement site. No regulated sites or former or current remediation sites exist along Kenosha Dunes. Appendix 1 includes an evaluation of potential upland sources of contamination for the harbor. Investigation suggests that there are no significant sources of contaminants and no significant regulated sites near the harbor.

3.1.7 – Climate

The climate of the study area is predominantly continental with some modification by Lake Michigan. The National Oceanic and Atmospheric Administration’s (NOAA) Online Weather Data was queried for the Kenosha, WI and Milwaukee WI areas. Daily and monthly normals for temperature, precipitation, and snowfall between 1989 and 2010 were available (NOAA 2019a). The mean winter high temperature is 28.9°F while the mean winter low temperature is 13.9°F (January) (Table 1 and Figure 5). The mean summer high temperature is 82.1°F while the mean summer low temperature is 60.0°F (July) (Table 1 and

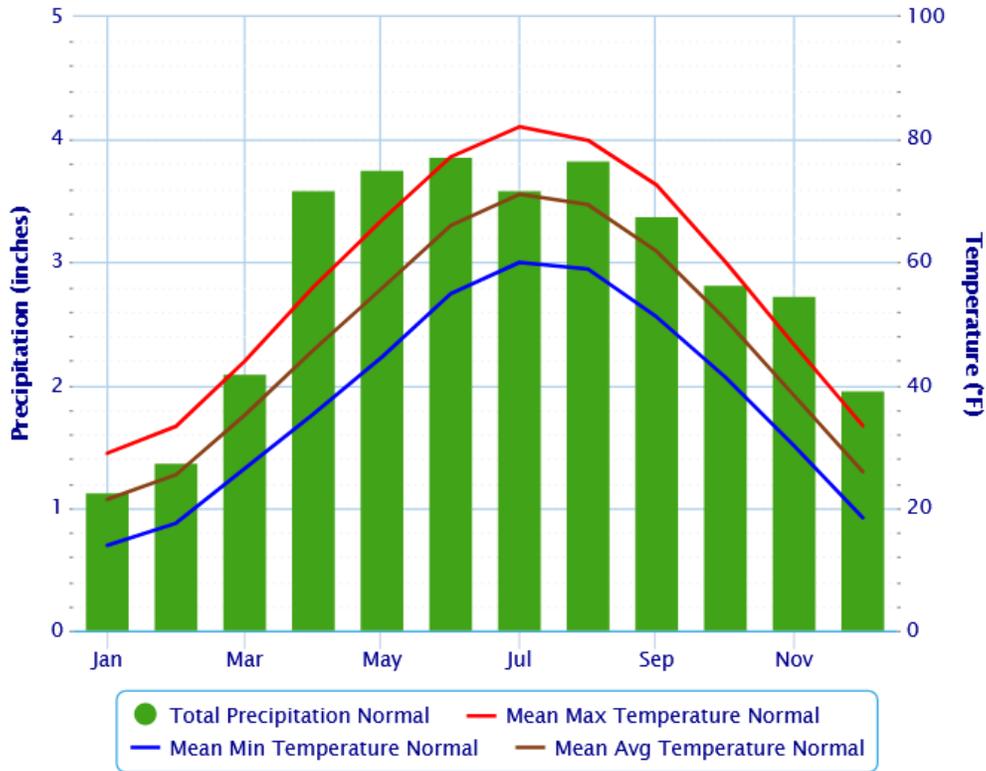
¹ USEPA News Release, April 20, 2020, Accessed at: <https://www.epa.gov/newsreleases/epa-and-wisconsin-announce-kenosha-area-now-meets-federal-air-quality-standard-ozone>

Figure 5). Annual total precipitation normal for the Kenosha, WI area is 34.16 inches (Table 1 and Figure 5). In winter, total snowfall is generally heavy with an annual total snowfall normal for the Milwaukee, WI area of 46.9 inches (Table 2 and Figure 6). The majority of snowfall occurs between December and March with total snowfall normals ranging from 7.0 inches (i.e., March) to 14.7 inches (i.e., January) during this timeframe.

Table 1: Precipitation and Temperature normals for the Kenosha, WI area. (NOAA 2019a).

Month	Total Precipitation Normal (inches)	Mean Max Temperature Normal (°F)	Mean Min Temperature Normal (°F)	Mean Avg Temperature Normal (°F)
January	1.14	28.9	13.9	21.4
February	1.37	33.3	17.5	25.4
March	2.10	43.9	26.4	35.1
April	3.60	56.0	35.3	45.7
May	3.76	66.9	44.6	55.8
June	3.86	77.2	54.9	66.0
July	3.60	82.1	60.0	71.1
August	3.84	79.9	58.9	69.4
September	3.38	72.6	51.1	61.8
October	2.82	60.1	41.3	50.7
November	2.73	46.6	30.1	38.3
December	1.96	33.4	18.4	25.9
Annual	34.16	56.7	37.7	47.2

Monthly Climate Normals (1981–2010) – KENOSHA REGIONAL AP, WI



Powered by ACIS

Figure 5: Precipitation and temperature Normals for the Kenosha, WI are between 1981 and 2010 (NOAA 2020a).

Table 2: Snowfall normal for the Milwaukee, WI area between 1981 and 2010 (NOAA 2019a).

Month	Total Snowfall Normal (inches)
July	0.0
August	0.0
September	0.0
October	0.3
November	2.4
December	10.6
January	14.7
February	9.8
March	7.0
April	2.0
May	0.1
June	0.0
Annual	46.9

Monthly Climate Normals (1981–2010) – Milwaukee Area, WI
(ThreadEx)

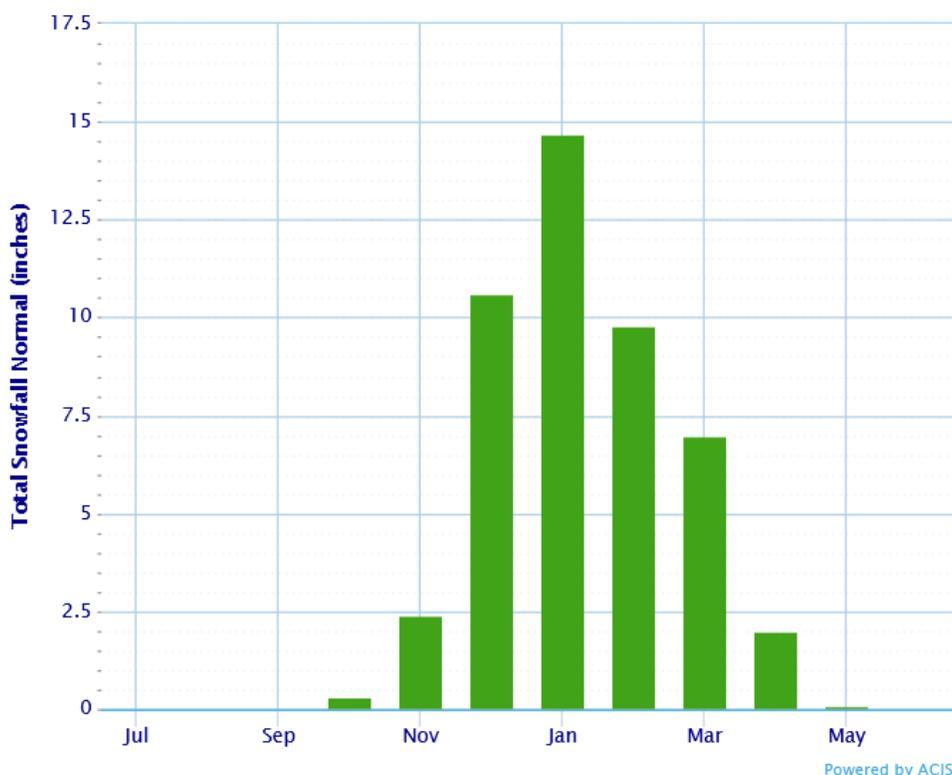


Figure 6: Snowfall normal for the Milwaukee, WI area between 1981 and 2010 (NOAA 2020a).

