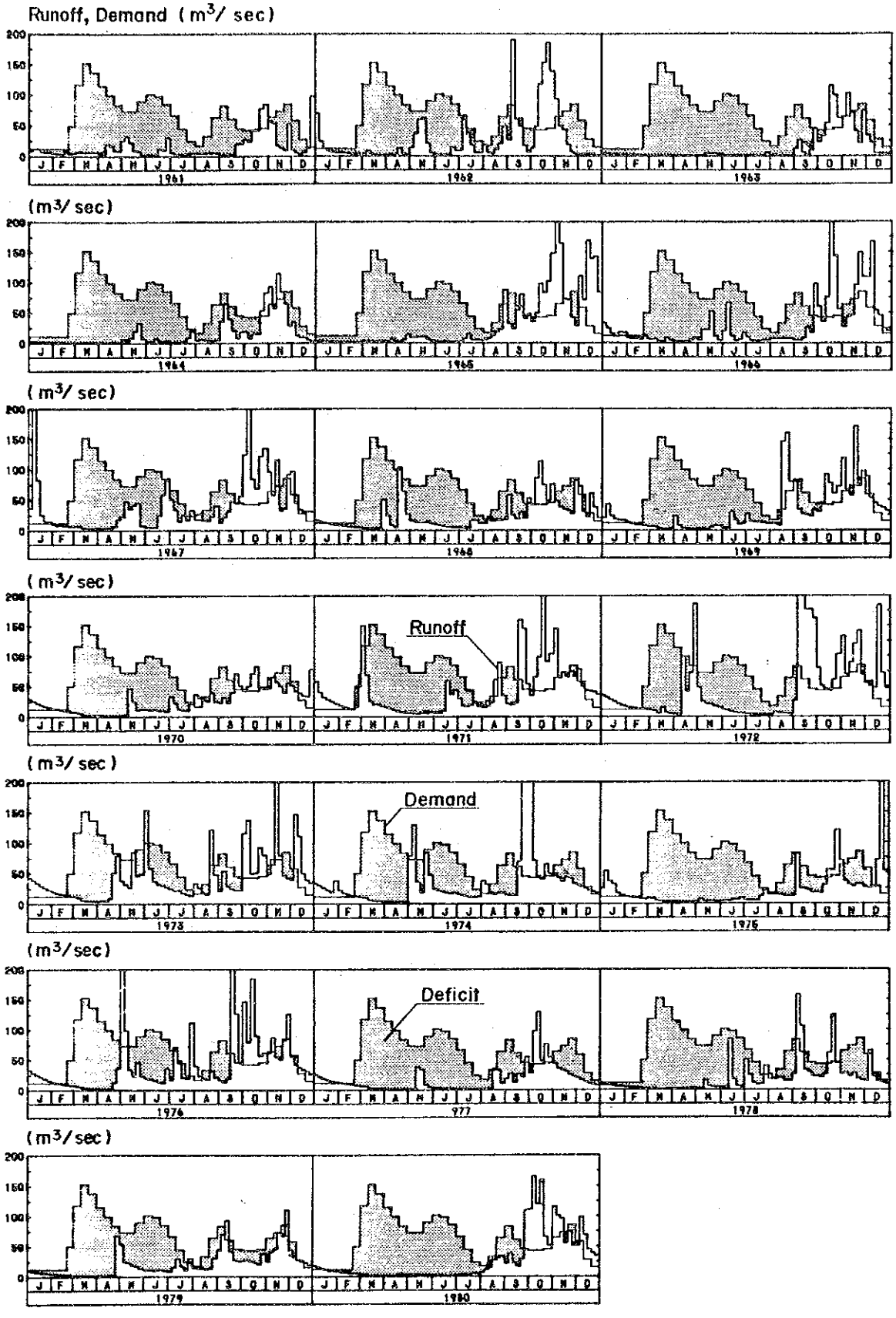

Fig. 9 Water Demand and Supply Balance of Kedah River System in 2000 in High Growth Case

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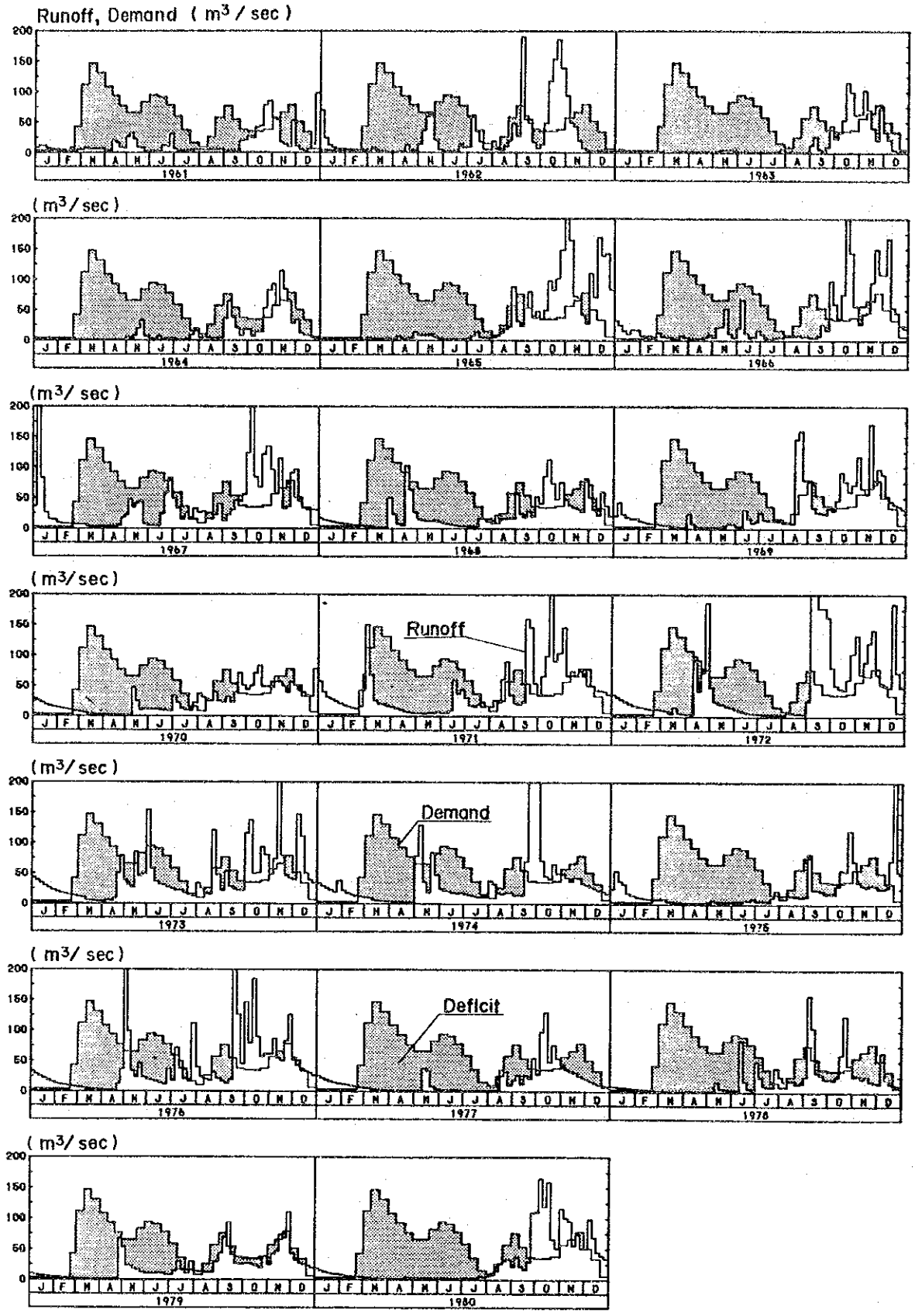

Fig. 10 Water Demand and Supply Balance of Kedah River System in 1990 in Low Growth Case

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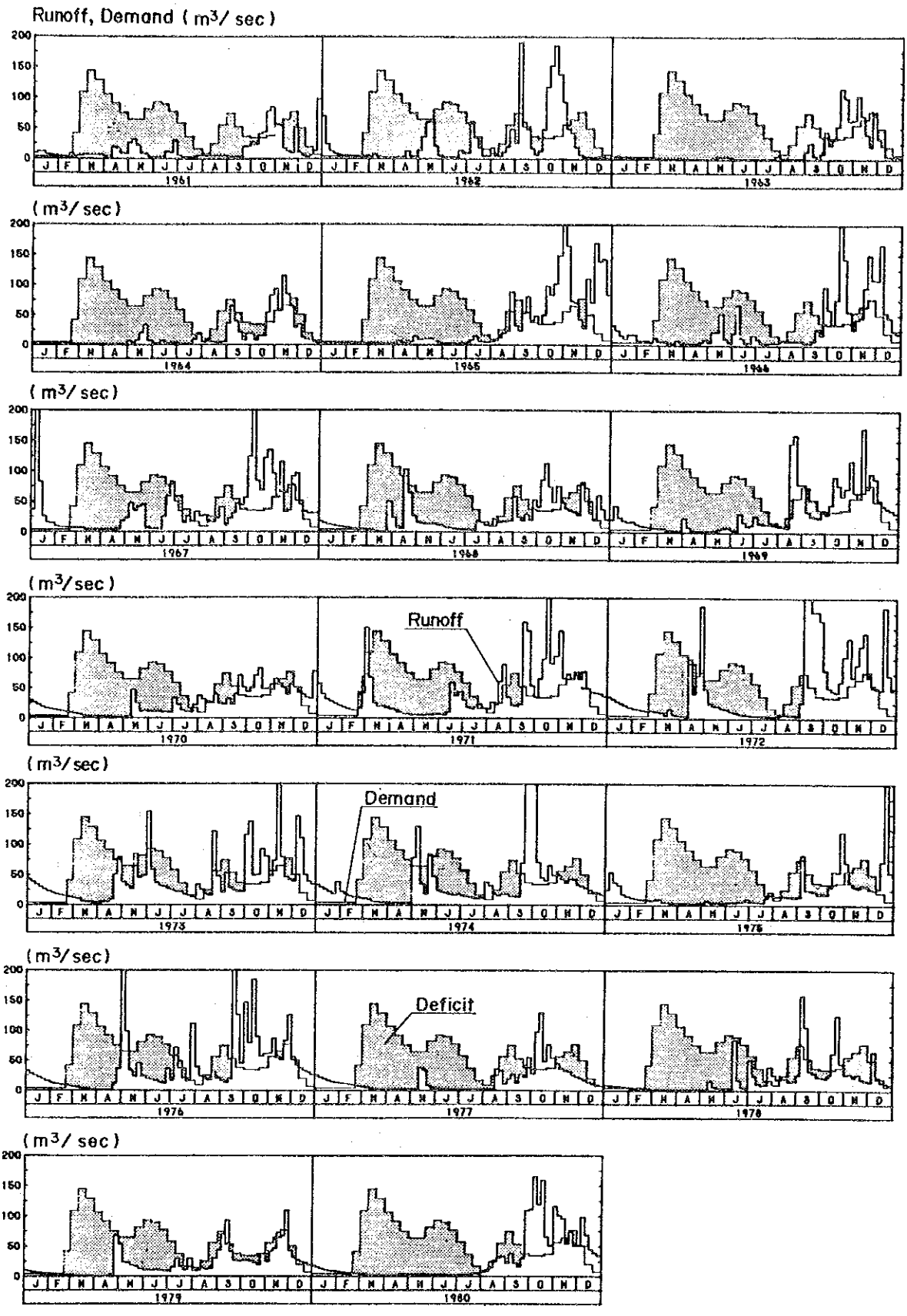

