StateDMI Training

Network Editor

Version: 3.10.00, 2010-05-10

Duration: Approximately 30 minutes

Level: Advanced

This Presentation

- Provides an overview of the StateDMI model network editor
- Builds on introductory StateDMI training presentations, and supports other advanced training presentations
- Is designed for self-paced training

The StateMod Model Network

- Provides an upstream to downstream representation of a river basin, as a series of nodes
- Serves as the master copy of stations to be included in modeling – often simple lists of identifiers are extracted from the network for use with other data processing

cm2005.rin - Notepad

File Edit Format View Help

StateMod River Network File (*.rin)

```
#> ***************************************************
#>  StateMod River Network File
#>  WARNING - if .net file is available, it should be edited and the .rin
#>  file should be created from the .net
#>
#>  format:  (a12, a24, a12, 1x, a12, 1x, f8.0)
#>
#>  ID           cstaid:  Station ID
#>  Name         stanam:  Station name
#>  Downstream   cstadn:  Downstream node ID
#>  Comment     comment:  Alternate identifier/comment.
#>  GWMax        gwmaxr:  Max recharge limit (cfs) - see iwell in control file.
#>
#>   ID                 Name          DownStream     Comment    GWMax
#>---------eb----------------------eb----------exb----------exb------e
#>
#>EndHeader
#>
514601       GRAND RIVER DITCH    _DIV09010500     514601           -999
09010500     COLORADO RIVER BELOW_FLO512068        09010500         -999
512068       MIN FLOW N FK COLORA_ISF510848        512068           -999
510848       REDTOP VALLEY DITCH _DIV512068_Dwn    510848           -999
512068_Dwn                        _OTH09011000     512068_Dwn       -999
09011000     COLORADO RIVER NEAR _FLO513695        09011000         -999
513695       CBT SHADOW MTN GRAND_RES514634        513695           -999
514634       CBT ALVA B ADAMS TUN_DIV953695        514634           -999
953695       SHADOW MTN RES BYPAS_ISF953695_Dwn    953695           -999
953695_Dwn                        _OTH512069       953695_Dwn       -999
512069       MIN FLOW COLORADO R _ISF512069_Dwn    512069           -999
512069_Dwn                        _OTH514620       512069_Dwn       -999
514620       CBT GRANBY RESERVOIR_RES510585        514620           -999
510585       COFFEE MCQUEARY DITC_DIV51_ADC001     510585           -999
51_ADC001    COLORADO R NR GRANBY_DIV954620        51_ADC001        -999
954620       GRANBY RES MIN RELEA_ISF[illegible]   [illegible]      -999
954620_Dwn                        _OTH09019500     954620_Dwn       -999
09019500     COLORADO RIVER NEAR _FLO510880        09019500         -999
510934       TRAIL CREEK DITCH    _DIV513710       510934           -999
513710       CBT WILLOW CREEK RES_RES510958        513710           -999
510958       CBT WILLOW CREEK FEE_DIV953710        510958           -999
953710       WILLOW CR RES MIN RE_ISF953710_Dwn    953710           -999
953710_Dwn                        _OTH51_ADC002    953710_Dwn       -999
51_ADC002    WILLOW CREEK         _DIV09021000     51_ADC002        -999
09021000     WILLOW CREEK BELOW W_FLO510546        09021000         -999
510546       BUNTE HIGHLINE DITCH_DIV510880        510546           -999
510880       SELAK LARRABEE DITCH_DIV514700        510880           -999
514625       BERTHOUD CANAL TUNNE_DIV510639        514625           -999
510639       FRASER RIVER DIVR PR_DIV950639        510639           -999
950639       JIM CREEK BYPASS     _ISF950639_Dwn   950639           -999
950639_Dwn                        _OTH514655       950639_Dwn       -999
514655       MOFFAT WATER TUNNEL _DIV954655        514655           -999
954655       FLOW FOR WINTER PARK_ISF954655_Dwn    954655           -999
954655_Dwn                        _OTH09024000     954655_Dwn       -999
09024000     FRASER RIVER AT WINT_FLO510699        09024000         -999
511310       FRASER RIVER DIVR PR_DIV951310        511310           -999
951310       VASQUEZ CRK BYPASS   _ISF951310_Dwn   951310           -999
951310_Dwn                        _OTH09025000     951310_Dwn       -999
09025000     VASQUEZ CREEK AT WIN_FLO510699        09025000         -999
511309       FRASER RIVER DIVR PR_DIV951309        511309           -999
951309       ST LOUIS CRK BYPASS _ISF951309_Dwn    951309           -999
```

