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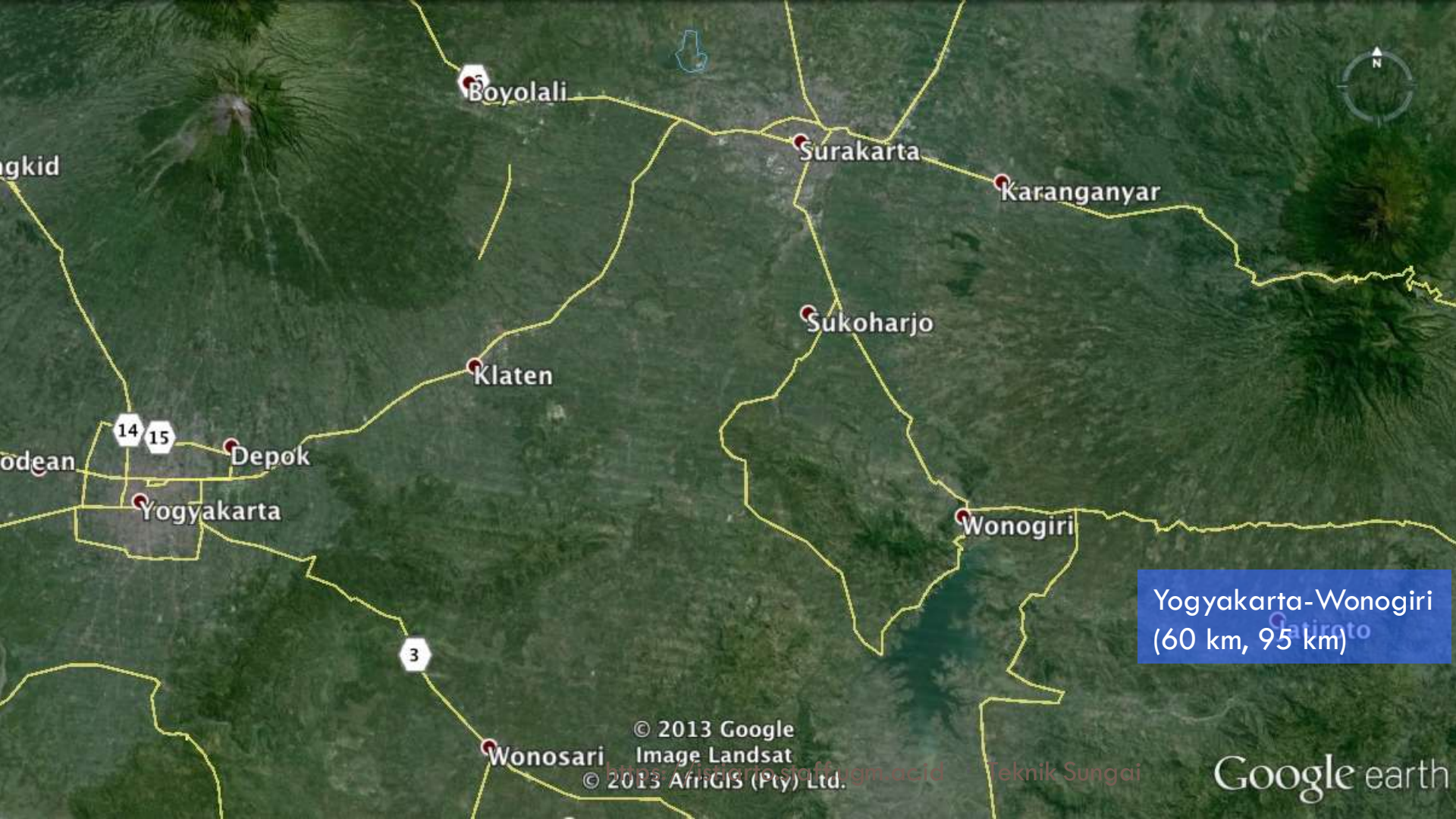
Departemen Teknik Sipil dan Lingkungan