Fig. 11 Water Demand and Supply Balance of Kedah River System in 2000 in Low Growth Case

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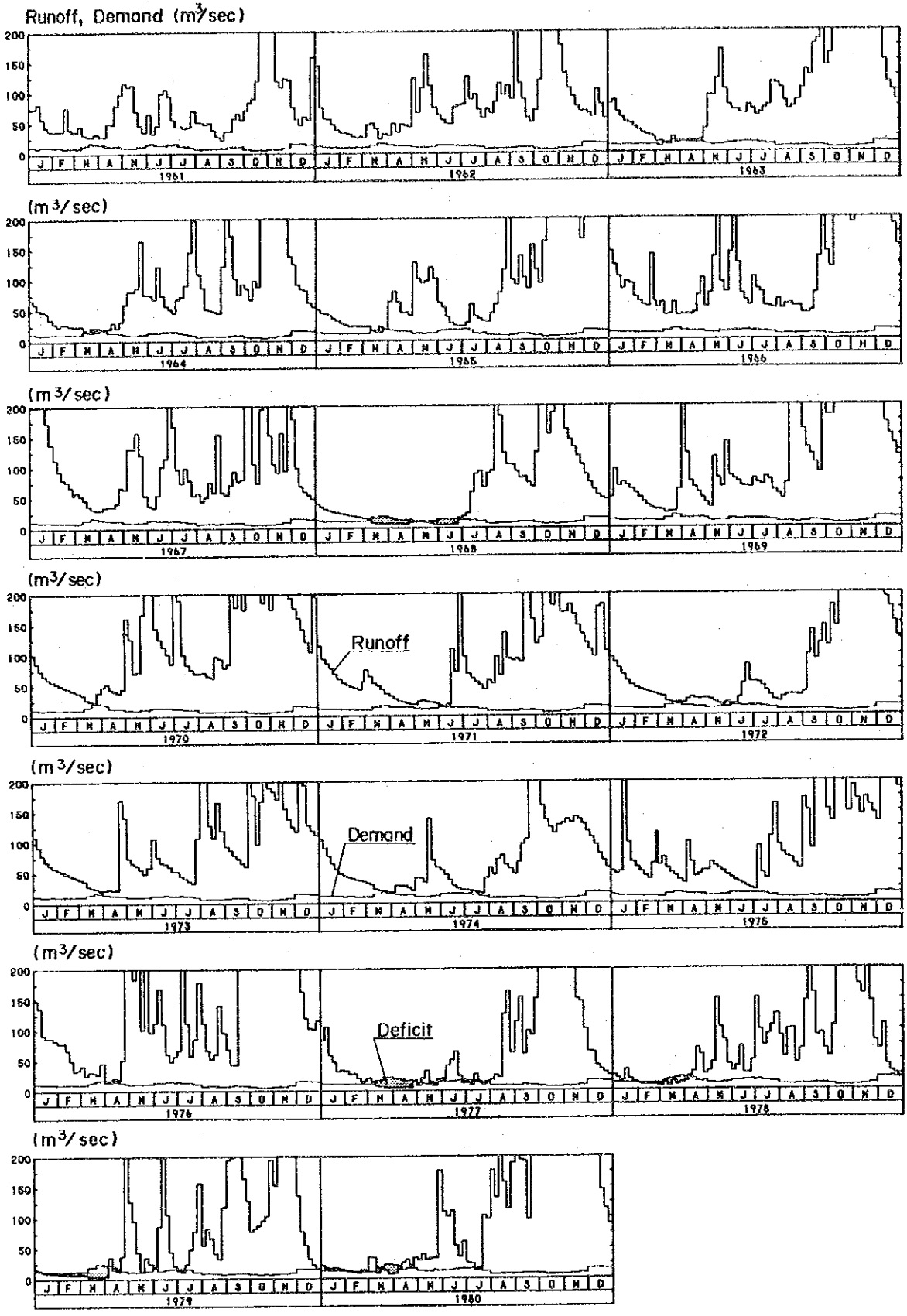

Fig. 12 Water Demand and Supply Balance of Muda River System in 1982

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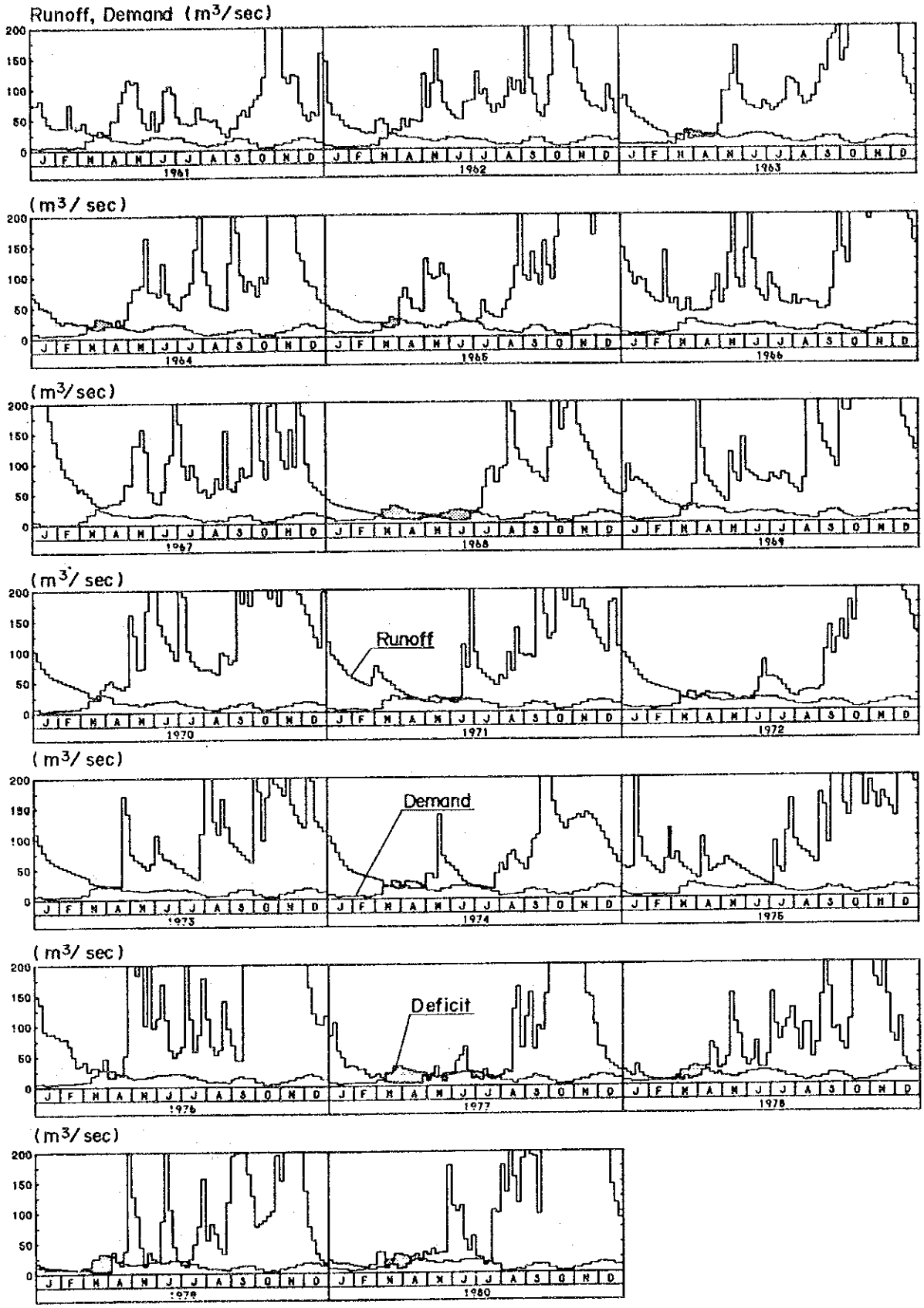

Fig. 13 Water Demand and Supply Balance of Muda River System in 1990 in High Growth Case

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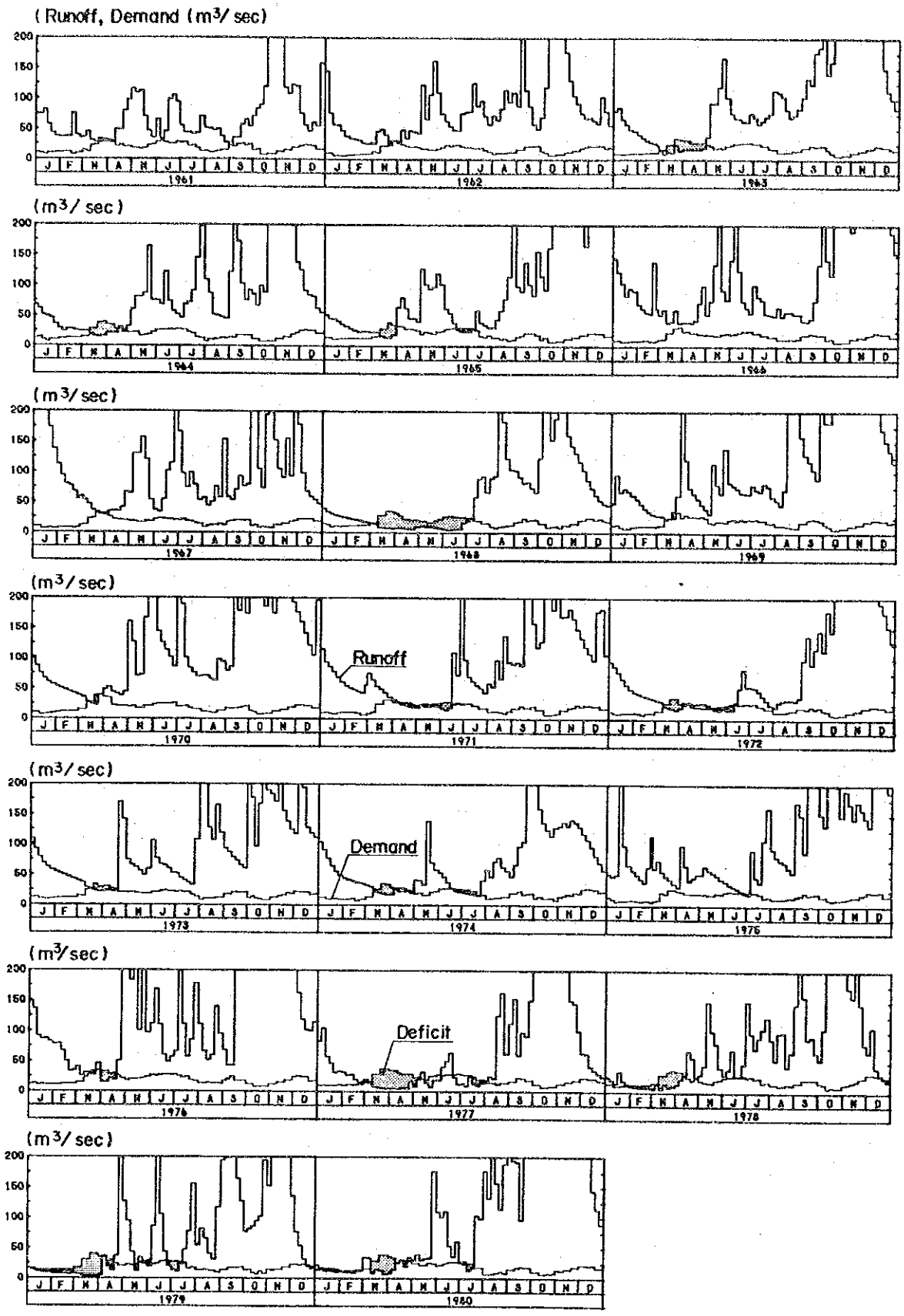