3.1.8 – Limnology

Lake Michigan’s surface is on average approximately 579.95 feet (IGLD 85) for 2017 (Table 3). The lake has a total surface area of 22,300 mi², with an average depth of 279 feet and a maximum depth of 923 feet. At its greatest extent, Lake Michigan is 307 miles long and 118 miles across. Only a relatively small amount of water flows out the bottleneck straits between lakes Michigan and Huron, so Lake Michigan holds its water a long time, nearly 100 years. Lake Michigan is bordered by 1,659 miles of shoreline, of which 495 miles of shoreline are located in Wisconsin.

The natural hydrology and littoral hydraulic process have been completely altered from their natural state. Sand is now transported and trapped at many different points due to the numerous structures along the whole southern basin of Lake Michigan. The project area is subject to very large waves during northerly storms.

Table 3: Characteristics of Lake Michigan

Great Lake	Water Surface Area (mile ²)	Surface Elevation (IGLD, feet)	Length (miles)	Breadth (miles)	Maximum Depth (feet)	Drainage Area (mile ²)
Lake Michigan	22,300	579.95	307	118	925	67,900

Water levels within Lakes Michigan and Huron have been recorded since 1918. The lake wide period of record average (1918 to present) is currently 578.8 feet (IGLD 85) (NOAA-GLERL 2019b). Figure 7 depicts the changes that have been observed since 1918 to present for the lake-wide monthly average and the lake-wide annual average. The data for these lakes (i.e., Michigan and Huron) are presented together since hydrologically they are considered one lake.

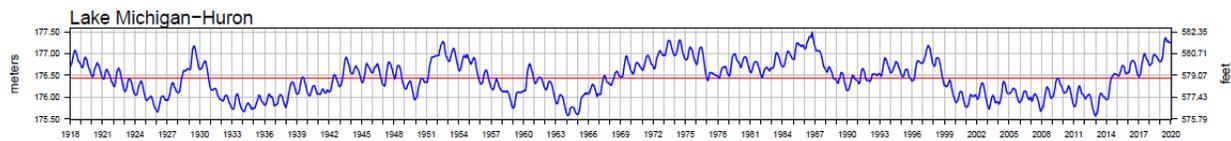


Figure 7: Water levels for Lake Michigan and Huron (USACE 2020).
Blue line indicates monthly mean water level and red line indicates long term annual average.

3.2 – Ecological Resources

3.2.1 – Great Lakes Habitat

The proposed sand placement area is classified as Lacustrine (lake) system type, with an additional wetland type, barrier enclosed system, existing as an interior basin at the northern portion of the Chiwaukee Prairie. Hydrogeomorphic Classification for Great Lakes Coastal Wetlands by Albert et al (2005) was utilized to delineate and characterize wetlands for this EA.

Lacustrine System / Open Lacustrine / Open Shoreline

The beach along Chiwaukee Prairie at Kenosha Dunes and the Open Water Area are classified generically as an open lacustrine shoreline (Albert et al 2005). The hydrogeomorphic setting for this type is driven by wave action sculpting and moving littoral sediment (cobble/sand/clay) with water and hydroperiod provided by Lake Michigan. Wetland plants cannot typically establish in this environment due to severe hydraulic forces of wave action and continually moving sediment. This habitat type is starved of organic matter in which hydrophytic plants that are able to colonize quiescent areas typically do not require organic sediment. The resultant expanse of shallow water bars, spits, beaches and small foredunes of this habitat type can serve to dampen waves and create a more stable wetland systems on the inland side, as is the case of Chiwaukee Prairie.

Barrier Enclosed System / Swale Complex / Ridge & Swale Complex

The Chiwaukee Prairie is classified generically as a barrier enclosed ridge and swale complex (Albert et al 2005). This primary type of swale complex wetland occurs between relict beach ridges, which is known as a ridge and swale complex, but is also referred to as dune and swale or strand-plain. The ridge and swale complex at Chiwaukee Prairie is composed of a series of beach ridges separated by narrow swales, in which the ridges formed in response to cyclic fluctuations in Lake Michigan water levels over the past several thousand years. The current hydrogeomorphic setting is established by the beach and foredune (open shoreline) providing barrier to the harsh wave climates and littoral Lake Michigan. Because of the barrier, there is reduced mixing of Great Lakes waters and exclusion of coastal processes within the wetlands. The first couple of swales are typically in direct hydrologic connection to the lake; however, these ridge and swales continue for hundreds of feet inland in which other hydrologic inputs have influence. Organic soil depths are quite variable, as is the vegetation, which ranges from shrub swamp, to sedge meadow to wet savanna. These wetlands can also discharge water into the Lake, creating small streams for transient lake fishes and other aquatic organisms.

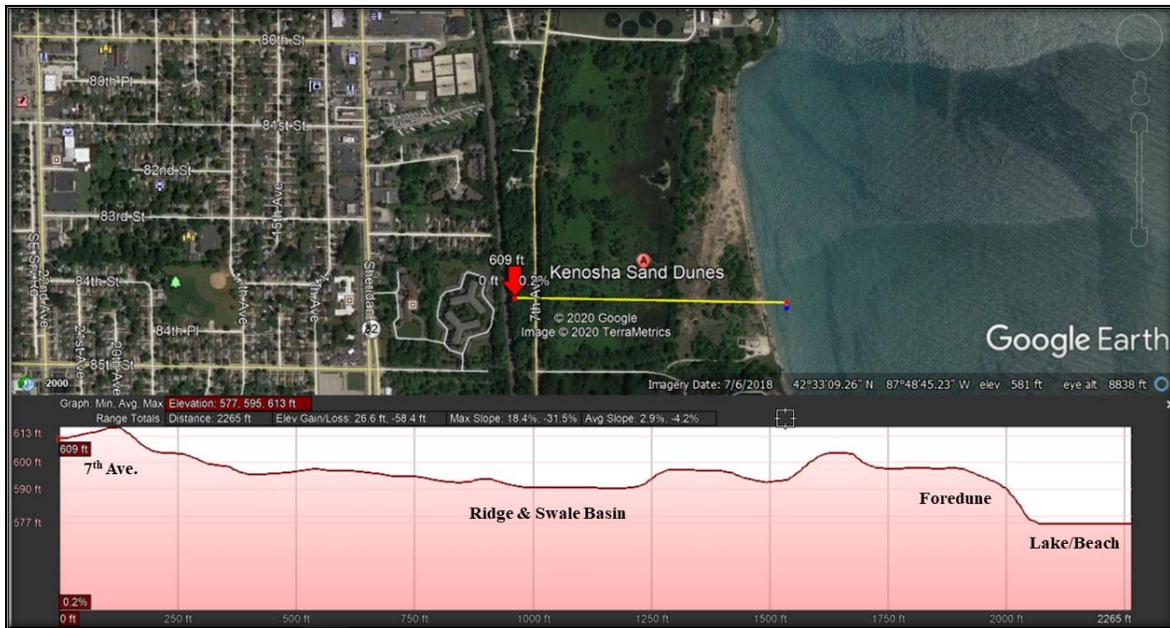


Figure 8: Geomorphology of Foredune and Interior Ridge & Swale Complex (USGS 30m DEM)

