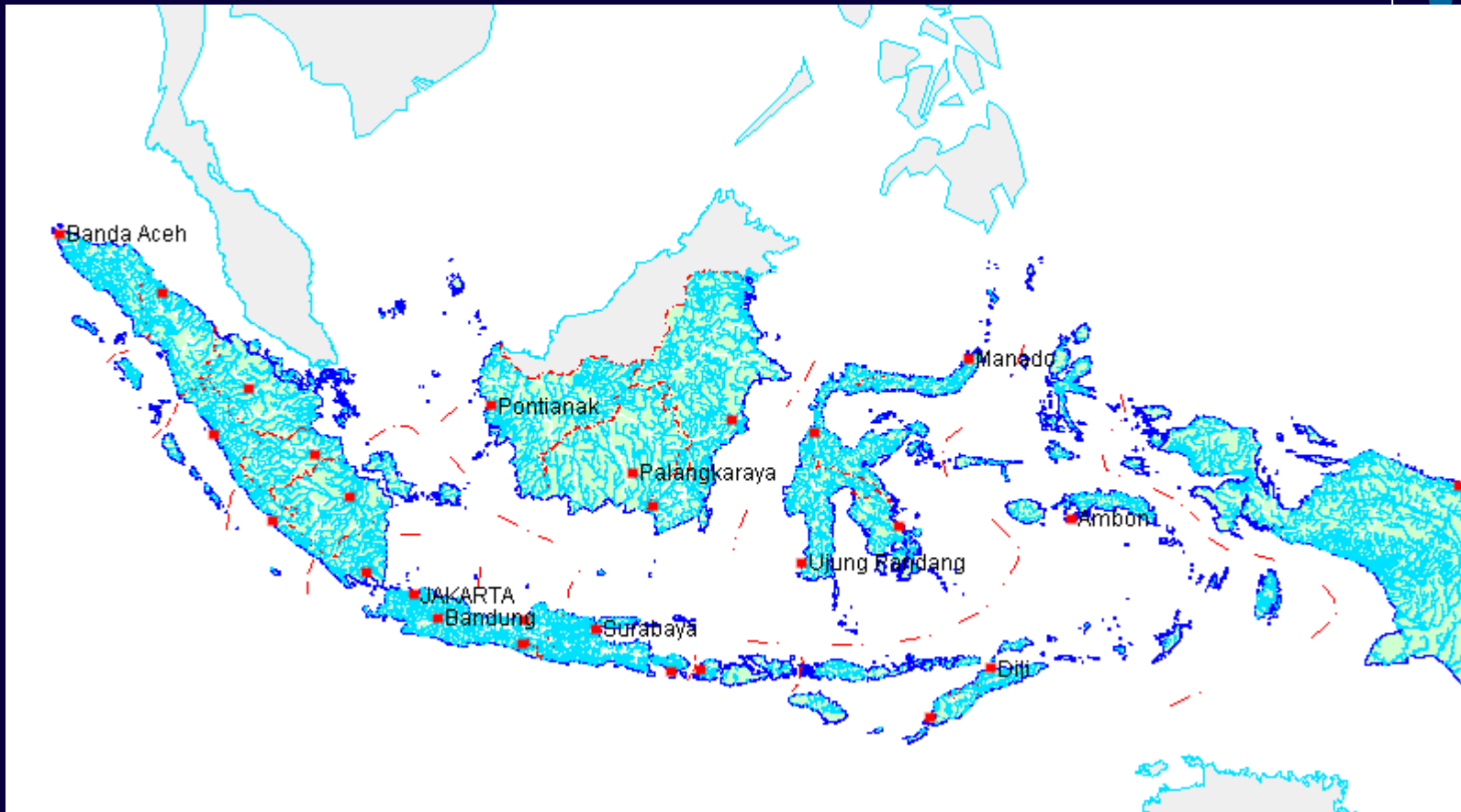


Recent Signs of Water-related Disasters



Joesron Loebis

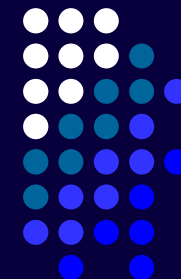
Chairman, Indonesia Hydrological Society