Fig. 14 Water Demand and Supply Balance of Muda River System in 2000 in High Growth Case

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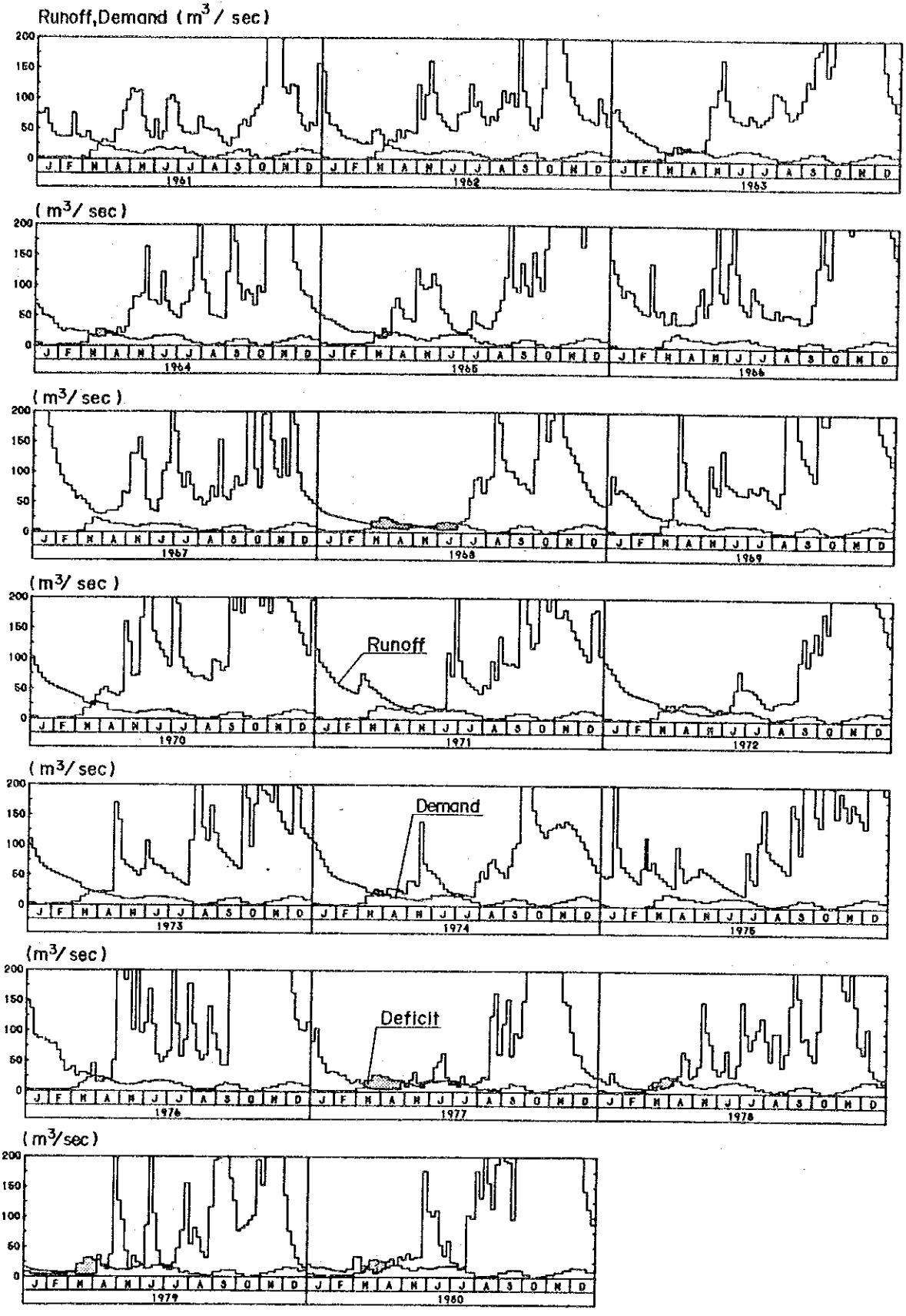

Fig. 15 Water Demand and Supply Balance of Muda River System in 1990 in Low Growth Case

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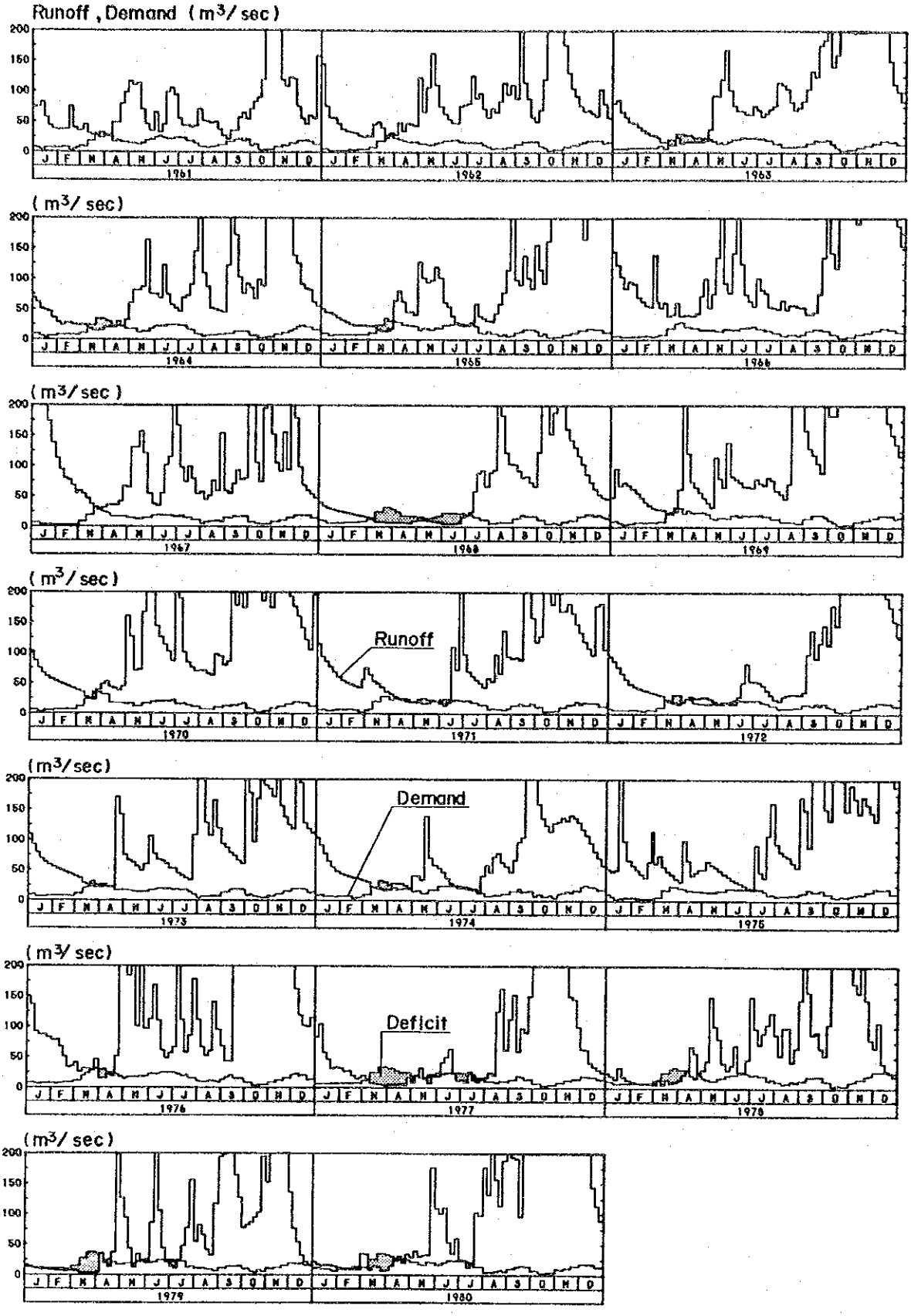

Fig. 16 Water Demand and Supply Balance of Muda River System in 2000 in Low Growth Case

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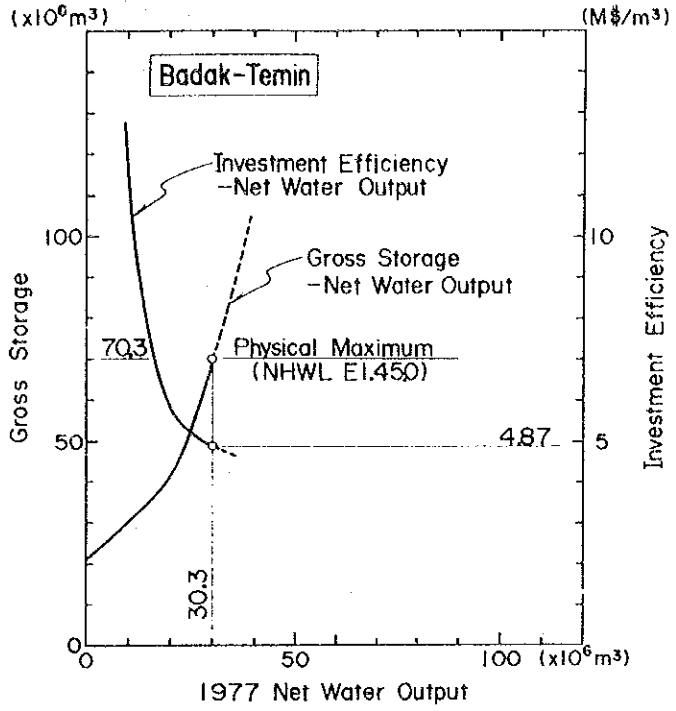