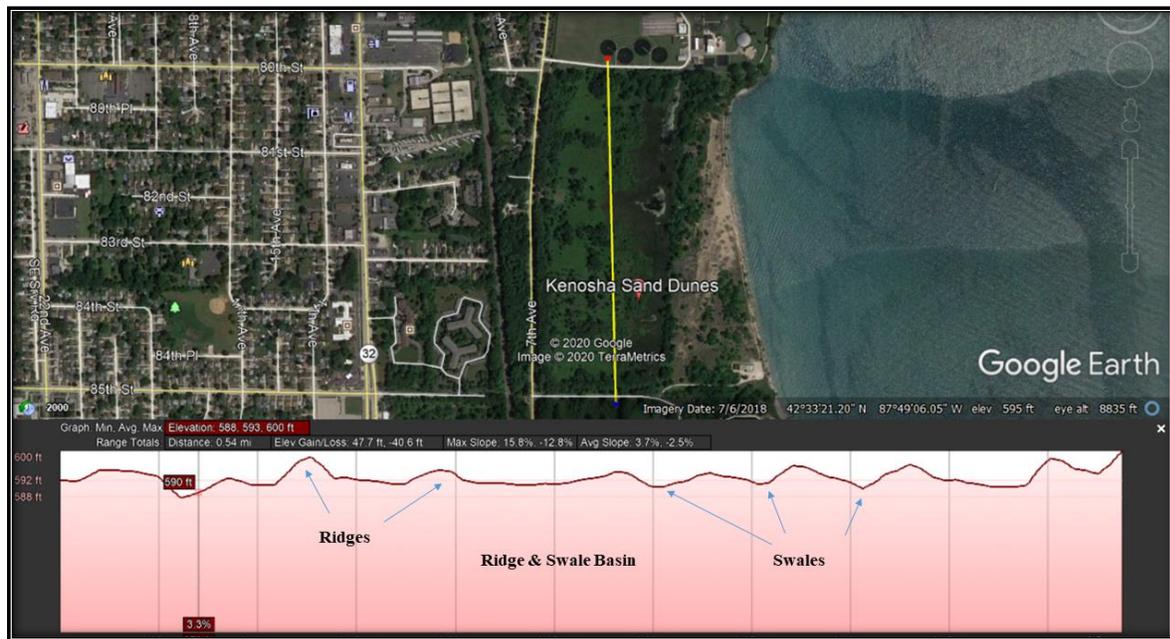


Figure 9: North / South Line of Ridge & Swale Geomorphic Formation (USGS 30m DEM)

3.2.2 – Native Plant Communities

Surf & Beach Zone – The surf and beach zones are typically devoid of vegetation due to the continual wave action and movement of littoral substrates, but may have interspersed small patches or individual plants. Typically, the wave active beach zones are known to have established populations of winged pigweed (*Cycloloma atriplicifolium*), sand grass (*Triplasis purpurea*), seaside spurge (*Chamaesyce polygonifolia*) and sea rocket (*Cakile edentula*).

Foredune – The foredune habitat is dominated by plant species that are sand binders; they possess the ability to hold sand in place by their rhizomatous root systems. These species, which are primarily grasses, play an important role in dune stabilization. Common graminoid species on the foredune include marram grass (*Ammophila breviligulata*), sand reed grass (*Calamovilfa longifolia magna*), bog reed grass (*Calamagrostis inexpansa*), and wild rye (*Elymus canadensis*). Other species include sand cherry (*Prunus pumila*), beach pea (*Lathyrus japonicus*), and silverweed (*Potentilla anserina*). The federally listed dune thistle (*Cirsium pitcheri*) grows on foredunes and beaches, and less commonly in the rear dune. Rear-dune species include bearberry (*Arctostaphylos uva-ursi*), trailing juniper (*Juniperus horizontalis*), flowering spurge (*Euphorbia corollata*) and beach wormwood (*Artemisia caudata*). Downy yellow-painted cup (*Castilleja sessiliflora*) can be found in the Hosah Prairie in the north unit and in the northern portion of the south unit.

Interior Basin Ridge & Swale

The panne habitat is now uncommon in the Great Lakes but could possibly be found in the preserve. Species typical of this habitat include shrubby cinquefoil (*Potentilla fruticosa*), twig rush (*Cladium mariscoides*), hair beak rush (*Rhynchospora capillacea*), small fringed and fringed gentian (*Gentiana procera* and *G. crinita*), arrowgrass (*Triglochin maritima*) and sedges such as (*Carex viridula* and *C. crawei*).

The prairie community is generalized by grasses such as big and little blue stem (*Andropogon gerardii* and *A. scoparius*), prairie dropseed (*Sporobolus heterolepis*), and blue joint grass (*Calamagrostis canadensis*). Typical prairie forbs include golden alexanders (*Zizia aurea*), shooting stars (*Dodecatheon meadia*), blazing stars (*Liatris* spp.), and goldenrods (*Solidago* spp.).

The marsh communities contain standing water during most of the year because the low marsh areas extend below the water table. Much of the marsh habitat is characterized by dense stands of cattails (*Typha* spp.), as well as prairie cordgrass (*Spartina pectinata*), and sweet flag (*Acorus calamus*) with several species of rushes (*Juncus* spp.) along the wetland margins. There are scattered willows (*Salix* spp.) which are typically found on the higher ridges as well as boneset (*Eupatorium perfoliatum*) and spotted joe pye weed (*E. maculatum*).

The oak savanna habitat can be found along the relic beach ridges; the dominant species is black oak (*Quercus velutina*).

3.2.3 – Macroinvertebrates

Several studies on aquatic macroinvertebrates in Southern Lake Michigan have been completed. Garza and Whitman of the United States Geological Survey investigated macroinvertebrate assemblages of Southern Lake Michigan and observed macroinvertebrates from forty taxa. Approximately 81% of the observed taxa consisted of a species of segmented worm (*Chaetogaster diastrophus*) and a variety of round worms (*Nematoda* spp). Nalepa et al. also conducted surveys throughout southern Lake Michigan that encompassed areas adjacent to the City of Chicago. Their study identified three main groups of macroinvertebrates including Amphipods (*Diporeia*), worms (*Oligochaeta*), and bivalves (*Sphaeriidae*). Another study investigating the diet of Lake Whitefish (*Coregonus clupeaformis*) from 1985 to 2000 revealed a shift in the macroinvertebrate prey items with the establishment of the Zebra and Quagga mussels (*Dreissena polymorpha* and *Dreissena burgensis*). As *Dreissena* spp. filtered the water of Southern Lake Michigan it reduced the food availability to native macroinvertebrates and severely impacted populations of amphipods (*Diporeia* spp), the dominant food source for Lake Whitefish. At the turn of the century, Lake Whitefish along the southeast coast of Lake Michigan had turned to consuming Chironomidae as their primary prey item with *Dreissena polymorpha*, *Mysis relicta* and *Sphaeriidae*

supplementing the diet. Yellow perch diets were analyzed under yet another study in southeast Lake Michigan in 1998 and 1999. These fish were found to be consuming primarily *Mysis relicta*, Chironomidae, *Gammarus* spp. and Isopoda.

3.2.4 – Fishes

In general, the surf zone fish assemblage of Lake Michigan would be the target community that occurs within the shoreline placement area at Kenosha Dunes. The shallow surf zone fish assemblage typically consists of Longnose Dace (*Rhinichthys cataractae*), Emerald Shiner (*Notropis atherinoides*), Sand Shiner (*Notropis stramineus*), and Spottail Shiner (*Notropis hudsonius*), with less frequent presence of Lake Chub (*Couesius plumbeus*), Mimic Shiner (*Notropis volucellus*), Mottled Sculpin (*Cottus bairdii*), juvenile Yellow Perch (*Perca flavescens*) and juvenile Smallmouth Bass (*Mircropterus dolomieu*). The recent increase in abundance and range by the Banded Killifish (*Fundulus diaphanus*) has now also made this fish a typical surf zone fish. Species presence was determined utilizing the Chicago Region Fish Database (unpublished); specimens are vouched at the Milwaukee Public Museum and include USGS Wisconsin Fish Data.

3.2.5 – Amphibians & Reptiles

Reptiles and amphibians that may be present in the area include those that utilize beach habitat. These are quite limited along the coast of Lake Michigan, and may include Painted Turtle¹ (*Chrysemys picta*), Red Ear Slider (*Pseudemys scripta*), Snapping Turtle (*Chelydra serpentina*) and the Garter Snake (*Thamnophis sirtalis*). Any manmade rock structures of the failed revetment could support Mudpuppy (*Necturus maculosus*) salamander. These salamanders spend their entire life underwater, foraging rocky shoals for crayfish and other prey items. They prefer cold water and only migrate into the near shore area during the winter months.

