

**Illinois Environmental Protection Agency  
Bureau of Water, Permit Section  
(IEPA)**

1021 North Grand Avenue East, Post Office Box 19276, Springfield, Illinois 62794-9276, 217/782-3362

The IEPA has issued a Public Notice of a request for a Clean Water Act Section 401 water quality certification that would allow the issuance of a federal permit for the discharge of pollutants to waters of the State.

**Public Notice Beginning Date:**

Friday, October 22, 2021

**Public Notice Ending Date:**

Friday, November 5, 2021

**Agency Log No.:C-0200-21**

**Federal Permit Information:** Federal permit/license no. LRC-2021-00493 is under the jurisdiction of Chicago District, Regulatory Branch U.S. Army Corps of Engineers

**Name and Address of Discharger:** Illinois Department of Natural Resources, Dale Brockamp - One Natural Resources Way, Springfield, IL 62702

**Discharge Location:** In Sections 14 and 23 of Township 46-North and Range 12-East of the 3rd Principal Meridian in Lake County. Additional project location information includes the following: 300 Lake Front Drive, Zion, IL 60099

**Name of Receiving Water:** Lake Michigan and Kellogg Creek

**Project Description:** The construction of a new shoreline protection and stabilization system that includes 7 offshore breakwaters, rock/concrete/steel sheetpile groin, and sand nourishment to protect critical infrastructure and reduce natural shoreline transitory processes with Illinois Beach State Park near Camp Logan.

**Construction Schedule:** Unknown at this time

The Public Notice period will begin and end on the dates indicated in the heading of this Public Notice. Interested persons are invited to submit written comments on the project to the IEPA at the above address. Commenters shall provide their name and address along with comments on the certification request. The IEPA Log number must appear on each comment page. Commenters may include a request for public hearing. Only comments that pertain to Clean Water Act Section 401 authority as defined under 40 CFR part 121.3 will be considered. Part 121.3 defines the "scope of a Clean Water Act section 401 certification is limited to assuring that a discharge from a Federally licensed or permitted activity will comply with water quality requirements". Requests for additional comment period must provide a demonstration of need. The last day when comments will be received will be on the Public Notice period ending date unless the IEPA grants an extended notice period.

The attached Fact Sheet provides a detailed description of the project and the findings of the IEPA's antidegradation assessment.

If written comments or requests indicate a significant degree of public interest in the certification application, the IEPA may, at its discretion, hold a public hearing. Public notice will be given 30 days before any public hearing. If a Section 401 water quality certification is issued, response to relevant comments will be provided at the time of the certification. For further information, please see the contact information below.

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Post Document. No. C-0200-21-10222021-PublicNoticeAndFactSheet.pdf

Antidegradation Assessment Review for a 401 Water Quality Certification for Illinois Department of Natural Resources (IDNR)  
IEPA Log No. C-0200-21  
Lake County  
Contact: Angie Sutton 217-782-9864

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The Illinois Department of Natural Resources (IDNR) has applied for a 401 Water Quality Certification for impacts associated with the construction of a new shoreline protection and stabilization system in Lake Michigan at Illinois Beach State Park in Zion, Lake County, Illinois. The project site known as Area 2 – Camp Logan can be found in Township 46N, Range 12E, Sections 14 and 23. The proposed project would allow for construction of seven emergent and partially submerged breakwater structures in 3.7 acres of open water, consisting of either filter and armor layers (2-layer stone design) or core, filter and armor layers (3-layer stone design) using approximately 45,100 cubic yards (CY) of rock. The breakwater lengths vary from 275 to 540 feet with crest elevations between 580 feet IGLD-85 (International Great Lakes Datum – 1985 adjusted) and 587 ft IGLD-85. Width of the breakwaters will range from 52 to 76 feet overall and 12 to 28 feet at the crest. Construction of the structures will be completed by placement of materials from barge mounted construction cranes, excavators, front end loaders and other various equipment. Sand nourishment at Area 2 will consist of using approximately 88,600 CY of sand similar to the native sand, to fill 15.2 acres of onshore and near shore areas (0.67 miles of shoreline) by pumping from offshore barge. Additionally, sand will be placed from a truck on the land and earthmovers will grade the placed sand. Previously, the 4900-ft project site has undergone several shoreline protection measures to control erosion north of the Lake County water intake station including revetments, sheetpile and concrete cubes. These methods have helped slow erosion, but the areas have collapsed, and erosion is occurring along the protected portions. South of the Lake County water intake station is experiencing rapid shoreline erosion that began once the land was exposed due to the destruction of an eco-block groin following a rapid increase in water levels. Just north of Area 2 and the Lake County water intake is Kellogg Creek which conveys stormwater runoff to Lake Michigan from the surrounding land. In recent years the confluence of the creek and Lake Michigan becomes blocked with sand resulting in minor flooding due to water backing up in the creek. In the past this was easily reopened but due to large cobbles becoming part of the sediment blockage, reopening the creek by hand has become more difficult. The cobbles were placed along the eco-block revetment and due to storm events, the wall has failed resulting in migration of the cobbles to the south. A groin constructed of rock, concrete, or steel sheetpile is proposed to hold sediment and cobble from migrating further south. The footprint of the groin could impact up to 0.32 acres of lake bottom and consist of up to 3300 CY of rock. The structure will extend offshore 310 feet and have a top of groin elevation of 585 ft IGLD-85. Without protection, the shoreline will continue to naturally erode over time. This project is designed to protect critical infrastructure and habitat for the endangered species that live in the park as well as reduce the natural shoreline transitory process. The improvements to Area 2 – Camp Logan will protect existing uses and provide additional habitat for various aquatic and avian species therefore no compensatory mitigation is expected to be required.