Research Institute for Water Resources

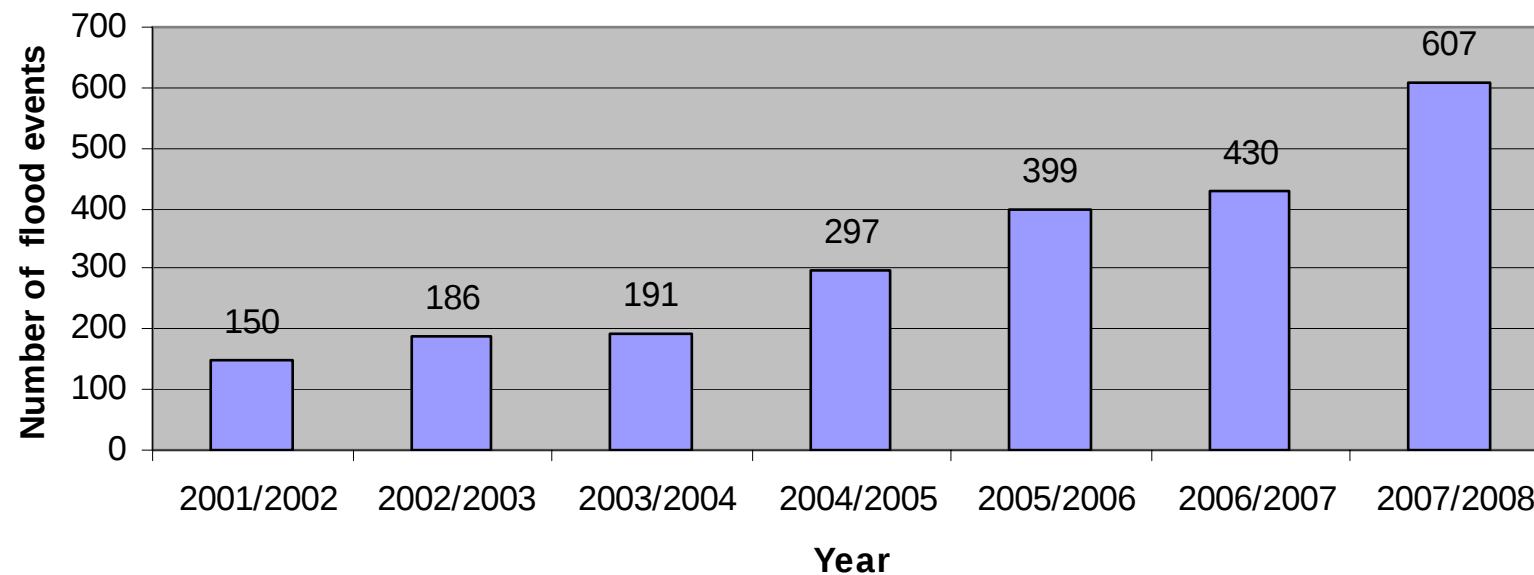
Jl.Ir.H.Juanda 193, Bandung, Indonesia

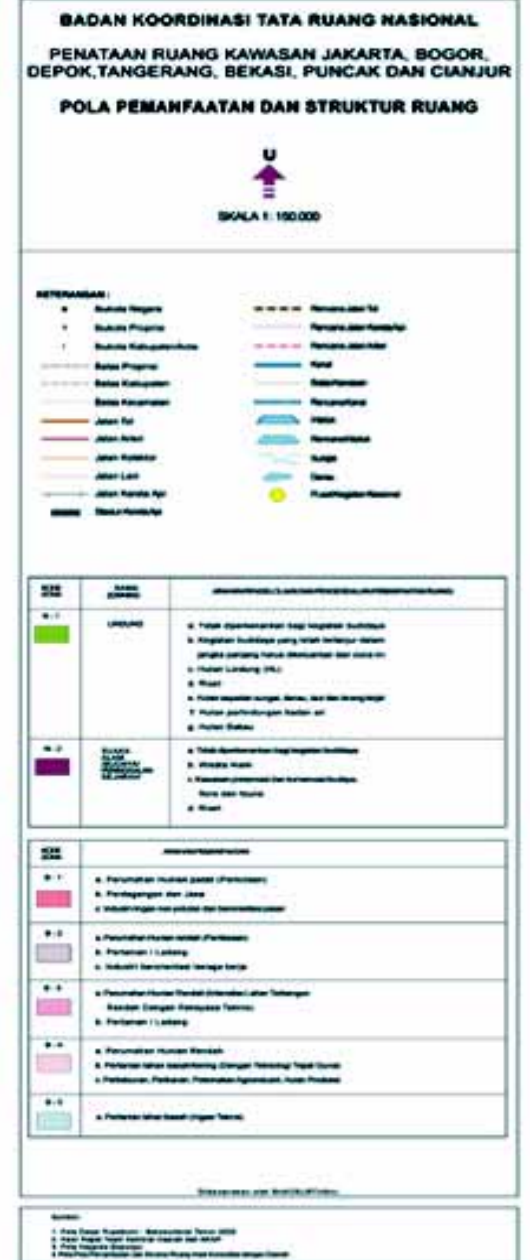
E-mail: joesron@melsa.net.id

URBAN AND FLASH FLOODS

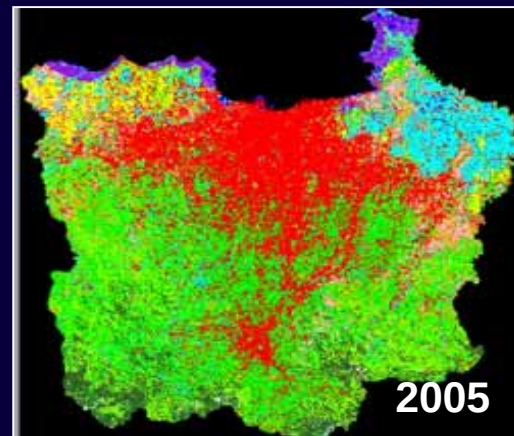
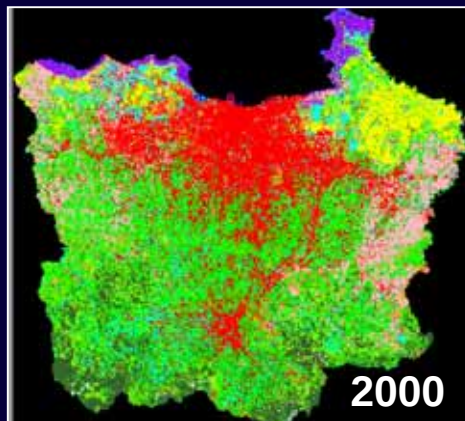
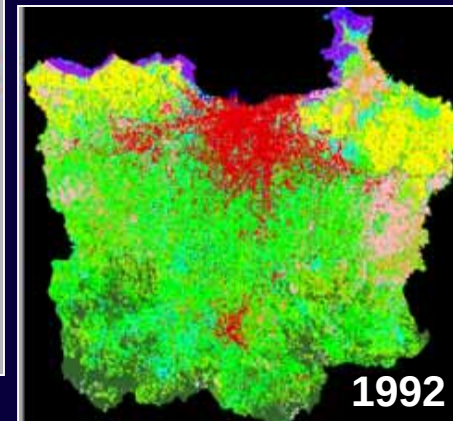
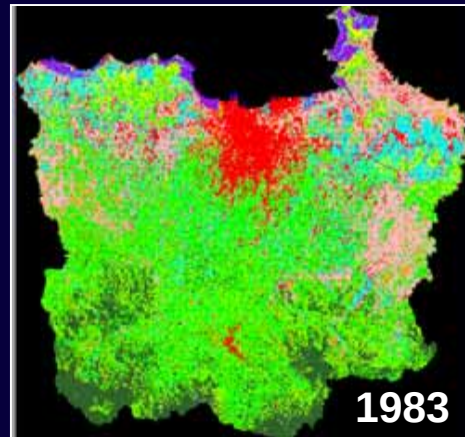
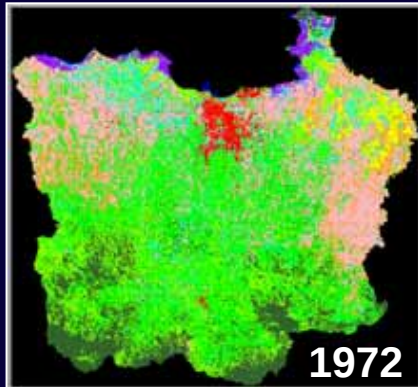


NUMBER OF FLOODS OCCURRED IN INDONESIA



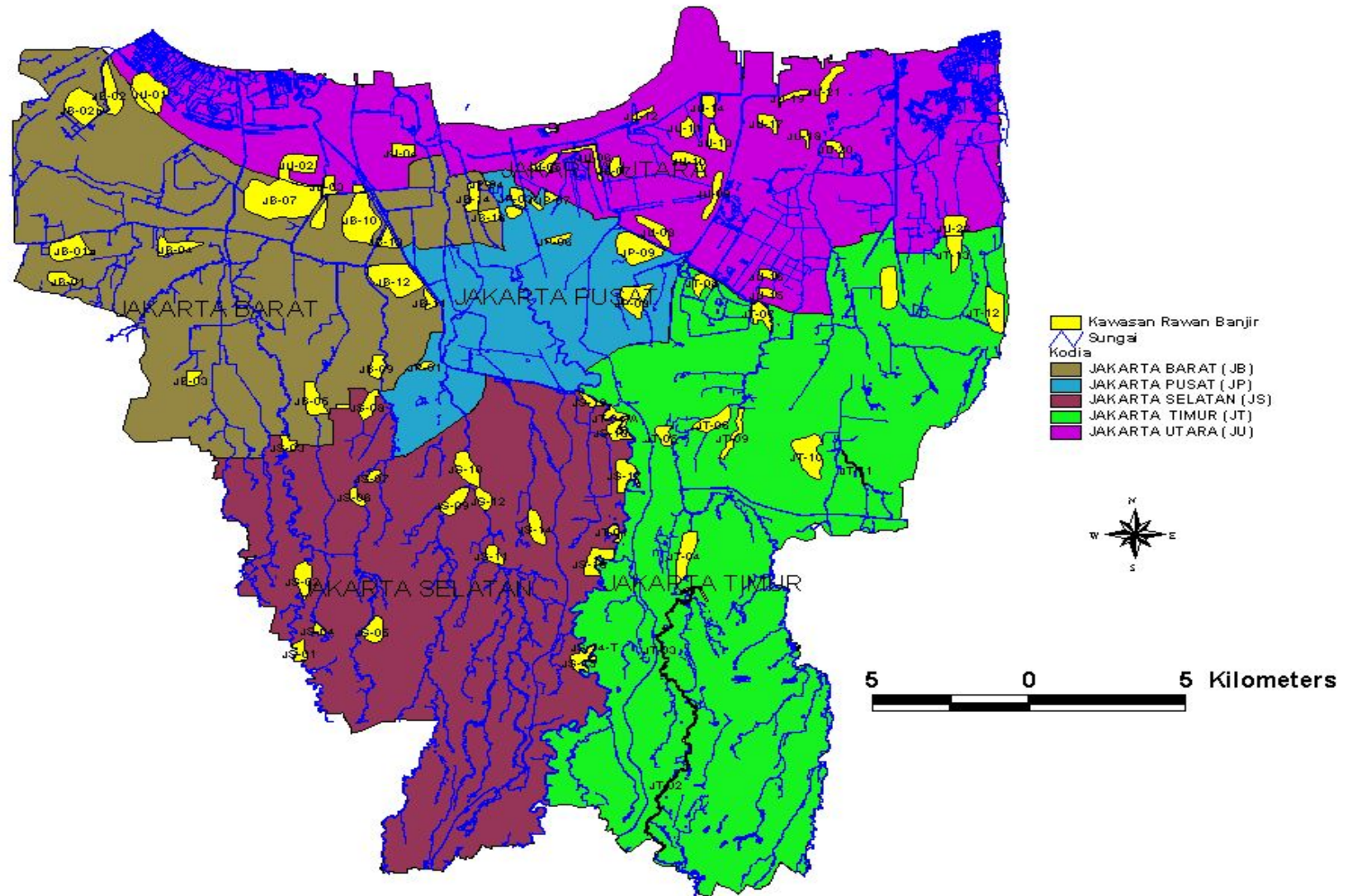
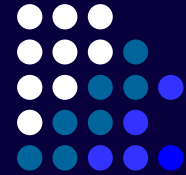


LAND USE CHANGE IN SURROUNDING JAKARTA AREA FROM 1972 - 2005

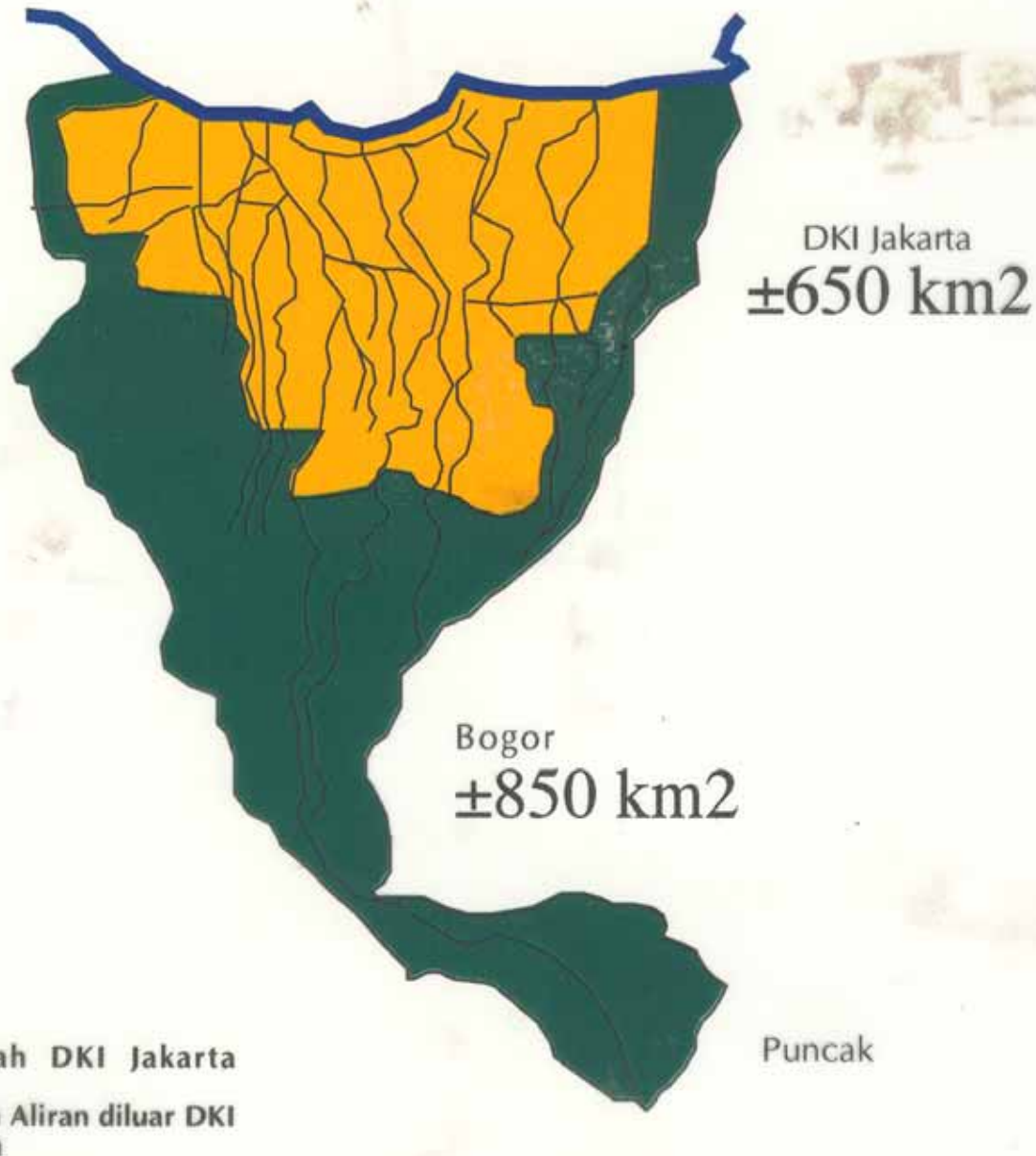


as result of land use conversion and the impact of climate change will changing water availability such as Increasing temperature will increasing evaporation and reduced runoff and reduced river flow, on the other hand increasing precipitation will increasing runoff and river flow, on the contrary decreasing precipitation will decreasing runoff and river flow.

