

# **APPENDIX E - Hydrologic Models**

## **Summary Output**

**2 through 100 Year - Spring**

**2 through 100 Year - Summer**

## **Spring Event Output**



```

# Date      : 06-06-2003
# Modeller  : [JoF]
# Company   : JFSAinc.
# License # : 2549237
# *****
# SNOWMELT + RAIN MODEL
# To be used with synthetic 10 Day SnowMelt+Rain Events
# MODEL PARAMETERS AS PER CALIBRATED MODEL BASED ON 2003 MEASURED EVENT
# AND VALIDATED WITH 1978, 1993, 1997 AND 1998 SPRING EVENTS.
  ** END OF RUN : 1

```

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RUN:COMMAND#
002:0001-----
START
  [TZERO = .00 hrs on 0]
  [METOUT= 2 (1=imperial, 2=metric output)]
  [NSTORM= 1 ]
  [NRUN = 2 ]

```

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# *****
# SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
# *****
# Project Name: [Jock River] Project Number: [411-02]
# Date      : 06-06-2003
# Modeller  : [JoF]
# Company   : JFSAinc.
# License # : 2549237
# *****
# SNOWMELT + RAIN MODEL
# To be used with synthetic 10 Day SnowMelt+Rain Events
# MODEL PARAMETERS AS PER CALIBRATED MODEL BASED ON 2003 MEASURED EVENT
# AND VALIDATED WITH 1978, 1993, 1997 AND 1998 SPRING EVENTS.

```

```

002:0002-----
READ STORM
  Filename = storm.001
  Comment = Model 5 CDA - S+Rain 12hr/day, RTP 2 years, 10 Days.
  [SDT=60.00:SDUR= 240.00:PTOT= 115.69]

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002:0003-----
MODIFY STORM
  [RFACT= .90:TSHIFT= .00 min]
  [SDT=60.00:SDUR= 240.00:PTOT= 104.12]

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002:0004-----
COMPUTE API
  [APIini= 50.00: APIkdy= .8000: APIkdt= .9907]
  {APImax= 67.64: APIavg= 49.95: APImin= 38.19}

```

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002:0005-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:JR_HW 3680.000 9.201 No_date 115:00 64.85 .623
  [CN= 35.0: N= 3.00]
  [Tp= 5.42:DT=60.00]
  [IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
  [InterEventTime= 18.00]

```

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002:0006-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_13 971.000 3.054 No_date 112:00 64.85 .623
  [CN= 35.0: N= 3.00]
  [Tp= 2.86:DT=60.00]
  [IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
  [InterEventTime= 18.00]

```

```

002:0007-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:JR_GWM 3074.000 7.139 No_date 115:00 64.85 .623
  [CN= 35.0: N= 3.00]
  [Tp= 6.29:DT=60.00]
  [IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
  [InterEventTime= 18.00]

```

```

002:0008-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:JR_ASH 1781.000 5.107 No_date 113:00 64.85 .623

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[CN= 35.0: N= 3.00]
[Tp= 3.91:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
002:0009-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_11 500.000 1.746 No_date 110:00 64.85 .623
[CN= 35.0: N= 3.00]
[Tp= 1.24:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
002:0010-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:NN_CK 1917.000 5.979 No_date 112:00 64.85 .623
[CN= 35.0: N= 3.00]
[Tp= 2.94:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
002:0011-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_10 5666.000 14.316 No_date 115:00 64.85 .623
[CN= 35.0: N= 3.00]
[Tp= 5.28:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
002:0012-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:KG_CK 8376.000 18.905 No_date 116:00 64.85 .623
[CN= 35.0: N= 3.00]
[Tp= 6.65:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
002:0013-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_9 1132.000 3.918 No_date 111:00 64.85 .623
[CN= 35.0: N= 3.00]
[Tp= 1.49:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
002:0014-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:NC_CK 4464.000 10.423 No_date 115:00 64.85 .623
[CN= 35.0: N= 3.00]
[Tp= 6.23:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
002:0015-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_8 131.000 .468 No_date 110:00 64.85 .623
[CN= 35.0: N= 3.00]
[Tp= .50:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
002:0016-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:HB_DR 3854.000 9.918 No_date 114:00 64.85 .623
[CN= 35.0: N= 3.00]
[Tp= 5.09:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
002:0017-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_7 3197.000 9.404 No_date 113:00 64.85 .623
[CN= 35.0: N= 3.00]
[Tp= 3.66:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
002:0018-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_6 165.000 .540 No_date 112:00 64.85 .623
[CN= 35.0: N= 3.00]
[Tp= 2.38:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
002:0019-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:VG_DR 1332.000 3.952 No_date 113:00 64.85 .623
[CN= 35.0: N= 3.00]
[Tp= 3.57:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
002:0020-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-

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* CONTINUOUS NASHYD 60.0 01:SW_5 224.000 .799 No_date 110:00 64.85 .623
  [CN= 35.0: N= 3.00]
  [Tp= .75:DT=60.00]
  [IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
  [InterEventTime= 18.00]
002:0021-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:FL_CK 4945.000 14.489 No_date 113:00 64.85 .623
  [CN= 35.0: N= 3.00]
  [Tp= 3.70:DT=60.00]
  [IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
  [InterEventTime= 18.00]
002:0022-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_5A2 20.000 .071 No_date 110:00 64.85 .623
  [CN= 35.0: N= 3.00]
  [Tp= .62:DT=60.00]
  [IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
  [InterEventTime= 18.00]
002:0023-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_5A1 1412.000 3.682 No_date 114:00 64.85 .623
  [CN= 35.0: N= 3.00]
  [Tp= 4.96:DT=60.00]
  [IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
  [InterEventTime= 18.00]
002:0024-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_4 585.000 2.000 No_date 111:00 64.85 .623
  [CN= 35.0: N= 3.00]
  [Tp= 1.75:DT=60.00]
  [IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
  [InterEventTime= 18.00]
002:0025-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:LM_CK 1021.000 3.325 No_date 112:00 64.85 .623
  [CN= 35.0: N= 3.00]
  [Tp= 2.46:DT=60.00]
  [IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
  [InterEventTime= 18.00]
002:0026-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_2 177.000 .631 No_date 110:00 64.85 .623
  [CN= 35.0: N= 3.00]
  [Tp= .75:DT=60.00]
  [IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
  [InterEventTime= 18.00]
002:0027-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SM_DR 1122.000 3.418 No_date 113:00 64.85 .623
  [CN= 35.0: N= 3.00]
  [Tp= 3.25:DT=60.00]
  [IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
  [InterEventTime= 18.00]
002:0028-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:MO_DR 2737.000 8.456 No_date 113:00 64.85 .623
  [CN= 35.0: N= 3.00]
  [Tp= 3.03:DT=60.00]
  [IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
  [InterEventTime= 18.00]
002:0029-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_1 3176.000 9.431 No_date 113:00 64.85 .623
  [CN= 35.0: N= 3.00]
  [Tp= 3.56:DT=60.00]
  [IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
  [InterEventTime= 18.00]

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#

# Routing hydrographs

#

# Starting with the addition of Jock River Headwater and Subwatershed 13

#

```

002:0030-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD 60.0 02:JR_HW 3680.000 9.201 No_date 115:00 64.85 n/a
    + 60.0 03:SW_13 971.000 3.054 No_date 112:00 64.85 n/a
  [DT=60.00] SUM= 60.0 01:S_N13 4651.000 11.967 No_date 114:00 64.85 n/a

```

#

```

# Sum of hydrographs from Node 13 routed to Node 13A
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
#
002:0031-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N13    4651.000    11.967 No_date  114:00    64.85 n/a
[RDT=60.00] out<- 60.0 01:N13A    4651.000    10.215 No_date  116:00    64.85 n/a
[L/S/n= 9074./ .022/.025]
{Vmax= .679:Dmax= 2.507}

#
# Addition of Subwatershed Jock River at Goodwood Marsh to Node 13A
#
002:0032-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD                60.0 02:N13A    4651.000    10.215 No_date  116:00    64.85 n/a
+                      60.0 03:JR_GWM    3074.000    7.139 No_date   115:00    64.85 n/a
[DT=60.00] SUM=       60.0 01:SN13A    7725.000    17.327 No_date  116:00    64.85 n/a

#
# Insertion of a reservoir to simulate the effects of the Goodwood Marsh
#
002:0033-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE RESERVOIR ->  60.0 02:SN13A    7725.000    17.327 No_date  116:00    64.85 n/a
[RDT=60.00] out<- 60.0 01:RES_GM    7725.000    4.258 No_date  240:00    64.85 n/a
{MxStoUsed=.2480E+03}

#
# Output of Reservoir Goodwood Marsh routed from Node 13A to Node 12
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
002:0034-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:RES_GM    7725.000    4.258 No_date  240:00    64.85 n/a
[RDT=60.00] out<- 60.0 01:N12    7725.000    4.256 No_date  241:00    64.85 n/a
[L/S/n= 5926./ .076/.025]
{Vmax= .805:Dmax= 1.337}

#
# Addition of Subwatershed Jock River at Ashton to Node 12
#
002:0035-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD                60.0 02:N12    7725.000    4.256 No_date  241:00    64.85 n/a
+                      60.0 03:JR_ASH    1781.000    5.107 No_date  113:00    64.85 n/a
[DT=60.00] SUM=       60.0 01:S_N12    9506.000    8.067 No_date  137:00    64.85 n/a
002:0036-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD             60.0 01:S_N12    9506.000    8.067 No_date  137:00    64.85 n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H_SN12.002
remark:flow at Ashton, node 12

#
# Sum of hydrographs from Node 12 routed to Node 11
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
002:0037-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N12    9506.000    8.067 No_date  137:00    64.85 n/a
[RDT=60.00] out<- 60.0 01:N11    9506.000    8.046 No_date  137:00    64.85 n/a
[L/S/n= 972./ .051/.025]
{Vmax= .830:Dmax= 1.840}

#
# Addition of Subwatershed 11 and Cramed Creek to Node 11
#
002:0038-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD                60.0 02:N11    9506.000    8.046 No_date  137:00    64.85 n/a
+                      60.0 03:SW_11    500.000    1.746 No_date  110:00    64.85 n/a
+                      60.0 04:NN_CK    1917.000    5.979 No_date  112:00    64.85 n/a
[DT=60.00] SUM=       60.0 01:S_N11    11923.000    15.022 No_date  113:00    64.85 n/a

#
# Sum of hydrographs from Node 11 routed to Node 10
# Section 1
# Use variable n for summer conditions and n=0.025 for spring conditions

```

```
002:0039-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 60.0 02:S_N11 11923.000 15.022 No_date 113:00 64.85 n/a
[RDT=60.00] out<- 60.0 01:N10 11923.000 12.932 No_date 115:00 64.85 n/a
[L/S/n=14028./ .157/.025]
{Vmax= .935:Dmax= .610}
```

```
#
# Addition of Subwatershed 10 and Kings Creek to Node 10
```

```
#
002:0040-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
60.0 02:N10 11923.000 12.932 No_date 115:00 64.85 n/a
+ 60.0 03:SW_10 5666.000 14.316 No_date 115:00 64.85 n/a
+ 60.0 04:KG_CK 8376.000 18.905 No_date 116:00 64.85 n/a
[DT=60.00] SUM= 60.0 01:S_N10 25965.000 46.063 No_date 115:00 64.85 n/a
002:0041-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD 60.0 01:S_N10 25965.000 46.063 No_date 115:00 64.85 n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N10.002
remark:Flow near Franktown Rd Gauge
```

```
#
# Sum of hydrographs from Node 10 routed to Node 9
# Section 2
# Use variable n for summer conditions and n=0.025 for spring conditions
```

```
#
002:0042-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 60.0 02:S_N10 25965.000 46.063 No_date 115:00 64.85 n/a
[RDT=60.00] out<- 60.0 01:N9 25965.000 45.611 No_date 116:00 64.85 n/a
[L/S/n= 3982./ .075/.025]
{Vmax= 1.066:Dmax= 1.036}
```

```
#
# Addition of Subwatershed 9 and Nichols Creek to Node 9
```

```
#
002:0043-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
60.0 02:N9 25965.000 45.611 No_date 116:00 64.85 n/a
+ 60.0 03:SW_9 1132.000 3.918 No_date 111:00 64.85 n/a
+ 60.0 04:NC_CK 4464.000 10.423 No_date 115:00 64.85 n/a
[DT=60.00] SUM= 60.0 01:S_N9 31561.000 57.534 No_date 115:00 64.85 n/a
```

```
#
# Sum of hydrographs from Node 9 routed to Node 8
# Section 3
# Use variable n for summer conditions and n=0.025 for spring conditions
```

```
#
002:0044-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 60.0 02:S_N9 31561.000 57.534 No_date 115:00 64.85 n/a
[RDT=60.00] out<- 60.0 01:N8 31561.000 56.766 No_date 116:00 64.85 n/a
[L/S/n= 2269./ .088/.025]
{Vmax= .874:Dmax= 1.178}
```

```
#
# Addition of Subwatershed 8 and Hobb's Drain to Node 8
```

```
#
002:0045-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
60.0 02:N8 31561.000 56.766 No_date 116:00 64.85 n/a
+ 60.0 03:SW_8 131.000 .468 No_date 110:00 64.85 n/a
+ 60.0 04:HB_DR 3854.000 9.918 No_date 114:00 64.85 n/a
[DT=60.00] SUM= 60.0 01:S_N8 35546.000 66.306 No_date 116:00 64.85 n/a
```

```
#
# Sum of hydrographs from Node 8 routed to Node 7
# Section 4
# Use variable n for summer conditions and n=0.025 for spring conditions
```

```
#
002:0046-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 60.0 02:S_N8 35546.000 66.306 No_date 116:00 64.85 n/a
[RDT=60.00] out<- 60.0 01:N7 35546.000 63.924 No_date 117:00 64.85 n/a
[L/S/n= 3750./ .053/.025]
{Vmax= .696:Dmax= 1.310}
```

```
#
```



```

# Addition of Subwatershed 7 to Node 7
#
002:0047-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ADD HYD          60.0 02:N7          35546.000   63.924 No_date  117:00   64.85 n/a
          +      60.0 03:SW_7         3197.000    9.404 No_date  113:00   64.85 n/a
[DT=60.00] SUM=  60.0 01:S_N7         38743.000   70.409 No_date  117:00   64.85 n/a
002:0048-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
SAVE HYD         60.0 01:S_N7         38743.000   70.409 No_date  117:00   64.85 n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N7.002
remark:INFLOW FROM FEN

# Insertion of a reservoir to simulate the effects of the Richmond Fen.
# Storage area and volumes were estimated from available topo maps.
# Release rate from fen was assumed to be controlled by the downstream
# river cross-section for spring conditions. It is was assumed that for up to
# 0.75 m of water, the main channel of the river provided the storage. Above
# this depth, the wetland starts to signigicantly store water.
#
002:0049-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ROUTE RESERVOIR -> 60.0 02:S_N7          38743.000   70.409 No_date  117:00   64.85 n/a
[RDT=60.00] out<- 60.0 01:RES_RF         38743.000   50.368 No_date  147:00   64.85 n/a
{MxStoUsed=.8844E+02}

#
002:0050-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
SAVE HYD         60.0 01:RES_RF         38743.000   50.368 No_date  147:00   64.85 n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-RES_RF.002
remark:OUTFLOW FROM FEN

#
# Sum of hydrographs from Node 7 routed to Node 6
# Section 5
# Use variable n for summer conditions and n=0.025 for spring conditions
#
002:0051-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:RES_RF         38743.000   50.368 No_date  147:00   64.85 n/a
[RDT=60.00] out<- 60.0 01:N6           38743.000   50.342 No_date  147:00   64.85 n/a
[L/S/n= 3056./ .082/.025]
{Vmax= .924:Dmax= .819}

#
# Addition of Subwatershed 6 and Van Gaal Drain to Node 6
#
002:0052-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ADD HYD          60.0 02:N6          38743.000   50.342 No_date  147:00   64.85 n/a
          +      60.0 03:SW_6          165.000    .540 No_date  112:00   64.85 n/a
          +      60.0 04:VG_DR         1332.000    3.952 No_date  113:00   64.85 n/a
[DT=60.00] SUM=  60.0 01:S_N6         40240.010   51.566 No_date  146:00   64.85 n/a

#
# Sum of hydrographs from Node 6 routed to Node 5
# Section 6
# Use variable n for summer conditions and n=0.025 for spring conditions
#
002:0053-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N6         40240.010   51.566 No_date  146:00   64.85 n/a
[RDT=60.00] out<- 60.0 01:N5         40240.010   51.560 No_date  147:00   64.85 n/a
[L/S/n= 1852./ .054/.025]
{Vmax= .719:Dmax= 1.015}

#
# Addition of Subwatershed 5 and Flowing Creek to Node 5
#
002:0054-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ADD HYD          60.0 02:N5          40240.010   51.560 No_date  147:00   64.85 n/a
          +      60.0 03:SW_5          224.000    .799 No_date  110:00   64.85 n/a
          +      60.0 04:FL_CK         4945.000   14.489 No_date  113:00   64.85 n/a
[DT=60.00] SUM=  60.0 01:S_N5         45409.010   63.103 No_date  137:00   64.85 n/a

#
# Sum of hydrographs from Node 5 routed to Node 5A

```

```

# Section 7
# Use variable n for summer conditions and n=0.025 for spring conditions
#
002:0055-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N5      45409.010  63.103 No_date 137:00  64.85 n/a
[RDT=60.00] out<- 60.0 01:N5A      45409.010  63.100 No_date 137:00  64.85 n/a
[L/S/n= 556./ .090/.025]
{Vmax= .851:Dmax= .933}

#
# Addition of Subwatershed 5A1 and Subwatershed 5A2 to Node 5A
#
002:0056-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 60.0 02:N5A      45409.010  63.100 No_date 137:00  64.85 n/a
      + 60.0 03:SW_5A2    20.000      .071 No_date 110:00  64.85 n/a
      + 60.0 04:SW_5A1   1412.000     3.682 No_date 114:00  64.85 n/a
[DT=60.00] SUM= 60.0 01:S_N5A  46841.010  66.294 No_date 137:00  64.85 n/a

#
# Sum of hydrographs from Node 5A routed to Node 4
# Section 8
# Use variable n for summer conditions and n=0.025 for spring conditions
#
002:0057-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N5A      46841.010  66.294 No_date 137:00  64.85 n/a
[RDT=60.00] out<- 60.0 01:N4      46841.010  65.963 No_date 138:00  64.85 n/a
[L/S/n= 4630./ .043/.025]
{Vmax= 1.053:Dmax= 3.101}

#
# Addition of Subwatershed 4 and Leamy Creek to Node 4
#
002:0058-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 60.0 02:N4      46841.010  65.963 No_date 138:00  64.85 n/a
      + 60.0 03:SW_4      585.000     2.000 No_date 111:00  64.85 n/a
      + 60.0 04:LM_CK     1021.000     3.325 No_date 112:00  64.85 n/a
[DT=60.00] SUM= 60.0 01:S_N4  48447.000  69.713 No_date 137:00  64.85 n/a
002:0059-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N4.002
remark:flow at S_N4

#
# Sum of hydrographs from Node 4 routed to Node 2
# Section 9
# Use variable n for summer conditions and n=0.025 for spring conditions
#
002:0060-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N4      48447.000  69.713 No_date 137:00  64.85 n/a
[RDT=60.00] out<- 60.0 01:N2      48447.000  69.717 No_date 138:00  64.85 n/a
[L/S/n= 1667./ .060/.025]
{Vmax= 1.199:Dmax= 2.987}

#
# Addition of Subwatershed 2 with Monohan Drain and Smith Drain to Node 2
#
002:0061-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 60.0 02:N2      48447.000  69.717 No_date 138:00  64.85 n/a
      + 60.0 03:SW_2      177.000     .631 No_date 110:00  64.85 n/a
      + 60.0 04:SM_DR     1122.000     3.418 No_date 113:00  64.85 n/a
      + 60.0 05:MO_DR     2737.000     8.456 No_date 113:00  64.85 n/a
[DT=60.00] SUM= 60.0 01:S_N2  52483.000  80.085 No_date 137:00  64.85 n/a
002:0062-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N2.002
remark:flow at S_N2 - Jock River at Moodie