3.2.6 – Birds

Kenosha Dunes – The project vicinity, being along a major shoreline oriented roughly to a north-south axis is part of a globally significant migratory bird flyway. The diverse habitat and wetlands of the Chiwaukee Prairie, provides an important spring and fall resting and feeding area during migration for ducks, geese, and many other migratory birds would use the area.

Nests were observed dug into the eroded sand bluff in May 2020 (Figure 10). According to the field ecologist for the Kenosha Dunes, most of the nests are bank swallows, with a few rough-winged swallows. Kingfishers have been observed on site, but have not been confirmed to be nesting in the bluff. These birds are not listed under the Federal Endangered Species Act, nor are they found on the listings of State-protected wildlife. However, they are protected under the Migratory Bird Protection Act, which the latest guidance from USFWS indicates that deliberate take is prohibited. Therefore, the contract plans and specifications will indicate that placement of dredge material is prohibited in areas where bank-nesting birds are present. In this way, prohibited take of migratory birds will be prevented. Additionally, the USFWS is being consulted for guidance on what measures can be taken to help minimize disturbance of these bank-nesting birds, and any practicable measures provided will be implemented in the project design. In this way, the proposed placement activities would not have a significant impact on birds. For future placement cycles, if there is open beach below the OHWM, the beach area will be evaluated for wildlife impacts prior to placement operations. For example, if a very wide beach ever forms at Kenosha Dunes, it is conceivable that the federally listed piping plover could nest there. The beach condition would be evaluated prior to each placement cycle to determine if any species are present and what measures are needed to avoid significant impacts, such as placing off shore or placing later in the season.



Figure 10: Eroded Foredune with Bank Swallow Nests at Kenosha Dunes

Open Water Area – The open water of Lake Michigan provides resting and forage habitat for many water fowl such as Divers, Mergansers, Terns, Gulls, and Raptors.

3.2.7 – Threatened & Endangered Species

Federal

Federally listed species for the Kenosha Dunes and the Kenosha Harbor include northern long-eared bat (threatened), eastern prairie fringed orchid (threatened), whooping crane (experimental population, non-essential), and the rufa red knot (threatened). There are no designated critical habitats in the project vicinity.

The project (dredging, transport, and placement) would have no effect on the northern long-eared bat, whooping crane, and eastern prairie fringed orchid as the activities are planned to take place along the eroding shoreline away from coastal wetlands, prairies, and woodlands, which are the preferred habitats for these species, and would not directly impact any established terrestrial habitats.

The nearshore area where the dredged material is to be placed varies from shallow water to wet sandy flats which may provide feeding habitat for red knots passing through the area. The shoreline protection activities would have minimal effect on the red knots. At the onset of work, any red knots present in the nearshore area would vacate the area ahead of the construction activity. As red knot do not nest in the area, the only disturbance would be to feeding or resting activities. Suitable locations for red knots to resume these activities are available elsewhere along the coast in the project vicinity. Therefore, the proposed placement of dredged material as shoreline protection along Kenosha Dunes may affect, but is not likely to adversely affect (NLAA), the rufa red knot. This NLAA determination for red knot was provided to the U.S. Fish and Wildlife Service on June 3, 2020, for their review and was concurred with by USFWS on July 20, 2020 (Appendix 3).

State of Wisconsin

State-listed endangered species were reviewed for the project area by the Chicago District. Wisconsin listed species and their critical habitats are identified by Wisconsin DNR as occurring within Kenosha County and listed in Table 4. The preferred plan is not likely to adversely affect these species or their critical habitats.

Table 4: Wisconsin State listed threatened and endangered species.

Common Name	Species Name	Common Name	Species Name
Skipjack Herring	<i>Alosa chrysochloris</i>	Lake Chubsucker	<i>Erimyzon sucetta</i>
Least Darter	<i>Etheostoma microperca</i>	Starhead Topminnow	<i>Fundulus dispar</i>
Longear Sunfish	<i>Lepomis megalotis</i>	Striped Shiner	<i>Luxilus chrysocephalus</i>
Redfin Shiner	<i>Lythrurus umbratilis</i>	River Redhorse	<i>Moxostoma carinatum</i>
Pugnose Shiner	<i>Notropis anogenus</i>	Blanchard's Cricket Frog	<i>Acris blanchardi</i>
Great Egret	<i>Ardea alba</i>	Upland Sandpiper	<i>Bartramia longicauda</i>
American Bittern	<i>Botaurus lentiginosus</i>	Henslow's Sparrow	<i>Centronyx henslowii</i>
Piping Plover	<i>Charadrius melodus</i>	Black Tern	<i>Chlidonias niger</i>
Peregrine Falcon	<i>Falco peregrinus</i>	Whooping Crane	<i>Grus Americana</i>
Least Bittern	<i>Ixobrychus exilis</i>	Black-crowned Night-Heron	<i>Nycticorax</i>
Foster's Tern	<i>Sterna forsteri</i>	Western Meadowlark	<i>Sturnella neglecta</i>
Franklin's Ground Squirrel	<i>Poliocitellus franklinii</i>	Blanding's Turtle	<i>Emydoidea blandingii</i>
Eastern Massasauga	<i>Sistrurus catenatus</i>	Rusty Patch Bumble Bee	<i>Bombus affinis</i>
Liatriis Borer Moth	<i>Papaipema beeriana</i>	Silphium Borer Moth	<i>Papaipema silphii</i>
Prairie Crayfish	<i>Procambarus gracilis</i>	Double-striped Bluet	<i>Enallagma basidens</i>
Leafhopper	<i>Destria crocea</i>	Planthopper	<i>Myndus ovatus</i>
Elktoe	<i>Alasmidonta marginata</i>	Slippershell Mussel	<i>Alasmidonta viridis</i>
Ellipse	<i>Venustaconcha ellipsiformis</i>	Rainbow Shell	<i>Villosa iris</i>

3.2.8 – Natural Areas & Nature Preserves**Chiwaukee Prairie / Kenosha Dunes**

Kenosha Dunes is part of the Chiwaukee Prairie State Natural Area. According to the Wisconsin State Natural Areas Program, it is one of the largest prairie complexes in the state and the most intact coastal wetland in southeastern Wisconsin. The northernmost portion is the Kenosha Dunes, contains ridge, swale, open and stabilized sand dunes along the lake shore. The prairie began forming 13,000 years ago, when Lake Michigan started to recede. As a former lakebed, the prairie stands on beach sand covered with about 10 inches of topsoil. The dunes were created by the winds and wave action of the receding Lake Michigan. Vegetation such as sand reed and marram grass, which binds sand together, eventually took root and helped create the relatively stable dune formations.

The 400+ acre Chiwaukee Prairie is the most species-rich prairie in Wisconsin. The diversity of the vegetation is unequalled with more than 400 species of native plants, including one federally endangered species (the prairie fringed orchid), five state-endangered and five state-threatened species. The plant communities found in Chiwaukee include wet prairie as the dominant cover, and with some sandy, dry prairie on the higher ridges. Sedge meadows and emergent marsh vegetation occupy the deeper swales. There are tall grasses and oak openings along the western and southern portions of the preserve. The prairie contains nationally significant archeological and geological features.



Figure 11: Blazing Star & Nodding Wild Onion at Chiwaukee Prairie.

3.3 – Cultural & Social Resources

3.3.1 – Social Setting

Kenosha City – Kenosha Harbor and the northern part of the Kenosha Dunes are located in the city of Kenosha, WI. Kenosha City has a population of 99,944 (2019), 25.1% of which are under the age of 18 years of age. The median household income is \$53,657.

Pleasant Prairie Village – The southern portion of the Kenosha Dunes are located in the village of Pleasant Prairie, WI. Pleasant Prairie has a population of 21,034 (2019), 21.3% of which are under 18 years of age. The median household income is \$81,526.