Information used in this review was obtained from the application documents dated July 2, 2018, September 6, 2019, September 13, 2019, February 26, 2021, April 9, 2021, April 22, 2021, April 29, 2021, May 5, 2021 and September 13, 2021.

### **Identification and Characterization of the Affected Water Body.**

Lake Michigan has 0 cfs of flow during critical 7Q10 low-flow conditions. Lake Michigan is classified as a Lake Michigan Basin Use Water. Lake Michigan is not listed as a biologically significant stream in the 2008 Illinois Department of Natural Resources Publication *Integrating Multiple Taxa in a Biological Stream Rating System*, nor is it given an integrity rating in that document. Illinois State Beach Park North, Waterbody Segment IL\_QH-03, is listed on the 2018 Illinois Integrated Water Quality Report and Section

303(d) List as impaired for fish consumption use with potential causes given as mercury and polychlorinated biphenyls and for primary contact recreation use with potential cause given as E-coli.

Kellogg Creek has 0 cfs of flow during critical 7Q10 low-flow conditions. Kellogg Creek is classified as a General Use Water. Kellogg Creek is not listed as a biologically significant stream in the 2008 Illinois Department of Natural Resources Publication *Integrating Multiple Taxa in a Biological Stream Rating System*, nor is it given an integrity rating in that document. Kellogg Creek, Waterbody Segment IL\_QF, is listed on the 2018 Illinois Integrated Water Quality Report and Section 303(d) List as impaired for aquatic life use with potential causes given as aldrin, dissolved oxygen, and flow alteration-changes in depth and flow velocity. Aesthetic quality is fully supported.

Kellogg Creek primarily flows through forested riparian corridors. The final half-mile of the creek before flowing into Lake Michigan is channelized and has a complete lack of connectivity to the Lake. This is especially true at low water levels. Because of these issues, the stream doesn't provide the quality of a natural meandering stream system. Additionally, the creek's mouth is constantly blocked. The surrounding park lands, water intake and processing plant sites, and residential development to the west make up the contributing sub-watershed though minimally contributing to pollutants and sediments. Kellogg Creek does not appear to provide valuable fish habitat in its current condition as low water levels during the 2021 sampling season resulted in a very poor fish sample. IDNR collected 37 fish that represented 5 species. This is substantially lower than the 2016 sample which yielded 241 fish that represented 9 species.

A Total Maximum Daily Load (TMDL) Report has been prepared and approved by the USEPA for 51 beaches along Illinois' Lake Michigan shoreline to address Primary Contact Use Recreation impairments due to excess bacteria. The proposed activity occurs within an area identified by the May 15, 2013 report "Shoreline Segments in Suburban Lake County, Illinois" as a Beach Protection Area and is therefore subject to this TMDL.

### **Identification of Proposed Pollutant Load Increases or Potential Impacts on Uses.**

The pollutant load increases that would occur from this project include some possible increases in total suspended solids. These increases are a normal and unavoidable result of the placement of the 7 quarrystone breakwaters and quarry sand beach fill. The fill material will consist of clean quarried stone and sand that will be placed using a combination of marine and land-based access and is expected to fill 18.9 acres.

As a result of groin placement in the northern bank of Kellogg Creek, some increases in total suspended solids is expected. The fill material will consist of a rock structure comprised of clean, quarried rock, a steel sheetpile wall, or a combination of the two. Depending on the design selected, the footprint of the groin could impact up to 0.32 acres of lake bottom and consist of up to 3300 CY of rock.

