

8th KYOTO University Southeast Asian Forum

What to do and not to do during earthquake?

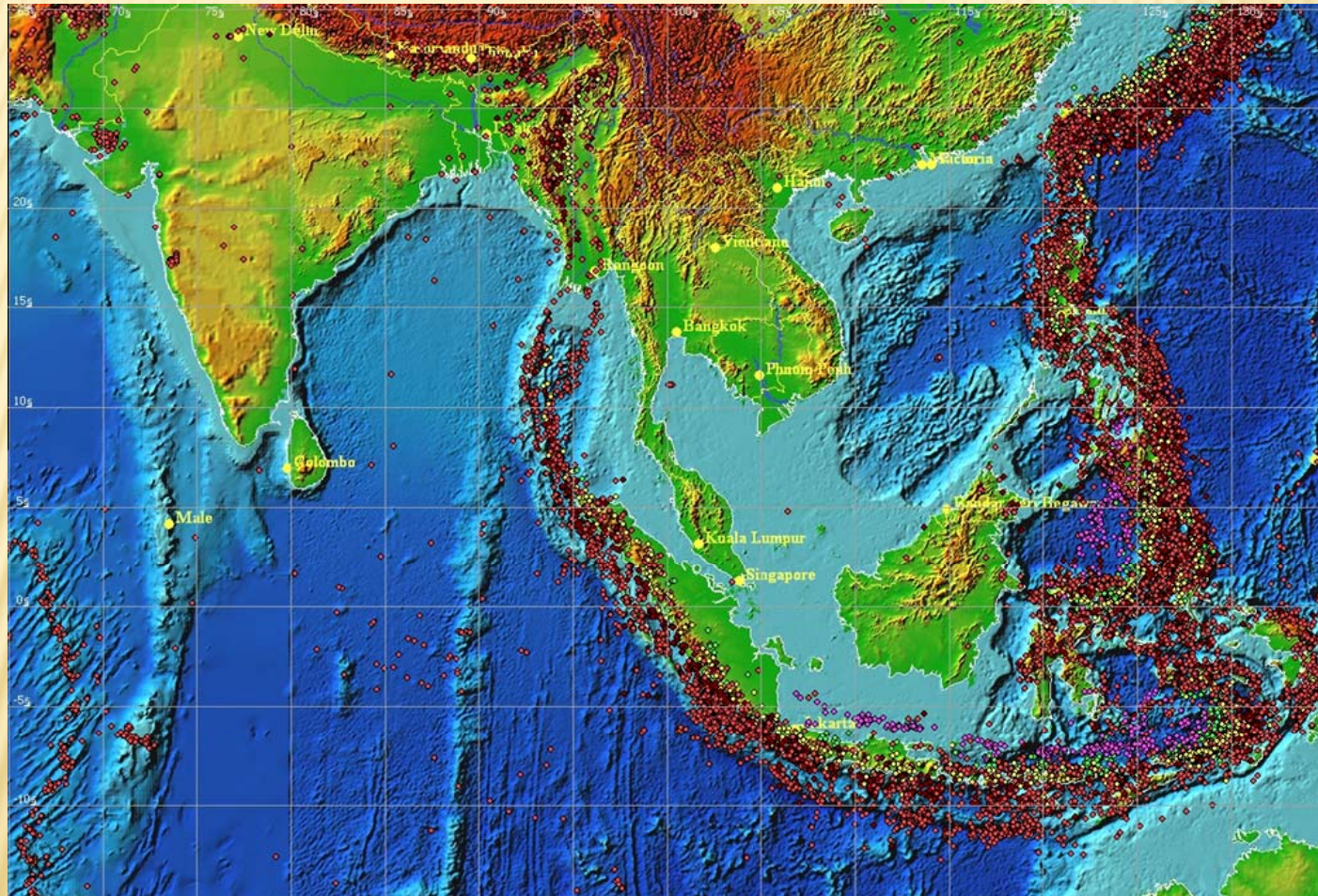


How Safe are EGAT Dams?

