

Date: 16 July 2020

To: Anna Hotz, Kevin Molloy, MPCA, Section 401 WQ Certification Program

From: Philip Monson, MPCA, Water Quality Standards Unit

RE: Human Health Risk Assessment of Dredged Materials used for Beach Nourishment on Minnesota Point

This memo serves to report the results from analysis of sediment samples collected in efforts to characterize dredge materials placed on Minnesota Point in 2019. Sampling of these placed sediments was done to inform a Human Health Risk Assessment (HHRA) of these materials to characterize risks associated with polychlorinated dibenzo-p-dioxins and furans (PCDD/F), an ubiquitous contaminant known to be present in harbor sediments. Sampling efforts on Minnesota Point occurred in 2019 by the Army Corps of Engineers (ACOE) and in May 2020 by both the ACOE and the Minnesota Pollution Control Agency (MPCA). Sampling procedures performed by the ACOE (1) and analytical results of their sample collection (2), and by the MPCA (3) are cited below. Because Minnesota Point is a recreational beach, and the placement of dredged material during the 2020 season is being proposed on and near residential properties, the MPCA Section 401 Water Quality Certification Program's annual approval letter for this activity required the USACE to furnish final results of their Human Health Risk Assessment for the MPCA to review.

As sediments used for placement on Minnesota Point originate from the dredging of harbor sediments, and measured concentrations of PCDD/F are present, it is important to know the fate of any residual PCDD/F following placement on Minnesota Point. In efforts to complete a HHRA of the beach area, it was also important to devise a sampling plan that captures the likely recreational use of the beach. Therefore, samples were collected in the aquatic areas anticipated to be used by humans, which included approximately the surf zone of the beach, the wading area (up to about six foot depth) and those sediment areas deeper that are less likely to have human contact. From these site-specific scenarios of exposure, concentrations of PCDD/F were calculated that are protective for human use of these areas. From this assessment, the most stringent calculated site-specific sediment value is 7.2E-06 (7.2 ng/kg) mg/kg TEQ Dioxin/Furan.

Analysis of sediment samples collected by the ACOE in 2019 and 2020 (2), and by the MPCA (3) reported concentrations of PCDD/F that were below the most stringent calculated site-specific sediment value of 7.2E-06 mg/kg TEQ Dioxin/Furan. These sampling events were conducted to characterize potential risk to human health from exposure to beach materials consisting of reused dredge sediment placed in 2019. In conclusion, the MPCA has determined from analysis of sediment collected post-placement that no unacceptable risks exist for human health associated with exposure to these placed beach materials.

References Cited:

1. Sediment Monitoring Plan: Second Amendment. FY19 Dredged material placement at Minnesota Point, Duluth-Superior Harbor, Duluth, Minnesota. March 2020. Prepared for Minnesota Pollution Control Agency by US Army Corps of Engineers, Detroit District.
2. Minnesota Point Sediment Monitoring of FY 19 Duluth-Superior Dredged Material Duluth-Superior Harbor, Minnesota Mobilization 4 Draft Report, June 22, 2020. Prepared for U.S. Army Corps of Engineers, Detroit District by AEM Group.
3. Minnesota Point Summary Memo, June 2020. Prepared for Minnesota Pollution Control Agency by Bay West LLC.