

การฝึกอบรมเชิงปฏิบัติการ

เรื่อง

การประยุกต์ใช้ชุดแบบจำลอง

Decision Support Framework (DSF)

โดย

นายวินัย วังพิมุล

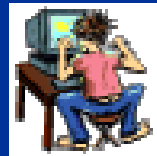
วิศวกรโยธา ชำนาญการ

30 มิถุนายน – 3 กรกฎาคม 2552

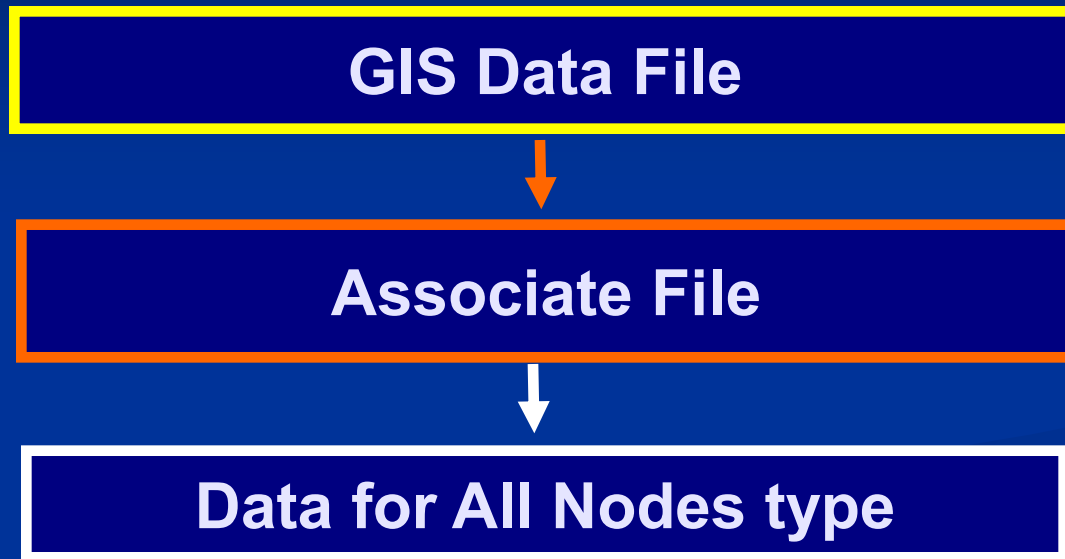
ณ สำนักงานทรัพยากรน้ำภาค 4 ขอนแก่น กรมทรัพยากรน้ำ



Data Preparation for IQQM Model



Data Preparation for IQQM Model



1. GIS Data File

- ต้องการข้อมูลที่อยู่ในรูปแบบ Vector file (*.vec) ที่เป็นขอบเขตลุ่มน้ำ (subbasin.vec) และที่เป็นเส้นลำน้ำ (river.vec) ที่
- ระบบพิกัดที่ใช้คือ Geographic หรือ Lat & Long
- GIS File ไม่มีผลต่อการคำนวณใดๆ
- ใช้สำหรับการสร้างโครงข่ายลำน้ำ (Schematic Diagram)

1. GIS Data File

RIVER SYSTEM MODEL [Close]

Header Details | **GIS Files** | Associated Files | Time Step | Quality

Type	GIS File	Description	Colour	Display
Point			Red	<input type="checkbox"/>
Point			Yellow	<input type="checkbox"/>
Point			Green	<input type="checkbox"/>
Vector	subbasinloei.vec		Light Green	<input checked="" type="checkbox"/>
Vector	river_loei.vec		Cyan	<input checked="" type="checkbox"/>
Point			Magenta	<input type="checkbox"/>
Point			Orange	<input type="checkbox"/>
Point			Dark Green	<input type="checkbox"/>

OK Cancel Help

2. Associate File

- Rainfall data (*.idx , *.out)
- Evaporation data (*.idx , *.out)
- Flow data (*.idx , *.out)
- Pattern file (*.pat)
- Crop factor file (*.crp)

