

A STUDY ON DISSOLVED METAL
CONCENTRATIONS IN THE WATER OF
NERUS RIVER

YEAP CHENG SOON

JABATAN SAINS KEJURUTERAAN
FAKULTI SAINS DAN TEKNOLOGI
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA

SESI 2002/2003

fn 1663

1100025075

LP 28 FST 3 2003



1100025075

A study on dissolved metal concentrations in the water of Nerus River / Yeap Cheng Soon.



1100025075

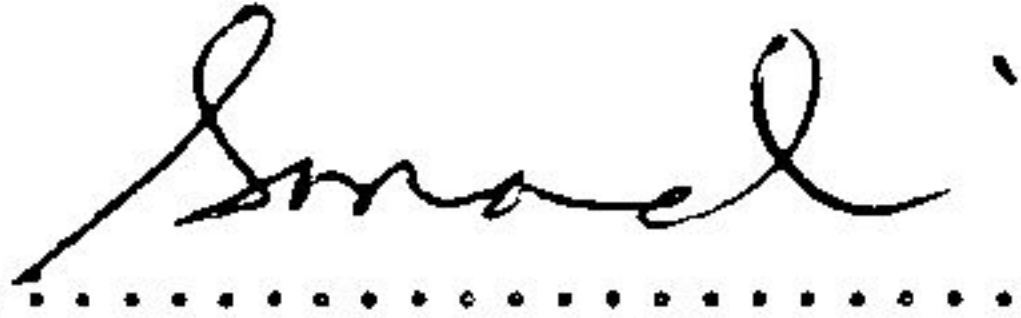
PERPUSTAKAAN KOLEJ UNIVERSITI SAINS & TEKNOLOGI MALAYSIA (KUSTEM)

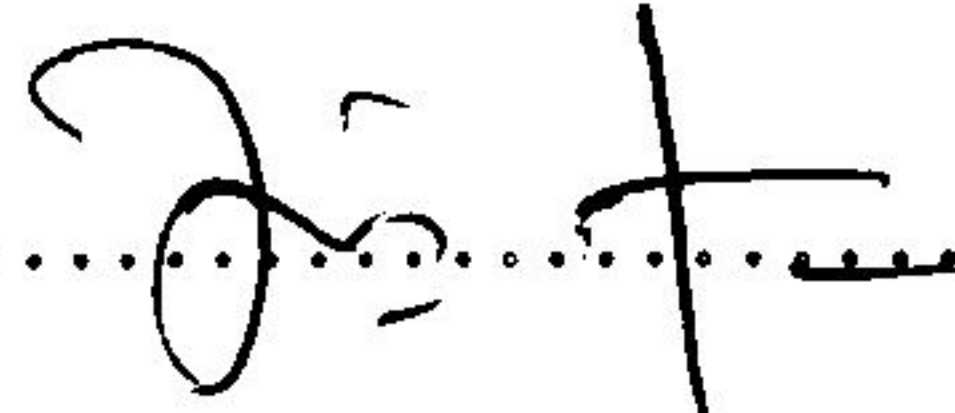
cln 1663

Pengarang		No. Panggilan	
YEAP CHENG SOON		LP 28	
Judul		FST 13	
A STUDY ON		2003	
DISSOLVED---			
Tarikh	Waktu Pemulangan	Nombor Ahli	Tanda tangan
7/3/05	3.20 pm	UK9103	li
8/3/05	2.45 pm	UK 9199	luf.
2/5/05	11/30 pm	GSK 0030	af
3/05/05	12.30 pm	GSK 0220	N.

LP 28 FST 3 2003

“Kami akui bahawa kami telah membaca karya ini dan pada pendapat kami karya ini adalah memadai dari segi skop dan kualiti untuk tujuan penganugerahan ijazah Sarjana Muda Teknologi (Teknologi Alam Sekitar).”

Tandatangan : 
Nama Penyelia I : En. Asmadi Ali @ Mahmud
Tarikh : 22/03/03

Tandatangan : 
Nama Penyelia II : En. Suhaimi Suratman
Tarikh : 22/3/03

**A STUDY ON DISSOLVED METAL CONCENTRATIONS IN THE WATER
OF NERUS RIVER**

YEAP CHENG SOON

**This Thesis is Submitted in Partial Fulfilment of
the Requirements for the Degree of Bachelor of Technology
(Environmental Technology)**

**Faculty of Science and Technology
Kolej Universiti Sains dan Teknologi Malaysia**

MARCH, 2003

1100025075

“I declare that this thesis is the result of my own research except the materials as cited in references.”

