

DRAFT Environmental Assessment
Chicago Harbor Breakwater Repairs
Chicago, Illinois



U.S. Army Corps of Engineers
Chicago District

September 2024

DRAFT FINDING OF NO SIGNIFICANT IMPACT**CHICAGO HARBOR BREAKWATER REPAIRS****CHICAGO, COOK COUNTY, ILLINOIS**

The U.S. Army Corps of Engineers, Chicago District (USACE) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The Draft Environmental Assessment (EA) dated September 2024 for the Chicago Harbor Breakwater Repairs Project addresses the need to support the navigability of the Chicago Harbor, Cook County, Illinois.

The Draft EA, incorporated herein by reference, evaluated two alternatives, a “no action” alternative and alternative 1, injecting grout through the eastern outer breakwater cap and encapsulating the shore arm with armor stone. The proposed action is alternative 1.

For both alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the proposed action is listed in Table 1:

Table 1: Summary of Potential Effects of the Proposed Action

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Aesthetics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recreation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Air quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wetlands	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ecological resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Threatened & endangered species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Archaeological & historic properties	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tribal cultural resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Floodplains	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hazardous, toxic & radioactive waste	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Limnology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Navigation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noise	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other social effects	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Socioeconomics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental justice	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Geology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sediment quality	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Water quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climate/Climate Change	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the proposed action. 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). Refer to sections 3.3.4, 3.3.5, 3.4.2, and 3.4.3 in the EA for proposed BMPs.

No compensatory mitigation is required as part of the proposed action.

Public review of the draft EA and FONSI will be completed in October 2024. All comments submitted during the public review period will be taken into consideration and responded to in the Final EA and FONSI.

Pursuant to Section 7 of the Endangered Species Act of 1973, as amended, USACE determined that the proposed action would have “no effect” on the federally listed northern long-eared bat, tricolored bat, piping plover, rufa red knot, eastern massasauga, Hine’s emerald dragonfly, monarch butterfly (candidate), eastern prairie fringed orchid, and leafy prairie-clover. Documentation of the analysis for the ‘no effect’ determination is included in Section 3.4.5 of the EA.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the USACE determined that there would be no adverse effect to historic properties by the proposed action. A finding of No Adverse Effect to Historic Properties was submitted to the Illinois State Historic Preservation Office on July 15, 2024. The Illinois SHPO concurred with this finding in a letter dated August 15, 2024. The USACE reached out to the Kickapoo Tribe of Indians of the Kickapoo Reservation in Kansas, the Menominee Indian Tribe of Wisconsin, the Miami Tribe of Oklahoma, the Citizen Potawatomi of Oklahoma, the Prairie Band Potawatomi Nation, the Forest County Potawatomi Executive Council, the Kickapoo Tribe of Oklahoma, the Hannahville Indian Community of Michigan, the Little Traverse Bay Bands of Odawa Indians of Michigan, to assist in identifying properties which may be of religious and cultural significance. The Tribes did not comment on the proposed action.

Pursuant to the Clean Water Act of 1972, as amended, the discharge of dredged or fill material associated with the proposed action 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 B – 404(b)(1) Evaluation* of the EA.

A water quality certification (WQC) pursuant to section 401 of the Clean Water Act was obtained via the Lake Michigan Regional General Permit (LMRGP). The State of Illinois has issued a WQC for the activities listed under the LMRGP, including maintenance of existing public harbor, public access facilities, and navigational features required for maintaining existing function. 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 Illinois Coastal Management Program (ICMP) pursuant to the Coastal Zone Management Act of 1972 has been sought from the Illinois Department of Natural Resources (IDNR). USACE sent a letter on July 2, 2024, stating that the proposed action is consistent with state Coastal Zone Management plans. The IDNR ICMP concurred with the USACE determination of consistency in a letter dated September 3, 2024.

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 EA, 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 proposed action would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

Date

KENNETH P. ROCKWELL
COL, EN
Commanding

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Appendix A – Coordination
Appendix B – 404(b)1 Evaluation

1. Purpose & Need

1.1. National Environmental Policy Act and Related Procedures

The National Environmental Policy Act (NEPA) (42 United States Code [USC] 4321 et seq.), the Council on Environmental Quality (CEQ) NEPA regulations (Phase I Final Rule) (40 Code of Federal Regulations [CFR] Parts 1500 to 1508), and the U.S. 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 deciding the proposed action. This Environmental Assessment (EA) includes the direct, indirect, and cumulative effects of repairing the existing south breakwater at Chicago Harbor. This EA provides the USACE, other decision makers, and the public with the information needed to make an informed decision about the breakwater repair activities.

1.2. Project Location & Authorization

The Chicago Harbor Breakwater is found on the southwestern Lake Michigan shoreline at the mouth of the Chicago River, as shown in Figure 1. The breakwater structure provides protection for several important developments along the downtown Chicago shoreline including the Chicago Harbor Lock, Navy Pier, and the Jardine Water Purification Plant, which provides water for roughly 60 percent of the Chicago metropolitan area.

Initial construction of the Chicago Harbor breakwater was completed in 1889 consisting of a 5,321-foot north breakwater with a 2,250-foot shore arm extension. A 5,321-foot southward extension was completed in 1917. A 2,717-foot southward extension was completed between 1920 and 1923, leaving a 582-foot channel between the north and south structures to the mouth of the Chicago River.

The Chicago Harbor breakwater system is a combination of several types of structures combined to provide protection to the Chicago Harbor infrastructure. The types of structures used in the breakwater system include:

1. filled timber crib founded on fill stone and capped with concrete,
2. stone-filled timber crib placed on a combination of fill stone and smaller timber cribs with submerged rubble-mound protection,
3. cut stone over a quarry run and stone chips core, and
4. concrete caissons with stone fill and concrete cap.

During the mid-1960's water levels on Lake Michigan reached record lows exposing the upper levels of the timber cribs to air, causing dry-rot and wash-out of the stone material leaving large voids in the core of the structure. Low lake levels in the 1960's particularly degraded the part of the cribbing where the horizontal tie rod connections were. When lake levels (and their associated wave energy) were then high in the 1970's and 1980's, structural integrity was lost – the wood pilings broke at the tie rod connections allowing the stone to spill out, leading to settlement of the limestone capstone and some areas becoming indistinguishable from rubble-mound. As a result, concrete caps along several sections of the breakwater have experienced partial or full collapse and need repair to prevent further deterioration to the integrity of the structure. Portions of the breakwater have been stabilized through grouting methods in 2009, 2014, 2017, and 2022.

The Chicago Harbor is authorized under the Rivers & Harbors Acts of 1870, 1880, 1912, 1919, and 1962. The authority permits the operation and maintenance of the federal project, including dredging and repair of the harbor's navigation and protection features.

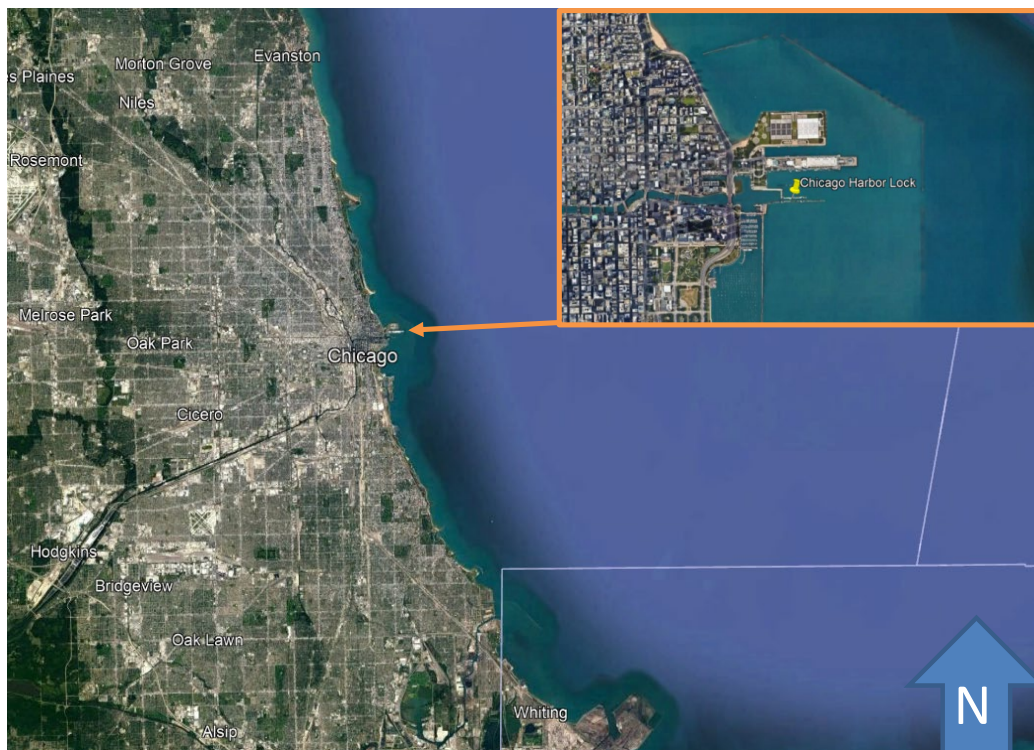


Figure 1: Chicago Harbor vicinity.

1.3. Purpose & Need

The primary purpose of this federal action is to provide wave attenuation for the Chicago Harbor through maintenance and stabilization of the existing Chicago Harbor exterior breakwater and shore arm extension.

The need for the project is to restore the breakwater's structural integrity, which diminished as the foundational timber crib dry rotted and stone washed out resulting in large voids in the core of the structure. An additional need is to restore the shore arm to the originally designed crest elevation.

1.4. Related NEPA Documentation, Previous Studies & Projects

This EA was prepared to comply with NEPA of 1969, as amended and includes a 404(b)(1) Evaluation pursuant to Section 404 of the Clean Water Act. This EA addresses the maintenance and repair of the exterior breakwater and the shore arm extension.

- Rivers and Harbors Act of July 11, 1870, as amended, authorized the Chicago Harbor project, which includes operation, maintenance and repair when needed.

2. Proposed Alternatives

This EA considers two alternative plans for the repair and maintenance of the shore arm extension and the exterior breakwater at Chicago Harbor to support recreation and commercial navigation.

2.1. List of Alternatives

No Action Alternative

Under the no action alternative, USACE would not repair the breakwater or the shore arm structures surrounding the Chicago Harbor. The no action alternative would not adversely impact cultural and archaeological resources, nor would it impact biological resources. Physical and social resources, however, could be impacted if the breakwater repairs are not made, the structure will further deteriorate, thereby limiting safe access to the harbor and potentially reducing employment, business, and recreational activity in the area by limiting the recreational, commercial, and transportation capabilities of the harbor. In addition, the Jardine Water Purification Plant and Navy Pier could be adversely impacted by wave action if the breakwater and shore arm extension are allowed to degrade and eventually fail.

Alternative 1 - Exterior Breakwater Grouting and Shore Arm Extension Rubble-mound Encapsulation

Alternative 1 involves exterior breakwater repair and shore arm encapsulation and proposes to 1) inject grout into the exterior breakwater to support the concrete cap by filling interstitial voids and stabilize the structure under the cap, and 2) place armor stone to encapsulate and bring the shore arm extension breakwater up to the design crest elevation.

The grout injection portion of alternative 1 would include grouting northwestward from station 18+88 towards 00+96 until funds are exhausted, as shown in Figure 2. There is 96 feet of breakwater from 00+00 to 00+96 that is owned by the City of Chicago and would not be included in this work. Features would include a double row grout curtain along the top of the cap. The design team estimates approximately 12 cubic yards of grout per injection well based on previous grouting work on this breakwater. The extent and volume of grouting would be dependent on available funding. Some temporary grout containment measures would be used (placing choke stone throughout the toe-stone to prevent fugitive grout getting into the lake).

Holes would be drilled 4 or 6.5 inches in diameter in two rows along the cap. The holes would be grouted in two stages to fill voids immediately under the shoulder and the cap. Temporary casing would be used for the bottom stage (stage one) and a surface packer for the top stage (stage two). The hole spacing would be staggered on 10 to 15-foot centers. The outside (lake side) row would be drilled and grouted prior to the inside (harbor side) row. The final hole depth would be two feet below the base of the shoulder. The top of stage one would be set at the bottom of the shoulder and top of stage two would be level with the cap, as depicted in Figure 3.

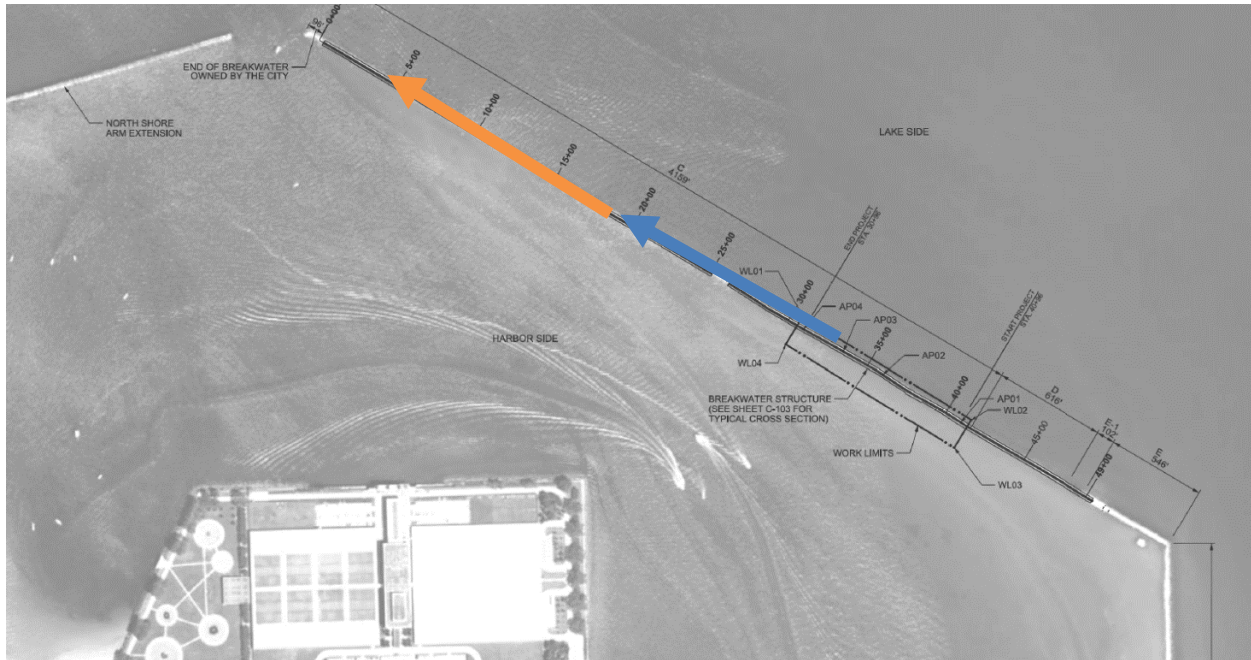


Figure 2: Exterior breakwater with previous work depicted in blue and proposed work shown in orange.

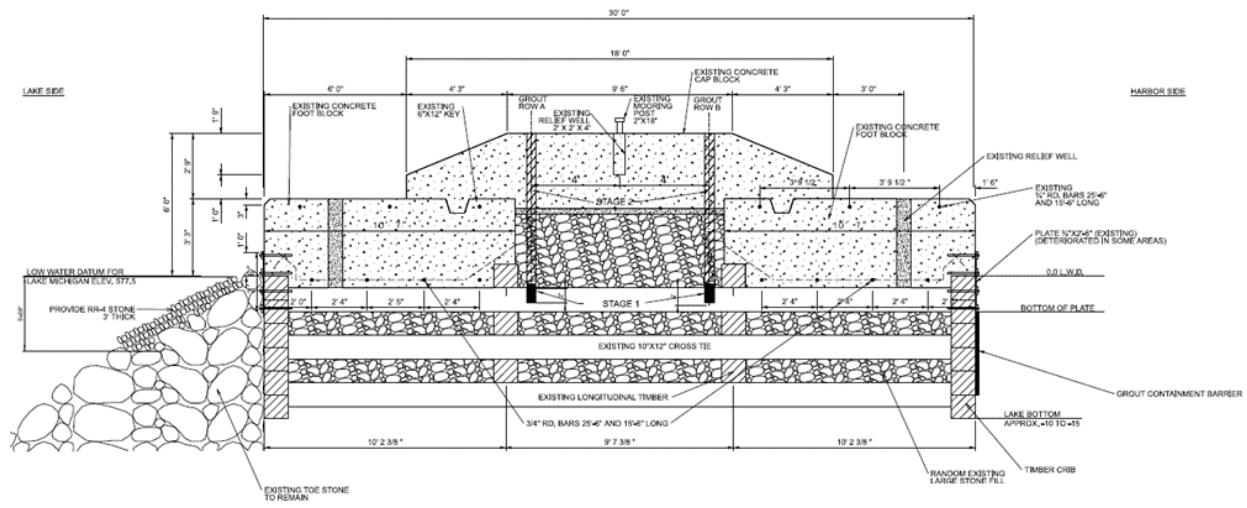


Figure 3: Typical cross section of existing structure.

The rubble-mound encapsulation of the shore arm extension breakwater would include placing armor stone over the B2 reach of the existing structure. Rubble-mound encapsulation would begin at the easternmost point of Reach B2 and continue westward for 140 feet from station 20+40 with three options for 20 additional feet each. (Figure 4). The intent would be to return the crest elevation to original design crest elevation by placing a rubble-mound breakwater over the existing structure (Figure 5). A drawing showing the encapsulation of the existing timber crib and concrete cap breakwater is shown below in Figure 6 and the expected increase in structure footprint is shown in Figure 7.

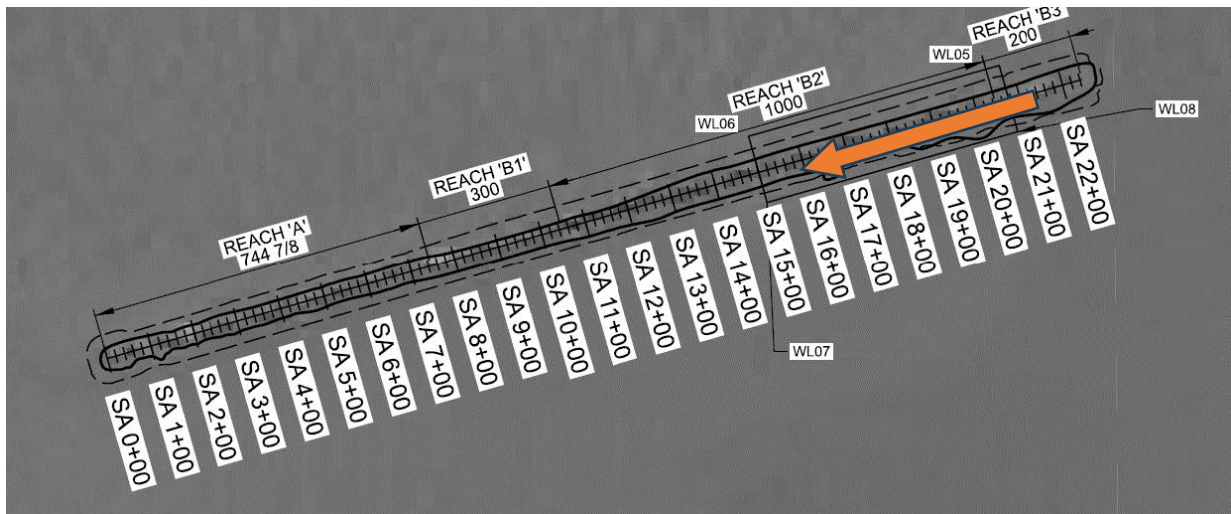


Figure 4: Shore arm extension with stations and orange arrow showing proposed work area.

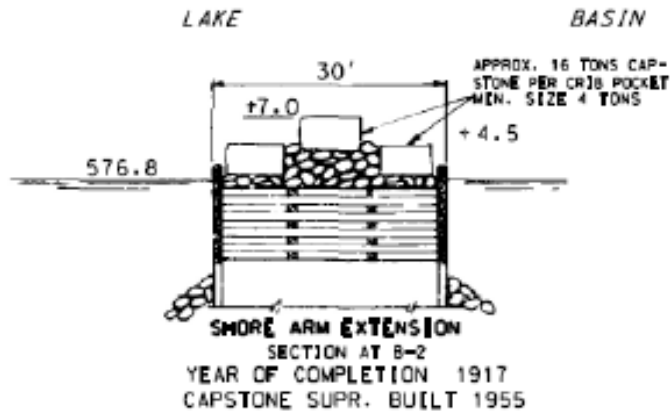


Figure 5: As-built of affected reach showing current capstone cap.

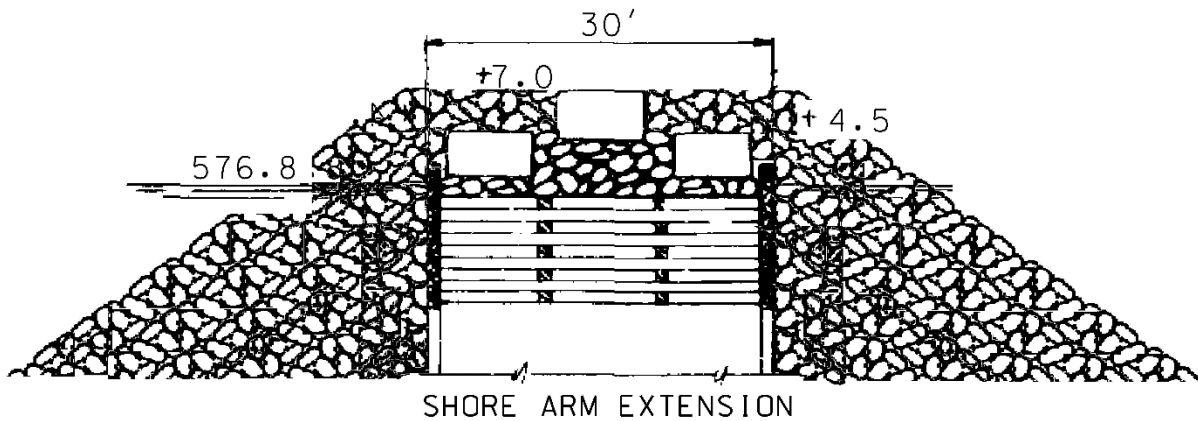


Figure 6: Cross-section showing intended rubble-mound encapsulation of existing timber crib and capstone structure.

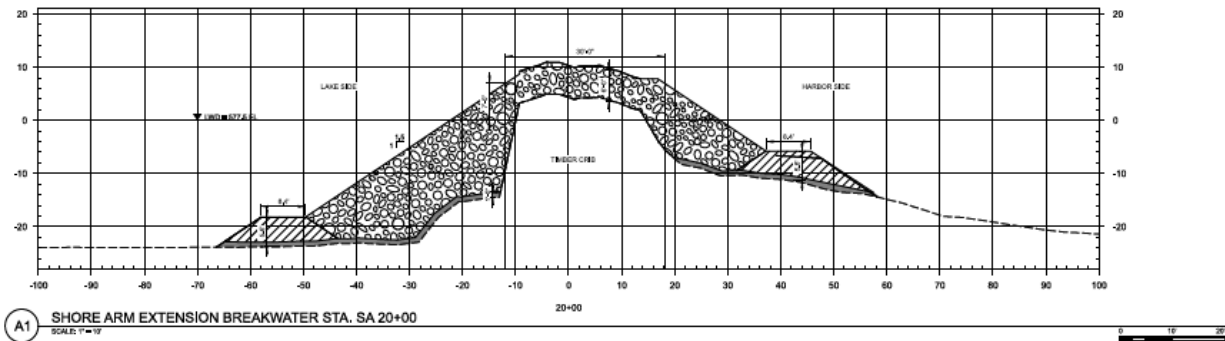


Figure 7: Cross-section showing proposed footprint increase of alternative one at station 20+00.

2.2. Proposed Action

Alternative 1, exterior breakwater grouting and shore arm extension rubble-mound encapsulation as described in the previous section, is the proposed action. The proposed action would provide a more stable and long-lasting structure, providing wave protection to the Jardine Water Purification Plant, Navy Pier, and the Chicago Harbor Lock, and maintaining safe passage for vessels entering and exiting the port.

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 a supplemental NEPA document, if necessary.

3. Existing Conditions and Environmental Consequences

3.1. No Action Alternative

Under the no action alternative, there would be no placement of armor stone on the shore arm extension and there would be no grout injection in the exterior breakwater at Chicago Harbor. The no action alternative would not adversely impact cultural and archaeological resources, nor would it impact biological resources. Physical and social resources, however, could be impacted if the breakwater repairs are not made, the structure will further deteriorate, thereby limiting safe access to the harbor and potentially reducing employment, business, and recreational activity in the area by limiting the recreational, commercial, and transportation capabilities of the harbor. In addition, the Jardine Water Purification Plant and Navy Pier could be adversely impacted by wave action if the breakwater and shore arm extension are allowed to degrade and eventually fail.