Universitas Gadjah Mada

Email: istiarto@ugm.ac.id Website: <https://istiarto.staff.ugm.ac.id/>

WADUK GADJAHMUNGKUR WONOGIRI JAWA TENGAH

Teknik Sungai



Boyolali

Surakarta

Karanganyar

Sukoharjo

Klaten

Depok

Yogyakarta

Wonogiri

Wonosari

Yogyakarta-Wonogiri
(60 km, 95 km)

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Teknik Sungai

Google earth

Wonogiri Dam



plta

surge tank

spillway

dam (bendungan)
[urugan tanah]

intake tower

spillway

waduk

intake

Wonogiri Dam



closure dike (under construction)

dam (bendungan)
[urugan tanah]

plta

surge tank

intake tower

waduk

spillway

intake

spillway

Bendungan Wonogiri



Bendungan dan Bendung

Dam - Weir

Bendungan dan Waduk

- Bendungan → Dam
- Waduk → Reservoir

Bendungan vs Bendung

Bendungan (Dam)

- Fungsi
 - ▣ Meningkatkan muka air dan menampung air
 - ▣ Ada tampungan (storage), waduk (reservoir)
 - ▣ Air melimpas melalui jalan khusus (pelimpah, spillway)

Bendung (Weir, Barrage)

- Fungsi
 - ▣ Meningkatkan muka air
 - ▣ Tidak ada tampungan, tidak ada waduk
 - ▣ Air melimpas melalui tubuh bendung

Bendungan dan Bendung



Fungsi Bendungan dan Waduk

Waduk serba-guna (multi-purpose reservoir)

- Pengendali banjir
- Penyedia air untuk irigasi, air baku
- PLTA
- dll.

Waduk eka-guna (single purpose reservoir)

- Satu fungsi saja
- Hal ini jarang ditemui

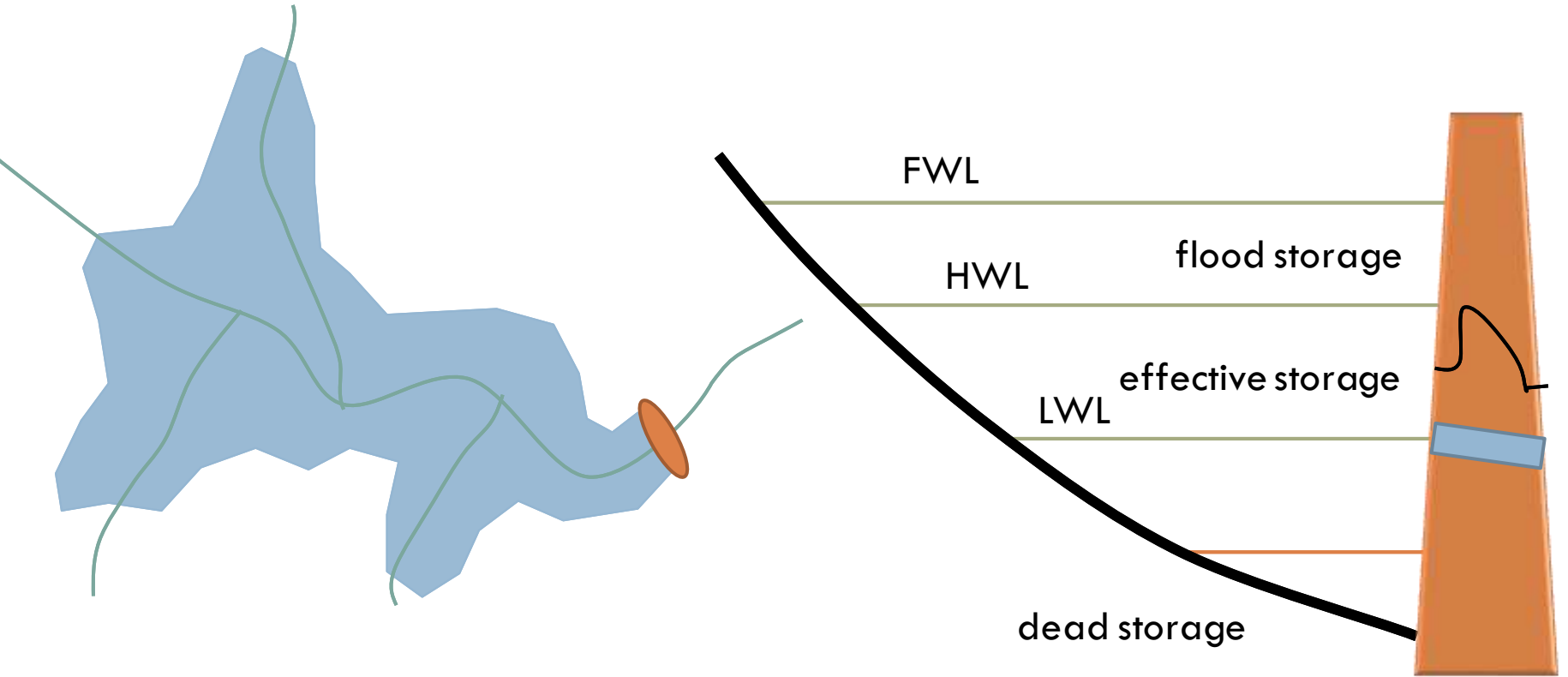
Jenis Bendungan (Dam)

