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ACE 28/95
for information

Review of Contaminated Mud Disposal at East Sha Chau: Interim Report II

Purpose

To inform members of progress in implementing consultants recommendations for refining the contaminated mud disposal arrangements at East Sha Chau.

Background

2. Civil Engineering Department (CED) Consultants, EVS Environment Consultants of Canada, presented their overview report to ACE on 17 October 1994. An update on the implementation of the follow-up activities was presented to ACE on 21 November 1994.

3. At the ACE meeting on 20 February 1995, an Interim Report I was circulated for members' information.

Work Progress

4. The table below summarizes progress since the update to ACE on 20 February 1995.

Recommendations	Activities as of 20.2.1995	Activities as of 12.6.1995
I. QA/QC Review (EVS)	The draft report with specific recommendations to improve the existing QA/QC procedures was sent to relevant Government departments for review in mid-December 1994. The report was finalized on 7.2.1995.	The recommendations of the QA/QC procedures were forwarded to the consultants (BCL/CES), currently undertaking the environmental monitoring and audit programme, for implementation.
II. Retrospective Statistical Analysis (EVS)	The draft report with detailed recommendations to refine the current monitoring programme was sent to relevant Government departments for comment in mid-December 1994. The final report was received on 7.2.1995.	The revised programme will be undertaken for a 6-month period starting in June 1995. See paragraphs 5 and 6 below.

<p>III. Sediment Toxicity Testing (EVS)</p>	<p>EVS was preparing a summary document on the relative roles of sediment chemistry results and toxicity tests results.</p>	<p>The document was received on 21.3.1995. 12 localities have been selected for collecting sediment samples, 4 reference stations and 8 stations in and around the active pit. Sample collection will start in June 1995. See paragraph 7 below.</p>
<p>IV. Comparative Risk Assessment (EVS)</p>	<p>(i) The selection of appropriate locations for the risk assessment in comparison with East Sha Chau was initiated.</p> <p>(ii) An ecological risk calculation of the Chinese White Dolphin was being planned.</p>	<p>(i) 3 trawl stations for collecting demersal nekton have been selected. BCL/CES will undertake the trawling between June and August 1995, then EVS will undertake the comparative risk assessment when the tissue burden data are available. See paragraph 8 below. (ii) Lack of information on the Chinese White Dolphin in Chinese waters is a major difficulty. EVS are still gathering specific information, such as dolphin's diets and foraging range, needed for the risk calculation.</p>
<p>V. Source Characterization (CED)</p>	<p>The collection of dredged source material from barges as they arrived at East Sha Chau was carried out from 28.12.1994 to 26.1.1995.</p>	<p>61 sediment samples were analyzed for heavy metals, moisture contents and particle size distribution. Results of the sediment tests were received in late March 1995. See paragraph 9 below.</p>
<p>VI. Sediment Loss Survey (CED)</p>	<p>A trial ADCP survey to determine the extent and concentrations of the suspended sediment plumes was conducted on 17.1.95. This was followed by a detailed survey on 28.2.95, which was planned to coincide with a period of high tidal fluctuation.</p>	<p>Results of sediment classification tests were received in mid-April 1995. These data, needed for evaluating sediment loss during dumping, will be incorporated in the calculation. The report on the ADCP survey will be ready in July 1995.</p>
<p>VII. International Practices (CED)</p>	<p>Officers from EPD, CED, AFD and NAPCO attended the International Conference on Marine Pollution and Ecotoxicology held on 22-25 January 1995 in Hong Kong.</p>	<p>Numerous contacts have been made with local universities and external agencies which have research interests in ecotoxicology and/or contaminated mud disposal.</p>

5. The revised monitoring programme requires an elevated level of sampling for analysis of sediment and water quality, aquatic biota and ecotoxicology. It includes:

- (i) the introduction of 4 new reference stations sited further from the disposal activity;
- (ii) detailed analysis of suspended sediment chemistry;

- (iii) expanding the trawl survey activity from 2 to 6 nets;
- (iv) raising the number of benthic replicates from 2 to 5;
- (v) the inclusion of 4 additional demersal nekton species for heavy metal analysis;
- (vi) increasing the frequency of biomonitoring;
- (vii) strengthening the QA/QC procedures; and
- (viii) rigorous statistical analysis of the data.

A major reduction in the monitoring effort results from the use of composite samples for heavy metal analysis of sediment and biota tissue.

6. An additional cost of HK \$5.6 million is required for the revised monitoring programme for a 6-month period. This revised programme will commence in June 1995.

7. The selection of suitable reference sites for sediment toxicity testing required much effort. To ensure that the reference sediments provide an appropriate comparison to the disposal area, the sediment characteristics at these sites must be similar to those at East Sha Chau, but outside the influence of the mud disposal activity. Seabed condition at these stations was surveyed on 2 May 1995 using a remotely operated, mobile underwater video camera. The sample collection will commence in June 1995.

8. In addition to conducting a trawling survey south of the West Kowloon Reclamation (Victoria Harbour), demersal nekton will also be sampled from the bay just north of Tung Lung Chau. This will provide data to enable a comparison of risk with East Sha Chau to be made. The trawl surveys will begin in June 1995 for three consecutive months.

9. The test results show that mixing of contaminated with uncontaminated mud during the dredging process has diluted the contaminants to an extent that about 40% of the sediments disposed of at East Sha Chau can be re-classified as uncontaminated. The most common heavy metals present are copper, lead and zinc. Samples with elevated levels of cadmium, chromium, nickel and mercury are rare.

Next Report to ACE

10. A review of the revised monitoring programme will be undertaken by EVS Consultants after the first three months to determine if there is need to modify the sampling frequency of some monitoring parameters. CED plan to report to ACE again in October 1995.