3.2. Environmental Consequences

This chapter identifies the environmental, cultural, and social resources that could potentially be affected by either the no action alternative or the proposed action. As discussed in Chapter 2, the proposed action is to inject grout into the exterior breakwater and place armor stone during breakwater repair activities at Chicago Harbor.

3.3. Physical Resources

3.3.1. Climate/Climate Change

Existing Condition

The climate of the project area is predominantly continental with some modification by Lake Michigan. The National Oceanic and Atmospheric Administration's (NOAA) Online Weather Data were queried for the Chicago, Illinois area. Daily and monthly normals for temperature, precipitation, and snowfall between 1991 and 2020 were available (Figure 8 and Table 1) (NOAA 2024). The mean winter high temperature is in the mid to low 30's°F while the mean winter low temperature is 18.8°F (January). The mean summer high temperature is 84.5°F while the mean summer low temperature is in the low to mid 60's°F. Annual total precipitation normal for the Chicago area is 37.86 inches (Table 1 and Figure 4). Average annual snowfall is 38.4 inches. The majority of snowfall occurs between December and March with total snowfall normals ranging from 5.5 inches in March to 11.3 inches in January. Climate change trends indicate that heavy precipitation events will occur more often in the Chicago Region. In addition, temperature means, maximums, and minimums have increased and are expected to continue to increase (Figure 9).

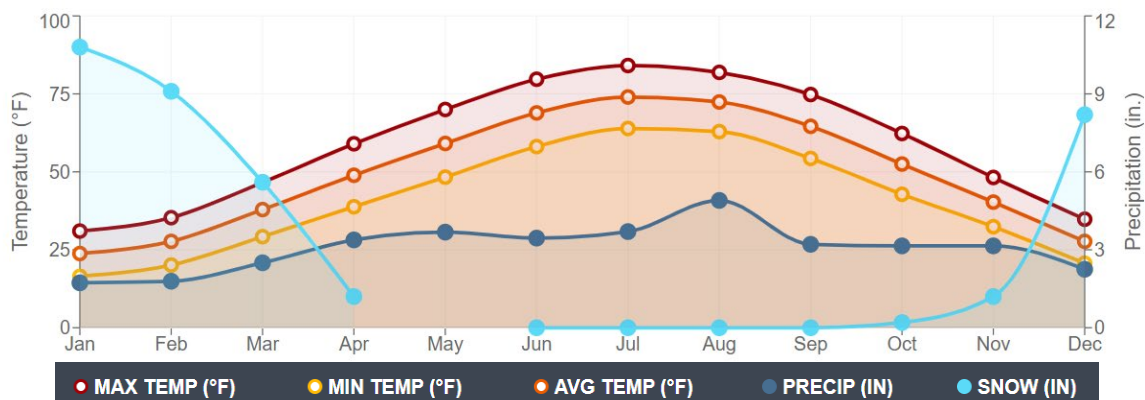


Figure 8: Precipitation and temperature normals for the Chicago, Illinois area between 1991 and 2020 (NOAA 2024).

Table 1: Precipitation and temperature normals for the Chicago, Illinois area (NOAA 2024).

Month	Total Precipitation Normal (inches)	Mean Max Temperature Normal (°F)	Mean Min Temperature Normal (°F)	Mean Avg Temperature Normal (°F)	Total Snowfall Normal (inches)
January	1.99	31.6	18.8	25.2	11.3
February	1.97	35.7	21.8	28.8	10.7
March	2.45	47.0	31.0	39.0	5.5
April	3.75	59.0	40.3	49.7	1.3
May	4.49	70.5	50.6	60.6	0
June	4.10	80.4	60.8	70.6	0
July	3.71	84.5	66.4	75.4	0
August	4.25	82.5	65.1	73.8	0
September	3.19	75.5	57.1	66.3	0
October	3.43	62.7	45.4	54.0	0.2
November	2.42	48.4	34.1	41.3	1.8
December	2.11	36.6	24.4	30.5	7.6
Total/Mean	37.86	59.5	43.0	51.3	38.4

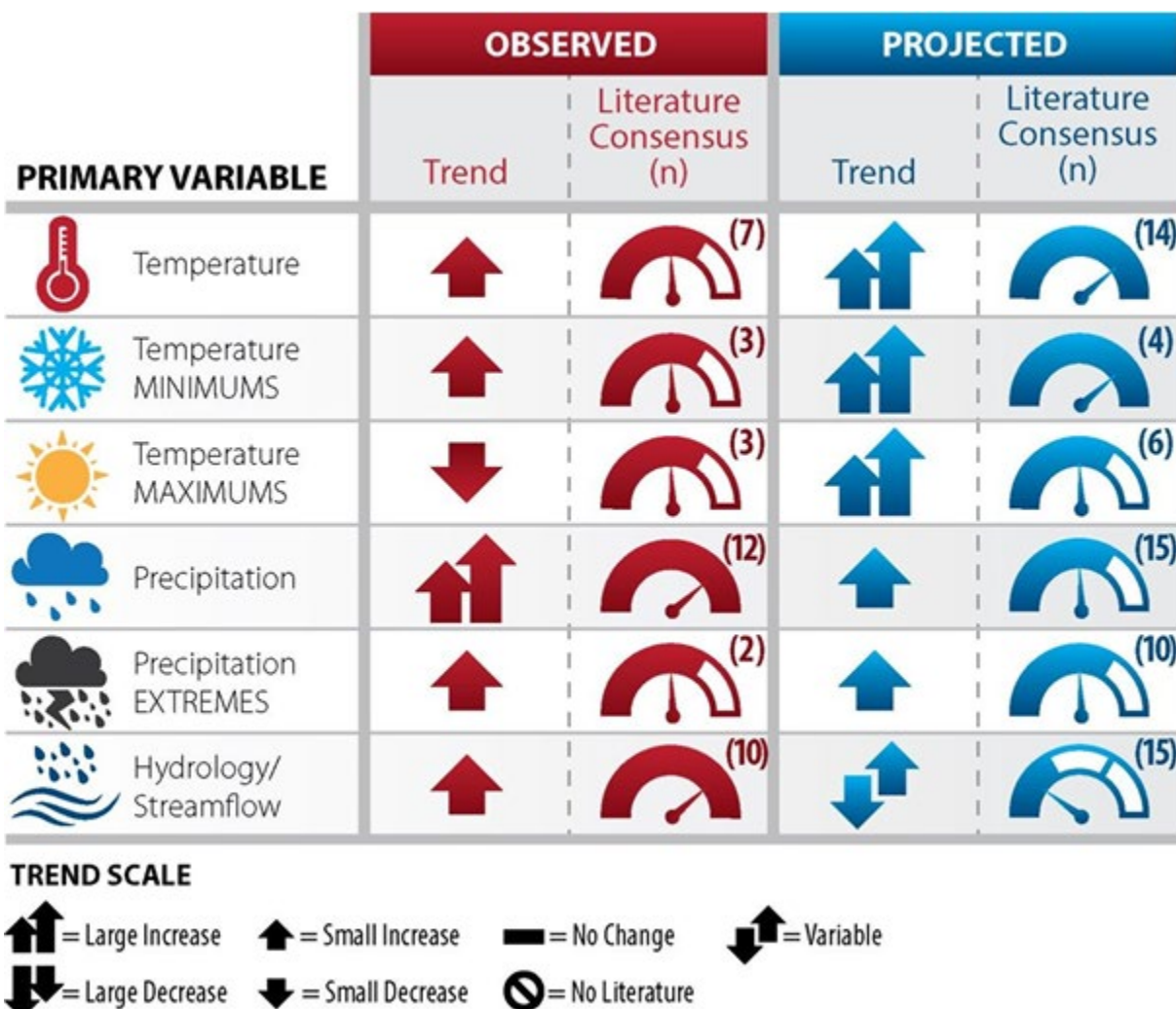


Figure 9: Upper Mississippi Region – Summary matrix of observed and projected climate trends and literary consensus (USACE 2015).

Alternative Impact

The proposed action would not have significant short-term or long-term, direct or indirect impacts on climate. Additional fossil fuels would be needed during the breakwater repair process for the operation of associated construction vessels and vehicles. However, there would be no measurable impact on climate, even though there may be temporary localized increases in greenhouse gas emissions during construction. Once construction is complete, additional fossil fuels would not be needed for operation of the breakwater (see Section 3.3.5 – Air Quality). Climate and climate change influences Lake Michigan water levels, but lake levels are stochastic and are tough to predict with certainty. Future high lake level periods are likely, and these conditions further elucidate the need for structurally-sound breakwater infrastructure. Overall, the proposed action is expected to have a localized short-term direct impact on greenhouse gas emissions during construction, but no short-term indirect or long-term direct/indirect impacts are anticipated.

No impacts to climate are expected under the no action alternative. However, climate change trends may increase the likelihood of future high lake levels, which could further degrade the breakwater infrastructure and threaten the infrastructure that it protects.

3.3.2. Geology

Existing Conditions

The geologic history of the Chicago area was primarily shaped by events that occurred more than 15,000 years ago. During the Wisconsin glacial episode, a lobe of glacial ice known as the Lake Michigan lobe advanced southward along the Lake Michigan Basin and then turned to the southwest and extended across what is now northeastern Illinois. About 20,000 years ago the ice reached its maximum southward position, which was approximately 200 miles south of Chicago. As the climate warmed, the ice margin of the Lake Michigan lobe began to recede northward. Pauses in the recession of the ice lobe resulted in the deposition of glacial sediments that formed end moraines on the margin of the receding ice. From about 15,000 to 14,000 years ago, the fluctuating ice margin was building end moraines and shaping the landscape of what is now the Chicago region. By 13,500 years ago, the receding ice had permanently withdrawn into the Lake Michigan Basin, and by 10,500 years ago, the lake basin was free of glacial ice. The remaining end moraines influenced the drainage patterns in the region that persist today, despite extensive development in the region. Bedrock located within the project area is primarily composed of dolomite and limestone with small amounts of shale present. The bedrock is covered by up to 300 feet of an unconsolidated formation comprising clay, silt, sand, and gravel. Much of the material was directly deposited as glacial till and outwash from melting glaciers. There are no geologic sites of importance in the vicinity of the proposed project.

Alternative Impact

The proposed action would place clean armor stone to encapsulate the shore arm extension breakwater and would inject grout into the voids within the exterior breakwater to stabilize the structures from previous degradation resulting from wave action and fluctuating lake level impacts. Armor stone placement to the crest elevation will broaden the width of the structure's footprint by approximately 85 to 100 feet. The expanded footprint is currently Lake Michigan bottom and is directly adjacent to the existing shore arm extension breakwater. It is anticipated that the proposed action would have no significant short-term or long-term, direct or indirect impacts to geologic resources since all stone and grout placement would be surficial.

No impacts to geologic resources are expected as a result of the no action alternative.

3.3.3. Sediment Quality

Existing Conditions

Chicago Harbor is a deep draft commercial harbor. The authorized depths are 29 feet in the Lake Michigan harbor approach, 28 feet in the outer harbor, and 21 feet to Rush Street. No harbor channel maintenance has been completed since 1986, due to the draft of the vessels using the port. At that time, the sediment was placed into a confined disposal facility. Overall, the sediment is characterized as silty sand with a high percentage of fines and clays. These localized issues do not significantly detract from the overall high quality of the sediment in Lake Michigan.

Alternative Impact

The proposed action includes the placement of clean quarried stone to repair and maintain the existing Chicago Harbor breakwater, as well as grouting to stabilize the interior of the breakwater. No sediment will be dredged for this project and stone will be placed on the existing lake bottom. Since the stone to be placed will be inert fill material, it is anticipated that the proposed action would have no short-term or long-term, direct or indirect impacts on sediment quality.

No impacts to sediment quality are expected as a result of the no action alternative.

3.3.4. Water Quality

Existing Condition

Lake Michigan is an extremely important resource for drinking water supply, industrial water supply, fishing, recreation, and waterborne commerce. Located within the harbor is the Jardine Water Purification Plant, one of the largest in the world. It treats 1.4 billion gallons per day, serving three million households in 119 municipalities.

Factors potentially affecting water quality in the near shore lake zone include combined sewer overflows, stormwater discharges, tributary streams, and boat harbors. The State of Illinois has jurisdiction over and assesses the quality of three Lake Michigan water types: Open Waters, Shoreline, and Harbors. In the draft 2024 303(d) list Chicago Harbor was assessed as Fully Supporting (F) both the Aquatic Life Use (ALU) and Aesthetic Quality Use (AQU) of the possible designated uses. 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 use. These localized issues do not significantly detract from the overall high quality of Lake Michigan water.

Alternative Impact

USACE armor stone specifications require stone to be clean and free of contaminants and organic debris. Sources are required to be newly quarried stone, to be approved by USACE assessment and inspection. The specifications do not identify required sources, however all armor stone for projects on the west side of Lake Michigan in the last 10 years has come from one of seven established and licensed commercial quarries, all of which are located in Wisconsin. The activities associated with the proposed action are expected to cause localized, minor, and temporary increases in turbidity during construction. Choke stone would be placed on the exterior of the breakwater in areas where grouting would occur to fill the interstitial spaces and minimize movement of grout out of the breakwater and into lake waters. Additional best management practices (BMPs) such as turbidity curtains may also be used, as needed. However, small amounts of grout could still leak out of the structure and could cause temporary water quality degradation. BMPs such as use of floating containment booms will be used to control spills, if necessary, and the Contractor will maintain a spill plan and response materials on site. Therefore, the proposed action is expected to have a short-term adverse construction related impact to water quality, but no long-term direct or indirect adverse impacts are expected since these impacts are not expected to persist once construction is complete.

No impacts to water quality are expected as a result of the no action alternative.

3.3.5. Air Quality

Existing Condition

The Clean Air Act requires the U.S. Environmental Protection Agency (USEPA) to set national ambient air quality standards (NAAQS) for six criteria pollutants that are considered harmful to public health and the environment. These include carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur oxides. Areas not meeting the NAAQS for one or more of the criteria pollutants are designated as “nonattainment” areas by the USEPA. Cook County is part of the larger Chicago, IL-IN-WI air monitoring region. Cook County is listed as non-attainment for ozone for the revoked one-hour ozone standard (1979), the revoked 8-hour ozone standard (1997), and the current eight-hour ozone standard (2015). The most recent year of non-attainment is 2024¹.

Table 2: Non-attainment status for Cook County, Illinois.

NAAQS	Area Name	Most Recent Year of Nonattainment	Current Status	Classification
1-Hour Ozone (1979) – NAAQS revoked	Chicago-Gary-Lake County, IL-IN	2004	-	Severe-17
8-Hour Ozone (1997) – NAAQS revoked	Chicago-Gary-Lake County, IL-IN	2011	Maintenance (since 2012)	Moderate
8-Hour Ozone (2015)	Chicago, IL-IN-WI	2024	-	Moderate

¹USEPA Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants (aka “Green Book”), accessed on August 2024 at <https://www.epa.gov/green-book/green-book-national-area-and-county-level-multi-pollutant-information>

Alternative Impact

The local air quality in Cook County is considered ‘non-attainment’ under the Clean Air Act. The proposed project is within the non-attainment zone. Due to the small scale and short duration of this project, the main sources of releases would be vehicle emissions. 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 the proposed action are minor in terms of the NAAQS and the State Implementation Plan. The proposed action is not expected to be a significant source of greenhouse gas emissions. All construction equipment would be in compliance with current air quality control requirements for diesel exhaust, fuels, and similar requirements. USACE follows Engineering Manual (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. If the proposed action is implemented, the breakwater project itself would be neutral in terms of air quality, with no features that either emit or sequester air pollutants to a large degree, including greenhouse gas emissions. Therefore, the proposed action is expected to have a minor short-term adverse effect on air quality and no long-term direct or indirect impacts on air quality.

No impacts to air quality are expected as a result of the no action alternative.

3.3.6. Limnology

Existing Condition

Lake Michigan’s water surface elevation is on average approximately 581.73 feet (International Great Lakes Datum [IGLD] 85) for 2020 (Table 3). The lake has a total surface area of 22,404

square miles (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.

The natural hydrology and littoral hydraulic processes have been significantly 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 (mi ²)	Surface Elevation (IGLD, feet)	Length (miles)	Breadth (miles)	Maximum Depth (feet)	Drainage Area (mi ²)
Lake Michigan	22,404	581.73	307	118	923	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 578.9 feet (IGLD 85) (NOAA 2021). Figure 10 depicts the monthly observed water levels for 2020, the monthly and annual averages, and the monthly minimum and maximums. The data for these lakes (Michigan and Huron) are presented together since hydrologically they are considered one lake.

FINAL 2021
and Long-Term (1918-2021) Mean, Max & Min
Monthly Mean Water Levels (Based on Gage Networks)
(Feet, IGLD85)

14-Feb-2022

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
LAKES MICHIGAN-HURON													
2021	580.94	580.68	580.54	580.54	580.54	580.48	580.71	580.77	580.48	580.41	579.95	579.69	580.48
Mean	578.48	578.44	578.48	578.77	579.07	579.30	579.40	579.33	579.17	578.94	578.77	578.61	578.90
Max	581.56	581.53	581.43	581.69	581.96	582.19	582.22	582.09	581.96	582.35	581.96	581.56	
	2020	2020	2020	2020	2020	2020	2020	2020	1986	1986	1986	1986	
Min	576.02	576.08	576.05	576.15	576.57	576.64	576.71	576.67	576.64	576.44	576.28	576.15	
	2013	1964	1964	1964	1964	1964	1964	1964	1964	1964	1964	2012	

Figure 10: Water levels for Lake Michigan and Huron(USACE 2022).

Alternative Impact

The proposed action does not include the placement of material that would further disrupt lacustrine processes above the baseline, and therefore would have no short-term or long-term, direct, or indirect impact to lacustrine processes.

No impacts to lacustrine processes are expected as a result of the no action alternative.

3.4. Ecological Resources

3.4.1. Macroinvertebrates

Existing Condition

Several studies on aquatic macroinvertebrates in southern Lake Michigan have been completed. Garza and Whitman (2004) 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) (Garza and Whitman 2004). Nalepa et al. (1998) also conducted surveys throughout southern Lake Michigan and their study identified three main groups of macroinvertebrates including amphipods (*Diporeia* spp.), worms (Oligochaeta), and bivalves (Sphaeriidae). Other populous macroinvertebrates within Lake Michigan include the non-native zebra and quagga mussels (*Dreissena polymorpha* and *D. bugensis*). Site specific macroinvertebrate assessments occurred at Chicago Harbor along the breakwater as well, which is pertinent to the Chicago Harbor due to their close proximity and similar position within Lake Michigan. A study utilizing stone and boulders more conducive to aquatic habitat was conducted by Geisthardt et al. (2022) looking at fish and macroinvertebrate use of natural and nature-based features. In general, the findings demonstrated the occurrence of the following class/orders/families of macroinvertebrates: Mysidacea, Chironimidae, Cladocera, Copepoda, Amphipoda, Decapoda, and Dreissenidae.

Alternative Impact

The proposed action includes placement of stone along the shore arm extension and injecting grout into the exterior breakwater voids. Grouting could result in short-term increases in turbidity, but choke stone would be placed on the exterior of the breakwater in grouting locations to fill the interstitial spaces and minimize movement of grout outside of the breakwater structure. Placement of the stone would likely smother some aquatic macroinvertebrates located where the material is to be placed. In addition, the placement/replacement of stone would temporarily increase turbidity in the area, which in turn would affect filter-feeding macroinvertebrates. Macroinvertebrate species located on the breakwater and within the vicinity of the breakwater are likely pollution tolerant species meaning the population of these species in the area are fairly abundant. Therefore, while the placement of stone would directly smother macroinvertebrates and could indirectly impair the feeding ability of filter feeding macroinvertebrates, this is anticipated to not substantially affect the composition or abundance of macroinvertebrates in the area. In summary, the placement of stone as part of the breakwater repair would have a direct and indirect short-term less than significant impact to aquatic macroinvertebrates in the project area. Long-term it is anticipated that aquatic macroinvertebrates adjacent to the project area would colonize the newly placed stone and turbidity levels would return to baseline conditions once construction is completed. Therefore, no direct or indirect long-term impacts to macroinvertebrate communities are anticipated proposed action.

No impacts to macroinvertebrates are expected as a result of the no action alternative.

3.4.2. Fishes

Existing Condition

Robust fish surveys have been conducted around Chicago Harbor for several decades, with less intense sampling since the late 1880s. Twenty-three native species and eight non-native species have been identified from the area surrounding the North Pier (Table 4). Important, rare, and sensitive species include the Silver Lamprey (*Ichthyomyzon unicuspis*), Longnose Sucker (*Catostomus catostomus*), Trout Perch (*Percopsis omiscomaycus*) and Mottled Sculpin (*Cottus bairdii*). The Spoonhead Sculpin (*Cottus ricei*) is a rare record from 1909; this species typically

occupies deep, offshore waters. Important native game fishes include Smallmouth Bass (*Micropterus dolomieu*), Largemouth Bass (*Micropterus salmoides*), Rockbass (*Ambloplites rupestris*), and Yellow Perch (*Perca flavescens*). Non-native introduced game fish include the Pacific Salmonids (*Oncorhynchus spp.*) and European Brown Trout (*Salmo trutta*). Non-native invasive species include Common Carp (*Cyprinus carpio*), Grass Carp (*Ctenopharyngodon idella*), Goldfish (*Carassius auratus*), Alewife (*Alosa pseudoharengus*) and Round Goby (*Neogobius melanostomus*).

Table 4: Fish species collected in and around Chicago Harbor.

Species	Common Name	Status
<i>Ichthyomyzon unicuspis</i>	Silver Lamprey	possibly extirpated
<i>Alosa pseudoharengus</i>	Alewife	non-native, Atlantic Slope
<i>Dorosoma cepedianum</i>	Gizzard Shad	common
<i>Cyprinus carpio</i>	Common Carp	non-native, Asiatic
<i>Carassius auratus</i>	Goldfish	non-native, Asiatic
<i>Notemigonus crysoleucas</i>	Golden Shiner	common
<i>Notropis hudsonius</i>	Spottail Shiner	common
<i>Pimephales notatus</i>	Bluntnose Minnow	common
<i>Catostomus commersonii</i>	White Sucker	common
<i>Catostomus catostomus</i>	Longnose Sucker	state threatened
<i>Ameiurus melas</i>	Black Bullhead	common
<i>Ictalurus punctatus</i>	Channel Catfish	common
<i>Oncorhynchus kisutch</i>	Coho Salmon	non-native; Pacific Rim
<i>Oncorhynchus mykiss</i>	Steelhead Salmon	non-native; Pacific Rim
<i>Oncorhynchus tshawytscha</i>	Chinook Salmon	non-native; Pacific Rim
<i>Salmo trutta</i>	Brown Trout	non-native; Europe
<i>Esox americanus</i>	Grass Pickerel	common
<i>Percopsis omiscomaycus</i>	Trout Perch	rare, of concern
<i>Pungitius pungitius</i>	Nine-Spine Stickleback	common
<i>Gasterosteus aculeatus</i>	Three-Spine Stickleback	common
<i>Cottus bairdii</i>	Mottled Sculpin	possibly extirpated
<i>Ambloplites rupestris</i>	Rockbass	common
<i>Pomoxis nigromaculatus</i>	Black Crappie	common
<i>Micropterus dolomieu</i>	Smallmouth Bass	common
<i>Micropterus salmoides</i>	Largemouth Bass	common
<i>Lepomis cyanellus</i>	Green Sunfish	common
<i>Lepomis gibbosus</i>	Pumpkinseed	common
<i>Lepomis gulosus</i>	Warmouth	low abundance
<i>Lepomis macrochirus</i>	Bluegill	common
<i>Perca flavescens</i>	Yellow Perch	common
<i>Etheostoma nigrum</i>	Johnny Darter	rare occurrence for lake
<i>Neogobius melanostomus</i>	Round Goby	non-native; Ponto-Caspian

Alternative Impact

Appropriate control measures would be taken as part of the proposed action to minimize potential adverse impacts of the stone placement/replacement activities on the aquatic ecosystem. General construction scheduling and sequencing would minimize impacts to any spawning fish present in the project area. BMPs such as choke stone placement on the exterior of the breakwater to minimize movement of the grout into the lake, turbidity curtains, and visual inspection to ensure turbidity is minimal would be implemented to minimize impacts associated with temporary sources of turbidity or debris. In addition, containment booms and spill kits would be on hand to minimize the impacts of potential spills. Overall, the placement/replacement of stone has the potential to smother nekton and increase turbidity in the area which, in turn, would affect sight feeding fish species. However, this would be a less than significant, indirect short-term impact to fish species in the project area lasting only as long as construction. Long-term it is anticipated that fish species could utilize the newly placed stone as shelter (a beneficial impact), therefore, there would be no direct or indirect long-term impacts to the fish community as a result of the proposed action.