Material bendungan

- ❑ Beton (concrete dam)
- ❑ Urugan tanah (earth-fill dam)
- ❑ Urugan batu (rock-fill dam)
- ❑ Bahan lain (sangat jarang)

Bentuk bendungan

- ❑ Concrete dam
 - ❑ Gravity dam
 - ❑ Arch dam
 - ❑ Buttress dam

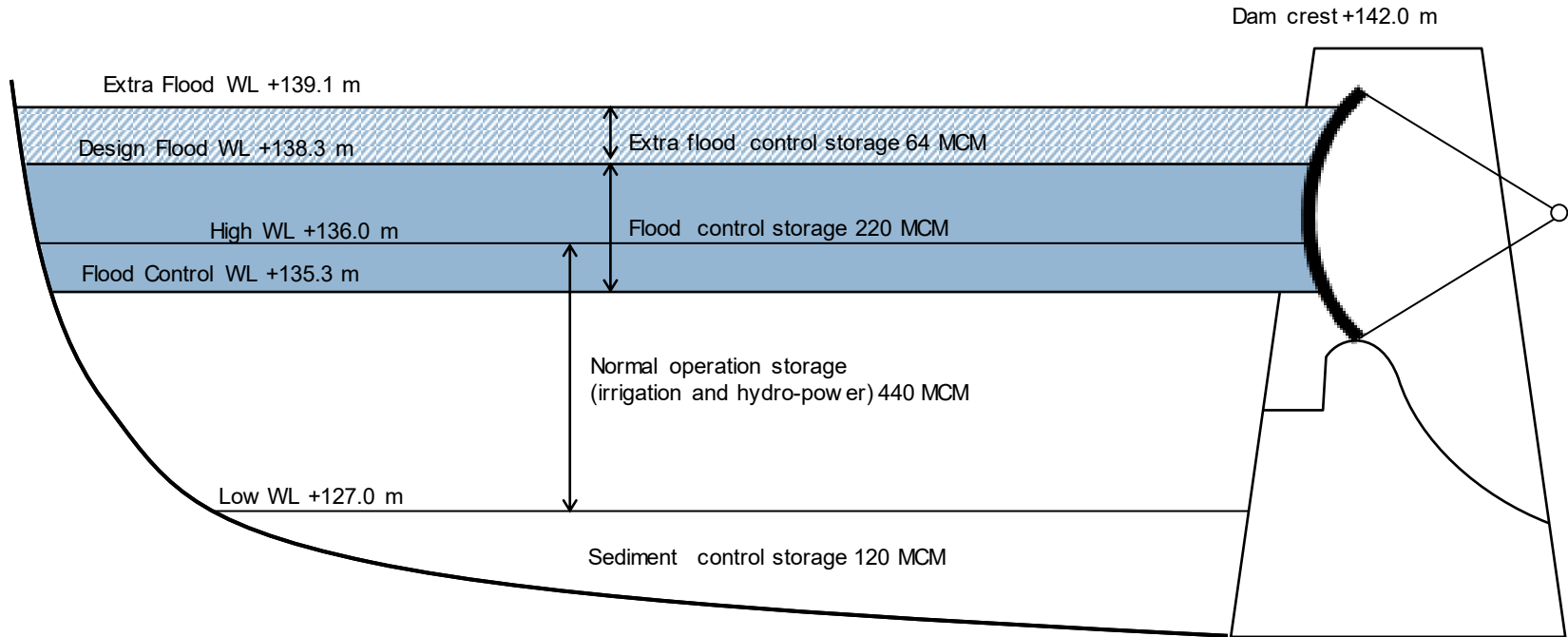


Wonogiri Dam

Multi-purpose reservoir

- Irrigation
- Water supply
- Hydropower generation
- Flood control

Wonogiri Reservoir



Waduk Gadjahmungkur

Pengendalian banjir

Wonogiri Dam



Four Radial Gates to control release during flood event.



Four Radial Gates to control release during flood event