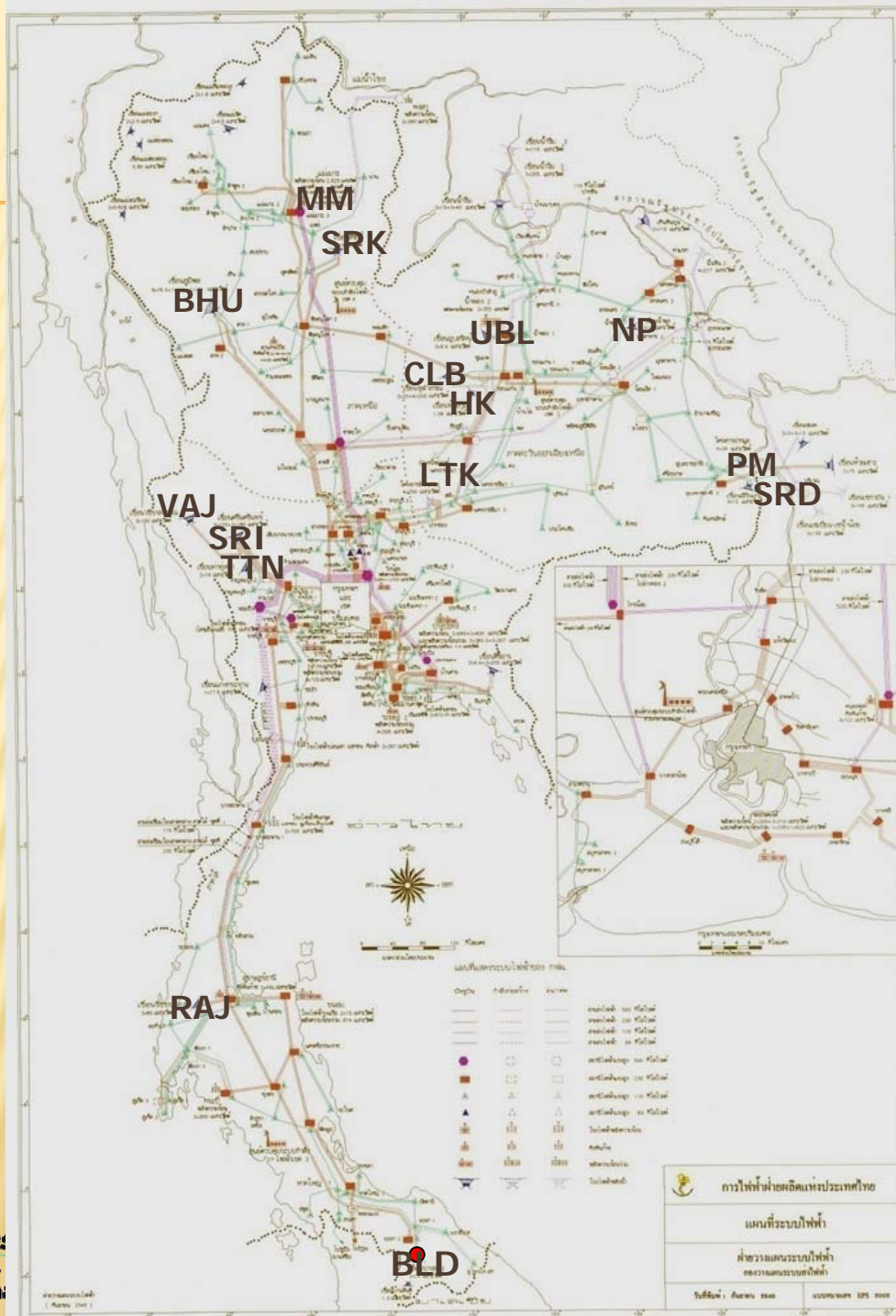
MR. VEERACHAI CHAISRAKAEW

**ASSISTANT DIRECTOR
CIVIL MAINTENANCE