2. Associate File

RIVER SYSTEM MODEL

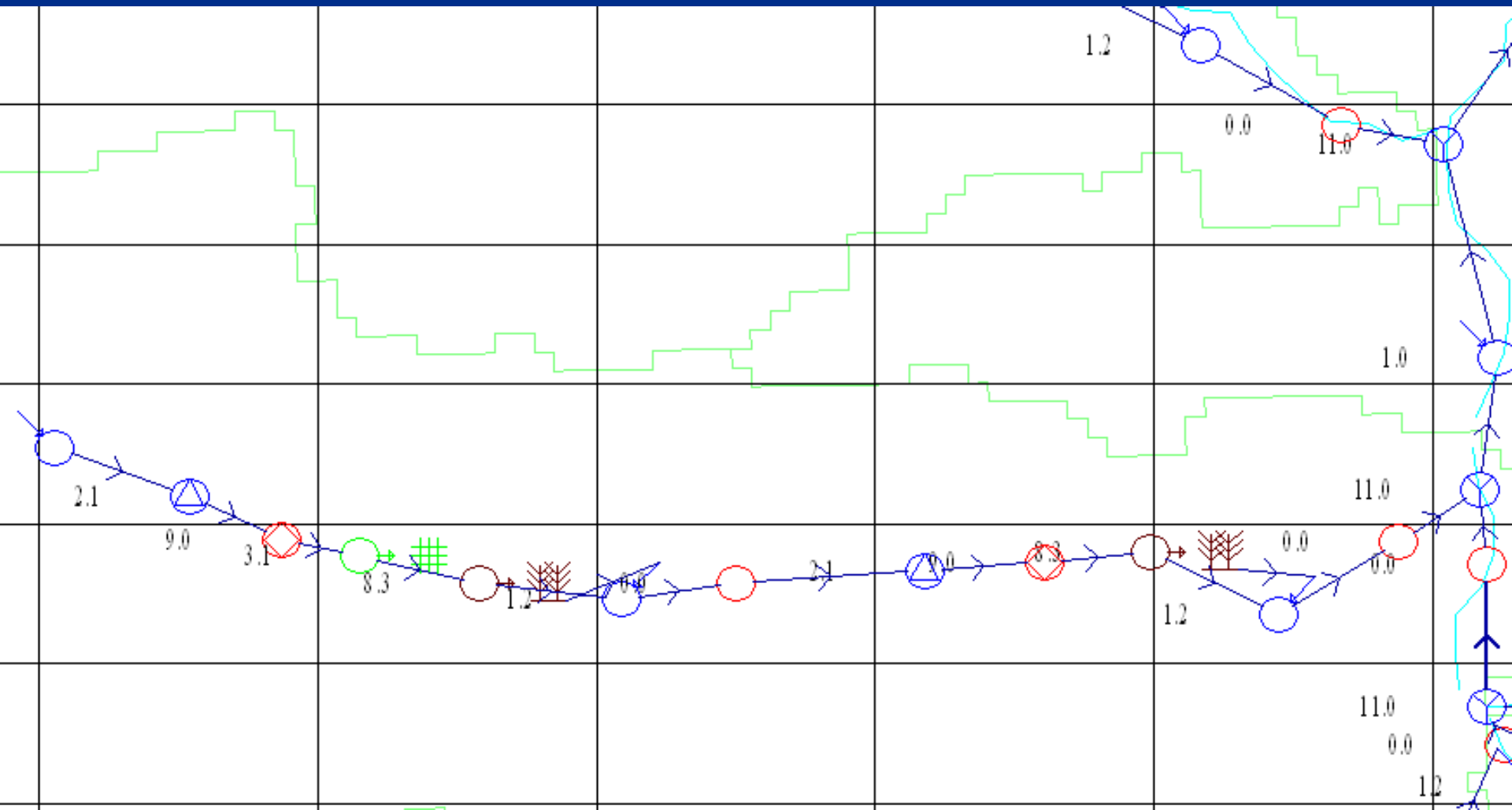
Header Details | GIS Files | **Associated Files** | Time Step | Quality

Name	Type	Description
ChinKrt02.pat	Pattern Information	
pcp_loei	Rainfall Data	
et_loei	Evaporation Data	
Inflow_loei1	Flow Data	
	Diversion Data	
	Groundwater Allocation	
ChinKrt01.crp	Crop factors	
	Maximum Temperature Data	
	Minimum Temperature Data	

OK Cancel Help

3. Data for All Nodes type

- Schematicsation



3. Data for All Nodes type

■ Node 1.0 (Inflow Node)

The image shows two overlapping dialog boxes from a software application. The background dialog is titled "Edit Node Type 01" and contains several input fields. The "Specific data" button at the bottom is circled in orange. The foreground dialog is titled "Node type 1.0 specific data" and has four tabs: "General", "Water Trading", "Minimum flow", and "water quality". The "General" tab is active, showing a list of parameters. The "Time series inflow site" parameter is set to "WYLD_02.FLR" and is circled in orange. Other parameters include "Tributary scaling factor" (1.0000), "Tributary recession factor" (1.0000), and "State 1 share" (1.0000). There is also an unchecked checkbox for "use minimum two year inflow".