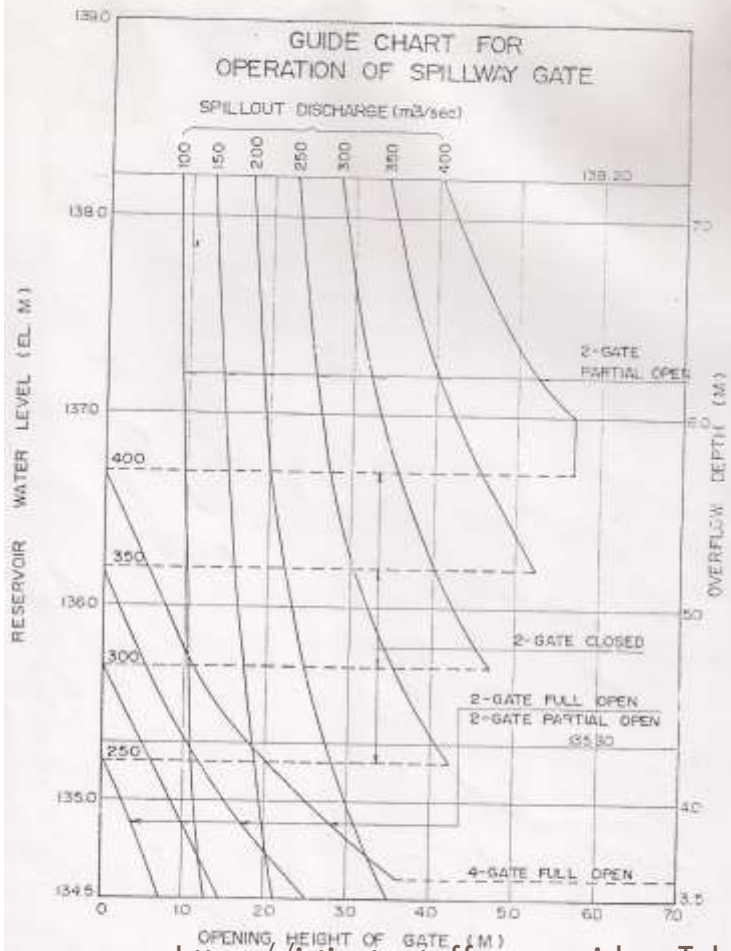
Four Radial Gates to control release during flood event.



Reservoir operation rule during flood event

- Small flood $Q_p < 400 \text{ m}^3/\text{s}$
 - ▣ Release below $400 \text{ m}^3/\text{s}$
- Standard flood $400 < Q_p [\text{m}^3/\text{s}] < 4000$
 - ▣ Release below $400 \text{ m}^3/\text{s}$ by partial gate opening
- Extra-ordinary flood $Q_p > 4000 \text{ m}^3/\text{s}$
 - ▣ Release below $400 \text{ m}^3/\text{s}$ by partial gate opening when reservoir water level below +138.2 m
 - ▣ Full gate opening when reservoir water level beyond +138.2 m