#
# Sum of hydrographs from Node 2 routed to Node 1
# Section 10
# Use variable n for summer conditions and n=0.025 for spring conditions

```

```
#
002:0063-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ROUTE CHANNEL -> 60.0 02:S_N2 52483.000 80.085 No_date 137:00 64.85 n/a
[RDT=60.00] out<- 60.0 01:N1 52483.000 78.527 No_date 138:00 64.85 n/a
[L/S/n=10046./ .050/.025]
{Vmax= 1.373:Dmax= 2.622}
```

```
#
# Addition of Subwatershed 1 to Node 1
#
```

```
002:0064-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ADD HYD 60.0 02:N1 52483.000 78.527 No_date 138:00 64.85 n/a
+ 60.0 03:SW_1 3176.000 9.431 No_date 113:00 64.85 n/a
[DT=60.00] SUM= 60.0 01:N1 55659.000 86.389 No_date 138:00 64.85 n/a
** END OF RUN : 4
```

\*\*\*\*\*

```
RUN:COMMAND#
```

```
005:0001-----
START
[TZERO = .00 hrs on 0]
[METOUT= 2 (1=imperial, 2=metric output)]
[NSTORM= 1 ]
[NRUN = 5 ]
```

```
*****
# SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
*****
# Project Name: [Jock River] Project Number: [411-02]
# Date : 06-06-2003
# Modeller : [JoF]
# Company : JFSAinc.
# License # : 2549237
*****
# SNOWMELT + RAIN MODEL
# To be used with synthetic 10 Day SnowMelt+Rain Events
# MODEL PARAMETERS AS PER CALIBRATED MODEL BASED ON 2003 MEASURED EVENT
# AND VALIDATED WITH 1978, 1993, 1997 AND 1998 SPRING EVENTS.
```

```
005:0002-----
READ STORM
Filename = storm.001
Comment = Model 5 CDA - S+Rain 12hr/day, RTP 5 years, 10 Days.
[SDT=60.00:SDUR= 240.00:PTOT= 156.28]
```

```
005:0003-----
MODIFY STORM
[RFACT= .90:TSHIFT= .00 min]
[SDT=60.00:SDUR= 240.00:PTOT= 140.65]
```

```
005:0004-----
COMPUTE API
[APIini= 50.00: APIkdy= .8000: APIkdt= .9907]
{APImax= 83.84: APIavg= 60.29: APImin= 42.72}
```

```
005:0005-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:JR_HW 3680.000 13.950 No_date 115:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 5.42:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
```

```
005:0006-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_13 971.000 4.677 No_date 112:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 2.86:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
```

```
005:0007-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:JR_GWM 3074.000 10.819 No_date 115:00 95.58 .680
[CN= 35.0: N= 3.00]
```

```

[Tp= 6.29:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0008-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:JR_ASH 1781.000 7.801 No_date 113:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 3.91:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0009-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_11 500.000 2.686 No_date 110:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 1.24:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0010-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:NN_CK 1917.000 9.161 No_date 112:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 2.94:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0011-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_10 5666.000 21.760 No_date 114:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 5.28:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0012-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:KG_CK 8376.000 28.554 No_date 116:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 6.65:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0013-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_9 1132.000 5.977 No_date 111:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 1.49:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0014-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:NC_CK 4464.000 15.797 No_date 115:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 6.23:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0015-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_8 131.000 .716 No_date 109:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= .50:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0016-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:HB_DR 3854.000 15.099 No_date 114:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 5.09:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0017-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_7 3197.000 14.353 No_date 113:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 3.66:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0018-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_6 165.000 .824 No_date 112:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 2.38:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0019-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:VG_DR 1332.000 6.029 No_date 113:00 95.58 .680

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[CN= 35.0: N= 3.00]
[Tp= 3.57:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0020-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_5 224.000 1.222 No_date 110:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= .75:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0021-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:FL_CK 4945.000 22.119 No_date 113:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 3.70:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0022-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_5A2 20.000 .109 No_date 110:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= .62:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0023-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_5A1 1412.000 5.605 No_date 114:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 4.96:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0024-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_4 585.000 3.062 No_date 111:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 1.75:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0025-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:LM_CK 1021.000 5.075 No_date 112:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 2.46:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0026-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_2 177.000 .965 No_date 110:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= .75:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0027-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SM_DR 1122.000 5.205 No_date 113:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 3.25:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0028-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:MO_DR 2737.000 12.957 No_date 112:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 3.03:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
005:0029-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_1 3176.000 14.389 No_date 113:00 95.58 .680
[CN= 35.0: N= 3.00]
[Tp= 3.56:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]

```

```

#
# Routing hydrographs
#
# Starting with the addition of Jock River Headwater and Subwatershed 13
#

```

```

005:0030-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-

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```

ADD HYD          60.0 02:JR_HW      3680.000   13.950 No_date  115:00   95.58 n/a
      +          60.0 03:SW_13      971.000    4.677 No_date  112:00   95.58 n/a
[DT=60.00] SUM= 60.0 01:S_N13     4651.000   18.165 No_date  114:00   95.58 n/a

#
# Sum of hydrographs from Node 13 routed to Node 13A
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
#
005:0031-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  -> 60.0 02:S_N13     4651.000   18.165 No_date  114:00   95.58 n/a
[RDT=60.00] out<- 60.0 01:N13A     4651.000   15.686 No_date  116:00   95.58 n/a
[L/S/n= 9074./ .022/.025]
{Vmax= .754:Dmax= 2.956}

#
# Addition of Subwatershed Jock River at Goodwood Marsh to Node 13A
#
005:0032-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          60.0 02:N13A      4651.000   15.686 No_date  116:00   95.58 n/a
      +          60.0 03:JR_GWM     3074.000   10.819 No_date  115:00   95.58 n/a
[DT=60.00] SUM= 60.0 01:SN13A     7725.000   26.449 No_date  115:00   95.58 n/a

#
# Insertion of a reservoir to simulate the effects of the Goodwood Marsh
#
005:0033-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE RESERVOIR -> 60.0 02:SN13A     7725.000   26.449 No_date  115:00   95.58 n/a
[RDT=60.00] out<- 60.0 01:RES_GM     7725.000    5.034 No_date  241:00   95.58 n/a
{MxStoUsed=.4366E+03}

#
# Output of Reservoir Goodwood Marsh routed from Node 13A to Node 12
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
005:0034-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  -> 60.0 02:RES_GM     7725.000    5.034 No_date  241:00   95.58 n/a
[RDT=60.00] out<- 60.0 01:N12      7725.000    5.032 No_date  243:00   95.58 n/a
[L/S/n= 5926./ .076/.025]
{Vmax= .842:Dmax= 1.428}

#
# Addition of Subwatershed Jock River at Ashton to Node 12
#
005:0035-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          60.0 02:N12      7725.000    5.032 No_date  243:00   95.58 n/a
      +          60.0 03:JR_ASH     1781.000    7.801 No_date  113:00   95.58 n/a
[DT=60.00] SUM= 60.0 01:S_N12     9506.000   11.222 No_date  113:00   95.58 n/a
005:0036-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD         60.0 01:S_N12     9506.000   11.222 No_date  113:00   95.58 n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H_SN12.005
remark:flow at Ashton, node 12

#
# Sum of hydrographs from Node 12 routed to Node 11
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
005:0037-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  -> 60.0 02:S_N12     9506.000   11.222 No_date  113:00   95.58 n/a
[RDT=60.00] out<- 60.0 01:N11     9506.000   11.216 No_date  114:00   95.58 n/a
[L/S/n= 972./ .051/.025]
{Vmax= .911:Dmax= 2.076}

#
# Addition of Subwatershed 11 and Cramed Creek to Node 11
#
005:0038-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          60.0 02:N11      9506.000   11.216 No_date  114:00   95.58 n/a
      +          60.0 03:SW_11      500.000    2.686 No_date  110:00   95.58 n/a
      +          60.0 04:NN_CK      1917.000    9.161 No_date  112:00   95.58 n/a
[DT=60.00] SUM= 60.0 01:S_N11    11923.000  22.314 No_date  112:00   95.58 n/a

```

```

#
# Sum of hydrographs from Node 11 routed to Node 10
# Section 1
# Use variable n for summer conditions and n=0.025 for spring conditions
005:0039-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N11  11923.000  22.314 No_date  112:00  95.58  n/a
[RDT=60.00] out<-  60.0 01:N10  11923.000  19.819 No_date  114:00  95.58  n/a
[L/S/n=14028./ .157/.025]
{Vmax= 1.080:Dmax= .749}

#
# Addition of Subwatershed 10 and Kings Creek to Node 10
#
005:0040-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          60.0 02:N10  11923.000  19.819 No_date  114:00  95.58  n/a
                +  60.0 03:SW_10  5666.000  21.760 No_date  114:00  95.58  n/a
                +  60.0 04:KG_CK  8376.000  28.554 No_date  116:00  95.58  n/a
[DT=60.00] SUM=  60.0 01:S_N10  25965.000  70.001 No_date  115:00  95.58  n/a
005:0041-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD         60.0 01:S_N10  25965.000  70.001 No_date  115:00  95.58  n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N10.005
remark:Flow near Franktown Rd Gauge

#
# Sum of hydrographs from Node 10 routed to Node 9
# Section 2
# Use variable n for summer conditions and n=0.025 for spring conditions
#
005:0042-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N10  25965.000  70.001 No_date  115:00  95.58  n/a
[RDT=60.00] out<-  60.0 01:N9  25965.000  69.292 No_date  115:00  95.58  n/a
[L/S/n= 3982./ .075/.025]
{Vmax= 1.234:Dmax= 1.316}

#
# Addition of Subwatershed 9 and Nichols Creek to Node 9
#
005:0043-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          60.0 02:N9  25965.000  69.292 No_date  115:00  95.58  n/a
                +  60.0 03:SW_9  1132.000  5.977 No_date  111:00  95.58  n/a
                +  60.0 04:NC_CK  4464.000  15.797 No_date  115:00  95.58  n/a
[DT=60.00] SUM=  60.0 01:S_N9  31561.000  87.736 No_date  115:00  95.58  n/a

#
# Sum of hydrographs from Node 9 routed to Node 8
# Section 3
# Use variable n for summer conditions and n=0.025 for spring conditions
#
005:0044-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N9  31561.000  87.736 No_date  115:00  95.58  n/a
[RDT=60.00] out<-  60.0 01:N8  31561.000  86.952 No_date  116:00  95.58  n/a
[L/S/n= 2269./ .088/.025]
{Vmax= .901:Dmax= 1.329}

#
# Addition of Subwatershed 8 and Hobb's Drain to Node 8
#
005:0045-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          60.0 02:N8  31561.000  86.952 No_date  116:00  95.58  n/a
                +  60.0 03:SW_8  131.000  .716 No_date  109:00  95.58  n/a
                +  60.0 04:HB_DR  3854.000  15.099 No_date  114:00  95.58  n/a
[DT=60.00] SUM=  60.0 01:S_N8  35546.000  101.421 No_date  115:00  95.58  n/a

#
# Sum of hydrographs from Node 8 routed to Node 7
# Section 4
# Use variable n for summer conditions and n=0.025 for spring conditions
#
005:0046-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N8  35546.000  101.421 No_date  115:00  95.58  n/a

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```

[RDT=60.00] out<- 60.0 01:N7      35546.000  98.857 No_date  117:00  95.58  n/a
[L/S/n= 3750./ .053/.025]
{Vmax= .753:Dmax= 1.489}

#
# Addition of Subwatershed 7 to Node 7
#
005:0047-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          60.0 02:N7      35546.000  98.857 No_date  117:00  95.58  n/a
                + 60.0 03:SW_7      3197.000   14.353 No_date  113:00  95.58  n/a
  [DT=60.00] SUM= 60.0 01:S_N7      38743.000  109.723 No_date  116:00  95.58  n/a
005:0048-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  SAVE HYD         60.0 01:S_N7      38743.000  109.723 No_date  116:00  95.58  n/a
  fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N7.005
  remark:INFLOW FROM FEN

# Insertion of a reservoir to simulate the effects of the Richmond Fen.
# Storage area and volumes were estimated from available topo maps.
# Release rate from fen was assumed to be controlled by the downstream
# river cross-section for spring conditions. It is was assumed that for up to
# 0.75 m of water, the main channel of the river provided the storage. Above
# this depth, the wetland starts to significantly store water.
#
005:0049-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE RESERVOIR -> 60.0 02:S_N7      38743.000  109.723 No_date  116:00  95.58  n/a
  [RDT=60.00] out<- 60.0 01:RES_RF  38743.000   67.034 No_date  146:00  95.58  n/a
  {MxStoUsed=.2530E+03}

#
005:0050-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  SAVE HYD         60.0 01:RES_RF  38743.000   67.034 No_date  146:00  95.58  n/a
  fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-RES_RF.005
  remark:OUTFLOW FROM FEN

#
# Sum of hydrographs from Node 7 routed to Node 6
# Section 5
# Use variable n for summer conditions and n=0.025 for spring conditions
#
005:0051-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL -> 60.0 02:RES_RF  38743.000   67.034 No_date  146:00  95.58  n/a
  [RDT=60.00] out<- 60.0 01:N6      38743.000   67.019 No_date  147:00  95.58  n/a
  [L/S/n= 3056./ .082/.025]
  {Vmax= 1.015:Dmax= .956}

#
# Addition of Subwatershed 6 and Van Gaal Drain to Node 6
#
005:0052-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          60.0 02:N6      38743.000   67.019 No_date  147:00  95.58  n/a
                + 60.0 03:SW_6      165.000    .824 No_date  112:00  95.58  n/a
                + 60.0 04:VG_DR      1332.000   6.029 No_date  113:00  95.58  n/a
  [DT=60.00] SUM= 60.0 01:S_N6      40240.010  68.571 No_date  146:00  95.58  n/a

#
# Sum of hydrographs from Node 6 routed to Node 5
# Section 6
# Use variable n for summer conditions and n=0.025 for spring conditions
#
005:0053-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL -> 60.0 02:S_N6      40240.010  68.571 No_date  146:00  95.58  n/a
  [RDT=60.00] out<- 60.0 01:N5      40240.010  68.523 No_date  147:00  95.58  n/a
  [L/S/n= 1852./ .054/.025]
  {Vmax= .777:Dmax= 1.165}

#
# Addition of Subwatershed 5 and Flowing Creek to Node 5
#
005:0054-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          60.0 02:N5      40240.010  68.523 No_date  147:00  95.58  n/a
                + 60.0 03:SW_5      224.000    1.222 No_date  110:00  95.58  n/a

```



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+      60.0 04:FL_CK      4945.000    22.119 No_date  113:00   95.58 n/a
[DT=60.00] SUM=      60.0 01:S_N5      45409.010    83.747 No_date  137:00   95.58 n/a

#
# Sum of hydrographs from Node 5 routed to Node 5A
# Section 7
# Use variable n for summer conditions and n=0.025 for spring conditions
#
005:0055-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->   60.0 02:S_N5      45409.010    83.747 No_date  137:00   95.58 n/a
[RDT=60.00] out<- 60.0 01:N5A      45409.010    83.737 No_date  137:00   95.58 n/a
[L/S/n= 556./ .090/.025]
{Vmax= .897:Dmax= 1.059}

#
# Addition of Subwatershed 5A1 and Subwatershed 5A2 to Node 5A
#
005:0056-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
+      60.0 02:N5A      45409.010    83.737 No_date  137:00   95.58 n/a
+      60.0 03:SW_5A2      20.000        .109 No_date  110:00   95.58 n/a
+      60.0 04:SW_5A1      1412.000     5.605 No_date  114:00   95.58 n/a
[DT=60.00] SUM=      60.0 01:S_N5A      46841.010    88.396 No_date  137:00   95.58 n/a

#
# Sum of hydrographs from Node 5A routed to Node 4
# Section 8
# Use variable n for summer conditions and n=0.025 for spring conditions
#
005:0057-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->   60.0 02:S_N5A      46841.010    88.396 No_date  137:00   95.58 n/a
[RDT=60.00] out<- 60.0 01:N4      46841.010    88.042 No_date  138:00   95.58 n/a
[L/S/n= 4630./ .043/.025]
{Vmax= 1.147:Dmax= 3.420}

#
# Addition of Subwatershed 4 and Leamy Creek to Node 4
#
005:0058-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
+      60.0 02:N4      46841.010    88.042 No_date  138:00   95.58 n/a
+      60.0 03:SW_4      585.000     3.062 No_date  111:00   95.58 n/a
+      60.0 04:LM_CK      1021.000     5.075 No_date  112:00   95.58 n/a
[DT=60.00] SUM=      60.0 01:S_N4      48447.000    93.362 No_date  137:00   95.58 n/a
005:0059-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD      60.0 01:S_N4      48447.000    93.362 No_date  137:00   95.58 n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N4.005
remark:flow at S_N4

#
# Sum of hydrographs from Node 4 routed to Node 2
# Section 9
# Use variable n for summer conditions and n=0.025 for spring conditions
#
005:0060-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->   60.0 02:S_N4      48447.000    93.362 No_date  137:00   95.58 n/a
[RDT=60.00] out<- 60.0 01:N2      48447.000    93.417 No_date  138:00   95.58 n/a
[L/S/n= 1667./ .060/.025]
{Vmax= 1.307:Dmax= 3.293}

#
# Addition of Subwatershed 2 with Monohan Drain and Smith Drain to Node 2
#
005:0061-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
+      60.0 02:N2      48447.000    93.417 No_date  138:00   95.58 n/a
+      60.0 03:SW_2      177.000        .965 No_date  110:00   95.58 n/a
+      60.0 04:SM_DR      1122.000     5.205 No_date  113:00   95.58 n/a
+      60.0 05:MO_DR      2737.000    12.957 No_date  112:00   95.58 n/a
[DT=60.00] SUM=      60.0 01:S_N2      52483.000   108.490 No_date  137:00   95.58 n/a
005:0062-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD      60.0 01:S_N2      52483.000   108.490 No_date  137:00   95.58 n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N2.005
remark:flow at S_N2 - Jock River at Moodie

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```

#
# Sum of hydrographs from Node 2 routed to Node 1
# Section 10
# Use variable n for summer conditions and n=0.025 for spring conditions
#
005:0063-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->   60.0 02:S_N2      52483.000  108.490 No_date  137:00  95.58  n/a
[RDT=60.00] out<- 60.0 01:N1      52483.000  106.442 No_date  138:00  95.58  n/a
[L/S/n=10046./ .050/.025]
{Vmax= 1.510:Dmax= 3.048}

```

```

#
# Addition of Subwatershed 1 to Node 1
#
005:0064-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          60.0 02:N1      52483.000  106.442 No_date  138:00  95.58  n/a
+                60.0 03:SW_1    3176.000   14.389 No_date  113:00  95.58  n/a
[DT=60.00] SUM=  60.0 01:N1      55659.000  117.876 No_date  138:00  95.58  n/a
** END OF RUN :    9

```

\*\*\*\*\*

```

RUN:COMMAND#
010:0001-----
START
[TZERO = .00 hrs on 0]
[METOUT= 2 (1=imperial, 2=metric output)]
[NSTORM= 1 ]
[NRUN = 10 ]

```

```

# *****
# SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
# *****
# Project Name: [Jock River] Project Number: [411-02]
# Date : 06-06-2003
# Modeller : [JoF]
# Company : JFSInc.
# License # : 2549237
# *****

```

```

# SNOWMELT + RAIN MODEL
# To be used with synthetic 10 Day SnowMelt+Rain Events
# MODEL PARAMETERS AS PER CALIBRATED MODEL BASED ON 2003 MEASURED EVENT
# AND VALIDATED WITH 1978, 1993, 1997 AND 1998 SPRING EVENTS.