### **Fate and Effect of Parameters Proposed for Increased Loading.**

The increase in total suspended solids would be local and temporary, and existing aquatic life use in the shallow, nearshore zone will be temporarily disturbed, but will recover over time. The proposed project will consist of building structures designed to address the shoreline erosion and stabilize the shoreline by protecting critical infrastructure and habitat for aquatic and avian species as well as providing new habitat features that will attract native and desired species. The breakwater, groin, and sand nourishment designs reflect modeling studies that determined the minimum size and dimensions of the structures and sand placement that would still meet the project goals. Additionally, the sand nourishment was designed to work with native sediments and provide environmental benefits while limiting the shoreline erosion but

not holding it in a static position. A mitigation of pre-fill of 4,375 CY of sand was proposed for impacts to alongshore littoral transport based on littoral analysis. During sand discharge from barge and pumping, training berms will be used to limit the turbidity of the water that would re-enter Lake Michigan. Turbidity curtains will be used if the levels re-entering the Lake are considered potentially detrimental. The improvements to Area 2- Camp Logan, will protect existing uses and provide additional habitat for various aquatic and avian species therefore no compensatory mitigation is expected to be required. The project will also likely improve the value of Kellogg Creek for fish by the resulting improvement to connectivity to the Lake. The improved connectivity would also be expected to support a more diverse fish makeup in the creek.

### **Purpose and Social & Economic Benefits of the Proposed Activity.**

Illinois Beach State Park consists of the northernmost reach at North Point Marina to the southernmost reach at Waukegan Generating Station. The State Park provides many recreational opportunities as well as provides invaluable habitat to a range of threatened and endangered species. It is the last remaining natural shoreline in Illinois and due to its transitory nature, will continue to erode inland without intervention as sand migrates south. The purpose of the project is to develop shoreline protection that addresses erosion and provides stability to the shoreline protecting critical infrastructure and habitat for the many endangered species that inhabit the park.

### **Assessments of Alternatives for Less Increase in Loading or Minimal Environmental Degradation.**

Alternatives evaluated considered minimization of impacts to Lake Michigan and Kellogg Creek while still meeting project goals for shoreline stabilization, and infrastructure and habitat creation. Design changes in order to reduce structure sizes and sand placement to the minimum required were also identified. The Applicant has considered different sizes, alignments, shapes and numbers of breakwaters using a coastal evolution model. Shorelines resulting are after five representative years of wave conditions.

#### No Action Alternative:

If allowed to erode the shoreline would retreat approximately an additional 90-170 feet at different points in five years. The rapid erosion due to high-water level conditions south of the Lake County water intake and the hardened revetment edge is threatening the natural unprotected shoreline. This area contains recreational trails, a nature preserve, and RAMSAR wetlands.

#### Alternative 2.1:

This option proposes a 650-ft breakwater that would extend from the existing revetment at the intake building. The structure would create a protected area that would be pre-filled with a coarse grained sand which is less likely to be transported by wave action. A small L-shaped groin would anchor the southern end of the prefill. This alternative was not chosen as the groin causes negative effect downdrift despite the coastline holding in position between the two structures. Downdrift is not acceptable as this area is part of a nature preserve.

#### Alternative 2.2:

This option reduces the length of the breakwater and adds three detached offshore breakwaters perpendicular to the NE wave direction which creates a shadow area behind them. Pre-filling the nearshore to increase the beach width would be necessary. The beach nourishment area would reshape over time until the shoreline reaches equilibrium. Modeling shows the offshore breakwaters as effective in protecting the shoreline, however this alternative was not chosen as the area adjacent to the north revetment shows continued erosion indicating that the length does not provide adequate protection to the area.

Alternative 2.3:

This option includes the 650-ft breakwater and reduces the offshore breakwaters to two. Prefilling would still be required. Modeling shows this configuration held the shoreline position well and shows less downdrift than Alternative 2.1. This alternative was not chosen.

Alternative 2.4:

This option consists of adding an offshore breakwater parallel to the coastline. Modeling shows sediment accumulating behind this breakwater which raised concern among stakeholders that damage could potentially occur to the Lake County intake pipe. This alternative was not chosen although there is minimal erosion of the shoreline behind the third breakwater.

Alternative 2.5

This option is a revision of Alternative 2.3 with the two offshore breakwaters having a length of 492 feet but using cobble for the modeling study rather than sand. Cobble is not desirable in this area, so this alternative was not chosen.

Alternative 2.6:

This option is a revision of Alternative 2.3 with the two offshore breakwaters having a length of 328 feet but using cobble for the modeling study rather than sand. Cobble is not desirable in this area, so this alternative was not chosen.

Alternative 2.7

This option involves the use of only the 650-ft breakwater attached to the existing revetment and using cobble for the modeling study rather than sand. Cobble is not desirable in this area, so this alternative was not chosen.

Alternative 2.8 (Preferred Option):

This option consists of a nearshore breakwater connecting to the existing revetment, two offshore breakwaters to break the main wave direction and a nearshore breakwater that promotes the formation of a tombolo behind it. This combination showed to be most effective at reducing drift and stabilizing the shoreline. This option also avoided interference with the existing Lake County water intake pipe.