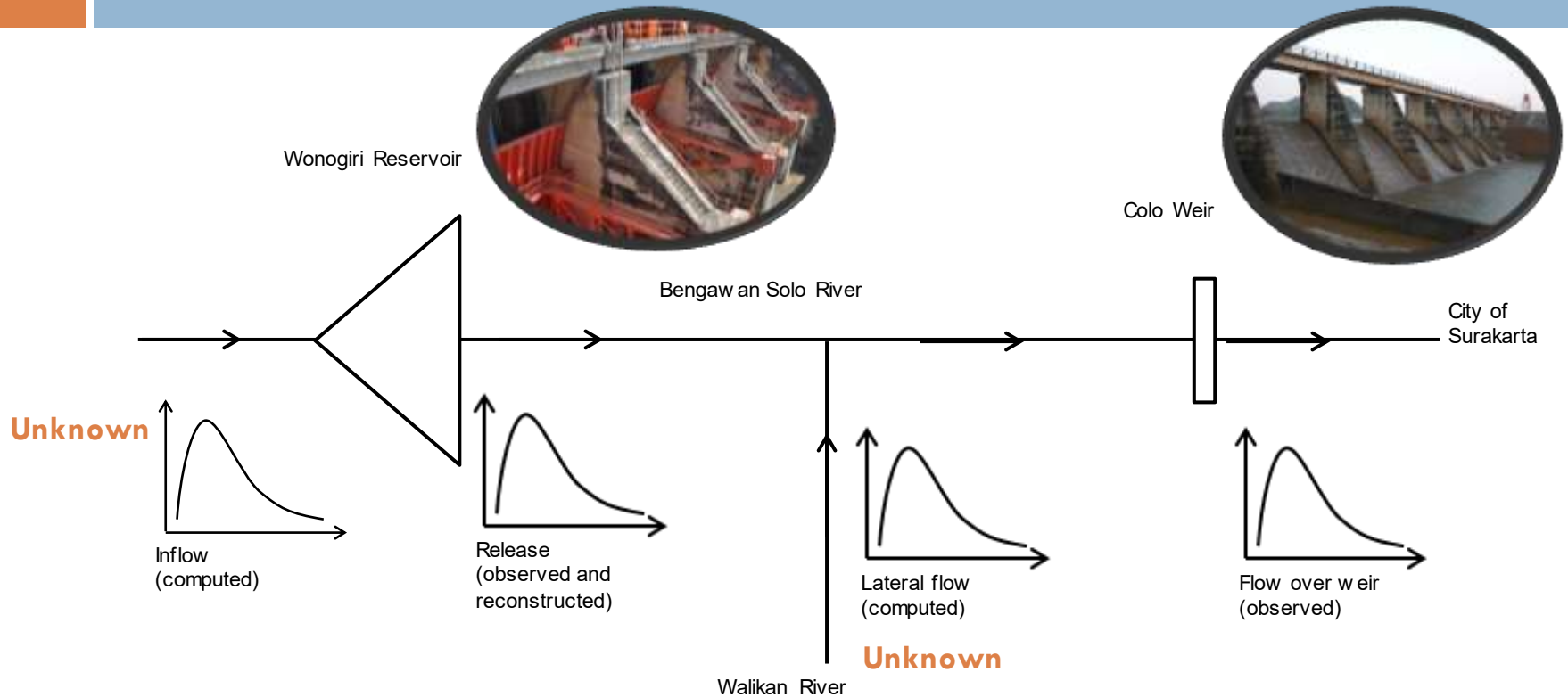






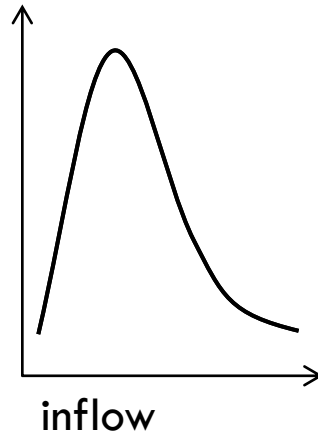
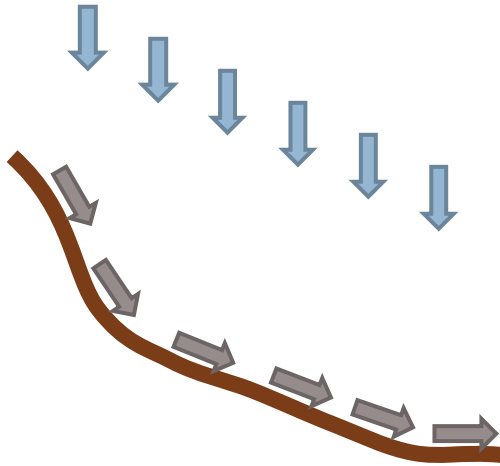


