

MINERALOGICAL STUDY OF MERRIMAN CRISTAL SEDIMENT

BY MERRIMAN CRISTAL

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MINERALOGICAL STUDY OF MERRIMAN CRISTAL SEDIMENT
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MINERALOGICAL STUDY OF KEMAMAN COASTAL SEDIMENT

By

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**JABATAN SAINS MARIN
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**PENGAKUAN DAN PENGESAHAN LAPORAN
PROJEK PENYELIDIKAN I DAN II**

Adalah ini dimaklumkan dan disahkan bahawa laporan penyelidikan bertajuk: Mineralogy of Kemaman Coastal Sediments oleh Siti Waznah Binti Abdurahman, No. Matrik: UK 10015 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Samudera sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda (Sains Samudera), Fakulti Pengajian Maritim dan Sains Marin, Universiti Malaysia Terengganu.

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LIST OF ABBREVIATIONS

%	percentage
$^{\circ}\text{C}$	degree Celsius
L	liter
ml	milliliter
μm	micrometer
cm	centimeter
mm	millimeter
mg	milligram
g	gram
kg	kilogram
M	mol
N	normality
NaHCO_3	Sodium bicarbonate
HCl	Hydrochloric acid
H_2O_2	Hydrogen peroxide
MgCl_2	Magnesium chloride
<	less than
>	more than
CHR	corrected hydrometer reading
S.G	Specific Gravity

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ABSTRACT

The study was conducted to determine the mineral contents and also the textural classes of the Kemaman coastal sediments (from Dungun River to Kemaman River). The sediments were collected from 12 stations by using Smith Mc Intyre grab. The sediments were analyzed using three methods: (i) X-Ray Diffractometer (XRD), for silt and clay fractions, (ii) Quantitative Mineral Estimation (QME), for heavy mineral analysis, and (iii) Textural class analysis using Hydrometer method. The result of XRD analysis showed that quartz is the dominant mineral in most of the stations, while other minerals such as feldspar, illite, kaolinite, montmorillonite, chlorite and vermiculite were found in trace amounts. The QME analysis also showed that quartz is the dominant mineral in every station. The other 10 minerals obtained which are listed in a decreasing abundance are: andalusite, ilmenite, iron oxide, siderite, tourmaline, hydroilmenite, magnetite, rutile and zircon. According to the result of textural class analysis, there were two classes of sediment that were identified: (i) sand, and (ii) sandy loam. The group of sand texture are mostly found at nearshore area (Stations 2, 5, 6, 7, 9, 10 and 11), while sandy loam texture are found at offshore area (Stations 1, 3, 4, 8 and 12).

ABSTRAK

Tujuan utama projek ini dijalankan adalah untuk mengenalpasti kandungan jenis-jenis mineral serta kelas tekstur bagi taburan sedimen dasar laut di kawasan perairan Kemaman (dari Sungai Dungun hingga Sungai Kemaman). Kajian dijalankan terhadap 12 stesen dengan menggunakan alat penyampel sedimen, iaitu Pencekau Smith Mc Intyre. Sampel dianalisa melalui 3 kaedah utama: (i) *X-Ray Diffractometer (XRD)*, untuk analisa fraksi kelodak dan liat, (ii) *Quantitative Mineral Estimation (QME)*, untuk analisa mineral berat, dan (iii) Pengkelasan tekstur tanah dengan menggunakan Kaedah Hydrometer. Keputusan daripada analisa *XRD* menunjukkan kuartza sangat dominan di kebanyakan stesen berbanding dengan mineral lain yang hadir sebagai mineral surih seperti *feldspar*, *illite*, *kaolinite*, *montmorillonite*, *chlorite* dan *vermiculite*. Analisis *QME* juga menunjukkan kandungan kuartza yang dominan di kawasan kajian, dan ini diikuti oleh mineral-mineral yang hadir dalam kuantiti minor (surih) iaitu *andalusite*, *ilmenite*, *iron oxide*, *siderite*, *tourmaline*, *hydroilmenite*, *magnetite*, *rutile* dan *zircon*. Analisis pengkelasan tekstur tanah pula menunjukkan kehadiran dua jenis kelas tekstur: (i) pasir dan (ii) loam berpasir. Berdasarkan keputusan yang diperolehi, sedimen berpasir ditemui di kawasan berdekatan dengan pantai (stesen 2, 5, 6, 7, 9, 10 dan 11), manakala sedimen loam berpasir kebanyakannya ditemui di kawasan yang jauh dari pantai (stesen 1, 3, 4, 8 dan 12).