Signature : 

Name : Yeap Cheng Soon

Date : 22/3/03

ACKNOWLEDGEMENTS

I would like to thank God most of all for His love and faithfulness throughout my life. Everything that I have is His gift and blessing.

I want express my gratitude to my project supervisor, En. Asmadi Ali, for his advice and for guiding me throughout this project. I thank him for the time sacrificed in correcting the mistakes in this report. I also thank En. Suhaimi Suratman, my second supervisor, for his time, guidance and advice. I wish to thank the lab assistants especially En. Ruzeman and En. Zulkifli, who have been of great help in carrying out and completing my experiments. Kudos to them for their competency in carrying out their duties.

I also want to thank my parents who have provided a good education for me and my whole family who have always supported me. I am grateful to Saw Hooi who has been a source of strength and encouragement to me. Finally, to all my course mates, thank you for your friendship and help throughout these three years.

ABSTRACT

This study on dissolved metal concentrations in Nerus River was carried out from August 2002 to November 2002. The river water samples were collected monthly from eight stations located along the river namely Kampung Payung, Kampung Langkap, Kampung Banggul Nyiur, Kampung Pengkalan Merbau, Kampung Bukit Nenas, Tekah, Kampung Banggul Peradung and Kampung Buluh Gading. The samples were extracted using the APDC-MIBK solvent extraction technique and analysed in an ICP-AES. The results showed that the average dissolved Al concentration was between $0.501\mu\text{g l}^{-1}$ and $1.526\mu\text{g l}^{-1}$ while the average concentration of dissolved Cd ranges from $0.364\mu\text{g l}^{-1}$ to $0.520\mu\text{g l}^{-1}$. The average dissolved Fe concentration was between $1.186\mu\text{g l}^{-1}$ and $1.996\mu\text{g l}^{-1}$ and the average dissolved Mn concentration was from $0.073\mu\text{g l}^{-1}$ to $0.319\mu\text{g l}^{-1}$. The average dissolved concentration of Pb was found to be between $6.594\mu\text{g l}^{-1}$ and $7.635\mu\text{g l}^{-1}$. Dissolved metal concentration was found to be affected by river flow, rainfall and anthropogenic inputs. Dissolved Mn concentration was affected by dissolved oxygen, temperature and salinity.

ABSTRAK

Kajian kandungan logam terlarut dalam air Sungai Nerus dijalankan dari Ogos 2002 sehingga November 2002. Sampel air sungai diambil tiap-tiap bulan dari lapan buah stesen yang terletak di sepanjang Sungai Nerus. Stesen-stesen tersebut adalah Kampung Payung, Kampung Langkap, Kampung Banggul Nyiur, Kampung Pengkalan Merbau, Kampung Bukit Nenas, Tekah, Kampung Banggul Peradung dan Kampung Buluh Gading. Sampel air disaring dengan menggunakan kaedah penyaringan pelarut APDC-MIBK dan dianalisis menggunakan ICP-AES. Keputusan yang diperolehi menunjukkan kandungan Al terlarut adalah di antara $0.501\mu\text{gl}^{-1}$ dan $1.526\mu\text{gl}^{-1}$ manakala kandungan Cd terlarut adalah di antara $0.364\mu\text{gl}^{-1}$ sehingga $0.520\mu\text{gl}^{-1}$. Kandungan Fe, Mn dan Pb terlarut masing-masing adalah di antara $1.186\mu\text{gl}^{-1}$ hingga $1.996\mu\text{gl}^{-1}$, $0.073\mu\text{gl}^{-1}$ hingga $0.319\mu\text{gl}^{-1}$, dan $6.594\mu\text{gl}^{-1}$ hingga $7.635\mu\text{gl}^{-1}$. Kepekatan logam terlarut dipengaruhi oleh aliran sungai, hujan dan pencemaran. Kepekatan Mn terlarut dipengaruhi oleh kandungan oksigen terlarut, suhu air dan saliniti.