

Flood Early Warning and Disaster Mitigation in Korea

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WATER RELATED DISASTERS IN KOREA



Snow in Winter

Storms
in Summer



Droughts
in Spring

FLOODS IN A RECENT DECADE



Collapse of Yeoncheon Dam

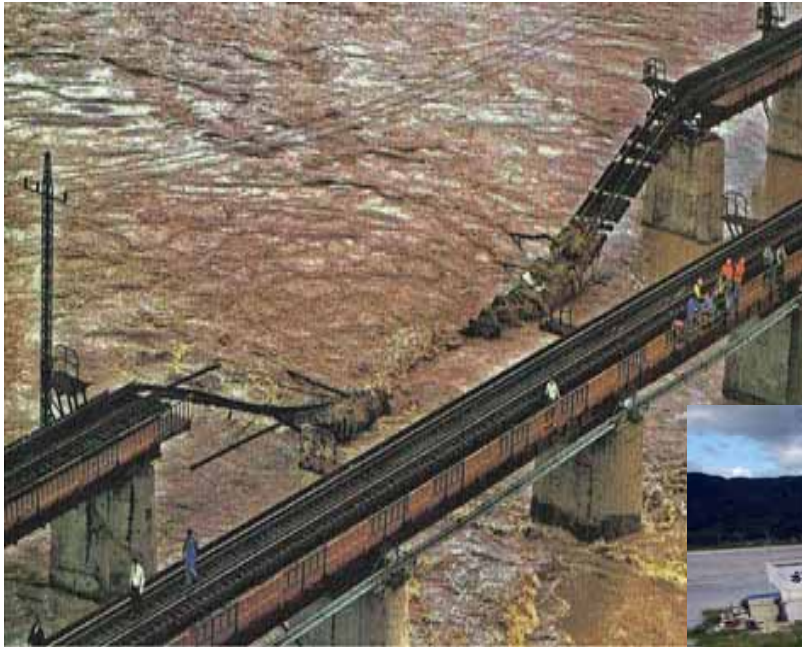


Flooded Paju City





FLOODS IN A RECENT DECADE



Broken Railway Bridge by Typhoon Rusa



Flooded Village by Typhoon Maemi

FLOOD DAMAGES IN RURAL AREAS

Inundation of farmlands due to levee failures

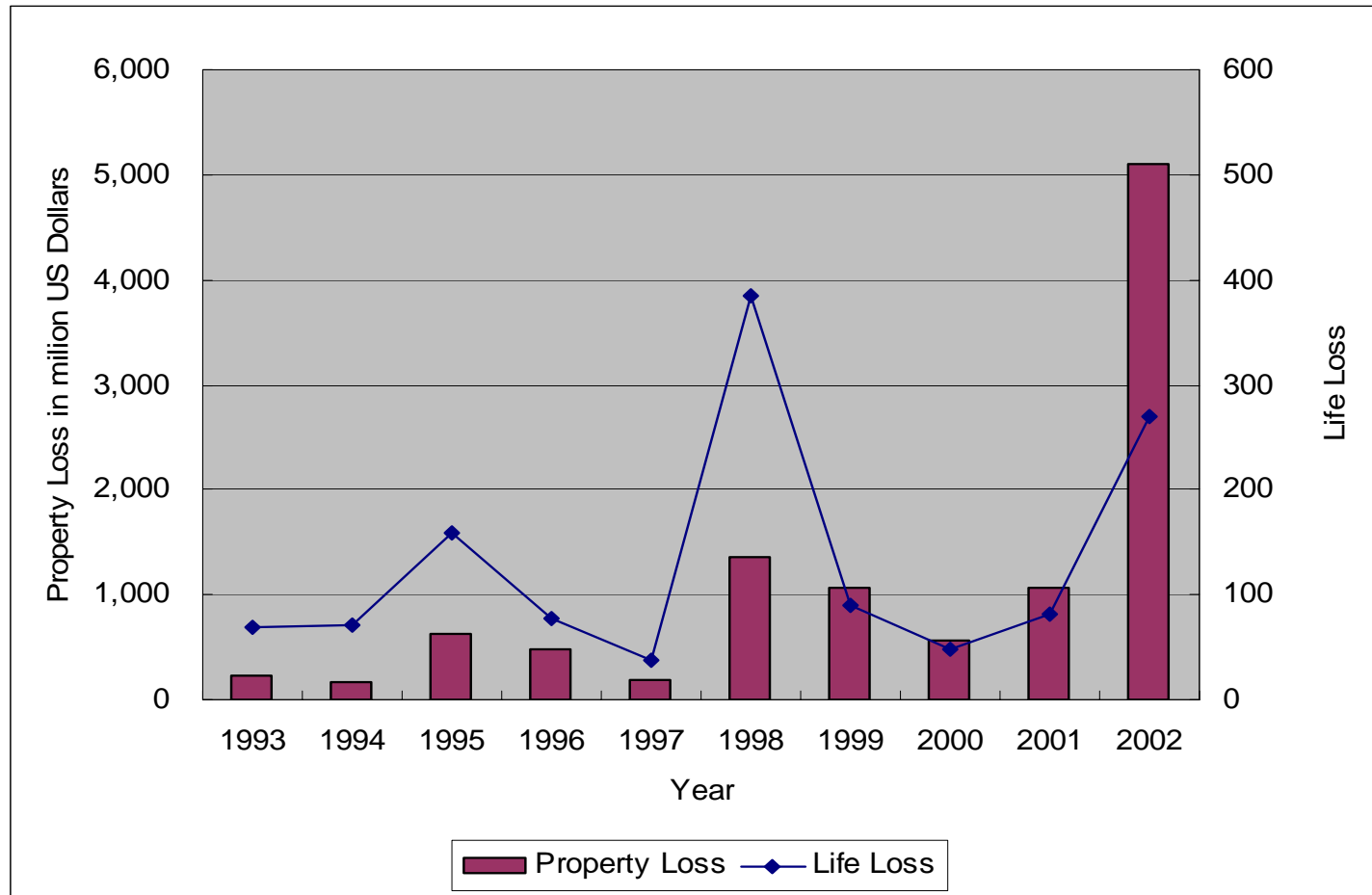


FLOOD DAMAGES IN URBAN AREAS

Inundation of roads and underground facilities due to insufficient drain capacities



DAMAGES IN A RECENT DECADE DUE TO FLOOD



FLOOD DISASTER MITIGATION

Preparatory Action against Flood

Flood Forecasting and Early Warning

- **FCO under the MOCT**
 - Disseminate warning for certain control points by water level
 - Approval of dam operation