Upper reach of Bengawan Solo River

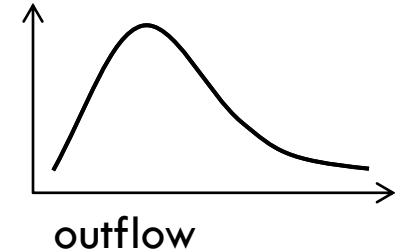
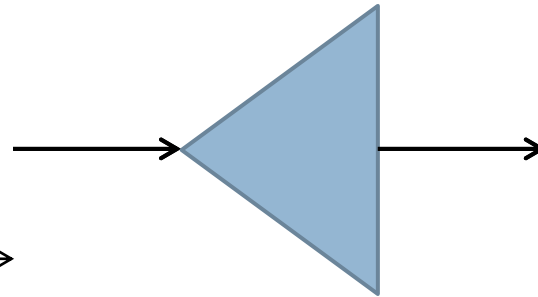


Reservoir release during flood event

A. Transformation of rainfall to (surface) run-off

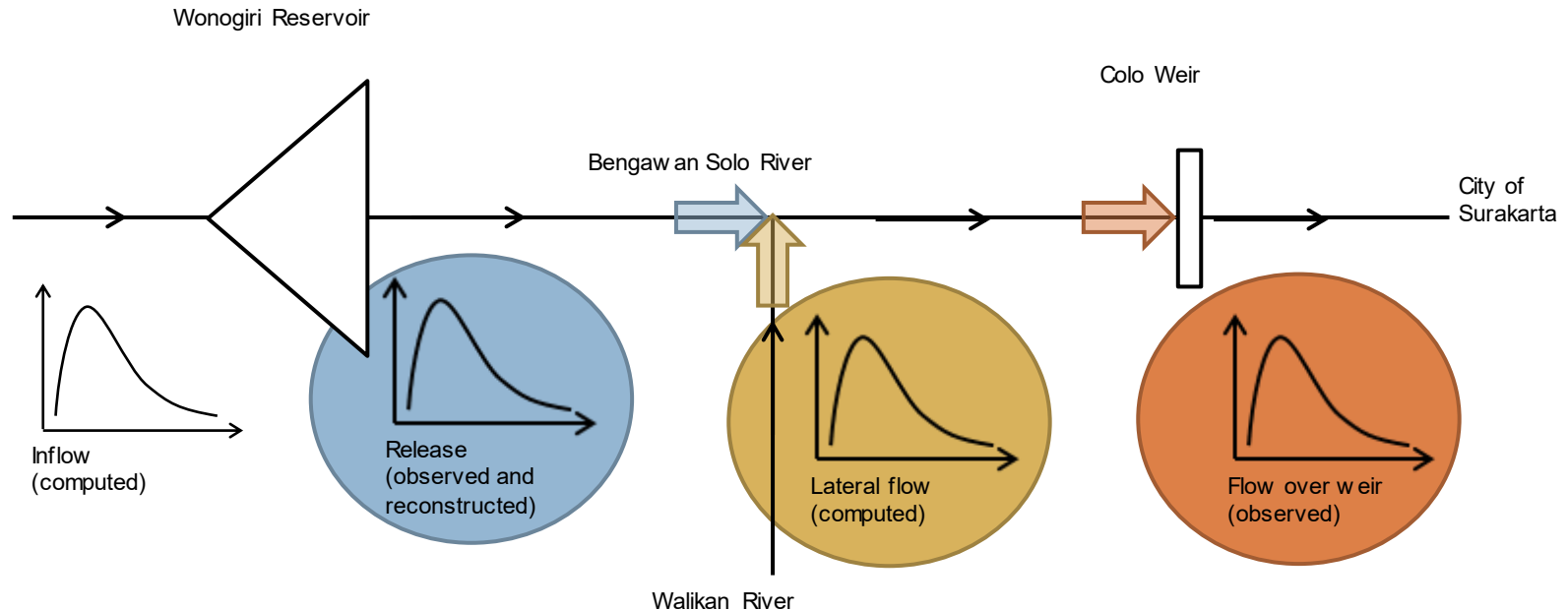