No impacts to fish communities are expected as a result of the no action alternative.

3.4.3. Amphibians & Reptiles

Existing Condition

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 turtle (*Chrysemys picta*), red-eared slider (*Trachemys scripta elegans*), snapping turtle (*Chelydra serpentina*) and the common garter snake (*Thamnophis sirtalis*). The existing breakwater structure could also support common mudpuppy (*Necturus maculosus*), which spend their entire life underwater and forage along rocky shoals.

Alternative Impact

Limited areas for food, cover, and reproduction result in reptile and amphibian population diversity and abundance that is absent to low. However, the existing breakwater could support the common mudpuppy. Overall, stone placement included in the proposed action would have a potential direct impact to aquatic salamanders that may be currently using the existing breakwater structure by disturbing or crushing them. In addition, the stone placement would have a potential indirect impact to aquatic salamanders by increasing turbidity during construction. For example, although the common mudpuppy actively hunts and consumes their prey, their external gills have the capability to extract small organisms and particles from the water, similar to filter feeding. Increased turbidity during construction could hinder this secondary feeding mechanism. Overall, this potential impact would be less than significant, though, with the implementation of BMPs such as construction scheduling and sequencing (i.e., restricting construction from occurring between December through March) to minimize impacts to any reproducing salamanders, and the use of floating containment booms to control spills. Long-term, aquatic salamanders would be expected to recolonize the repaired breakwater structure; therefore, there would be no direct or indirect long-term impacts to amphibians or reptiles resulting from the proposed action.

No impacts to amphibians or reptiles are anticipated as a result of the no action alternative.

3.4.4. Birds

Existing Condition

The open water of Lake Michigan provides resting and foraging habitat for many waterfowl such as divers, mergansers, terns, gulls, and raptors. According to the eBird citizen scientist observations associated with The Cornell Lab of Ornithology (eBird, 2024), common birds observed at the Chicago Harbor include: American white pelican (*Pelecanus erythrorhynchos*), red-breasted merganser (*Mergus serrator*), Canada goose (*Branta canadensis*), herring gull (*Larus argentatus*), ring-billed gull (*Larus delawarensis*), common merganser (*Mergus merganser*), double-crested cormorant (*Phalacrocorax auritus*), greater scaup (*Aythya marila*), and Caspian tern (*Hydroprogne caspia*).

Alternative Impact

Harbor breakwaters are inhospitable structures where birds do not typically nest, although pelicans, terns, and gulls may congregate there seeking a safe place to roost during the night. The open water of Lake Michigan provides resting and foraging habitat for these and other bird species such as mergansers and other divers. These and other avifauna would temporarily avoid the immediate breakwater repair area because of construction noise and activity but would be expected to return shortly following completion of these operations. Therefore, the proposed action would have a less than significant indirect short-term impact to birds using the project area, and no direct or indirect long-term impacts to residential or migratory birds.

The no action alternative would result in a lower crest on the shore arm extension and a less structurally sound and eventual lower crest elevation on the exterior breakwater as it crumbles and degrades. This could result in less resting space for the above-mentioned species, especially during high water levels. However, there are other areas that would continue to be available such as nearby piers, as well as sections of the breakwater that have been repaired in the past. Therefore, the no action alternative is not expected to have a significant direct or indirect long-term or short-term impact to birds in the region.

No impacts to bird communities are expected as a result of the no action alternative.

3.4.5. Threatened & Endangered Species

Existing Conditions

Federal

A query of the U.S. Fish and Wildlife Service's (USFWS) Environmental Conservation Online System Information for Planning and Consultation (ECOS-IPaC) on August 15, 2024, resulted in an official species list (Project Code: 2024-0097750; *Appendix A - Coordination*) of federally listed species that may be present within the project area. Obtaining the official species list from ECOS-IPaC fulfills the requirement for federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action". Federally-listed species for the Chicago Harbor vicinity (Table 5) include the piping plover (*Charadrius melodus*), rufa red knot (*Calidris canutus rufa*), eastern massasauga (*Sistrurus catenatus*), Hine's emerald dragonfly (*Stomatochlora hineana*), monarch butterfly (*Danaus plexippus*), eastern prairie fringed orchid (*Platanthera leucophaea*), and leafy prairie clover (*Dalea foliosa*). There are no designated critical habitats in the project vicinity.

Table 5: Federally listed species with the potential to occur in the project area.

Species Name	Federal Status	Preferred Habitat	Potential to Occur
Piping plover (<i>Charadrius melodus</i>)	Endangered	Wide, undisturbed sand and gravel beaches with stones.	Not Present; lack of suitable habitat.
Rufa red knot (<i>Calidris canutus rufa</i>)	Threatened	May use inland freshwater habitats during migration.	Not Present; lack of suitable habitat.
Eastern massasauga (<i>Sistrurus catenatus</i>)	Threatened	Shallow wetlands and surrounding upland areas.	Not Present; lack of suitable habitat.
Hine's emerald dragonfly (<i>Stomatochlora hineana</i>)	Endangered	Wetland habitats dominated by grass, fed by water from mineral source over dolomite or calcareous limestone bedrock.	Not Present; lack of suitable habitat.
Monarch butterfly (<i>Danaus plexippus</i>)	Candidate	Fields, roadsides, and open areas where <i>Asclepias</i> and flowering plant species are present.	Not Present; lack of suitable habitat.
Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>)	Threatened	Moist to wet prairies, sedge meadows, fens, and old fields.	Not Present; lack of suitable habitat.
Leafy prairie clover (<i>Dalea foliosa</i>)	Endangered	Glades and prairies with limestone substrates.	Not Present; lack of suitable habitat.

State of Illinois

State-listed endangered species were reviewed for the project area by USACE. Illinois listed species and their critical habitats are identified by Illinois Department of Natural Resources (IDNR) as occurring within the vicinity of the project location. The IDNR Ecological Compliance Assessment Tool (EcoCAT) was queried on May 31, 2024 (*Appendix A - Coordination*). The following species were identified: black-crowned night heron (*Nycticorax nycticorax*), mottled sculpin (*Cottus bairdii*), and common mudpuppy (*Necturus maculosus*).

Alternative Impact

Federal

The USACE determined that the proposed action would have 'no effect' on any of the federally listed species identified in ECOS-IPaC. This is because construction activities are planned to take place along the harbor's existing shore arm and exterior breakwater away from coastal wetlands, prairies, and woodlands, which are the preferred habitats for these species, and would not directly impact any established terrestrial habitats.

No impacts to federally listed species are expected as a result of the no action alternative.

State of Illinois

Appropriate erosion control measures, including adding choke stone to the outside of the exterior breakwater to avoid grout leakage, would be taken as part of the proposed action to minimize potential adverse impacts of the stone placement and grout injection activities on the aquatic ecosystem. General construction scheduling and sequencing would minimize impacts to any spawning fish present in the project area. Overall, the placement of stone has the potential to disturb or crush common mudpuppy and mottled sculpin that may be within the project area. However, construction would be restricted to April through November per IDNR recommendations (*Appendix A – Coordination*) to avoid the mudpuppy period of high activity in Lake Michigan. Long-term it is anticipated that mottled sculpin and common mudpuppy could utilize the newly placed stone as shelter and/or foraging habitat, therefore, the proposed action would not result in direct or indirect long-term impacts to state listed species.

No impacts to state listed species are expected as a result of the no action alternative.

3.5. Cultural & Social Resources

3.5.1. Environmental Justice and Socioeconomics

Existing Condition and Alternative Impact

Neither the proposed action nor the no action alternative would cause adverse human health effects or adverse environmental effects on minority populations or low-income populations. Executive Order 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*) requires that, to the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each federal agency make achieving environmental justice part of its mission. This is accomplished by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands.

USACE conducted an evaluation of potential environmental justice impacts to ensure that no minority and/or low-income populations in the area would be disproportionately affected due to the no action alternative or the proposed action.

In terms of environmental justice and evaluating potential impacts, it was analyzed whether the proposed action or the no action alternative would have a disproportionate impact to minority communities or low-income communities. To evaluate potential disproportional impacts to minority populations or to low-income households, the USEPA's Environmental Justice Screening and Mapping tool (EJSCREEN) and the Climate and Economic Justice Screening Tool (CEJST) were consulted to determine if the project area was in an environmental justice census block.

As defined in Executive Order 12898 and CEQ guidance, a minority population occurs where one or both of the following conditions are met within a given geographic area:

- The American Indian, Alaskan Native, Asian, Pacific Islander, Black, or Hispanic population of the affected area exceeds 50 percent.
- The minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

A minority population also exists if more than one minority group is present, and the aggregate minority percentage meets one of the above conditions. The selection of the appropriate unit of geographic analysis could be a governing body's jurisdiction, a neighborhood, census tract, or other similar unit. Note that the Hispanic/Latino population represents a multi-racial ethnicity, which may overlap with other minority groups.

Executive Order 12898 does not provide criteria to determine if an affected area consists of a low-income population. For this assessment, the CEQ criteria for defining a minority population have been adapted to identify populations in an affected area that constitute a low-income population. An affected geographic area is considered a low-income population (i.e., below the poverty level, for purposes of this analysis) where one or both of the following conditions are met within a given geographic area:

- The poverty rate or minority population of the total population is above 50 percent.
- The percentage of individuals in poverty or considered a minority is meaningfully greater than in the general population or other appropriate unit of geographic analysis.

A search of the USEPA EJSCREEN revealed that within a one-mile buffer of the Chicago Harbor, 13% (25th percentile when compared to the state's low-income population) of the population is considered below the poverty line and 41% (60th percentile when compared to the state's minority population) of the population is considered a minority (Table 6). Since neither population is above 50% or meaningfully greater than the general population of Illinois, the project area does not meet the above criteria to be defined as a significant minority population or low-income population. In addition, because the overall project is considered infrastructure maintenance, it is not expected to adversely impact the human environment and will benefit the surrounding communities that use the Chicago Harbor or infrastructure protected by the breakwater. Therefore, no adverse effects to any low-income populations and/or minority populations are expected as a result of the proposed action or the no action alternative. Overall, both the proposed action and the no action alternative are in full compliance with this executive order.

Table 6: USEPA EJSCREEN data (USEPA 2024).

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
POLLUTION AND SOURCES					
Particulate Matter ($\mu\text{g}/\text{m}^3$)	9.81	9.44	60	8.08	88
Ozone (ppb)	66	63.6	84	61.6	80
Diesel Particulate Matter ($\mu\text{g}/\text{m}^3$)	1.34	0.358	98	0.261	99
Air Toxics Cancer Risk* (lifetime risk per million)	35	24	68	25	52
Air Toxics Respiratory HI*	0.5	0.29	97	0.31	92
Toxic Releases to Air	6,000	6,000	67	4,600	88
Traffic Proximity (daily traffic count/distance to road)	2,200	200	98	210	98
Lead Paint (% Pre-1960 Housing)	0.093	0.44	18	0.3	34
Superfund Proximity (site count/km distance)	0.042	0.095	42	0.13	38
RMP Facility Proximity (facility count/km distance)	3.2	0.72	96	0.43	98
Hazardous Waste Proximity (facility count/km distance)	9.6	1.7	99	1.9	95
Underground Storage Tanks (count/km ²)	11	8.6	71	3.9	90
Wastewater Discharge (toxicity-weighted concentration/m distance)	8.7	38	82	22	96
SOCIOECONOMIC INDICATORS					
Demographic Index	27%	34%	49	35%	45
Supplemental Demographic Index	8%	14%	21	14%	20
People of Color	41%	39%	60	39%	59
Low Income	13%	29%	25	31%	23
Unemployment Rate	4%	7%	42	6%	48
Limited English Speaking Households	4%	4%	71	5%	72
Less Than High School Education	2%	11%	16	12%	16
Under Age 5	3%	6%	28	6%	32
Over Age 64	17%	17%	57	17%	56
Low Life Expectancy	16%	20%	19	20%	20

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: <https://www.epa.gov/haps/air-toxics-data-update>.

Executive Order 14008 (*Tackling the Climate Crisis at Home and Abroad*) was signed in 2021 and ordered the CEQ to develop a new tool called CEJST. The tool provides information to identify disadvantaged communities experiencing burdens in eight different categories, climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development. Census tracts appear shaded on the website's mapping tool if they are experiencing these burdens. Figure 11 is a screenshot from the CEJST website and indicates that census tracts to the west of downtown Chicago are disadvantaged. However, effects of the proposed action are expected to be limited to the Chicago Harbor and the surrounding water and would not impact disadvantaged communities to the west of downtown Chicago.

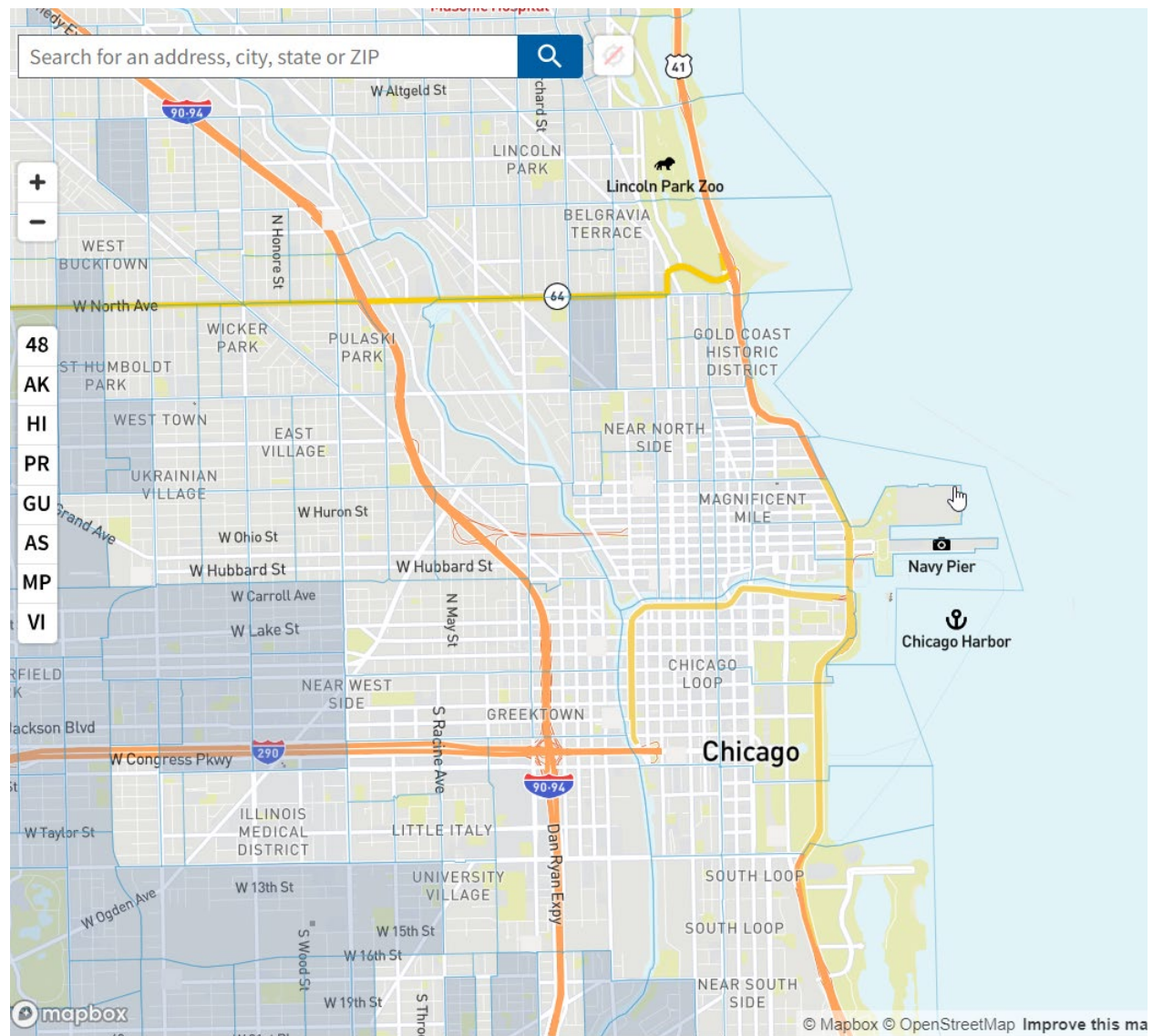


Figure 11: Screenshot of study area from the CEJST website.

Under the no action alternative, the breakwater would continue to degrade and could eventually fail, resulting in reduced wave protection for Chicago Harbor facilities.

The proposed action includes grouting the voids in the exterior breakwater and stone placement on the shore arm extension. The proposed action would not adversely impact low-income and minority populations that utilize the Chicago Harbor for recreation or as the focus of religious or social practices. No significant adverse impacts to the human or natural environment are expected. Recreation in and around the harbor would not be interrupted, and no adverse impacts to residents or activities on shore are expected, especially since the work would occur offshore. Conversely, the proposed action would provide benefits such as wave protection to Navy Pier, Jardine Water Purification Plant, and Chicago Lock, each of which provides benefits to the area. Therefore, the proposed action is expected to provide minor long-term beneficial impacts for low-income communities by continuing to provide protection to infrastructure and recreational boating.

Other Social Effects

Potential impacts to other social effects such as security of life, health, and safety were also considered for the impact analysis. A proposed action could have a beneficial or adverse impact depending on whether it 1) reduces/increases/does not change risk of flood, drought, or other disaster affecting the security of life, health, and safety; 2) reduces/increases/does not change the number of disease-carrying insects and related pathological factors; 3) reduces/increases/does not change the concentration and exposure to water and air pollution; and 4) reduces/increases/does not change access to a year-round consumer choice of food that contributes to the improvement of national nutrition. The proposed action would potentially have a beneficial impact to life, health, and safety, by continuing to maintain a safe and operable harbor that shelters vessels and harbor infrastructure from the open water wave environment and provides recreational opportunities.

The no action alternative would result in continued deterioration of the breakwater, thereby increasing the potential for breakwater failure. Breakwater failure would mean the breakwater is unable to provide wave protection for Navy Pier, Jardine Water Purification Plant, and Chicago Lock. Breakwater failure also means there is not as much wave protection for vessels in the harbor or recreational users of the harbor. Therefore, the no action alternative would potentially have a long-term direct adverse impact to these other social effects if breakwater failure occurs.

3.5.2. Archaeological & Historic Properties

Existing Condition

The USACE has coordinated its review of cultural resources impacts under Section 106 of the National Historic Preservation Act (NHPA). The Area of Potential Effect (APE) for the undertaking encompasses the project area, including staging and access routes, and totals approximately 66 acres. The USACE believes that the APE is sufficient to identify and consider potential effects of the proposed project.

USACE has made a reasonable and good faith effort to identify historic properties that may be affected by the undertaking. USACE conducted an archival review for the project study and APE. The Chicago Harbor, including the breakwaters, has been previously determined eligible for the NRHP and the Chicago Harbor Lighthouse was listed in 1984. Although the breakwaters are potentially contributing elements to the eligibility of Chicago Harbor, due to fluctuating lake levels, there have been numerous repairs over the years that have changed the appearance and composition of the breakwater while maintaining the overall form and function.

Alternative Impact

The proposed action is part of the ongoing operation and maintenance of the Chicago Harbor and would not significantly alter the form or function of the structure or adversely impact its potential NRHP eligibility. The Chicago Harbor Lighthouse would not be impacted by the proposed action.

A finding of no adverse effect to historic properties was submitted to the Illinois State Historic Preservation Office (SHPO) on July 15, 2024. The Illinois SHPO concurred with this finding in a letter dated August 15, 2024 (*Appendix A - Coordination*).

No impacts to archaeological or historic properties are expected as a result of the no action alternative.

3.5.3. Recreation

Existing Condition

The Chicago Harbor houses the Chicago Harbor Lock, which locks the most recreation vessels out of any lock in the country. The Chicago Harbor is also home to Navy Pier, which provides sightseeing, boating, and tourist activities. There are also several beaches to the north and south of the Chicago Harbor along the shoreline.

Alternative Impact

Activities associated with the proposed action may have short-term, temporary effects on recreation, but would not result in significant impacts in these areas. Recreational fishing, should it occur within the proximity of the project site, could potentially be impacted in the short term due to construction activities that would likely frighten fish away from the construction area. Barge and crane activity associated with the proposed action would be directly adjacent to the breakwater and would not impact recreational boating in the Chicago Harbor. Overall, the proposed action would have a less than significant short-term impact, long-term beneficial impacts, and no direct or indirect long-term adverse impacts to recreation. Long-term beneficial impacts to recreation are anticipated due to the continued wave protection the maintained breakwater would provide to users of the Chicago Harbor.

The no action alternative could result in long-term adverse impacts to recreation because the breakwater would eventually fail and would no longer provide wave attenuation for the Chicago Harbor and the infrastructure within the harbor. Navy Pier provides recreation opportunities for visitors and Navy Pier would likely become battered and damaged over time if the breakwater was not intact. In addition, the Chicago Lock provides lockage for a significant number of recreational boating vessels throughout the year, and the structural integrity and operation of the lock is dependent upon the protection provided by the breakwater. Finally, many people operate small recreational motor craft within the Chicago Harbor and many paddlers enjoy the protection provided by the breakwater as well. Many of these recreation opportunities would be diminished without the wave attenuation provided by the breakwater structures.

3.5.4. Noise

Existing Condition

The Chicago Harbor houses the Chicago Harbor Lock, which locks the most recreation vessels out of any lock in the country, and Navy Pier, which have several boat docks where commercial tourist vessels dock to load and unload passengers. These vessels generate engine noise while operating, especially the Sea Dog vessels, which have louder than normal engine mufflers. In addition to the noise generated by the vessels operating in the harbor, waves crashing on the breakwater create natural white noise, especially on windy days. Sounds from the cityscape including vehicle noise can also be heard from the harbor at times.

Alternative Impact

Activities associated with the proposed action may result in short-term, temporary increases in noise, but would not result in significant impacts. Noise from barges and cranes would generally be in accordance with local noise ordinances. Noise impacts from the armor stone placement efforts would be limited to the breakwater area and are not likely to be audible from Navy Pier or the shore. Overall, the proposed action would have a less than significant short-term impact that

end when construction activities cease and would have no direct or indirect long-term adverse impacts on noise levels.

The no action alternative would not generate any additional noise.

3.5.5. Aesthetics

Existing Condition

The outer breakwater structure is difficult to see from shore, but from a boat it appears as a linear concrete mound-type structure with some large stone along the water line depending on current lake levels. The shore arm largely appears as a linear mound of large stone sticking out of the water. The amount of stone visible depends on lake levels. There is a lighthouse on the outer breakwater and there are some navigation structures marking the gaps in the breakwater where vessels can enter and exit the harbor. There are no protected aesthetic features along the breakwater other than the lighthouse, which is historically significant.

Alternative Impact

The proposed action would not significantly alter the visual appearance of the outer breakwater since the grout would be injected into the internal parts of the structure. The rubble mound encapsulation of the shore arm could result in more stone being visible along the structure, but it would not change the overall aesthetic viewshed of the harbor. In addition, the lighthouse would be unaffected by the activities associated with the proposed action. There could be short-term less than significant adverse impacts to aesthetics associated with construction equipment operating in the harbor, but those impacts would cease when construction concludes.

The no action alternative would not have any impacts to aesthetics.

3.5.6. Navigation

Existing Condition

The Chicago Harbor houses the Chicago Harbor Lock, which locks the most recreation vessels out of any lock in the country. Many of these recreation vessels operate within the harbor due to the calmer conditions provided by the breakwater. The Chicago Harbor is also home to Navy Pier, which has several commercial boat docks for site seeing tours, water taxis, and other tourist boating activities. Occasionally commercial freight vessels and barges utilize the Chicago Lock to transit between the Chicago River and Lake Michigan, although their size is limited by the size of the lock.

Alternative Impact

The proposed action is not likely to result in any significant adverse impacts to commercial or recreational navigation. The barge and crane activities associated with the proposed action would be directly adjacent to the breakwater structures and would not obstruct the navigation channel. However, the proposed action would provide long-term benefits to navigation by providing a more structurally sound breakwater to protect the harbor and the infrastructure within the harbor. A more stable breakwater would continue to provide wave attenuation and shelter from storms for both commercial and recreation vessels into the foreseeable future.

The no action alternative would result in continued degradation of the breakwater and shore arm, which could eventually lead to structure failure. This would have a long-term adverse impact on commercial and recreational navigation because the breakwater and shore arm

would no longer provide wave attenuation and the waters in the harbor would be rougher, making navigation more treacherous.

3.6. Hazardous, Toxic & Radioactive Wastes (HTRW)

Existing Condition

USEPA's EnviroMapper online tool was used to determine whether any environmental issues attributed to unresolved contaminated sites would impact construction activities or armor stone placement. Although various environmental compliance sites and regulated activities exist around and adjacent to the harbor, no HTRW sites are located on or adjacent to the breakwater. There are no HTRW sites listed within the harbor proper or within nearby Lake Michigan.

