Appendix

LEXICON OF TERMS USED FOR DRILLCORE LOGGING AND SURFACE MAPPING AT TUNG CHUNG, LANTAU ISLAND, HONG KONG
(Reproduced, with minor amendments, from a report prepared for the GEO, CED, by M. R. Gillespie, A. J. Humpage and R. A. Ellison, November 1998)

Introduction

This document outlines the geological terms recommended for use during drillcore logging and surface mapping of rocks and superficial deposits at Tung Chung New Town, Lantau Island, Hong Kong. The terms and their definitions are based largely on those described in Hong Kong Geological Survey Memoir No. 6 (Geology of Lantau District; Langford *et al.* 1995) and in Geoguide 3, the 'Guide to Rock and Soil Descriptions' produced by the Geotechnical Engineering Office, Civil Engineering Department, Hong Kong.

Descriptions of all the key lithologies and geological features encountered in the Tung Chung drillcores are presented. These are based primarily on visual examination of drillcore in a wettened state, using a hand lens where appropriate. Useful additional information is provided by the acid test (using 10% HC1 to detect calcite), and a hardness (scratch) test using a steel knife.

A list of key diagnostic features and, where appropriate, one or more photographs accompany the brief description provided for each recommended term. Significant differences in the character of lithologies between the main sites (Sites 3, 4 and 5) investigated within the Tung Chung New Town Area (Figure 1) are noted. Grain size terms are defined in Table 5 of Geoguide 3.

One or more reference samples of most of the Tung Chung lithologies has been collected and is stored by the Hong Kong Geological Survey, Geotechnical Engineering Office, Civil Engineering Department, Hong Kong. These are mainly hand samples of drillcore, each of which has been assigned an identification number (e.g. Reference sample no. 1). However, Mazier samples, whole drillcore boxes and several complete drillcores also form part of the reference sample collection. The reference sample numbers, or the borehole name and depth of the other types of reference samples, are referred to at appropriate points in the text.

In photographs showing drillcore in boxes, or parts of boxes, the shallowest part of the core is at top left, the deepest part at bottom right.

Lexicon

Fill

Description
Man-made deposit composed mainly of sand, gravel and shell fragments, with occasional boulders, cobbles, wood and synthetic materials. Table 18 in Geoguide 3 summarises some of the features associated with fill.
Key diagnostic features :
(i) Mainly sand, gravel and shell fragments. Occasional boulders, cobbles, wood and synthetic materials.
(ii) Unconsolidated.
(iii) No structure.
(iv) Usually light brown to grey.
Reference sample no. : Fill is represented in all the whole reference drillcores.

Marine sediment

Description

Unconsolidated mud, sand, silt, shell fragments. The marine sediments at Tung Chung belong to the Hang Hau Formation, details of which are summarised in Section A.6.4 and Plate 11C of Geoguide 3.

Key diagnostic features :

(i) Composed dominantly of mid- to dark grey, clayey/silty mud, often with shell fragments.

(ii) The mud is soft and plastic, though it may dry out and become hard in storage.

Comments

Light brown to grey sand may form part of the marine sediment locally and can be difficult to distinguish from fill, where the two are juxtaposed.

Reference sample no.: Reference drillcore B-19, 20.5 – 27.7 m

Photograph: See Geoguide 3: Plates 9A & 11C

Alluvium

Description

Unconsolidated boulders, cobbles, gravel, sand and silt. Features characteristic of alluvium in Hong Kong are summarised in Section A.6.3 of Geoguide 3.

Key diagnostic features :

(i) Composed of unconsolidated boulders, cobbles, gravel, sand and silt.

(ii) Clast surfaces are typically rounded.

(iii) Clasts are generally not cemented.

(iv) There is usually a variety of clast lithologies.

Comments

Alluvium at Tung Chung belongs to the Chek Lap Kok (?and pre-Chek Lap Kok) Formation. Alluvium sequences in Tung Chung drillcores are typically dominated by boulders and cobbles, any finer matrix having been lost during drilling. Intervals up to several metres thick of dark grey to pale green mud and sand occur locally in the alluvium of Site 3 and Site 4.

