

## USACE 2020 Minnesota Point Beach Nourishment Summary

November 25, 2020

The U.S. Army Corps of Engineers (USACE) is authorized with maintaining the federal navigation channel. The Corps dredges approximately 110,000 CY of dredged material from the Duluth-Superior Harbor every year just to keep the federal navigation channels open. Over the last several years we've had great success partnering with various local, state and federal agencies to beneficially use over one million cubic yards of dredged material for habitat restoration and remediation projects in the harbor.

Last year we formed a working group with local, state and federal agencies and stakeholders to identify beneficial use projects for the Duluth-Superior Harbor dredged material. The City of Duluth expressed interest in using the 2020 dredged material to nourish the Minnesota Point shoreline. The USACE coordinated closely with project partners to place approximately 50,000 cubic yards of dredged material along the eroded shoreline between 7<sup>th</sup> Street and 10<sup>th</sup> Street in 2020. The benefits of the beach nourishment project include temporarily stabilizing the eroded shoreline and dune habitat along MN Point, as well as providing habitat for beach grass and other endangered and threatened species. Although there is certainly an unintended consequence, we are certainly pleased to see the nourished beach. We are committed to work hard to determine effective measures for mitigating the risk of debris being inadvertently placed during future beach nourishment operations.

During the 2020 beach nourishment dredging and placement operations citizens expressed some concerns about the project. Below is a summary of the USACE assessment of the concerns and proposed changes to future beach nourishment operations based on this assessment.

### USACE Assessment of Citizen Concerns

#### Sediment quality:

- Temporary Odor - When dredging it's not unusual to encounter sediment that temporarily has a foul odor. This is the result of small pockets of otherwise mostly sand that includes more fines and some natural organic matter such as degraded tree roots and branches. This organic material when in the navigation channel is anaerobic (lacks oxygen) and will have a sulfurous smell that quickly dissipates as the sand is exposed to air.
- Oil Sheen - When disturbed, anaerobic sediment can release a biofilm that shimmers on the water surface that looks like a small gasoline spill. These biofilms are commonly seen near exposed sediment in marshes and sloughs. These are the natural product of microbes in the sediment. The sheens are usually small in size and not considered a hazard to human health, the environment or shore birds.
- Grain Size - We collect a finite number of samples in the navigation channels to characterize sediment in the dredge areas and determine placement suitability. The sediment samples do not tell us what is in every square inch of the material within the dredge area, including the size and composition of possible pockets of finer material that may occur. The material within the dredge area varies and the material placed on the beach will include natural variation in sediment grain size and organic matter. This variation does not impact its suitability for

placement on the beach. The weighted average grain size for all the material placed at MN Point is 85.5 percent sand. It also contains about 14.5 percent fine material, which is suitable material for beach nourishment projects in accordance with the Environmental Protection Agency & USACE Great Lake Testing Manual.

In addition to sediment sampling, we monitored sediment placed on MN Point in 2019 and found that about 86 percent of fines are removed from dredged material during hydraulic placement operations. While the area being dredged does contain fines, the material placed on the beach has a low percentage of fine material and is suitable for beach nourishment.

There is need for suitable placement sites to allow us to maintain the authorized federal navigation channels; dredging allows ships to safely navigate in the harbor. We meet annually with the shipping industry to identify critical shoals which need to be dredged. We work collaboratively with partners and stakeholders to find suitable placement sites for the dredged material. Project partners understand that we cannot guarantee the dredged material characteristics as there is some variability within the harbor sediment

#### Turbidity:

- Turbidity becomes elevated in the harbor and Lake Superior when there is heavy rainfall, wind, and/or large waves. During 2020 placement operations, a resident notified several agencies about elevated turbidity resulting from placement operations on MN Point. Our staff took aerial photos of the placement area to evaluate and document the turbidity at the time we received the concern. Although the photo showed elevated turbidity in the area surrounding the placement equipment, there was no elevated turbidity outside of the project area, which was coordinated with and approved by the MPCA.

To ensure placement operations are compliant with applicable State of MN water quality standards, the USACE Engineer Research and Development Center (ERDC) develop several Best Management Practices (BMPs). These BMPs were developed with an understanding of the nearshore hydrodynamics of Lake Superior and Minnesota Point, sediment characteristics of the dredge material, and placement equipment and methods used by contractors. The BMPs were submitted to the MPCA for review and approved for use in the project.