```

```

010:0002-----
READ STORM
Filename = storm.001
Comment = Model 5 CDA - S+Rain 12hr/day, RTP 10 years, 10 Days.
[SDT=60.00:SDUR= 240.00:PTOT= 183.22]

```

```

010:0003-----
MODIFY STORM
[RFACT= .90:TSHIFT= .00 min]
[SDT=60.00:SDUR= 240.00:PTOT= 164.89]

```

```

010:0004-----
COMPUTE API
[APIini= 50.00: APIkdy= .8000: APIkdt= .9907]
{APImax= 94.59: APIavg= 67.15: APImin= 45.56}

```

```

010:0005-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:JR_HW      3680.000   17.294 No_date  115:00  116.79  .708
[CN= 35.0: N= 3.00]
[Tp= 5.42:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]

```

```

010:0006-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_13     971.000    5.824 No_date  112:00  116.79  .708
[CN= 35.0: N= 3.00]
[Tp= 2.86:DT=60.00]

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```

[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0007-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:JR_GWM 3074.000 13.408 No_date 115:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 6.29:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0008-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:JR_ASH 1781.000 9.703 No_date 113:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 3.91:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0009-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_11 500.000 3.352 No_date 110:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 1.24:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0010-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:NN_CK 1917.000 11.410 No_date 112:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 2.94:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0011-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_10 5666.000 27.021 No_date 114:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 5.28:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0012-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:KG_CK 8376.000 35.333 No_date 116:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 6.65:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0013-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_9 1132.000 7.456 No_date 110:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 1.49:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0014-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:NC_CK 4464.000 19.579 No_date 115:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 6.23:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0015-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_8 131.000 .896 No_date 109:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= .50:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0016-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:HB_DR 3854.000 18.750 No_date 114:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 5.09:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0017-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_7 3197.000 17.847 No_date 113:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 3.66:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0018-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_6 165.000 1.024 No_date 112:00 116.79 .708
[CN= 35.0: N= 3.00]

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[Tp= 2.38:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0019-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:VG_DR 1332.000 7.496 No_date 113:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 3.57:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0020-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_5 224.000 1.521 No_date 110:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= .75:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0021-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:FL_CK 4945.000 27.505 No_date 113:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 3.70:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0022-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_5A2 20.000 .136 No_date 109:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= .62:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0023-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_5A1 1412.000 6.961 No_date 114:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 4.96:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0024-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_4 585.000 3.812 No_date 111:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 1.75:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0025-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:LM_CK 1021.000 6.311 No_date 112:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 2.46:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0026-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_2 177.000 1.202 No_date 110:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= .75:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0027-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SM_DR 1122.000 6.467 No_date 113:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 3.25:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0028-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:MO_DR 2737.000 16.142 No_date 112:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 3.03:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
010:0029-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_1 3176.000 17.888 No_date 113:00 116.79 .708
[CN= 35.0: N= 3.00]
[Tp= 3.56:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]

```

#

```

# Routing hydrographs
#
# Starting with the addition of Jock River Headwater and Subwatershed 13
#
010:0030-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          60.0 02:JR_HW      3680.000  17.294 No_date  115:00  116.79  n/a
                + 60.0 03:SW_13      971.000    5.824 No_date  112:00  116.79  n/a
  [DT=60.00] SUM= 60.0 01:S_N13      4651.000  22.531 No_date  114:00  116.79  n/a

#
# Sum of hydrographs from Node 13 routed to Node 13A
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
#
010:0031-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL  -> 60.0 02:S_N13      4651.000  22.531 No_date  114:00  116.79  n/a
  [RDT=60.00] out<- 60.0 01:N13A      4651.000  19.578 No_date  115:00  116.79  n/a
  [L/S/n= 9074./ .022/.025]
  {Vmax= .797:Dmax= 3.212}

#
# Addition of Subwatershed Jock River at Goodwood Marsh to Node 13A
#
010:0032-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          60.0 02:N13A      4651.000  19.578 No_date  115:00  116.79  n/a
                + 60.0 03:JR_GWM     3074.000  13.408 No_date  115:00  116.79  n/a
  [DT=60.00] SUM= 60.0 01:SN13A      7725.000  32.987 No_date  115:00  116.79  n/a

#
# Insertion of a reservoir to simulate the effects of the Goodwood Marsh
#
010:0033-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE RESERVOIR -> 60.0 02:SN13A      7725.000  32.987 No_date  115:00  116.79  n/a
  [RDT=60.00] out<- 60.0 01:RES_GM     7725.000   5.552 No_date  242:00  116.79  n/a
  {MxStoUsed=.5705E+03}

#
# Output of Reservoir Goodwood Marsh routed from Node 13A to Node 12
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
010:0034-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL  -> 60.0 02:RES_GM     7725.000   5.552 No_date  242:00  116.79  n/a
  [RDT=60.00] out<- 60.0 01:N12       7725.000   5.550 No_date  244:00  116.79  n/a
  [L/S/n= 5926./ .076/.025]
  {Vmax= .869:Dmax= 1.489}

#
# Addition of Subwatershed Jock River at Ashton to Node 12
#
010:0035-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          60.0 02:N12       7725.000   5.550 No_date  244:00  116.79  n/a
                + 60.0 03:JR_ASH     1781.000   9.703 No_date  113:00  116.79  n/a
  [DT=60.00] SUM= 60.0 01:S_N12     9506.000  13.346 No_date  113:00  116.79  n/a
010:0036-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  SAVE HYD        60.0 01:S_N12     9506.000  13.346 No_date  113:00  116.79  n/a
  fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H_SN12.010
  remark:flow at Ashton, node 12

#
# Sum of hydrographs from Node 12 routed to Node 11
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
010:0037-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL  -> 60.0 02:S_N12     9506.000  13.346 No_date  113:00  116.79  n/a
  [RDT=60.00] out<- 60.0 01:N11     9506.000  13.283 No_date  113:00  116.79  n/a
  [L/S/n= 972./ .051/.025]
  {Vmax= .954:Dmax= 2.216}

#
# Addition of Subwatershed 11 and Cramed Creek to Node 11
#

```

```

010:0038-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          60.0 02:N11      9506.000   13.283 No_date  113:00  116.79  n/a
                +   60.0 03:SW_11    500.000    3.352 No_date  110:00  116.79  n/a
                +   60.0 04:NN_CK    1917.000   11.410 No_date  112:00  116.79  n/a
  [DT=60.00] SUM=  60.0 01:S_N11   11923.000  27.243 No_date  112:00  116.79  n/a

```

```

#
# Sum of hydrographs from Node 11 routed to Node 10
# Section 1
# Use variable n for summer conditions and n=0.025 for spring conditions

```

```

010:0039-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL  ->  60.0 02:S_N11   11923.000  27.243 No_date  112:00  116.79  n/a
  [RDT=60.00] out<- 60.0 01:N10    11923.000  24.175 No_date  114:00  116.79  n/a
  [L/S/n=14028./ .157/.025]
  {Vmax= 1.140:Dmax= .823}

```

```

#
# Addition of Subwatershed 10 and Kings Creek to Node 10
#

```

```

010:0040-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          60.0 02:N10      11923.000  24.175 No_date  114:00  116.79  n/a
                +   60.0 03:SW_10    5666.000  27.021 No_date  114:00  116.79  n/a
                +   60.0 04:KG_CK    8376.000  35.333 No_date  116:00  116.79  n/a
  [DT=60.00] SUM=  60.0 01:S_N10   25965.000  86.189 No_date  115:00  116.79  n/a
010:0041-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  SAVE HYD        60.0 01:S_N10   25965.000  86.189 No_date  115:00  116.79  n/a
  fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N10.010
  remark:Flow near Franktown Rd Gauge

```

```

#
# Sum of hydrographs from Node 10 routed to Node 9
# Section 2
# Use variable n for summer conditions and n=0.025 for spring conditions
#

```

```

010:0042-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL  ->  60.0 02:S_N10   25965.000  86.189 No_date  115:00  116.79  n/a
  [RDT=60.00] out<- 60.0 01:N9     25965.000  85.177 No_date  115:00  116.79  n/a
  [L/S/n= 3982./ .075/.025]
  {Vmax= 1.306:Dmax= 1.483}

```

```

#
# Addition of Subwatershed 9 and Nichols Creek to Node 9
#

```

```

010:0043-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          60.0 02:N9       25965.000  85.177 No_date  115:00  116.79  n/a
                +   60.0 03:SW_9     1132.000   7.456 No_date  110:00  116.79  n/a
                +   60.0 04:NC_CK    4464.000  19.579 No_date  115:00  116.79  n/a
  [DT=60.00] SUM=  60.0 01:S_N9    31561.000  107.941 No_date  115:00  116.79  n/a

```

```

#
# Sum of hydrographs from Node 9 routed to Node 8
# Section 3
# Use variable n for summer conditions and n=0.025 for spring conditions
#

```

```

010:0044-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL  ->  60.0 02:S_N9    31561.000  107.941 No_date  115:00  116.79  n/a
  [RDT=60.00] out<- 60.0 01:N8    31561.000  106.445 No_date  116:00  116.79  n/a
  [L/S/n= 2269./ .088/.025]
  {Vmax= .851:Dmax= 1.459}

```

```

#
# Addition of Subwatershed 8 and Hobb's Drain to Node 8
#

```

```

010:0045-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          60.0 02:N8       31561.000  106.445 No_date  116:00  116.79  n/a
                +   60.0 03:SW_8     131.000    .896 No_date  109:00  116.79  n/a
                +   60.0 04:HB_DR    3854.000  18.750 No_date  114:00  116.79  n/a
  [DT=60.00] SUM=  60.0 01:S_N8    35546.000  124.176 No_date  116:00  116.79  n/a

```

```

#
# Sum of hydrographs from Node 8 routed to Node 7

```

```

# Section 4
# Use variable n for summer conditions and n=0.025 for spring conditions
#
010:0046-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N8    35546.000  124.176 No_date  116:00  116.79  n/a
[RDT=60.00] out<- 60.0 01:N7      35546.000  120.976 No_date  117:00  116.79  n/a
[L/S/n= 3750./ .053/.025]
{Vmax= .752:Dmax= 1.573}

#
# Addition of Subwatershed 7 to Node 7
#
010:0047-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          60.0 02:N7      35546.000  120.976 No_date  117:00  116.79  n/a
                + 60.0 03:SW_7    3197.000   17.847 No_date  113:00  116.79  n/a
[DT=60.00] SUM= 60.0 01:S_N7    38743.000  133.541 No_date  116:00  116.79  n/a
010:0048-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD         60.0 01:S_N7    38743.000  133.541 No_date  116:00  116.79  n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N7.010
remark:INFLOW FROM FEN

# Insertion of a reservoir to simulate the effects of the Richmond Fen.
# Storage area and volumes were estimated from available topo maps.
# Release rate from fen was assumed to be controlled by the downstream
# river cross-section for spring conditions. It is was assumed that for up to
# 0.75 m of water, the main channel of the river provided the storage. Above
# this depth, the wetland starts to significantly store water.
#
010:0049-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE RESERVOIR ->  60.0 02:S_N7    38743.000  133.541 No_date  116:00  116.79  n/a
[RDT=60.00] out<- 60.0 01:RES_RF  38743.000   86.472 No_date  145:00  116.79  n/a
{MxStoUsed=.3557E+03}

#
010:0050-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD         60.0 01:RES_RF  38743.000   86.472 No_date  145:00  116.79  n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-RES_RF.010
remark:OUTFLOW FROM FEN

#
# Sum of hydrographs from Node 7 routed to Node 6
# Section 5
# Use variable n for summer conditions and n=0.025 for spring conditions
#
010:0051-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:RES_RF  38743.000   86.472 No_date  145:00  116.79  n/a
[RDT=60.00] out<- 60.0 01:N6      38743.000   86.319 No_date  146:00  116.79  n/a
[L/S/n= 3056./ .082/.025]
{Vmax= 1.087:Dmax= 1.100}

#
# Addition of Subwatershed 6 and Van Gaal Drain to Node 6
#
010:0052-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          60.0 02:N6      38743.000   86.319 No_date  146:00  116.79  n/a
                + 60.0 03:SW_6      165.000    1.024 No_date  112:00  116.79  n/a
                + 60.0 04:VG_DR    1332.000    7.496 No_date  113:00  116.79  n/a
[DT=60.00] SUM= 60.0 01:S_N6    40240.010   88.221 No_date  145:00  116.79  n/a

#
# Sum of hydrographs from Node 6 routed to Node 5
# Section 6
# Use variable n for summer conditions and n=0.025 for spring conditions
#
010:0053-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N6    40240.010   88.221 No_date  145:00  116.79  n/a
[RDT=60.00] out<- 60.0 01:N5      40240.010   88.208 No_date  146:00  116.79  n/a
[L/S/n= 1852./ .054/.025]
{Vmax= .832:Dmax= 1.315}

#

```

```

# Addition of Subwatershed 5 and Flowing Creek to Node 5
#
010:0054-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ADD HYD          60.0 02:N5          40240.010   88.208 No_date  146:00  116.79  n/a
                + 60.0 03:SW_5         224.000     1.521 No_date  110:00  116.79  n/a
                + 60.0 04:FL_CK        4945.000    27.505 No_date  113:00  116.79  n/a
[DT=60.00] SUM= 60.0 01:S_N5        45409.010   98.260 No_date  137:00  116.79  n/a

#
# Sum of hydrographs from Node 5 routed to Node 5A
# Section 7
# Use variable n for summer conditions and n=0.025 for spring conditions
#
010:0055-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ROUTE CHANNEL  -> 60.0 02:S_N5        45409.010   98.260 No_date  137:00  116.79  n/a
[RDT=60.00] out<- 60.0 01:N5A        45409.010   98.251 No_date  137:00  116.79  n/a
[L/S/n= 556./ .090/.025]
{Vmax= .934:Dmax= 1.127}

#
# Addition of Subwatershed 5A1 and Subwatershed 5A2 to Node 5A
#
010:0056-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ADD HYD          60.0 02:N5A        45409.010   98.251 No_date  137:00  116.79  n/a
                + 60.0 03:SW_5A2         20.000     .136 No_date  109:00  116.79  n/a
                + 60.0 04:SW_5A1       1412.000     6.961 No_date  114:00  116.79  n/a
[DT=60.00] SUM= 60.0 01:S_N5A       46841.010  103.984 No_date  138:00  116.79  n/a

#
# Sum of hydrographs from Node 5A routed to Node 4
# Section 8
# Use variable n for summer conditions and n=0.025 for spring conditions
#
010:0057-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ROUTE CHANNEL  -> 60.0 02:S_N5A       46841.010  103.984 No_date  138:00  116.79  n/a
[RDT=60.00] out<- 60.0 01:N4        46841.010  103.529 No_date  138:00  116.79  n/a
[L/S/n= 4630./ .043/.025]
{Vmax= 1.200:Dmax= 3.616}

#
# Addition of Subwatershed 4 and Leamy Creek to Node 4
#
010:0058-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ADD HYD          60.0 02:N4         46841.010  103.529 No_date  138:00  116.79  n/a
                + 60.0 03:SW_4          585.000     3.812 No_date  111:00  116.79  n/a
                + 60.0 04:LM_CK       1021.000     6.311 No_date  112:00  116.79  n/a
[DT=60.00] SUM= 60.0 01:S_N4       48447.000  109.890 No_date  138:00  116.79  n/a
010:0059-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
SAVE HYD         60.0 01:S_N4       48447.000  109.890 No_date  138:00  116.79  n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N4.010
remark:flow at S_N4

#
# Sum of hydrographs from Node 4 routed to Node 2
# Section 9
# Use variable n for summer conditions and n=0.025 for spring conditions
#
010:0060-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ROUTE CHANNEL  -> 60.0 02:S_N4       48447.000  109.890 No_date  138:00  116.79  n/a
[RDT=60.00] out<- 60.0 01:N2       48447.000  110.002 No_date  138:00  116.79  n/a
[L/S/n= 1667./ .060/.025]
{Vmax= 1.368:Dmax= 3.480}

#
# Addition of Subwatershed 2 with Monohan Drain and Smith Drain to Node 2
#
010:0061-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ADD HYD          60.0 02:N2         48447.000  110.002 No_date  138:00  116.79  n/a
                + 60.0 03:SW_2          177.000     1.202 No_date  110:00  116.79  n/a
                + 60.0 04:SM_DR       1122.000     6.467 No_date  113:00  116.79  n/a
                + 60.0 05:MO_DR       2737.000    16.142 No_date  112:00  116.79  n/a

```



```
[DT=60.00] SUM= 60.0 01:S_N2 52483.000 128.249 No_date 137:00 116.79 n/a
010:0062-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD 60.0 01:S_N2 52483.000 128.249 No_date 137:00 116.79 n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N2.010
remark:flow at S_N2 - Jock River at Moodie
```

```
#
# Sum of hydrographs from Node 2 routed to Node 1
# Section 10
# Use variable n for summer conditions and n=0.025 for spring conditions
#
```

```
010:0063-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 60.0 02:S_N2 52483.000 128.249 No_date 137:00 116.79 n/a
[RDT=60.00] out<- 60.0 01:N1 52483.000 126.017 No_date 138:00 116.79 n/a
[L/S/n=10046./ .050/.025]
{Vmax= 1.593:Dmax= 3.299}
```

```
#
# Addition of Subwatershed 1 to Node 1
#
```

```
010:0064-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 60.0 02:N1 52483.000 126.017 No_date 138:00 116.79 n/a
+ 60.0 03:SW_1 3176.000 17.888 No_date 113:00 116.79 n/a
[DT=60.00] SUM= 60.0 01:N1 55659.000 139.918 No_date 138:00 116.79 n/a
** END OF RUN : 24
```

\*\*\*\*\*

RUN:COMMAND#

```
025:0001-----
START
[TZERO = .00 hrs on 0]
[METOUT= 2 (1=imperial, 2=metric output)]
[NSTORM= 1 ]
[NRUN = 25 ]
```

```
*****
# SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
*****
# Project Name: [Jock River] Project Number: [411-02]
# Date : 06-06-2003
# Modeller : [JoF]
# Company : JFSAinc.
# License # : 2549237
*****
```

```
# SNOWMELT + RAIN MODEL
# To be used with synthetic 10 Day SnowMelt+Rain Events
# MODEL PARAMETERS AS PER CALIBRATED MODEL BASED ON 2003 MEASURED EVENT
# AND VALIDATED WITH 1978, 1993, 1997 AND 1998 SPRING EVENTS.
```

```
025:0002-----
READ STORM
Filename = storm.001
Comment = Model 5 CDA - S+Rain 12hr/day, RTP 25 years, 10 Days.
[SDT=60.00:SDUR= 240.00:PTOT= 217.18]
```

```
025:0003-----
MODIFY STORM
[RFACT= .90:TSHIFT= .00 min]
[SDT=60.00:SDUR= 240.00:PTOT= 195.46]
```

```
025:0004-----
COMPUTE API
[APIini= 50.00: APIkdy= .8000: APIkdt= .9907]
[APImax=108.15: APIavg= 75.80: APImin= 47.19]
```

```
025:0005-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:JR_HW 3680.000 21.743 No_date 114:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 5.42:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
```

```

[InterEventTime= 18.00]
025:0006-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_13 971.000 7.344 No_date 112:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 2.86:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0007-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:JR_GWM 3074.000 16.836 No_date 115:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 6.29:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0008-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:JR_ASH 1781.000 12.223 No_date 113:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 3.91:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0009-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_11 500.000 4.235 No_date 110:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 1.24:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0010-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:NN_CK 1917.000 14.392 No_date 112:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 2.94:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0011-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_10 5666.000 33.991 No_date 114:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 5.28:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0012-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:KG_CK 8376.000 44.313 No_date 115:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 6.65:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0013-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_9 1132.000 9.431 No_date 110:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 1.49:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0014-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:NC_CK 4464.000 24.585 No_date 115:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 6.23:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0015-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_8 131.000 1.134 No_date 109:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= .50:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0016-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:HB_DR 3854.000 23.588 No_date 114:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 5.09:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0017-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_7 3197.000 22.476 No_date 113:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 3.66:DT=60.00]