Response against Flood Damage

• Flood Control by Dam Operation

• **WROC under the KOWACO**

• Evacuation

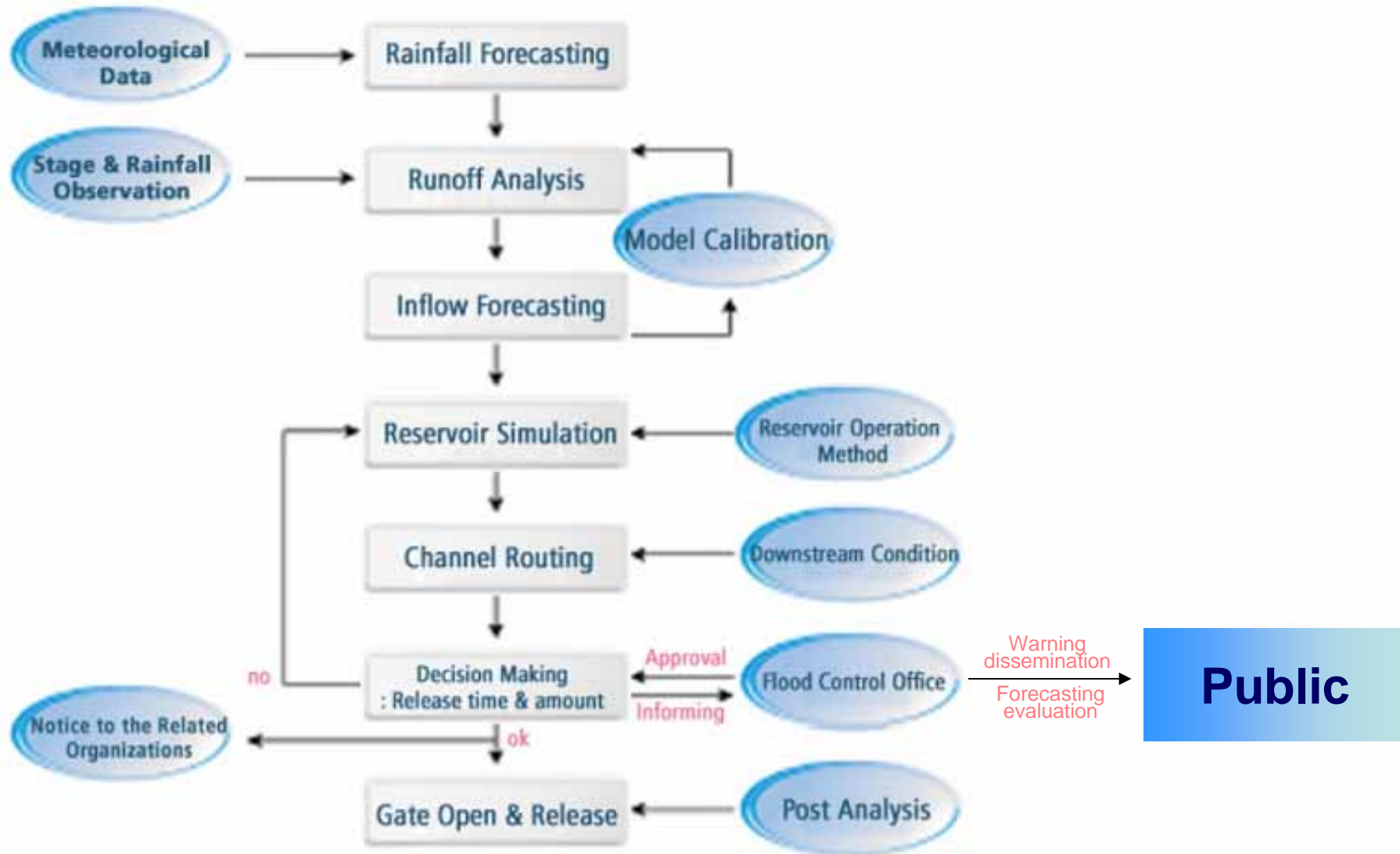
• **Local Communities**

- Disaster Management System based on Flood Hazard Maps