KAWASAN RAWAN BANJIR WILAYAH DKI JAKARTA



DAERAH ALIRAN SUNGAI



Masalah Banjir di DKI Jakarta

2. Ada 13 Sungai besar dan sedang yang berasal dari Jawa Barat menuju Teluk Jakarta melalui Kota Jakarta.

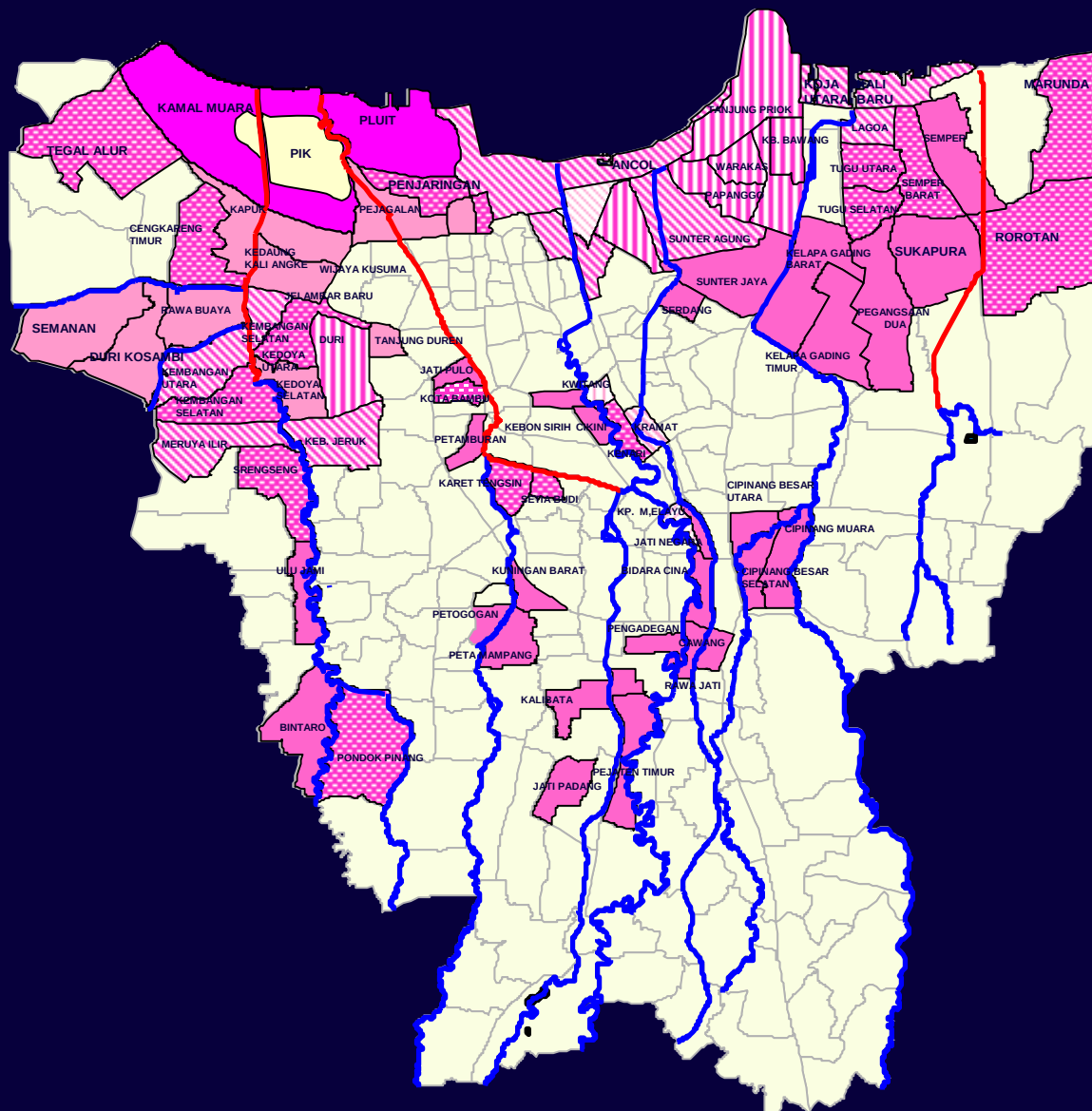
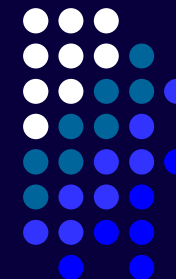
Sungai-sungai ini adalah :

01. MOOKERVART
02. ANGKE
03. PESANGGRAHAN
04. GROGOL
05. KRUKUT
06. KALIBARU BARAT
07. CILIWUNG
08. KALIBARU TIMUR
09. CIPINANG
10. SUNTER
11. BUARAN
12. JATI KRAMAT
13. CAKUNG

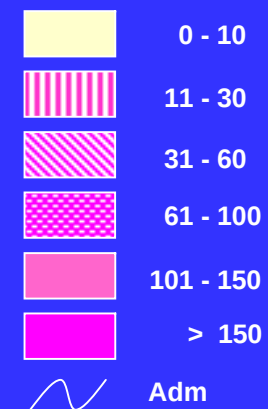
Luas Daerah Aliran Sungai adalah 1.500 km^2 yang meliputi wilayah DKI Jakarta dan sebagian wilayah BOTABEK.

3. Curah Hujan Cukup Tinggi Rata-rata 2000 s/d 4000 mm/tahun

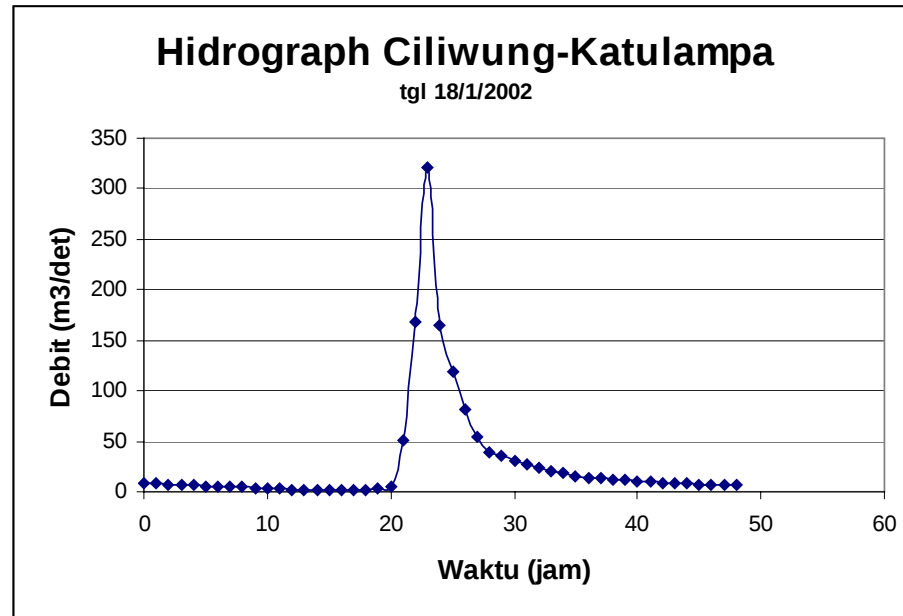
LOKASI BANJIR TAHUN 2002



Legend :



SAMPEL HIDROGRAPH DI CILIWUNG 2002



PUNCAK 321m³/det

PUNCAK 293m³/det

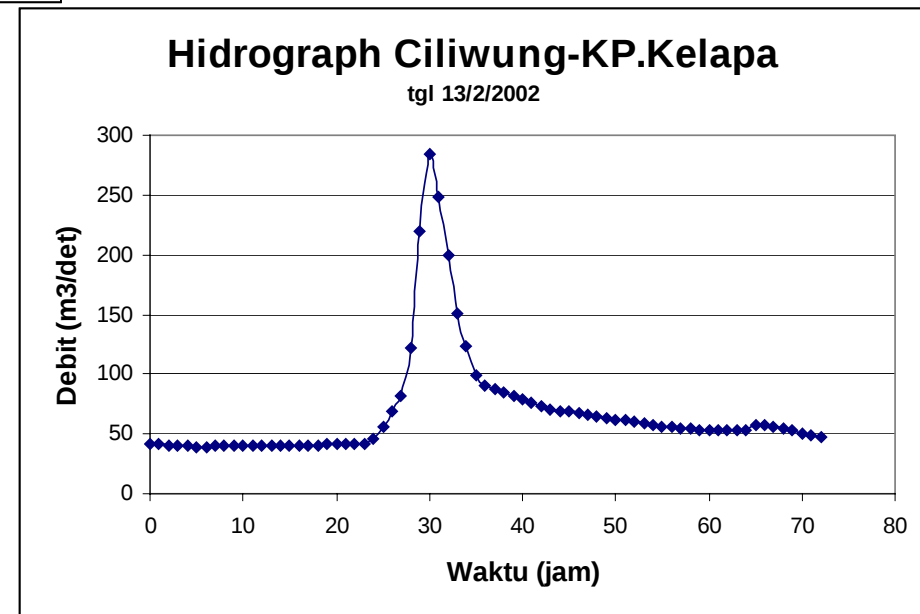
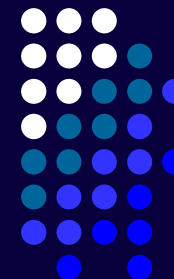


PHOTO BANJIR 2002



More Photos
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4

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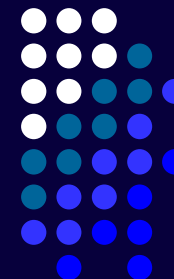
6



1

Luapan Kali Cideng (Jl. Kebon Sirih)

PHOTO BANJIR 2002



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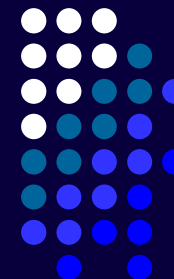


2

Kawasan Menteng

BACK NEXT

PHOTO BANJIR 2002



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4

5

6

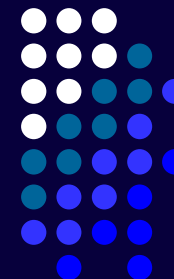


3

Luapan Kali Banjir Kanal (Jalam menuju bandara)

BACK NEXT

PHOTO BANJIR 2002



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2

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4

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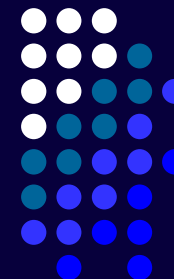
6