```

```

[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0018-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_6 165.000 1.290 No_date 111:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 2.38:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0019-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:VG_DR 1332.000 9.439 No_date 113:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 3.57:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0020-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_5 224.000 1.920 No_date 109:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= .75:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0021-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:FL_CK 4945.000 34.640 No_date 113:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 3.70:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0022-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_5A2 20.000 .172 No_date 109:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= .62:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0023-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_5A1 1412.000 8.757 No_date 114:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 4.96:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0024-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_4 585.000 4.806 No_date 111:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 1.75:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0025-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:LM_CK 1021.000 7.948 No_date 112:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 2.46:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0026-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_2 177.000 1.517 No_date 109:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= .75:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0027-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SM_DR 1122.000 8.148 No_date 112:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 3.25:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0028-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:MO_DR 2737.000 20.364 No_date 112:00 144.35 .738
[CN= 35.0: N= 3.00]
[Tp= 3.03:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
025:0029-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_1 3176.000 22.524 No_date 113:00 144.35 .738
[CN= 35.0: N= 3.00]

```

[Tp= 3.56:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

```
#
# Routing hydrographs
#
# Starting with the addition of Jock River Headwater and Subwatershed 13
#
025:0030-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD                60.0 02:JR_HW      3680.000    21.743 No_date  114:00  144.35  n/a
                        + 60.0 03:SW_13      971.000     7.344 No_date  112:00  144.35  n/a
  [DT=60.00] SUM=       60.0 01:S_N13     4651.000    28.309 No_date  114:00  144.35  n/a
```

```
#
# Sum of hydrographs from Node 13 routed to Node 13A
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
#
```

```
025:0031-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL ->      60.0 02:S_N13     4651.000    28.309 No_date  114:00  144.35  n/a
  [RDT=60.00] out<-    60.0 01:N13A     4651.000    24.887 No_date  115:00  144.35  n/a
  [L/S/n= 9074./ .022/.025]
  {Vmax= .849:Dmax= 3.504}
```

```
#
# Addition of Subwatershed Jock River at Goodwood Marsh to Node 13A
#
```

```
025:0032-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD                60.0 02:N13A     4651.000    24.887 No_date  115:00  144.35  n/a
                        + 60.0 03:JR_GWM    3074.000    16.836 No_date  115:00  144.35  n/a
  [DT=60.00] SUM=       60.0 01:SN13A    7725.000    41.723 No_date  115:00  144.35  n/a
```

```
#
# Insertion of a reservoir to simulate the effects of the Goodwood Marsh
#
```

```
025:0033-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE RESERVOIR ->   60.0 02:SN13A     7725.000    41.723 No_date  115:00  144.35  n/a
  [RDT=60.00] out<-    60.0 01:RES_GM    7725.000     6.347 No_date  243:00  144.35  n/a
  {MxStoUsed=.7460E+03}
```

```
#
# Output of Reservoir Goodwood Marsh routed from Node 13A to Node 12
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
```

```
025:0034-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL ->      60.0 02:RES_GM    7725.000     6.347 No_date  243:00  144.35  n/a
  [RDT=60.00] out<-    60.0 01:N12     7725.000     6.344 No_date  245:00  144.35  n/a
  [L/S/n= 5926./ .076/.025]
  {Vmax= .897:Dmax= 1.562}
```

```
#
# Addition of Subwatershed Jock River at Ashton to Node 12
#
```

```
025:0035-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD                60.0 02:N12     7725.000     6.344 No_date  245:00  144.35  n/a
                        + 60.0 03:JR_ASH    1781.000    12.223 No_date  113:00  144.35  n/a
  [DT=60.00] SUM=       60.0 01:S_N12    9506.000    16.086 No_date  113:00  144.35  n/a
```

```
025:0036-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  SAVE HYD                60.0 01:S_N12    9506.000    16.086 No_date  113:00  144.35  n/a
  fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H_SN12.025
  remark:flow at Ashton, node 12
```

```
#
# Sum of hydrographs from Node 12 routed to Node 11
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
```

```
025:0037-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL ->      60.0 02:S_N12    9506.000    16.086 No_date  113:00  144.35  n/a
  [RDT=60.00] out<-    60.0 01:N11     9506.000    16.014 No_date  113:00  144.35  n/a
  [L/S/n= 972./ .051/.025]
```

```

{Vmax= 1.005:Dmax= 2.387}

#
# Addition of Subwatershed 11 and Cramed Creek to Node 11
#
025:0038-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD                60.0 02:N11      9506.000    16.014 No_date 113:00 144.35 n/a
                        + 60.0 03:SW_11    500.000     4.235 No_date 110:00 144.35 n/a
                        + 60.0 04:NN_CK    1917.000    14.392 No_date 112:00 144.35 n/a
  [DT=60.00] SUM=       60.0 01:S_N11    11923.000   33.651 No_date 112:00 144.35 n/a

#
# Sum of hydrographs from Node 11 routed to Node 10
# Section 1
# Use variable n for summer conditions and n=0.025 for spring conditions
025:0039-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL  ->    60.0 02:S_N11    11923.000   33.651 No_date 112:00 144.35 n/a
  [RDT=60.00] out<- 60.0 01:N10      11923.000   30.097 No_date 114:00 144.35 n/a
  [L/S/n=14028./ .157/.025]
  {Vmax= 1.228:Dmax= .919}

#
# Addition of Subwatershed 10 and Kings Creek to Node 10
#
025:0040-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD                60.0 02:N10      11923.000   30.097 No_date 114:00 144.35 n/a
                        + 60.0 03:SW_10    5666.000   33.991 No_date 114:00 144.35 n/a
                        + 60.0 04:KG_CK    8376.000   44.313 No_date 115:00 144.35 n/a
  [DT=60.00] SUM=       60.0 01:S_N10    25965.000  107.674 No_date 115:00 144.35 n/a
025:0041-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  SAVE HYD            60.0 01:S_N10    25965.000  107.674 No_date 115:00 144.35 n/a
  fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N10.025
  remark:Flow near Franktown Rd Gauge

#
# Sum of hydrographs from Node 10 routed to Node 9
# Section 2
# Use variable n for summer conditions and n=0.025 for spring conditions
#
025:0042-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL  ->    60.0 02:S_N10    25965.000  107.674 No_date 115:00 144.35 n/a
  [RDT=60.00] out<- 60.0 01:N9       25965.000  106.251 No_date 115:00 144.35 n/a
  [L/S/n= 3982./ .075/.025]
  {Vmax= 1.338:Dmax= 1.681}

#
# Addition of Subwatershed 9 and Nichols Creek to Node 9
#
025:0043-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD                60.0 02:N9       25965.000  106.251 No_date 115:00 144.35 n/a
                        + 60.0 03:SW_9      1132.000     9.431 No_date 110:00 144.35 n/a
                        + 60.0 04:NC_CK    4464.000   24.585 No_date 115:00 144.35 n/a
  [DT=60.00] SUM=       60.0 01:S_N9     31561.000  134.721 No_date 115:00 144.35 n/a

#
# Sum of hydrographs from Node 9 routed to Node 8
# Section 3
# Use variable n for summer conditions and n=0.025 for spring conditions
#
025:0044-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL  ->    60.0 02:S_N9     31561.000  134.721 No_date 115:00 144.35 n/a
  [RDT=60.00] out<- 60.0 01:N8     31561.000  133.483 No_date 116:00 144.35 n/a
  [L/S/n= 2269./ .088/.025]
  {Vmax= .856:Dmax= 1.550}

#
# Addition of Subwatershed 8 and Hobb's Drain to Node 8
#
025:0045-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD                60.0 02:N8     31561.000  133.483 No_date 116:00 144.35 n/a
                        + 60.0 03:SW_8      131.000     1.134 No_date 109:00 144.35 n/a

```

```

+      60.0 04:HB_DR      3854.000  23.588 No_date  114:00  144.35  n/a
[DT=60.00] SUM= 60.0 01:S_N8      35546.000  156.128 No_date  115:00  144.35  n/a

#
# Sum of hydrographs from Node 8 routed to Node 7
# Section 4
# Use variable n for summer conditions and n=0.025 for spring conditions
#
025:0046-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N8      35546.000  156.128 No_date  115:00  144.35  n/a
[RDT=60.00] out<- 60.0 01:N7      35546.000  150.850 No_date  117:00  144.35  n/a
[L/S/n= 3750./ .053/.025]
{Vmax= .744:Dmax= 1.686}

#
# Addition of Subwatershed 7 to Node 7
#
025:0047-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD                60.0 02:N7      35546.000  150.850 No_date  117:00  144.35  n/a
+      60.0 03:SW_7      3197.000  22.476 No_date  113:00  144.35  n/a
[DT=60.00] SUM= 60.0 01:S_N7      38743.000  166.689 No_date  116:00  144.35  n/a
025:0048-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD                60.0 01:S_N7      38743.000  166.689 No_date  116:00  144.35  n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N7.025
remark:INFLOW FROM FEN

# Insertion of a reservoir to simulate the effects of the Richmond Fen.
# Storage area and volumes were estimated from available topo maps.
# Release rate from fen was assumed to be controlled by the downstream
# river cross-section for spring conditions. It is assumed that for up to
# 0.75 m of water, the main channel of the river provided the storage. Above
# this depth, the wetland starts to significantly store water.
#
025:0049-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE RESERVOIR ->  60.0 02:S_N7      38743.000  166.689 No_date  116:00  144.35  n/a
[RDT=60.00] out<- 60.0 01:RES_RF      38743.000  111.564 No_date  145:00  144.35  n/a
{MxStoUsed=.4397E+03}

#
025:0050-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD                60.0 01:RES_RF      38743.000  111.564 No_date  145:00  144.35  n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-RES_RF.025
remark:OUTFLOW FROM FEN

#
# Sum of hydrographs from Node 7 routed to Node 6
# Section 5
# Use variable n for summer conditions and n=0.025 for spring conditions
#
025:0051-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:RES_RF      38743.000  111.564 No_date  145:00  144.35  n/a
[RDT=60.00] out<- 60.0 01:N6      38743.000  111.395 No_date  145:00  144.35  n/a
[L/S/n= 3056./ .082/.025]
{Vmax= 1.151:Dmax= 1.256}

#
# Addition of Subwatershed 6 and Van Gaal Drain to Node 6
#
025:0052-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD                60.0 02:N6      38743.000  111.395 No_date  145:00  144.35  n/a
+      60.0 03:SW_6      165.000  1.290 No_date  111:00  144.35  n/a
+      60.0 04:VG_DR      1332.000  9.439 No_date  113:00  144.35  n/a
[DT=60.00] SUM= 60.0 01:S_N6      40240.010  113.858 No_date  145:00  144.35  n/a

#
# Sum of hydrographs from Node 6 routed to Node 5
# Section 6
# Use variable n for summer conditions and n=0.025 for spring conditions
#
025:0053-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N6      40240.010  113.858 No_date  145:00  144.35  n/a

```

```

[RDT=60.00] out<- 60.0 01:N5      40240.010  113.765 No_date  145:00  144.35  n/a
[L/S/n= 1852./ .054/.025]
{Vmax= .894:Dmax= 1.480}

#
# Addition of Subwatershed 5 and Flowing Creek to Node 5
#
025:0054-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          60.0 02:N5      40240.010  113.765 No_date  145:00  144.35  n/a
                + 60.0 03:SW_5    224.000    1.920 No_date  109:00  144.35  n/a
                + 60.0 04:FL_CK   4945.000  34.640 No_date  113:00  144.35  n/a
[DT=60.00] SUM= 60.0 01:S_N5    45409.010  125.272 No_date  140:00  144.35  n/a

#
# Sum of hydrographs from Node 5 routed to Node 5A
# Section 7
# Use variable n for summer conditions and n=0.025 for spring conditions
#
025:0055-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 60.0 02:S_N5    45409.010  125.272 No_date  140:00  144.35  n/a
[RDT=60.00] out<- 60.0 01:N5A    45409.010  125.312 No_date  140:00  144.35  n/a
[L/S/n= 556./ .090/.025]
{Vmax= .994:Dmax= 1.241}

#
# Addition of Subwatershed 5A1 and Subwatershed 5A2 to Node 5A
#
025:0056-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          60.0 02:N5A    45409.010  125.312 No_date  140:00  144.35  n/a
                + 60.0 03:SW_5A2    20.000     .172 No_date  109:00  144.35  n/a
                + 60.0 04:SW_5A1  1412.000   8.757 No_date  114:00  144.35  n/a
[DT=60.00] SUM= 60.0 01:S_N5A   46841.010  132.110 No_date  139:00  144.35  n/a

#
# Sum of hydrographs from Node 5A routed to Node 4
# Section 8
# Use variable n for summer conditions and n=0.025 for spring conditions
#
025:0057-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 60.0 02:S_N5A   46841.010  132.110 No_date  139:00  144.35  n/a
[RDT=60.00] out<- 60.0 01:N4     46841.010  131.649 No_date  140:00  144.35  n/a
[L/S/n= 4630./ .043/.025]
{Vmax= 1.285:Dmax= 3.937}

#
# Addition of Subwatershed 4 and Leamy Creek to Node 4
#
025:0058-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          60.0 02:N4     46841.010  131.649 No_date  140:00  144.35  n/a
                + 60.0 03:SW_4     585.000    4.806 No_date  111:00  144.35  n/a
                + 60.0 04:LM_CK   1021.000   7.948 No_date  112:00  144.35  n/a
[DT=60.00] SUM= 60.0 01:S_N4    48447.000  137.248 No_date  139:00  144.35  n/a
025:0059-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD         60.0 01:S_N4    48447.000  137.248 No_date  139:00  144.35  n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N4.025
remark:flow at S_N4

#
# Sum of hydrographs from Node 4 routed to Node 2
# Section 9
# Use variable n for summer conditions and n=0.025 for spring conditions
#
025:0060-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 60.0 02:S_N4    48447.000  137.248 No_date  139:00  144.35  n/a
[RDT=60.00] out<- 60.0 01:N2    48447.000  137.356 No_date  139:00  144.35  n/a
[L/S/n= 1667./ .060/.025]
{Vmax= 1.459:Dmax= 3.763}

#
# Addition of Subwatershed 2 with Monohan Drain and Smith Drain to Node 2
#

```

```

025:0061-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          60.0 02:N2      48447.000  137.356 No_date  139:00  144.35  n/a
                + 60.0 03:SW_2    177.000    1.517 No_date  109:00  144.35  n/a
                + 60.0 04:SM_DR    1122.000    8.148 No_date  112:00  144.35  n/a
                + 60.0 05:MO_DR    2737.000   20.364 No_date  112:00  144.35  n/a
  [DT=60.00]  SUM= 60.0 01:S_N2    52483.000  158.038 No_date  138:00  144.35  n/a
025:0062-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  SAVE HYD          60.0 01:S_N2    52483.000  158.038 No_date  138:00  144.35  n/a
  fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N2.025
  remark:flow at S_N2 - Jock River at Moodie

```

```

#
# Sum of hydrographs from Node 2 routed to Node 1
# Section 10
# Use variable n for summer conditions and n=0.025 for spring conditions
#

```

```

025:0063-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL  -> 60.0 02:S_N2    52483.000  158.038 No_date  138:00  144.35  n/a
  [RDT=60.00] out<- 60.0 01:N1     52483.000  156.140 No_date  139:00  144.35  n/a
  [L/S/n=10046./ .050/.025]
  {Vmax= 1.708:Dmax= 3.632}

```

```

#
# Addition of Subwatershed 1 to Node 1
#

```

```

025:0064-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          60.0 02:N1      52483.000  156.140 No_date  139:00  144.35  n/a
                + 60.0 03:SW_1    3176.000   22.524 No_date  113:00  144.35  n/a
  [DT=60.00]  SUM= 60.0 01:N1     55659.000  173.133 No_date  138:00  144.35  n/a
  ** END OF RUN : 49

```

\*\*\*\*\*

```

RUN:COMMAND#
050:0001-----
  START
  [TZERO = .00 hrs on 0]
  [METOUT= 2 (1=imperial, 2=metric output)]
  [NSTORM= 1 ]
  [NRUN = 50 ]

```

```

# *****
# SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
# *****
# Project Name: [Jock River] Project Number: [411-02]
# Date : 06-06-2003
# Modeller : [JoF]
# Company : JFSAinc.
# License # : 2549237
# *****

```

```

# SNOWMELT + RAIN MODEL
# To be used with synthetic 10 Day SnowMelt+Rain Events
# MODEL PARAMETERS AS PER CALIBRATED MODEL BASED ON 2003 MEASURED EVENT
# AND VALIDATED WITH 1978, 1993, 1997 AND 1998 SPRING EVENTS.

```

```

050:0002-----
  READ STORM
  Filename = storm.001
  Comment = Model 5 CDA - S+Rain 12hr/day, RTP 50 years, 10 Days.
  [SDT=60.00:SDUR= 240.00:PTOT= 242.37]

```

```

050:0003-----
  MODIFY STORM
  [RFACT= .90:TSHIFT= .00 min]
  [SDT=60.00:SDUR= 240.00:PTOT= 218.13]

```

```

050:0004-----
  COMPUTE API
  [APIini= 50.00: APIkdy= .8000: APIkdt= .9907]
  {APImax=118.20: APIavg= 82.21: APImin= 47.24}

```



050:0005-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 60.0 01:JR\_HW 3680.000 25.159 No\_date 114:00 165.04 .757  
[CN= 35.0: N= 3.00]  
[Tp= 5.42:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

050:0006-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 60.0 01:SW\_13 971.000 8.511 No\_date 112:00 165.04 .757  
[CN= 35.0: N= 3.00]  
[Tp= 2.86:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

050:0007-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 60.0 01:JR\_GWM 3074.000 19.459 No\_date 115:00 165.04 .757  
[CN= 35.0: N= 3.00]  
[Tp= 6.29:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

050:0008-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 60.0 01:JR\_ASH 1781.000 14.157 No\_date 113:00 165.04 .757  
[CN= 35.0: N= 3.00]  
[Tp= 3.91:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

050:0009-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
\* CONTINUOUS NASHYD 60.0 01:SW\_11 500.000 4.914 No\_date 110:00 165.04 .757  
[CN= 35.0: N= 3.00]  
[Tp= 1.24:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

050:0010-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 60.0 01:NN\_CK 1917.000 16.681 No\_date 112:00 165.04 .757  
[CN= 35.0: N= 3.00]  
[Tp= 2.94:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

050:0011-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 60.0 01:SW\_10 5666.000 39.332 No\_date 114:00 165.04 .757  
[CN= 35.0: N= 3.00]  
[Tp= 5.28:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

050:0012-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 60.0 01:KG\_CK 8376.000 51.209 No\_date 115:00 165.04 .757  
[CN= 35.0: N= 3.00]  
[Tp= 6.65:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

050:0013-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
\* CONTINUOUS NASHYD 60.0 01:SW\_9 1132.000 10.950 No\_date 110:00 165.04 .757  
[CN= 35.0: N= 3.00]  
[Tp= 1.49:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

050:0014-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 60.0 01:NC\_CK 4464.000 28.417 No\_date 115:00 165.04 .757  
[CN= 35.0: N= 3.00]  
[Tp= 6.23:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

050:0015-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
\* CONTINUOUS NASHYD 60.0 01:SW\_8 131.000 1.317 No\_date 109:00 165.04 .757  
[CN= 35.0: N= 3.00]  
[Tp= .50:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

050:0016-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 60.0 01:HB\_DR 3854.000 27.295 No\_date 114:00 165.04 .757  
[CN= 35.0: N= 3.00]  
[Tp= 5.09:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]

```

[InterEventTime= 18.00]
050:0017-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_7 3197.000 26.027 No_date 113:00 165.04 .757
[CN= 35.0: N= 3.00]
[Tp= 3.66:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
050:0018-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_6 165.000 1.497 No_date 111:00 165.04 .757
[CN= 35.0: N= 3.00]
[Tp= 2.38:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
050:0019-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:VG_DR 1332.000 10.929 No_date 113:00 165.04 .757
[CN= 35.0: N= 3.00]
[Tp= 3.57:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
050:0020-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_5 224.000 2.231 No_date 109:00 165.04 .757
[CN= 35.0: N= 3.00]
[Tp= .75:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
050:0021-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:FL_CK 4945.000 40.114 No_date 113:00 165.04 .757
[CN= 35.0: N= 3.00]
[Tp= 3.70:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
050:0022-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_5A2 20.000 .200 No_date 109:00 165.04 .757
[CN= 35.0: N= 3.00]
[Tp= .62:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
050:0023-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_5A1 1412.000 10.133 No_date 114:00 165.04 .757
[CN= 35.0: N= 3.00]
[Tp= 4.96:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
050:0024-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_4 585.000 5.569 No_date 111:00 165.04 .757
[CN= 35.0: N= 3.00]
[Tp= 1.75:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
050:0025-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:LM_CK 1021.000 9.205 No_date 112:00 165.04 .757
[CN= 35.0: N= 3.00]
[Tp= 2.46:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
050:0026-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_2 177.000 1.763 No_date 109:00 165.04 .757
[CN= 35.0: N= 3.00]
[Tp= .75:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
050:0027-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SM_DR 1122.000 9.448 No_date 112:00 165.04 .757
[CN= 35.0: N= 3.00]
[Tp= 3.25:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
050:0028-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:MO_DR 2737.000 23.607 No_date 112:00 165.04 .757
[CN= 35.0: N= 3.00]
[Tp= 3.03:DT=60.00]