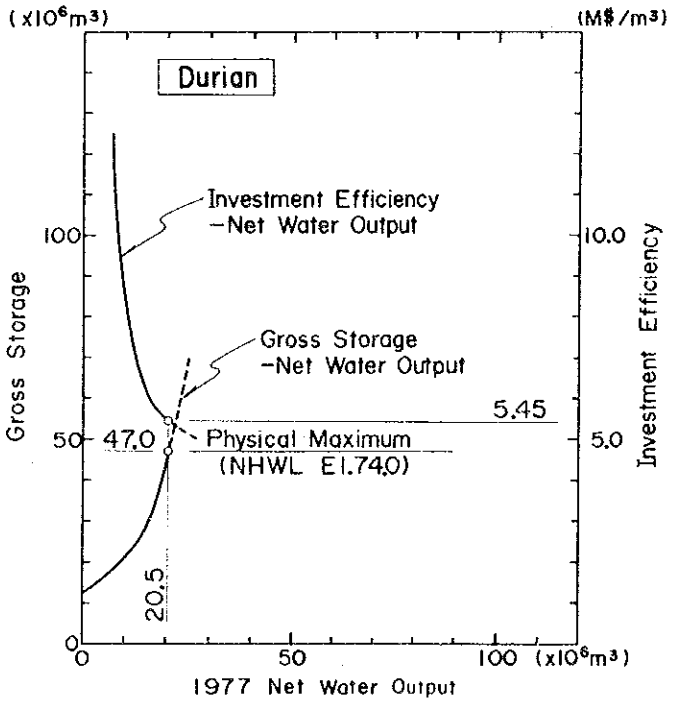

Remarks: (1) 1977 Net Water Output
= 1977 Regulated Outflow - Average Shutdown

(2) Investment Efficiency (M$/m³)
= (Financial Project Cost)/(1977 Net Water Output)

Fig. 17 Gross Storage - 1977 Net Water Output - Investment Efficiency Relationship (1/3)

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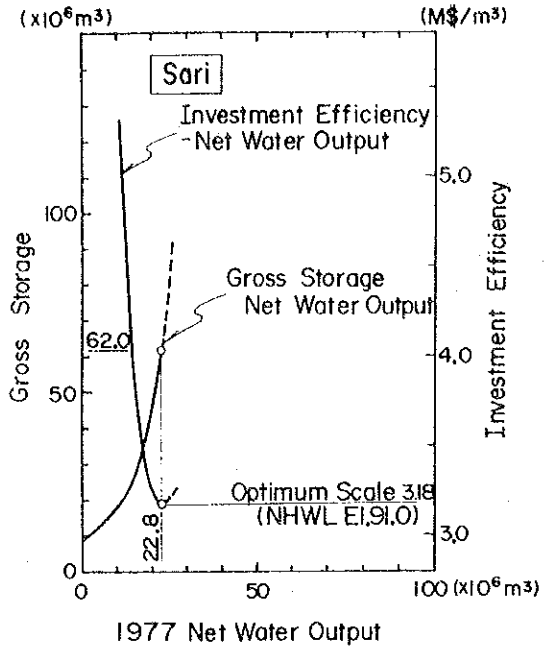

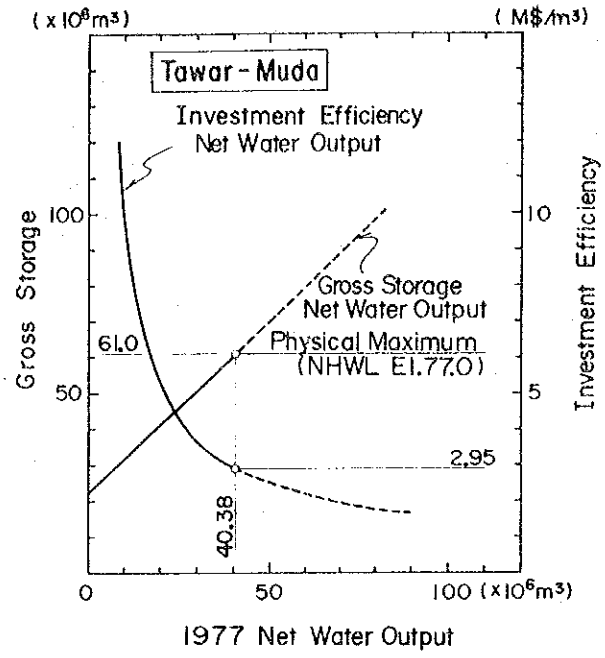

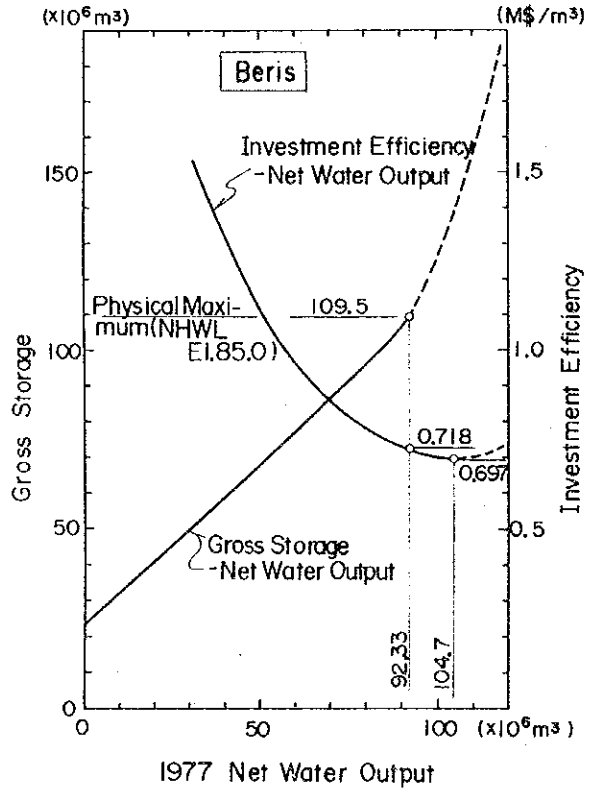

Remarks: (1) 1977 Net Water Output
=1977 Regulated Outflow-
Average Shutdown

(2) Investment Efficiency(M$/m³)
=(Financial Project Cost)/(1977
Net Water Output)

Fig. 18 Gross Storage - 1977 Net Water Output - Investment Efficiency Relationship (2/3)

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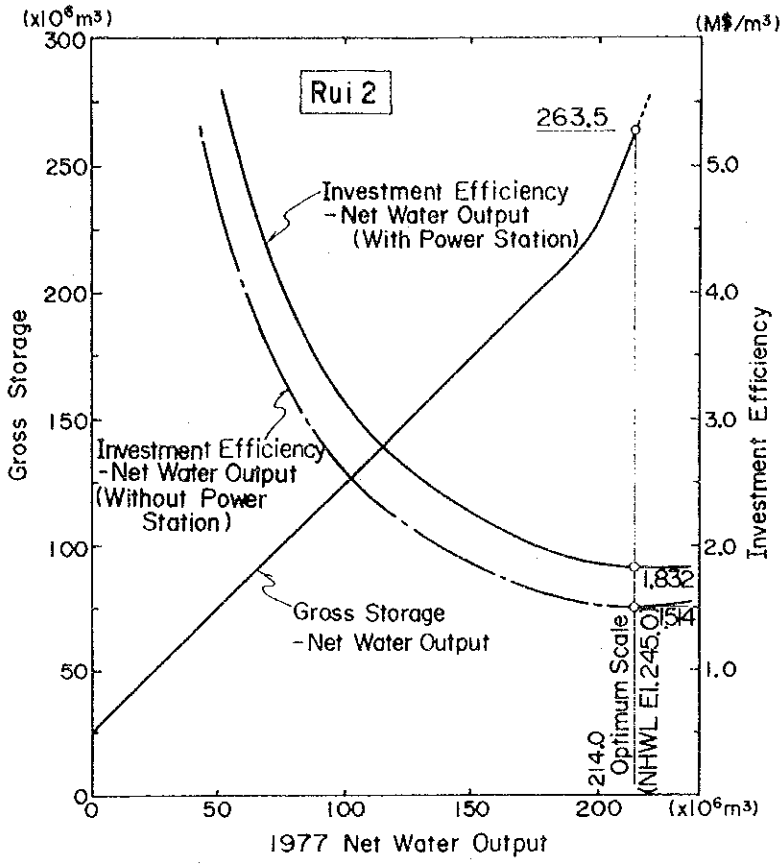

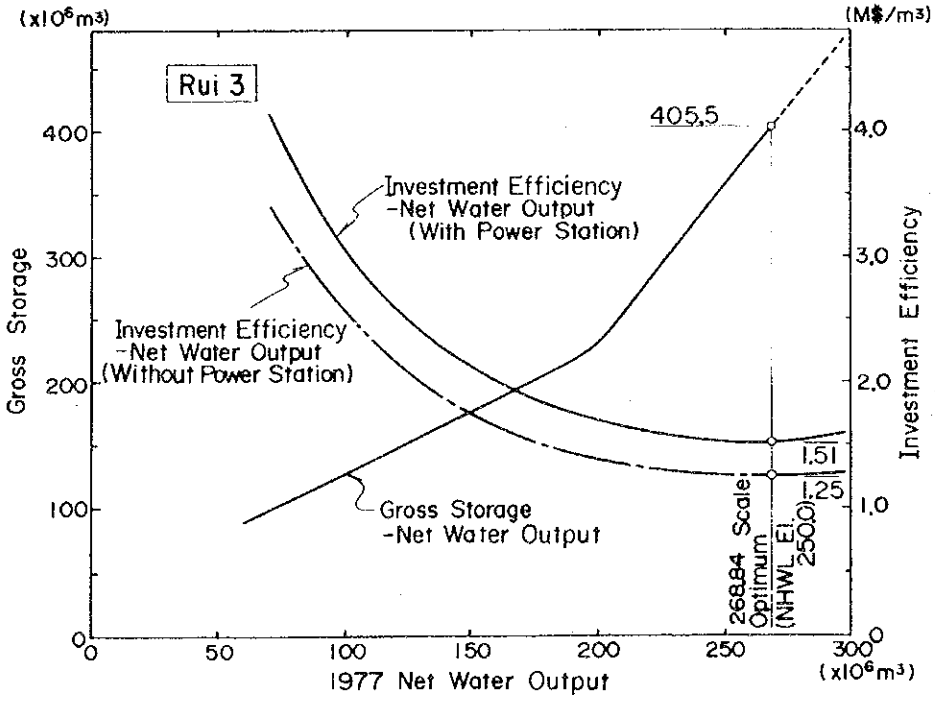

Remarks : (1) 1977 Net Water Output
= 1977 Regulated Outflow - Average Shutdown

(2) Investment Efficiency (M$/m³)
= (Financial Project Cost)/(1977 Net Water Output)

Fig. 19 Gross Storage - 1977 Net Water Output - Investment Efficiency Relationship (3/3)