DEPARTMENT**

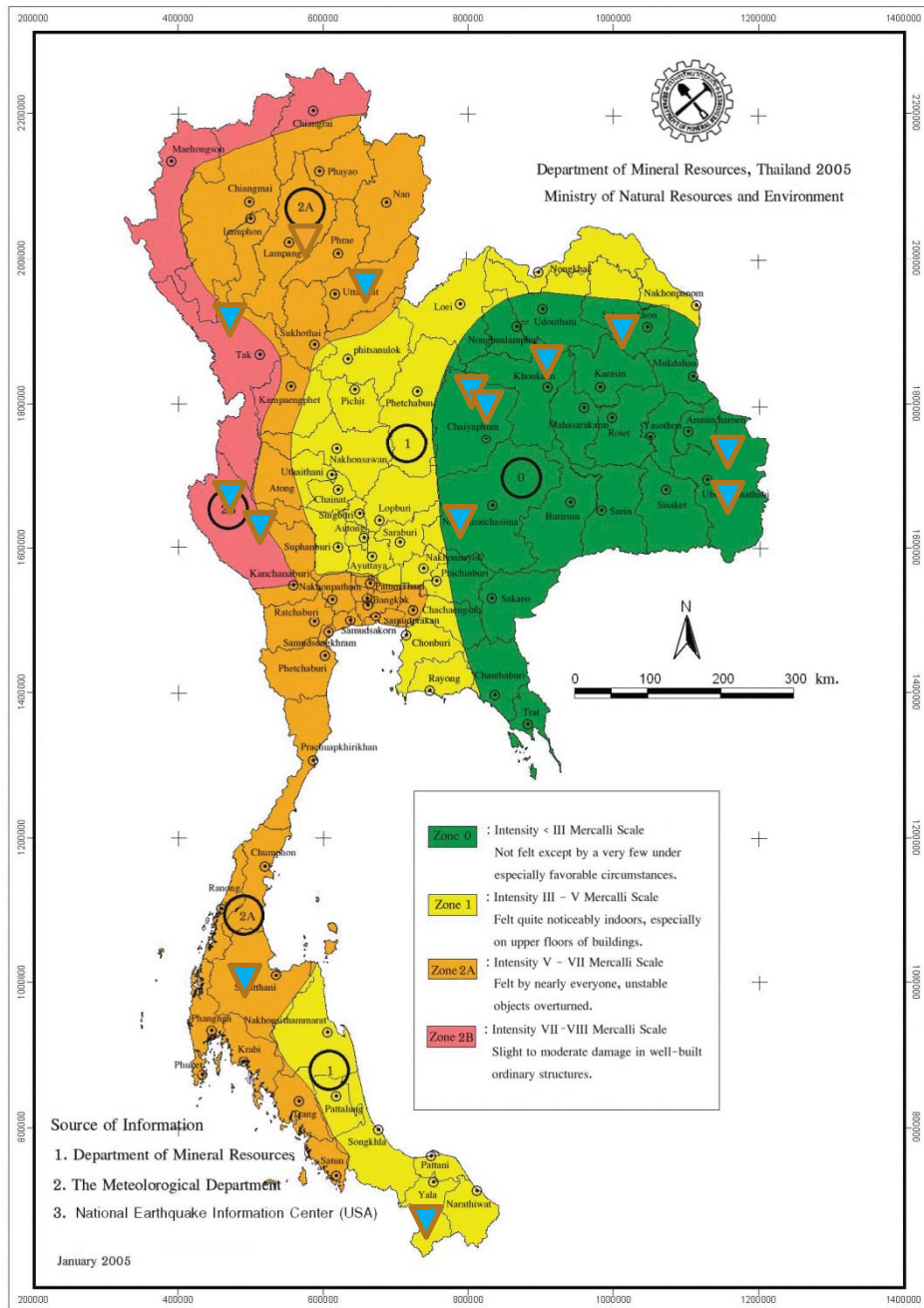
EGAT DAMS AND ITS BACKGROUND OF SEISMICITY