4 Luapan Kali Ciliwung

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PHOTO BANJIR 2002



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1

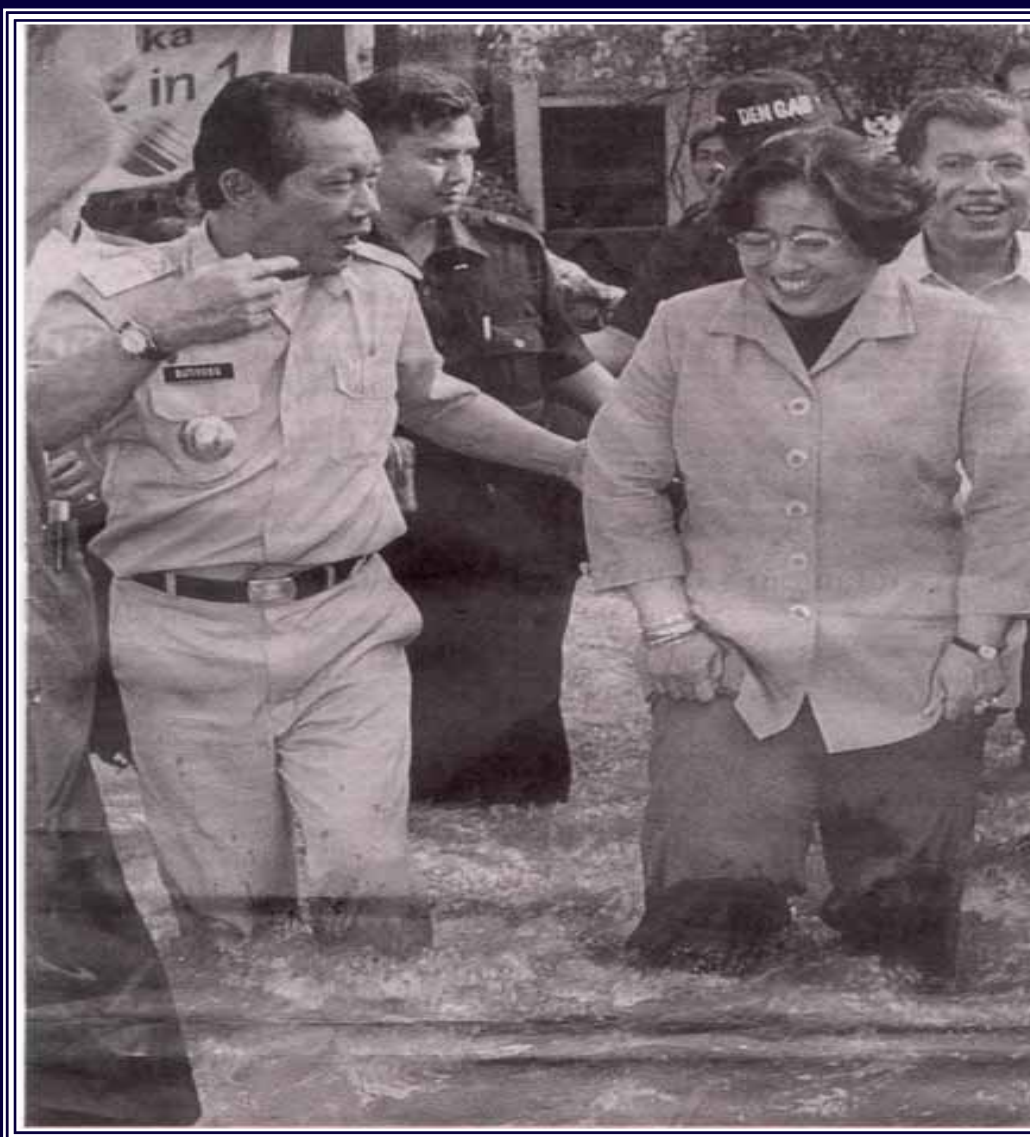
2

3

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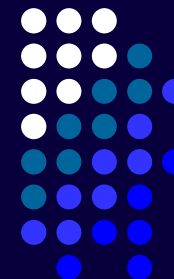
6



5 Luapan Kali Cipinang

BACK NEXT

PHOTO BANJIR 2002



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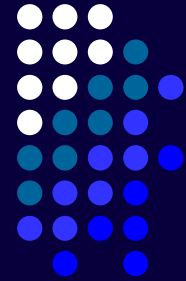


6

Limpasan Banjir Kanal Barat

BACK *NEXT*

PHOTO BANJIR 2007



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12

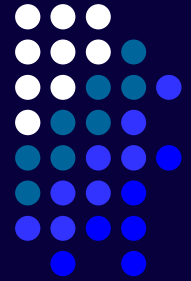


KEPUNG BANJIR: Kondisi jalan di Pos Pengumben, Jakarta Barat putus total akibat banjir. Tampak sejumlah warga yang nekat menyeberangi jalan dengan menggunakan gerobak sampah.

7

Luapan Kali Cideng (Jl. Kebon Sirih)

PHOTO BANJIR 2007



More Photo
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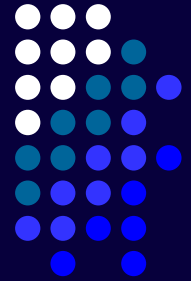
12



8

Kawasan Menteng

PHOTO BANJIR 2007



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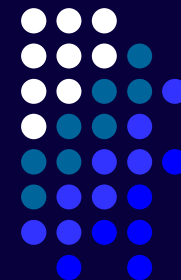
12



9

Luapan Kali Banjir Kanal

PHOTO BANJIR 2008



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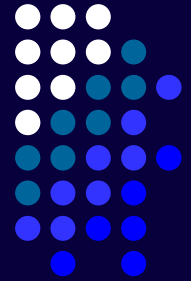
11

12



10 Luapan Kali Ciliwung

PHOTO BANJIR 2008



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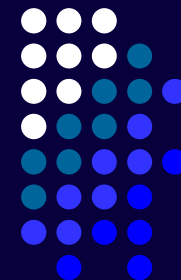
11

12



11 Tol Road to International Airport

PHOTO BANJIR 2008



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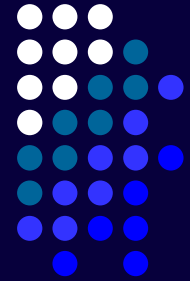
11