Alternative Impact

There are no identified regulated sites on or adjacent to the Chicago Harbor breakwater. The armor stone placement would not impact any regulated or unresolved environmental sites. There are no anticipated direct or indirect, short-term or long-term HTRW impacts associated with the proposed action.

There are no anticipated direct or indirect, short-term or long-term HTRW impacts associated with the no action alternative.

3.7. Cumulative Impacts

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 the 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 affected and will affect the same resources. When assessing cumulative effects, the key determinant of importance or significance is whether the incremental effects 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 action were assessed in accordance with guidance provided by the President's CEQ for identifying and evaluating cumulative effects in NEPA analysis.

The overall cumulative impact of the proposed action is considered to be beneficial socially and economically.

The cumulative effects issues and assessment goals are established in this EA, the spatial and temporal boundaries are determined, and reasonably foreseeable future actions are identified. Cumulative effects are assessed to determine if the sustainability of any of the resources are adversely affected with the goal of determining the incremental impact to key resources that would occur should the proposal be permitted. The spatial boundary for the assessment encompasses the Chicago Harbor, the surrounding lakebed and water, and the associated facilities served by the infrastructure to be improved. The temporal boundaries are:

1. Past- 1889, when initial construction of the Chicago Harbor breakwater was completed.

2. Present- 2024, when the proposed action was being developed.
3. Future- 2074, the year used for determining project life end.

Projecting reasonably foreseeable future actions is difficult at best. Clearly, the proposed action 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. In this case, reasonably foreseeable future actions include:

1. Increased variability in Lake Michigan water levels.
2. Continued application of environmental requirements such as the Clean Water Act.

Cumulative effects are only analyzed for those resources that the proposed action would have an effect on. Resources that the proposed action would have no effect on are not discussed as the project in association with other reasonably foreseeable future actions would not have a cumulative effect.

Cumulative Effects on Water Quality and Aquatic Communities

The proposed action would have short-term construction-related adverse effects on water quality and aquatic communities in the region, but conditions are expected to return to normal following construction completion.

Cumulative Effect of Terrestrial Resources

The proposed action would have no long-term cumulative effect on terrestrial resources since the project would be restricted to the breakwater structure out in the harbor.

Cumulative Effects on Air Quality

The proposed action would have a temporary and localized impact on greenhouse gas emissions, but when combined with the reasonably foreseeable future actions would have no long-term cumulative effect on air quality.

Cumulative Effects on Noise

The proposed action would have a minor, localized impact to ambient noise levels due to the operation of equipment during construction; however, the combination of the proposed action and reasonably foreseeable future actions is expected to have no cumulative effect on noise.

Cumulative Effects on Navigation

The proposed action would ultimately have a beneficial effect on navigation by continuing to provide wave protection to vessels operating or docked within the Chicago Harbor. Therefore, the proposed action in combination with reasonably foreseeable future actions is not expected to have a cumulative adverse effect on navigation.

Cumulative effects on Public Infrastructure

The proposed action would have a beneficial long-term effect on public facilities by improving the Chicago Harbor.

Cumulative effects on Socioeconomics

This proposed action would have a beneficial effect on other social effects by continuing to provide wave protection for users of the Chicago Harbor. Therefore, the proposed action in

combination with reasonably foreseeable future actions is not expected to have an adverse cumulative effect on socioeconomics.

Cumulative Effects Summary

Along with direct and indirect effects, cumulative effects of the proposed action were assessed. There have been numerous effects to resources from past and present actions in the area, and reasonably foreseeable future actions can also be expected to produce both beneficial and adverse effects. Because the effects of the proposed project are relatively minor, the implementation of the proposed project in consort with other reasonably foreseeable future actions is not expected to have significant cumulative effects.

3.8. Irreversible and irretrievable Commitment of Resources

Neither the proposed action nor the no action alternative would entail significant irretrievable or irreversible commitments of resources. Long-term sustainability actions were included for the benefit of environmental resources.

3.9. Short-term uses of Man's Environment and Long-term Productivity

NEPA, Section 102(2)(C)(iv) calls for a discussion of the relationship between local short-term uses of man's environment and maintenance and enhancement of long-term productivity in an environmental document. The proposed action would repair the breakwater and positively affect the function and durability of the structure as part of keeping the harbor navigable. The breakwater repair would lead to wave attenuation that would reduce water turbidity and provide calmer hydrologic processes for navigational purposes. Under the no action alternative, no project would be implemented, therefore, physical, biological, and social resources, could be impacted by the continued deterioration of the structure, thereby limiting safe access to the harbor and potentially reducing employment, business, and recreational activity in the area by limiting the recreational, commercial, and transportation capabilities of the harbor.

4. Conclusions & Compliance

Chicago Harbor breakwater maintenance activities involved in the proposed action would not result in significant adverse environmental effects, nor would they be expected to result in any significant cumulative or long-term adverse environmental effects. Adverse effects would be negligible, to include short-term increased noise and air emissions from equipment operation; temporary, minor turbidity from stone placement operations; and smothering or temporary displacement of some macroinvertebrate, fish, amphibian, and bird species and associated recreational fishing activities. Macroinvertebrates, fish, amphibians, birds, and recreational fishermen would return upon completion of construction. The analysis detailed above supports these conclusions. The placement site for fill material is currently Lake Michigan bottom and is directly adjacent to the existing breakwater bounding the Chicago Harbor. It is anticipated that the proposed action would have no adverse, long-term effects to geologic resources since all stone placement would be surficial and grout placement would be within the exterior breakwater structure.

4.1. Compliance with Environmental Statutes

The proposed breakwater repair and maintenance project at Chicago Harbor has been reviewed pursuant to the following Acts and Executive Orders: Fish and Wildlife Coordination Act of 1958,

as amended; NHPA of 1966, as amended; NEPA of 1969; Clean Air Act of 1970, as amended; 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 as amended; Executive Order 11988 (*Floodplain Management*) May 1977; Executive Order 11990 (*Wetland Protection*) May 1977; Executive Order 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), February 1994; Executive Order 13990 (*Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*) January 2021; Executive Order 14008 (*Tackling the Climate Crisis at Home and Abroad*) January 2021; and Executive Order 13186 (*Responsibilities of Federal Agencies to Protect Migratory Birds*) January 2001. The proposed action has been found to be in compliance with these Acts and Executive Orders as described below. Documentation of coordination with applicable resource agencies is included in *Appendix A - Coordination*.

- Fish and Wildlife Coordination Act of 1958: Coordination was commenced with USFWS and IDNR with the provision of a scoping letter sent May 3, 2024 (*Appendix A – Coordination*). Coordination under the Fish and Wildlife Coordination Act requirements will be fulfilled upon completion of the public review period, which will occur October 2024. USFWS replied to the scoping letter on May 13, 2024 (*Appendix A – Coordination*), stating that they had no concerns at this time, but that they would review the NEPA document during public review. The IDNR responded to scoping on June 18, 2024, with recommendations for limiting impacts to common mudpuppy (*Appendix A – Coordination*). Those recommendations are included in the EA and will be implemented during construction.
- Executive Order 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 short duration of the grout injection and stone placement work would have no long-term detrimental impacts to migratory birds.
- National Historic Preservation Act of 1966: Section 106 of the NHPA (16 USC 470) requires federal agencies to take into account the effects of proposed federal undertakings on historic properties included or eligible for the NRHP. The implementing regulations for Section 106 (36 CFR § 800) requires federal agencies to consult with various parties, including the Advisory Council on Historic Preservation, the SHPO, and Indian Tribes, to identify and evaluate historic properties, and to assess and resolve effects to historic properties. The USACE has consulted with the Illinois SHPO, the Kickapoo Tribe of Indians of the Kickapoo Reservation in Kansas, the Menominee Indian Tribe of Wisconsin, the Miami Tribe of Oklahoma, the Citizen Potawatomi of Oklahoma, the Prairie Band Potawatomi Nation, the Forest County Potawatomi Executive Council, the Kickapoo Tribe of Oklahoma, the Hannahville Indian Community of Michigan, the Little Traverse Bay Bands of Odawa Indians of Michigan, to assist in identifying properties which may be of religious and cultural significance. The Tribes did not comment on the undertaking. A finding of No Adverse Effect to Historic Properties was submitted to the SHPO on July 15, 2024 (*Appendix A – Coordination*). The Illinois SHPO concurred with this finding in a letter dated August 15, 2024.

-
- National Environmental Policy Act of 1969: This EA has been prepared in accordance with NEPA; the CEQ, *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (Phase I Final Rule, 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: The proposed Chicago Harbor breakwater repair location is within an air quality non-attainment area. Due to the small scale, short duration and nature of the armor stone replacement project, emissions will be limited to temporary vehicle/equipment emissions. Temporary vehicle emission impacts would meet current federal regulations. Greenhouse gas emissions are expected to be negligible. Overall, the project is *de minimis* in terms of emissions.
 - Coastal Zone Management Act of 1972: The project site is within the Illinois Great Lakes Coastal Region. The project will protect the public interest by helping to preserve harbor safety and access. 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 Illinois Coastal Management Program (ICMP). USACE sent the Federal Consistency Determination dated July 2, 2024 (*Appendix A - Coordination*), to the Federal Consistency Coordinator of the ICMP for their review and concurrence. The proposed action is consistent with state Coastal Zone Management plans. The ICMP concurred with the USACE consistency determination in a letter dated September 3, 2024 (*Appendix A – Coordination*).
 - Endangered Species Act of 1973: The USACE determined that the proposed action would have ‘no effect’ on federally listed species. Documentation of the analysis for the “no effect” determination is included in Section 3.4.5 of the EA. Coordination was commenced with USFWS with the provision of a scoping letter sent May 3, 2024 (*Appendix A – Coordination*). Coordination under the Endangered Species Act requirements was fulfilled when the “no effect” determination was documented. USFWS replied to the scoping letter on May 13, 2024 (*Appendix A – Coordination*), stating that they had no concerns at this time, but that they would review the NEPA document during public review.
 - Clean Water Act of 1977: Pursuant to the Clean Water Act , 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 included as *Appendix B – 404(b)(1) Evaluation* to this document. The Section 404(b)(1) Evaluation concludes that the proposed action is consistent with Section 404 of the Clean Water Act. Pursuant to Section 404, compliance with state water quality standards is being completed through the 401 Water Quality certification issued by the state of Illinois under the Lake Michigan Regional General Permit. The State of Illinois has issued a WQC for the activities listed under the LMRGP, including maintenance of existing public harbor, public access facilities, and navigational features required for maintaining existing function. All conditions of the water quality certification will be implemented in order to minimize adverse impacts to water quality. BMPs, as discussed in section 3.3.4, would be implemented as needed to minimize adverse impacts to water quality.
 - Executive Order 11988, *Floodplain Management*, May 1977: The project site is within Lake Michigan and does not impact floodplains.
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- Executive Order 11990, *Wetland Protection*, May 1977: The proposed action does not impact coastal or terrestrial wetlands as there are none present within the project area. The proposed breakwater repair results in a potential disturbance of up to approximately 0.69 acres of Lake Michigan bottom through expansion of the shore arm extension footprint but is not expected to have a more than minimal impact on existing ecosystem functions.
 - Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, February 1994: The proposed action does not disproportionately impact low-income or minority populations.
 - Executive Order 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate*, January 2021: The proposed action does not affect the climate. Additional fossil fuels would be needed during the breakwater repair 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 construction. However, localized increases would be temporary and would return to baseline levels once construction is complete.
 - Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad*, January 2021: The proposed action does not affect the climate. Additional fossil fuels would be needed during the breakwater repair 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 construction. However, localized increases would be temporary and would return to baseline levels once construction is complete.

This EA concludes that the proposed Chicago Harbor breakwater maintenance and repair project: 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.

Bibliography

- eBird. 2024. eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Available: <http://www.ebird.org>. (Accessed: June 18, 2024).
- Garza and Whitman. 2004. The Nearshore Benthic Invertebrate Community of Southern Lake Michigan and its Response to Beach Nourishment. *Environmental Science* 30: 114-122.
- Geisthardt, E.J., Suedel, B.C., and Janssen, J.A. 2022. A *Hemimysis* Driven Novel Ecosystem at a Modified Rubble Mound Break: An Engineering with Nature Demonstration Project. *Integrated Environmental Assessment and Management* 18(1):49-62.
- Illinois Environmental Protection Agency (IEPA). 2024. Illinois Integrated Water Quality Report and Section 303(d) List, 2024 Draft. Available at: [extension://efaidnbmnnnibpcajpcglclefindmkaj/https://epa.illinois.gov/content/dam/soi/en/web/epa/topics/water-quality/watershed-management/tmdls/documents/303d/2024-IR.pdf](https://efaidnbmnnnibpcajpcglclefindmkaj/https://epa.illinois.gov/content/dam/soi/en/web/epa/topics/water-quality/watershed-management/tmdls/documents/303d/2024-IR.pdf)
- 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. *Canadian Journal of Fisheries and Aquatic Sciences* 55:2402–2413.
- National Oceanic and Atmospheric Administration (NOAA). 2024. NOAA Online Weather Data. Available at: <https://www.ncei.noaa.gov/access/us-climate-normals/#dataset=normals-monthly&timeframe=81&location=IL&station=USW00094846>
- NOAA – Great Lakes Environmental Research Laboratory (NOAA-GLERL). 2021. Great Lakes Dashboard Project (GLDP) - Great Lakes Water Levels. Available at: https://www.glerl.noaa.gov/data/dashboard/GLD_HTML5.html
- U.S. Army Corps of Engineers (USACE). 2015. Recent US Climate Change and Hydrology Literature Applicable to US Army Corps of Engineers Missions – Upper Mississippi Region 07. Civil Works Technical Report, CWTS-2015-13. Washington, DC: USACE.
- USACE. 2024. Great Lakes Water Level Data. Great Lakes Hydraulics and Hydrology. Available at: <https://re-wm.usace.army.mil/ForecastData/GLBasinConditions/LTA-GLWL-Graph.pdf>
- U.S. Environmental Protection Agency (USEPA). 2024. Climate and Economic Justice Screening Tool (CEJST). Available at: <https://screeningtool.geoplatform.gov/en/#3/33.471-97.5>
- USEPA. 2024. Green Book National Area and County-Level Multi-Pollutant Information. Available at: <https://www.epa.gov/green-book/green-book-national-area-and-county-level-multi-pollutant-information>

Draft Appendix A - Coordination
Chicago Harbor Breakwater Repairs
Chicago, Illinois



U.S. Army Corps of Engineers
Chicago District

September 2024



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, CHICAGO DISTRICT
231 SOUTH LA SALLE STREET, SUITE 1500
CHICAGO IL 60604

April 30, 2024

Planning Branch

Dear Recipient:

The U.S Army Corps of Engineers, Chicago District (USACE) will be preparing a National Environmental Policy Act (NEPA) document on the impacts associated with proposed repairs to two breakwaters within the Chicago Harbor in the City of Chicago, Cook County, Illinois. Repairs include grouting under the concrete cap of the exterior breakwater and encapsulating the shore arm extension breakwater with stone, restoring it to its original design height. USACE is working to support the aging breakwater structures with stabilization measures required to maintain structural viability. The project limits for the effort are entirely within the Chicago Harbor (Enclosure 1).

The proposed project would involve drilling holes in the exterior concrete cap and injecting grout to fill voids in the breakwater structure from station 18+88, moving west towards station 00+96 for a total of 7,350 feet, or as funding allows. In addition, the proposed project would involve placing armor stone from station 3+00 to 8+75 for a total of 575 feet, or as funding allows.

As part of the NEPA scoping process, USACE would appreciate any comments or concerns associated with the proposed work. Enclosure 2 is a list of state and federal agencies, tribal nations, and interested stakeholders receiving a scoping request.

Comments regarding the proposed action may be submitted via email or mail. Emailed comments should be sent to ryan.a.johnson@usace.army.mil. Mailed comments should be sent to the attention of Mr. Ryan Johnson (CELRC-PDL-E) at the address above. All comments should be postmarked or emailed by May 31, 2024. Questions should be directed to Mr. Johnson at (312) 846-5559.

Sincerely,

BUCARO.DAVID
.F.1245178677

Digitally signed by
BUCARO.DAVID.F.1245178677
Date: 2024.04.30 13:12:47
-05'00'

David F. Bucaro, P.E., PMP, WRCP
Chief, Planning Branch
Chicago District

Enclosures:

- 1) Project Maps and Drawings
- 2) Distribution List

Chicago Harbor Exterior Breakwater and Shore Arm Rubble Mound Encapsulation Enclosure 1 – Maps and Drawings

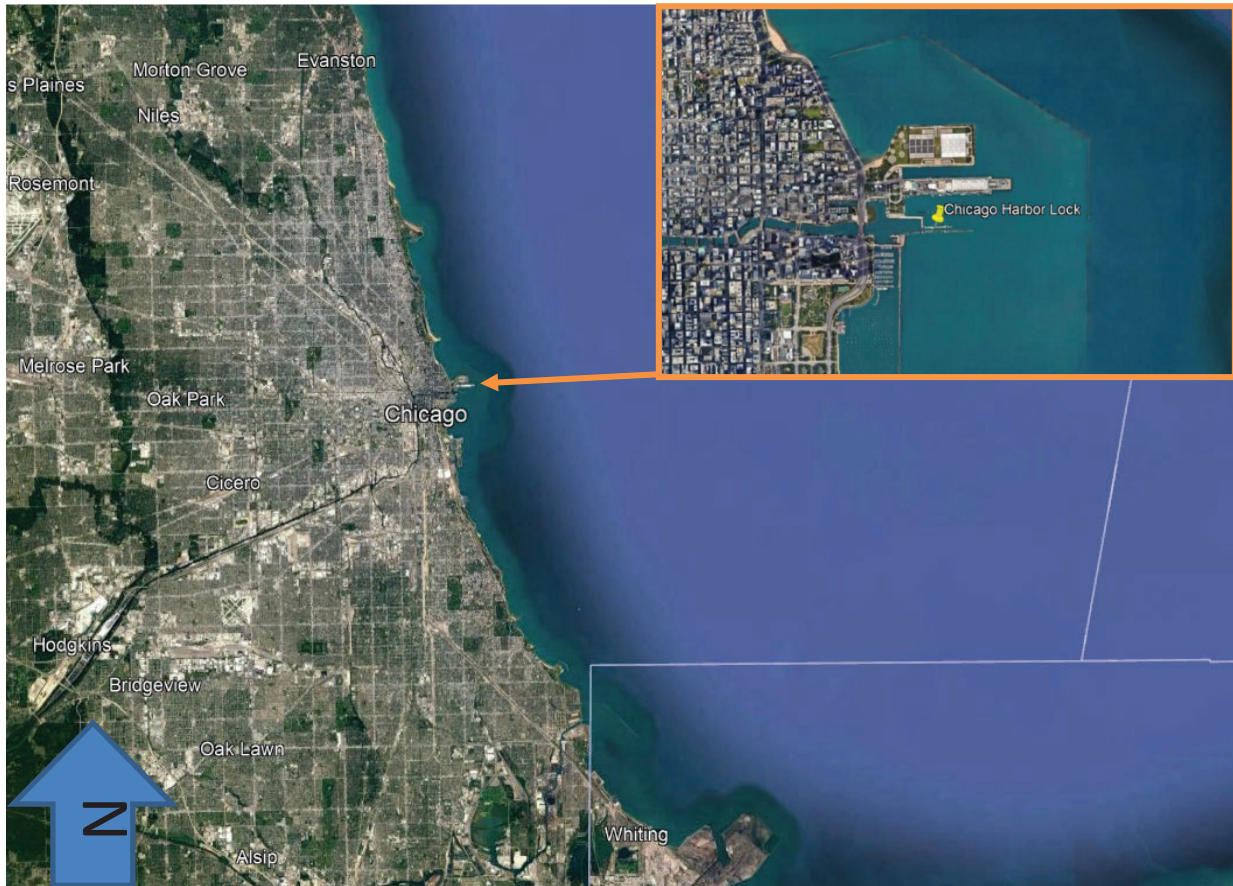


Figure 1. Overhead view of Chicago Harbor and Lock in relation to Chicago. (Google 2024)



Figure 2. Chicago Harbor Shore Arm Extension and Exterior Breakwaters

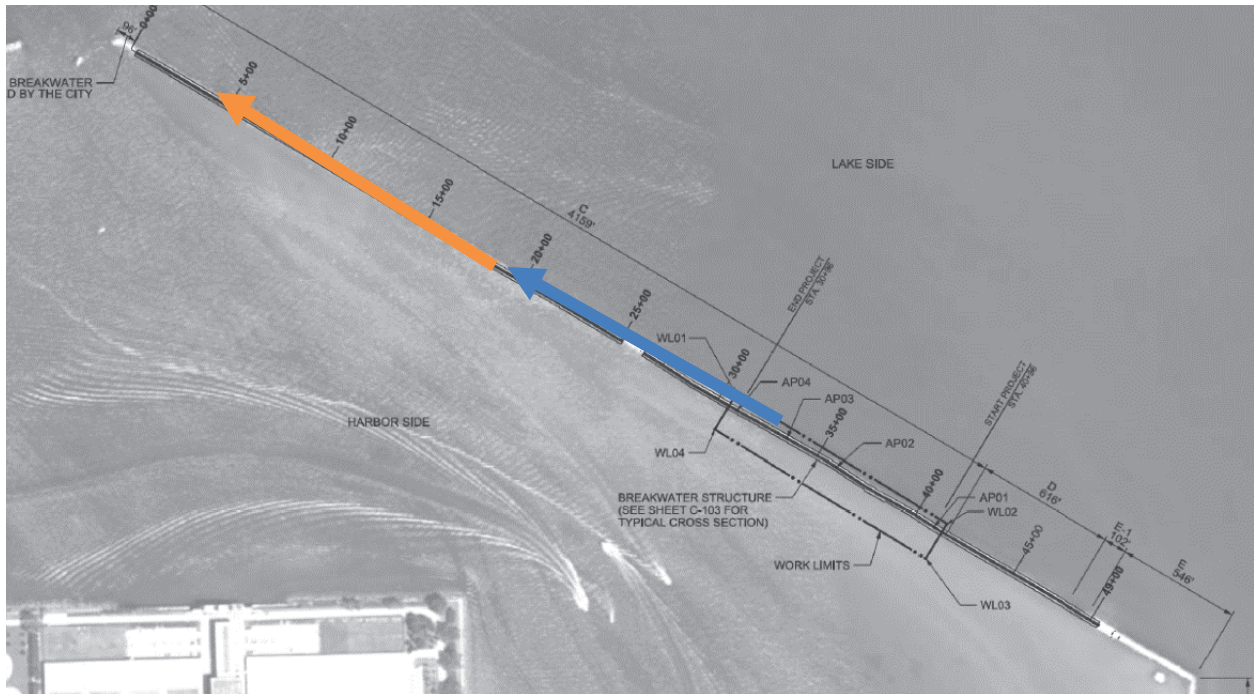


Figure 3. Chicago Harbor Outer Breakwater intended work, previous work depicted by blue arrow and intended work depicted by orange arrow (adapted from previous contract documents)



Figure 4. Chicago Harbor Shorearm Extension Breakwater intended work, intended work depicted by orange arrow (adapted from previous contract documents)