The U.S. Census Bureau’s American Fact Finder and Quick Facts (U.S. Census Bureau 2020) for Kenosha City, Pleasant Prairie Village, Kenosha County, and the state of Wisconsin were reviewed for socioeconomic information and presented in Table 5.

Table 5: 2018 U.S. Census data for Kenosha, Kenosha County, and Wisconsin.

Category	Kenosha City	Pleasant Prairie Village	Kenosha County	Wisconsin
Total Population	99,944	21,034	169,561	5,822,434
Under 18 years	25.1%	21.3%	22.4%	21.8%
Under 5 years	6.5%	4.7%	5.6%	5.7%
White	79.5%	91.8%	87.2%	87.0%
Black or African American	11.5%	1.6%	7.4%	6.7%
American Indian and Alaska Native	0.6%	0.2%	0.8%	1.2%
Asian	1.7%	2.4%	1.8%	3.0%
Native Hawaiian and Other Pacific Islander	0.0%	0.0%	0.1%	0.1%
Hispanic or Latino	17.6%	7.7%	13.5%	7.1%
Two or more races	4.0%	2.6%	2.8%	2.0%
High School Graduate or Higher	88.7%	92.9%	90.2%	91.9%
Bachelor's Degree or Higher	24.0%	33.4%	25.7%	29.5%
Median Household Income	\$53,657	\$81,526	\$60,929	\$59,209
Below Poverty Level	17.7%	6.6%	12.0%	11.0%

3.3.2 – Archaeological & Historic Properties

Kenosha Harbor and its approach channels are not considered to be of historical significant according to the National Register of Historic Places. On the north pier of the entrance channel is the Kenosha North Pierhead Light and along 4th Avenues is the Kenosha (Southport) Light Station. Both structures are listed as historic structures on the Wisconsin and National Register of Historic Places. However, these structures will not be impacted by the proposed work.

Reports from investigations along the Kenosha Dunes in the 1960s and the Tribal Historic Preservation Officer (THPO) of the Forest County Potawatomi (FCP) Community reported that a pre-contact (prior to the entrance of Europeans) archeological site exists in the surrounding are.in an email dated June 13, 2020. The FCP also indicated that the presence of sites in the area suggest that undiscovered sites may exist in the proposed placement reach, most of which has not been surveyed for archeological resources.

3.3.3 – Recreation

Kenosha City – The City of Kenosha maintains many parks and beaches throughout the city limits, three of which are near to the Harbor, the Navy Memorial Park, Harbor Park, and the Simmons Island Park. Additionally, within Kenosha Harbor is a recreational harbor that is used by recreational boats and charter companies to dock their boats.

Kenosha Dunes – The dunes are open to the public and offers walking trails, swimming and fishing opportunities.

Chapter 4 – Effects Determination

The effects determination provided in this document only pertain to the placement of clean, nourishing sandy material at Kenosha Dunes. Dredging of the federal harbor is covered under other completed NEPA documents. Review of the proposed shoreline protection area indicates it would not result in significant adverse environmental effects, nor would it be expected to result in any significant cumulative or long-term adverse environmental effects. Adverse effects would be negligible to minor, including short-term noise and air emissions from equipment operation; temporary turbidity from operations; and temporary displacement of some fish and bird species. Fish and birds would return upon completion of sand placement. The placement of material would help temporarily nourish the littoral drift, maintain dynamic equilibrium for the ridge and swale wetland complex. The analysis detailed below document these findings.

4.1 – Physical Resources

4.1.1 – Geology

The proposed alternative would place clean littoral sands back into the littoral drift system, which would support sediment transport and efforts to naturalize erosion of coastal glacial features and till/outwash materials; however these positive effects are considered short term and minor. It is anticipated that the preferred alternative would have no adverse, long-term effects to geologic resources.

4.1.2 – Hydrodynamics & Littoral Drift

The proposed alternative would place clean littoral sands back into the littoral drift system, which would support sediment transport and efforts to slow down coastal erosion; however be it minor and short term comparatively to the greater natural littoral drift system. It is anticipated that the preferred alternative would have no adverse, long-term effects to littoral drift resources.

4.1.3 – Sediment Quality

The sediment quality at the Kenosha Dunes would not be impacted by the placement of Kenosha Harbor materials; the sediment along the up-drift Wisconsin coastal zone consists of similar sands as the placement materials. The proposed work would only increase the mass of sediment at the Kenosha Dunes location, but would not impact sediment quality nor would the placement change the well-established sediment migration patterns that exist along the coast. It is anticipated that the preferred alternative would have no adverse, long-term effects to work area sediment quality.

4.1.4 – Water Quality

The proposed plans that place sand into the littoral drift system would have temporary and localized impacts on Lake Michigan at the dredging and particularly at the sediment placement location, due to the mixing of the sediment the water and the release of water entrained in the sediment to the water column. Main impacts would be turbidity (cloudiness) caused by the suspension of fines, and potentially nutrients due to the release of soluble nitrogen and phosphorus compounds from the sediment matrix. Both of these conditions would be temporary, and any released materials would be quickly mixed within the water column and diluted to levels below impact. In general, the activities are expected to comply with the applicable water quality standards and no violations are anticipated. It is expected that the State will issue a Chapter 30 permit with conducting this work and that the preferred alternative would have no adverse, long-term effects to work area water quality. See Appendix 1 for the full 404(b)(1) criteria and analysis.

4.1.5 – Air Quality

The local air quality in Kenosha County is considered ‘attainment’ under the Clean Air Act. The proposed project is within the attainment zone. Due to the small scale and short duration of these projects, the main sources of emissions would be vehicle emissions and dust associated with the construction activities. The project does not include any stationary sources of air emissions, and a General Conformity Analysis was not completed. The temporary mobile source emissions from this project is de minimis in terms of the National Ambient Air Quality Standards and the State Implementation Plan. The project is not expected to be a significant source of Green House Gas emissions. All construction vehicles will comply with federal vehicle emission standards. USACE and its Contractors comply with all Federal vehicle emissions requirements. USACE follows EM 385-1-1 for worker health and safety, and requires all construction activities to be completed in compliance with Federal health and safety requirements.

4.1.6 – Hazardous, Toxic & Radioactive Wastes (HTRW)

There are no identified regulated sites at Kenosha Dunes. Neither the dredging nor placement would impact any regulated or unresolved environmental sites. There are no identified HTRW impacts.

4.1.7 – Climate

Construction of the recommended plan would not have any short-term or long-term impacts to climate. Additional fossil fuels would be needed during the dredging and placement process for the operation of associated construction vehicles. However, there would be no measurable impact on climate, even though there may be localized increases in greenhouse gas emissions during operations. Once operations are complete, additional fossil fuels would not be needed for operation of the navigation channel.

4.1.8 – Limnology

Construction of the recommended plan does not include the placement of material features that would disrupt lacustrine processes. Manual movement of sediment from the shoaling area of the harbor to littoral or beach placement zones would facilitate sediment transport that would normally occur along the lakefront if the harbor was not there. Dredging and the littoral or beach placement operations are returning the trapped sand to the littoral drift process so that it may continue to accumulate on downstream beaches and in the water column as it migrates along the coast. Therefore, the recommended plan would have no short-term or long-term adverse impact to lacustrine processes.

4.2 – Ecological Resources

4.2.1 – Great Lakes Habitat

The lacustrine/coastal area proposed for sand placement requires transport of glacially deposited sands, till and outwash to sustain its hydrogeomorphic setting and associated hydrology. The preferred alternative would place sand onto open beach and surf zone where it has formerly eroded away (Figure 12), mimicking this required process. Material placement is strictly limited to the area between the toe of the eroded bank and the nearshore area where water depths are less than 8-feet. In a short period of time (days to weeks), the placed sand would become naturalized in geomorphology. There would be no sand placed landward of the foredune eroded face, and therefore no placement of material in or near the ridge and swale complex. It is anticipated that the preferred alternative would have no adverse, long-term effects to Great Lakes wetlands of Lacustrine Open Shoreline and Barrier Enclosed Ridge and Swale Complex. Continued erosion under the No Action condition would eventually remove the Open Shoreline

condition, rupture the foredune and start changing the hydrology of the currently protected Ridge and Swale Complex.