12



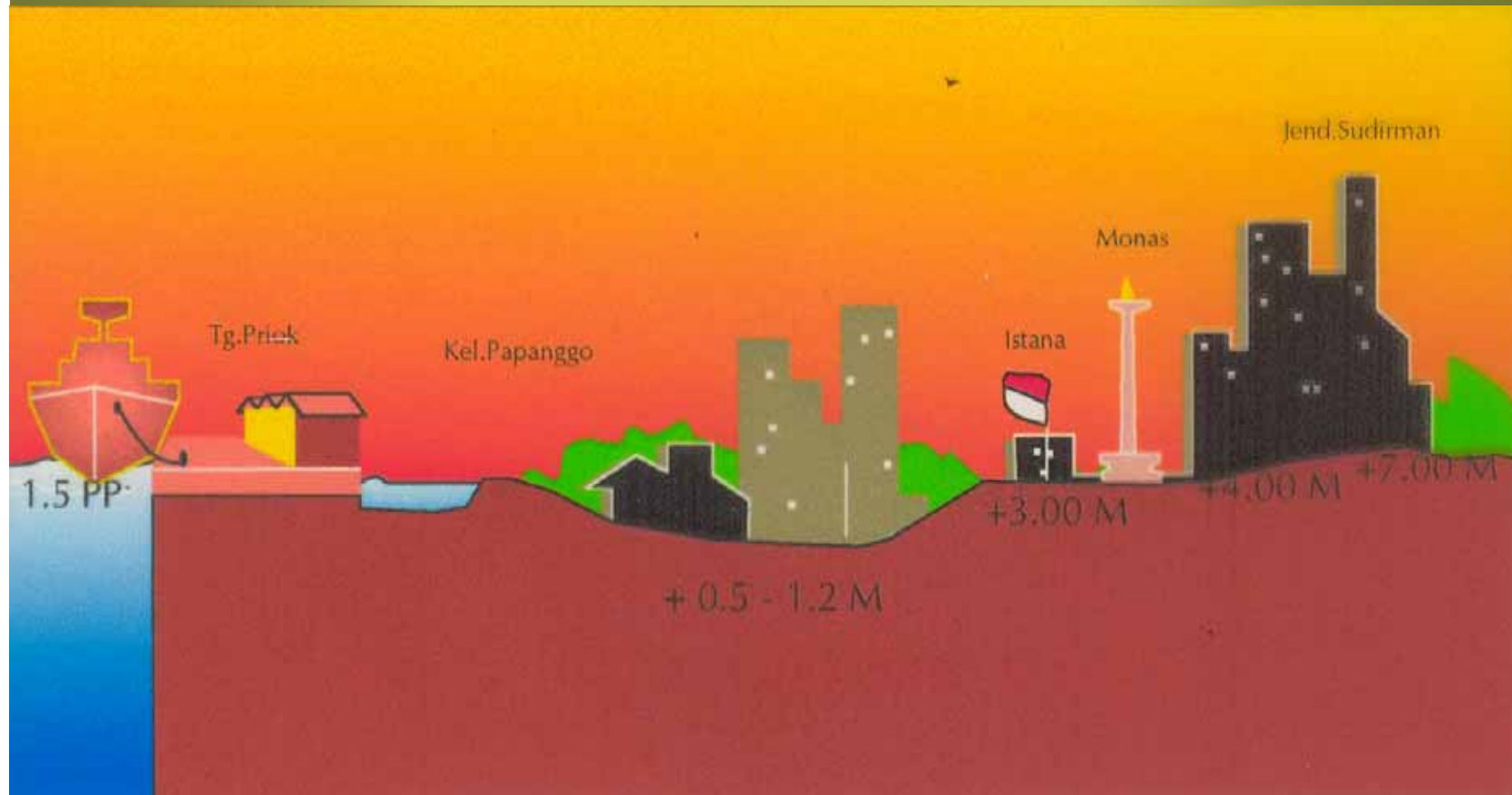
12 Tol Toad to International Airport

OVER FLOW CILIWUNG RIVER 2008

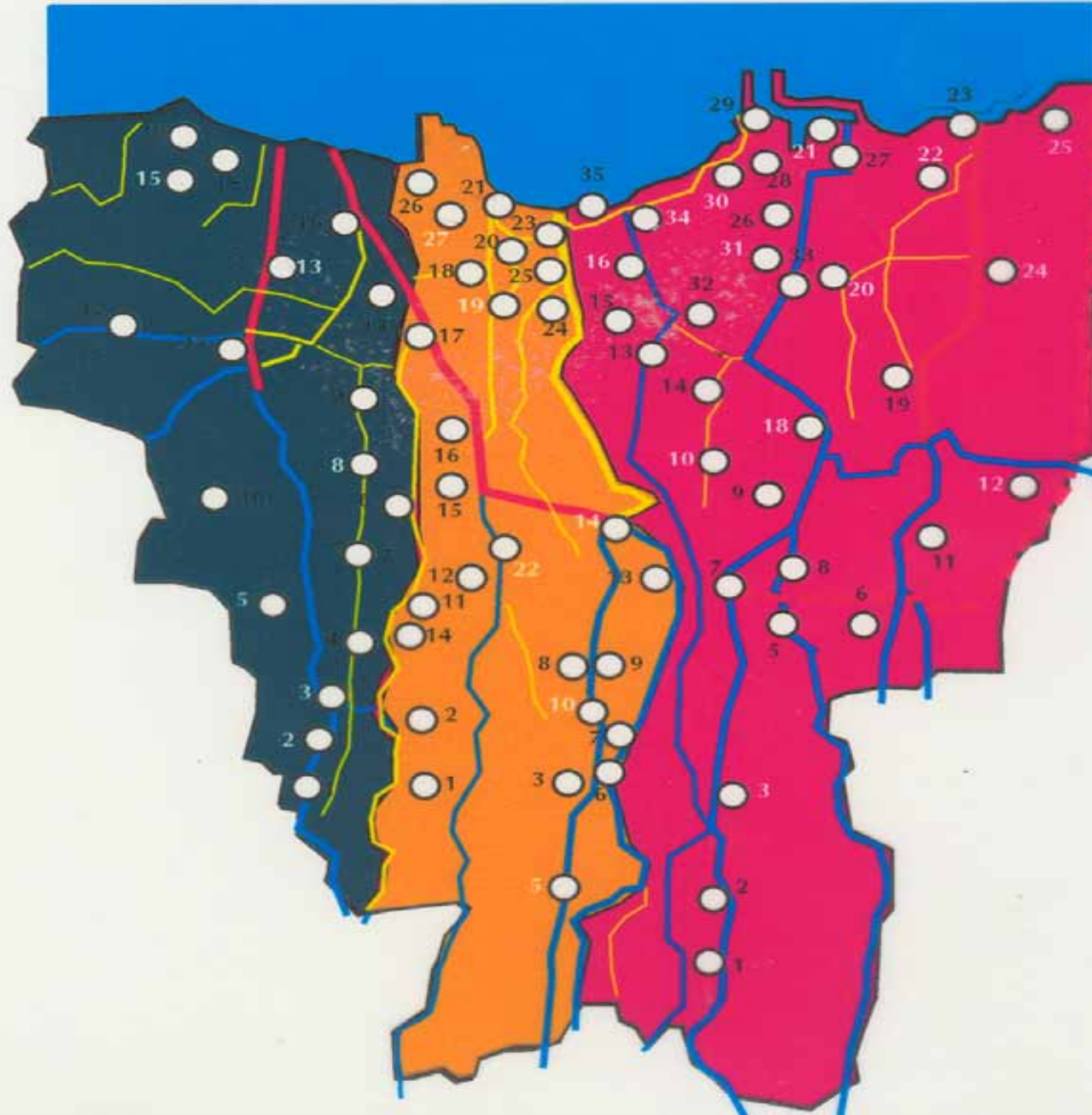


CROSS SECTION JAKARTA

40 % ABOVE SEA LEVEL



PETA LOKASI RAWAN BANJIR



Masalah Banjir di DKI Jakarta

DAERAH ALIRAN BARAT

- | | |
|-------------------------|-----------------------------|
| 01. KAMPUNG CIREUNDEU | 10. MERUYA |
| 02. SESKOPOL/PD. PINANG | 11. RAWA BUAYA |
| 03. KOMP. IKPN BINTARO | 12. SEMANAN/DURI KOSAMBI |
| 04. SHANGRILLA INDAH II | 13. KEDAUNG ANGKE/KAPUK |
| 05. KAMPUNG DUKUH | 14. JELAMBAR/WIJAYA KUSUMAH |
| 06. KEMANDORAN | 15. KAMAL, TEGAL ALUR |
| 07. KELAPA DUA | 16. TELUK GONG, KAMP. GUSTI |
| 08. SUKABUMI UTARA | 17. KAMUK MUARA, SEDIATMO |
| 09. KOMPLEK ABRI | 18. KAPUK KAMAL |

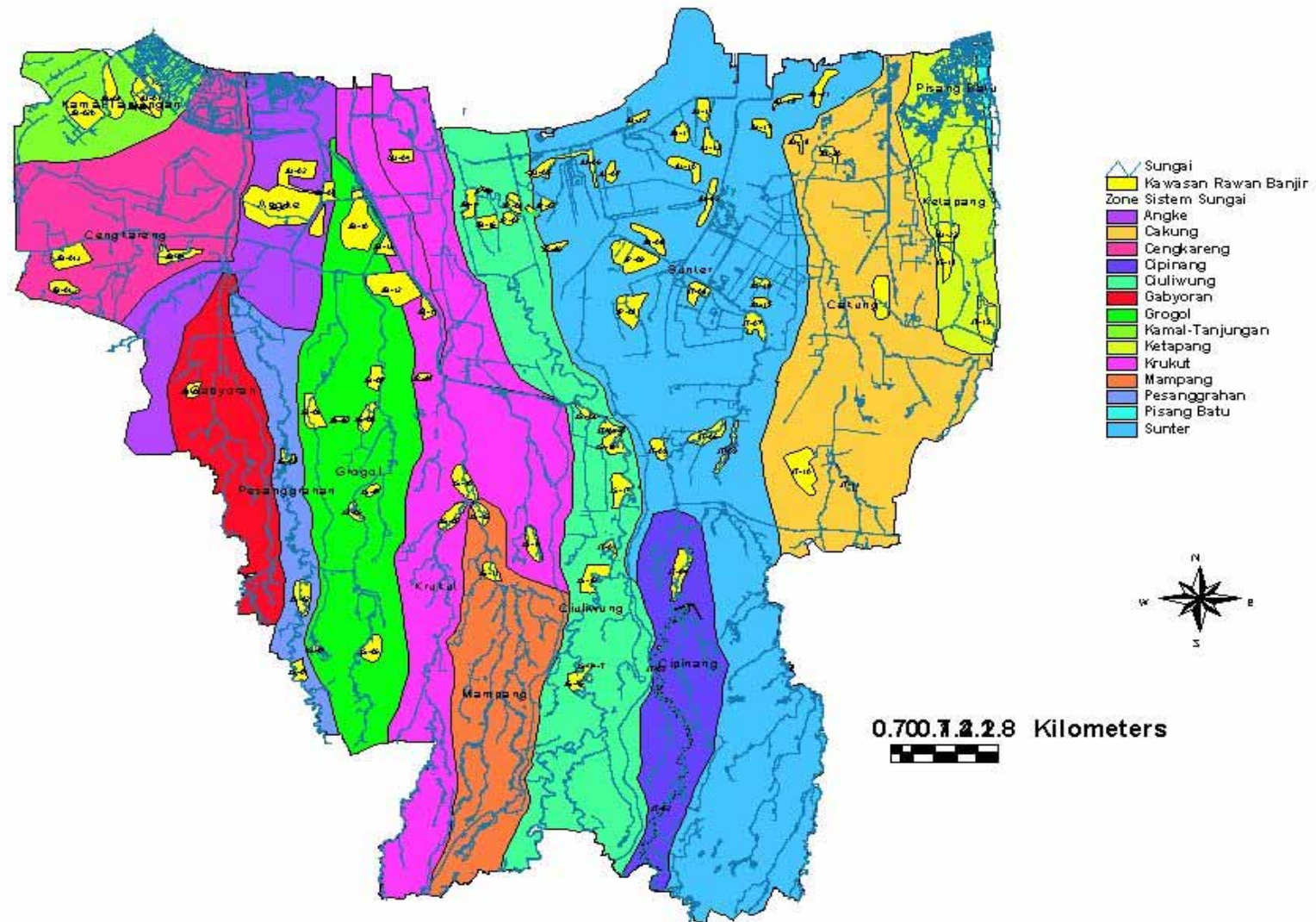
DAERAH ALIRAN TENGAH

- | | |
|------------------------------|--------------------------------|
| 01. GANDARIA SELATAN | 15. JATI PULO/KT. BAMBU TIMUR |
| 02. JL. H. SAJIM/GAND. UTARA | 16. TOMANG/RAWA KEPA |
| 03. PULO RAYA | 17. JL. DR. SUSILO, MUWARDI |
| 04. JL. KERINCI/HANG LEKIR | 18. KRENDANG/DURI UTARA |
| 05. KOMP. AL. PASAR MINGGU | 19. MANGGA BESAR I S/D IV |
| 06. PEJATEN TIMUR | 20. TANGKI |
| 07. RAWA JATI | 21. P. NANGSIA/GLODOK |
| 08. PONDOK KARYA | 22. JATI PINGGIR |
| 09. TEGAL PARANG/PMI | 23. MANGGA DUA ABDAD |
| 10. DARMA JAYA | 24. MG. BESAR, DWI WARNA |
| 11. KEBALEN | 25. JL. P. JAYAKARTA |
| 12. PONCOL | 26. BUNDERAN PLUIT, BIMOLI |
| 13. KEBON BARU | 27. TANAH PASIR, JEMB. II, III |
| 14. BUKIT DURI | |