```

```

[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
050:0029-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD    60.0 01:SW_1      3176.000  26.079 No_date  113:00  165.04  .757
[CN= 35.0: N= 3.00]
[Tp= 3.56:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]

#
# Routing hydrographs
#
# Starting with the addition of Jock River Headwater and Subwatershed 13
#
050:0030-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD              60.0 02:JR_HW      3680.000  25.159 No_date  114:00  165.04  n/a
      +              60.0 03:SW_13     971.000   8.511 No_date  112:00  165.04  n/a
[DT=60.00] SUM=     60.0 01:S_N13     4651.000  32.734 No_date  114:00  165.04  n/a

#
# Sum of hydrographs from Node 13 routed to Node 13A
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
#
050:0031-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL ->    60.0 02:S_N13     4651.000  32.734 No_date  114:00  165.04  n/a
[RDT=60.00] out<-  60.0 01:N13A     4651.000  29.034 No_date  115:00  165.04  n/a
[L/S/n= 9074./ .022/.025]
{Vmax= .885:Dmax= 3.706}

#
# Addition of Subwatershed Jock River at Goodwood Marsh to Node 13A
#
050:0032-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD              60.0 02:N13A     4651.000  29.034 No_date  115:00  165.04  n/a
      +              60.0 03:JR_GWM   3074.000  19.459 No_date  115:00  165.04  n/a
[DT=60.00] SUM=     60.0 01:SN13A     7725.000  48.494 No_date  115:00  165.04  n/a

#
# Insertion of a reservoir to simulate the effects of the Goodwood Marsh
#
050:0033-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE RESERVOIR -> 60.0 02:SN13A     7725.000  48.494 No_date  115:00  165.04  n/a
[RDT=60.00] out<-  60.0 01:RES_GM   7725.000   6.958 No_date  244:00  165.04  n/a
{MxStoUsed=.8776E+03}

#
# Output of Reservoir Goodwood Marsh routed from Node 13A to Node 12
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
050:0034-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL ->    60.0 02:RES_GM   7725.000   6.958 No_date  244:00  165.04  n/a
[RDT=60.00] out<-  60.0 01:N12     7725.000   6.957 No_date  245:00  165.04  n/a
[L/S/n= 5926./ .076/.025]
{Vmax= .916:Dmax= 1.612}

#
# Addition of Subwatershed Jock River at Ashton to Node 12
#
050:0035-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD              60.0 02:N12     7725.000   6.957 No_date  245:00  165.04  n/a
      +              60.0 03:JR_ASH   1781.000  14.157 No_date  113:00  165.04  n/a
[DT=60.00] SUM=     60.0 01:S_N12     9506.000  18.197 No_date  113:00  165.04  n/a
050:0036-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD             60.0 01:S_N12     9506.000  18.197 No_date  113:00  165.04  n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H_SN12.050
remark:flow at Ashton, node 12

#
# Sum of hydrographs from Node 12 routed to Node 11
# (Approximated cross-section - see cross-section 258)

```

```

# Use n=0.04 for summer conditions and n=0.025 for spring conditions
050:0037-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N12      9506.000  18.197 No_date  113:00  165.04  n/a
[RDT=60.00] out<- 60.0 01:N11      9506.000  18.116 No_date  113:00  165.04  n/a
[L/S/n= 972./ .051/.025]
{Vmax= 1.036:Dmax= 2.502}

#
# Addition of Subwatershed 11 and Cramed Creek to Node 11
#
050:0038-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 60.0 02:N11      9506.000  18.116 No_date  113:00  165.04  n/a
      + 60.0 03:SW_11    500.000   4.914 No_date  110:00  165.04  n/a
      + 60.0 04:NN_CK    1917.000  16.681 No_date  112:00  165.04  n/a
[DT=60.00] SUM= 60.0 01:S_N11    11923.000  38.525 No_date  112:00  165.04  n/a

#
# Sum of hydrographs from Node 11 routed to Node 10
# Section 1
# Use variable n for summer conditions and n=0.025 for spring conditions
050:0039-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N11    11923.000  38.525 No_date  112:00  165.04  n/a
[RDT=60.00] out<- 60.0 01:N10    11923.000  34.844 No_date  114:00  165.04  n/a
[L/S/n=14028./ .157/.025]
{Vmax= 1.245:Dmax= .986}

#
# Addition of Subwatershed 10 and Kings Creek to Node 10
#
050:0040-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 60.0 02:N10    11923.000  34.844 No_date  114:00  165.04  n/a
      + 60.0 03:SW_10  5666.000  39.332 No_date  114:00  165.04  n/a
      + 60.0 04:KG_CK  8376.000  51.209 No_date  115:00  165.04  n/a
[DT=60.00] SUM= 60.0 01:S_N10  25965.000  124.568 No_date  115:00  165.04  n/a
050:0041-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD      60.0 01:S_N10  25965.000  124.568 No_date  115:00  165.04  n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N10.050
remark:Flow near Franktown Rd Gauge

#
# Sum of hydrographs from Node 10 routed to Node 9
# Section 2
# Use variable n for summer conditions and n=0.025 for spring conditions
#
050:0042-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N10  25965.000  124.568 No_date  115:00  165.04  n/a
[RDT=60.00] out<- 60.0 01:N9    25965.000  123.223 No_date  115:00  165.04  n/a
[L/S/n= 3982./ .075/.025]
{Vmax= 1.371:Dmax= 1.798}

#
# Addition of Subwatershed 9 and Nichols Creek to Node 9
#
050:0043-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 60.0 02:N9    25965.000  123.223 No_date  115:00  165.04  n/a
      + 60.0 03:SW_9  1132.000  10.950 No_date  110:00  165.04  n/a
      + 60.0 04:NC_CK  4464.000  28.417 No_date  115:00  165.04  n/a
[DT=60.00] SUM= 60.0 01:S_N9    31561.000  156.049 No_date  115:00  165.04  n/a

#
# Sum of hydrographs from Node 9 routed to Node 8
# Section 3
# Use variable n for summer conditions and n=0.025 for spring conditions
#
050:0044-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N9    31561.000  156.049 No_date  115:00  165.04  n/a
[RDT=60.00] out<- 60.0 01:N8    31561.000  154.479 No_date  116:00  165.04  n/a
[L/S/n= 2269./ .088/.025]
{Vmax= .877:Dmax= 1.602}

#

```

```

# Addition of Subwatershed 8 and Hobb's Drain to Node 8
#
050:0045-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ADD HYD          60.0 02:N8      31561.000  154.479 No_date  116:00  165.04  n/a
                + 60.0 03:SW_8    131.000    1.317 No_date  109:00  165.04  n/a
                + 60.0 04:HB_DR   3854.000    27.295 No_date  114:00  165.04  n/a
[DT=60.00] SUM=  60.0 01:S_N8    35546.000  181.156 No_date  115:00  165.04  n/a

#
# Sum of hydrographs from Node 8 routed to Node 7
# Section 4
# Use variable n for summer conditions and n=0.025 for spring conditions
#
050:0046-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N8    35546.000  181.156 No_date  115:00  165.04  n/a
[RDT=60.00] out<- 60.0 01:N7    35546.000  174.092 No_date  117:00  165.04  n/a
[L/S/n= 3750./ .053/.025]
{Vmax= .745:Dmax= 1.764}

#
# Addition of Subwatershed 7 to Node 7
#
050:0047-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ADD HYD          60.0 02:N7      35546.000  174.092 No_date  117:00  165.04  n/a
                + 60.0 03:SW_7    3197.000    26.027 No_date  113:00  165.04  n/a
[DT=60.00] SUM=  60.0 01:S_N7    38743.000  192.960 No_date  116:00  165.04  n/a
050:0048-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
SAVE HYD        60.0 01:S_N7    38743.000  192.960 No_date  116:00  165.04  n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N7.050
remark:INFLOW FROM FEN

# Insertion of a reservoir to simulate the effects of the Richmond Fen.
# Storage area and volumes were estimated from available topo maps.
# Release rate from fen was assumed to be controlled by the downstream
# river cross-section for spring conditions. It is was assumed that for up to
# 0.75 m of water, the main channel of the river provided the storage. Above
# this depth, the wetland starts to signigicantly store water.
#
050:0049-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ROUTE RESERVOIR ->  60.0 02:S_N7    38743.000  192.960 No_date  116:00  165.04  n/a
[RDT=60.00] out<-  60.0 01:RES_RF  38743.000  127.095 No_date  145:00  165.04  n/a
{MxStoUsed=.4915E+03}

#
050:0050-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
SAVE HYD        60.0 01:RES_RF  38743.000  127.095 No_date  145:00  165.04  n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-RES_RF.050
remark:OUTFLOW FROM FEN

#
# Sum of hydrographs from Node 7 routed to Node 6
# Section 5
# Use variable n for summer conditions and n=0.025 for spring conditions
#
050:0051-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:RES_RF  38743.000  127.095 No_date  145:00  165.04  n/a
[RDT=60.00] out<-  60.0 01:N6    38743.000  126.959 No_date  145:00  165.04  n/a
[L/S/n= 3056./ .082/.025]
{Vmax= 1.182:Dmax= 1.342}

#
# Addition of Subwatershed 6 and Van Gaal Drain to Node 6
#
050:0052-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ADD HYD          60.0 02:N6      38743.000  126.959 No_date  145:00  165.04  n/a
                + 60.0 03:SW_6    165.000    1.497 No_date  111:00  165.04  n/a
                + 60.0 04:VG_DR   1332.000    10.929 No_date  113:00  165.04  n/a
[DT=60.00] SUM=  60.0 01:S_N6    40240.010  129.658 No_date  145:00  165.04  n/a

#
# Sum of hydrographs from Node 6 routed to Node 5

```

```

# Section 6
# Use variable n for summer conditions and n=0.025 for spring conditions
#
050:0053-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N6      40240.010  129.658 No_date  145:00  165.04  n/a
[RDT=60.00] out<- 60.0 01:N5      40240.010  129.630 No_date  145:00  165.04  n/a
[L/S/n= 1852./ .054/.025]
{Vmax= .932:Dmax= 1.569}

#
# Addition of Subwatershed 5 and Flowing Creek to Node 5
#
050:0054-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 60.0 02:N5      40240.010  129.630 No_date  145:00  165.04  n/a
      + 60.0 03:SW_5    224.000    2.231 No_date  109:00  165.04  n/a
      + 60.0 04:FL_CK   4945.000   40.114 No_date  113:00  165.04  n/a
[DT=60.00] SUM= 60.0 01:S_N5    45409.010  143.585 No_date  139:00  165.04  n/a

#
# Sum of hydrographs from Node 5 routed to Node 5A
# Section 7
# Use variable n for summer conditions and n=0.025 for spring conditions
#
050:0055-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N5      45409.010  143.585 No_date  139:00  165.04  n/a
[RDT=60.00] out<- 60.0 01:N5A    45409.010  143.617 No_date  139:00  165.04  n/a
[L/S/n= 556./ .090/.025]
{Vmax= 1.031:Dmax= 1.311}

#
# Addition of Subwatershed 5A1 and Subwatershed 5A2 to Node 5A
#
050:0056-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 60.0 02:N5A    45409.010  143.617 No_date  139:00  165.04  n/a
      + 60.0 03:SW_5A2  20.000    .200 No_date  109:00  165.04  n/a
      + 60.0 04:SW_5A1  1412.000  10.133 No_date  114:00  165.04  n/a
[DT=60.00] SUM= 60.0 01:S_N5A    46841.010  151.481 No_date  139:00  165.04  n/a

#
# Sum of hydrographs from Node 5A routed to Node 4
# Section 8
# Use variable n for summer conditions and n=0.025 for spring conditions
#
050:0057-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N5A    46841.010  151.481 No_date  139:00  165.04  n/a
[RDT=60.00] out<- 60.0 01:N4      46841.010  150.907 No_date  140:00  165.04  n/a
[L/S/n= 4630./ .043/.025]
{Vmax= 1.334:Dmax= 4.135}

#
# Addition of Subwatershed 4 and Leamy Creek to Node 4
#
050:0058-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 60.0 02:N4      46841.010  150.907 No_date  140:00  165.04  n/a
      + 60.0 03:SW_4     585.000    5.569 No_date  111:00  165.04  n/a
      + 60.0 04:LM_CK   1021.000   9.205 No_date  112:00  165.04  n/a
[DT=60.00] SUM= 60.0 01:S_N4    48447.000  157.912 No_date  138:00  165.04  n/a
050:0059-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD
      60.0 01:S_N4    48447.000  157.912 No_date  138:00  165.04  n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N4.050
remark:flow at S_N4

#
# Sum of hydrographs from Node 4 routed to Node 2
# Section 9
# Use variable n for summer conditions and n=0.025 for spring conditions
#
050:0060-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N4      48447.000  157.912 No_date  138:00  165.04  n/a
[RDT=60.00] out<- 60.0 01:N2      48447.000  157.847 No_date  139:00  165.04  n/a
[L/S/n= 1667./ .060/.025]

```

{Vmax= 1.520:Dmax= 3.959}

```
#
# Addition of Subwatershed 2 with Monohan Drain and Smith Drain to Node 2
#
050:0061-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  ADD HYD          60.0 02:N2          48447.000  157.847 No_date  139:00  165.04  n/a
                +   60.0 03:SW_2          177.000    1.763 No_date  109:00  165.04  n/a
                +   60.0 04:SM_DR          1122.000   9.448 No_date  112:00  165.04  n/a
                +   60.0 05:MO_DR          2737.000  23.607 No_date  112:00  165.04  n/a
  [DT=60.00] SUM=  60.0 01:S_N2          52483.000 182.229 No_date  137:00  165.04  n/a
050:0062-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  SAVE HYD         60.0 01:S_N2          52483.000 182.229 No_date  137:00  165.04  n/a
  fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N2.050
  remark:flow at S_N2 - Jock River at Moodie
```

```
#
# Sum of hydrographs from Node 2 routed to Node 1
# Section 10
# Use variable n for summer conditions and n=0.025 for spring conditions
#
```

```
050:0063-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  ROUTE CHANNEL ->  60.0 02:S_N2          52483.000 182.229 No_date  137:00  165.04  n/a
  [RDT=60.00] out<- 60.0 01:N1          52483.000 180.333 No_date  138:00  165.04  n/a
  [L/S/n=10046./ .050/.025]
  {Vmax= 1.794:Dmax= 3.878}
```

```
#
# Addition of Subwatershed 1 to Node 1
#
```

```
050:0064-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  ADD HYD          60.0 02:N1          52483.000 180.333 No_date  138:00  165.04  n/a
                +   60.0 03:SW_1          3176.000   26.079 No_date  113:00  165.04  n/a
  [DT=60.00] SUM=  60.0 01:N1          55659.000 199.883 No_date  138:00  165.04  n/a
  ** END OF RUN : 99
```

\*\*\*\*\*

```
RUN:COMMAND#
100:0001-----
  START
  [TZERO = .00 hrs on 0]
  [METOUT= 2 (1=imperial, 2=metric output)]
  [NSTORM= 1 ]
  [NRUN = 100 ]
```

```
*****
# SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
*****
# Project Name: [Jock River] Project Number: [411-02]
# Date : 06-06-2003
# Modeller : [JoF]
# Company : JFSAinc.
# License # : 2549237
*****
# SNOWMELT + RAIN MODEL
# To be used with synthetic 10 Day SnowMelt+Rain Events
# MODEL PARAMETERS AS PER CALIBRATED MODEL BASED ON 2003 MEASURED EVENT
# AND VALIDATED WITH 1978, 1993, 1997 AND 1998 SPRING EVENTS.
```

```
100:0002-----
  READ STORM
  Filename = storm.001
  Comment = Model 5 CDA - S+Rain 12hr/day, RTP 100 years, 10 Days.
  [SDT=60.00:SDUR= 240.00:PTOT= 267.43]
100:0003-----
  MODIFY STORM
  [RFACT= .90:TSHIFT= .00 min]
```

```

[SDT=60.00:SDUR= 240.00:PTOT= 240.69]
100:0004-----DT-ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
COMPUTE API
[APIini= 50.00: APIkdy= .8000: APIkdt= .9907]
{APImax=128.21: APIavg= 88.59: APImin= 47.29}
100:0005-----DT-ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:JR_HW 3680.000 28.641 No_date 114:00 186.01 .773
[CN= 35.0: N= 3.00]
[Tp= 5.42:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
100:0006-----DT-ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_13 971.000 9.702 No_date 112:00 186.01 .773
[CN= 35.0: N= 3.00]
[Tp= 2.86:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
100:0007-----DT-ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:JR_GWM 3074.000 22.133 No_date 115:00 186.01 .773
[CN= 35.0: N= 3.00]
[Tp= 6.29:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
100:0008-----DT-ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:JR_ASH 1781.000 16.129 No_date 113:00 186.01 .773
[CN= 35.0: N= 3.00]
[Tp= 3.91:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
100:0009-----DT-ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_11 500.000 5.607 No_date 110:00 186.01 .773
[CN= 35.0: N= 3.00]
[Tp= 1.24:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
100:0010-----DT-ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:NN_CK 1917.000 19.017 No_date 112:00 186.01 .773
[CN= 35.0: N= 3.00]
[Tp= 2.94:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
100:0011-----DT-ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_10 5666.000 44.778 No_date 114:00 186.01 .773
[CN= 35.0: N= 3.00]
[Tp= 5.28:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
100:0012-----DT-ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:KG_CK 8376.000 58.238 No_date 115:00 186.01 .773
[CN= 35.0: N= 3.00]
[Tp= 6.65:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
100:0013-----DT-ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_9 1132.000 12.502 No_date 110:00 186.01 .773
[CN= 35.0: N= 3.00]
[Tp= 1.49:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
100:0014-----DT-ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:NC_CK 4464.000 32.322 No_date 115:00 186.01 .773
[CN= 35.0: N= 3.00]
[Tp= 6.23:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
100:0015-----DT-ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 60.0 01:SW_8 131.000 1.504 No_date 109:00 186.01 .773
[CN= 35.0: N= 3.00]
[Tp= .50:DT=60.00]
[IaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]

```



100:0016-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 60.0 01:HB\_DR 3854.000 31.074 No\_date 114:00 186.01 .773  
[CN= 35.0: N= 3.00]  
[Tp= 5.09:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

100:0017-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 60.0 01:SW\_7 3197.000 29.646 No\_date 113:00 186.01 .773  
[CN= 35.0: N= 3.00]  
[Tp= 3.66:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

100:0018-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 60.0 01:SW\_6 165.000 1.709 No\_date 111:00 186.01 .773  
[CN= 35.0: N= 3.00]  
[Tp= 2.38:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

100:0019-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 60.0 01:VG\_DR 1332.000 12.448 No\_date 113:00 186.01 .773  
[CN= 35.0: N= 3.00]  
[Tp= 3.57:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

100:0020-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
\* CONTINUOUS NASHYD 60.0 01:SW\_5 224.000 2.549 No\_date 109:00 186.01 .773  
[CN= 35.0: N= 3.00]  
[Tp= .75:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

100:0021-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 60.0 01:FL\_CK 4945.000 45.695 No\_date 113:00 186.01 .773  
[CN= 35.0: N= 3.00]  
[Tp= 3.70:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

100:0022-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
\* CONTINUOUS NASHYD 60.0 01:SW\_5A2 20.000 .229 No\_date 109:00 186.01 .773  
[CN= 35.0: N= 3.00]  
[Tp= .62:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