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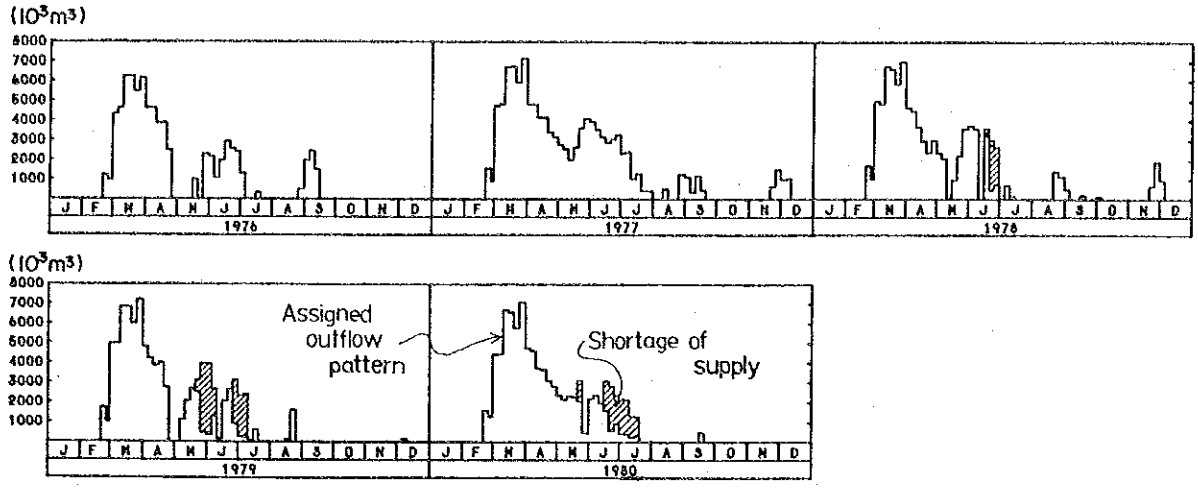
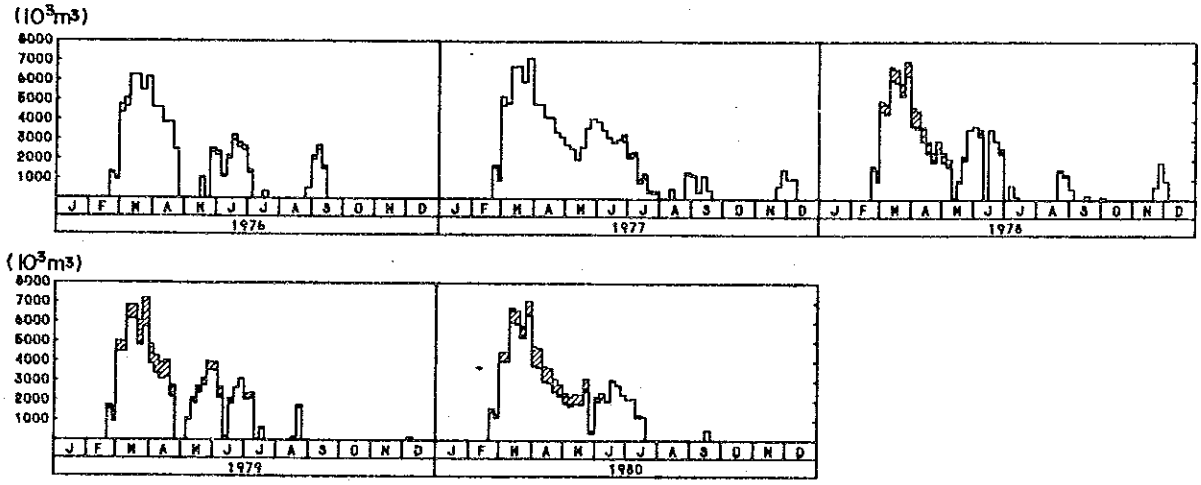
Reservoir Operation without Rule Curve



Reservoir Operation with Rule Curve



Water Level Rule Curve

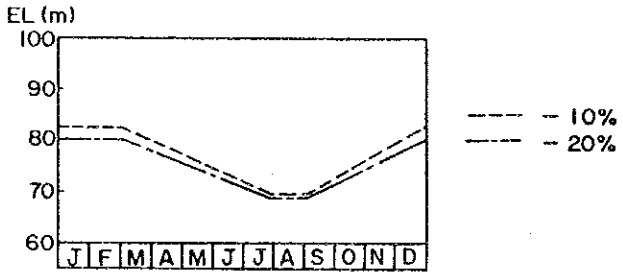


Fig. 20 Reservoir Operation by Rule Curve Method for Beris Dam

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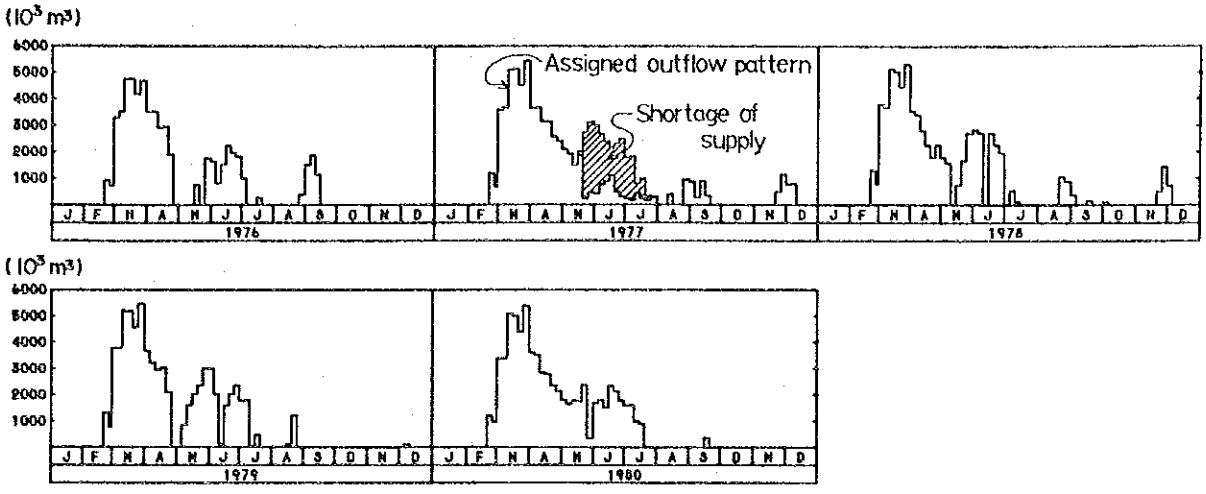
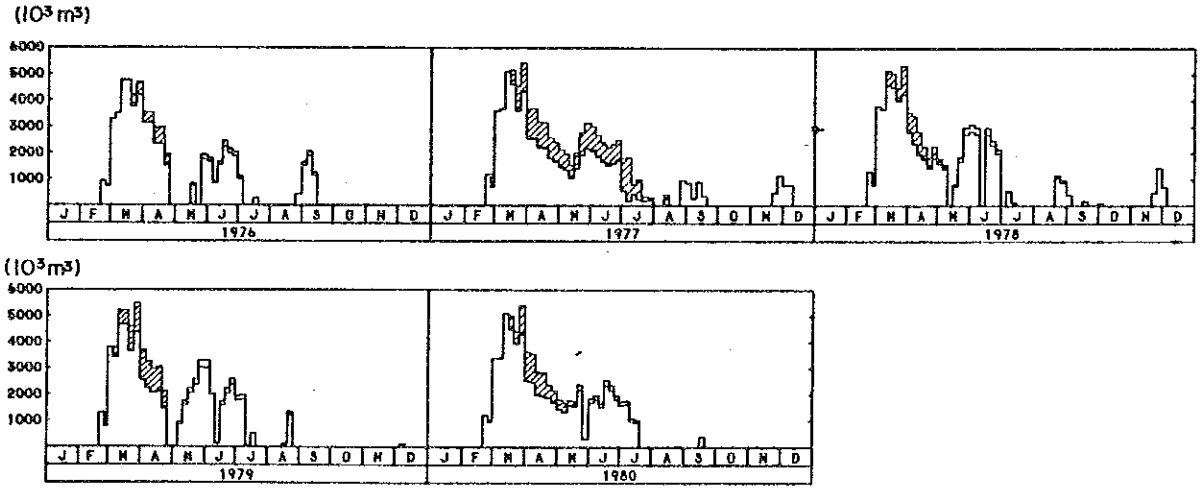
Reservoir Operation without Rule Curve