Fixed format columns

Part of the name has in the past been used to indicate the node type, to simplify extraction of station lists (however, see the new network file)

cm2005.net - Notepad

File Edit Format View Help

```
#>
#> EndHeader
-->
<StateMod_Network
    XMin = "-741.265957"
    YMin = "-851.215184"
    XMax = "3946.585106"
    YMax = "2771.215184"
    LegendX = "-506.000000"
    LegendY = "-186.000000">
    <PageLayout ID = "Page Layout #1"
        IsDefault = "true"
        PaperSize = "E"
        PageOrientation = "Landscape"
        NodeLabelFontSize = "10"
        NodeSize = "10"/>
    <Node ID = "514601"
         AlternateX = "430500.9"
         AlternateY = "4480972.5"
         Description = "GRAND RIVER DITCH"
         IsBaseflow = "true"
         IsImport = "false"
         Area = "37.4"
         Precipitation = "40.0"
         LabelPosition = "Left"
         Type = "Diversion"
         X = "3546.223404"
         Y = "2020.000000">
        <DownstreamNode ID = "09010500"/>
    </Node>

    <Node ID = "09010500"
         AlternateX = "-999.0"
         AlternateY = "-999.0"
         Description = "COLO R BL BAKER GULCH"
         IsBaseflow = "true"
         IsImport = "false"
         Area = "54.0"
         Precipitation = "33.15"
         LabelPosition = "Right"
         Type = "Streamflow"
         X = "3546.223404"
         Y = "1996.363636">
        <DownstreamNode ID = "512068"/>
        <UpstreamNode ID = "514601"/>
    </Node>

    <Node ID = "512068"
         AlternateX = "426132.2"
         AlternateY = "4456129.8"
         Description = "MIN FLOW N FK COLORADO R"
         IsBaseflow = "false"
         IsImport = "false"
         LabelPosition = "Left"
         Type = "Instream Flow"
         X = "3546.223404"
         Y = "1972.727273">
        <DownstreamNode ID = "510848"/>
        <UpstreamNode ID = "09010500"/>
```

Generalized Network File (*.net)
A simple XML file format is used.

Meta-data for entire network, including page layout information.

Each node has location and other attributes. The node identifier (ID) is used to link to other model data.