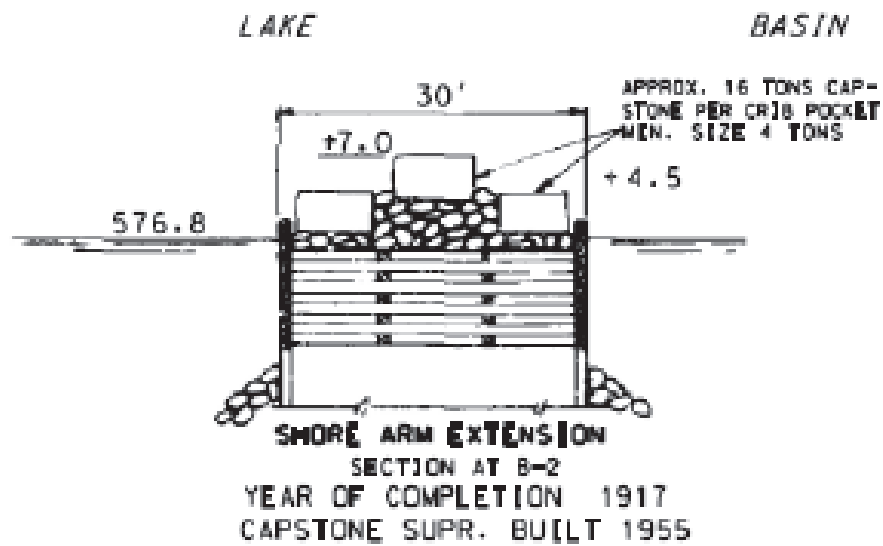


Figure 5. As-built of Reach B-2 showing current capstone cap

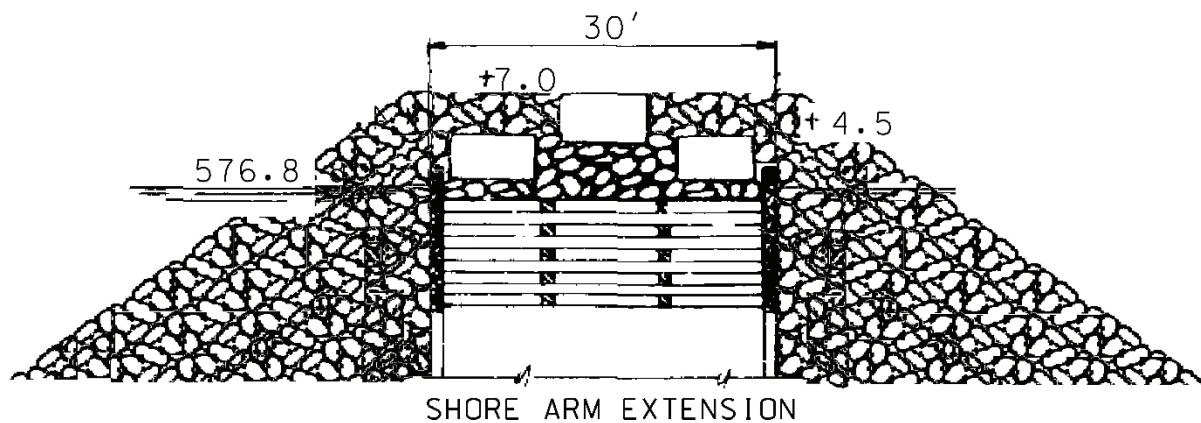


Figure 6

Figure 7. Schematic cross-section drawing showing intended rubble-mound encapsulation of existing timber crib and capstone structure

Chicago Harbor Exterior Breakwater and Shore Arm Rubble Mound Encapsulation
Enclosure 2 – Distribution List

Agencies

Ms. Elizabeth Pellosso
U.S. Environmental Protection Agency

U.S. Coast Guard

Mr. Kraig McPeck
U.S. Fish & Wildlife Service

Mr Shawn Citron
U.S. Fish & Wildlife Service

Mr. John Kim
Illinois Environmental Protection Agency

Ms. C.J. Wallace
Illinois State Historic Preservation Office

Mr. Cody Eskew
Illinois Department of Natural Resources
Mr. Bradley Hayes
Illinois Department of Natural Resources

Ms. Natalie Phelps Finnie
Illinois Department of Natural Resources

Ms. Loren Wobig
Illinois Department of Natural Resources

Ms. Brittany Strong
Chicago Office of Emergency Management &
Communications

Ms. Kari Steele
Metropolitan Water Reclamation District of
Greater Chicago

Mr. Kerl LaJeune
Public Building Commission of Chicago

Ms. Ciere Boatright
Chicago Department of Planning and
Development

Mr. Jason Lach
Chicago Fire Department

Elected Officials

Governor JB Pritzker

Senator Tammy Duckworth
U.S. Senate

Senator Dick Durbin
U.S. Senate

Representative Danny Davis
U.S. House of Representatives

Alderman Brendan Reilly
Chicago City Council

Stakeholders

Great Lakes Boating Federation

Mr. Scott Reimer
Underwater Archaeological Society of Chicago

Mr. Dan Russell
The Chicago Harbor Safety Committee

Mr. David Brezina
The Chicago Harbor Safety Committee

Mr. Justin Lampert
American Waterways Operators

Mr. Bradley Trammell
American Waterways Operators

Ms. Lynn Muench
American Waterways Operators

National Material Trading LLC

Ms. Mary Barton
Alliance for the Great Lakes

Tribal Organizations

Chairman Kenneth Meshigaud
Hannahville Potawatomi Tribal Council

Chicago Harbor Exterior Breakwater and Shore Arm Rubble Mound Encapsulation
Enclosure 2 – Distribution List

Ms. Diane Hunter
Miami Tribe of Oklahoma

Chief Douglas Lankford
Miami Tribe of Oklahoma

Chairperson Joseph Rupnick
Prairie Band Potawatomi Tribal Council

Mr. Raphael Wahwassuck
Prairie Band Potawatomi Nation

Mr. Pam Wesley
Kickapoo Tribe of Oklahoma

Chairman Darwin Kaskaske
Kickapoo Tribe of Oklahoma

Mr. David Grignon
Menominee Indian Tribe of Wisconsin

Chairperson Gena Kakkak
Menominee Indian Tribe of Wisconsin

Mr. Blake Norton
Citizen Potawatomi Executive Council

Chairperson John Barrett
Citizen Potawatomi Executive Council

Chairperson James Crawford
Forest County Potawatomi Executive Council

Mr. Olivia Nunway
Forest County Potawatomi Executive Council

Chairperson Regina Gasco-Bentley
Little Traverse Bay Bands of Odawa Indians,
Michigan

Ms. Melissa Wiatrolik
Little Traverse Bay Bands of Odawa Indians,
Michigan

Chairperson Gail Cheatham
Kickapoo Tribe of Indians of the Kickapoo
Reservation in Kansas

Johnson, Ryan A CIV USARMY CELRC (USA)

From: Cirton, Shawn <shawn_cirton@fws.gov>
Sent: Monday, May 13, 2024 9:45 AM
To: Johnson, Ryan A CIV USARMY CELRC (USA)
Subject: [Non-DoD Source] Re: [EXTERNAL] FW: USACE NEPA Scoping Letter - Chicago Harbor Breakwater Repairs

Ryan,

We received your letter, dated April 30, 2024, indicating that the Chicago District is preparing a National Environmental Policy Act (NEPA) document on the impacts associated with proposed repairs to two breakwaters within the Chicago Harbor in the City of Chicago, Cook County, Illinois. We are not aware of any particular issues that should be addressed during the scoping process regarding this project. We will plan to respond to your request to review the NEPA documents when they are complete.

Sincerely,

Shawn Cirton
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
Chicago Illinois Field Office
230 South Dearborn Street, Suite 2938
Chicago, IL 60604
(847)366-2345

From: Johnson, Ryan A CIV USARMY CELRC (USA) <Ryan.A.Johnson@usace.army.mil>
Sent: Friday, May 3, 2024 9:32 AM
To: Cirton, Shawn <shawn_cirton@fws.gov>
Subject: RE: [EXTERNAL] FW: USACE NEPA Scoping Letter - Chicago Harbor Breakwater Repairs

Oh good. I thought it was weird that I got a kick-back. Have a nice weekend!

Ryan

From: Cirton, Shawn <shawn_cirton@fws.gov>
Sent: Friday, May 3, 2024 9:31 AM
To: Johnson, Ryan A CIV USARMY CELRC (USA) <Ryan.A.Johnson@usace.army.mil>
Subject: [Non-DoD Source] Re: [EXTERNAL] FW: USACE NEPA Scoping Letter - Chicago Harbor Breakwater Repairs

I received this one Ryan!

Shawn Cirton
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service

Chicago Illinois Field Office
230 South Dearborn Street, Suite 2938
Chicago, IL 60604
(847)366-2345

From: Johnson, Ryan A CIV USARMY CELRC (USA) <Ryan.A.Johnson@usace.army.mil>
Sent: Friday, May 3, 2024 8:49 AM
To: Cirton, Shawn <shawn_cirton@fws.gov>
Subject: [EXTERNAL] FW: USACE NEPA Scoping Letter - Chicago Harbor Breakwater Repairs

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Shawn,
For some reason this bounced back when I sent it to you earlier this week. Hopefully this one makes it through.

Respectfully,

Ryan Johnson
Biologist
US Army Corps of Engineers, Chicago District
231 S LaSalle St. Suite 1500
Chicago, IL 60604
312-846-5559 (office)
312-718-2856 (cell)

From: Johnson, Ryan A CIV USARMY CELRC (USA)
Sent: Wednesday, May 1, 2024 11:36 AM
Subject: USACE NEPA Scoping Letter - Chicago Harbor Breakwater Repairs

Dear Recipient:

The U.S Army Corps of Engineers, Chicago District (USACE) will be preparing a National Environmental Policy Act (NEPA) document on the impacts associated with proposed repairs to two breakwaters within the Chicago Harbor in the City of Chicago, Cook County, Illinois. Repairs include grouting under the concrete cap of the exterior breakwater and encapsulating the shore arm extension breakwater with stone, restoring it to its original design height. USACE is working to support the aging breakwater structures with stabilization measures required to maintain structural viability.

Comments regarding the proposed action may be submitted via email or mail. Emailed comments should be sent to ryan.a.johnson@usace.army.mil. Mailed comments should be sent to the attention of Mr. Ryan Johnson (CELRC-PDL-E) at 231 South La Salle Street, Suite 1500, Chicago, IL 60604. All comments should be postmarked or emailed by May 31, 2024. Questions should be directed to Mr. Johnson at (312) 846-5559.

Respectfully,

Ryan Johnson
Biologist
US Army Corps of Engineers, Chicago District
231 S LaSalle St. Suite 1500
Chicago, IL 60604
312-846-5559 (office)
312-718-2856 (cell)



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, CHICAGO DISTRICT
231 SOUTH LASALLE STREET, SUITE 1500
CHICAGO IL 60604

July 15, 2024

Environmental & Cultural Resources Section
Planning Branch

Ms. Carey Mayer
Deputy State Historic Preservation Officer
Old State Capitol Building
One Old State Capitol Plaza
Springfield, IL 62701

SUBJECT: FY24 Chicago Harbor Breakwater Repair Project

Dear Ms. Mayer:

The U.S. Army Corps of Engineers (USACE) is proposing to repair and maintain the shore arm extension and the exterior breakwater at the Chicago Harbor (undertaking) in Cook County, Illinois (Figure 1). As part of our review under Section 106 of the National Historic Preservation Act, USACE has determined that the proposed federal action is an undertaking that has the potential to affect historic properties. This letter provides a brief project description, documents the area of potential effect (APE), summarizes the efforts to identify historic properties, and provides agency findings. The letter requests agreement with USACE's finding that there will be no adverse effect to historic properties by the proposed undertaking.

The Chicago Harbor Breakwater is located on the southwestern shoreline of Lake Michigan at the mouth of the Chicago River. The Chicago Harbor breakwater system is a combination of several types of structures to provide protection to the Chicago Harbor infrastructure. The types of structures used in the breakwater system include a filled timber crib founded on fill stone and capped with concrete, a stone-filled timber crib placed on a combination of fill stone and smaller timber cribs with submerged rubble-mound protection, a cut stone over a quarry run and stone chips core, and a concrete caisson with stone fill and concrete cap.

During the mid-1960's water levels on Lake Michigan reached record lows exposing the upper levels of the timber cribs to air, causing dry-rot and wash-out of the stone material leaving large voids in the core of the structure. Low lake levels in the 1960's particularly degraded the part of the cribbing where the horizontal tie rod connections were. When lake levels (and their associated wave energy) were then high in the 1970's and 1980's, structural integrity was lost – the wood pilings broke at the tie rod connections allowing the stone to spill out, leading to settlement of the limestone capstone and some areas becoming indistinguishable from rubble-mound. As a result, concrete caps along several sections of the breakwater have experienced partial or full collapse and need repair to

prevent further deterioration to the integrity of the structure. Portions of the breakwater have been stabilized through grouting methods in 2009, 2014, 2017, and 2022.

The proposed project consists of injecting grout into the exterior breakwater to fill interstitial voids and stabilize the structure, as well as placing armor stone to encapsulate the shore arm extension. Features would include a double row grout curtain along the top of the cap. The extent and volume of grouting would be dependent on available funding. The end state is to return crest elevation to the original design crest elevation. The project also intends to grout the relief wells in the cap, ensuring grout containment measures are in place throughout. Rubble-mound encapsulation of the shore arm extension breakwater would include placing armor stone over the existing timber crib and concrete cap structure to return the crest elevation to the original design. The project does not include any alteration of the Chicago Harbor Lighthouse.

The proposed undertaking is in Section 10, Township 39 North, Range 14 East, Cook County, Illinois (Figure 2). The APE for the undertaking encompasses the project area including staging, access, etc. and totals approximately 66 acres. USACE believes that the APE is sufficient to identify and consider both direct and indirect effects of the proposed project.

USACE has made a reasonable and good faith effort to identify historic properties that may be affected by the undertaking. USACE conducted an archival review for the project study and APE. The Chicago Harbor, including the breakwaters, has been previously determined eligible for the National Register of Historic Places (NRHP) and the Chicago Harbor Lighthouse was listed in 1984. Although the breakwaters are potentially contributing elements to the eligibility of Chicago Harbor, due to fluctuating lake levels, there have been numerous repairs over the years that have changed the appearance and composition of the breakwater while maintaining the overall form and function. These elements will be maintained and improved by the proposed project, returning the breakwater to the originally designed crown height. The lighthouse would not be altered by the proposed project, and there are no known archaeological sites within the project APE.

USACE requests your review and agreement with our finding of No Adverse Effect to Historic Properties. If you have any questions or desire additional information, please contact the project Archaeologist, Ms. Ashley Dailide, at ashley.m.dailide@usace.army.mil or (312) 846-5581.

Sincerely,

A handwritten signature in cursive script that reads "Alex Hoxsie".

Alex Hoxsie
Chief, Environmental & Cultural Resources
Chicago District

Enclosures

Figure 1. Project Vicinity Map

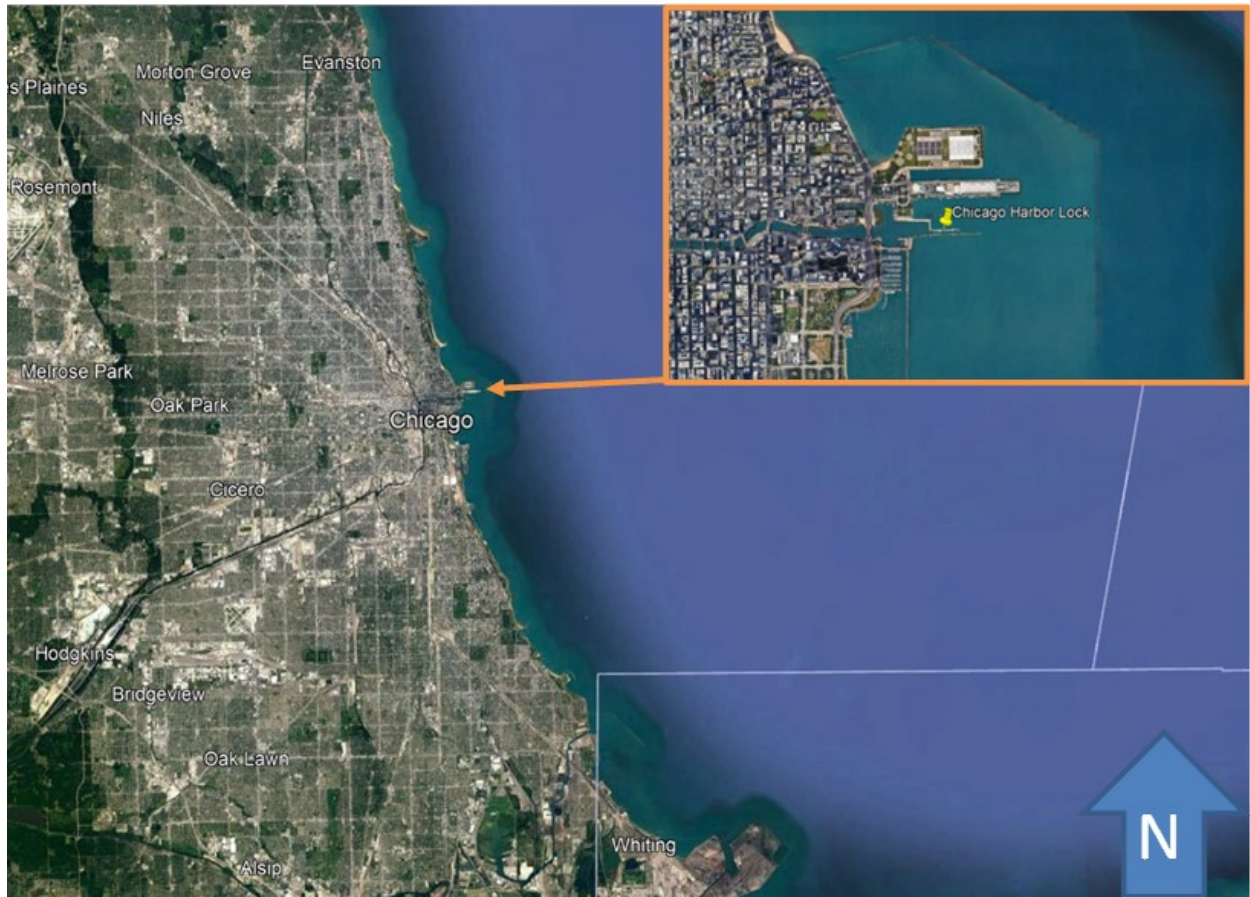
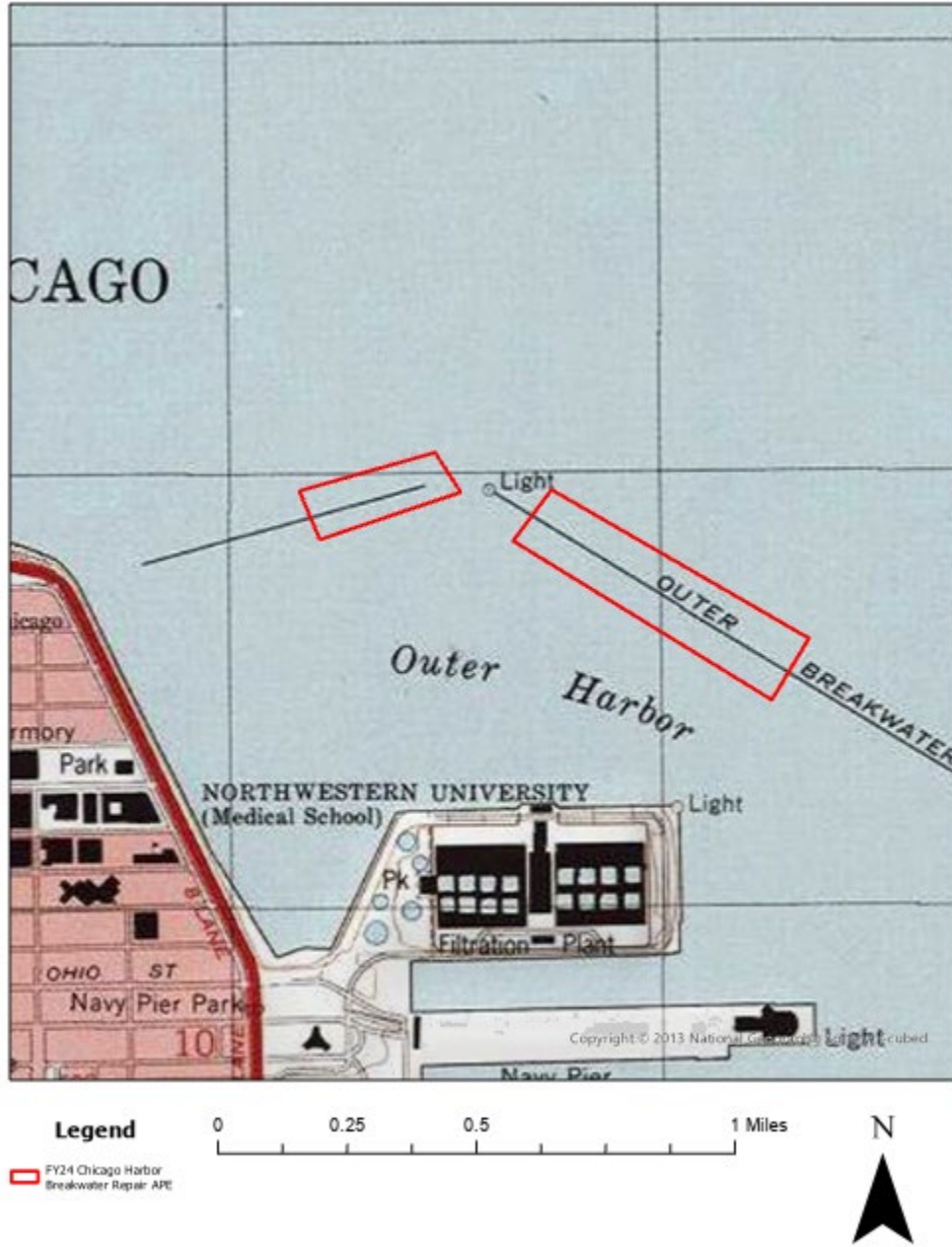


Figure 2. Project APE

FY24 Chicago Harbor Breakwater Repair Project APE





**Cook County
Chicago**

**USACE, Repairs to Breakwater, Chicago Harbor, Section:10-Township:39N-Range:14E
SHPO Log #009050224**

August 15, 2024

**Alex Hoxsie
U.S. Army Corps of Engineers, Chicago District
231 S. LaSalle St., Suite 1500
Chicago, IL 60604**

Dear Mr. Hoxsie:

Thank you for your submission of repairs to Chicago Harbor breakwaters (SHPO log # 009050224), which we received on 7/15/24, and for the 90% plans that we received on 8/12/24. Our comments are required by Section 106 of the [National Historic Preservation Act of 1966](#), as amended, 54 U.S.C. § 306108, and its [implementing regulations](#) (36 CFR Part 800) (Act).

On 8/24/22, this office determined that the breakwaters in and around Chicago Harbor are eligible for listing to the National Register of Historic Places (NRHP). Additionally, our staff have determined that no historic archaeological properties are known to exist within the project area. However, if any archaeological materials are encountered during construction, this office must be notified. This letter is not a clearance for purposes of the [Illinois Human Remains Protection Act](#) (20 ILCS 3440).

This project meets the Secretary of the Interior's Standards for Rehabilitation (Standards) and will not adversely affect any historic resources.

If the project's scope of work changes from that which has been submitted to and approved by this office, you must email those changes to Anthony Rubano (Anthony.Rubano@Illinois.gov) for review and comment. Failure to submit project changes for review and comment may result in an adverse effect determination.

Sincerely,

**Carey L. Mayer, AIA
Deputy State Historic Preservation Officer**

**c: Ashley Dailide, U.S. Army Corps of Engineers, Chicago District
Ryan Johnson, Department of the Army**



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Chicago Ecological Service Field Office
U.s. Fish And Wildlife Service Chicago Ecological Services Office
230 South Dearborn St., Suite 2938
Chicago, IL 60604-1507
Phone: (312) 485-9337

In Reply Refer To:

08/15/2024 18:46:08 UTC

Project Code: 2024-0097750

Project Name: Chicago Harbor Breakwater and Shore Arm Repairs FY24

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

Additionally, please note that on March 23, 2022, the Service published a proposal to reclassify the northern long-eared bat (NLEB) as endangered under the Endangered Species Act. The U.S. District Court for the District of Columbia has ordered the Service to complete a new final listing

determination for the NLEB by November 2022 (Case 1:15-cv-00477, March 1, 2021). The bat, currently listed as threatened, faces extinction due to the range-wide impacts of white-nose syndrome (WNS), a deadly fungal disease affecting cave-dwelling bats across the continent. The proposed reclassification, if finalized, would remove the current 4(d) rule for the NLEB, as these rules may be applied only to threatened species. Depending on the type of effects a project has on NLEB, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective (anticipated to occur by December 30, 2022). If your project may result in incidental take of NLEB after the new listing goes into effect this will first need to be addressed in an updated consultation that includes an Incidental Take Statement. If your project may require re-initiation of consultation, please contact our office for additional guidance.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf>

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see <https://www.fws.gov/program/migratory-bird-permit/what-we-do>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and

their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see <https://www.fws.gov/library/collections/threats-birds>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/partner/council-conservation-migratory-birds>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Chicago Ecological Service Field Office

U.s. Fish And Wildlife Service Chicago Ecological Services Office
230 South Dearborn St., Suite 2938
Chicago, IL 60604-1507
(312) 485-9337

PROJECT SUMMARY

Project Code: 2024-0097750

Project Name: Chicago Harbor Breakwater and Shore Arm Repairs FY24

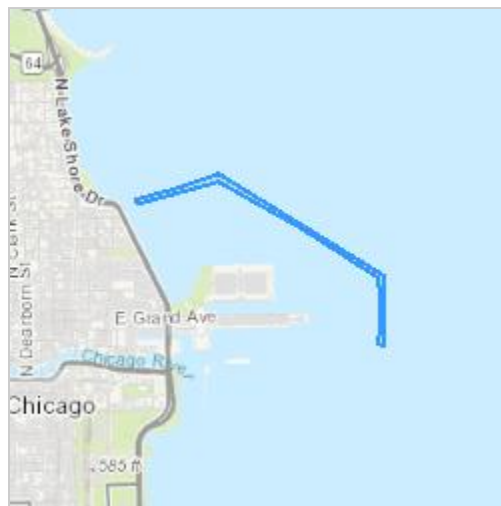
Project Type: Breakwaters - Maintenance/Modification

Project Description: The U.S Army Corps of Engineers, Chicago District (USACE) will be preparing a National Environmental Policy Act (NEPA) document on the impacts associated with proposed repairs to two breakwaters within the Chicago Harbor in the City of Chicago, Cook County, Illinois. Repairs include grouting under the concrete cap of the exterior breakwater and encapsulating the shore arm extension breakwater with stone, restoring it to its original design height. USACE is working to support the aging breakwater structures with stabilization measures required to maintain structural viability. The project limits for the effort are entirely within the Chicago Harbor (Enclosure 1).