100:0023-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 60.0 01:SW\_5A1 1412.000 11.536 No\_date 114:00 186.01 .773  
[CN= 35.0: N= 3.00]  
[Tp= 4.96:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

100:0024-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
\* CONTINUOUS NASHYD 60.0 01:SW\_4 585.000 6.348 No\_date 111:00 186.01 .773  
[CN= 35.0: N= 3.00]  
[Tp= 1.75:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

100:0025-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 60.0 01:LM\_CK 1021.000 10.485 No\_date 112:00 186.01 .773  
[CN= 35.0: N= 3.00]  
[Tp= 2.46:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

100:0026-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
\* CONTINUOUS NASHYD 60.0 01:SW\_2 177.000 2.015 No\_date 109:00 186.01 .773  
[CN= 35.0: N= 3.00]  
[Tp= .75:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]  
[InterEventTime= 18.00]

100:0027-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 60.0 01:SM\_DR 1122.000 10.775 No\_date 112:00 186.01 .773  
[CN= 35.0: N= 3.00]  
[Tp= 3.25:DT=60.00]  
[IaREC= 6.00: SMIN=204.20: SMAX=\*\*\*\*\*: SK= .100]

```

[InterEventTime= 18.00]
100:0028-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:MO_DR 2737.000 26.915 No_date 112:00 186.01 .773
[CN= 35.0: N= 3.00]
[Tp= 3.03:DT=60.00]
[LaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]
100:0029-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 60.0 01:SW_1 3176.000 29.704 No_date 113:00 186.01 .773
[CN= 35.0: N= 3.00]
[Tp= 3.56:DT=60.00]
[LaREC= 6.00: SMIN=204.20: SMAX=*****: SK= .100]
[InterEventTime= 18.00]

#
# Routing hydrographs
#
# Starting with the addition of Jock River Headwater and Subwatershed 13
#
100:0030-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 60.0 02:JR_HW 3680.000 28.641 No_date 114:00 186.01 n/a
+ 60.0 03:SW_13 971.000 9.702 No_date 112:00 186.01 n/a
[DT=60.00] SUM= 60.0 01:S_N13 4651.000 37.243 No_date 114:00 186.01 n/a

#
# Sum of hydrographs from Node 13 routed to Node 13A
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
#
100:0031-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 60.0 02:S_N13 4651.000 37.243 No_date 114:00 186.01 n/a
[RDT=60.00] out<- 60.0 01:N13A 4651.000 33.214 No_date 115:00 186.01 n/a
[L/S/n= 9074./ .022/.025]
{Vmax= .916:Dmax= 3.901}

#
# Addition of Subwatershed Jock River at Goodwood Marsh to Node 13A
#
100:0032-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 60.0 02:N13A 4651.000 33.214 No_date 115:00 186.01 n/a
+ 60.0 03:JR_GWM 3074.000 22.133 No_date 115:00 186.01 n/a
[DT=60.00] SUM= 60.0 01:SN13A 7725.000 55.347 No_date 115:00 186.01 n/a

#
# Insertion of a reservoir to simulate the effects of the Goodwood Marsh
#
100:0033-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE RESERVOIR -> 60.0 02:SN13A 7725.000 55.347 No_date 115:00 186.01 n/a
[RDT=60.00] out<- 60.0 01:RES_GM 7725.000 7.538 No_date 244:00 186.01 n/a
{MxStoUsed=.1011E+04}

#
# Output of Reservoir Goodwood Marsh routed from Node 13A to Node 12
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
100:0034-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 60.0 02:RES_GM 7725.000 7.538 No_date 244:00 186.01 n/a
[RDT=60.00] out<- 60.0 01:N12 7725.000 7.536 No_date 246:00 186.01 n/a
[L/S/n= 5926./ .076/.025]
{Vmax= .935:Dmax= 1.661}

#
# Addition of Subwatershed Jock River at Ashton to Node 12
#
100:0035-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 60.0 02:N12 7725.000 7.536 No_date 246:00 186.01 n/a
+ 60.0 03:JR_ASH 1781.000 16.129 No_date 113:00 186.01 n/a
[DT=60.00] SUM= 60.0 01:S_N12 9506.000 20.357 No_date 113:00 186.01 n/a
100:0036-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD 60.0 01:S_N12 9506.000 20.357 No_date 113:00 186.01 n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H_SN12.100

```

remark:flow at Ashton, node 12

```
#
# Sum of hydrographs from Node 12 routed to Node 11
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
100:0037-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N12    9506.000    20.357 No_date  113:00  186.01  n/a
[RDt=60.00] out<- 60.0 01:N11    9506.000    20.271 No_date  113:00  186.01  n/a
[L/S/n= 972./ .051/.025]
{Vmax= 1.065:Dmax= 2.615}
```

```
#
# Addition of Subwatershed 11 and Cramed Creek to Node 11
#
100:0038-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 60.0 03:SW_11    500.000    5.607 No_date  110:00  186.01  n/a
      + 60.0 04:NN_CK    1917.000   19.017 No_date  112:00  186.01  n/a
[DT=60.00] SUM= 60.0 01:S_N11  11923.000  43.555 No_date  112:00  186.01  n/a
```

```
#
# Sum of hydrographs from Node 11 routed to Node 10
# Section 1
# Use variable n for summer conditions and n=0.025 for spring conditions
100:0039-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N11    11923.000   43.555 No_date  112:00  186.01  n/a
[RDt=60.00] out<- 60.0 01:N10    11923.000   38.748 No_date  114:00  186.01  n/a
[L/S/n=14028./ .157/.025]
{Vmax= 1.226:Dmax= 1.051}
```

```
#
# Addition of Subwatershed 10 and Kings Creek to Node 10
#
100:0040-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 60.0 03:SW_10    5666.000   44.778 No_date  114:00  186.01  n/a
      + 60.0 04:KG_CK    8376.000   58.238 No_date  115:00  186.01  n/a
[DT=60.00] SUM= 60.0 01:S_N10  25965.000  141.293 No_date  115:00  186.01  n/a
100:0041-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD
      60.0 01:S_N10    25965.000  141.293 No_date  115:00  186.01  n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N10.100
remark:Flow near Franktown Rd Gauge
```

```
#
# Sum of hydrographs from Node 10 routed to Node 9
# Section 2
# Use variable n for summer conditions and n=0.025 for spring conditions
#
100:0042-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N10    25965.000  141.293 No_date  115:00  186.01  n/a
[RDt=60.00] out<- 60.0 01:N9    25965.000  139.745 No_date  115:00  186.01  n/a
[L/S/n= 3982./ .075/.025]
{Vmax= 1.405:Dmax= 1.909}
```

```
#
# Addition of Subwatershed 9 and Nichols Creek to Node 9
#
100:0043-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 60.0 03:SW_9    1132.000   12.502 No_date  110:00  186.01  n/a
      + 60.0 04:NC_CK    4464.000   32.322 No_date  115:00  186.01  n/a
[DT=60.00] SUM= 60.0 01:S_N9    31561.000  177.003 No_date  115:00  186.01  n/a
```

```
#
# Sum of hydrographs from Node 9 routed to Node 8
# Section 3
# Use variable n for summer conditions and n=0.025 for spring conditions
#
100:0044-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N9    31561.000  177.003 No_date  115:00  186.01  n/a
```

```

[RDT=60.00] out<- 60.0 01:N8      31561.000  175.403 No_date  116:00  186.01  n/a
[L/S/n= 2269./ .088/.025]
{Vmax= .899:Dmax= 1.653}

#
# Addition of Subwatershed 8 and Hobb's Drain to Node 8
#
100:0045-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          60.0 02:N8      31561.000  175.403 No_date  116:00  186.01  n/a
                + 60.0 03:SW_8      131.000    1.504 No_date  109:00  186.01  n/a
                + 60.0 04:HB_DR     3854.000   31.074 No_date  114:00  186.01  n/a
  [DT=60.00] SUM= 60.0 01:S_N8     35546.000  205.993 No_date  115:00  186.01  n/a

#
# Sum of hydrographs from Node 8 routed to Node 7
# Section 4
# Use variable n for summer conditions and n=0.025 for spring conditions
#
100:0046-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL  -> 60.0 02:S_N8     35546.000  205.993 No_date  115:00  186.01  n/a
  [RDT=60.00] out<- 60.0 01:N7      35546.000  199.309 No_date  116:00  186.01  n/a
  [L/S/n= 3750./ .053/.025]
  {Vmax= .767:Dmax= 1.817}

#
# Addition of Subwatershed 7 to Node 7
#
100:0047-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          60.0 02:N7      35546.000  199.309 No_date  116:00  186.01  n/a
                + 60.0 03:SW_7      3197.000   29.646 No_date  113:00  186.01  n/a
  [DT=60.00] SUM= 60.0 01:S_N7     38743.000  221.810 No_date  116:00  186.01  n/a
100:0048-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  SAVE HYD        60.0 01:S_N7     38743.000  221.810 No_date  116:00  186.01  n/a
  fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N7.100
  remark:INFLOW FROM FEN

# Insertion of a reservoir to simulate the effects of the Richmond Fen.
# Storage area and volumes were estimated from available topo maps.
# Release rate from fen was assumed to be controlled by the downstream
# river cross-section for spring conditions. It is was assumed that for up to
# 0.75 m of water, the main channel of the river provided the storage. Above
# this depth, the wetland starts to significantly store water.
#
100:0049-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE RESERVOIR -> 60.0 02:S_N7     38743.000  221.810 No_date  116:00  186.01  n/a
  [RDT=60.00] out<- 60.0 01:RES_RF   38743.000  144.980 No_date  122:00  186.01  n/a
  {MxStoUsed=.5515E+03}

#
100:0050-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  SAVE HYD        60.0 01:RES_RF   38743.000  144.980 No_date  122:00  186.01  n/a
  fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-RES_RF.100
  remark:OUTFLOW FROM FEN

#
# Sum of hydrographs from Node 7 routed to Node 6
# Section 5
# Use variable n for summer conditions and n=0.025 for spring conditions
#
100:0051-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL  -> 60.0 02:RES_RF   38743.000  144.980 No_date  122:00  186.01  n/a
  [RDT=60.00] out<- 60.0 01:N6      38743.000  144.834 No_date  123:00  186.01  n/a
  [L/S/n= 3056./ .082/.025]
  {Vmax= 1.212:Dmax= 1.429}

#
# Addition of Subwatershed 6 and Van Gaal Drain to Node 6
#
100:0052-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          60.0 02:N6      38743.000  144.834 No_date  123:00  186.01  n/a
                + 60.0 03:SW_6      165.000    1.709 No_date  111:00  186.01  n/a

```

```

+      60.0 04:VG_DR      1332.000   12.448 No_date  113:00  186.01  n/a
[DT=60.00] SUM=      60.0 01:S_N6      40240.010  147.245 No_date  123:00  186.01  n/a

#
# Sum of hydrographs from Node 6 routed to Node 5
# Section 6
# Use variable n for summer conditions and n=0.025 for spring conditions
#
100:0053-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->   60.0 02:S_N6      40240.010  147.245 No_date  123:00  186.01  n/a
[RDT=60.00] out<- 60.0 01:N5      40240.010  147.204 No_date  123:00  186.01  n/a
[L/S/n= 1852./ .054/.025]
{Vmax= .970:Dmax= 1.656}

#
# Addition of Subwatershed 5 and Flowing Creek to Node 5
#
100:0054-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
+      60.0 02:N5      40240.010  147.204 No_date  123:00  186.01  n/a
+      60.0 03:SW_5      224.000    2.549 No_date  109:00  186.01  n/a
+      60.0 04:FL_CK      4945.000   45.695 No_date  113:00  186.01  n/a
[DT=60.00] SUM=      60.0 01:S_N5      45409.010  161.992 No_date  139:00  186.01  n/a

#
# Sum of hydrographs from Node 5 routed to Node 5A
# Section 7
# Use variable n for summer conditions and n=0.025 for spring conditions
#
100:0055-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->   60.0 02:S_N5      45409.010  161.992 No_date  139:00  186.01  n/a
[RDT=60.00] out<- 60.0 01:N5A      45409.010  162.048 No_date  139:00  186.01  n/a
[L/S/n= 556./ .090/.025]
{Vmax= 1.061:Dmax= 1.375}

#
# Addition of Subwatershed 5A1 and Subwatershed 5A2 to Node 5A
#
100:0056-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
+      60.0 02:N5A      45409.010  162.048 No_date  139:00  186.01  n/a
+      60.0 03:SW_5A2      20.000    .229 No_date  109:00  186.01  n/a
+      60.0 04:SW_5A1      1412.000   11.536 No_date  114:00  186.01  n/a
[DT=60.00] SUM=      60.0 01:S_N5A      46841.010  170.892 No_date  139:00  186.01  n/a

#
# Sum of hydrographs from Node 5A routed to Node 4
# Section 8
# Use variable n for summer conditions and n=0.025 for spring conditions
#
100:0057-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->   60.0 02:S_N5A      46841.010  170.892 No_date  139:00  186.01  n/a
[RDT=60.00] out<- 60.0 01:N4      46841.010  170.344 No_date  140:00  186.01  n/a
[L/S/n= 4630./ .043/.025]
{Vmax= 1.383:Dmax= 4.319}

#
# Addition of Subwatershed 4 and Leamy Creek to Node 4
#
100:0058-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
+      60.0 02:N4      46841.010  170.344 No_date  140:00  186.01  n/a
+      60.0 03:SW_4      585.000    6.348 No_date  111:00  186.01  n/a
+      60.0 04:LM_CK      1021.000   10.485 No_date  112:00  186.01  n/a
[DT=60.00] SUM=      60.0 01:S_N4      48447.000  178.608 No_date  138:00  186.01  n/a
100:0059-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD      60.0 01:S_N4      48447.000  178.608 No_date  138:00  186.01  n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N4.100
remark:flow at S_N4

#
# Sum of hydrographs from Node 4 routed to Node 2
# Section 9
# Use variable n for summer conditions and n=0.025 for spring conditions

```

```

#
100:0060-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N4      48447.000  178.608 No_date  138:00  186.01  n/a
[RDT=60.00] out<- 60.0 01:N2      48447.000  178.632 No_date  138:00  186.01  n/a
[L/S/n= 1667./ .060/.025]
{Vmax= 1.571:Dmax= 4.135}

```

```

#
# Addition of Subwatershed 2 with Monohan Drain and Smith Drain to Node 2
#

```

```

100:0061-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 60.0 03:SW_2      177.000    2.015 No_date  109:00  186.01  n/a
      + 60.0 04:SM_DR     1122.000   10.775 No_date  112:00  186.01  n/a
      + 60.0 05:MO_DR     2737.000   26.915 No_date  112:00  186.01  n/a
[DT=60.00] SUM= 60.0 01:S_N2      52483.000  206.358 No_date  137:00  186.01  n/a
100:0062-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD      60.0 01:S_N2      52483.000  206.358 No_date  137:00  186.01  n/a
fname :c:\JFSA\P411\SWMHYMO\SPRING~2\H-S_N2.100
remark:flow at S_N2 - Jock River at Moodie

```

```

#
# Sum of hydrographs from Node 2 routed to Node 1
# Section 10
# Use variable n for summer conditions and n=0.025 for spring conditions
#

```

```

100:0063-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  60.0 02:S_N2      52483.000  206.358 No_date  137:00  186.01  n/a
[RDT=60.00] out<- 60.0 01:N1      52483.000  204.250 No_date  138:00  186.01  n/a
[L/S/n=10046./ .050/.025]
{Vmax= 1.863:Dmax= 4.103}

```

```

#
# Addition of Subwatershed 1 to Node 1
#

```

```

100:0064-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 60.0 03:SW_1      3176.000    29.704 No_date  113:00  186.01  n/a
[DT=60.00] SUM= 60.0 01:N1      55659.000  226.250 No_date  138:00  186.01  n/a
** END OF RUN : 105

```

\*\*\*\*\*

## **Summer Event Output**

=====  
SSSSS W W M M H H Y Y M M OOO 999 999 =====  
S W W W MM MM H H Y Y MM MM O O 9 9 9 9  
SSSSS W W W M M M HHHHH Y M M M O O ## 9 9 9 9 Ver5 Beta  
S W W M M H H Y M M O O 9999 9999 Sept 2000  
SSSSS W W M M H H Y M M OOO 9 9 =====  
9 9 9 9 # 2549237  
StormWater Management Hydrologic Model 999 999 =====

\*\*\*\*\*  
\*\*\*\*\* SWMHYMO Ver/5.02 \*\*\*\*\*  
\*\*\*\*\* A single event and continuous hydrologic simulation model \*\*\*\*\*  
\*\*\*\*\* based on the principles of HYMO and its successors \*\*\*\*\*  
\*\*\*\*\* OTTHYMO-83 and OTTHYMO-89. \*\*\*\*\*  
\*\*\*\*\* Distributed by: J.F. Sabourin and Associates Inc. \*\*\*\*\*  
\*\*\*\*\* Ottawa, Ontario: (613) 727-5199 \*\*\*\*\*  
\*\*\*\*\* Gatineau, Quebec: (819) 243-6858 \*\*\*\*\*  
\*\*\*\*\* E-Mail: swmhymo@jfsa.Com \*\*\*\*\*  
\*\*\*\*\*

++++++  
++++++ Licensed user: JFSAinc. ++++++  
++++++ Gatineau SERIAL#:2549237 ++++++  
++++++

\*\*\*\*\*  
\*\*\*\*\* +++++ PROGRAM ARRAY DIMENSIONS +++++ \*\*\*\*\*  
\*\*\*\*\* Maximum value for ID numbers : 10 \*\*\*\*\*  
\*\*\*\*\* Max. number of rainfall points: 52750 \*\*\*\*\*  
\*\*\*\*\* Max. number of flow points : 52750 \*\*\*\*\*  
\*\*\*\*\*

\*\*\* DESCRIPTION SUMMARY TABLE HEADERS (units depend on METOUT in START) \*\*\*  
\*\*\*-----  
\*\*\* ID: Hydrograph IDentification numbers, (1-10). \*\*\*  
\*\*\* NHYD: Hydrograph reference numbers, (8 digits or characters). \*\*\*  
\*\*\* AREA: Drainage area associated with hydrograph, (ac.) or (ha.). \*\*\*  
\*\*\* QPEAK: Peak flow of simulated hydrograph, (ft^3/s) or (m^3/s). \*\*\*  
\*\*\* TpeakDate\_hh:mm is the date and time of the peak flow. \*\*\*  
\*\*\* R.V.: Runoff Volume of simulated hydrograph, (in) or (mm). \*\*\*  
\*\*\* R.C.: Runoff Coefficient of simulated hydrograph, (ratio). \*\*\*  
\*\*\* \*: see WARNING or NOTE message printed at end of run. \*\*\*  
\*\*\* \*\*: see ERROR message printed at end of run. \*\*\*  
\*\*\*\*\*  
\*\*\*\*\*

::

\*\*\*\*\*  
\*\*\*\*\* S U M M A R Y O U T P U T \*\*\*\*\*  
\*\*\*\*\*  
\* DATE: 2004-03-25 TIME: 17:59:42 RUN COUNTER: 000786 \*  
\*\*\*\*\*  
\* Input filename: c:\JFSA\P411\SWMHYMO\SUMMER~1\SUM-DES.DAT \*  
\* Output filename: c:\JFSA\P411\SWMHYMO\SUMMER~1\SUM-DES.out \*  
\* Summary filename: c:\JFSA\P411\SWMHYMO\SUMMER~1\SUM-DES.sum \*  
\* User comments: \*  
\* 1: \_\_\_\_\_ \*  
\* 2: \_\_\_\_\_ \*  
\* 3: \_\_\_\_\_ \*  
\*\*\*\*\*