LOCATION OF EGAT DAMS



Seismic Hazard Map of Thailand



Location of EGAT's Dams Related to Seismic Zone

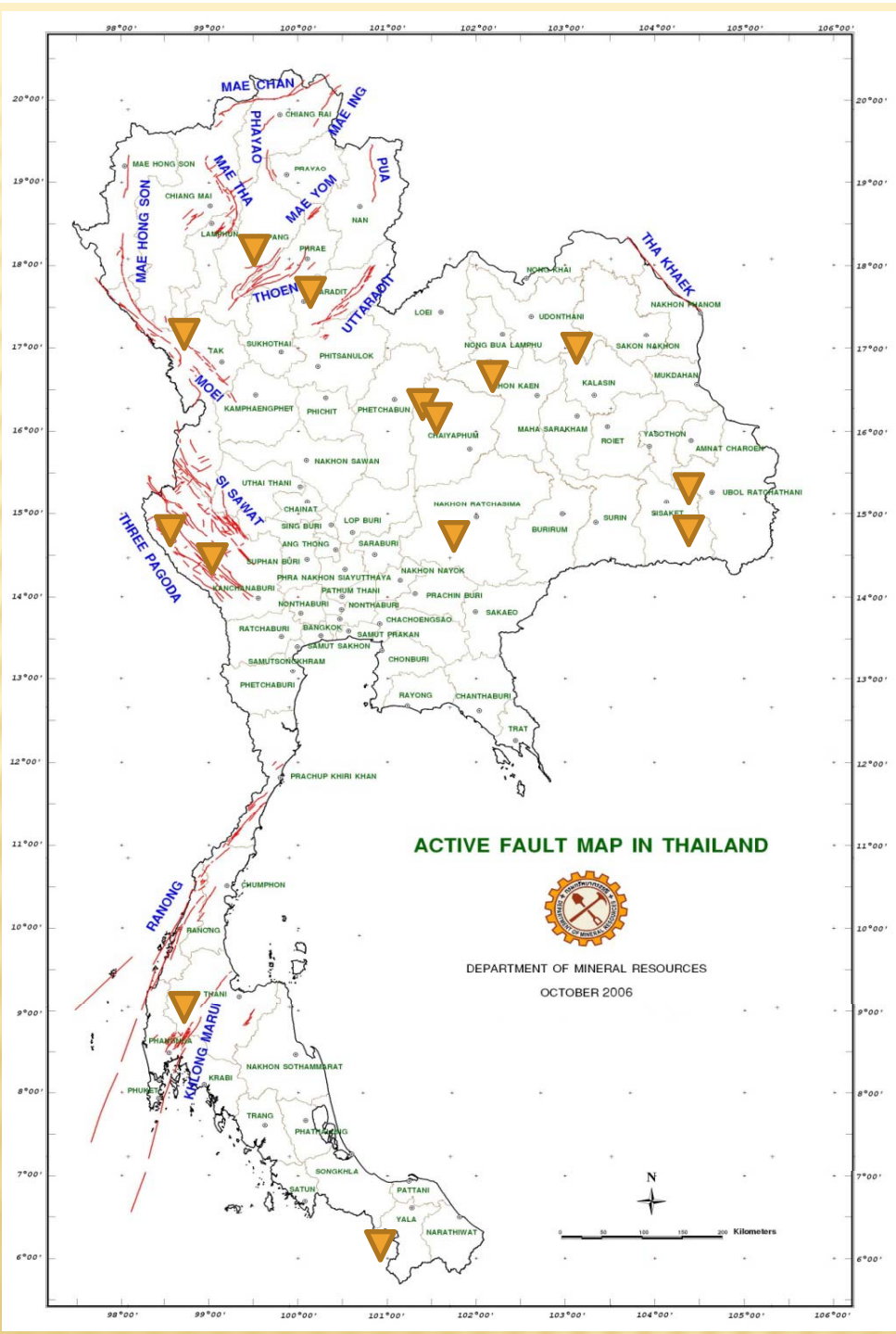
Large Dam of EGAT

- Zone 0** : Intensity < III Mercalli Scale
Not felt except by a very few under especially favorable circumstances.
- Zone 1** : Intensity III - V Mercalli Scale
Felt quite noticeably indoors, especially on upper floors of buildings.
- Zone 2A** : Intensity V - VII Mercalli Scale
Felt by nearly everyone, unstable objects overturned.
- Zone 2B** : Intensity VII - VIII Mercalli Scale
Slight to moderate damage in well-built ordinary structures.

Location of EGAT's Dams Related to Fault Zone



Large Dam of EGAT



Egat Dams Inventory

■ > 45 years
 ■ > 35 years
 ■ > 24 years
 ■ < 20 years

NO.	NAME	TYPE	HEIGHT (M.)	CREST LENGTH (M.)	STORAGE (MCM)	Age Years	COMPLETION YEAR
1	BHUMIBOL	Concrete arch	154	486	13,462	47	1964
2	NamPunk Dam	Rockfill w/clay core	40	1720	165	46	1965
3	Ubol Ratana Dam	Rockfill w / clay core	35	885	2263	45	1966
4	Sirinthorn Dam	Rockfill w/clay core	42	940	1966	40	1971
5	SIRIKIT	Earthfill	114	810	9,510	39	1972
6	Chularporn Dam	Rockfill w/clay core	70	700	188	39	1972

Egat Dams Inventory

■ > 40 years
 ■ > 30 years
 ■ > 20 years
 ■ < 20 years

NO.	NAME	TYPE	HEIGHT (M.)	CREST LENGTH (M.)	STORAGE (MCM)	Age Years	COMPLETION YEAR
7	SRINAGARIND	Rockfill w / clay core	140	610	17,745	31	1980
8	Banglang Dam	Rockfill w/clay core	85	422	1403	30	1981
9	Huay Kum Dam	Rockfill w/clay core	36	282	23	30	1981
10	Ta Thung Na Dam	Rockfill w/clay core	30	722	55	29	1982
11	VAJIRALONGKORN	Rockfill w/concrete face	92	1,019	8,860	26	1985
12	RAJJAPRABHA	Rockfill w / clay core	94	909	5,639	24	1987
13	PAK MUN	RC Concrete	17	324	225	17	1994
14	LAM TA KHONG	Rockfill w/HDPE asphalt face	50	2,000	10.3	9	2002