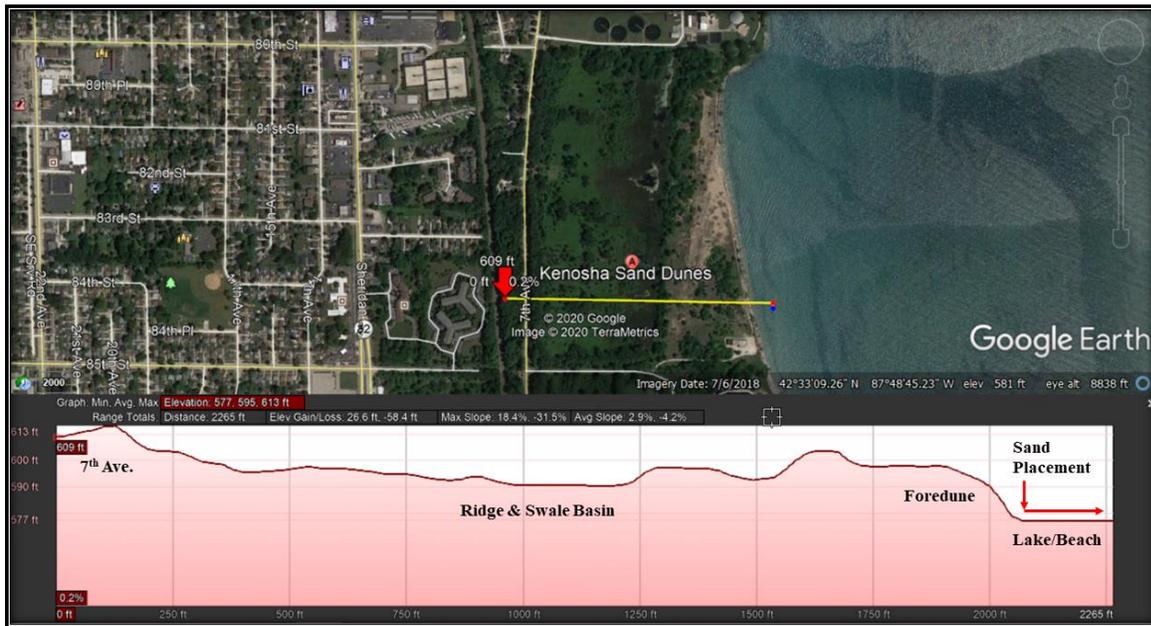


Figure 12: Placement of Restorative Sands in Open Shoreline Only

4.2.2 – Native Plant Communities

The preferred alternative would place sand onto open beach or into the surf zone, which are the natural zones for littoral sands to continue through the drift process. These zones are naturally barren, with minimal to no plant life due to wave action and continually moving substrates (Albert 2005). The only plant typically found in the beach zone is the Sea Rocket, which is an annual that reproduces by seed and maintains persistence in this manner. It is anticipated that the preferred alternative would have no adverse, long-term effects to inland, foredune, dune or beach plant communities.

4.2.3 – Macroinvertebrates

The preferred alternative would place sand onto open beach or into the surf zone, which are the natural zones for littoral sands to continue through the drift process. These zones are naturally barren with continually shifting sands and substrates. Due to these conditions, macroinvertebrate diversity is low, and those taxa that live in the conditions are adapted to sands and gravels continually being entrained and deposited by waves (Albert 2005). It is anticipated that the preferred alternative would have no adverse, long-term effects to littoral and macroinvertebrate communities.

4.2.4 – Fishes

The preferred alternative would place sand onto open beach or into the surf zone, which are the natural zones for littoral sands to continue through the drift process. These zones are naturally barren with continually shifting sands and substrates, which provides spawning and foraging conditions for surf zone fishes. Although surf zone fishes have adapted to continually moving substrates, large piles of sand that would sit in the surf zone for durations longer than a day or two could impact fish eggs embedded in the shifting sands and gravels. To avoid minor effects to surf zone fish spawning and recruitment, no sand be

placed in the surf zone between 01 March and 01 July of any given year. It is anticipated that the preferred alternative would have no adverse, long-term effects to surf zone or littoral fish communities.

4.2.5 – Amphibians & Reptiles

The preferred alternative would place sand onto open beach or into the surf zone, which are the natural zones for littoral sands to continue through the drift process. These zones are naturally barren with continually shifting sands and substrates. Due to these conditions, amphibian and reptile diversity is absent to low. To protect Mudpuppy Salamander, it is recommended not to cover or disturb rocky areas between 01 December and 01 April in lieu of a site specific survey. It is anticipated that the preferred alternative would have no adverse, long-term effects to amphibian or reptile communities.

4.2.6 – Birds

The preferred alternative would place sand onto open beach or into the surf zone, which are the natural zones for littoral sands to continue through the drift process. These zones are naturally barren with continually shifting sands and substrates, where birds do not nest. However, due to these conditions, certain species of birds have adapted to feeding on macroinvertebrates in these areas, such as certain Sandpiper and Plover species. Also, wading birds and diving duck species likely hunt for fish in the surf zone. Waterfowl, songbirds, and shorebirds would temporarily avoid the immediate area of shoreline protection operation because of the noise and activity, but would be expected to return shortly following operations. Special protection has been given to the bird habitat along the eroding foredune face at Kenosha Dunes by the USFWS, therefore no material shall be placed within 10 feet of the eroding bluff where bird nests are apparent. It is anticipated that the preferred alternative would have no adverse, long-term effects to residential or migratory birds.

4.2.7 – Threatened & Endangered Species

Federally Listed Species

It is anticipated that the preferred alternative would have no adverse, long-term effects to federal threatened or endangered species. The USFWS concurred with this determination in an email dated July 20, 2020.

Wisconsin State Listed Species

It is anticipated that the preferred alternative would have no adverse, long-term effects to state threatened or endangered species.

4.3 – Cultural & Social Resources

4.3.1 – Social Properties

It is anticipated that the preferred alternative would have no adverse, long-term effects to social properties or issues.

4.3.2 – Land Use History

It is anticipated that the preferred alternative would have no adverse, long-term effects to historic land uses.

4.3.3 – Recreation

The proposed action would have short-term, temporary effects on recreation, noise, and aesthetics and would not result in significant impacts in these areas. Noise from dredging and from a booster pump, if used, would generally be in accordance with local noise ordinances. Noise and aesthetic impacts from the placement activity is limited to the shoreline area and is not near residential areas. While the temporary noise and aesthetic effects would be noticed by hikers, overall impacts on recreation are positive in alleviating some of the erosion at the dunes. Noise from floating plant, any booster pumps, etc. would have limited effect on aquatic species. It is anticipated that the preferred alternative would have no adverse, long-term effects to recreation.

4.3.4 – Archaeological & Historic Properties

It is anticipated that this project will not impact any historically significant properties. The Wisconsin Historical Society State Historic Preservation Office (SHPO) was notified of this project on July 31, 2020. In correspondence dated August 6, 2020 the SHPO office concurred with the Chicago District's finding of no historically significant properties will be effected.

In an email dated June 13, 2020, the FCP noted that placement of dredge material could help protect existing sites, but could also damage any sites that have been exposed and are in the area proposed for placement of dredged material. Further coordination with the FCP resolved the concerns on the condition that all work be from the water with no land access and no work above the OHWM. Any future proposals that may affect areas above the OHWM would be re-coordinated. The Miami Tribe of Oklahoma submitted a letter on May 20, 2020 indicating no historic properties or sites will be affected.

4.3.5 – 17 Points of Environmental Quality

The 17 points are defined in Section 122 of the Rivers, Harbors and Flood Control Act of 1970 (P.L. 91-611). Effects to these points are discussed as follows:

Noise – Temporary increases in noise from sand off-loading machinery would be noticeable by beach goers, but would not extend beyond the park boundaries since sand off-loading operations would be water based.