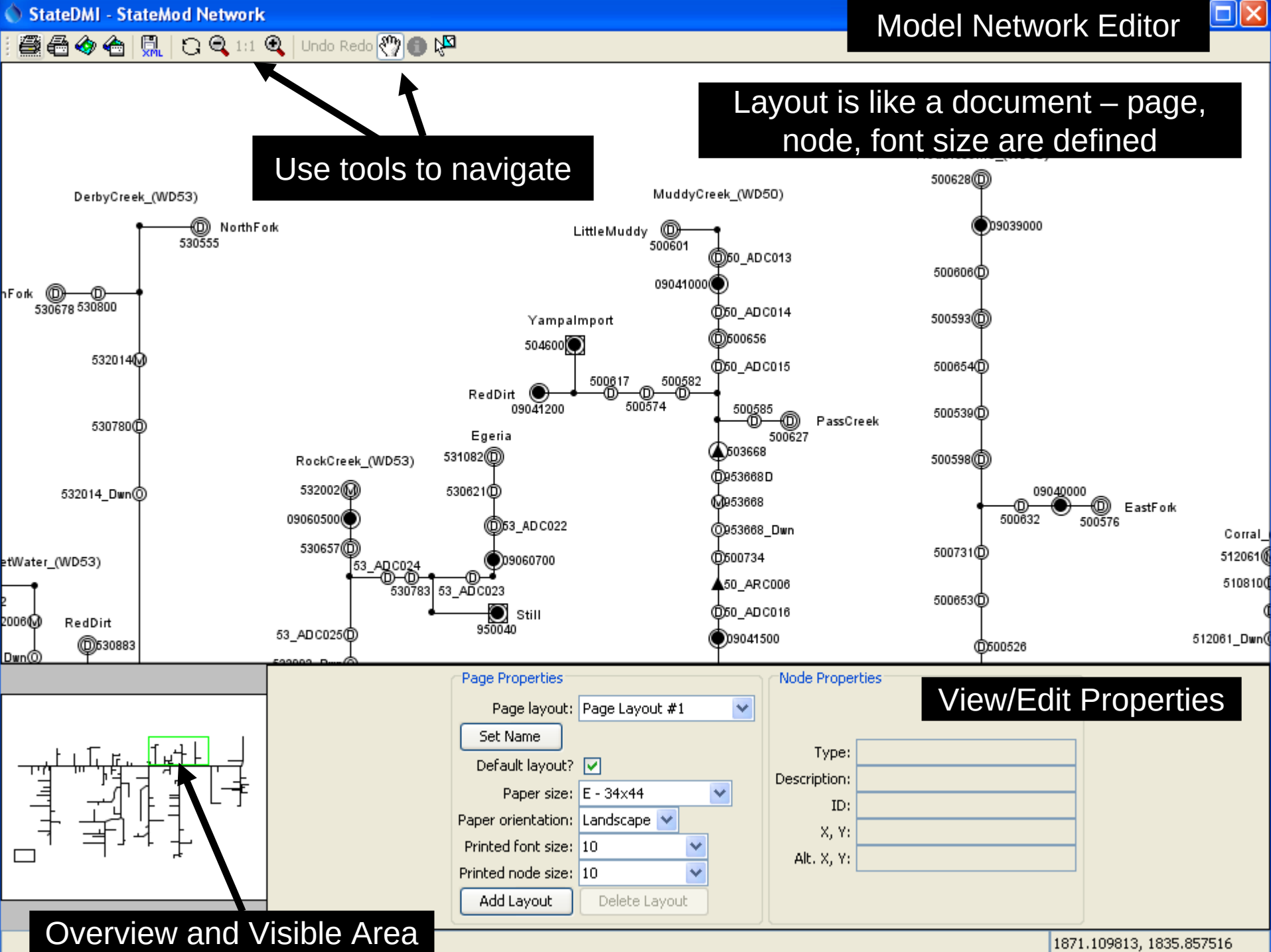
Note: The StateMod model reads the *.rin file, NOT the *.net file.