The proposed project would involve drilling holes in the exterior concrete cap and injecting grout to fill voids in the breakwater structure from station 18+88, moving west towards station 00+96 for a total of 7,350 feet, or as funding allows. In addition, the proposed project would involve placing armor stone from station 3+00 to 8+75 for a total of 575 feet, or as funding allows.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@41.89727325,-87.59500167565157,14z>



Counties: Cook County, Illinois

ENDANGERED SPECIES ACT SPECIES

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

BIRDS

NAME	STATUS
Piping Plover <i>Charadrius melodus</i> Population: [Great Lakes watershed DPS] - Great Lakes, watershed in States of IL, IN, MI, MN, NY, OH, PA, and WI and Canada (Ont.) There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Endangered
Rufa Red Knot <i>Calidris canutus rufa</i> There is proposed critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened

REPTILES

NAME	STATUS
Eastern Massasauga (=rattlesnake) <i>Sistrurus catenatus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2202	Threatened

INSECTS

NAME	STATUS
Hine's Emerald Dragonfly <i>Somatochlora hineana</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7877	Endangered
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

FLOWERING PLANTS

NAME	STATUS
Eastern Prairie Fringed Orchid <i>Platanthera leucophaea</i> No critical habitat has been designated for this species. This species only needs to be considered under the following conditions: <ul style="list-style-type: none"> ▪ Follow the guidance provided at https://www.fws.gov/midwest/endangered/section7/s7process/plants/epfos7guide.html Species profile: https://ecos.fws.gov/ecp/species/601	Threatened
Leafy Prairie-clover <i>Dalea foliosa</i> Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5498	Endangered

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Army Corps of Engineers
Name: Ryan Johnson
Address: 231 South LaSalle Street
Address Line 2: Suite 1500
City: Chicago
State: IL
Zip: 60604
Email: ryan.a.johnson@usace.army.mil
Phone: 3127182856



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, CHICAGO DISTRICT
231 SOUTH LASALLE STREET, SUITE 1500
CHICAGO IL 60604

July 02, 2024

Environmental & Cultural Resources Section
Planning Branch

Cody Eskew
IDNR Coastal Management Program
Michael A. Bilandic Building
160 N. LaSalle Street, Suite 703
Chicago, Illinois 60601
Cody.eskew@Illinois.gov

Dear Mr. Eskew:

The U.S Army Corps of Engineers, Chicago District (USACE) will be preparing a National Environmental Policy Act (NEPA) document on the impacts associated with proposed repairs to two breakwaters within the Chicago Harbor in the City of Chicago, Cook County, Illinois. Repairs include grouting under the concrete cap of the exterior breakwater and encapsulating the shore arm extension breakwater with stone, restoring it to its original design height. USACE is working to support the aging breakwater structures with stabilization measures required to maintain structural viability. The project limits for the effort are entirely within the Chicago Harbor (Enclosure).

The proposed project would involve drilling holes in the exterior concrete cap and injecting grout to fill voids in the breakwater structure from station 18+88, moving west towards station 00+96 for a total of 7,350 feet, or as funding allows. In addition, the proposed project would involve placing armor stone to encapsulate the shore arm extension breakwater from station 21+00 to 15+25 for a total of 575 feet, or as funding allows.

The proposed activity will not negatively impact coastal use or resources and it complies with Illinois' approved coastal management program and will be conducted in a manner consistent with such policies. The Chicago District is requesting concurrence with this federal consistency determination from the IDNR/CMP.

Questions and communications can be submitted to Mr. Ryan Johnson by email at ryan.a.johnson@usace.army.mil or by phone at (312) 846-5559.

Sincerely,

Alex Hoxsie
Chief, Environmental & Cultural Resources
Planning Branch

Enclosure

Chicago Harbor Exterior Breakwater and Shore Arm Rubble Mound Encapsulation Enclosure – Maps and Drawings

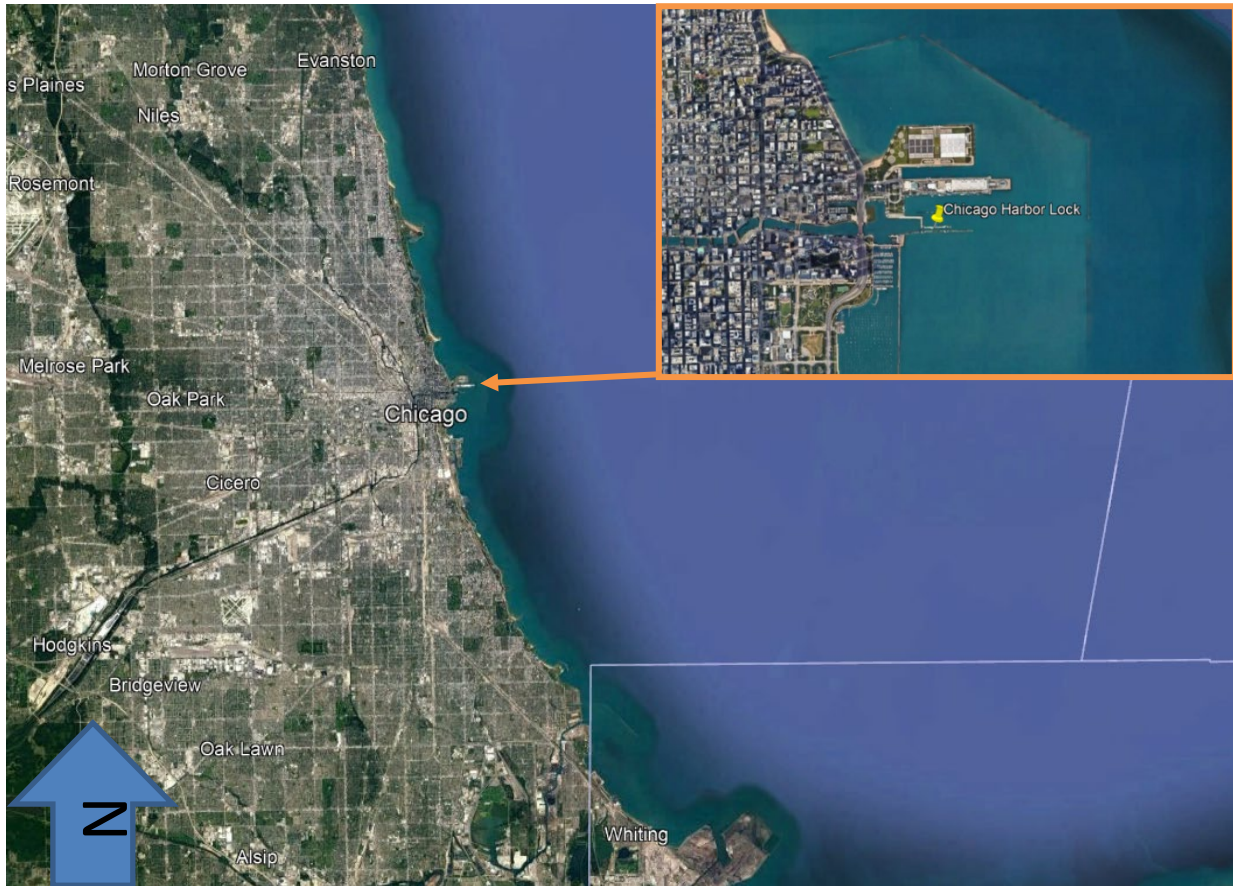


Figure 1. Overhead view of Chicago Harbor and Lock in relation to Chicago. (Google 2024)



Figure 2. Chicago Harbor Shore Arm Extension and Exterior Breakwaters

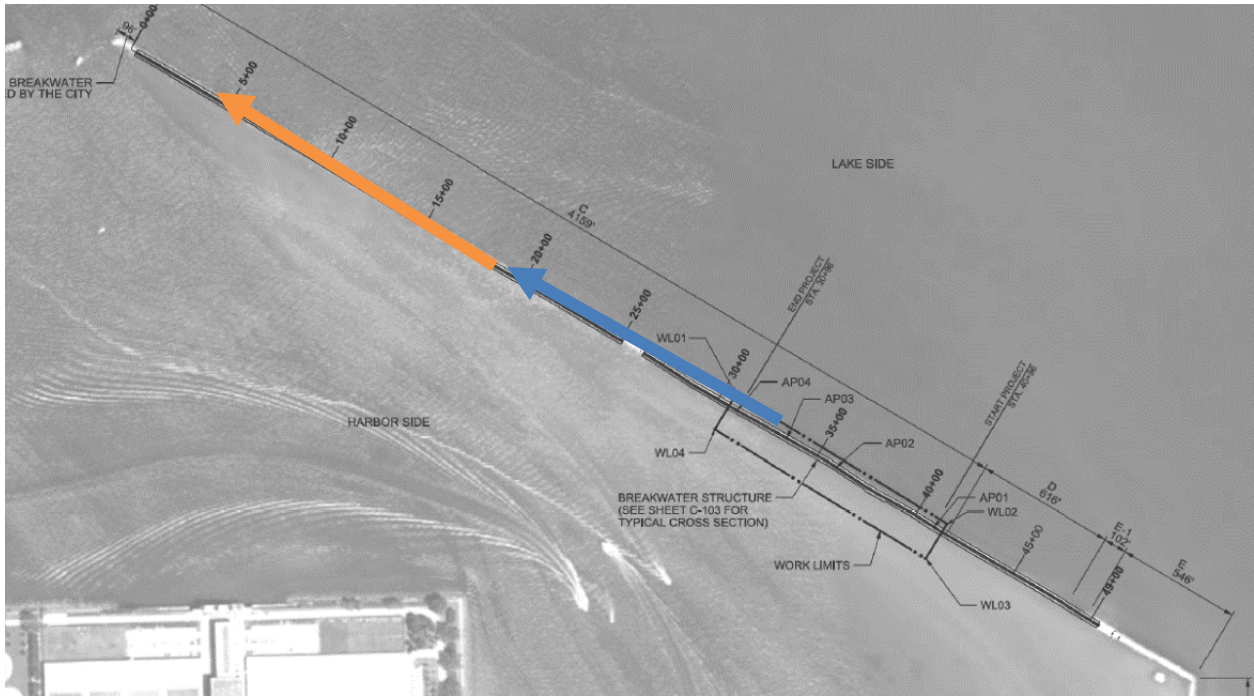


Figure 3. Chicago Harbor Outer Breakwater intended work, previous work depicted by blue arrow and intended work depicted by orange arrow (adapted from previous contract documents)

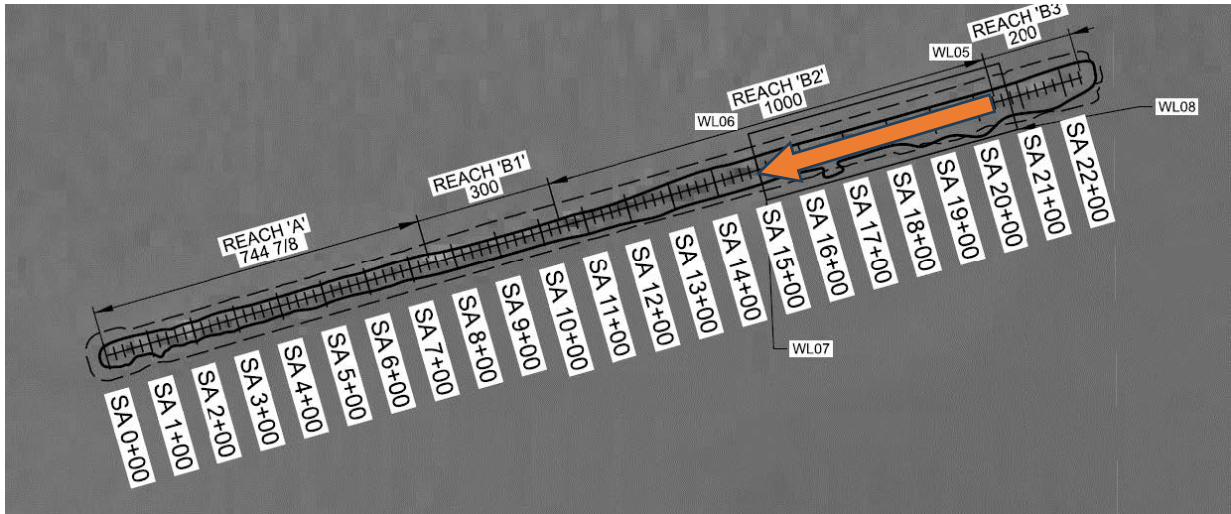


Figure 4. Chicago Harbor Shore Arm Extension Breakwater intended work, intended work depicted by orange arrow (adapted from previous contract documents)

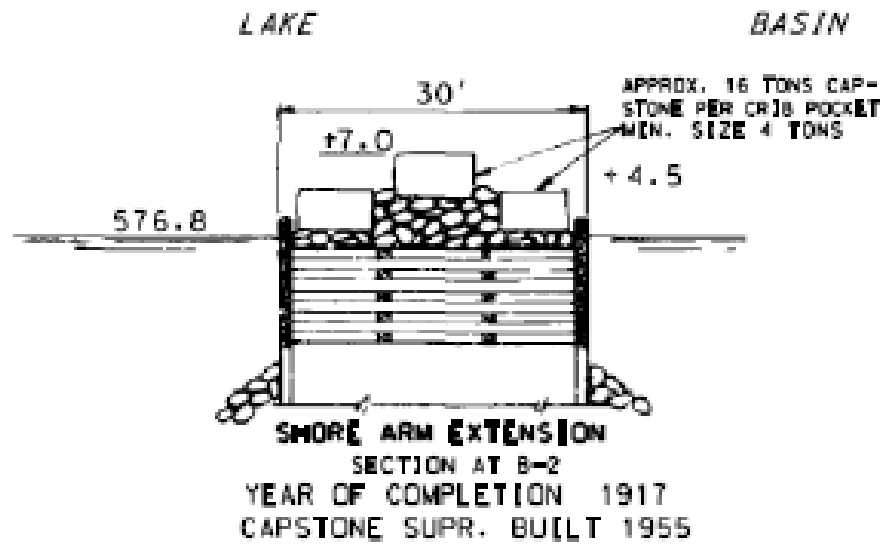


Figure 5. As-built of Reach B-2 showing current capstone cap

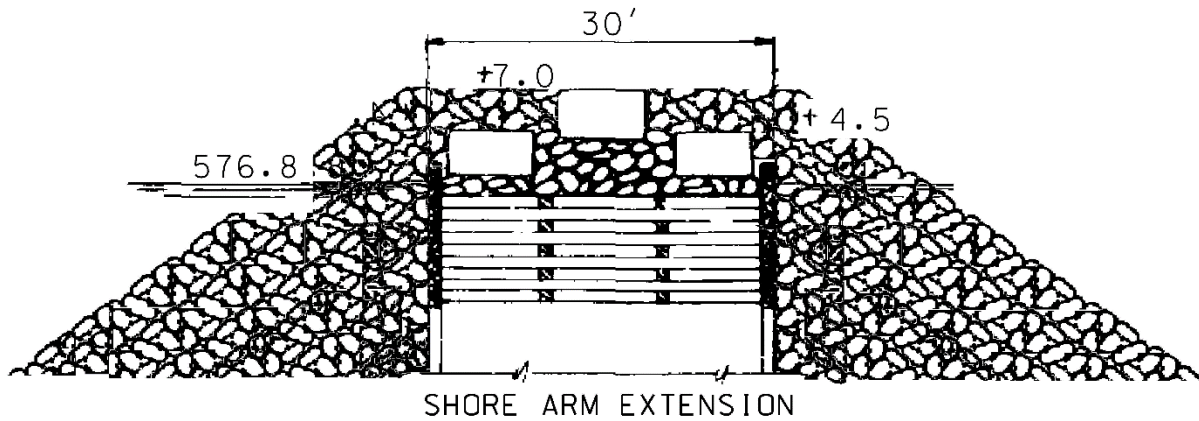


Figure 6. Schematic cross-section drawing showing intended rubble-mound encapsulation of existing timber crib and capstone structure

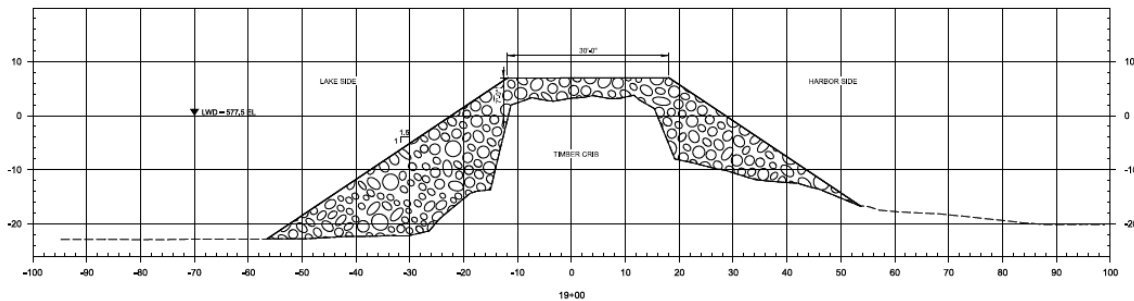


Figure 7: Cross-section showing proposed footprint increase of alternative 1 at station 19+00.



JB Pritzker, Governor

Natalie Phelps Finnie, Illinois Department of Natural Resources Director

160 N. LaSalle St., Suite S-703 • Chicago, Illinois 60601 • 312-814-1405 • www.dnr.illinois.gov/cmp

September 3, 2024

Alex Hoxsie
Department of the Army
US Army Corps of Engineers, Chicago District
231 South LaSalle Street, Suite 1500
Chicago, IL 60604

RE: IFC2024011 by U.S. Army Corps of Engineers for Repair of two Chicago Harbor breakwaters in Chicago, IL

Dear Mr. Hoxsie,

Thank you for the federal consistency certificate dated July 2, 2024 for the above referenced project. Department staff has reviewed the determination and concur that the proposed activity complies with the enforceable policies of the ICMP and will be conducted in a manner consistent with the ICMP.

If you have any questions, feel free to contact me at (440) 773-5251 or cody.eskew@illinois.gov.

Sincerely,

A handwritten signature in black ink that reads "Cody Eskew".

Cody Eskew

Applicant: US Army Corps of Engineers
Contact: Ryan Johnson
Address: 231 S. LaSalle Street
Suite 1500
Chicago, IL 60604

IDNR Project Number: 2415681
Date: 05/31/2024

Project: Chicago Harbor Breakwater Repairs - FY24
Address: Chicago Harbor, Chicago

Description: The U.S Army Corps of Engineers, Chicago District (USACE) will be preparing a National Environmental Policy Act (NEPA) document on the impacts associated with proposed repairs to two breakwaters within the Chicago Harbor in the City of Chicago, Cook County, Illinois. Repairs include grouting under the concrete cap of the exterior breakwater and encapsulating the shore arm extension breakwater with stone, restoring it to its original design height. USACE is working to support the aging breakwater structures with stabilization measures required to maintain structural viability. The project limits for the effort are entirely within the Chicago Harbor (Enclosure 1).

The proposed project would involve drilling holes in the exterior concrete cap and injecting grout to fill voids in the breakwater structure from station 18+88, moving west towards station 00+96 for a total of 7,350 feet, or as funding allows. In addition, the proposed project would involve placing armor stone from station 3+00 to 8+75 for a total of 575 feet, or as funding allows.

Natural Resource Review Results

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

- Black-Crowned Night Heron (*Nycticorax nycticorax*)
- Mottled Sculpin (*Cottus bairdii*)
- Mudpuppy (*Necturus maculosus*)

An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.

Location

The applicant is responsible for the accuracy of the location submitted for the project.



IL Department of Natural Resources
Contact
Bradley Hayes
217-785-5500
Division of Ecosystems & Environment

Government Jurisdiction
U.S. Army Corps of Engineers

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

Terms of Use

By using this website, you acknowledge that you have read and agree to these terms. These terms may be revised by IDNR as necessary. If you continue to use the EcoCAT application after we post changes to these terms, it will mean that you accept such changes. If at any time you do not accept the Terms of Use, you may not continue to use the website.

1. The IDNR EcoCAT website was developed so that units of local government, state agencies and the public could request information or begin natural resource consultations on-line for the Illinois Endangered Species Protection Act, Illinois Natural Areas Preservation Act, and Illinois Interagency Wetland Policy Act. EcoCAT uses databases, Geographic Information System mapping, and a set of programmed decision rules to determine if proposed actions are in the vicinity of protected natural resources. By indicating your agreement to the Terms of Use for this application, you warrant that you will not use this web site for any other purpose.
2. Unauthorized attempts to upload, download, or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act.
3. IDNR reserves the right to enhance, modify, alter, or suspend the website at any time without notice, or to terminate or restrict access.

Security

EcoCAT operates on a state of Illinois computer system. We may use software to monitor traffic and to identify unauthorized attempts to upload, download, or change information, to cause harm or otherwise to damage this site. Unauthorized attempts to upload, download, or change information on this server is strictly prohibited by law.

Unauthorized use, tampering with or modification of this system, including supporting hardware or software, may subject the violator to criminal and civil penalties. In the event of unauthorized intrusion, all relevant information regarding possible violation of law may be provided to law enforcement officials.

Privacy

EcoCAT generates a public record subject to disclosure under the Freedom of Information Act. Otherwise, IDNR uses the information submitted to EcoCAT solely for internal tracking purposes.



Illinois
Department of
**Natural
Resources**

JB Pritzker, Governor • Natalie Phelps Finnie, Director
One Natural Resources Way • Springfield, Illinois 62702-1271

www.dnr.illinois.gov

June 18, 2024

Ryan Johnson
Biologist
231 S. LaSalle Street
Suite 1500
Chicago, IL 60604

**RE: Chicago Harbor Breakwater Repairs - FY24
Consultation Program
EcoCAT Review #2415681
Cook County**

Dear Mr. Johnson:

The Department has received your submission for this project for the purposes of consultation pursuant to the *Illinois Endangered Species Protection Act* [520 ILCS 10/11], the *Illinois Natural Areas Preservation Act* [525 ILCS 30/17], and Title 17 *Illinois Administrative Code* Part 1075.

The proposed action consists of the preparation of a National Environmental Policy Act (NEPA) document on the impacts associated with proposed repairs to two breakwaters within the Chicago Harbor in the City of Chicago, Cook County, Illinois. Repairs include grouting under the concrete cap of the exterior breakwater and encapsulating the shore arm extension breakwater with stone, restoring it to its original design height. USACE is working to support the aging breakwater structures with stabilization measures required to maintain structural viability. The project limits for the effort are entirely within the Chicago Harbor (Enclosure 1).

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

State Threatened or Endangered Species

Black-crowned Night Heron (*Nycticorax nycticorax*)

Mottled Sculpin (*Cottus bairdii*)

Mudpuppy (*Necturus maculosus*)

Due to the project scope and proximity to protected resources, the Department offers the following comments and recommends the following actions be taken to avoid adversely impacting listed species in the vicinity of the project:

Black-crowned Night Heron & Mottled Sculpin

The Department has determined that adverse impacts to these species are unlikely.

Mudpuppy

EcoCAT has indicated records for the state-listed Mudpuppy in the vicinity of the project area. Due to the known occurrence of these species in the project area, the Department recommends:

- Avoiding the Mudpuppy period of high activity in Lake Michigan by restricting work to April - November.
- USACE consults with the Department's Endangered Species Program to identify additional measures to avoid, minimize, and mitigate take of the state-threatened Mudpuppy, as per the Department's previous agreement with USACE's Chicago Harbor Lock repair project. The Department and USACE will codevelop a strategy to conserve Mudpuppy and provide benefit to the species.

Given the above recommendations are adopted, the Department has determined that impacts to these protected resources are unlikely. The Department has determined impacts to other protected resources in the vicinity of the project location are also unlikely.

In accordance with 17 Ill. Adm. Code 1075.40(h), please notify the Department of your decision regarding these recommendations.