Displacement of People – The proposed sand placement will not displace any people.

Aesthetic Values – The proposed sand placement could have minor short term impacts during placement but after placement could restore the visual aesthetics of a more natural shoreline.

Community Cohesion – The proposed sand placement would not disrupt community cohesion.

Desirable Community Growth – The proposed sand placement would not affect community growth.

Desirable Regional Growth – The proposed sand placement would not affect regional growth.

Tax Revenues – The proposed sand placement could potentially save municipal tax payers money.

Property Values – The proposed sand placement would not affect property values.

Public Facilities – The proposed sand placement would help maintain public and semi-public facilities.

Public Services – The proposed sand placement would allow public services to continue, including recreation, public safety and economic driven activities.

Employment – The proposed sand placement would provide short term beneficial impacts during construction activities.

Business and Industrial Activity – The proposed sand placement would support local businesses and industries that support beach and water recreation.

Displacement of Farms – Since there are no farms within the study area none will be displaced.

Man-made Resources – The proposed sand placement would not adversely affect man-made resources.

Natural Resources – The proposed sand placement would support sustaining existing natural resources at Chiwaukee Prairie / Kenosha Dunes.

Air Quality – Kenosha Harbor and the proposed placement location are within attainment areas. Due to the small scale, short duration and nature of the dredging and placement project, it is assumed that the project is de minimis with regard to ozone and ozone precursors. Although a General Conformity analysis was not conducted, other Great Lakes dredging projects that are much larger in scale and earthwork have emissions well below the level of significance under the Clean Air Act and based on those experiences it is assumed that the proposed project is de minimis for air impacts. Temporary vehicle emission impacts would meet current federal regulations. Greenhouse gas emissions are expected to be negligible.

Water Quality – The proposed dredging and sediment placement would have temporary, localized impacts on water quality during sediment placement activities, particularly in the form of turbidity. Because of the coarse nature and limited fines associated with the sediment, any impacts would be temporary. Lake Michigan as a whole would experience negligible short term impacts from the project, and would experience beneficial long term impacts from improved shoreline stability.

4.5 - Cumulative Effects

Consideration of cumulative effects requires a broader perspective than examining just the direct and indirect effects of a proposed action. It requires that reasonably foreseeable future impacts be assessed in the context of past and present effects to important resources. Often it requires consideration of a larger geographic area than just the immediate “project” area. One of the most important aspects of cumulative effects assessment is that it requires consideration of how actions by others (including those actions completely unrelated to the proposed action) have and will affect the same resources. In assessing cumulative effects, the key determinant of importance or significance is whether the incremental effect of the proposed action will alter the sustainability of resources when added to other present and reasonably foreseeable future actions. Cumulative environmental effects for the proposed littoral sand placement areas on the southern Wisconsin shore and Illinois north shore of Lake Michigan were assessed in accordance with guidance provided by the Council on Environmental Quality (CEQ) and the U.S. Environmental Protection Agency (USEPA 315-R-99-002).

4.5.1 - Scope of Cumulative Effects Analysis

Through this environmental assessment, the cumulative effects issues and assessment goals are established, the spatial and temporal boundaries are determined, and the reasonably foreseeable future actions are identified. Cumulative effects are assessed to determine if the sustainability of any of the resources is adversely affected with the goal of determining the incremental impact to key resources that

would occur should the proposed work be implemented. The spatial boundary being considered is normally in the general area of the proposed activity; however, the area may be expanded on a case-by-case basis if some particular resource condition necessitates broadening the boundary. The analysis will only include the immediate area since the proposed activity is a highly localized placement.

Three temporal boundaries were considered:

- Past – Pre-1830s because this is the approximate time that the Lake Michigan shoreline and littoral drift started being modified for development
- Present – 2021 when the decision is being made on sand placement.
- Future – 2071, the year used for determining repair life (~50 years)

Projecting the reasonably foreseeable future actions can be difficult. The proposed action, sand placement along southern Wisconsin's shore of Lake Michigan, is reasonably foreseeable; however, the actions by others that may affect the same resources are not as clear. Projections of those actions must rely on judgment as to what are reasonable based on existing trends and where available, projections from qualified sources. Reasonably foreseeable does not include unfounded or speculative projections. Some future projections were taken from watershed and specific studies generated for the general project area. In this case, reasonably foreseeable future actions include:

- Continued reduction in erosion from littoral sand inputs and/or shoreline armoring
- Continued reduction and attenuation of littoral sands from north shore structures
- Continued use of dredged littoral sands to supplement actively erosive shoreline reaches
- Continued maintenance and protection of sandy bathing beaches

4.5.2 - Cumulative Effects on Resources

The proposed sand placement areas are beneficial impacts, but considered to be localized compared to the whole southern Lake Michigan littoral drift system. Generally, the removal of sand from one spot within the littoral system and placing it in another spot is quite negligible and the effects are short term when considering the quantities and ceaseless movement of littoral sands in the system. The physical and ecological/biological impacts associated with littoral drift processes were started over 100 years ago with the development and build-out of the southern Lake Michigan shoreline. The proposed sand placement will temporarily abate minor shoreline erosion and potentially result in a cumulative economic and social effect by reducing local costs for sand placement and allowing the funding to be utilized for other municipal/public resources. Implementation of the preferred alternative would not result in a significant cumulative environmental effect since the greater littoral drift system and waves driven by thunderstorms far outweigh any of the minor and short term affects resulting from sand placement.

Physical Resources

The combination of the preferred alternative and the potential slowing of shoreline erosion would have no cumulative negative impact on physical resources within the area. Dredging and placement described by the recommended plan along with other potential future actions would not require the use of a large number of construction vehicles over a long period of time that would cumulatively have the potential to affect climate or air quality. The Recommended Project and future actions would not change the land use of the area. Future actions such as the shoreline improvement, could temporarily increase turbidity in the area. However, this would only be a temporary increase and BMPs would be in place to minimize turbidity impacts.

Biological Resources

The combination of the preferred alternative and the potential future shoreline improvements would have no cumulative negative impact on biological resources within the area. Dredging and placement activities of the preferred alternative and future actions would not overlap, therefore, there would be no cumulative temporal effect to biological resources, such as migratory birds or wildlife, in the area. Future actions such as the shoreline placement, could temporarily impact aquatic resources through the increase in turbidity. This would be a short-term impact. The onshore terrestrial community would be impacted in that beach and dune erosion would be slowed as there would be a new beach. This beneficially impacts those plant and animal communities located on the dunes as the new beach would supply protection and buffer incoming wave action for a time. The preferred alternative is not expected to have any long-term impacts to fish or aquatic macroinvertebrates.

Cultural and Historic Resources

The recommended plan would have no cumulative impact on cultural and historic resources within the area. Dredging and placement activities for the recommended plan as well as any future actions would occur in an area where known historically and culturally significant artifacts have been found previously. However, it is anticipated that this project will not negatively impact any archaeological sites that may be in the area. This determination of no impact was confirmed by the FCP and the Miami Tribe of Oklahoma.

Cumulative Effects Summary

Along with direct and indirect effects, cumulative effects of the preferred alternative were assessed following the guidance provided by the Presidents' Council on Environmental Quality (Table 6). There have been numerous effects to resources from past and present actions, and reasonably foreseeable future actions can also be expected to produce both beneficial and adverse effects. The effects of the preferred alternative are expected to be relatively minor.