ฝ่ายบำรุงรักษาฝาย
 พัฒนาคณะ เพื่อประชาชน เพื่อประเทศไทย
Civil Maintenance Division



EGAT

Power for Thai Happiness

MOST OF EGAT DAMS ARE VERY HIGH HAZARD

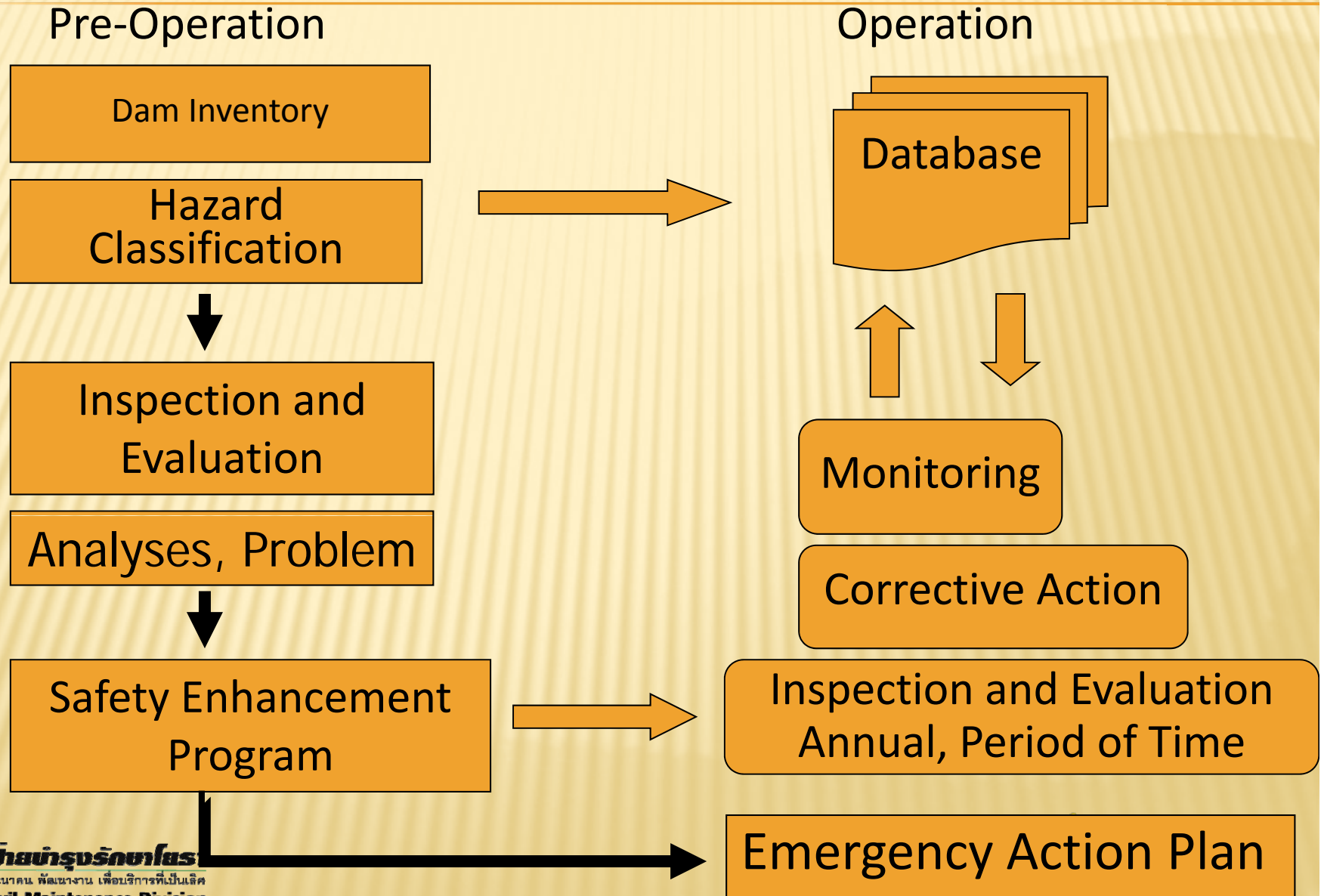
- × **Loss of life to people at downstream**
- × **Loss of properties and welfare to people**
- × **Direct impact to Social, Economic, and Environment**

So EGAT always aware of safety of dams to assure that downstream people will safe