#####  
# SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE  
#####  
# Project Name: [Jock River] Project Number: [411-02]



```

# Date      : 06-06-2003
# Modeller  : [JoF]
# Company   : JFSAinc.
# License # : 2549237
#*****
# CALIBRATION OF SUMMER MODEL PARAMETERS
# USING CONTINUOUS SIMULATIONS
# Rainfall data from JFSA raingauge installed at site + other gauges by the City
# Use data collected from May 1st to July 14, 2003

# -----
** END OF RUN : 1

*****

RUN:COMMAND#
002:0001-----
START
[TZERO = .00 hrs on 0]
[METOUT= 2 (1=imperial, 2=metric output)]
[NSTORM= 1 ]
[NRUN = 2 ]

#*****
# SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
#*****
# Project Name: [Jock River] Project Number: [411-02]
# Date : 06-06-2003
# Modeller : [JoF]
# Company : JFSAinc.
# License # : 2549237
#*****
# CALIBRATION OF SUMMER MODEL PARAMETERS
# USING CONTINUOUS SIMULATIONS
# Rainfall data from JFSA raingauge installed at site + other gauges by the City
# Use data collected from May 1st to July 14, 2003

# -----
002:0002-----
READ STORM
Filename = storm.001
Comment = Pluie SCS de 24 hres 1:2 ans pour Ottawa CDA
[SDT=10.00:SDUR= 24.00:PTOT= 45.51]
002:0003-----
MODIFY STORM
[RFACT= 1.00:TSHIFT= 960.00 min]
[SDT=10.00:SDUR= 40.00:PTOT= 45.51]
002:0004-----
COMPUTE API
[APIini= 50.00: APIkdy= .8500: APIkdt= .9989]
{APIimax= 80.12: APIavg= 56.74: APIimin= 44.87}

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.32
002:0005-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:JR_HW 3680.000 6.065 No_date 37:00 11.44 .251
[CN= 64.0: N= 3.00]
[Tp= 7.13:DT=30.00]
[IaREC= 4.00: SMIN= 57.05: SMAX=380.32: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.32
002:0006-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_13 971.000 2.154 No_date 32:30 10.72 .236

```

[CN= 61.0: N= 3.00]  
[Tp= 3.76:DT=30.00]  
[IaREC= 4.00: SMIN= 64.50: SMAX=430.01: SK= .010]  
[InterEventTime= 12.00]

#  
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)  
# of 1.80  
002:0007-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 30.0 01:JR\_GWM 3074.000 3.115 No\_date 39:30 9.41 .207  
[CN= 55.0: N= 3.00]  
[Tp=11.33:DT=30.00]  
[IaREC= 4.00: SMIN= 83.24: SMAX=554.96: SK= .010]  
[InterEventTime= 12.00]  
002:0008-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 30.0 01:JR\_ASH 1781.000 5.417 No\_date 32:30 13.91 .306  
[CN= 72.0: N= 3.00]  
[Tp= 3.91:DT=30.00]  
[IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]  
[InterEventTime= 12.00]  
002:0009-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 30.0 01:SW\_11 500.000 2.663 No\_date 29:00 11.95 .263  
[CN= 66.0: N= 3.00]  
[Tp= 1.24:DT=30.00]  
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]  
[InterEventTime= 12.00]

#  
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)  
# of 1.80  
002:0010-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 30.0 01:NN\_CK 1917.000 3.966 No\_date 34:30 11.95 .263  
[CN= 66.0: N= 3.00]  
[Tp= 5.29:DT=30.00]  
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]  
[InterEventTime= 12.00]

#  
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)  
# of 1.52  
002:0011-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 30.0 01:SW\_10 5666.000 10.936 No\_date 38:00 13.91 .306  
[CN= 72.0: N= 3.00]  
[Tp= 8.00:DT=30.00]  
[IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]  
[InterEventTime= 12.00]

#  
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)  
# of 1.75  
002:0012-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 30.0 01:KG\_CK 8376.000 10.656 No\_date 39:30 11.95 .263  
[CN= 66.0: N= 3.00]  
[Tp=11.66:DT=30.00]  
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]  
[InterEventTime= 12.00]

#  
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)  
# of 1.68  
002:0013-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 30.0 01:SW\_9 1132.000 4.365 No\_date 30:30 13.32 .293  
[CN= 70.0: N= 3.00]  
[Tp= 2.51:DT=30.00]  
[IaREC= 4.00: SMIN= 43.07: SMAX=287.10: SK= .010]  
[InterEventTime= 12.00]

#  
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)  
# of 1.82  
002:0014-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-

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CONTINUOUS NASHYD 30.0 01:NC_CK 4464.000 5.312 No_date 39:30 10.96 .241
[CN= 62.0: N= 3.00]
[Tp=11.32:DT=30.00]
[IaREC= 4.00: SMIN= 61.90: SMAX=412.66: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.80
002:0015-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_8 131.000 .770 No_date 28:30 11.20 .246
[CN= 63.0: N= 3.00]
[Tp= .90:DT=30.00]
[IaREC= 4.00: SMIN= 59.42: SMAX=396.11: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.65
002:0016-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:HB_DR 3854.000 6.083 No_date 38:30 11.95 .263
[CN= 66.0: N= 3.00]
[Tp= 8.42:DT=30.00]
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.82
002:0017-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_7 3197.000 4.557 No_date 36:30 9.83 .216
[CN= 57.0: N= 3.00]
[Tp= 6.65:DT=30.00]
[IaREC= 4.00: SMIN= 76.32: SMAX=508.81: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.75
002:0018-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_6 165.000 .407 No_date 33:00 12.21 .268
[CN= 67.0: N= 3.00]
[Tp= 4.18:DT=30.00]
[IaREC= 4.00: SMIN= 50.55: SMAX=336.97: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.67
002:0019-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:VG_DR 1332.000 3.083 No_date 35:00 13.91 .306
[CN= 72.0: N= 3.00]
[Tp= 5.95:DT=30.00]
[IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]
[InterEventTime= 12.00]
002:0020-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_5 224.000 2.527 No_date 28:30 15.88 .349
[CN= 77.0: N= 3.00]
[Tp= .75:DT=30.00]
[IaREC= 4.00: SMIN= 31.15: SMAX=207.66: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.20
002:0021-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:FL_CK 4945.000 14.579 No_date 33:00 14.54 .319
[CN= 74.0: N= 3.00]
[Tp= 4.45:DT=30.00]
[IaREC= 4.00: SMIN= 36.67: SMAX=244.49: SK= .010]
[InterEventTime= 12.00]

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002:0022-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_5A2 20.000 .287 No_date 28:30 17.76 .390
  [CN= 81.0: N= 3.00]
  [Tp= .62:DT=30.00]
  [IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
  [InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.61
002:0023-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_5A1 1412.000 3.007 No_date 38:00 15.19 .334
  [CN= 75.0: N= 3.00]
  [Tp= 8.00:DT=30.00]
  [IaREC= 4.00: SMIN= 33.81: SMAX=225.43: SK= .010]
  [InterEventTime= 12.00]
002:0024-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_4 585.000 4.232 No_date 29:30 17.76 .390
  [CN= 81.0: N= 3.00]
  [Tp= 1.75:DT=30.00]
  [IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
  [InterEventTime= 12.00]
002:0025-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:LM_CK 1021.000 5.667 No_date 30:30 17.36 .382
  [CN= 80.0: N= 3.00]
  [Tp= 2.46:DT=30.00]
  [IaREC= 4.00: SMIN= 26.32: SMAX=175.50: SK= .010]
  [InterEventTime= 12.00]
002:0026-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_2 177.000 1.996 No_date 28:30 15.88 .349
  [CN= 77.0: N= 3.00]
  [Tp= .75:DT=30.00]
  [IaREC= 4.00: SMIN= 31.15: SMAX=207.66: SK= .010]
  [InterEventTime= 12.00]
002:0027-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SM_DR 1122.000 5.257 No_date 31:30 17.76 .390
  [CN= 81.0: N= 3.00]
  [Tp= 3.25:DT=30.00]
  [IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
  [InterEventTime= 12.00]
002:0028-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:MO_DR 2737.000 11.338 No_date 31:30 15.53 .341
  [CN= 76.0: N= 3.00]
  [Tp= 3.03:DT=30.00]
  [IaREC= 4.00: SMIN= 32.46: SMAX=216.39: SK= .010]
  [InterEventTime= 12.00]
002:0029-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_1 3176.000 12.490 No_date 32:00 16.23 .357
  [CN= 78.0: N= 3.00]
  [Tp= 3.56:DT=30.00]
  [IaREC= 4.00: SMIN= 29.88: SMAX=199.22: SK= .010]
  [InterEventTime= 12.00]

#
# Routing hydrographs
#
# Starting with the addition of Jock River Headwater and Subwatershed 13
#
002:0030-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD 30.0 02:JR_HW 3680.000 6.065 No_date 37:00 11.44 n/a
    + 30.0 03:SW_13 971.000 2.154 No_date 32:30 10.72 n/a
  [DT=30.00] SUM= 30.0 01:S_N13 4651.000 7.713 No_date 35:30 11.29 n/a

#
# Sum of hydrographs from Node 13 routed to Node 13A
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
#
002:0031-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL -> 30.0 02:S_N13 4651.000 7.713 No_date 35:30 11.29 n/a
  [RDT=30.00] out<- 30.0 01:N13A 4651.000 6.154 No_date 39:30 11.29 n/a

```

[L/S/n= 9074./ .022/.040]  
{Vmax= .427:Dmax= 2.537}

#  
# Addition of Subwatershed Jock River at Goodwood Marsh to Node 13A  
#

002:0032-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
ADD HYD                   30.0 02:N13A       4651.000    6.154 No\_date   39:30   11.29 n/a  
                          +   30.0 03:JR\_GWM    3074.000    3.115 No\_date   39:30    9.41 n/a  
    [DT=30.00] SUM=    30.0 01:SN13A    7725.000    9.269 No\_date   39:30   10.54 n/a

#  
# Insertion of a reservoir to simulate the effects of the Goodwood Marsh  
#

002:0033-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
ROUTE RESERVOIR ->   30.0 02:SN13A       7725.000    9.269 No\_date   39:30   10.54 n/a  
  [RDT=30.00] out<-  30.0 01:RES\_GM       7725.000    2.603 No\_date   55:30   10.54 n/a  
{MxStoUsed=.3498E+02}

#  
002:0034-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
SAVE HYD                30.0 01:RES\_GM       7725.000    2.603 No\_date   55:30   10.54 n/a  
  fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H\_RESGM.002  
  remark:Outflow from Res GM

# Output of Reservoir Goodwood Marsh routed from Node 13A to Node 12  
# (Approximated cross-section - see cross-section 258)  
# Use n=0.04 for summer conditions and n=0.025 for spring conditions

002:0035-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
ROUTE CHANNEL ->    30.0 02:RES\_GM       7725.000    2.603 No\_date   55:30   10.54 n/a  
  [RDT=30.00] out<-  30.0 01:N12        7725.000    2.594 No\_date   58:00   10.54 n/a  
  [L/S/n= 5926./ .076/.040]  
  {Vmax= .501:Dmax= 1.326}

#  
# Addition of Subwatershed Jock River at Ashton to Node 12  
#

002:0036-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
ADD HYD                   30.0 02:N12        7725.000    2.594 No\_date   58:00   10.54 n/a  
                          +   30.0 03:JR\_ASH    1781.000    5.417 No\_date   32:30   13.91 n/a  
    [DT=30.00] SUM=    30.0 01:S\_N12    9506.000    7.371 No\_date   32:30   11.17 n/a  
002:0037-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
SAVE HYD                30.0 01:S\_N12       9506.000    7.371 No\_date   32:30   11.17 n/a  
  fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H\_SN12.002  
  remark:flow at S\_N12

#  
# Sum of hydrographs from Node 12 routed to Node 11  
# (Approximated cross-section - see cross-section 258)  
# Use n=0.04 for summer conditions and n=0.025 for spring conditions

002:0038-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
ROUTE CHANNEL ->    30.0 02:S\_N12       9506.000    7.371 No\_date   32:30   11.17 n/a  
  [RDT=30.00] out<-  30.0 01:N11        9506.000    7.317 No\_date   33:00   11.17 n/a  
  [L/S/n= 972./ .051/.040]  
  {Vmax= .580:Dmax= 2.119}

#  
# Sum of hydrographs from Node 12 routed to Node 11 with Dummy section 248  
#

002:0039-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
ROUTE CHANNEL ->    30.0 02:S\_N12       9506.000    7.371 No\_date   32:30   11.17 n/a  
  [RDT=30.00] out<-  30.0 01:Dum11    9506.000    7.320 No\_date   33:00   11.17 n/a  
  [L/S/n= 972./ .054/.040]  
  {Vmax= .589:Dmax= 2.098}

#  
# Addition of Subwatershed 11 and No Name Creek to Node 11  
#

002:0040-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
ADD HYD                   30.0 02:Dum11       9506.000    7.320 No\_date   33:00   11.17 n/a  
                          +   30.0 03:SW\_11        500.000    2.663 No\_date   29:00   11.95 n/a

```

+ 30.0 04:NN_CK 1917.000 3.966 No_date 34:30 11.95 n/a
[DT=30.00] SUM= 30.0 01:S_N11 11923.000 11.951 No_date 33:00 11.33 n/a
#
# Sum of hydrographs from Node 11 routed to Node 10
# Section 1
#
002:0041-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N11 11923.000 11.951 No_date 33:00 11.33 n/a
[RDT=30.00] out<- 30.0 01:N10 11923.000 8.216 No_date 39:30 11.33 n/a
[L/S/n=14028./ .157/.040]
{Vmax= .460:Dmax= .881}
#
# Addition of Subwatershed 10 to Node 10
#
002:0042-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:N10 11923.000 8.216 No_date 39:30 11.33 n/a
+ 30.0 03:SW_10 5666.000 10.936 No_date 38:00 13.91 n/a
[DT=30.00] SUM= 30.0 01:S_N10 17589.000 19.098 No_date 38:30 12.16 n/a
002:0043-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD 30.0 01:S_N10 17589.000 19.098 No_date 38:30 12.16 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN10.002
remark:flow at S_N10: N10 + SW_10
# Addition of Kings Creek to S_N10
#
002:0044-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:S_N10 17589.000 19.098 No_date 38:30 12.16 n/a
+ 30.0 03:KG_CK 8376.000 10.656 No_date 39:30 11.95 n/a
[DT=30.00] SUM= 30.0 01:S_N10A 25965.000 29.622 No_date 39:30 12.09 n/a
#
# Sum of hydrographs from Node 10 routed to Node 9
# Section 2
#
002:0045-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N10A 25965.000 29.622 No_date 39:30 12.09 n/a
[RDT=30.00] out<- 30.0 01:N9 25965.000 28.881 No_date 39:30 12.09 n/a
[L/S/n= 3982./ .075/.040]
{Vmax= .591:Dmax= 1.193}
#
# Addition of Subwatershed 9 and Nichols Creek to Node 9
#
002:0046-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:N9 25965.000 28.881 No_date 39:30 12.09 n/a
+ 30.0 03:SW_9 1132.000 4.365 No_date 30:30 13.32 n/a
+ 30.0 04:NC_CK 4464.000 5.312 No_date 39:30 10.96 n/a
[DT=30.00] SUM= 30.0 01:S_N9 31561.000 35.488 No_date 39:30 11.98 n/a
#
# Sum of hydrographs from Node 9 routed to Node 8
# Section 3
#
002:0047-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N9 31561.000 35.488 No_date 39:30 11.98 n/a
[RDT=30.00] out<- 30.0 01:N8 31561.000 33.301 No_date 40:00 11.98 n/a
[L/S/n= 2269./ .088/.045]
{Vmax= .420:Dmax= 1.270}
#
# Addition of Subwatershed 8 and Hobb's Drain to Node 8
#
002:0048-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:N8 31561.000 33.301 No_date 40:00 11.98 n/a
+ 30.0 03:SW_8 131.000 .770 No_date 28:30 11.20 n/a
+ 30.0 04:HB_DR 3854.000 6.083 No_date 38:30 11.95 n/a
[DT=30.00] SUM= 30.0 01:S_N8 35546.000 39.356 No_date 39:30 11.97 n/a
#

```

```

# Sum of hydrographs from Node 8 routed to Node 7
# Section 4
#
002:0049-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:S_N8      35546.000  39.356 No_date  39:30  11.97  n/a
[RDT=30.00] out<-  30.0 01:N7      35546.000  32.170 No_date  44:00  11.97  n/a
[L/S/n= 3750./ .053/.070]
{Vmax= .209:Dmax= 1.635}

#
# Addition of Subwatershed 7 to Node 7
#
002:0050-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N7      35546.000  32.170 No_date  44:00  11.97  n/a
+              30.0 03:SW_7      3197.000   4.557 No_date  36:30   9.83  n/a
[DT=30.00] SUM=  30.0 01:S_N7      38743.000  34.345 No_date  43:00  11.79  n/a
002:0051-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD        30.0 01:S_N7      38743.000  34.345 No_date  43:00  11.79  n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN7.002
remark:flow at S_N7: N7 + SW_7

# Insertion of a reservoir to simulate the effects of the Richmond Fen.
# Storage area and volumes were estimated from available topo maps.
# Release rate from fen was assumed to be controlled by the downstream
# river cross-section for summer conditions. It is was assumed that for up to
# 0.75 m of water, the main channel of the river provided the storage. Above
# this depth, the wetland starts to signigicantly store water.
#
002:0052-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE RESERVOIR ->  30.0 02:S_N7      38743.000  34.345 No_date  43:00  11.79  n/a
[RDT=30.00] out<-  30.0 01:RES_RF  38743.000  23.075 No_date  54:30  11.79  n/a
{MxStoUsed=.7399E+02}
002:0053-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD        30.0 01:RES_RF  38743.000  23.075 No_date  54:30  11.79  n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_ResRF.002
remark:outflow of Richmond Fen

#
# Sum of hydrographs from Node 7 routed to Node 6
# Section 5
#
002:0054-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:RES_RF  38743.000  23.075 No_date  54:30  11.79  n/a
[RDT=30.00] out<-  30.0 01:N6      38743.000  23.052 No_date  56:00  11.79  n/a
[L/S/n= 3056./ .082/.025]
{Vmax= .431:Dmax= .805}

#
# Addition of Subwatershed 6 and Van Gaal Drain to Node 6
#
002:0055-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N6      38743.000  23.052 No_date  56:00  11.79  n/a
+              30.0 03:SW_6      165.000    .407 No_date  33:00  12.21  n/a
+              30.0 04:VG_DR      1332.000   3.083 No_date  35:00  13.91  n/a
[DT=30.00] SUM=  30.0 01:S_N6      40240.010  23.225 No_date  39:30  11.87  n/a

#
# Sum of hydrographs from Node 6 routed to Node 5
# Section 6
#
002:0056-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:S_N6      40240.010  23.225 No_date  39:30  11.87  n/a
[RDT=30.00] out<-  30.0 01:N5      40240.010  23.171 No_date  55:00  11.87  n/a
[L/S/n= 1852./ .054/.035]
{Vmax= .378:Dmax= .915}

#
# Addition of Subwatershed 5 and Flowing Creek to Node 5
#
002:0057-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N5      40240.010  23.171 No_date  55:00  11.87  n/a

```

```

+ 30.0 03:SW_5 224.000 2.527 No_date 28:30 15.88 n/a
+ 30.0 04:FL_CK 4945.000 14.579 No_date 33:00 14.54 n/a
[DT=30.00] SUM= 30.0 01:S_N5 45409.010 32.974 No_date 37:00 12.18 n/a

```

```

#
# Sum of hydrographs from Node 5 routed to Node 5A
# Section 7
#

```

```

002:0058-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N5 45409.010 32.974 No_date 37:00 12.18 n/a
[RDT=30.00] out<- 30.0 01:N5A 45409.010 32.921 No_date 37:00 12.18 n/a
[L/S/n= 556./ .090/.040]
{Vmax= .443:Dmax= .935}

```

```

#
# Addition of Subwatershed 5A1 and Subwatershed 5A2 to Node 5A
#

```

```

002:0059-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:N5A 45409.010 32.921 No_date 37:00 12.18 n/a
+ 30.0 03:SW_5A2 20.000 .287 No_date 28:30 17.76 n/a
+ 30.0 04:SW_5A1 1412.000 3.007 No_date 38:00 15.19 n/a
[DT=30.00] SUM= 30.0 01:S_N5A 46841.010 35.939 No_date 37:00 12.27 n/a

```