Consultation on the part of the Department is closed, unless the applicant desires additional information or advice related to this proposal. Consultation for Part 1075 is valid for two years unless new information becomes available which was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the action has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database at the time of the project submittal and should not be regarded as a final statement on the project being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are unexpectedly encountered during the project's implementation, the applicant must comply with the applicable statutes and regulations.

This letter does not serve as permission to take any listed or endangered species. As a reminder, no take of an endangered species is permitted without an Incidental Take Authorization or the required permits. Anyone who takes a listed or endangered species without an Incidental Take Authorization or required permit may be subject to criminal and/or civil penalties pursuant to the *Illinois Endangered Species Act*, the *Fish and Aquatic Life Act*, the *Wildlife Code* and other applicable authority.

The Department also offers the following conservation measures be considered to help protect native wildlife and enhance natural areas in the project area:

- If erosion control blanket is to be used, the Department also recommends that wildlife-friendly plastic-free blanket be used around wetlands and adjacent to natural areas, if not feasible to implement project wide, to prevent the entanglement of native wildlife.

Please contact me with any questions about this review.

Sincerely,



Bradley Hayes
Manager, Impact Assessment Section
Division of Real Estate Services and Consultation
Office of Realty & Capital Planning
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702
Bradley.Hayes@Illinois.gov
Phone: (217) 782-0031

From: [Gove, Darren](#)
To: [Dove, Margaret A CIV USARMY CELRC \(USA\)](#)
Cc: [Saichek, Richard E CIV USARMY CELRC \(USA\)](#)
Subject: [Non-DoD Source] RE: Use of LMRGP for repairs in Chicago Harbor
Date: Wednesday, August 14, 2024 3:04:54 PM

Hi Margaret,

IEPA recommends a thorough consideration of potential water quality impacts from the use of the cementitious grout and inclusion of periodic surface water sampling at down-current locations near the breakwater during grout use to determine if pollutant leaching and subsequent mixing with void water occurs during these activities. Metals and other analytes determined candidates for potential pollutant loading should be tested for at appropriate concentrations to determine compliance with Lake Michigan basin water quality standards, but at a minimum TSS, TDS, and pH must be analyzed. Provided Corps addresses these concerns we have no objection to proceeding as proposed.

Thanks,

Darren Gove

From: Dove, Margaret A CIV USARMY CELRC (USA) <Margaret.A.Dove@usace.army.mil>
Sent: Tuesday, August 13, 2024 2:12 PM
To: Gove, Darren <Darren.Gove@Illinois.gov>
Cc: Saichek, Richard E CIV USARMY CELRC (USA) <Richard.E.Saichek@usace.army.mil>
Subject: [External] Use of LMRGP for repairs in Chicago Harbor

Hi Darren –

Chicago District is preparing to repair two Chicago Harbor breakwaters in the City of Chicago, Illinois. Repairs include grouting under the concrete cap of the exterior breakwater by drilling holes in the exterior cap and injecting grout to fill voids for a total of 7,350 feet, or as funding allows, and encapsulating the shore arm extension by placing armor stone for a total of 575 feet, or as funding allows. This will restore the breakwater to its original design height. USACE is working to support the aging breakwater structures with stabilization measures required to maintain structural viability.

The repairs will not negatively impact coastal use or resources and it complies with Illinois' approved coastal management program. The comment period on IFC2024011 closes August 23, 2024. Scoping letters were mailed earlier in the summer, dated April 30, 2024.

The work will be conducted consistent with the Lake Michigan Regional General Permit (LMRGP), under authorized activity category *“Maintenance of existing public harbors, public access facilities, and navigational features required for maintaining existing function”*. All conditions of the 401 water quality certification will be implemented in order to minimize adverse impacts to water quality.

Comments can be submitted to Margaret Dove by email margaret.a.dove@usace.army.mil or by phone (312) 846-5502.

Thank you
--Margaret

Margaret Dove
Environmental Engineer
U.S. Army Corps of Engineers, Chicago District
231 S. LaSalle St, Suite 1500
Chicago, IL 60604
Office: (312) 846-5502

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Chicago Harbor Exterior Breakwater and Shore Arm Rubble Mound Encapsulation
NOA Letter Enclosure 1 – Distribution List

Agencies

Ms. Elizabeth Peloso
U.S. Environmental Protection Agency

U.S. Coast Guard

Mr. Kraig McPeck
U.S. Fish & Wildlife Service

Mr Shawn Citron
U.S. Fish & Wildlife Service

Mr. Darren Gove
Illinois Environmental Protection Agency

Ms. C.J. Wallace
Illinois State Historic Preservation Office

Mr. Cody Eskew
Illinois Department of Natural Resources

Mr. Bradley Hayes
Illinois Department of Natural Resources

Ms. Natalie Phelps Finnie
Illinois Department of Natural Resources

Mr. Loren Wobig
Illinois Department of Natural Resources

Ms. Brittany Strong
Chicago Office of Emergency Management &
Communications

Ms. Kari Steele
Metropolitan Water Reclamation District of
Greater Chicago

Mr. Kerl LaJeune
Public Building Commission of Chicago

Ms. Ciere Boatright
Chicago Department of Planning and
Development

Mr. Jason Lach
Chicago Fire Department

Elected Officials

Governor JB Pritzker

Senator Tammy Duckworth
U.S. Senate

Senator Dick Durbin
U.S. Senate

Representative Danny Davis
U.S. House of Representatives

Alderman Brendan Reilly
Chicago City Council

Stakeholders

Great Lakes Boating Federation

Mr. Scott Reimer
Underwater Archaeological Society of Chicago

Mr. Dan Russell
The Chicago Harbor Safety Committee

Mr. David Brezina
The Chicago Harbor Safety Committee

Mr. Justin Lampert
American Waterways Operators

Mr. Bradley Trammell
American Waterways Operators

Ms. Lynn Muench
American Waterways Operators

National Material Trading LLC

Ms. Mary Barton
Alliance for the Great Lakes

Tribal Organizations

Chairman Kenneth Meshigaud
Hannahville Potawatomi Tribal Council

Ms. Diane Hunter
Miami Tribe of Oklahoma

Chicago Harbor Exterior Breakwater and Shore Arm Rubble Mound Encapsulation
NOA Letter Enclosure 1 – Distribution List

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Miami Tribe of Oklahoma

Chairperson Joseph Rupnick
Prairie Band Potawatomi Tribal Council

Mr. Raphael Wahwassuck
Prairie Band Potawatomi Nation

Mr. Pam Wesley
Kickapoo Tribe of Oklahoma

Chairman Darwin Kaskaske
Kickapoo Tribe of Oklahoma

Mr. David Grignon
Menominee Indian Tribe of Wisconsin

Chairperson Gena Kakkak
Menominee Indian Tribe of Wisconsin

Mr. Blake Norton
Citizen Potawatomi Executive Council

Chairperson John Barrett
Citizen Potawatomi Executive Council

Chairperson James Crawford
Forest County Potawatomi Executive Council

Mr. Olivia Nunway
Forest County Potawatomi Executive Council

Chairperson Regina Gasco-Bentley
Little Traverse Bay Bands of Odawa Indians,
Michigan

Ms. Melissa Wiatrolik
Little Traverse Bay Bands of Odawa Indians,
Michigan

Chairperson Gail Cheatham
Kickapoo Tribe of Indians of the Kickapoo
Reservation in Kansas

Draft Appendix B
Section 404(b)(1) Evaluation
Chicago Harbor Breakwater Repairs
Chicago, Illinois



US Army Corps of Engineers
Chicago District

September 2024

Section 404(b)(1) Evaluation

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Section 404(b)(1) Evaluation

1.0 Project Description

1.1 Location

The Chicago Harbor Breakwater is found on the southwestern Lake Michigan shoreline at the mouth of the Chicago River, as shown in Figure 1.

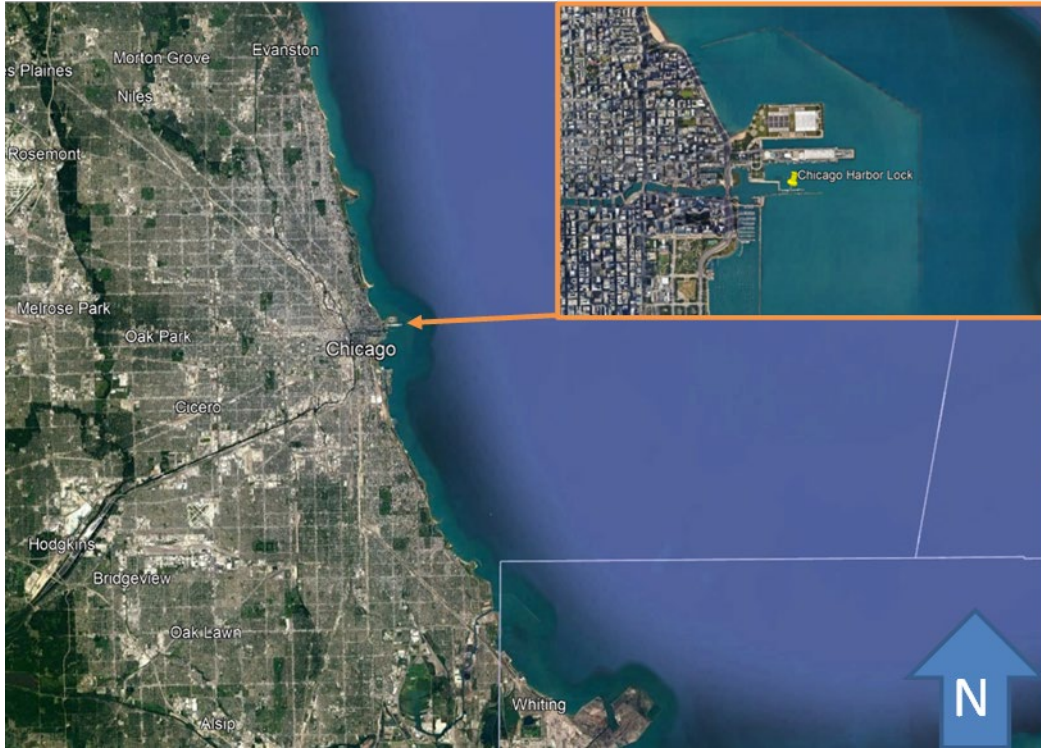


Figure 1: Chicago Harbor area.

1.2 General Description

The breakwater structure provides protection for several important developments along the downtown Chicago shoreline including the Chicago Harbor Lock, Navy Pier, and the Jardine Water Purification Plant, which provides water for roughly 60 percent of the Chicago metropolitan area.

Initial construction of the Chicago Harbor breakwater was completed in 1889 consisting of a 5,321-foot north breakwater with a 2,250-foot shore arm extension. A 5,321-foot southward extension was completed in 1917. A 2,717-foot southward extension was completed between 1920 and 1923, leaving a 582-foot channel between the north and south structures to the mouth of the Chicago River.

The Chicago Harbor breakwater system is a combination of several types of structures combined to provide protection to the Chicago Harbor infrastructure. The types of structures used in the breakwater system include:

1. filled timber crib founded on fill stone and capped with concrete,
2. stone-filled timber crib placed on a combination of fill stone and smaller timber cribs with submerged rubble-mound protection,
3. cut stone over a quarry run and stone chips core, and

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4. concrete caissons with stone fill and concrete cap.

During the mid-1960's water levels on Lake Michigan reached record lows exposing the upper levels of the timber cribs to air, causing dry-rot and wash-out of the stone material leaving large voids in the core of the structure. Low lake levels in the 1960's particularly degraded the part of the cribbing where the horizontal tie rod connections were. When lake levels (and their associated wave energy) were then high in the 1970's and 1980's, structural integrity was lost – the wood pilings broke at the tie rod connections allowing the stone to spill out, leading to settlement of the limestone capstone and some areas becoming indistinguishable from rubble-mound. As a result, concrete caps along several sections of the breakwater have experienced partial or full collapse and need repair to prevent further deterioration to the integrity of the structure. Portions of the breakwater have been stabilized through grouting methods in 2009, 2014, 2017, and 2022.

The exterior breakwater repair and shore arm encapsulation alternative proposes to 1) inject grout into the exterior breakwater to support the concrete cap by filling interstitial voids and stabilize the structure under the cap, and 2) place armor stone to encapsulate and bring the shore arm extension breakwater up to the design crest elevation.

The grout injection portion of the preferred alternative would include grouting northwestward from station 18+88 towards 00+96 until funds are exhausted, as shown in Figure 2. There is 96 feet of breakwater from 00+00 to 00+96 that is owned by the City of Chicago and would not be included in this work. Features would include a double row grout curtain along the top of the cap. The design team estimates approximately 12 cubic yards of grout per injection well based on previous grouting work on this breakwater. The extent and volume of grouting would be dependent on available funding. Some temporary grout containment measures will be used (placing choke stone throughout the toe-stone to prevent fugitive grout getting into the lake.

Holes would be drilled 4 or 6.5 inches in diameter in two rows along the cap. The holes would be grouted in two stages to fill voids immediately under the shoulder and the cap. Temporary casing would be used for the bottom stage (stage 1) and a surface packer for the top stage (stage 2). The hole spacing would be staggered on 10 to 15-foot centers. The outside (lake side) row would be drilled and grouted prior to the inside (harbor side) row. The final hole depth would be two feet below the base of the shoulder. The top of stage 1 would be set at the bottom of the shoulder and top of stage 2 would be level with the cap, as depicted in Figure 3.

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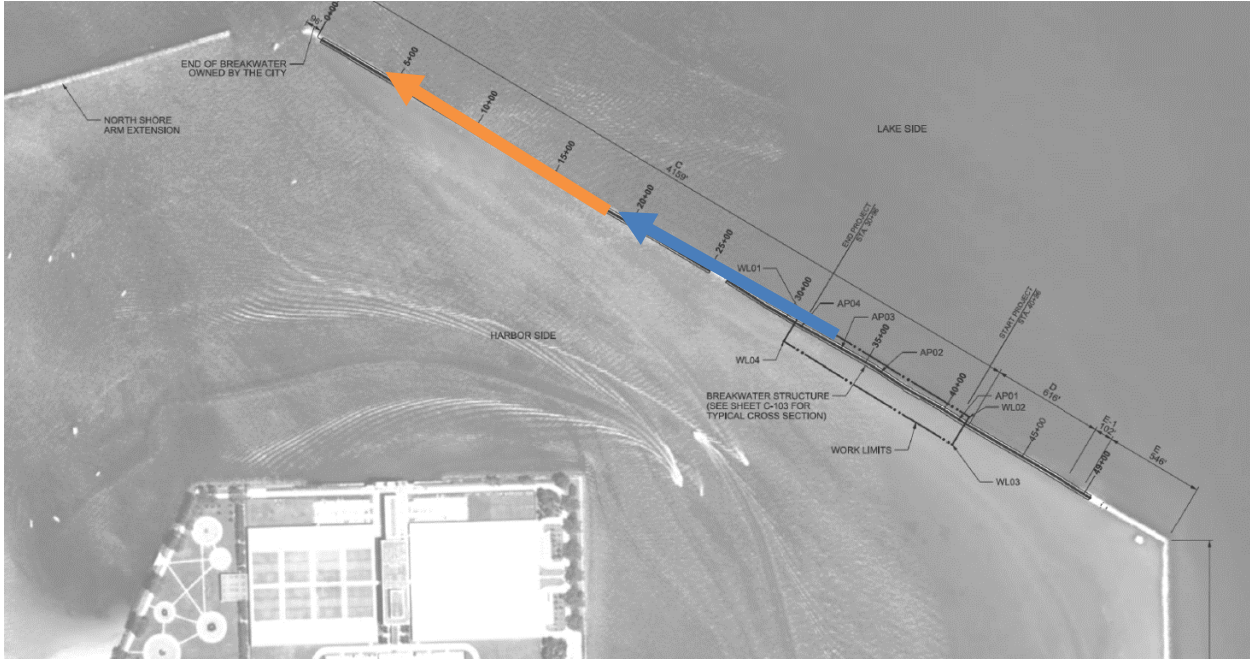


Figure 2: Exterior breakwater with previous work depicted in blue and proposed work shown in orange.

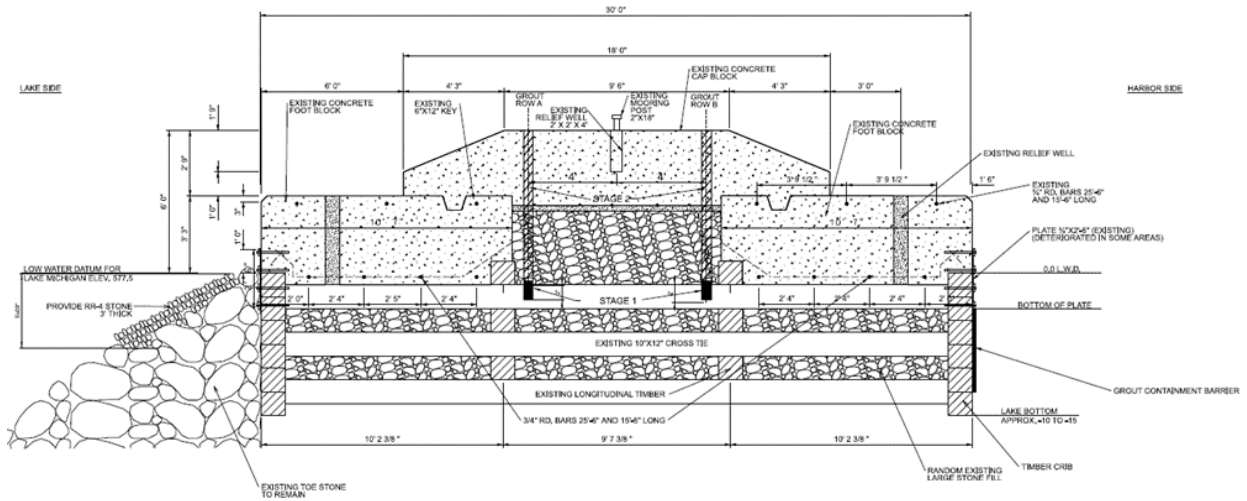


Figure 3: Typical cross section of existing structure.

The rubble-mound encapsulation of the shore arm extension breakwater would include placing armor stone over the B2 reach of the existing structure. Rubble-mound encapsulation would begin at the easternmost point of Reach B2 and continue westward for 140 feet from station 20+40 with three options for 20 additional feet each. (Figure 4). The intent would be to return the crest elevation to original design crest elevation by placing a rubble-mound breakwater over the existing structure (Figure 5). A drawing showing the encapsulation of the existing timber crib and concrete cap breakwater is shown below in Figure 6 and the expected increase in structure

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footprint is shown in Figure 7.

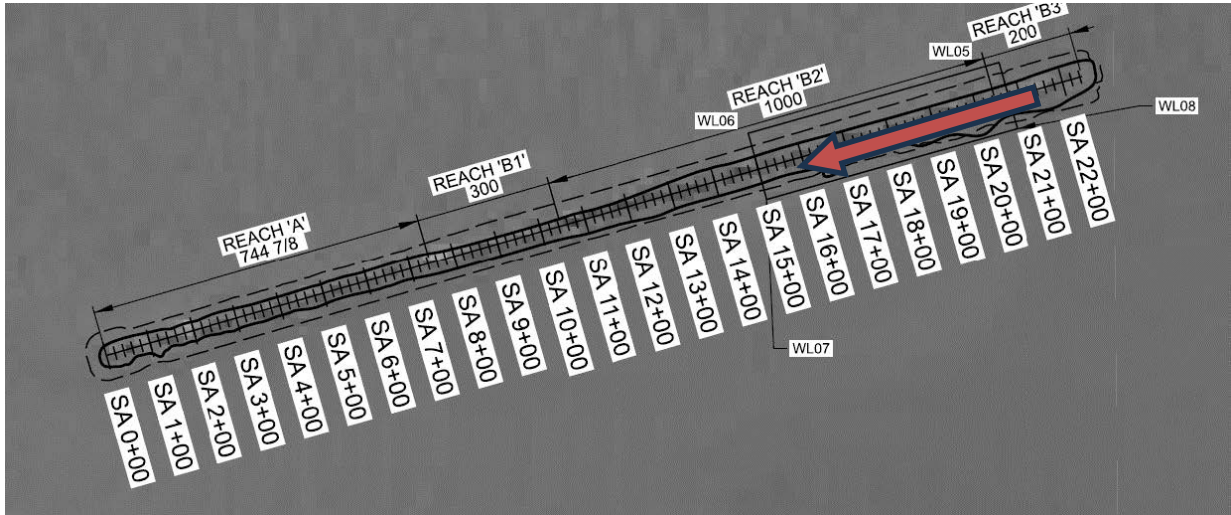


Figure 4: Shore arm extension with stations and orange arrow showing proposed work area.

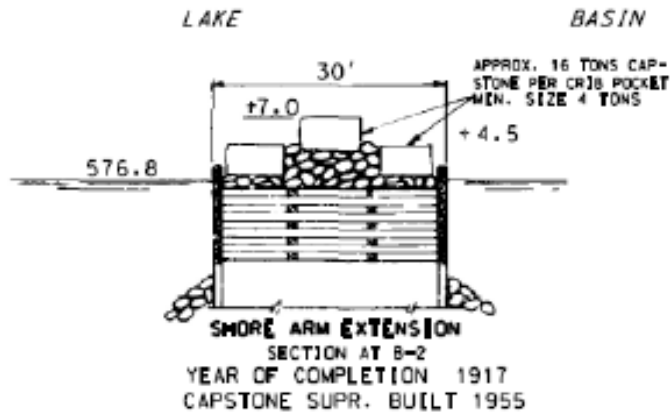


Figure 5: As-built of affected reach showing current capstone cap.

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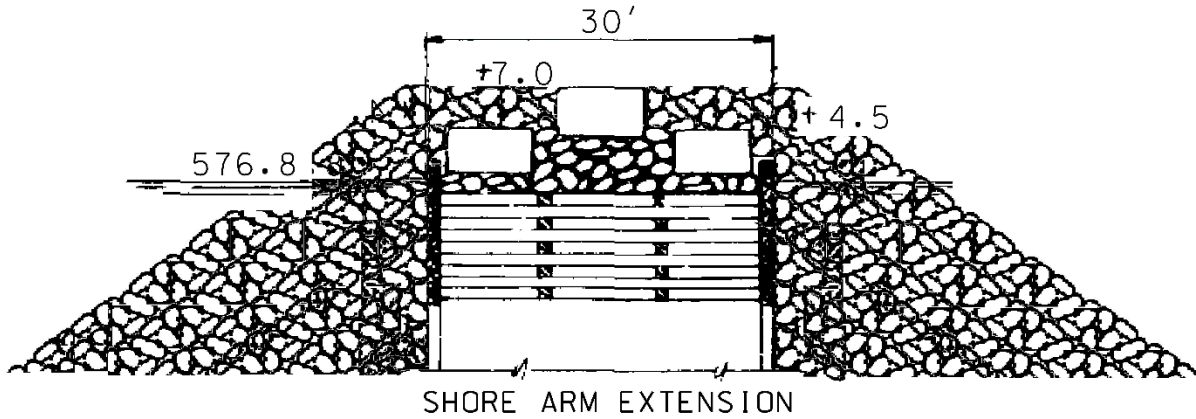


Figure 6: Cross-section showing intended rubble-mound encapsulation of existing timber crib and capstone structure.

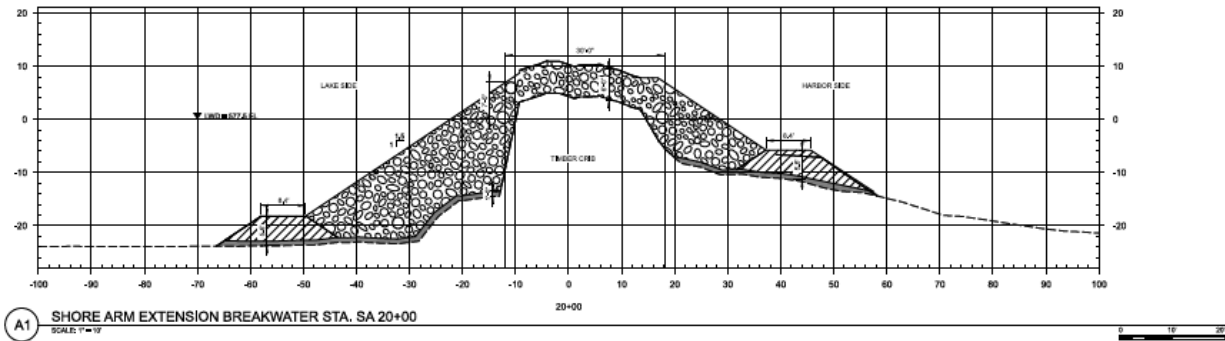


Figure 7: Cross-section showing proposed footprint increase of alternative 1 at station 20+00.