Edit Node Type 01

Node number: []
Node subtype: 1.0 Tributary
Node Name: Upper Name
State/ Group: No State
Longitude: []
Schematic X: []
Evaporation data site: ET_02.EVP
Rainfall data site: PCP_02.PT
Output flag: No Output

Specific data

OK Cancel

Node type 1.0 specific data

General | Water Trading | Minimum flow | water quality

Time series inflow site: WYLD_02.FLR
Tributary scaling factor: 1.0000
Tributary recession factor: 1.0000
State 1 share: 1.0000
use minimum two year inflow:

OK Cancel Help

3. Data for All Nodes type

■ Node 3.1 (Water Supply)

The image shows two overlapping software dialog boxes. The left dialog, titled 'Edit Node Type 03', contains fields for node identification and general settings. The right dialog, titled 'Node type 3.1 specific data', contains detailed parameters for a water supply node.

Edit Node Type 03

- Node number: 117
- Node subtype: 3.1 Dem with fixed env flow
- Node Name: WS Nammanh
- State/ Group: No State, No Group
- Longitude: 101.61, Latitude: (blank)
- Schematic X: 10160, Schematic Y: (blank)
- Evaporation data site: ET_12.EVR
- Rainfall data site: PCP_12.PTR
- Output flag: Quantity Output
- Buttons: Specific data, OK, Cancel

Node type 3.1 specific data

- Licensed volume: 0.0000
- Pump capacity: 0.10000E+38 m3/s
- Balance reset month: January
- Demand section:
 - Reference demand: 0.17000 m3/s
 - Pattern table number: 1. Uniform
- Flow sharing data section:
 - Upstream 9.1/9.2 node: No Type 9.1/2 node
 - Travel time from 9.1/9.2: 0
- Flow maintenance section:
 - Threshold constraint: No pattern
 - IDT constraint: IDT Data
- Receiving node: No Type 1.2 node
- Buttons: OK, Cancel, Help

3. Data for All Nodes type

■ Node 8.3 (Irrigation Node)

The image shows a software interface for editing node data. The main window is titled "Edit Node Type" and "Node type 8.3 specific data". It features a sidebar on the left with various node attributes and a main panel with several tabs: "General", "Pump", "Crop mix", "Area planting", "Planting Dates", "Rain", "Soil", "On farm storage", "Tile", and "Efficiency". The "Crop model" section is highlighted with an orange circle, showing "Crop model 2" selected and "ET_12.EVR" in the dropdown menu for "Crop potential evapotranspiration site". Other sections include "Farm information" with checkboxes for "On farm storage at this node", "Pump to other irrigation node", and "Return drainage water", and "Flow control and cap reset day" with a dropdown for "9.1/9.2 node that controls flow licence conditions" and a "Cap reset date" spinner.

Node number

Node subtype

Node Name

State/ Group

Longitude

Schematic X

Evaporation data

Rainfall data site

Output flag

Specific data

OK

OK

Cancel

Help

Operation

Licence

Balance

General

Pump

Crop mix

Area planting

Planting Dates

Rain

Soil

On farm storage

Tile

Efficiency

Farm information

On farm storage at this node

Time series farm file

Pump to other irrigation node

Receiving irrigation

Return drainage water

Receiving drainage

Crop model

Crop model 1

Crop potential evapotranspiration site

Crop model 2

Flow control and cap reset day

9.1/9.2 node that controls flow licence conditions

Cap reset date

Travel time from 9.1/9.2 node

Use IDT

EDIT IDT

Node type 8.3 specific data

Operation				Licence			Balance		
General	Pump	Crop mix	Area planting	Planting Dates	Rain	Soil	On farm storage	Tile	Efficiency

1
2
3
4
5
6
7
8
9
10

Node type 8.3 specific data

Operation				Licence			Balance		
General	Pump	Crop mix	Area planting	Planting Dates	Rain	Soil	On farm storage	Tile	Efficiency

Node type 8.3 specific data

Operation				Licence			Balance		
General	Pump	Crop mix	Area planting	Planting Dates	Rain	Soil	On farm storage	Tile	Efficiency