Reservoir Operation with Rule Curve



Water Level Rule Curve

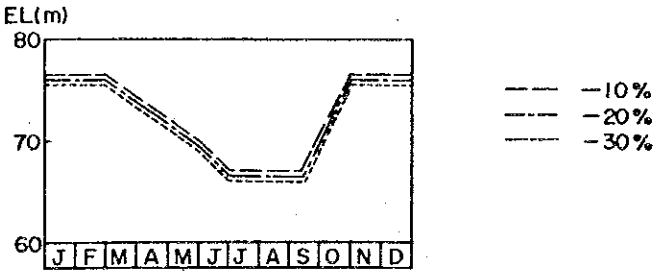


Fig. 21 Reservoir Operation by Rule Curve Method for Tawar-Muda Dam

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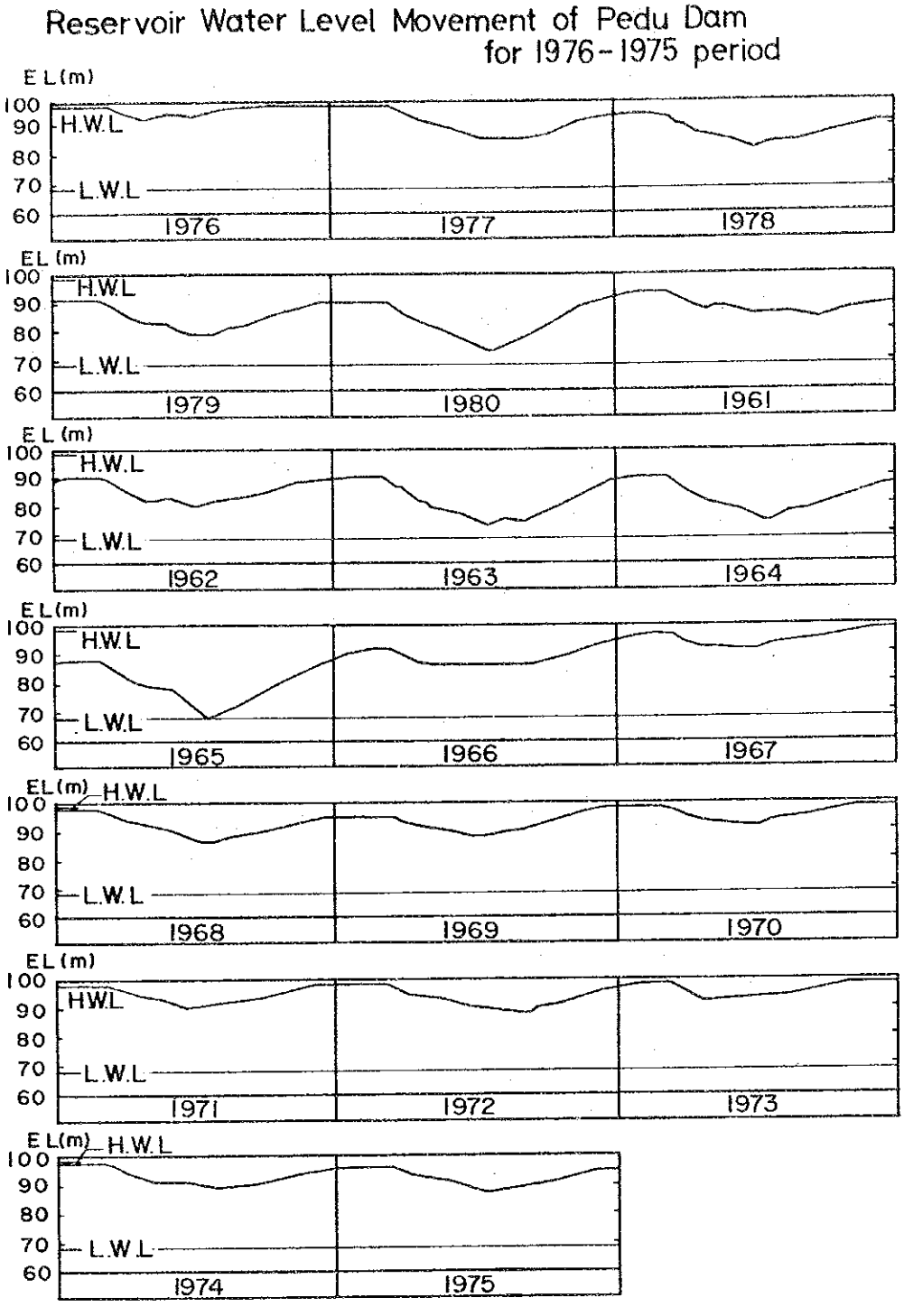

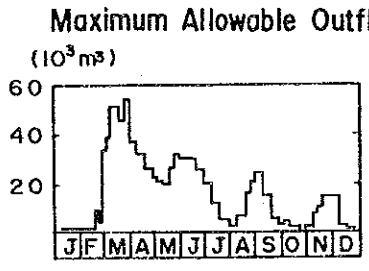

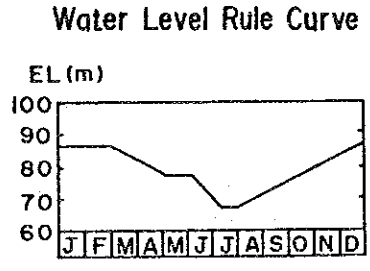

Fig. 22 Reservoir Operation of Pedu-Muda Dam System

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	Net Water Output ($10^6 m^3$)	Construction Cost (M$ 10^6)
Tawar-Muda	41	115
Rui	140	280
Khlong Thepa	73	90
Merbok	118	132
Reman	175	96
Beris	92	73
Jeniang	175	72
Ahning	42	56
Mengkuang	24	62

	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10
Water Output Kedah ($10^6 m^3$)	217	290	217	217	290	290	290	217	217	217
Water Output Muda-Perai ($10^6 m^3$)	142	24	157	24	142	157	24	142	157	24
Water Output Compatible ($10^6 m^3$)	267	308	274	308	133	140	133	133	140	133
Total Water Output ($10^6 m^3$)	626	622	648	549	565	587	447	492	514	374
Total Construction Cost (M$ 10^6)	491	564	639	474	600	748	468	510	658	378
Case	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10

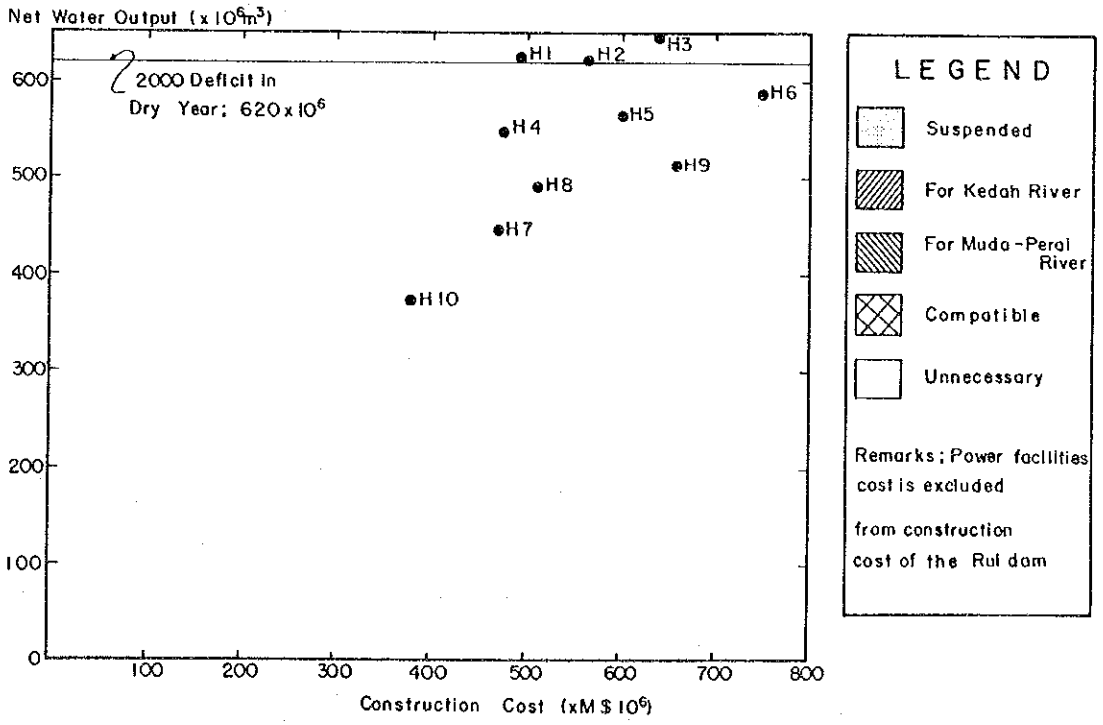

Fig. 23 Water Demand and Supply Balance Plan in High Growth Case

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	Net Water Output ($10^6 m^3$)	Construction Cost (M10^6$)			
Tawar - Muda	41	115			
Khlong Thepha	73	90			
Reman	175	96			
Berls	92	73			
Jenlang	178	72			
Ahning	42	56			
Mengkuang	24	62			
Water Output (Kedah ($10^6 m^3$))			220	293	220
Water Output (Muda-Perai($10^6 m^3$))			24	24	24
Water Output (Compatible($10^6 m^3$))			267	133	133
Total Water Ouput ($10^6 m^3$)			511	450	377
Total Coustruction Cost (M10^6$)			359	468	378
Case			L1	L2	L3

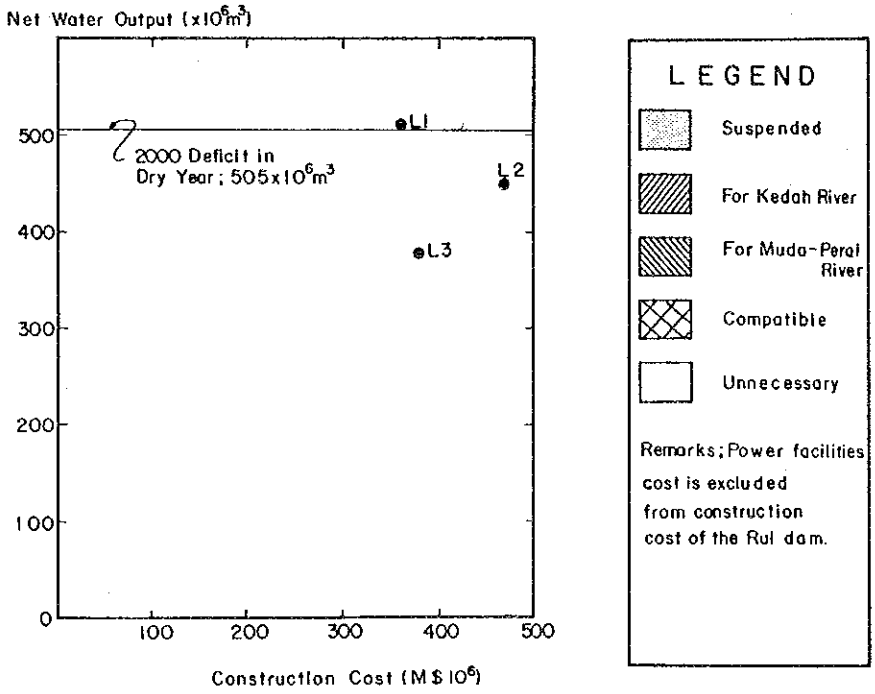

Fig. 24 Water Demand and Supply Balance Plan in Low Growth Case

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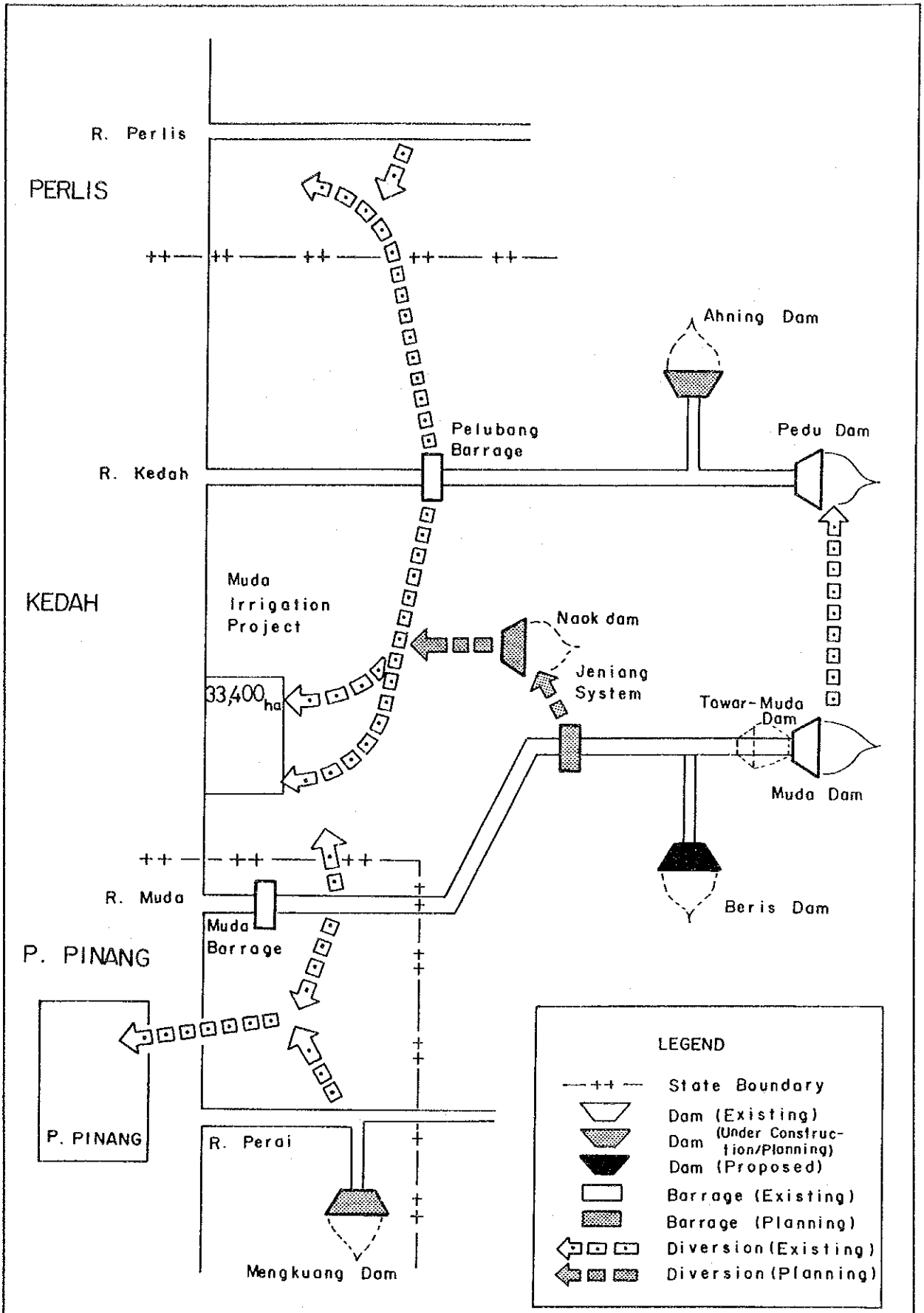