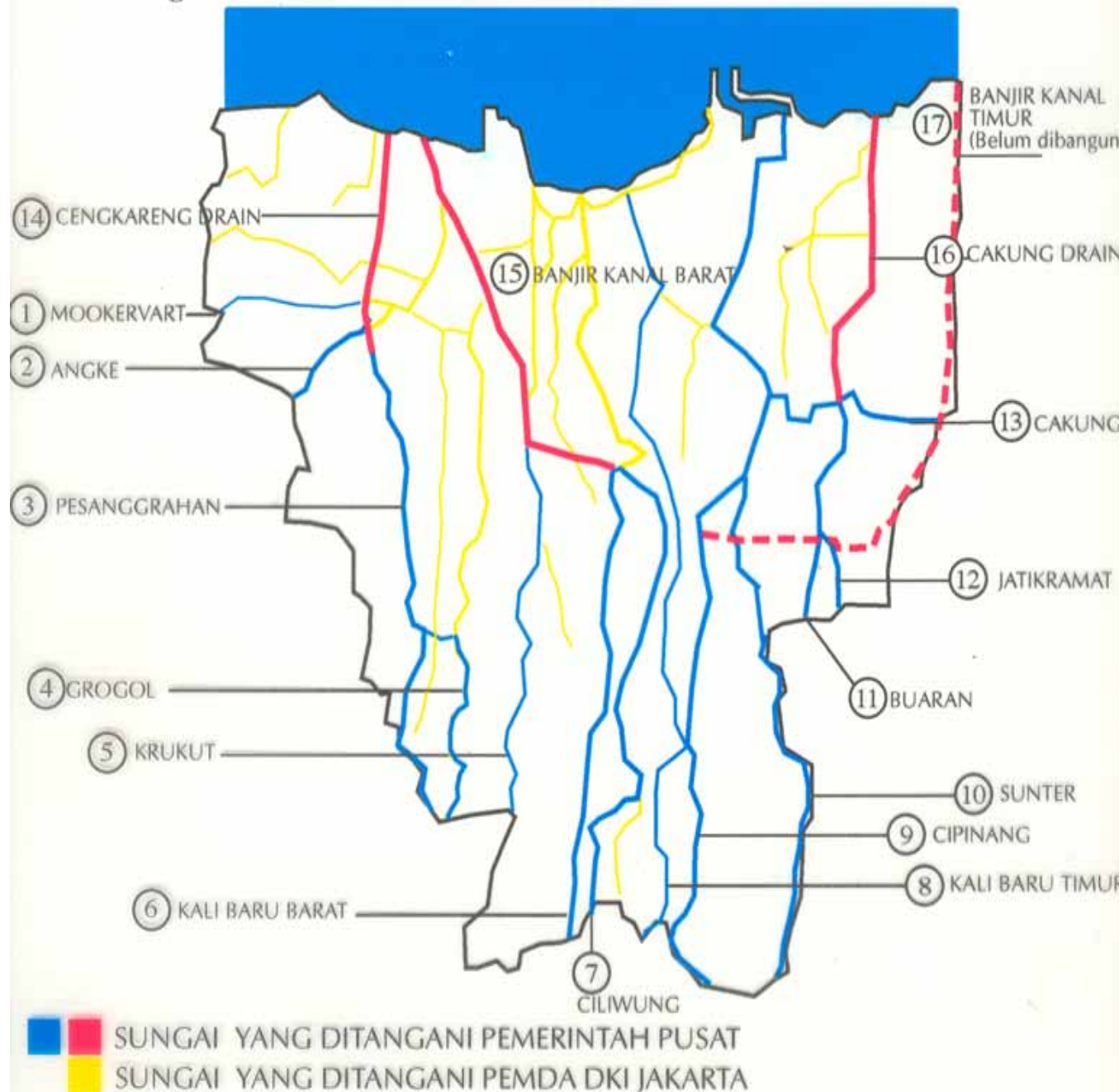
DAERAH ALIRAN TIMUR

- | | |
|-----------------------------------|-----------------------------|
| 01. KAMP. RAMBUTAN | 19. PERUM WK. JAKUT |
| 02. KR. JATI MAKASAR PRANTI | 20. KAMP. TUGU UTR/SLT |
| 03. KB. PALA HALIM PK | 21. LAGOA |
| 04. CILILITAN, CAWANG, KP. MELAYU | 22. KAMP. RAWA BADAK |
| 05. KB. MANGGIS | 23. KP. BARU TN. MERDEKA/ |
| 06. CIP. INDAH, CIP. MELAYU | 24. DEWA RUCI |
| 07. BULUH PERINDU | 25. YON ANGMOR |
| 08. KEBON NANAS, RAWA BUNGA | 26. MALAKA |
| 09. CIP. JAYA, CIP. MUARA | 27. KP. SUNGAI BAMBU |
| 10. PULO NANGKA | 28. KP. KEBON BAWANG |
| 11. PULO MAS | 29. KAMP. WARAKAS |
| 12. CAKUNG BARAT | 30. KP. BAHARI, MARTADINATA |
| 13. UJUNG MENTENG | 31. SUNTER JAYA |
| 14. CEMP. PUTIH/A. YANI | 32. KAMP. PAPANGGO |
| 15. JL. SUMUR BATU/SERDANG | 33. PODOMORO SUNTER A |
| 16. IL. ANGKASA BUNGUR | 34. JL. YOS SUDARSO |
| 17. RAJAWALI SELATAN | 35. SUNTER C |
| 18. JL. GUNUNG SAHARI RAYA | 36. PADEMANGAN TIMUR |
| 19. PERUM HI. KLP. GADING/VESPA | 37. PADEMANGAN BARAT |

ZONE SISTEM SUNGAI DALAM WILAYAH DKI JAKARTA



FLOODS CONTROL DIKES/RETARDING BASIN/PONDS



Masalah Banjir di DKI Jakarta

I. KEWENANGAN DEPARTEMEN PU (Ditjen Pengairan)

13 Kali yang melalui 2 Propinsi

01. MOOKERVART
02. ANGKE
03. PESANGGRAHAN
04. GROGOL
05. KRUKUT
06. KALIBARU BARAT
07. CILIWUNG
08. KALIBARU TIMUR
09. CIPINANG
10. SUNTER
11. BUARAN
12. JATI KRAMAT
13. CAKUNG

FLOOD WAY (Banjir Kanal)

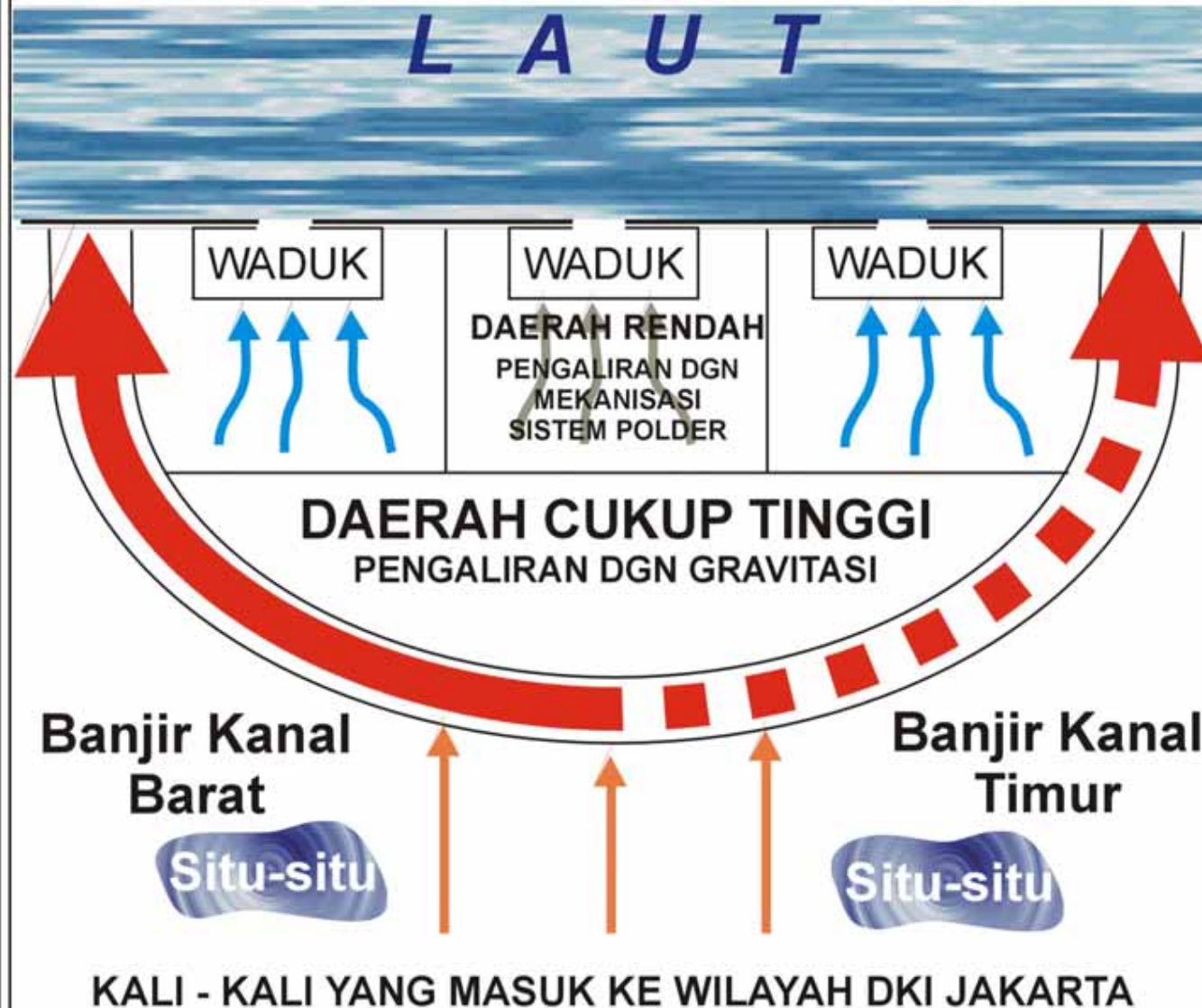
14. CENGKARENG DRAIN (1981)
15. BANJIR KANAL BARAT (1920)
16. CAKUNG DRAIN (1981)
17. BANJIR KANAL TIMUR (Belum Dibangun)

WADUK/POMPA
PLUIT, CIDENG, ISTANA,
ANCOL, SUNTER III

II. KEWENANGAN PEMDA

- Kali lewat 1 Propinsi
- Waduk (sebagian)
- Situ

KONSEP PENGENDALIAN BANJIR DKI JAKARTA



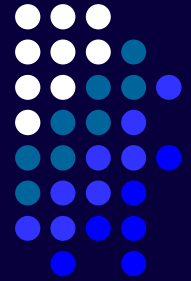
- Banjir kanal Barat & Timur Melingkari Jakarta menampung Aliran Sungai dari Hulu langsung ke Laut
- Pengaliran secara gravitasi untuk daerah yang masih mungkin di hilir banjir kanal
- Drainase sistem Polder (waduk dan pompa) di daerah rendah