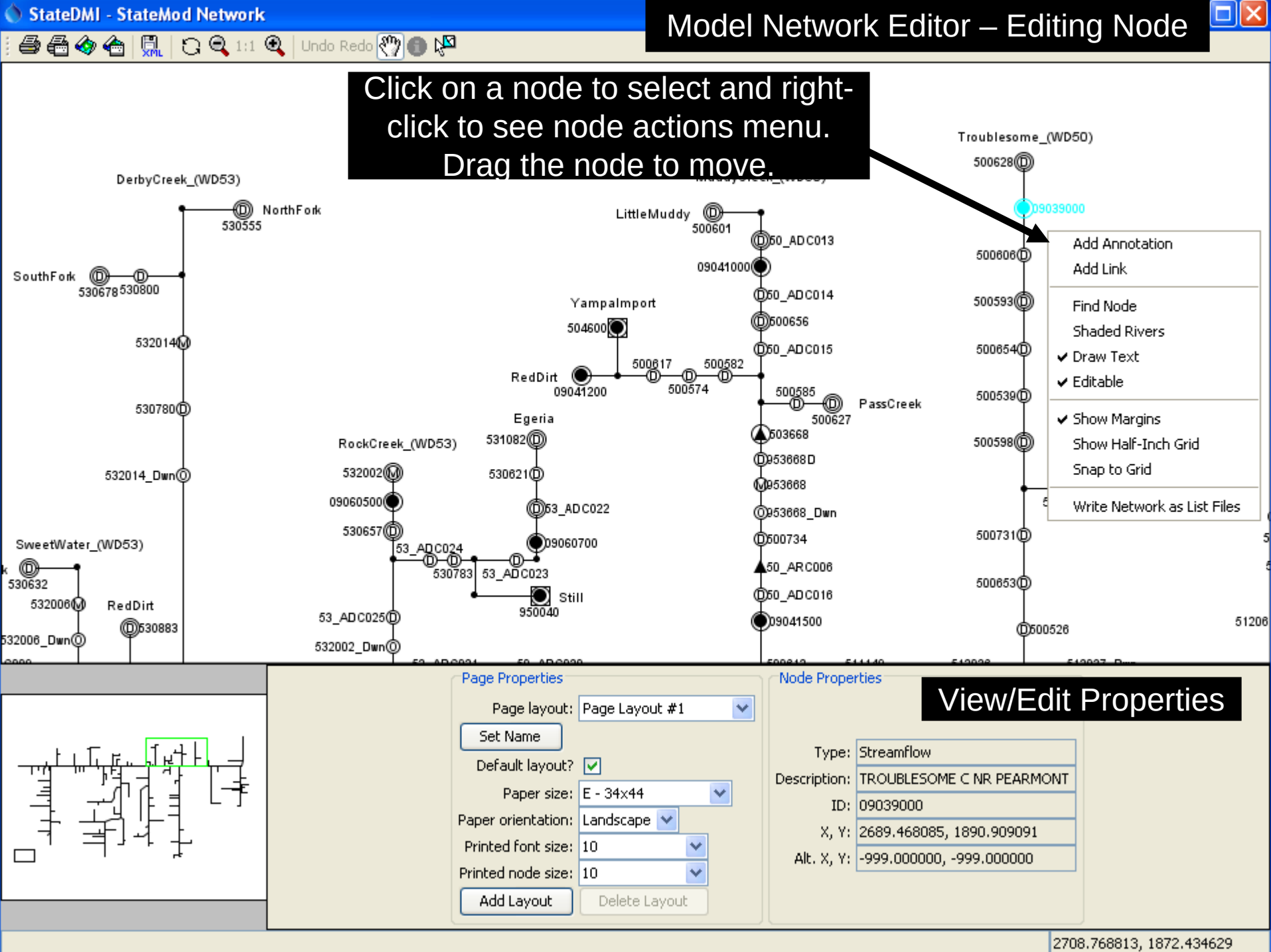
Use the Generalized Network File to Create the River Network File