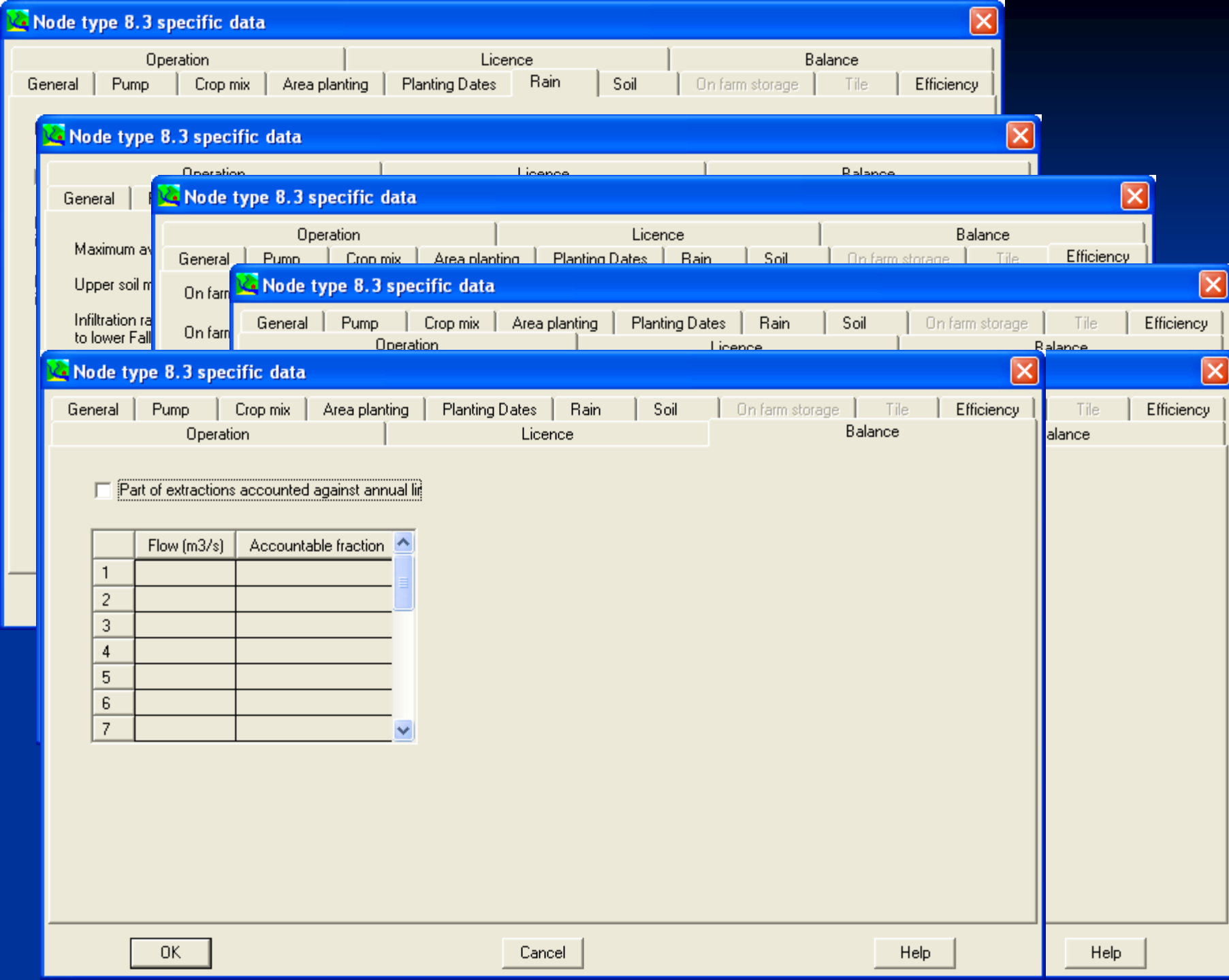
Node type 8.3 specific data

Operation				Licence			Balance		
General	Pump	Crop mix	Area planting	Planting Dates	Rain	Soil	On farm storage	Tile	Efficiency
Area									
Primary crop planting decision date				330					
Secondary crop planting decision				180					

OK

Cancel

Help



Node type 8.3 specific data

Operation Licence Balance
General Pump Crop mix Area planting Planting Dates Rain Soil On farm storage Tile Efficiency

Node type 8.3 specific data

Operation Licence Balance
General Pump Crop mix Area planting Planting Dates Rain Soil On farm storage Tile Efficiency

Node type 8.3 specific data

Maximum av
Upper soil m
Infiltration ra
to lower Fall
Operation Licence Balance
General Pump Crop mix Area planting Planting Dates Rain Soil On farm storage Tile Efficiency

Node type 8.3 specific data

Operation Licence Balance
General Pump Crop mix Area planting Planting Dates Rain Soil On farm storage Tile Efficiency