EGAT ACTIVITY FOR SAFETY OF DAMS

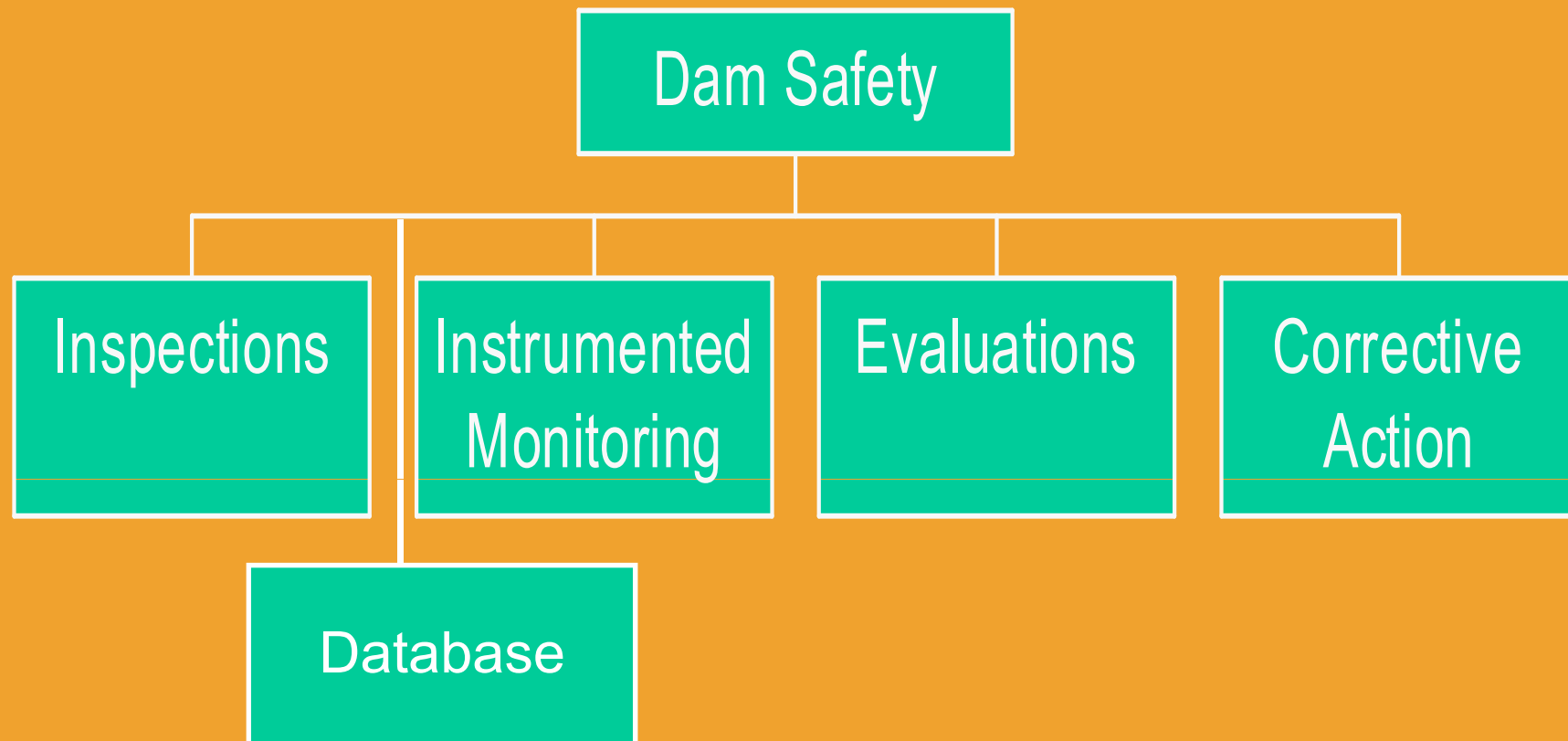
- × Dam Safety Programs
- × Preparedness and Mitigation Plan
- × Structural and Non-structural Measures
- × Monitoring Programs
- × Emergency Action Plans