- The generalized network file is the virtual representation of the physical system and requires significant effort to create (compared to other files)
- An attempt has been made to automate creation of the network from spatial data, but this functionality is experimental
- Lists of stations and the StateMod River Network file are created from the generalized network using StateDMI commands

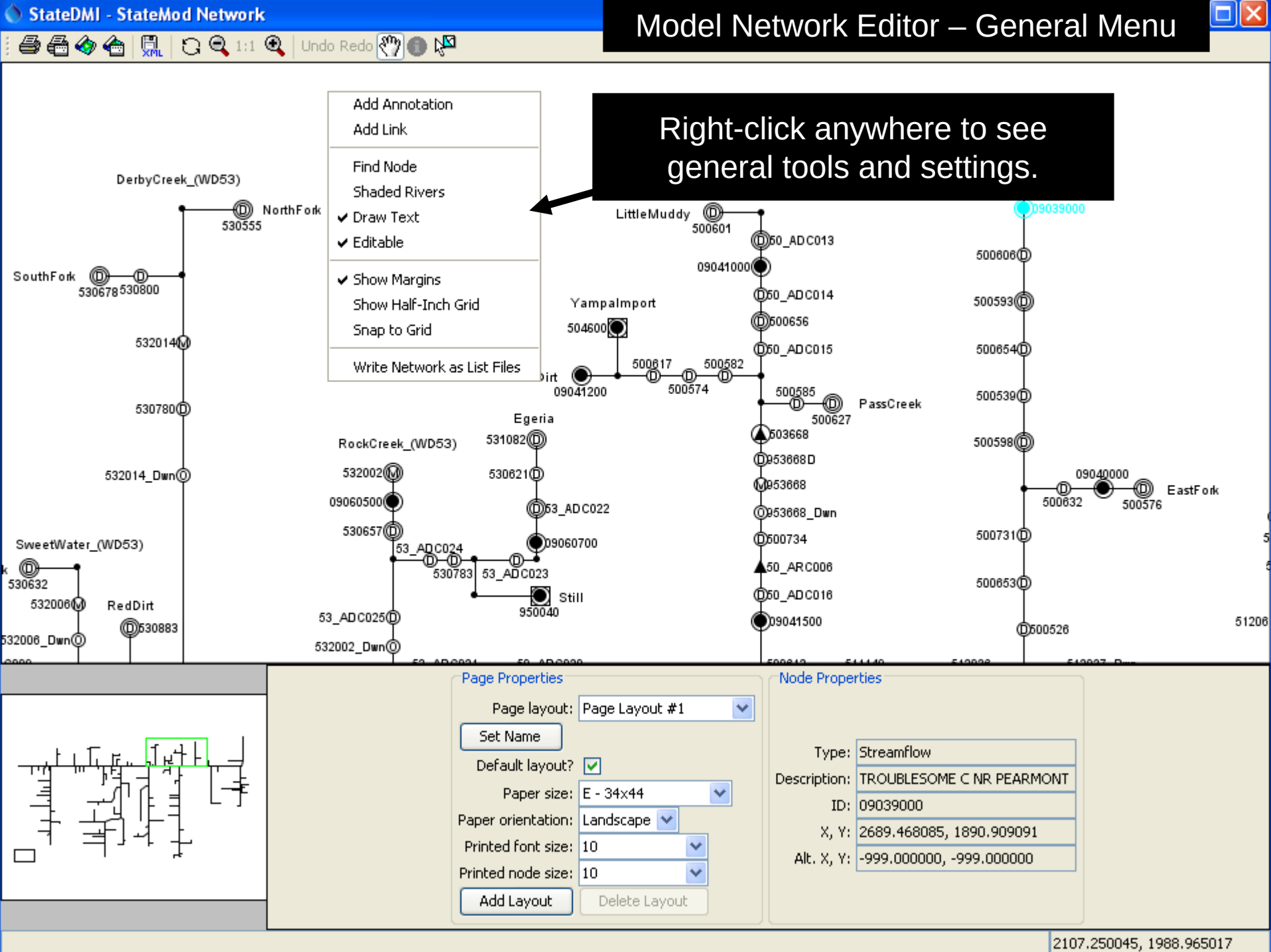
Viewing/Editing the Model Network

- See StateDMI documentation for instructions on creating a new network (File…New…Model Network)
- To open an existing network:
  - File…Open…Model Network
  - Or, View…Model Network
- See the cm2005.net file in the example1-colorado\network folder


StateDMI - StateMod Network
Model Network Editor
Use tools to navigate
Layout is like a document – page, node, font size are defined
DerbyCreek_(WD53)
NorthFork
530555
530678
530800
532014
530780
532014_Dwn
RedDirt
530883
MuddyCreek_(WD50)
LittleMuddy
500601
50_ADC013
09041000
50_ADC014
500656
50_ADC015
500585
PassCreek
500627
503668
503668D
503668
503668_Dwn
500734
50_ARC006
50_ADC016
09041500
YampaImport
504600
500617
500582
RedDirt
09041200
500574
Egeria
531082
530621
53_ADC022
09060700
RockCreek_(WD53)
532002
09060500
530657
53_ADC024
530783
53_ADC023
Still
950040
53_ADC025
500628
09039000
500606
500593
500654
500539
500598
09040000
500632
500576
EastFork
500731
500653
500526
Corral_
512061
510810
512061_Dwn
Page Properties
Page layout:
Page Layout #1
Set Name
Default layout?
Paper size:
E - 34x44
Paper orientation:
Landscape
Printed font size:
10
Printed node size:
10
Add Layout
Delete Layout
Node Properties
Type:
Description:
ID:
X, Y:
Alt. X, Y:
View/Edit Properties
Overview and Visible Area
1871.109813, 1835.857516