Node type 8.3 specific data

General Pump Crop mix Area planting Planting Dates Rain Soil On farm storage Tile Efficiency
Operation Licence Balance
 Part of extractions accounted against annual li

	Flow (m3/s)	Accountable fraction
1		
2		
3		
4		
5		
6		
7		

OK

Cancel

Help

Help

3. Data for All Nodes type

■ Node 2.1 (Headwater Node)

The image shows two overlapping software dialog boxes. The left dialog, titled 'Edit Node Type 02', contains the following fields and values:

- Node number: 115
- Node subtype: 2.1 Headwater storage
- Node Name: Nam Manh Res.
- State/ Group: No State (dropdown), No gr (dropdown)
- Longitude: 101.58
- Schematic X: 10161.
- Evaporation data site: ET_12.EVR
- Rainfall data site: PCP_12.PTR
- Output flag: Quantity Output

Buttons at the bottom of the left dialog are 'Specific data', 'OK', and 'Cancel'.

The right dialog, titled 'Type 2.1 specific data', has tabs for 'General', 'Valve', 'Spillway', 'Volume v Area', 'Rule curves', 'Enviro flows', and 'Quality'. The 'General' tab is active and contains:

- Volume section:
 - Full storage volume: 26000.
 - Inactive storage volume: 2600.0
 - Initial storage volume: 20800.
- Apply environmental flow rules for filling
- Water sharing ratios table:

	Group 1	Group 2
State 1	1.0000	0.0000
State 2	0.0000	0.0000

Buttons at the bottom of the right dialog are 'OK', 'Cancel', and 'Help'.

Type 2.1 specific data

General Valve Spillway Volume v Area Rule curves Enviro flows Quality

Use

Power r

Valve

Valve

Storage

1
2
3
4
5
6
7

Ca

Turbine

Head o turbine

OK

Type 2.1 specific data

General Valve Spillway Volume v Area Rule curves Enviro flows Quality

Storage volume vs spillway discharge

Storage volume
26000.
26001.

Volume vs surface

	Volume (ML)
1	0.0000
2	100.00
3	130.00
4	210.00
5	500.00
6	1350.0
7	2325.0
8	2650.0
9	2930.0
10	3350.0

OK

Type 2.1 specific data

General Valve Spillway V

Volume vs surface

	Volume (ML)
1	0.0000
2	100.00
3	130.00
4	210.00
5	500.00
6	1350.0
7	2325.0
8	2650.0
9	2930.0
10	3350.0

OK

Type 2.1 specific data

General Valve Spillway Volume v Area Rule curves Enviro flows Quality

No rule curve
 One rule curve
 Two rule curves

First Rule Curve
Type

	Storage volume
JAN	0.0000
FEB	0.0000
MAR	0.0000
APR	0.0000
MAY	0.0000
JUN	0.0000
JUL	0.0000
AUG	0.0000
SEP	0.0000
OCT	0.0000
NOV	0.0000
DEC	0.0000

Second Rule Curve
Type

	Storage volume
JAN	0.0000
FEB	0.0000
MAR	0.0000
APR	0.0000
MAY	0.0000
JUN	0.0000
JUL	0.0000
AUG	0.0000
SEP	0.0000
OCT	0.0000
NOV	0.0000
DEC	0.0000

OK Cancel Help

3. Data for All Nodes type

■ Node 9.0 (Request Demand)

The image shows three overlapping windows from a software application:

- Edit Node Type**: A sidebar window on the left with a list of node properties (Node number, Node subtype, Node Name, State/ Group, Longitude, Schematic X, Evaporation data, Rainfall data site, Output flag) and buttons for 'Specific data' and 'OK'.
- Node type 9.0 specific**: A dialog box with three tabs: 'General', 'Minimum flow', and 'Flood mitigation'. The 'General' tab is active, showing fields for 'Licensed volume', 'Order node' (with value '115 Nam'), 'Travel time from order node', and a checkbox for 'Use node for flood release'.
- Node type 9.0 specific data**: A dialog box with three tabs: 'General', 'Minimum flow', and 'Flood mitigation'. The 'General' tab is active, showing radio buttons for 'Use time series flows' and 'Use reference demand with pattern' (which is selected). Other fields include 'Flow data site' (No flow site), 'Reference demand' (1.0000 m3/s), 'Pattern table' (93. NamMant), and a checkbox for 'Use IDT' with an 'Edit IDT Data' button.



Demonstrations

Demonstrations

- How to prepare GIS File ?
- How to prepare Associated file ?
- How to prepare D&I, Irrigation data for all node ?
- How to add all data into IQQM Model ?



Thank you.