DAM SAFETY IMPLEMENTATION PROCESS



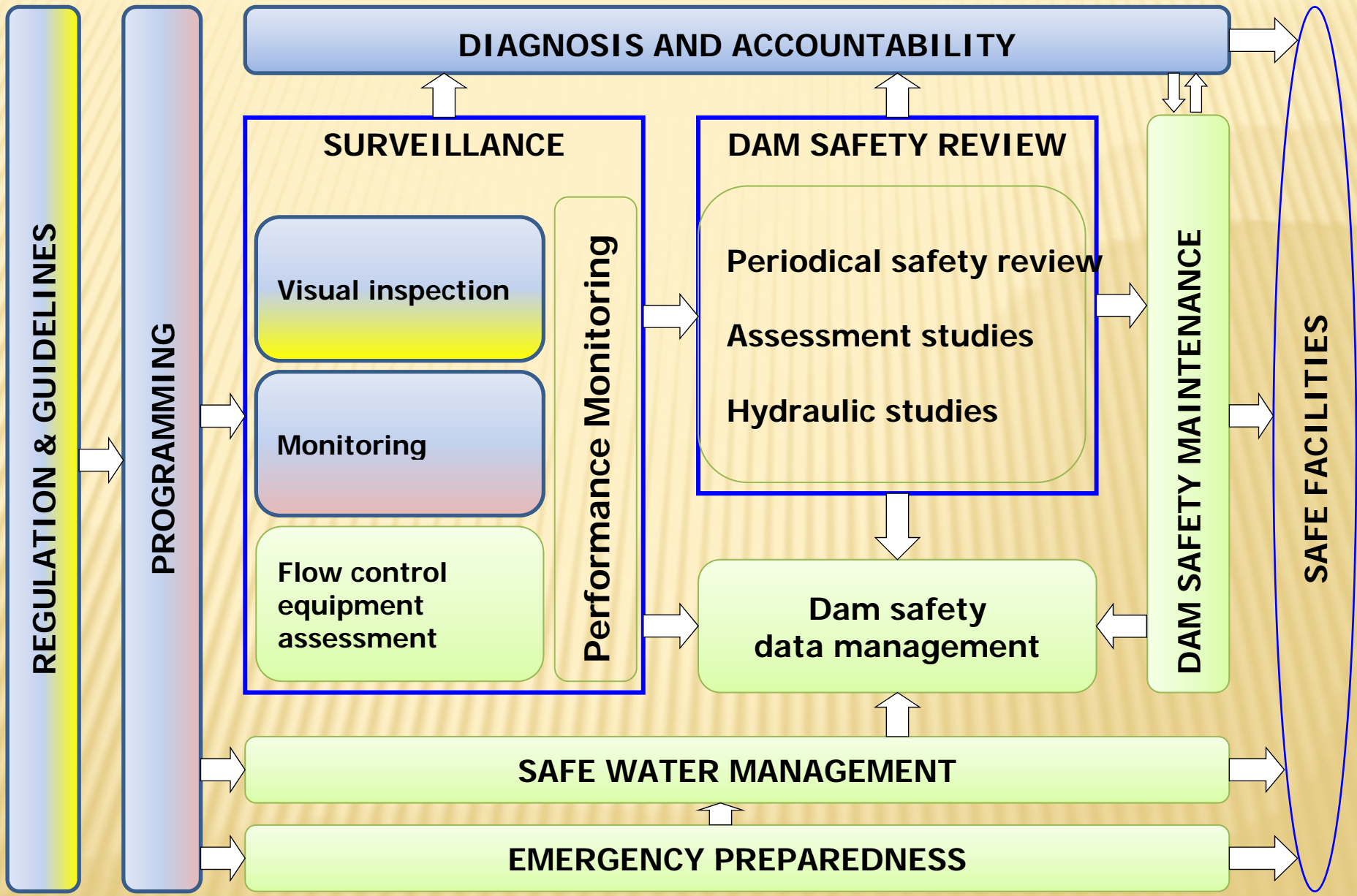
DAM SAFETY ORGANIZATION

FUNCTION ORIENTED



SURVEILLANCE: BASIC ELEMENTS IN A "DAM SAFETY" PROCESS

International Commission on Large Dam (ICOLD)
Bulletin 138 :2009



Dam Safety Program

Concrete
dam

Earthfill
dam

Clay core
rockfill dam

Concrete face
rockfill dam

Weir

- **DAM INSPECTION AND SAFETY EVALUATION (DISE)**
 - **DAM REMEDIAL DESIGN (DRD)**
 - **DAM BREAK ANALYSIS AND INUNDATION MAP (DBAIM)**
 - **DAM INSTRUMENTATION MONITORING SYSTEM (DIMS)**
- **DAM SAFETY TRAINING (DST)**
- **PUBLIC ACCEPTANCE FOR DAM SAFETY (PADS)**
 - **AQUATIC ECOLOGY (AE)**
 - **DAM SAFETY AUDIT (DSA)**
 - **DAM SAFETY REMOTE MONITORING SYSTEM (DSRMS)**
 - **DAM SAFETY EMERGENCY PREPAREDNESS PLAN (DSEPP)**
- **DAM SAFETY REVIEW (DSR)**

EGAT DAM SAFETY

DAM SAFETY IN OPERATION PERIOD

❖ Reservoir Operation

- ✓ Effective release of water under guidance of Royal Irrigation Department
- ✓ Prevent to uncontrolled release situations to assure safe dams