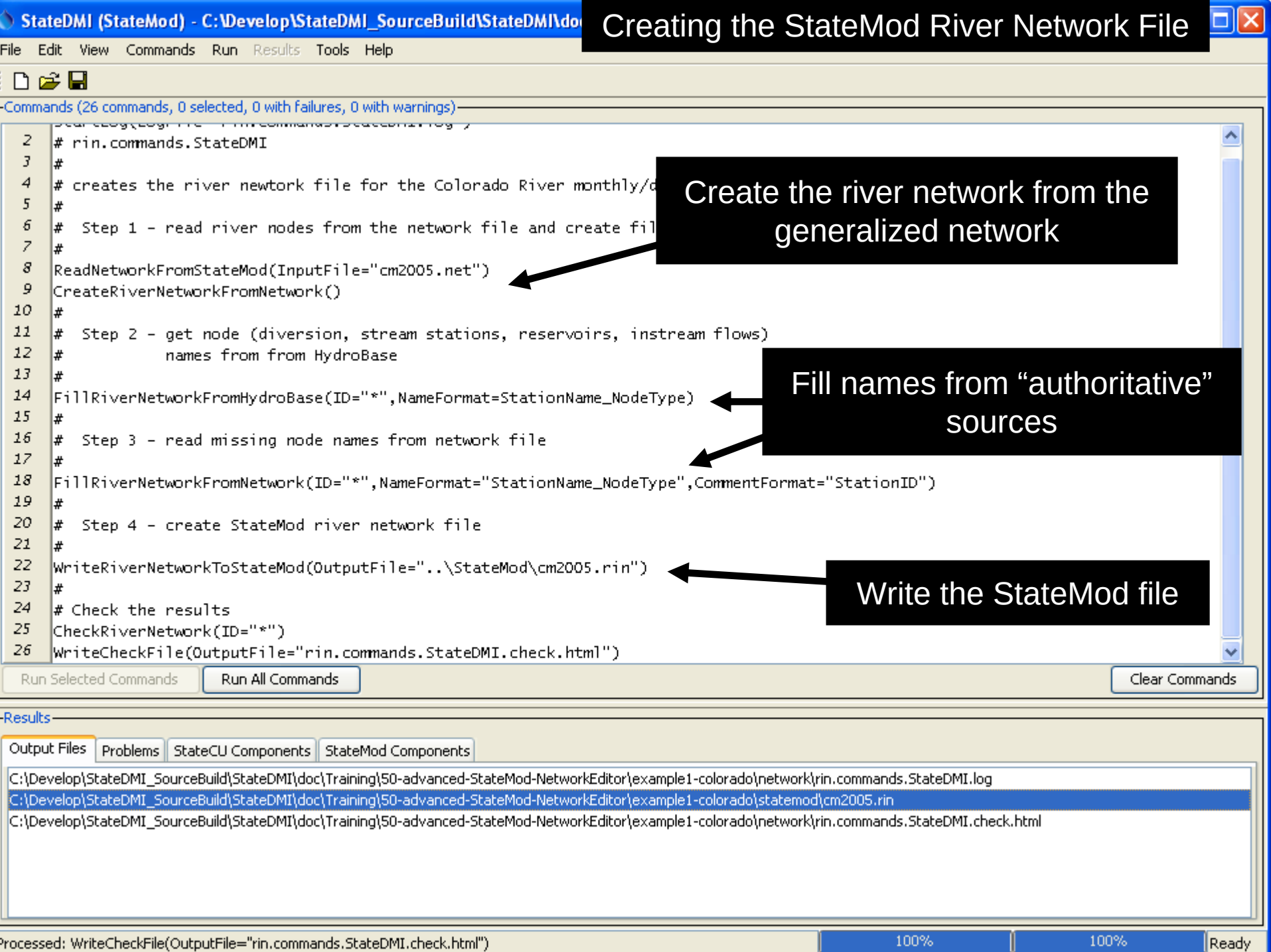

StateDMI - StateMod Network
Model Network Editor – Editing Node
Click on a node to select and right-click to see node actions menu. Drag the node to move.
DerbyCreek_(WD53)
NorthFork
530555
SouthFork
530678
530800
532014
530780
532014_Dwn
SweetWater_(WD53)
530632
532006
RedDirt
530883
532006_Dwn
LittleMuddy
500601
50_ADC013
09041000
50_ADC014
YampaImport
504600
500656
50_ADC015
500617
500582
RedDirt
09041200
500574
500585
PassCreek
500627
503668
953668D
953668
953668_Dwn
500734
50_ARC006
50_ADC016
09041500
Egeria
531082
RockCreek_(WD53)
532002
530621
09060500
53_ADC022
530657
09060700
53_ADC024
530783
53_ADC023
Still
950040
53_ADC025
532002_Dwn
Troublesome_(WD50)
500628
09039000
500606
500593
500654
500539
500598
500731
500653
500526
Add Annotation
Add Link
Find Node
Shaded Rivers
Draw Text
Editable
Show Margins
Show Half-Inch Grid
Snap to Grid
Write Network as List Files
Page Properties
Page layout:
Page Layout #1
Set Name
Default layout?
Paper size:
E - 34x44
Paper orientation:
Landscape
Printed font size:
10
Printed node size:
10
Add Layout
Delete Layout
Node Properties
View/Edit Properties
Type:
Streamflow
Description:
TROUBLESOME C NR PEARMONT
ID:
09039000
X, Y:
2689.468085, 1890.909091
Alt. X, Y:
-999.000000, -999.000000
2708.768813, 1872.434629