Fig. 25 Recommended Source Development Plan

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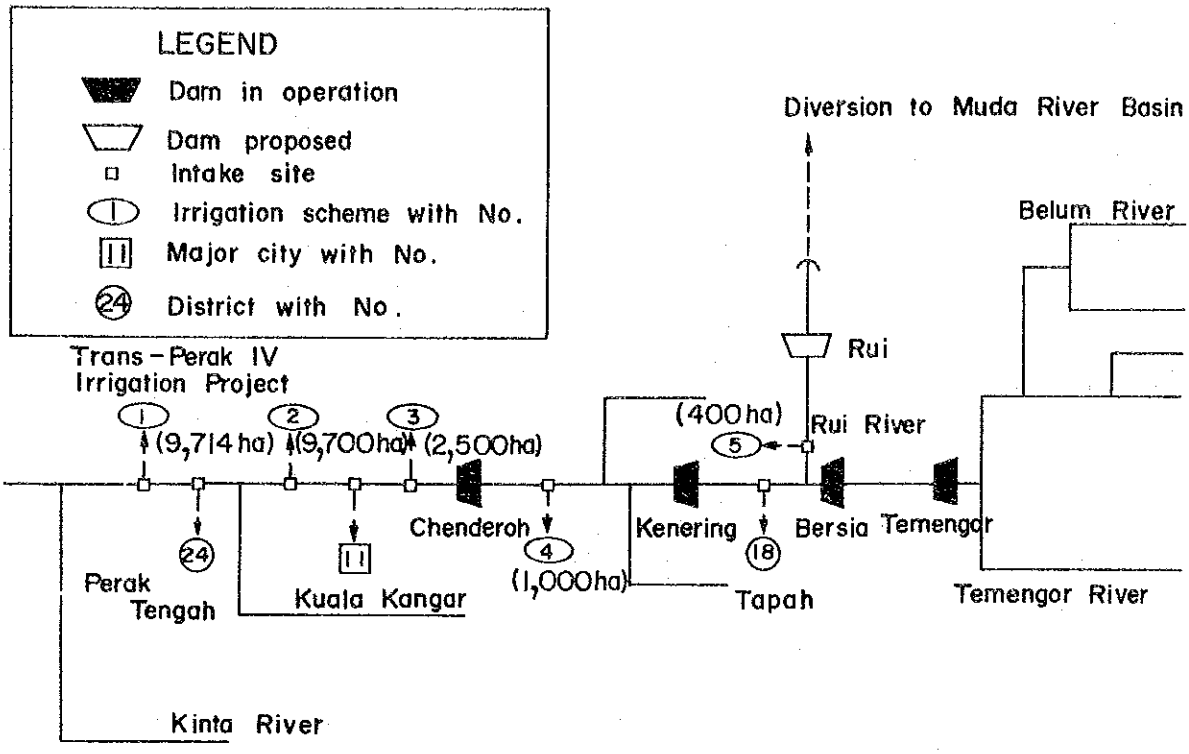

Fig. 26 Water Demand and Supply System Diagram for the Perak River Basin

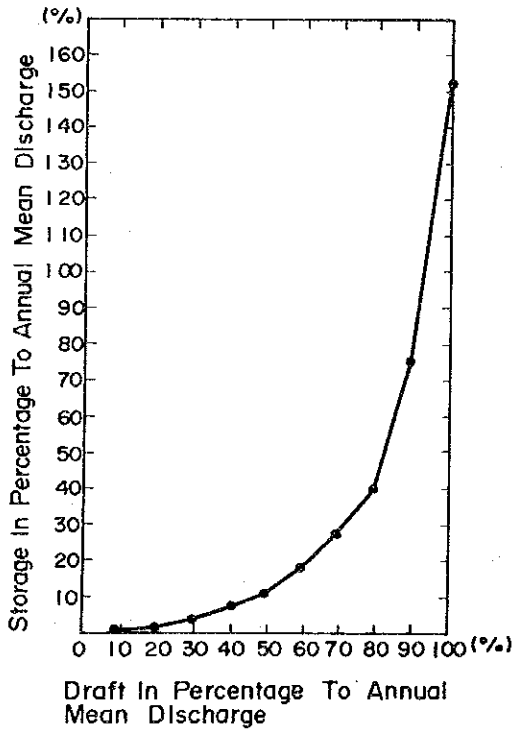

Fig. 27 Non-Dimensional Storage-Draft Curve at Lanjut Hydrological Station (4311464)

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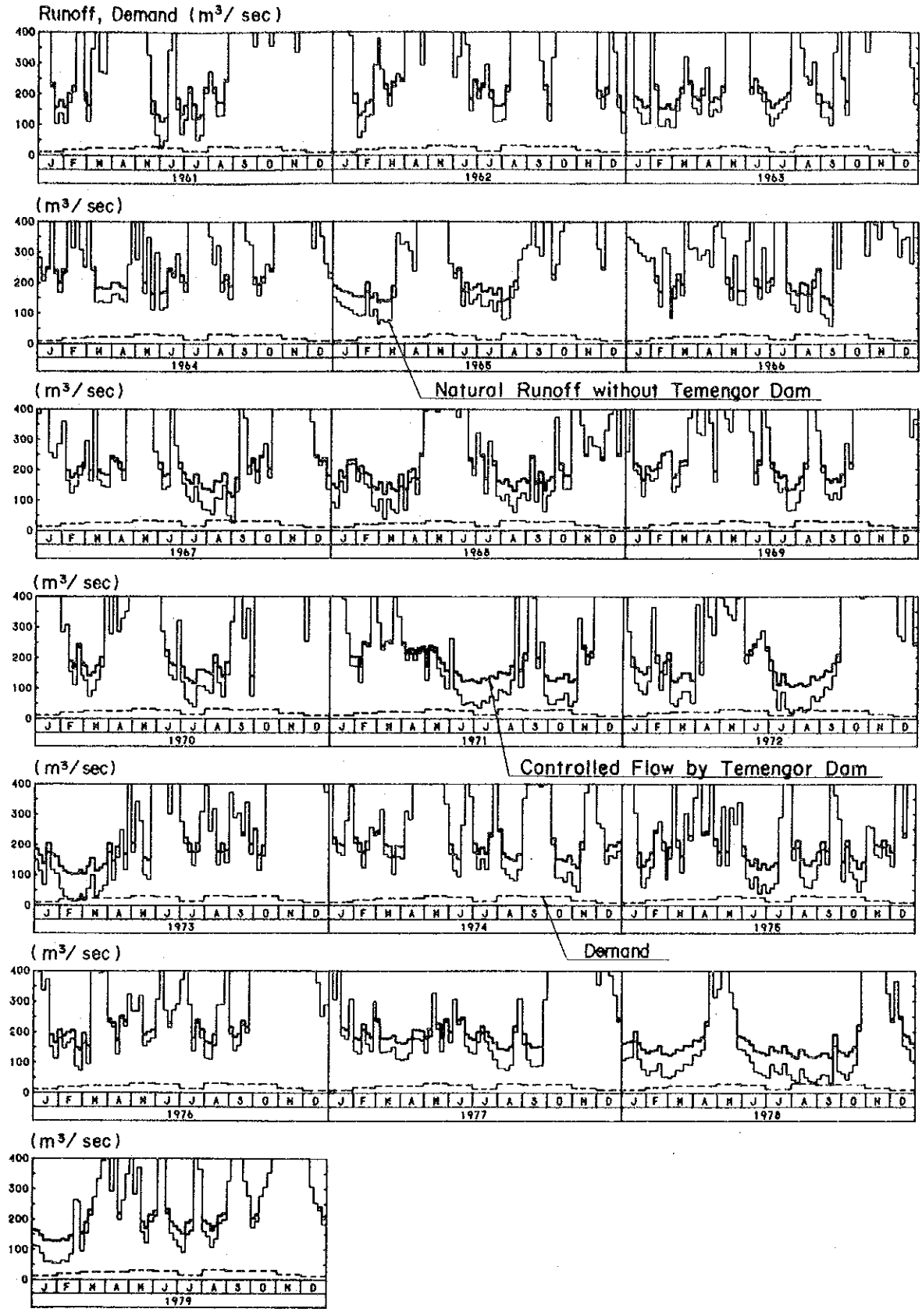

Fig. 28 Water Demand and Supply Balance of Perai River System in 2000

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PLATES

PLATE NO. 1

LEGEND

- Main Stream
- Tributary
- Irrigation Canal
- Diversion Canal (Existing)
- Diversion Canal (Proposed)
- Pipeline or Canal for D & I Water
- State Boundary
- Dam in Operation
- Dam Proposed
- Barrage or Weir in Operation
- Barrage or Weir Proposed
- Intake for Irrigation (Existing)
- " (Proposed)
- (123) No of Irrigation Scheme
- Intake for Domestic and Industrial Water
- (1001) No of Intake for Domestic and Industrial Water