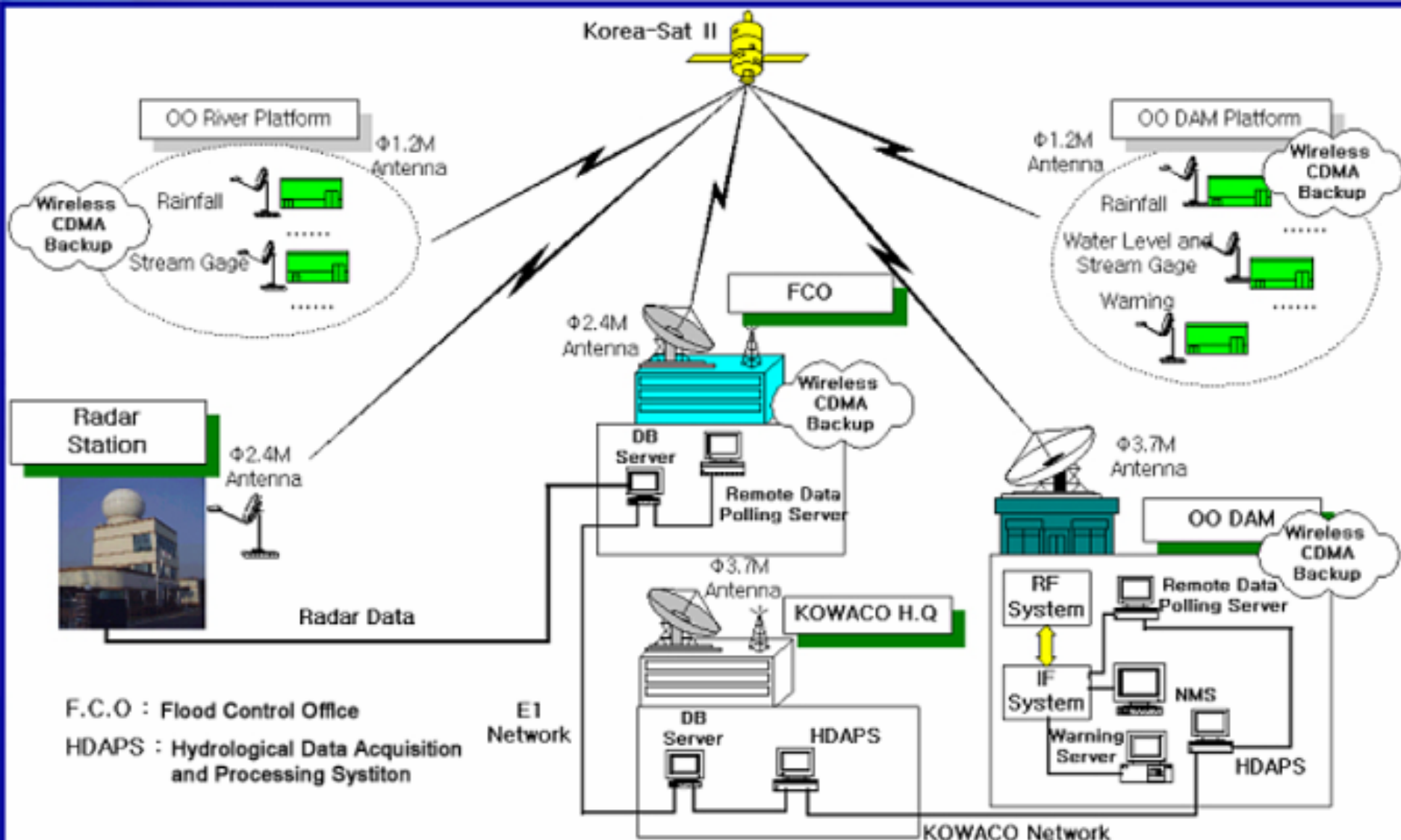
Recovery action for Flood Damage

- FCO: Flood Control Office
- MOCT: Ministry of Construction and Transportation
- WROC: Water Resources Operation Center
- KOWACO: Korea Water Resources Corporation