This combination was updated to configure a total of 7 structures. The southernmost nearshore breakwater has been removed, and four additional structures will be added. Sand nourishment will also be implemented.

Four updrift structures were explored to address the issues affecting Kellogg Creek:

Groin 1 – Shore Perpendicular:

A 246-ft perpendicular groin captures sediment on its updrift side and erosion along its downdrift side as a result of sand starvation in its shadow. As the downdrift side aligns with the mouth of Kellogg Creek and the revetment surrounding the water intake facility, this would be acceptable. Sand could deposit on the downdrift side as a result of the eddy formed by currents around the groin, but it is unlikely that cobble will be able to migrate around the structure. Sand will fill and eventually bypass the groin, increasing the amount of sand deposited at the mouth of the creek. This option was not chosen.

Groin 2 – Angled:

A 251-ft groin angled to the northeast would capture sediment and cobble migrating south. Like the Groin 1 option, this will result in some erosion on the down drift side. Longshore currents will still create an eddy, although lessened, in front of the mouth of Kellogg Creek. Sediments will still be deposited, and

the angled groin will have less capacity to entrap updrift sediment. This option would result in a faster rate of sediment deposition at the mouth of the creek; therefore, this option was not chosen.

Groin 3 – L-head:

This option employs the use of a 246-ft groin perpendicular to the shore with a 164-ft spur projecting northeast. The spur would redirect currents and their associated sediment offshore and around the creek mouth. Formation of an eddy would still occur but as it is further offshore, sediment settling out will not block the mouth of the creek. The option requires less maintenance and holds a larger amount of migrating sediments. This option was not chosen.

Groin 4 – Hooked (Preferred Option):

This option was explored due to the higher construction costs in deeper water. The spur was redirected to the northwest in shallower water which does allow for the redirection of currents at a higher velocity around the structure near the mouth of the creek. Sediments would be deposited at a reduced rate and although less sediment is captured, the structure would have a higher bypassing rate which is more beneficial to the downdrift shoreline.

**Summary Comments of the Illinois Department of Natural Resources, Regional Planning Commissions, Zoning Boards or Other Entities.**

On September 13, 2021, the IDNR EcoCAT review was initiated for the project area (Project #2204884). The review has not yet been finalized; however, an initial review identified the following protected resources that may be in the vicinity of the project:

- Illinois Beach INAI
- Illinois Dunes North INAI Site
- North Dunes Nature Preserve
- Bearberry (*Arctostaphylos uva-ursi*)
- Black-Billed Cuckoo (*Coccyzus erythrophthalmus*)
- Blanding's Turtle (*Emydoidea blandingii*)
- Clustered Broomrape (*Orobanche fasciculata*)
- Common Bog Arrow Grass (*Triglochin maritima*)
- Downy Yellow Painted Cup (*Castilleja sessiliflora*)
- Dune Willow (*Salix syrticola*)
- False Aspodel (*Tofieldia glutinosa*)
- Few-Flowered Spikerush (*Eleocharis pauciflora*)
- Hair Bladderwort (*Utricularia subulata*)
- Kalm's St. John's Wort (*Hypericum kalmianum*)
- Least Bittern (*Ixobrychus exilis*)
- Little Green Sedge (*Carex viridula*)
- Marram Grass (*Ammophila breviligulata*)
- Mountain Blue-Eyed Grass (*Sisyrinchium montanum*)
- Pale False Foxglove (*Agalinis skinneriana*)
- Redroot (*Ceanothus herbaceous*)
- Redveined Prairie Leafhopper (*Aflexia rubranura*)
- Richardson's Rush (*Juncus alpinoarticulatus*)
- Sea Rocket (*Cakile edentula var. lacustris*)
- Seaside Spurge (*Chamaesyce polygonifolia*)
- Shadbush (*Amelanchier interior*)

- Tall Sunflower (*Helianthus giganteus*)
- Trailing Juniper (*Juniperus horizontalis*)
- Tubercled Orchid (*Platanthera flava*)
- Wood Orchid (*Platanthera clavellata*)

The Illinois Wetlands Inventory shows wetlands within 250 feet of the project location.

**Agency Conclusion.**

This preliminary assessment was conducted pursuant to the Illinois Pollution Control Board regulation for Antidegradation found at 35 Ill. Adm. Code 302.105 (antidegradation standard) and was based on the information available to the Agency at the time this assessment was written. We tentatively find that the proposed activity would result in the attainment of water quality standards; that all technically and economically reasonable measures to avoid or minimize the extent of the proposed increase in pollutant loading have been incorporated into the proposed activity; and that this activity would benefit Illinois Beach State Park by providing shoreline stabilization to protect critical infrastructure and reduce natural shoreline transitory processes. Comments received during the 401 Water Quality Certification public notice period will be evaluated before a final decision is made by the Agency.