Table 6: Environmental Impact Summary

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action	Resource Positively affected by action
Aesthetics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Air quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aquatic resources/wetlands	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Invasive species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fish and wildlife habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Threatened/Endangered species/critical habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Historic properties	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other cultural resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Floodplains	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hazardous, toxic & radioactive waste	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hydrology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Land use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Navigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action	Resource Positively affected by action
Noise levels	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Socio-economics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Environmental justice	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Tribal trust resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Water quality	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Climate change	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Chapter 5 – Conclusions & Compliance

5.1 – Compliance with Environmental Statutes

The proposed shoreline erosion protection project at the Kenosha Dunes has been reviewed pursuant to the following Acts and Executive Orders: Fish and Wildlife Coordination Act of 1958; National Historic Preservation Act of 1966; National Environmental Policy Act of 1969; Clean Air Act of 1970; Farmland Protection Policy Act (Subtitle I of Title XV of the Agriculture and Food Act of 1981); Executive Order 11593, Protection and Enhancement of the Cultural Environment, May 1971; Coastal Zone Management Act of 1972; Endangered Species Act of 1973; Clean Water Act of 1977; Executive Order 11988, Floodplain Management, May 1977; Executive Order 11990, Wetland Protection, May 1977; Executive Order 12898 Environmental Justice, February 1994. The proposed action has been found to be in compliance with these Acts and Executive Orders as described below.

- Fish and Wildlife Coordination Act of 1958: Early coordination sent to USFWS and WDNR on May 13, 2020. EA will be provided for review.
- EO 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds – Federal agencies shall restore or enhance the habitat of migratory birds and prevent or abate pollution or detrimental alteration of the environment for migratory birds. This project lies within a significant portion of the Mississippi Flyway along the western shoreline of Lake Michigan that particularly favors both ecological and economically valuable species including neo-tropic migrants and waterfowl. The sand placement work would be in compliance by restoring and preserving existing Lacustrine Open Shoreline and Barrier Enclosed Ridge and Swale Complex wetlands.
- National Historic Preservation Act of 1966 and Executive Order 11593, Protection and Enhancement of the Cultural Environment, May 1971: Early coordination mailed to tribal interests on May 12, 2020. One Tribal comment was addressed to the Tribe’s satisfaction. Coordination with State Historic Preservation Office (SHPO) is in process as of July 2020 and the office has been provided a copy of this EA and all accompanying materials.
- National Environmental Policy Act of 1969: This EA has been prepared in accordance with NEPA; the Council on Environmental Quality, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR Parts 1500-1508); and the Corps of Engineers, Policy and Procedure for Implementing NEPA (33 CFR Part 230).
- Clean Air Act of 1970: Project is exempt *de minimis*.
- Farmland Protection Policy Act: Project exempt as it is within the boundaries of a municipality.
- Coastal Zone Management Act of 1972: The project site is within the Wisconsin Coastal Zone which is defined as all counties bordering the Great Lakes. The project will protect the public interest by helping preserve the dunes and associated habitat. The USACE has determined that the proposed activities would be “consistent to the maximum extent practicable” (as defined in 16 USC 1456, Coastal Zone Management Act, approved 1978) with the enforceable policies of the Wisconsin Coastal Management Program (WCPM). A letter providing the USACE’s coastal consistency determinations was provided on June 16, 2020, to the Federal Consistency Coordinator of the Wisconsin Coastal Management Plan for their review and concurrence.

- Endangered Species Act of 1973: NLAA and No Effect Section 7 Determinations sent June 3, 2020. USFWS concurrence of the NLAA received on 20 July 2020
- Clean Water Act of 1977: Pursuant to the Clean Water Act (CWA), a Section 404(b)(1) evaluation of the environmental effects of the fill material into the waters of the United States has been prepared and is an appendix to this document. The Section 404(b)(1) Evaluation concludes that the proposed action is in compliance with Section 404 of the Clean Water Act. Pursuant to Section 404(t), compliance with State water quality standards is being completed through the State Chapter 30 permit process.
- Executive Order 11988, Floodplain Management, May 1977: The project site is within the floodplain of Lake Michigan. The proposed action complies with the Federal Executive Order on Flood Plain Management (E.O. 11988) because there is no practicable alternative to construction in the floodplain. The project would have no adverse effects on the floodplain, would not impact flood stages, and would not promote development in the floodplain.
- Executive Order 11990, Wetland Protection, May 1977: The project does not impact wetlands.
- Executive Order 12898 Environmental Justice, February 1994: The project does not involve environmental justice.
- Executive Order 13653, Preparing the United States for the Impacts of Climate Change, November 2013: The project does not affect the climate.

This EA concludes that the proposed Kenosha Dunes shoreline nourishment with suitable dredged material from maintenance dredging of the Federal channel at Kenosha Harbor: 1) would not have significant cumulative or long-term adverse environmental impacts; 2) would have benefits that outweigh the minor and mostly temporary impacts that may result; and 3) does not constitute a major Federal action significantly affecting the quality of the human environment.

5.2 -Finding of No Significant Impact (FONSI)

This Environmental Assessment was completed for the discussed alternatives in this EA if there is a desire by the State and Federal partnership to implement the beneficial reuse of the sand. The Environmental Assessment has found that there would be no long term, significant effects resulting from implementation of any of the alternatives since sand inputs for the Wisconsin southern shore littoral drift system is critical at this point in time. A 15-day Agency and Public Review period was held from July 21, 2020 to August 15, 2020. All pertinent comments received were incorporated into the document. The Final Environmental Assessment document and supporting appendices was made available on the Chicago District's Civil Works webpage for maximum distribution. The FONSI has been posted at the front of this EA and the 404(b)(1) analysis and is located in Appendix 1.

Bibliography

- Albert, D.A., D.A. Wilcox, J.W. Ingram, T.A. Thompson. 2005. Hydrogeomorphic Classification for Great Lakes Coastal Wetlands. *Journal of Great Lakes Res.* 31 (Supplement 1):129-146
- Conservation Design Forum (CDF) and Montgomery Watson Harza (MWH). 2008. Dead River Watershed-Based Plan. Prepared for Dead River Watershed Planning Commission. 288pp and appendices.
- CDF and MWH. 2008. Kellogg Creek Watershed-Based Plan. Prepared for Kellogg Creek Watershed Planning Committee and Lake County Stormwater Management Commission. 278pp and appendices.
- Garza, E.L., Whitman, R.L., 2004. The nearshore benthic invertebrate community of southern Lake Michigan and its response to beach nourishment. *J. Great Lakes Res.* 30, 114–122.
- Illinois Coastal Management Program. 2011. Coastal erosion along the Illinois coastal zone.
- Jennings, J.R. 1990. 150 Year erosion history of a beach ridge and dune plain on the Illinois Lake Michigan shore: Programs with Abstracts, 33rd Conference on Great Lakes Research. International Association of Great Lakes Research, Ann Arbor, MI, p.67.
- Nalepa, T.F., Hartson, D.J., Fanslow, D.L., Lang, G.A., and Lozano, S.J. 1998. Declines in benthic macroinvertebrate populations in southern Lake Michigan, 1980–1993. *Can. J. Fish. Aquat. Sci.* 55:2402–2413.
- National Oceanic and Atmospheric Administration (NOAA), 2019a, NOWData – NOAA Online Weather Data. NOAA for the Chicago Area. National Weather Service Forecast Office, Chicago, IL. Available at: <https://w2.weather.gov/climate/xmacis.php?wfo=lot>
- National Oceanic and Atmospheric Administration – Great Lakes Environmental Research Laboratory (NOAA-GLERL). 2019b. Great Lakes Dashboard Project (GLDP) - Great Lakes Water Levels. Available at: https://www.glerl.noaa.gov/data/dashboard/GLD_HTML5.html
- Peterson, R.C., Madsen, B.L., Wilzbach, M.A., Magadza, C.H.D., Paarlberg, A., Kullberg, A. and Cummins, K.W. 1987. Stream management: emerging global similarities. *Ambio* 16:166-179.
- Shabica, C. & F. Pranschke. 1994. Survey of littoral drift sand deposits along the Illinois and Indiana shores of Lake Michigan. *Journal of Great Lake Research.* 20 (1): 61-72.
- Willman, H. B., 1971, Summary of the geology of the Chicago area: Circular 460, Illinois State Geological Survey, Urbana, IL.