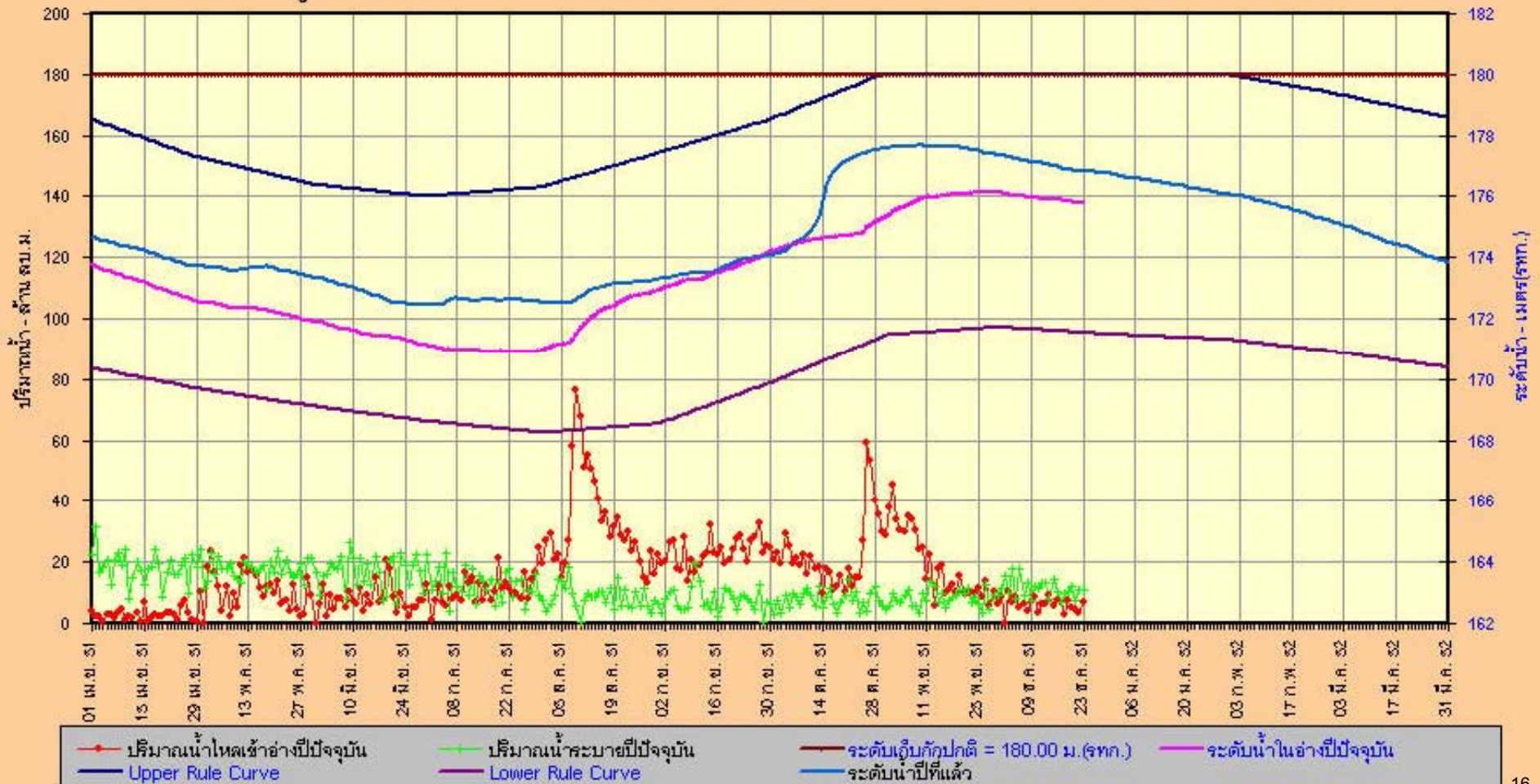
❖ Dam Inspection and Maintenance

- ✓ Initiate and proceed the Dam Safety Guideline which adapted from USBR and ICOLD guideline

SAFETY RESERVOIR OPERATION FLOOD CONTROL RULE CURVE

ข้อมูลวันที่ 23 ธันวาคม 2551 ณ เวลา 24:00 น.

รูปปริมาณน้ำไหลเข้า ปริมาณน้ำระบายและระดับน้ำในอ่างเก็บน้ำรายวันของเขื่อนศรีนครินทร์



EFFECTIVE WATER MANAGEMENT INFLOW – OUTFLOW

SUMMARY HYDROGRAPHS OF SRINAGARIND DAM