Wonogiri Reservoir

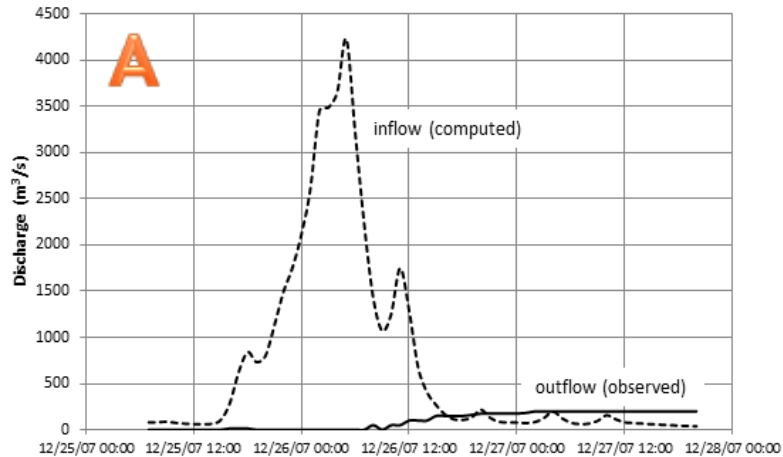


Reconstruction of flood hydrographs

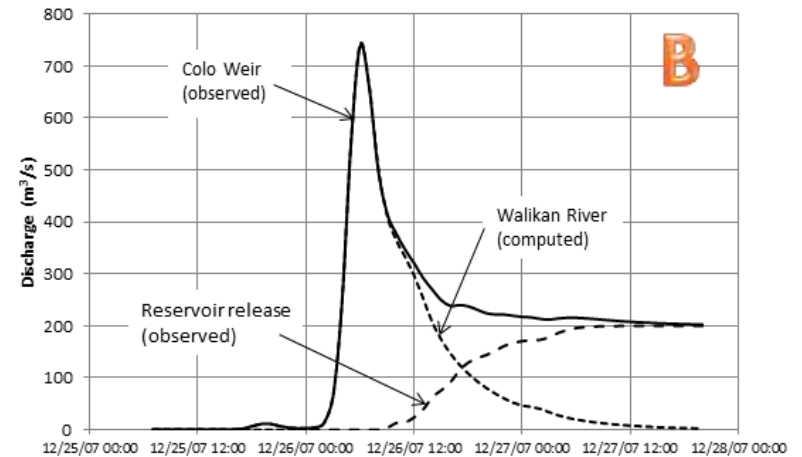
B. Routing of reservoir outflow and Walikan River flow to Colo Weir overflow