Keterangan :

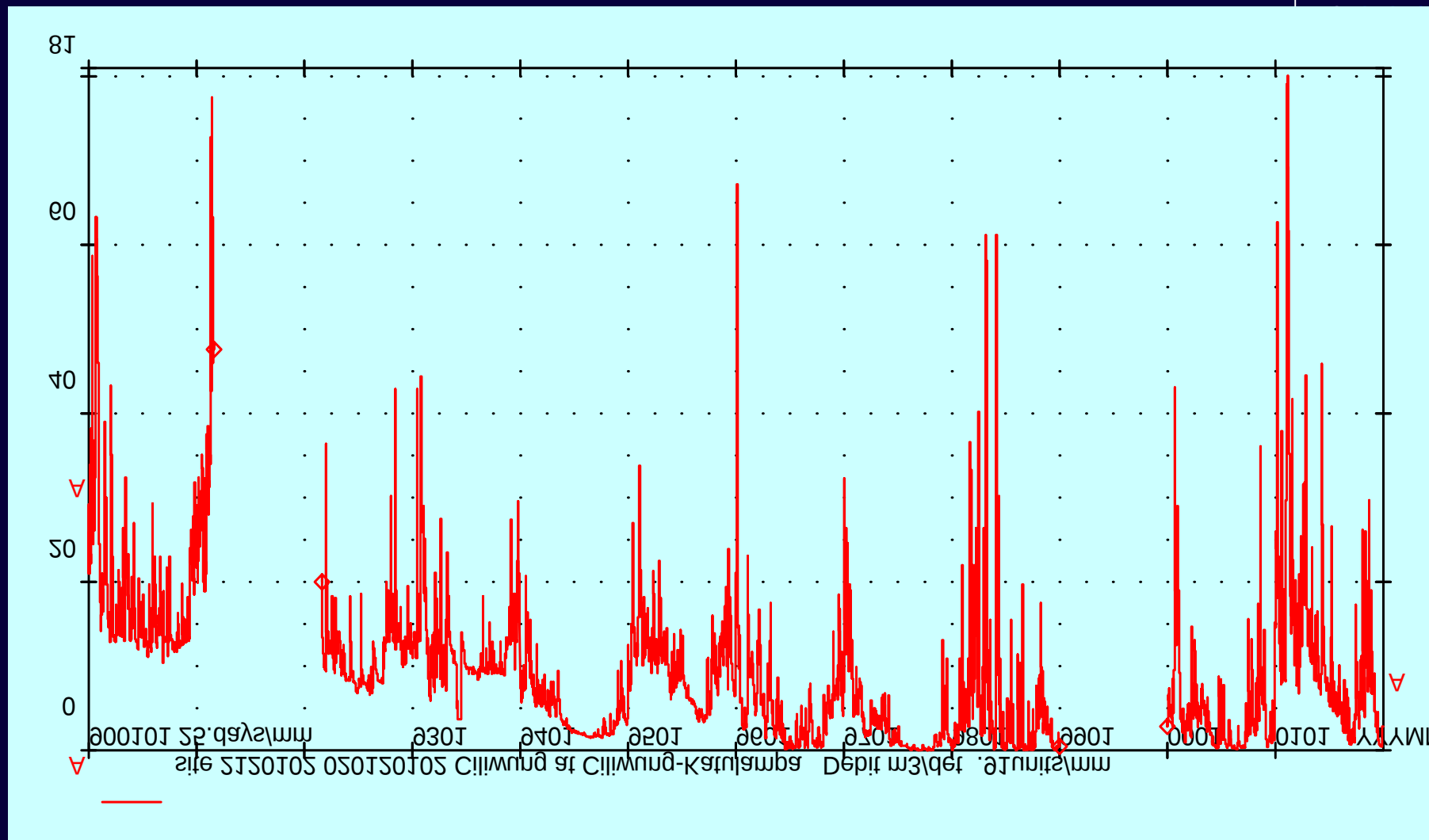
- ■ ■ ■ ■ Belum dilaksanakan
- Sudah dilaksanakan

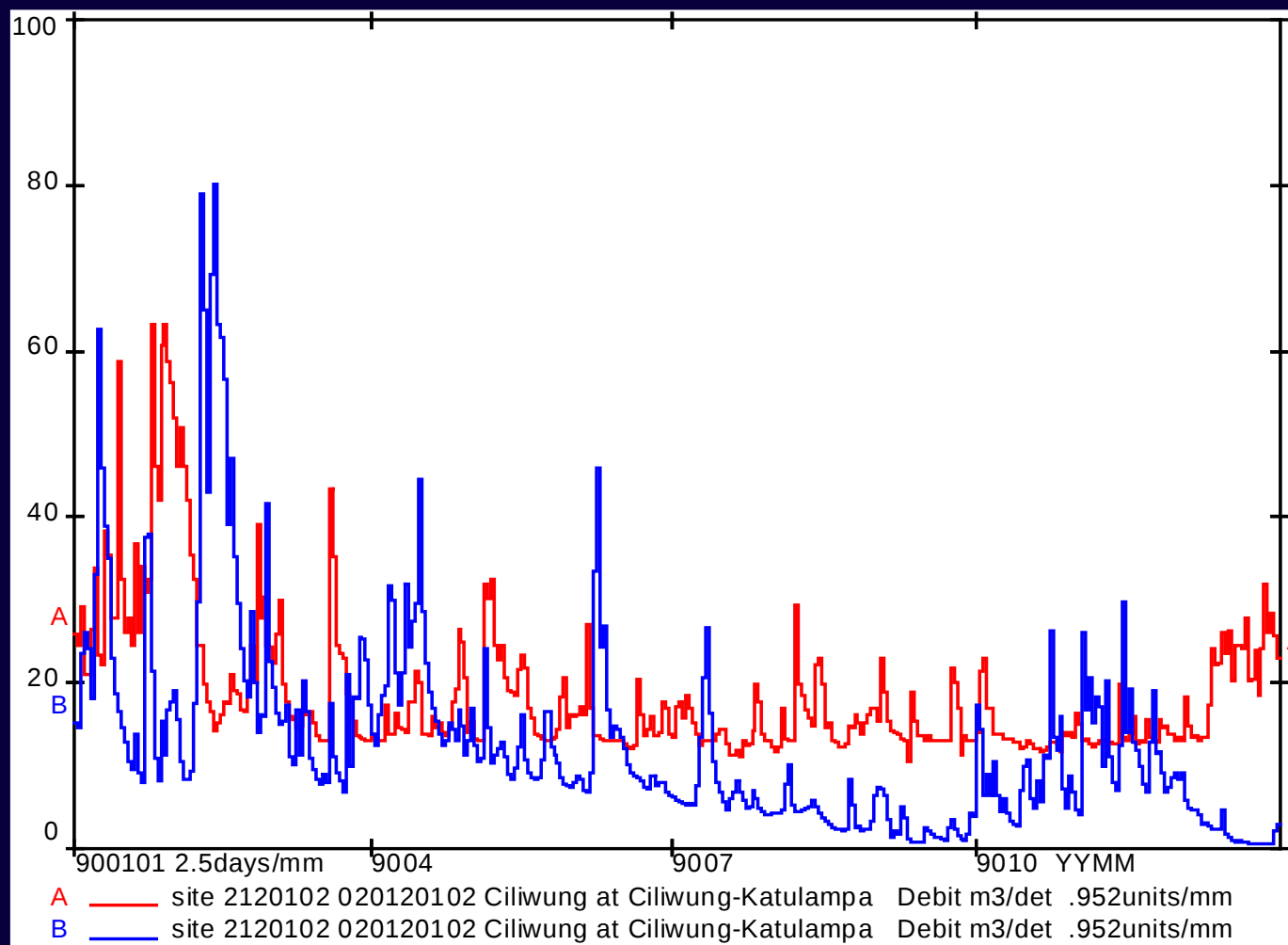
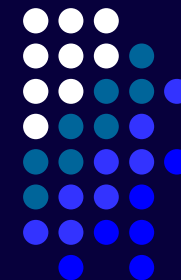


