

Great Lakes Dredging Team
2020 Informational Webinar: Meeting Summary
November 17, 2020

Evaluation of Dredged Sediment for Aquatic Placement: Interpreting Contaminant Bioaccumulation

Dr. Andrew McQueen, USACE ERDC presented about determining bioaccumulation from dredge materials. The presentation started with a background on bioaccumulation and providing context on the tiers of evaluation of bioaccumulation. The presentation then provided an overview of how bioaccumulation is tested and highlighted how statistics were used to determine if benthic invertebrates in dredged material had a significantly higher concentration of contaminants than benthic invertebrates from a reference site. When interpreting ecological significance of bioaccumulation, it is important to know the coefficient of variation (CV), which is how much variation there is among sample replicates. Bioaccumulation tissue results with a lower CV can more easily detect differences between the dredge placement site and reference site. The presentation concluded with examples from New York, The Gulf of Mexico, and the Great Lakes and provided some practical examples of how magnitude of differences could be used as lines of evidence to interpret bioaccumulation risks.

Technical and operational issues related to Great Lakes navigation dredging: a discussion of priorities and research needs

Dr. Jennifer Miller and Dr. Scudder Mackey lead the discussion for the Technical Committee. The presentation started with an overview of the priorities of the Technical Committee and an update on the work plan. The presentation then shifted to an open discussion about the key technical and operational issues that need additional information or research. The list below catalog's the suggestions during the discussion.

Suggestions during the discussion session:

Consider Geopools for dewatering

Transfer of invasive species – issue for beneficial use, especially for habitat creation

Geotubes

Comparing leach test results on dewatered material to those collected during dewatering?

Monitoring mud wave displacement

Erie pier management plan update (along with port) – beneficial use of silty materials: are there examples other places? Examples of funding or finding subsidies for dredge material transport?

It is time for an updated review of CDF effectiveness- lots of remediation dredged materials from the Legacy Act have gone into them, and a new CDF is on the way to being built in Milwaukee. CDFs work and have worked since they were originally built in the 1970s. Let's get some new data and publish it.

Best management practices to control and limit water quality impacts during in-water placement/pumping of sediment for habitat construction projects. Minimize loss to water column

Conversion of CDFs to sediment processing facilities? CDF verses sediment management facilities?

For sediment placement at beaches, bacteria and viruses can be an issue - some may be more persistent. Case studies that meld placement with recreational interests might be informative

What is the interplay between the federal standard and processing costs at CDFs? how to pair private investments with gov't budgets?

Even the fines through the processing at a CDF doesn't have an ample seed source to promote emergent and submergent vegetation growth in many cases. Is anyone familiar with technologies for enhancing vegetation growth? Duluth/Superior has tried natural 'biomedium' extrated from clean backbays, but getting permits will limit access to natural biomedium and fines is not attractive to our resource agencies. Can we create a manufactured biomedium?

How to prevent spread of invasive species through sediment beneficial use (can we sterilize the material somehow?) verses how to enhance the natural seedbank or the establishment of vegetation in newly created habitat areas (made with beneficial use)? – two sides of same coin

RE Fine grained materials :

Maher, A., W.S. Douglas, F. Jafari, and J. Pecchioli. 2013. The Processing and Beneficial Use of Fine-grained Dredged Material- A Manual for Engineers. New Jersey Department of Transportation.

http://www.state.nj.us/transportation/airwater/maritime/documents/PDM_FINAL_4.24.13-cs.pdf

Some of that work has been done in MN for soil blending, but it does seem that a key is having standards for transportation stormwater features, for instance. You need a market that needs the material

I'd like to suggest that the Technical Committee continue looking at the other factors that should/can be used to interpret laboratory bioaccumulation test results. Andrew focused on the MOPD vs statistical significance. There are probably half a dozen other important technical

issues related to characterizing the potential impact of bioaccumulative compounds in GL dredged material. Andrew listed several of them in one of his slides.

Here's a few.

1. How about a modern recommendation on managing non-detects from lab testing?
2. Understanding field variability (skewed variance) of bioaccumulative compounds and how to manage this during sampling and testing – should we be using incremental field sampling methods for highly skewed data?
3. Can data on ecological risk assessments to higher trophic levels be used for evaluating DM bioaccumulation testing and assessment needs?
4. Is extrapolation of laboratory Hg bioaccumulation tests to the field meaningful and relevant?