The project engineer confirmed the USACE contractor, Roen Salvage, properly employed the approved BMPs during placement operations. The contractor and the USACE project engineer performed daily visual monitoring of turbidity levels, weather, and wave conditions to help ensure the BMPs were correctly deployed and functioned as intended. There were no elevated turbidity levels observed outside of the project area.

#### Debris (aluminum cans):

- The USACE project engineer and contractor completed a final walk through along the nourishment area on September 25, 2020, and picked up some debris, including old can fragments.
- The USACE project engineer walked the site several times since September 25, 2020 and picked up additional debris, which also included some cans. The project engineer noted that most of

the cans collected were between 10<sup>th</sup> and 12<sup>th</sup> Street. The section of the beach between 7<sup>th</sup> Street and 10<sup>th</sup> Street contained very few cans.

- A Park Point resident notified the USACE about cans they observed in the beach nourishment area and just south of the area along MN Point (Park Point) on October 27, 2020.
- The USACE reviewed information provided by the resident, sediment sampling data, and daily dredging and placement reports to identify the potential that the debris was a result of beach nourishment operations.
- The USACE Duluth Area Office Chief of Construction participated in a site walk with the Park Point Erosion and High Water Committee and a Park Point concerned resident on November 19, 2020 to further assess the nourishment area conditions, discuss the resident's concerns, and collected any debris found on the beach (cans and other debris unrelated to placement operations). The USACE Duluth Area Office Chief of Construction confirmed that most of the pieces of cans were collected between 10<sup>th</sup> and 12<sup>th</sup> streets during the site walk.
- The USACE team met to discuss the site walk and the information that was compiled to evaluate the issue with debris in/near the nourishment area. Here is what the USACE team determined with the limited information that is currently available:
  - Site walk confirmed there is obvious debris along the beach. Some of the debris (ie. cans) appeared to be generated from our operations.
  - The dredge transfer box grating openings are approximately 3 x 5 inches which prevent large debris from entering the pump and pipeline. Given a can is less than 3 inches in diameter, it is possible cans could fit through the grate openings.
  - Localized density of cans at southern 200 ft of the nourishment area and review of daily reports leads the team to speculate the debris may have come from a small area of the harbor not dredged in a long time. There may have been trash in the harbor (circa 1970's) that was encountered in the dredge area and inadvertently placed on MN Point.

#### USACE Proposed Changes for Future Beach Nourishment Projects

The debris that has been found in the placement area likely resulted from the dredge hitting an unexpected area that contained debris. USACE had no indication that the dredged area contained debris and no indication that debris was being placed on the beach until notified by residents after placement operations were complete. USACE takes this situation very seriously and is developing a plan to mitigate the likelihood of encountering debris and/or placing debris fragments on the beach in future beach nourishment operations. Elements of the plan would include:

#### Sediment sampling plan:

- USACE to develop a more robust (higher density) sediment sampling plan for the non-maintained areas of the navigation channel to achieve a more definitive characterization of the material in those areas.

#### Evaluating Placement Sites for Dredged Material:

- Priority dredge areas are determined by the shipping industry and depending on the budget there may be an opportunity to dredge additional areas of the harbor that haven't been routinely maintained.

- The USACE mission is to maintain navigation in the harbor and must dredge shipping industry-identified critical shoals; however, the USACE will be more selective when evaluating which non-maintained areas of the harbor to dredge given the potential for debris in those areas.

Mitigate Debris Resulting from Future Dredging and Placement Operations:

- USACE will work with marine contractors to identify effective mechanisms to screen dredged material to help reduce debris being placed on MN Point.
- Add contract requirement for contractor to inspect the site several weeks after placement is complete and clean up debris (i.e. cans) generated from dredging and placement operations.
- Require contractor to submit a plan for monitoring debris generated, such as cans, and a plan for cleaning up the debris during placement operations.

In order to address the current situation of debris in the placement area:

Address 2020 Debris Concern:

- The USACE Duluth Area Office staff will monitor the site and collect debris generated during 2020 placement operations one day per week for four consecutive weeks beginning in the spring. The beach is frozen, and snow covered so no monitoring and cleanup can be completed at this point in the season. The need for additional monitoring and cleanup will be evaluated based on the amount of debris that is observed at the end of the four-week period. USACE acknowledges that the debris needs to be collected as soon as practicable and will do so as soon as the snow and ice along the shoreline thaws.