BSAP Fund

Seabed nutrient trapping with dredged glacial clays

CLATRAP

Finnish Environmental Institute

BSAP-2022-134
Report prepared 31.8.2024

Executive summary of the project

Key highlights of the project

CLAYTRAP project carried out laboratory investigation on the possibility to use dredged clay material in nutrient binding in the soft bottoms of the Baltic Sea. CLAYTRAP realized investigation in context of a real-life dredging plan by sampling sediments from the area to be dredged and sediments collected from supposed dumping area in the Inkoo region, southern Finland. Examination revealed that old glacial clay and partly oxidized sulfidic clay from dredging area had chemical characteristics which favoured phosphorus binding. Anoxic laboratory incubations showed that glacial clay inhibited anaerobic respiration according to a rate of mixing with poor-quality sediment. Furthermore, clays released dissolved iron which improved the phosphorus binding capacity. The increased binding capacity lowered phosphorus concentration in water when incubation conditions were turned from anoxic to oxic. The same applied for partly oxidized sulfidic muddy clay. The results of laboratory investigation support an implementation of basin scale experiment with dredging material. However, sulfidic clay, if oxidized during handling, may need measurements of acidity and dissolvedmetal concentrations before spreading.