PROCESS OF FLOOD FORECASTING AND CONTROL



FLOOD FORECASTING FACILITIES



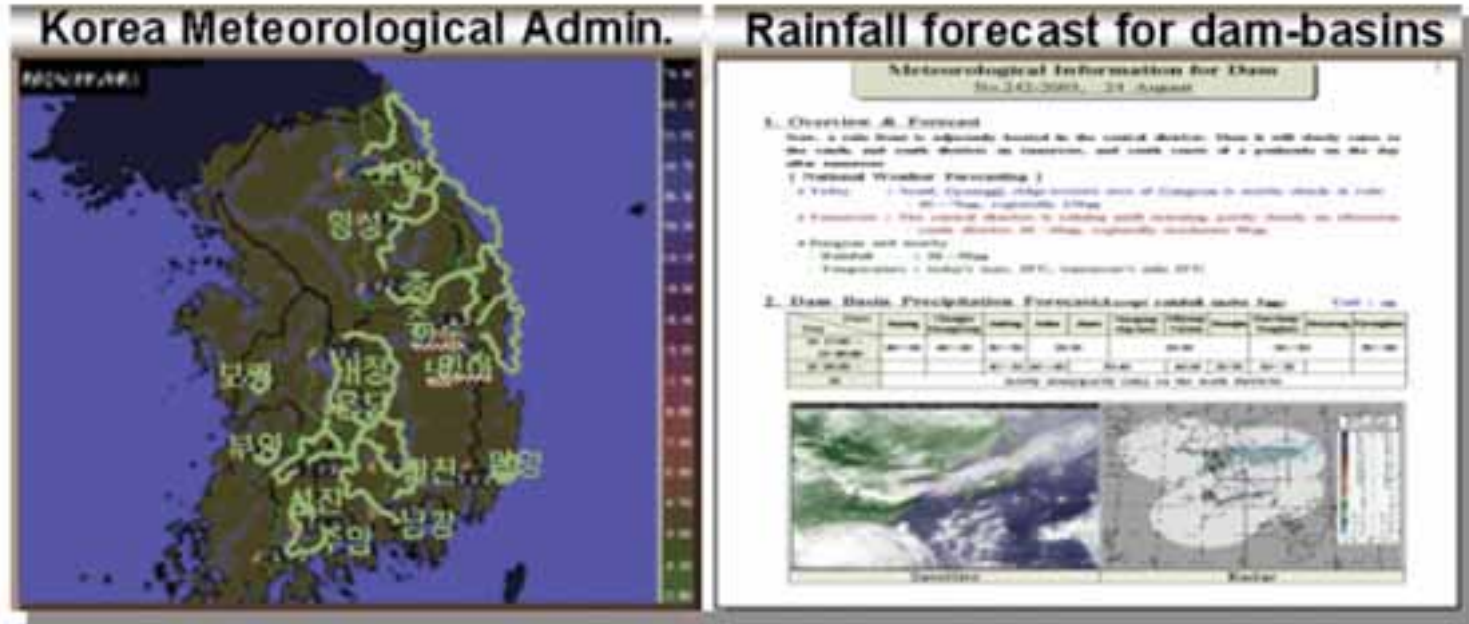
RAINFALL FORECASTING

Gathering and Analyzing all the available weather information

Data from KMA, JMA, JWTC, etc.

Gathering information: satellite, radar, AWS, etc.

In-house rainfall forecasting for dam-basins



FLOOD FORECASTING

Flood Analysis Models

Rainfall-Runoff Model

Storage function model (including SCS-CN method)