Reconstruction of flood hydrographs



at the Reservoir



at Colo Weir

Waduk Gadjahmungkur

PLTA







Waduk Gadjahmungkur

Sediment storage reservoir

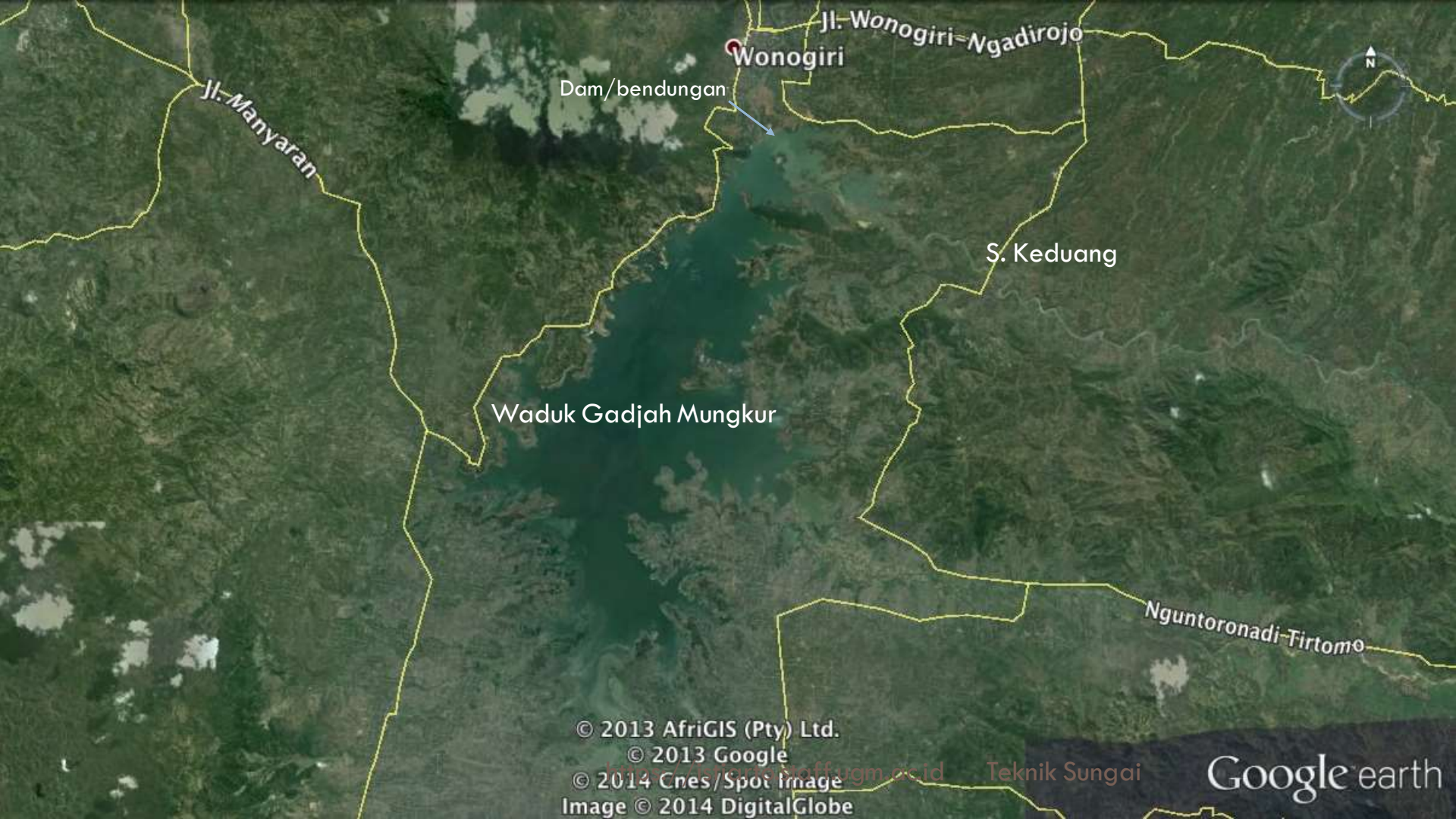
Air Waduk Berkurang



KOMPAS/VERTI ERI KUMIRU

Air Waduk Gajah Mungkur di Kabupaten Wonorejo, Jawa Tengah, terus berkurang Selasa (13/10). Saat ini elevasi waduk tinggal 128,74 meter di atas permukaan laut (mdpl) dibandingkan dengan kondisi tertinggi 136 mdpl. Air yang tersisa tidak mampu memutar turbin sehingga pembangkit listrik tenaga air di sekitar waduk berhenti beroperasi satu bulan terakhir. Bahkan, sejak 1 Oktober waduk tak bisa lagi digunakan untuk irigasi pertanian. Air yang tersisa hanya untuk air baku PDAM, itu pun setelah membuat alur sungai dengan menggunakan alat berat. Sebagian areal waduk yang ke-

<http://istiartha.staff.ugm.ac.id> Teknik Sungai



Jl. Manyaran

Jl. Wonogiri-Ngadirojo

Wonogiri

Dam/bendungan

S. Keduang

Waduk Gajah Mungkur

Nguntoronadi-Tirtomo

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Teknik Sungai

Google earth



Rayat Wadnogiri

Spillway (lama)

Spillway baru

S. Keduang

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Google earth

Sediment Storage Reservoir

Closure Dike (658 m)

Overflow Dike (250 m)

Sediment Storage Reservoir

Wonogiri Main Reservoir

Spillway

PLTA

New spillway (709 m)







Terima kasih