WATER LEVEL at Ciliwung River



Flow Discharge for Ciliwung River at Katulampa Sta. from 1990 up to 2001





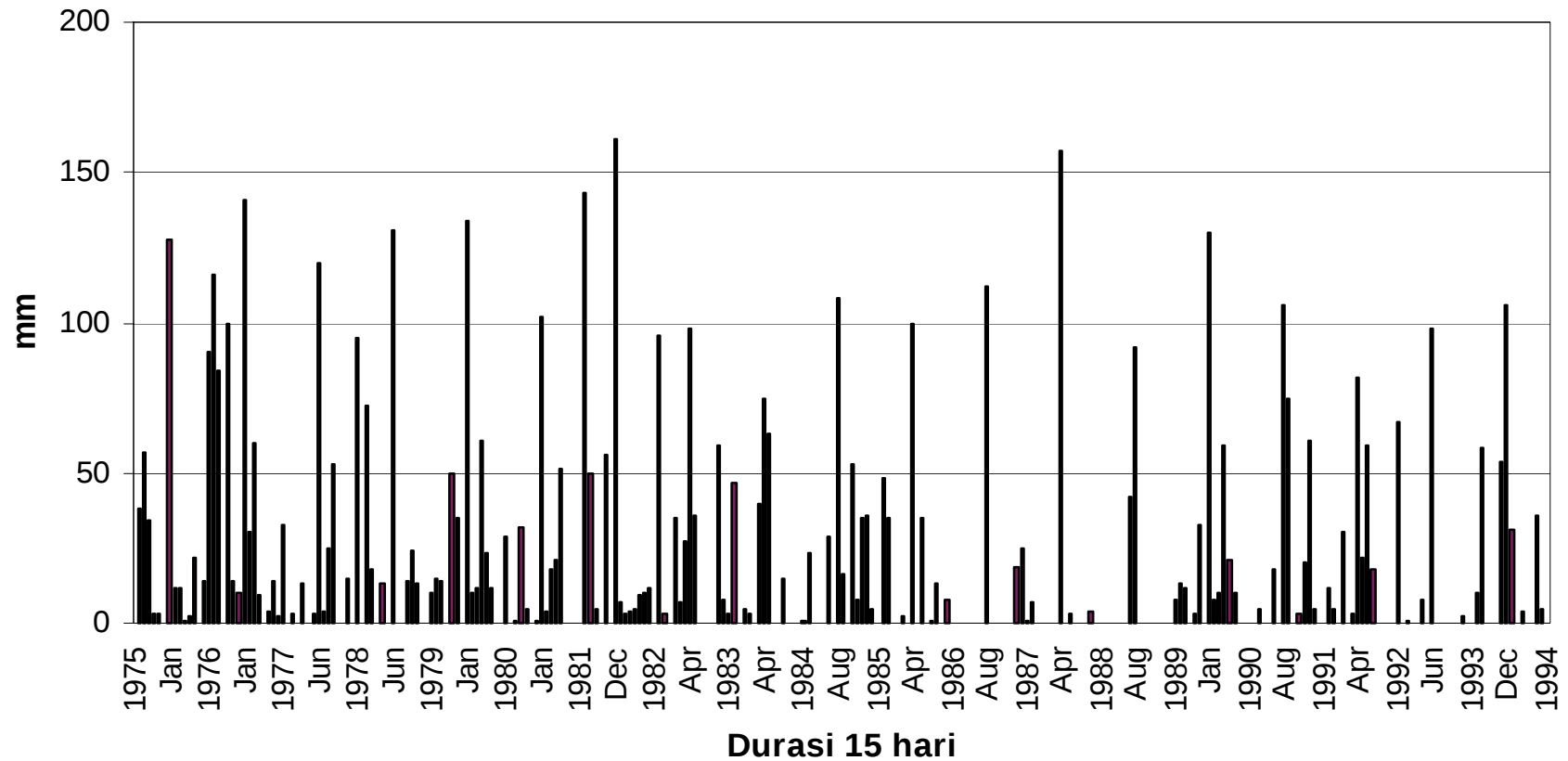
1990

2001

1975 s/d 1994

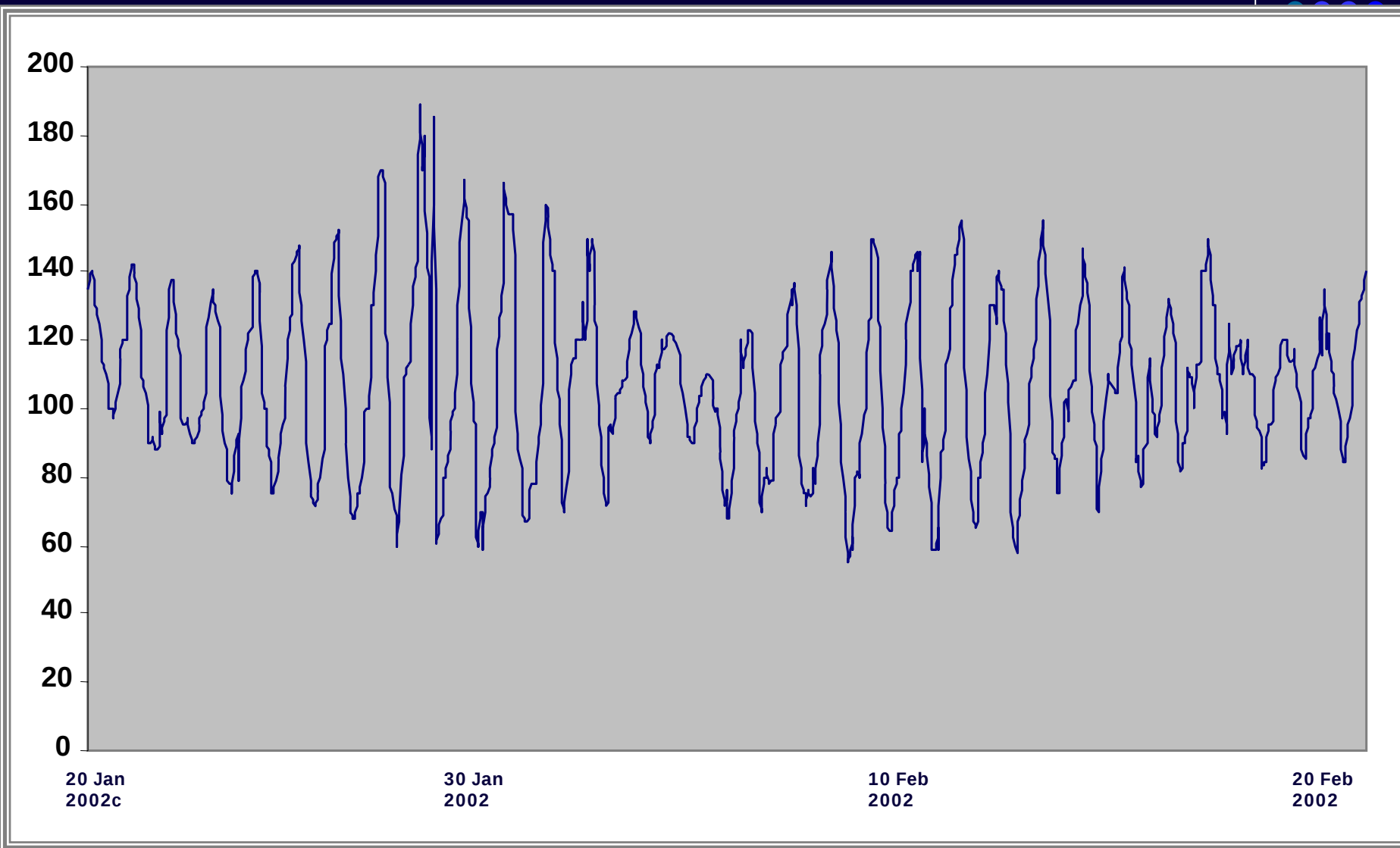
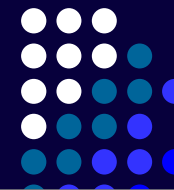


Data Curah Hujan di Pos Pengamatan Depok

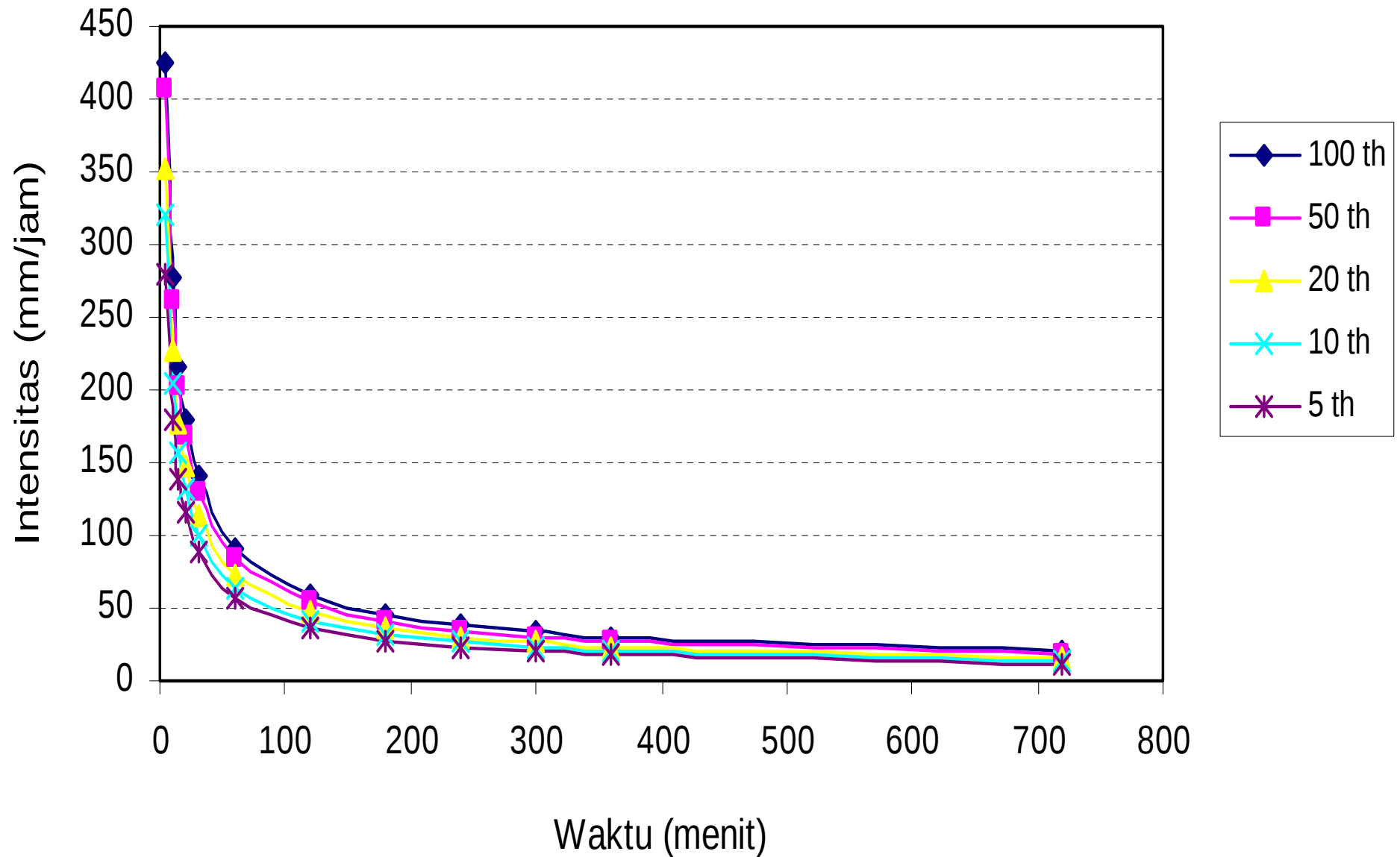


PEIL AIR LAUT

20 JANUARY 2002 - 20 FEBRUARY 2002



Lengkung IDF Pos Jakarta



FLASH FLOOD in INDONESIA





Flash Flood P. Nias 31 Juli 2001



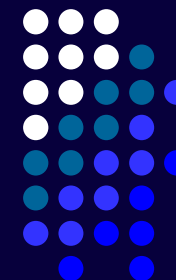
Rumah yang rusak ditenggelam banjir Sungai Suga di samping Jembatan Suga

Flash Flood

Hot Spring, Padusan, Pacet

11 Desember 2002





THANK YOU FOR YOUR KIND ATTENTION