Channel Routing

Hydrologic and hydraulic models

Reservoir Routing

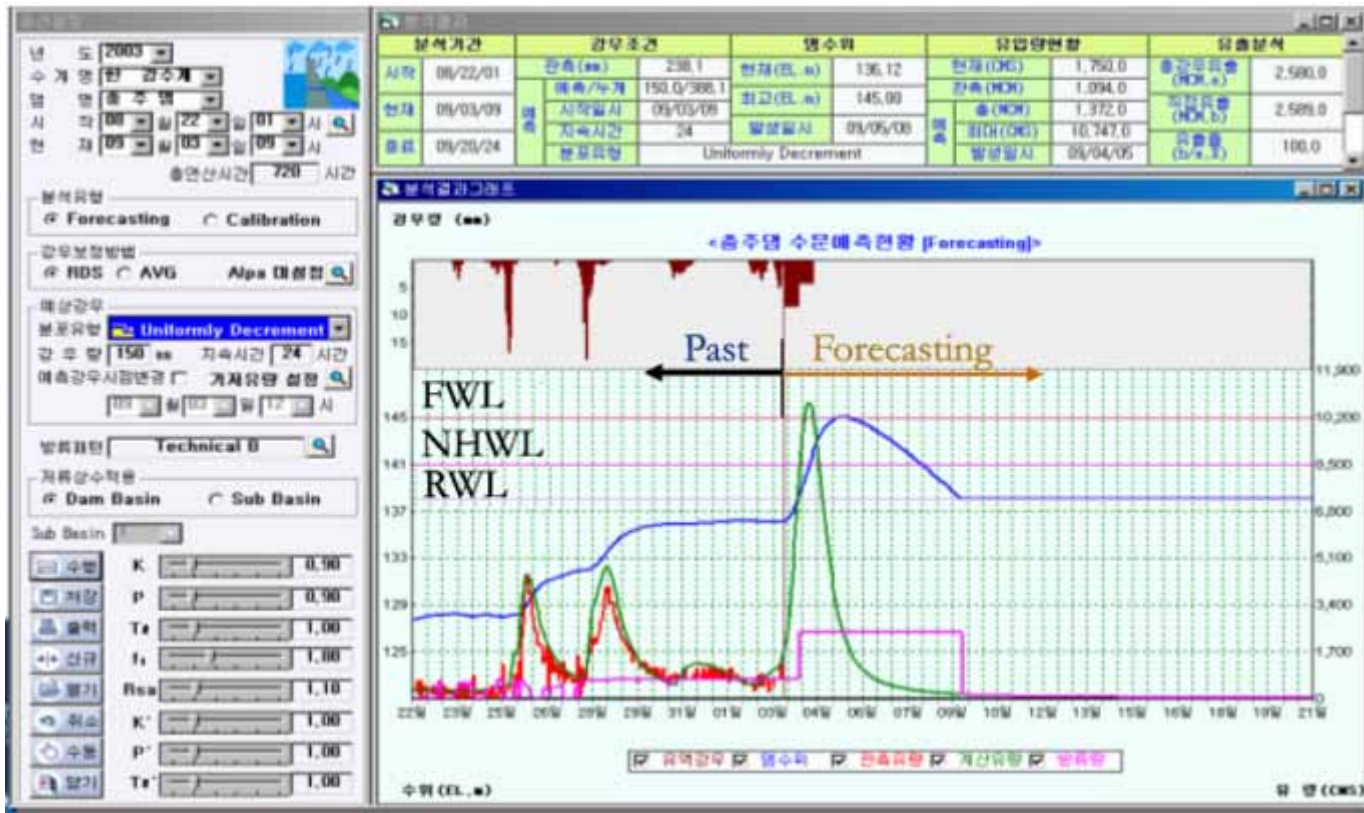
Scheduled release ROM

Rigid rate and rigid quantity ROM

Technical ROM, etc.