Reference sample no.: Reference drillcores B-5 (21 – 27 m) and CB-46A (21 – 42 m)

Plate A1 - Typical appearance of alluvium in Tung Chung drillcores.The five jar samples contain pale green mud. Tung Chung, Site 3; Drillcore CB-49C; Box 1, 0.0 - 39.0 m

See also : Plate 2

Plate A2 - 30.30 to about 30.90 is typical alluvium; 30.90 to 33.50 is typical colluvium; the colluvium sits directly on siltstone (see Section 2.6), which fills all the jar samples representing the cored interval 33.50 to 66.0 m. Tung Chung, Site 4; Drillcore B-19; Box 2, 30.30 – 66.0 m. See also: Geoguide 3, Plate 11E

Colluvium

Description

A deposit of boulders, cobbles, gravel, sand and silt. Features characteristic of colluvium in Hong Kong are summarised in Section A.6.2, Table 18 and Plate 11E of Geoguide 3.

Key diagnostic features :

(i) Composed of boulders, cobbles, gravel, sand and silt.
(ii) Clast surfaces are typically angular.
(iii) Clasts are set in a silty sand matrix, at least part of which generally survives coring.
(iv) A variety of clast lithologies usually distinguishes colluvium from a fault breccia.

Comments

Most of the colluvium in Tung Chung drillcores belongs to the Chek Lap Kok (?and pre-Chek Lap Kok) Formation and occurs immediately beneath, or wholly within, alluvium. Colluvium often forms the basal part of the superficial deposits.

Reference sample no.: Reference drillcores C-42 (36 – 55 m) and B-19 (31 – 33.5 m)

Fine alluvial sediment

Description

Typically orangish to dark brown, unconsolidated, soft sediment of mainly sand-silt grade, with occasional gravelly beds and little or no discernible structure.

Key diagnostic features :

(i) Orangish to dark brown colour.
(ii) Generally fine grain size.
(iii) Unconsolidated (though it may become hard and brittle after drying-out).
(iv) Typically found immediately beneath alluvium/colluvium.
(v) Contains very rare, small shell fragments.
(vi) Sand to gravel sized fragments of a range of rock types typically occur in the fine alluvial sediment (see Plate 3), and serve to distinguish it from residual soil derived from igneous rock (see Section 2.24).

Comments

Principal occurrence of fine alluvial sediment at Tung Chung is in Site 3, where up to seventy metres has been cored locally. Recovered material is almost entirely in jar and Mazier samples.

Reference sample no.: Reference drillcores CC9 (40.5 – 72.5; 83 – 111 m) and CB46A (42 – 97 m); and all Mazier samples in these intervals.

Plate A3 - Typical appearance of fine alluvial sediment in jar samples. Tung Chung, Site 3; Drillcore CA-4A; Box 2, 43.4 – 46.95 m

Siltstone

Description

Moderately consolidated to semi-lithified sediment composed mainly of silt-grade particles (Plates 2 and 4a). Local intervals of intraformational conglomerate up to about 19 metres thick consist of siltstone fragments set in a moderately consolidated silty matrix (Plate 4b).

Key diagnostic features :

(i) Generally uniform, moderately consolidated to semi-lithified, silty sediment.
(ii) Typically blue-grey to olive green and brown; fracture surfaces are stained orange-brown to black.
(iii) Local intervals of colluvium.
(iv) No macroscopic shell, plant or fossil material.
(v) Little or no evidence of bedding or other sedimentary structures.
(vi) Found beneath the coarse alluvium/colluvium sequence and above 'basement' lithologies such as granite, rhyolite and metasedimentary rocks.

Comments

Two apparently separate occurrences of siltstone have been identified at Tung Chung, both in Site 4, where up to about 100 metres of siltstone has been cored locally.

Intervals of soft, pale green, very fine-grained material, sometimes with thin bands of grey silt, occur locally in the siltstone (Plate 5). The green material is typically flecked with streaks and spots of black Mn-oxide. A sequence of assorted boulders, cobbles, and occasionally marine sediments, is found at the base of the deepest occurrences of siltstone.

Reference sample no.: 36 & 23. Also in Reference drillcores B5 (27 – 60 m) and B-19 (32.5 – 130 m)