1.3 Authority and Purpose

The Chicago Harbor is authorized under the Rivers & Harbors Acts of 1870, 1880, 1912, 1919, and 1962. The authority permits the operation and maintenance of the federal project, including dredging and repair of the harbor's navigation and protection features.

The primary purpose of this federal action is to provide wave attenuation for the Chicago Harbor through maintenance and stabilization of the Chicago Harbor Exterior Breakwater and Shore Arm Extension.

1.4 Regulatory Considerations

Section 404 of the Clean Water Act contains the permit requirements for the discharge of dredged or fill material into the navigable waters of the United States. Although Section 404 authorizes the U.S. Army Corps of Engineers (USACE) to issue permits for the discharge of dredged or fill material, 33 Code of Federal Regulations [CFR] 336.1(a) explains that the USACE does not process and issue permits for its own activities. The USACE authorizes its own discharges of dredged or fill material by applying all applicable substantive legal requirements, including public notice, opportunity for public hearing, and application of the Section 404(b)(1) guidelines, which are described in 40 CFR 230.

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Under Section 401 of the Clean Water Act, a federal agency, such as USACE, may not conduct any activity that may result in any discharge into waters of the United States unless a certifying authority issues a Section 401 water quality certification verifying compliance with existing water quality requirements or waives the certification requirement. An individual water quality certification or waiver is required for activities that would result in the discharge of dredged or fill material, unless the discharge is for an activity where a general water quality certification has already been issued, often under a nationwide or regional permit.

The USACE's National Regulatory Program includes a Nationwide Permit Program (NWP) that provides effective protection for wetlands and other aquatic resources, while helping to improve the efficiency and administration of the regulatory program. NWPs have specific project limitations and conditions to ensure environmental effects are no more than minimal and that the aquatic environment is protected. Regional permits are issued by the District Engineer for a general category of activities having minor impacts that do not fall under the existing NWP authorization. The Lake Michigan Regional General Permit (LMRGP) is for activities located on the shoreline and offshore waters of Lake Michigan within the State of Illinois subject to regulation by USACE, Chicago District. LMRGP covers eight authorized activity categories including "*Maintenance of existing public harbors, public access facilities, and navigational features required for maintaining existing function*". This is further explained as "*Maintenance (repair, rehabilitation, or replacement) of any previously authorized, currently serviceable structure or fill, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or footprint may be permitted, provided the environmental impacts resulting from such repair, rehabilitation, or replacement are minimal. This includes changes in materials, construction techniques, or current construction codes or safety standards which are necessary to implement the repair, rehabilitation, or replacement.*" The proposed project is covered by the LMRGP and general conditions, pre-construction notification requirements, additional conditions, limitations, and restrictions in the general permit will be followed. Since the proposed project is covered by the LMRGP, water quality certification has already been granted.

1.5 General Description of Fill Materials

1.5.1 General Characteristics and Purpose of Material

Fill material for the exterior breakwater repair work would include a double row grout curtain along the top of the cap from station 18+88 towards 00+96 until funds are exhausted, as shown in Figure 2. The extent and volume of grouting would be dependent on available funding. The grout mix would be an Illinois Department of Transportation (IDOT) Controlled Low Strength Material (CSLM) with anti-washout additive to prevent fugitive grout. The grout refusal criteria would be volumetric per stage to limit potential escape of grout from the structure into the lake.

Grout containment would include a blanket of crushed angular stone (RR-4) on the lake side to blanket the existing stone protection and choke off migrating grout and silt fences would also be necessary. Grout containment, especially the stone blanket would only be placed to cover the area to be grouted on any given day as the crushed stone would likely not remain for very long due to wave action.

Fill material associated with the rubble mound encapsulation of the shore arm would include armor stone placement at a 1.5:1 slope (D50 = 6.0 feet [18.1 tons]). Placement would begin at the easternmost point of Reach B2 and continue westward for 575 feet from Station 21+00 to

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15+25 or until funds have been exhausted (Figure 4). The intent would be to return the crest elevation to original design crest elevation by placing a rubble-mound breakwater over the existing structure (Figure 6).

1.5.2 Quantity of Material

Table 1 and Table 2 show the quantity of grout and choke stone that would be placed during grouting activities. Table 3 shows the quantities of armor stone that would be placed during the shore arm encapsulation activities.

Table 1: Summary of grout quantities – based on 1,800 linear feet (LF) of breakwater to be grouted.

Feature	Per 100 LF	Base Total	Units
Holes (double row)	34	612	each
Drilling (double row)	180	3,226	LF
Drill Grout (based on avg. for previous contracts)	408	7,344	CY
Drill Grout (based on actual FY22 contract)	272	4,896	CY
Relief Hole Filling (based on FY22 contract)	12	60	CY

Table 2: Summary of choke stone quantities – based on 1,800 linear feet of breakwater to be grouted.

Stone Type	Quantity ^a	Units	Notes
RR-4 Stone Width	5	ft	Proposed placement of choke stone on the lake side
RR-4 Stone Depth	3	ft	Proposed width of choke stone on the lake side
RR-4 Stone on slope 2H:1V	11	ft	
Vol of RR-4 Stone over 100 LF	3,300	ft ³	
Vol of RA-4 Stone over 100 LF	122	CY	Vol conversion from CF to CY
RR-4 Stone Weight over 100 LF	182	ton	
Limestone Weight	165	PCF	
Limestone Void space	67	%	Assumed void space of solids
Limestone Weight incorporating VS	1.5	ton/CY	
Weight of stone per 100 LF	42	ton	Value calculated by multiplying 28 CY and 1.5 ton/CY
TOTAL WEIGHT OF STONE	756	ton	per 1,800 LF

^a ft (feet), ft³ (cubic feet), PCF (pounds per cubic feet), tons/CY (tons per cubic yard).

Table 3: Summary of rubble-mound quantities – based on 575 linear feet of breakwater to be covered.

Harbor Side		
Height	31	ft
Slope	1.5:1	
Width	46.3	ft
Total Volume	825,298	ft ³
	30,567	CY

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Total Weight	73,360	tons
Lake Side		
Height	31	ft
Slope	1.5:1	
Width	46.3	ft
Total Volume	825,298	ft ³
	30,567	CY
Total Weight	73,360	tons
Center		
Height	7	ft
Width	30	ft

1.5.3 Source of Material

The stone would be purchased from a commercial supplier.

1.5.4 Material Quality

The stone would be clean, inert materials free from fines and free of surface pollution.

1.6 Description of Proposed Discharge Site

1.6.1 Location

The proposed discharge site for placement of fill is the existing Chicago Harbor exterior breakwater (grouting) and the shore arm extension (rubble-mound encapsulation).

1.6.2 Size

The size of the proposed discharge site for grouting is approximately 7,350 linear feet of the existing exterior breakwater and the size of the proposed discharge site for the armor stone placement is approximately 575 linear feet of the shore arm extension and approximately 0.69 acres of adjacent lakebed along this reach.

1.6.3 Type of Site

The proposed discharge site is Lake Michigan.

1.6.4 Type of Habitat

The type of habitat within the proposed discharge site is freshwater lacustrine.

1.6.5 Timing and Duration of Discharge

The proposed placement may occur as early as spring 2025. As recommended by the Illinois Department of Natural Resources (IDNR) to avoid adverse impacts to the state listed common mudpuppy, work would be restricted to April – November.

1.7 Description of Placement Method

Grout would be placed by injection through drilled holes in the concrete breakwater cap. Armor stone would be delivered by barge and moved into place via barge-mounted crane.

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2.0 Factual Determinations

2.1 Physical Substrate Determinations

2.1.1 Substrate Elevation and Slope

For the purposes of this analysis, the toe of the proposed structure is based on projected slopes relative to encapsulation of the existing crest. To minimize costs, a slope of 1.5:1 was considered. Additional proposed slopes were preliminarily considered: a slope of 2:1 with full encapsulation and a slope of 1.5:1 constructed to the existing structure crest. Based on this analysis, the armor stone layer would project approximately 58 feet from the front of the crib.

A bathymetric survey was collected along the Chicago Harbor breakwater on 14 February 2024, its limits extending approximately 65 feet lakeward and 25 feet leeward of the structure's toe. The depth of the lakebed at the toe corresponding to a slope of 1.5 varies between 19.3 and 24.5 feet. For the purposes of this analysis, the deeper condition of 24.5 feet will be used.

The slope adjacent to this location is approximately 0.02 ft. Relative to low water datum (LWD) (577.5 ft International Great Lakes Datum [IGLD]85), this translates to a depth of 553.0 feet IGLD85.

2.1.2 Substrate Type

The placement site was previously Lake Michigan bottom (sand) and is currently an existing breakwater (armor stone) adjacent to the Chicago Harbor.

2.1.3 Fill Material Movement

There would be no significant movement of grout or armor stone once placed. Armor stone would be sized appropriately to remain where placed along the breakwater.

2.1.4 Physical Effects on Benthos

The proposed fill activity would cover currently exposed Lake Michigan bottom. The footprint of the existing breakwater would be expanded by approximately 0.69 acres.

2.1.5 Water Circulation, Fluctuation, and Salinity Determinations

Water

The proposed fill activity would have no significant long-term negative impacts to water chemistry, water clarity, color, odor, taste, dissolved gas levels, nutrients, or increased eutrophication. Only clean, quarried stone, free of surficial pollutants would be placed.

Salinity

The proposed fill activity is occurring in a freshwater environment so no impacts to salinity are expected.

Water Chemistry

The activity associated with the construction of the proposed breakwater repair is not expected to have any short-term or long-term impacts to water chemistry.

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Clarity

The proposed activity associated with construction of the proposed breakwater repair is expected to have minor temporary impacts to water clarity. Turbidity of the water is expected to increase during placement activities. The minor localized increase in turbidity, however, would be temporary in duration, lasting only as long as construction is occurring. Overall, the proposed activity would have less than significant short-term impacts to water clarity and no long-term impacts to water clarity.

Color

The proposed activity associated with construction of the proposed breakwater repair is not expected to have short-term or long-term impacts to water color.

Odor

The proposed activity associated with construction of the proposed breakwater repair is not expected to have any short-term or long-term impacts to water odor.

Taste

The proposed activity associated with construction of the proposed breakwater repair is not expected to have any short-term or long-term impacts to water taste.

Dissolved Gas Levels

The proposed activity associated with construction of the proposed breakwater repair is not expected to have any short-term or long-term impacts to dissolved gas concentrations within the water.

Nutrients

The proposed activity associated with construction of the proposed breakwater repair is not expected to have any short-term or long-term effects upon nutrient concentrations within the water.

Eutrophication

The proposed activity associated with construction of the proposed breakwater repair is not expected to cause any short-term or long-term increase in eutrophication.

2.1.6 Current Patterns and Circulation

Current Patterns and Flow

No changes are expected to current patterns or flow as a result of project implementation.

Velocity

No changes are expected to velocity as a result of project implementation.

Stratification

No changes are expected to stratification as a result of project implementation.

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Hydrologic Regime

No changes are expected to the current hydrologic regime as a result of project implementation.

2.1.7 Normal Water Level Fluctuations

No changes are expected to normal water level fluctuations as a result of project implementation.

2.1.8 Salinity Gradients

No changes are expected to current salinity gradients as a result of project implementation.

2.1.9 Other

The proposed activity associated with construction of the proposed breakwater repair is not expected to have any short-term or long-term effects to other system components not specifically defined above.

2.1.10 Actions that would be Taken to Minimize Impacts

No specific actions are included to minimize impacts to the physical substrate based on the findings outlined in this section.

2.2 Suspended Particulate/Turbidity Determinations

2.2.1 Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Fill Site

There would be minor increases in suspended particulates and turbidity levels in the immediate area of the proposed placement activity during construction of the breakwater repair, which would likely be less than a typical summer thunderstorm that generates adverse weather conditions such as high winds and waves as well as strong currents. The increase in turbidity is expected to be temporary and no long-term changes to turbidity are expected as a result of the proposed activity.

2.2.2 Effects on Chemical and Physical Properties of the Water Column

It is expected that there would be negligible effects to light penetration and no effects to dissolved oxygen levels during construction. The placement of armor stone would not introduce metal, organic toxins or other pathogens into the project area.

Light Penetration

The proposed activity associated with construction of the proposed breakwater repair is expected to have localized and temporary impacts to light penetration due to the temporary increase in turbidity during construction. However, these effects are expected to be temporary in duration. Overall, no significant long-term negative effects to light penetration are expected with the proposed construction activities.

Dissolved Oxygen

The proposed activity associated with construction of the proposed breakwater repair is not expected to have any significant long-term negative effects to dissolved oxygen concentrations within the water column.

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Toxic Metals and Organics

The proposed activity associated with construction of the proposed breakwater repair is not expected to introduce any toxic metals or organics to the project area.

Pathogens

The proposed activity associated with construction of the proposed breakwater repair is not expected to introduce any pathogens into the project area.

Aesthetics

The proposed activity associated with construction of the breakwater repair is not expected to have any significant long-term negative effects to aesthetics. Localized and temporary effects to aesthetics are expected during the construction period of the project, but these impacts are expected to be temporary in duration.

Other

No additional long-term negative impacts to system components not listed above are expected as a result of the proposed activity.

2.2.3 Effects on Biota

The Chicago Harbor Breakwater is located in Lake Michigan. Natural lacustrine functions and structure of the harbor have been affected by the construction of manmade coastal structures. Manmade structures, such as the breakwaters, do provide shelter for various aquatic organisms. The proposed activity would result in a minor increase in the extent of manmade rocky habitat and a minor decrease in the extent of natural lake bottom; it would not significantly change the fish and macroinvertebrate assemblages presently encountered at the project area.

Primary Production, Photosynthesis

The proposed activity associated with construction of the proposed breakwater repair is expected to have localized and temporary impacts to light penetration due to the temporary increase in turbidity during construction. This could in turn temporarily impact primary production and photosynthesis by submergent aquatic vegetation within the area. However, submergent aquatic vegetation has not been identified as currently existing within the project area, so no significant short- or long-term negative effects to primary production or photosynthesis are expected with the proposed construction activities.

Suspension/Filter Feeders

The proposed activity associated with breakwater repair is expected to have localized and temporary increases to turbidity which could potentially impact suspension/filter feeders. These impacts are expected to be temporary in duration. In addition, the placement of the armor stone could smother any benthic suspension/filter feeders in the project area. Overall, there would be a short-term insignificant impact to suspension/filter feeders and no long-term impact as these species would be expected to recolonize the area from adjacent habitat once construction is complete.

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Sight Feeders

The proposed activity associated with construction of the proposed breakwater repair is expected to have localized and temporary increases in turbidity that could potentially impact sight feeders. However, the impacts are expected to be temporary in duration and, no greater than turbidity levels experienced during a storm, currents, or wave action. No significant long-term negative effects to sight feeders are expected.

Actions Taken to Minimize Impacts

No work would be performed from December 1 to March 31 to prevent impacts to any sensitive biota that could be impacted by the grout or stone placement. Floating containment booms may be used to control spills, if necessary; the contractor would maintain a spill plan and response materials on site.

2.2.4 Contaminant Determinations

The proposed fill material is not expected to introduce any new contaminants into Lake Michigan nor release existing contaminants (if any are present) through bottom disturbance within the construction zone. The stone would be placed on top of the existing sediment and minimal disturbance is expected.

2.2.5 Aquatic Ecosystem and Organism Determinations

Effects on Plankton

No long-term detrimental effects to planktonic organisms are expected.

Effects on Benthos

Existing benthos directly beneath the area within the expanded breakwater footprint would be smothered/crushed. The footprint of the existing breakwater would be expanded by approximately 20 feet. This additional breakwater area is relatively small in comparison to the wide expanse of natural lake bottom on which it sits. As such, it would have short-term insignificant effects on the greater macroinvertebrate population of the area. There are no significant long-term adverse effects expected.

Effects on Nekton

Fish eggs and larvae would potentially be smothered by the proposed fill activity since the anticipated construction activities may occur during reproductive or rearing seasons. Fish and other free-swimming organisms would tend to avoid the construction area due to construction activity in the water and as the construction increases the turbidity. The construction area would be used again by those organisms soon after construction ends, so overall species presence is not expected to decrease. A fish window would be observed from March 1 to June 15 or as coordinated with the state, to prevent impacts.

Effects on Aquatic Food Web

No adverse food web effects are expected as a result of the proposed breakwater repair.

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Effects on Special Aquatic Sites

Sanctuaries and Refuges

No sanctuaries or refuges are located within the project area, so the proposed activity associated with construction of the proposed breakwater repair is expected to have no significant impact on these habitat types.

Wetlands

No wetlands have been identified within the project area, so the proposed activity associated with construction of the proposed breakwater repair is expected to have no significant impact on this habitat type.

Mud Flats

No mudflats have been identified within the study area, so the proposed activity associated with construction of the proposed breakwater repair is expected to have no significant impact on this habitat type.

Vegetated Shallows

No vegetated shallows have been identified within the study area, so the proposed activity associated with construction of the proposed breakwater repair is expected to have no significant impact on this habitat type.

Coral Reefs

Not applicable to freshwater environments.

Riffle and Pool Complexes

No riffle and pool complexes have been identified within the study area, so the proposed activity associated with construction of the breakwater repair is expected to have no significant impact on this habitat type.

Threatened and Endangered Species

Federal

A query of the U.S. Fish and Wildlife Service's (USFWS) Environmental Conservation Online System Information for Planning and Consultation (ECOS-IPaC) on August 15, 2024, resulted in an official species list (Project Code: 2024-0097750) of federally listed species that have the potential to occur within the project area. Obtaining the official species list from ECOS-IPaC fulfills the requirement for federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed activity". Federally-listed species for the Chicago Harbor vicinity (Table 4) include the piping plover (*Charadrius melodus*), rufa red knot (*Calidris canutus rufa*), eastern massasauga (*Sistrurus catenatus*), Hine's emerald dragonfly (*Stomatochlora hineana*), monarch butterfly (*Danaus plexippus*), eastern prairie fringed orchid (*Platanthera leucophaea*), and leafy prairie clover (*Dalea foliosa*). There are no designated critical habitats in the project vicinity.

Table 4: Federally Listed Species with the potential to occur in the project area.

Species Name	Federal Status	Preferred Habitat	Potential to Occur
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Piping plover (<i>Charadrius melodus</i>)	Endangered	Wide, undisturbed sand and gravel beaches with stones.	Not Present; lack of suitable habitat.
Rufa red knot (<i>Calidris canutus rufa</i>)	Threatened	May use inland freshwater habitats during migration.	Not Present; lack of suitable habitat.
Eastern massasauga (<i>Sistrurus catenatus</i>)	Threatened	Shallow wetlands and surrounding upland areas.	Not Present; lack of suitable habitat.
Hine's emerald dragonfly (<i>Stomatochlora hineana</i>)	Endangered	Wetland habitats dominated by grass, fed by water from mineral source over dolomite or calcareous limestone bedrock.	Not Present; lack of suitable habitat.
Monarch butterfly (<i>Danaus plexippus</i>)	Candidate	Fields, roadsides, and open areas where <i>Asclepias</i> and flowering plant species are present.	Not Present; lack of suitable habitat.
Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>)	Threatened	Moist to wet prairies, sedge meadows, fens, and old fields.	Not Present; lack of suitable habitat.
Leafy prairie clover (<i>Dalea foliosa</i>)	Endangered	Glades and prairies with limestone substrates.	Not Present; lack of suitable habitat.

State of Illinois

State-listed endangered species were reviewed for the project area by USACE. Illinois listed species and their critical habitats are identified by IDNR as occurring within the vicinity of the project location. The IDNR Ecological Compliance Assessment Tool (EcoCAT) was queried on May 31, 2024. The following species were identified: black-crowned night heron (*Nycticorax nycticorax*), mottled sculpin (*Cottus bairdii*), and common mudpuppy (*Necturus maculosus*).

Other Wildlife

No other wildlife would be significantly impacted by the proposed activity.

Actions to Minimize Impacts

General construction scheduling and sequencing would minimize impacts to any reproducing macroinvertebrates and fishes present. Floating containment booms would be used to control spills, as necessary.

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2.2.6 Proposed Disposal/Discharge Site Determinations

Mixing Zone Determination

A mixing zone is not applicable to this project since no violation of applicable water quality standards is expected during construction.

Determination of Compliance with Applicable Water Quality Standards

The proposed activity is not expected to cause significant or long-term degradation of water quality within Lake Michigan and would comply with all applicable water quality standards. The proposed project will be implemented under the LMRGP for which water quality certification has already been granted.

Potential Effects on Human use Characteristic

Overall, no significant impacts to municipal and private water supplies, water-related recreation, aesthetics, or recreational or commercial fisheries are expected. No significant adverse effects are expected.

Municipal and Private Water Supply

The proposed activity associated with construction of the proposed breakwater repair is not expected to have any significant short-term or long-term negative impacts on municipal or private water supply.

Recreational and Commercial Fisheries

The proposed activity associated with construction of the proposed breakwater repair is not expected to have any significant long-term negative impacts on recreational or commercial fisheries in the area. Recreational fishing, should it occur within the proximity of the project site, could potentially be impacted in the short term due to construction activities that would likely scare fish from the area. These impacts are expected to be temporary.

Water Related Recreation

Recreation near the project site could potentially be impacted in the short-term due to construction related noise and temporary increases in turbidity. The proposed activity associated with construction of the breakwater repair is not expected to have any significant long-term negative impacts on water related recreation in the area.

Aesthetics

The proposed activity would have short-term less than significant impacts to aesthetics in the project area due to the presence of construction equipment. Once construction is complete, the aesthetics of the project area would return and no long-term effects to aesthetics would occur.

Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites and Similar Preserves

The proposed project would have no impacts on parks, national and historic monuments, national seashores, wilderness areas, research sites or similar preserves. None of the aforementioned sites are located within the project area.

2.2.7 Determination of Cumulative Effects on Aquatic Ecosystem

No cumulative adverse impacts to the aquatic ecosystem or to aquatic organisms are expected to result from the construction of the proposed breakwater repair.

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2.2.8 Determination of Secondary Effects on the Aquatic Ecosystem

No significant secondary effects on the aquatic ecosystem are expected as a result of the proposed breakwater repair.

3.0 Findings of Compliance or Non-Compliance with the Restrictions on Discharge

- a. No significant adaptations of the Section 404(b)(1) guidelines were made relative to this evaluation.
- b. No practical alternatives are available that produce fewer adverse aquatic impacts than the proposed plan.
- c. The proposed fill activity at the site of the existing Chicago Harbor breakwater and shore arm extension would not violate any applicable water quality standards. The proposed project will be implemented under the LMRGP for which water quality certification has already been granted.
- d. The project is in compliance with applicable Toxic Effluent Standards under Section 307 of the Clean Water Act; the Endangered Species Act of 1973; the Fish and Wildlife Coordination Act of 1958, Coastal Zone Management Act of 1972, the National Historic Preservation Act of 1966; the Clean Air Act of 1970, and the National Environmental Policy Act of 1969.
- e. The proposed fill activity would not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing, plankton, fish, shellfish, wildlife communities (including community diversity, productivity, and stability), or special aquatic sites. The life stages of aquatic life and other wildlife would not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, recreational, aesthetic, and economic values would not occur.
- f. Appropriate erosion control measures would be taken to minimize potential adverse impacts of the fill activity on aquatic ecosystems. General construction scheduling and sequencing would minimize impacts to any reproducing macroinvertebrates and fishes present. Erosion control fabric, silt fencing, and containment booms would be implemented as needed to minimize any temporary turbidity, spill, or debris impacts associated with the proposed activity.
- g. On the basis of the Guidelines, the proposed site for the discharge of fill material is specified as complying with the inclusion of appropriate and practical conditions to minimize pollution or adverse impacts to the aquatic ecosystem.

3.1 Compensatory Mitigation

The purpose of compensatory mitigation is to offset losses of Waters of the United States and ensure that the net adverse effects are no more than minimal. The proposed breakwater repair results in a potential disturbance up to approximately 0.69 acres of lakebed. However, certain fill actions like the proposed activity in Lake Michigan are often not required to implement compensatory mitigation if it can be demonstrated that the affected environment has low functional value and that no additional mitigation would be required to result in minimal impacts.

In this instance, the affected environment is mainly within the footprint of the existing rubble mound dikes, a highly disturbed, man-made environment that lacks structural diversity. Further,

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an additional 0.69 acres of Lake Michigan bottom along the length of the existing breakwater would also be affected. While this minimally productive ecosystem supports a small amount of flora and fauna, the proposed activity would provide additional structural diversity to the rubble mound habitat that is unlikely to significantly impact the habitat's productivity and may have minor habitat benefits in the future. The proposed activity is not expected to have a more than minimal impact on existing ecosystem functions (as described previously in Section 2.0 Factual Determinations).

3.2 Conclusions

Based upon this evaluation, the construction of the proposed breakwater repair, subject to appropriate and reasonable conditions, is determined to comply with Section 404(b)(1) Guidelines, and is determined to protect the public interest.