Model Network Editor – General Menu



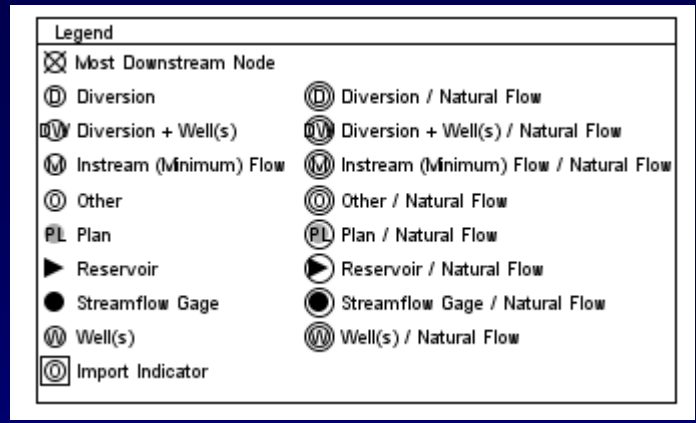
Processing the Network with Commands

- See the example1-colorado\rin.commands-updated.StateDMI command file
- To generate lists of stations, use commands that read stations from the network (e.g., ReadDiversionStationsFromNetwork()) and commands that write list files (e.g., WriteDiversionStationsToList())


StateDMI (StateMod) - C:\Develop\StateDMI_SourceBuild\StateDMI\do
Creating the StateMod River Network File
File Edit View Commands Run Results Tools Help
Commands (26 commands, 0 selected, 0 with failures, 0 with warnings)
rin.commands.StateDMI
#
creates the river newtork file for the Colorado River monthly/d
#
Step 1 - read river nodes from the network file and create fil
#
ReadNetworkFromStateMod(InputFile="cm2005.net")
CreateRiverNetworkFromNetwork()
#
Step 2 - get node (diversion, stream stations, reservoirs, instream flows)
names from from HydroBase
#
FillRiverNetworkFromHydroBase(ID="*",NameFormat=StationName_NodeType)
#
Step 3 - read missing node names from network file
#
FillRiverNetworkFromNetwork(ID="*",NameFormat="StationName_NodeType",CommentFormat="StationID")
#
Step 4 - create StateMod river network file
#
WriteRiverNetworkToStateMod(OutputFile="..\StateMod\cm2005.rin")
#
# Check the results
CheckRiverNetwork(ID="*")
WriteCheckFile(OutputFile="rin.commands.StateDMI.check.html")
Create the river network from the generalized network
Fill names from “authoritative” sources
Write the StateMod file
Run Selected Commands
Run All Commands
Clear Commands
Results
Output Files
Problems
StateCU Components
StateMod Components
C:\Develop\StateDMI_SourceBuild\StateDMI\doc\Training\50-advanced-StateMod-NetworkEditor\example1-colorado\network\rin.commands.StateDMI.log
C:\Develop\StateDMI_SourceBuild\StateDMI\doc\Training\50-advanced-StateMod-NetworkEditor\example1-colorado\statemod\cm2005.rin
C:\Develop\StateDMI_SourceBuild\StateDMI\doc\Training\50-advanced-StateMod-NetworkEditor\example1-colorado\network\rin.commands.StateDMI.check.html
Processed: WriteCheckFile(OutputFile="rin.commands.StateDMI.check.html")
100%
100%
Ready

Network Node Types

- Generally correspond to StateMod station files
- “D&W” nodes have information in diversion and well station files
- “Other” nodes are in the river network, but no station files
- Node symbol “decorators” indicate natural flow locations (outer circles) and imports (square)



Other Network Editor Features

- Annotations can be added
- Dashed lines can be used to connect nodes to illustrate relationships
- The network can be printed and images captured

More Information

Help…View Documentation to view the StateDMI documentation.

Basin model documentation describes in detail the sources of data, estimates, and processes that were used to create the data sets, and summarizes results.

Numerous task memoranda, reports, software documentation, and other documents provide technical information and are available on the CDSS web site:

http://cdss.state.co.us (see Products links)