APPENDIX 7

Below a sediment investigation approach is suggested that could be used in the context of the Jakarta Emergency Dredging Initiative to assess the quality of the sediment in the waterways of the drainage system. This approach is based on the manner Dutch sediments are routinely investigated.

The following basic principles apply:

- The main goal is to obtain an overall description of the sediment quality in the waterways of Jakarta in order to determine the destination of the sediments after dredging. Severely contaminated sediments need to be stored in isolated disposal sites; non to lightly contaminated sediments may be beneficially re-used.
- Although the composition of sediments from urban areas is generally very heterogeneous, mixed samples from sections of 0.5 – 1.0 km must be taken and subsequently analyzed in the laboratory. The reason for this is pragmatic: during the excavation it is hardly possible to distinguish between several contamination levels at a small(er) scale.
- The complete sediment layer that will be dredged must be investigated. No subdivision in vertical sections of the sediment layer should be made.
- The waste encountered during the sampling must not be stored together with the sediments. It would be helpful however when the fieldworkers note down of the occurrence of waste (amount, nature and so on) at each sampling point.
- The subdivision of the rivers, canals and drains into sections must be "logically founded"; this means that major discharges (of contaminated water) and confluences are good choices as a section boundary.

The following procedure may be used (Fig. 1)

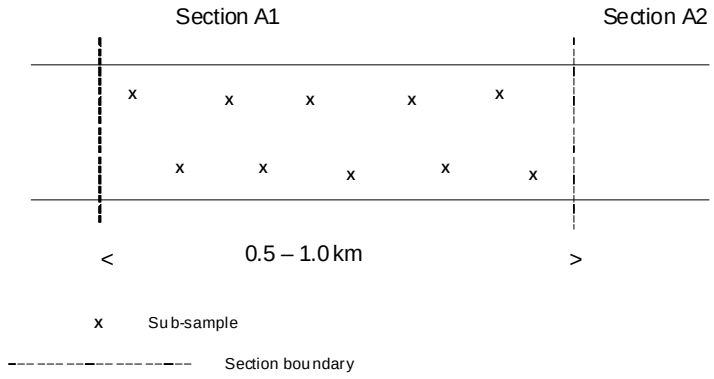

Fig. 1: Sampling scheme (view from above)

- During the fieldwork 10 subsamples of each section should be taken. The amount of each sub-sample should be approximately 1-2 kg. The 10 subsamples for the entire section can be mixed into one representative sample for analysis. This should take place in the laboratory, and not all of the material collected should be mixed; that way, when unexpected results are shown, sub-sample material is still available for follow-up analysis.

- The mixed sample should be analyzed at least for the following compounds: heavy metals, PAH (polycyclic aromatic hydrocarbons) and mineral oil. Additional compounds are recommended: such as organochlorine pesticides and PCB (polychlorinated biphenyls). Initially mixed sediment samples of 10-25% of all sections may be analyzed for these additional parameters (dependent on the budget available and / or the capacity of the laboratory).
- For reasons of comparison, it is recommended to determine the amounts of clay particles (< 2 µm) and organic matter in each mixed sample (contaminants tend to adsorb onto these fractions).
- Results should be compared to (inter)national standards.
- Dependent on the results additional analysis may be considered: e.g. subsamples per section, leachable fractions, and so on.