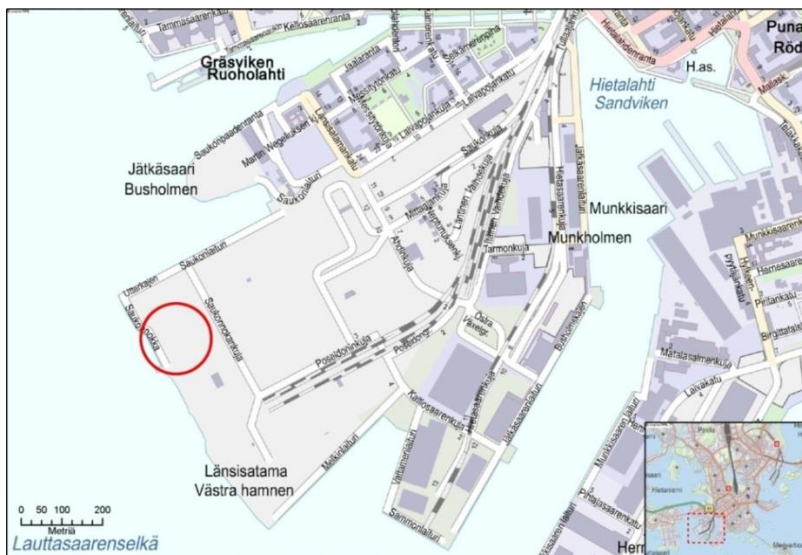


<p>JÄTKÄSAARI Helsinki, Finland Ex-situ utilization of contaminated sediments by mass stabilization</p>	<p>Key words: ex-situ mass stabilization, contaminated sediments</p>
<p>General information</p>	<p>The project concerned stabilization of dredged clay and mud sediments in three phases in 2010s in temporary stabilization basins. The 3.5 m high embankments of the basins were made of coarse non-cohesive soil and the bottom of the basins was covered by asphalt. The thickness of the stabilized sediment layer was approximately 2.5-3 m. The stabilized mass was mildly contaminated and the concentrations of harmful substances exceeded the lower values set for metals and the threshold values for organic substances.</p>
<p>Advantages of stabilization</p>	<p>Processing of mildly contaminated and clean sediment masses in order to turn them into a good-quality filling material. The dredged and stabilized sediments were utilized in landscaping etc.</p>
<p>Project timetable</p>	<p>Phase I in 2010-2011, Phase II in 2012-2013, Phase III in 2014-2016</p>
<p>Volumes and dimensions</p>	<p>Phase I: 20 000 m³ + Phase II: 81 000 m³ + Phase III: 23 500 m³</p>
<p>Geology and stabilized material</p>	<p>Clay, w ≈ 70-100 %, Lol ≈ 3-4 %,</p>
<p>Target strength of the stabilized material</p>	<p>Shear strength 40-60 kPa</p>
<p>Binder(s)</p>	<p>Various different combinations of binders (cement, lime and many different industrial by-products, f.e. fly ash, FSG, oil shale). Amount of binders varied from 50 kg/m³ to 200 kg/m³, in some test blocks 400 kg/m³</p>
<p>Laboratory and field tests</p>	<p>Sampling, index and stabilization tests in the laboratory, stabilization tests with various binder mixture combinations. Quality control investigations (soundings, test pits, laboratory samples) in the basins, quality control soundings in the temporary stockpiles (column penetrometer). In addition, leaching and other environmental tests were carried out for unstabilized sediment.</p>
<p>Other</p>	<p>The permeability of the stabilized sediment was examined in the embankment of Sepänmäki where a part of the sediments were utilized.</p>
<p>Long-term follow-up and lessons learned</p>	<p>-</p>
<p>Sources</p>	<p>Forsman, J et al. (2015), <i>Three mass stabilization phases in the West Harbour of Helsinki, Finland - geotechnical and environmental properties of mass stabilized dredged sediments as construction material</i>, Deep mixing conference, San Francisco ABSOILS, (2015), Final report on the pilot applications and quality control of the absoils project, available: http://projektit.ramboll.fi/life/absoils/matsku/absoils_final_report_on_pilots_and_quality_control.pdf Forsman, J. et al. 2018. <i>Utilization of mass stabilized surplus mud and clay as fill and embankment construction material in urban building</i>. WASCON 2018, 10th International Conference on the Environmental and Technical Implications of Construction with Alternative Materials. June 6-8, 2018, Tampere, Finland</p>
<p>Stabilization contractor</p>	<p>Biomaa Oy, Lemminkäinen Oy</p>



Aerial picture of the stabilization basins in Jätkäsaari



Stabilized sediments temporarily stored in stabilization basins in Jätkäsaari



Stabilized and piled sediment