KEDAH

PERLIS

Pedu

Salong Tunnel

Muda

Tawar Muda

Ahning

Durian

Sari

Sg.Pdg. Terap

Sg Kesai

Sg.Tok-Khamis

Sg Tekai

Sg.Jelutang

Sg Kejai

Sg Alor Yai

Pelubang

Sg.Timas

Sg. Janing

Sg. Perik

Badak-Temin

Sg. Temin

Sg. Sok

Beris

Sg. Beris

Sg. Kerik

Muda River

Sg.Jeneri

Jenlang

Sg.Reman

Reman

Naok

Arau

Timah-Tasoh

Sg. Tasoh

Sg. Timah

Sg.Jejawi

Sg. Giol

Sg. Arau

Perlis River

Sg. Kechor

Sg.Temenggong

Sg. Perlis (I)

Sg. Perlis (II)

Northern Canal

Central Canal

Southern Branch Canal

Sg. Yan Kechil

Sg. Belida

Kedah River

Sg. Pendang

Kedah

Muda Irrigation Project

3,103,5005, 10001

10002

10003

2,102

1,101

5004

5007

4, 105

STRAIT OF MELAKA

Water Demand and Supply System Diagram (1/2)

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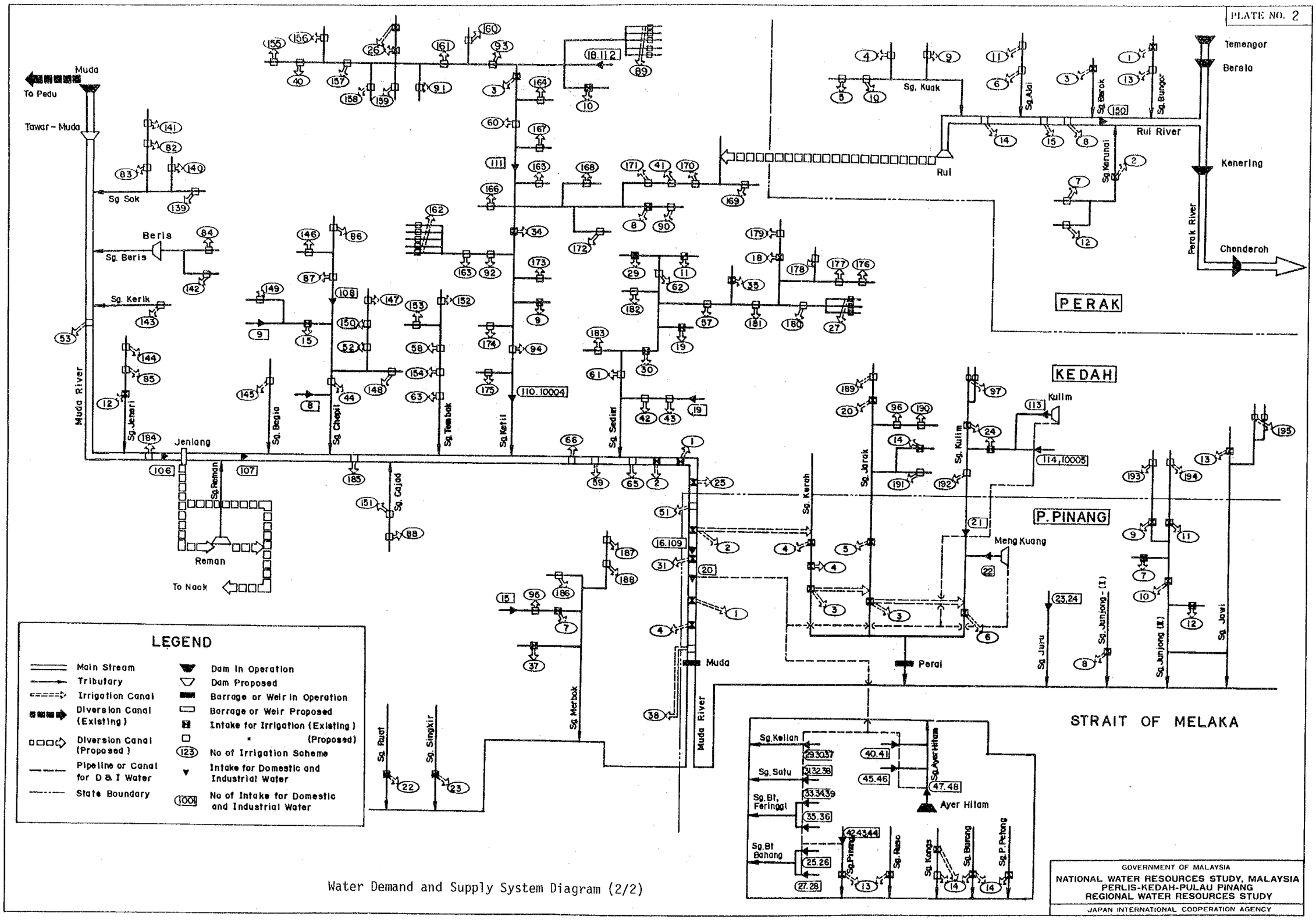
PLATE NO. 2



LEGEND

- Main Stream
- Tributary
- Irrigation Canal
- Diversion Canal (Existing)
- Diversion Canal (Proposed)
- Pipeline or Canal for D & I Water
- State Boundary
- Dam in Operation
- Dam Proposed
- Barrage or Weir in Operation
- Barrage or Weir Proposed
- Intake for Irrigation (Existing)
- (Proposed)
- No of Irrigation Scheme
- Intake for Domestic and Industrial Water
- No of Intake for Domestic and Industrial Water

Water Demand and Supply System Diagram (2/2)

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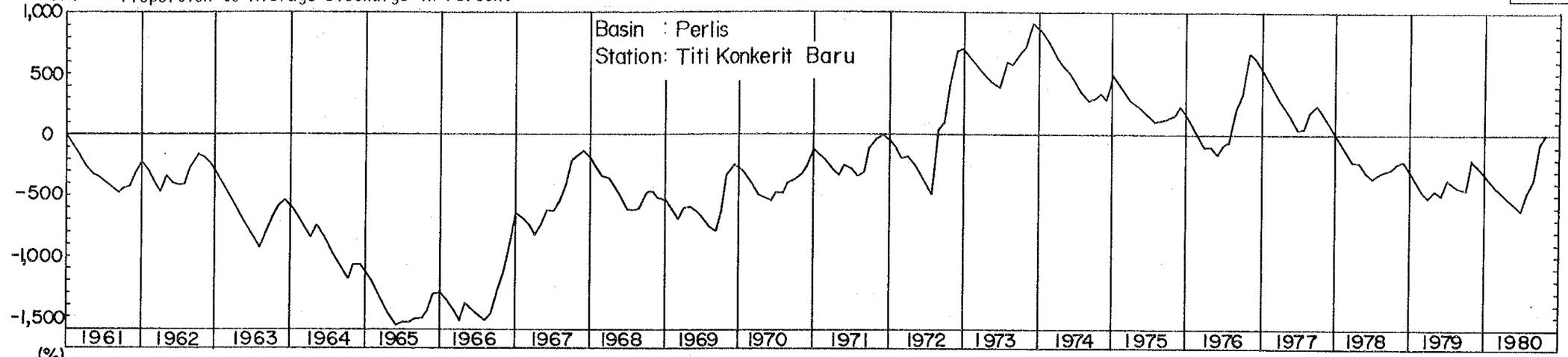
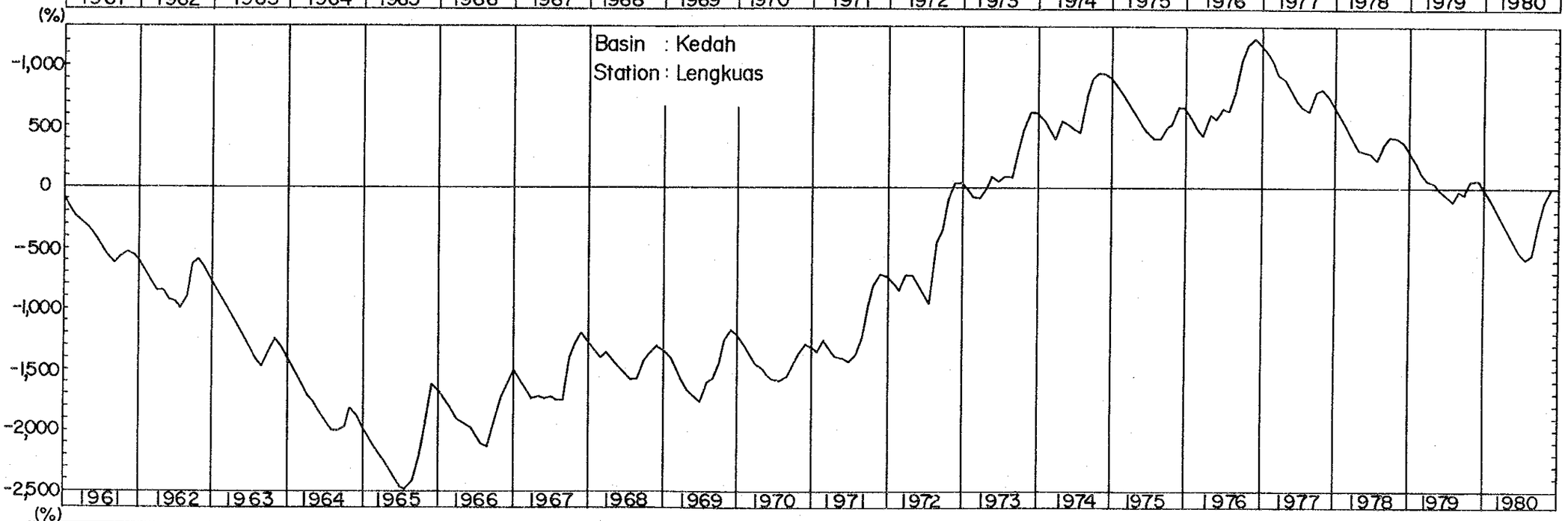
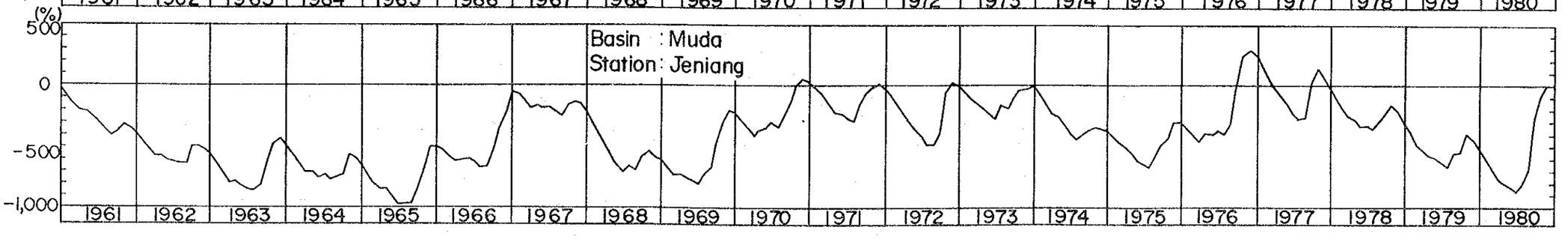
PLATE NO. 3

(%) Proportion to Average Discharge in Percent







Dimensionless Mass Curves of Key Stations

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