FLOOD FORECASTING

Reservoir Routing

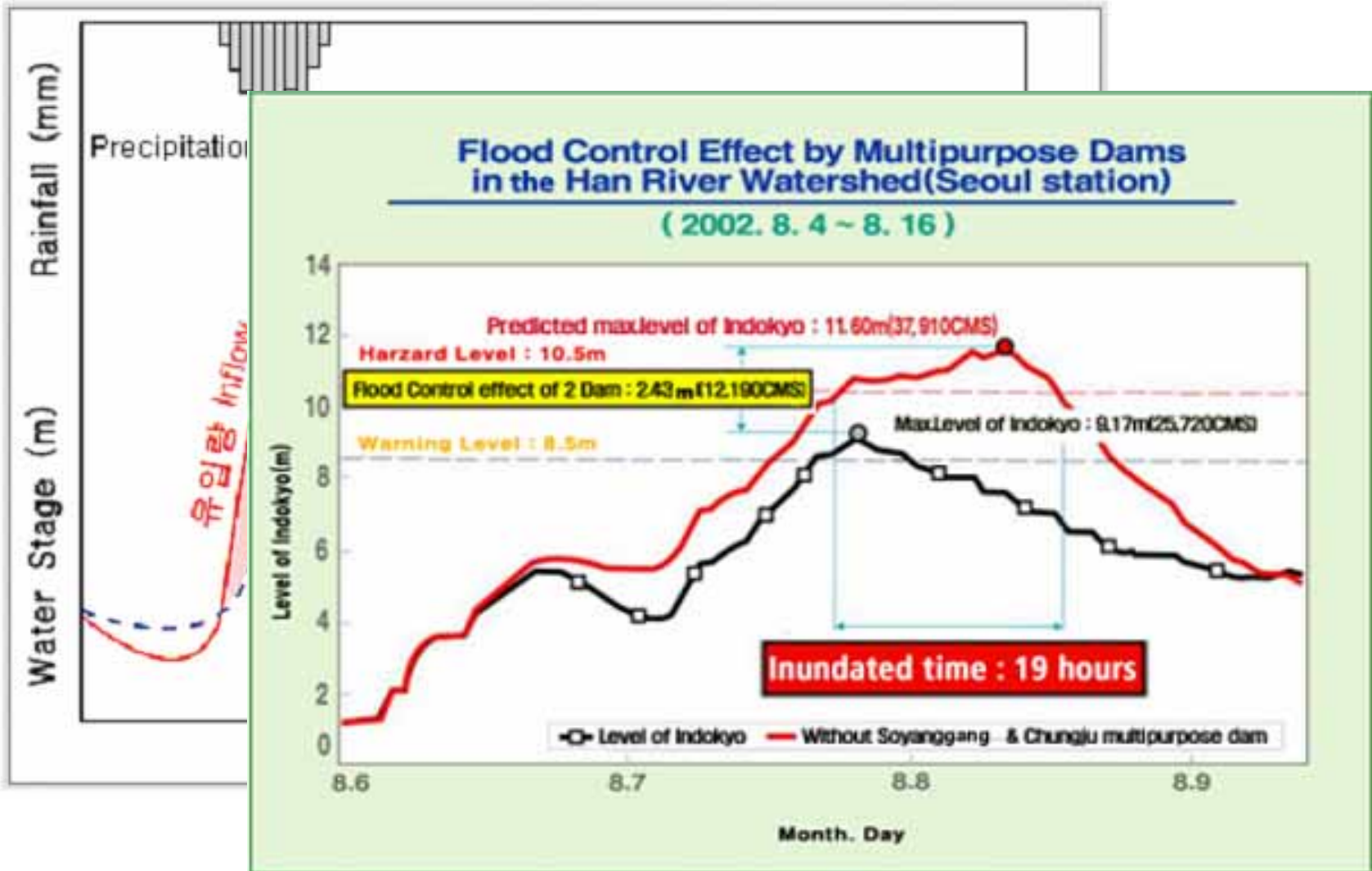


FLOOD FORECASTING

Down-stream Channel Routing

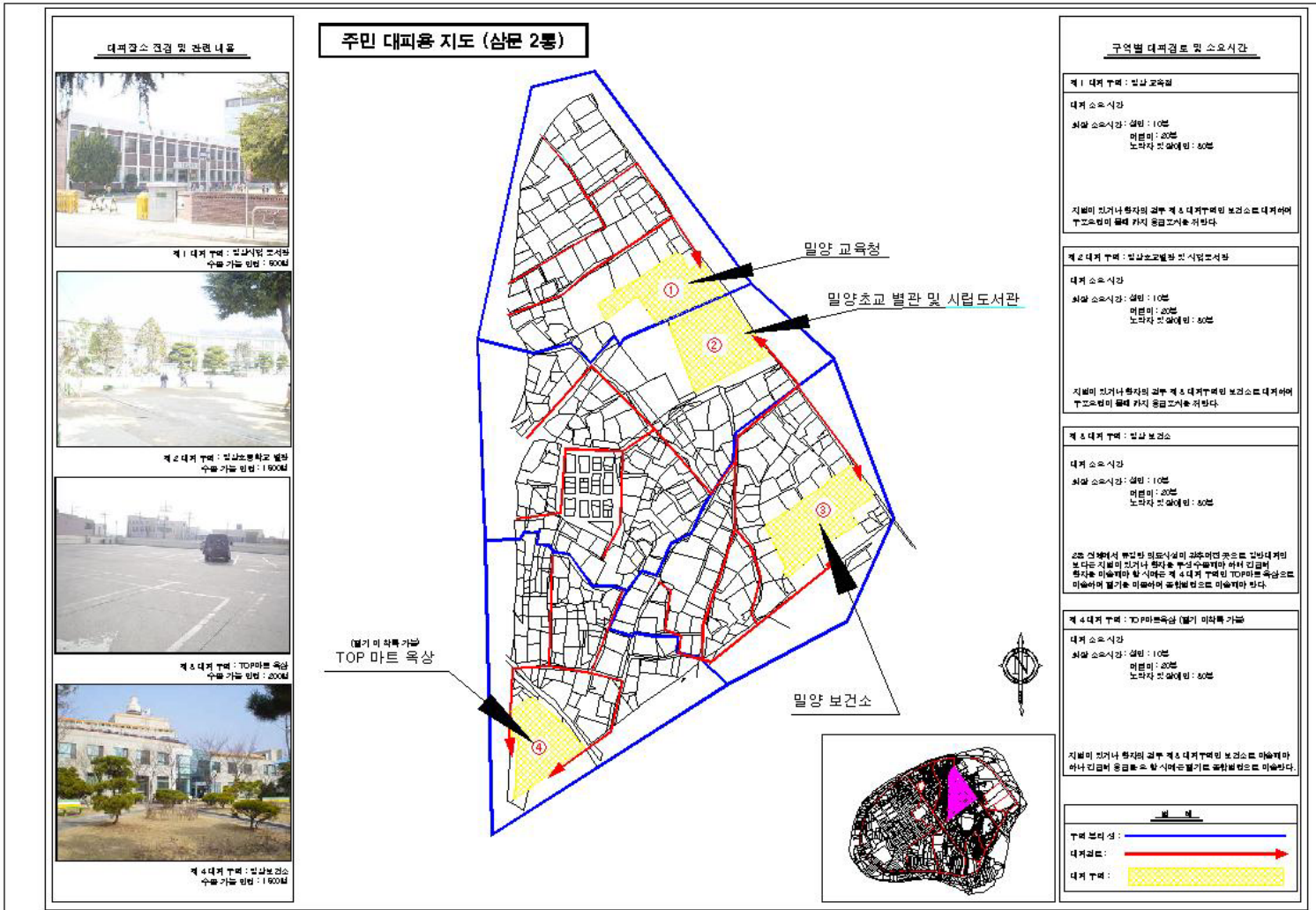


FLOOD CONTROL



FLOOD HAZARD MAP

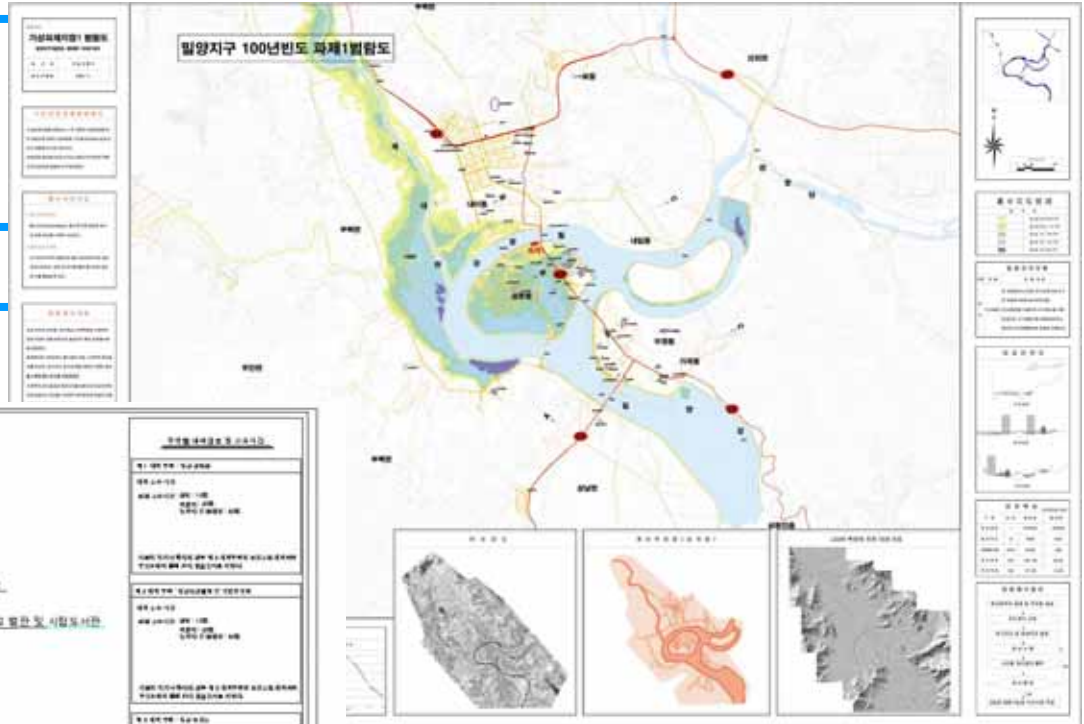
Sample map with evacuation information



DISASTER MANAGEMENT SYSTEM FOR LOCAL COMMUNITY

Receiving flood warning from FCO

Inundation



Operation of stream gates & pumping facilities

summary

- **Flood Forecasting and Early Warning Systems** have been established for major river basins, and are being extended to smaller basins.
 - More accurate rainfall forecasting with a proper leading time is prerequisite for the reliability of early warning system
- **Flood mapping has been conducted for major rivers, and are still under going.**
 - Flood map should be opened to the local communities and public to help them what to do in the real emergency situation
- **Local community based flood disaster management systems are being developed for effective preparedness against the flood risk.**



Thank you for your attention



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