```

#
# Sum of hydrographs from Node 5A routed to Node 4
# Section 8
#

```

```

002:0060-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N5A 46841.010 35.939 No_date 37:00 12.27 n/a
[RDT=30.00] out<- 30.0 01:N4 46841.010 35.066 No_date 39:00 12.27 n/a
[L/S/n= 4630./ .043/.035]
{Vmax= .693:Dmax= 2.836}

```

```

#
# Addition of Subwatershed 4 and Leamy Creek to Node 4
#

```

```

002:0061-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:N4 46841.010 35.066 No_date 39:00 12.27 n/a
+ 30.0 03:SW_4 585.000 4.232 No_date 29:30 17.76 n/a
+ 30.0 04:LM_CK 1021.000 5.667 No_date 30:30 17.36 n/a
[DT=30.00] SUM= 30.0 01:S_N4 48447.000 37.399 No_date 38:30 12.44 n/a
002:0062-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD 30.0 01:S_N4 48447.000 37.399 No_date 38:30 12.44 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H-S_N4.002
remark:flow at S_N4

```

```

#
# Sum of hydrographs from Node 4 routed to Node 2
# Section 9
#

```

```

002:0063-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N4 48447.000 37.399 No_date 38:30 12.44 n/a
[RDT=30.00] out<- 30.0 01:N2 48447.000 37.299 No_date 39:00 12.44 n/a
[L/S/n= 1667./ .060/.040]
{Vmax= .714:Dmax= 2.841}

```

```

#
# Addition of Subwatershed 2 with Monohan Drain and Smith Drain to Node 2
#

```

```

002:0064-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:N2 48447.000 37.299 No_date 39:00 12.44 n/a
+ 30.0 03:SW_2 177.000 1.996 No_date 28:30 15.88 n/a
+ 30.0 04:SM_DR 1122.000 5.257 No_date 31:30 17.76 n/a
+ 30.0 05:MO_DR 2737.000 11.338 No_date 31:30 15.53 n/a
[DT=30.00] SUM= 30.0 01:S_N2 52483.000 45.676 No_date 33:30 12.73 n/a
002:0065-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD 30.0 01:S_N2 52483.000 45.676 No_date 33:30 12.73 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN2.002
remark:flow at S_N2 Jock River Gauge at Moodie Dr.

```

```

#

```



```
# Sum of hydrographs from Node 2 routed to Node 1
# Section 10
#
002:0066-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:S_N2      52483.000  45.676 No_date  33:30  12.73  n/a
[RDT=30.00] out<-  30.0 01:N1      52483.000  42.605 No_date  39:30  12.73  n/a
[L/S/n=10046./ .050/.040]
{Vmax= .767:Dmax= 2.662}
```

```
#
# Addition of Subwatershed 1 to Node 1
#
002:0067-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N1      52483.000  42.605 No_date  39:30  12.73  n/a
                +  30.0 03:SW_1   3176.000  12.490 No_date  32:00  16.23  n/a
[DT=30.00] SUM=  30.0 01:N1      55659.000  49.164 No_date  36:30  12.93  n/a
002:0068-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD        30.0 01:N1      55659.000  49.164 No_date  36:30  12.93  n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H-N1.002
remark:total outflow of Jock River
```

```
#####
** END OF RUN : 4
```

```
*****
```

```
RUN:COMMAND#
005:0001-----
START
[TZERO = .00 hrs on 0]
[METOUT= 2 (1=imperial, 2=metric output)]
[NSTORM= 1 ]
[NRUN = 5 ]
```

```
#####
# SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
#####
# Project Name: [Jock River] Project Number: [411-02]
# Date : 06-06-2003
# Modeller : [JoF]
# Company : JFSAinc.
# License # : 2549237
#####
# CALIBRATION OF SUMMER MODEL PARAMETERS
# USING CONTINUOUS SIMULATIONS
# Rainfall data from JFSA raingauge installed at site + other gauges by the City
# Use data collected from May 1st to July 14, 2003
```

```
# -----
005:0002-----
READ STORM
Filename = storm.001
Comment = Pluie SCS de 24 hres 1:5 ans pour Ottawa CDA
[SDT=10.00:SDUR= 24.00:PTOT= 57.12]
005:0003-----
MODIFY STORM
[RFAC= 1.00:TSHIFT= 960.00 min]
[SDT=10.00:SDUR= 40.00:PTOT= 57.12]
005:0004-----
COMPUTE API
[APIini= 50.00: APIkdy= .8500: APIkdt= .9989]
{APIimax= 90.83: APIavg= 60.09: APIimin= 44.87}
```

```
#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.32
005:0005-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
```

```

CONTINUOUS NASHYD 30.0 01:JR_HW 3680.000 9.169 No_date 37:00 16.38 .287
[CN= 64.0: N= 3.00]
[Tp= 7.13:DT=30.00]
[IaREC= 4.00: SMIN= 57.05: SMAX=380.32: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.32
005:0006-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_13 971.000 3.350 No_date 32:30 15.27 .267
[CN= 61.0: N= 3.00]
[Tp= 3.76:DT=30.00]
[IaREC= 4.00: SMIN= 64.50: SMAX=430.01: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.80
005:0007-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:JR_GWM 3074.000 4.511 No_date 39:30 13.20 .231
[CN= 55.0: N= 3.00]
[Tp=11.33:DT=30.00]
[IaREC= 4.00: SMIN= 83.24: SMAX=554.96: SK= .010]
[InterEventTime= 12.00]
005:0008-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:JR_ASH 1781.000 8.382 No_date 32:30 20.09 .352
[CN= 72.0: N= 3.00]
[Tp= 3.91:DT=30.00]
[IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]
[InterEventTime= 12.00]
005:0009-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_11 500.000 4.260 No_date 29:00 17.15 .300
[CN= 66.0: N= 3.00]
[Tp= 1.24:DT=30.00]
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.80
005:0010-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:NN_CK 1917.000 6.085 No_date 34:00 17.15 .300
[CN= 66.0: N= 3.00]
[Tp= 5.29:DT=30.00]
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.52
005:0011-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_10 5666.000 16.454 No_date 38:00 20.09 .352
[CN= 72.0: N= 3.00]
[Tp= 8.00:DT=30.00]
[IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.75
005:0012-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:KG_CK 8376.000 15.668 No_date 39:30 17.15 .300
[CN= 66.0: N= 3.00]
[Tp=11.66:DT=30.00]
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.68

```

```

005:0013-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_9 1132.000 6.854 No_date 30:30 19.22 .336
[CN= 70.0: N= 3.00]
[Tp= 2.51:DT=30.00]
[IaREC= 4.00: SMIN= 43.07: SMAX=287.10: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.82
005:0014-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:NC_CK 4464.000 7.795 No_date 39:30 15.63 .274
[CN= 62.0: N= 3.00]
[Tp=11.32:DT=30.00]
[IaREC= 4.00: SMIN= 61.90: SMAX=412.66: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.80
005:0015-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_8 131.000 1.239 No_date 28:30 16.00 .280
[CN= 63.0: N= 3.00]
[Tp= .90:DT=30.00]
[IaREC= 4.00: SMIN= 59.42: SMAX=396.11: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.65
005:0016-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:HB_DR 3854.000 9.126 No_date 38:30 17.15 .300
[CN= 66.0: N= 3.00]
[Tp= 8.42:DT=30.00]
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.82
005:0017-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_7 3197.000 6.873 No_date 36:00 13.87 .243
[CN= 57.0: N= 3.00]
[Tp= 6.65:DT=30.00]
[IaREC= 4.00: SMIN= 76.32: SMAX=508.81: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.75
005:0018-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_6 165.000 .630 No_date 33:00 17.55 .307
[CN= 67.0: N= 3.00]
[Tp= 4.18:DT=30.00]
[IaREC= 4.00: SMIN= 50.55: SMAX=336.97: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.67
005:0019-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:VG_DR 1332.000 4.700 No_date 35:00 20.09 .352
[CN= 72.0: N= 3.00]
[Tp= 5.95:DT=30.00]
[IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]
[InterEventTime= 12.00]
005:0020-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_5 224.000 3.985 No_date 28:30 22.94 .402
[CN= 77.0: N= 3.00]
[Tp= .75:DT=30.00]
[IaREC= 4.00: SMIN= 31.15: SMAX=207.66: SK= .010]

```

```

[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.20
005:0021-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:FL_CK 4945.000 22.432 No_date 33:00 21.01 .368
[CN= 74.0: N= 3.00]
[Tp= 4.45:DT=30.00]
[IaREC= 4.00: SMIN= 36.67: SMAX=244.49: SK= .010]
[InterEventTime= 12.00]
005:0022-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_5A2 20.000 .448 No_date 28:30 25.59 .448
[CN= 81.0: N= 3.00]
[Tp= .62:DT=30.00]
[IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.61
005:0023-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_5A1 1412.000 4.515 No_date 37:30 21.96 .384
[CN= 75.0: N= 3.00]
[Tp= 8.00:DT=30.00]
[IaREC= 4.00: SMIN= 33.81: SMAX=225.43: SK= .010]
[InterEventTime= 12.00]
005:0024-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_4 585.000 6.551 No_date 29:30 25.59 .448
[CN= 81.0: N= 3.00]
[Tp= 1.75:DT=30.00]
[IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
[InterEventTime= 12.00]
005:0025-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:LM_CK 1021.000 8.738 No_date 30:30 25.04 .438
[CN= 80.0: N= 3.00]
[Tp= 2.46:DT=30.00]
[IaREC= 4.00: SMIN= 26.32: SMAX=175.50: SK= .010]
[InterEventTime= 12.00]
005:0026-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_2 177.000 3.149 No_date 28:30 22.94 .402
[CN= 77.0: N= 3.00]
[Tp= .75:DT=30.00]
[IaREC= 4.00: SMIN= 31.15: SMAX=207.66: SK= .010]
[InterEventTime= 12.00]
005:0027-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SM_DR 1122.000 8.043 No_date 31:30 25.59 .448
[CN= 81.0: N= 3.00]
[Tp= 3.25:DT=30.00]
[IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
[InterEventTime= 12.00]
005:0028-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:MO_DR 2737.000 17.548 No_date 31:30 22.44 .393
[CN= 76.0: N= 3.00]
[Tp= 3.03:DT=30.00]
[IaREC= 4.00: SMIN= 32.46: SMAX=216.39: SK= .010]
[InterEventTime= 12.00]
005:0029-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_1 3176.000 19.206 No_date 32:00 23.45 .411
[CN= 78.0: N= 3.00]
[Tp= 3.56:DT=30.00]
[IaREC= 4.00: SMIN= 29.88: SMAX=199.22: SK= .010]
[InterEventTime= 12.00]

#
# Routing hydrographs
#
# Starting with the addition of Jock River Headwater and Subwatershed 13
#
005:0030-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:JR_HW 3680.000 9.169 No_date 37:00 16.38 n/a

```

```

+      30.0 03:SW_13      971.000      3.350 No_date      32:30      15.27 n/a
[DT=30.00] SUM=      30.0 01:S_N13      4651.000      11.688 No_date      35:30      16.15 n/a

#
# Sum of hydrographs from Node 13 routed to Node 13A
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
#
005:0031-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->      30.0 02:S_N13      4651.000      11.688 No_date      35:30      16.15 n/a
[RDT=30.00] out<-      30.0 01:N13A      4651.000      9.343 No_date      39:30      16.15 n/a
[L/S/n= 9074./ .022/.040]
{Vmax= .475:Dmax= 2.992}

#
# Addition of Subwatershed Jock River at Goodwood Marsh to Node 13A
#
005:0032-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD                30.0 02:N13A      4651.000      9.343 No_date      39:30      16.15 n/a
+                      30.0 03:JR_GWM      3074.000      4.511 No_date      39:30      13.20 n/a
[DT=30.00] SUM=      30.0 01:SN13A      7725.000      13.855 No_date      39:30      14.97 n/a

#
# Insertion of a reservoir to simulate the effects of the Goodwood Marsh
#
005:0033-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE RESERVOIR ->      30.0 02:SN13A      7725.000      13.855 No_date      39:30      14.97 n/a
[RDT=30.00] out<-      30.0 01:RES_GM      7725.000      3.124 No_date      58:00      14.97 n/a
{MxStoUsed=.6193E+02}

#
005:0034-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD                30.0 01:RES_GM      7725.000      3.124 No_date      58:00      14.97 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_RESGM.005
remark:Outflow from Res GM

# Output of Reservoir Goodwood Marsh routed from Node 13A to Node 12
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
005:0035-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->      30.0 02:RES_GM      7725.000      3.124 No_date      58:00      14.97 n/a
[RDT=30.00] out<-      30.0 01:N12      7725.000      3.114 No_date      60:30      14.97 n/a
[L/S/n= 5926./ .076/.040]
{Vmax= .525:Dmax= 1.424}

#
# Addition of Subwatershed Jock River at Ashton to Node 12
#
005:0036-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD                30.0 02:N12      7725.000      3.114 No_date      60:30      14.97 n/a
+                      30.0 03:JR_ASH      1781.000      8.382 No_date      32:30      20.09 n/a
[DT=30.00] SUM=      30.0 01:S_N12      9506.000      10.361 No_date      32:30      15.93 n/a
005:0037-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD                30.0 01:S_N12      9506.000      10.361 No_date      32:30      15.93 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN12.005
remark:flow at S_N12

#
# Sum of hydrographs from Node 12 routed to Node 11
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
005:0038-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->      30.0 02:S_N12      9506.000      10.361 No_date      32:30      15.93 n/a
[RDT=30.00] out<-      30.0 01:N11      9506.000      10.228 No_date      33:00      15.93 n/a
[L/S/n= 972./ .051/.040]
{Vmax= .634:Dmax= 2.417}

#
# Sum of hydrographs from Node 12 routed to Node 11 with Dummy section 248
#
005:0039-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-

```

```

ROUTE CHANNEL -> 30.0 02:S_N12 9506.000 10.361 No_date 32:30 15.93 n/a
[RDT=30.00] out<- 30.0 01:Dum11 9506.000 10.240 No_date 33:00 15.93 n/a
[L/S/n= 972./ .054/.040]
{Vmax= .645:Dmax= 2.392}

#
# Addition of Subwatershed 11 and No Name Creek to Node 11
#
005:0040-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:Dum11 9506.000 10.240 No_date 33:00 15.93 n/a
                + 30.0 03:SW_11 500.000 4.260 No_date 29:00 17.15 n/a
                + 30.0 04:NN_CK 1917.000 6.085 No_date 34:00 17.15 n/a
[DT=30.00] SUM= 30.0 01:S_N11 11923.000 17.312 No_date 33:00 16.18 n/a

#
# Sum of hydrographs from Node 11 routed to Node 10
# Section 1
#
005:0041-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N11 11923.000 17.312 No_date 33:00 16.18 n/a
[RDT=30.00] out<- 30.0 01:N10 11923.000 11.896 No_date 38:30 16.18 n/a
[L/S/n=14028./ .157/.040]
{Vmax= .462:Dmax= 1.078}

#
# Addition of Subwatershed 10 to Node 10
#
005:0042-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N10 11923.000 11.896 No_date 38:30 16.18 n/a
                + 30.0 03:SW_10 5666.000 16.454 No_date 38:00 20.09 n/a
[DT=30.00] SUM= 30.0 01:S_N10 17589.000 28.336 No_date 38:00 17.44 n/a
005:0043-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD         30.0 01:S_N10 17589.000 28.336 No_date 38:00 17.44 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN10.005
remark:flow at S_N10: N10 + SW_10

# Addition of Kings Creek to S_N10
#
005:0044-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:S_N10 17589.000 28.336 No_date 38:00 17.44 n/a
                + 30.0 03:KG_CK 8376.000 15.668 No_date 39:30 17.15 n/a
[DT=30.00] SUM= 30.0 01:S_N10A 25965.000 43.586 No_date 39:30 17.35 n/a

#
# Sum of hydrographs from Node 10 routed to Node 9
# Section 2
#
005:0045-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N10A 25965.000 43.586 No_date 39:30 17.35 n/a
[RDT=30.00] out<- 30.0 01:N9 25965.000 42.441 No_date 39:30 17.35 n/a
[L/S/n= 3982./ .075/.040]
{Vmax= .663:Dmax= 1.480}

#
# Addition of Subwatershed 9 and Nichols Creek to Node 9
#
005:0046-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N9 25965.000 42.441 No_date 39:30 17.35 n/a
                + 30.0 03:SW_9 1132.000 6.854 No_date 30:30 19.22 n/a
                + 30.0 04:NC_CK 4464.000 7.795 No_date 39:30 15.63 n/a
[DT=30.00] SUM= 30.0 01:S_N9 31561.000 52.066 No_date 39:30 17.17 n/a

#
# Sum of hydrographs from Node 9 routed to Node 8
# Section 3
#
005:0047-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N9 31561.000 52.066 No_date 39:30 17.17 n/a
[RDT=30.00] out<- 30.0 01:N8 31561.000 48.431 No_date 40:00 17.17 n/a
[L/S/n= 2269./ .088/.045]
{Vmax= .371:Dmax= 1.510}

```

```

#
# Addition of Subwatershed 8 and Hobb's Drain to Node 8
#
005:0048-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          30.0 02:N8      31561.000  48.431 No_date  40:00  17.17  n/a
                +  30.0 03:SW_8      131.000    1.239 No_date  28:30  16.00  n/a
                +  30.0 04:HB_DR      3854.000    9.126 No_date  38:30  17.15  n/a
  [DT=30.00] SUM=  30.0 01:S_N8      35546.000  57.169 No_date  39:30  17.17  n/a

#
# Sum of hydrographs from Node 8 routed to Node 7
# Section 4
#
005:0049-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL  ->  30.0 02:S_N8      35546.000  57.169 No_date  39:30  17.17  n/a
  [RDT=30.00] out<-  30.0 01:N7      35546.000  46.889 No_date  45:00  17.17  n/a
  [L/S/n= 3750./ .053/.070]
  {Vmax= .207:Dmax= 1.839}

#
# Addition of Subwatershed 7 to Node 7
#
005:0050-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          30.0 02:N7      35546.000  46.889 No_date  45:00  17.17  n/a
                +  30.0 03:SW_7      3197.000    6.873 No_date  36:00  13.87  n/a
  [DT=30.00] SUM=  30.0 01:S_N7      38743.000  50.119 No_date  43:30  16.89  n/a
005:0051-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  SAVE HYD         30.0 01:S_N7      38743.000  50.119 No_date  43:30  16.89  n/a
  fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN7.005
  remark:flow at S_N7: N7 + SW_7

# Insertion of a reservoir to simulate the effects of the Richmond Fen.
# Storage area and volumes were estimated from available topo maps.
# Release rate from fen was assumed to be controlled by the downstream
# river cross-section for summer conditions. It is was assumed that for up to
# 0.75 m of water, the main channel of the river provided the storage. Above
# this depth, the wetland starts to significantly store water.
#
005:0052-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE RESERVOIR ->  30.0 02:S_N7      38743.000  50.119 No_date  43:30  16.89  n/a
  [RDT=30.00] out<-  30.0 01:RES_RF      38743.000  27.645 No_date  59:00  16.89  n/a
  {MxStoUsed=.1713E+03}
005:0053-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  SAVE HYD         30.0 01:RES_RF      38743.000  27.645 No_date  59:00  16.89  n/a
  fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_ResRF.005
  remark:outflow of Richmond Fen

#
# Sum of hydrographs from Node 7 routed to Node 6
# Section 5
#
005:0054-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL  ->  30.0 02:RES_RF      38743.000  27.645 No_date  59:00  16.89  n/a
  [RDT=30.00] out<-  30.0 01:N6      38743.000  27.614 No_date  60:00  16.89  n/a
  [L/S/n= 3056./ .082/.025]
  {Vmax= .458:Dmax= .889}

#
# Addition of Subwatershed 6 and Van Gaal Drain to Node 6
#
005:0055-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD          30.0 02:N6      38743.000  27.614 No_date  60:00  16.89  n/a
                +  30.0 03:SW_6      165.000    .630 No_date  33:00  17.55  n/a
                +  30.0 04:VG_DR      1332.000    4.700 No_date  35:00  20.09  n/a
  [DT=30.00] SUM=  30.0 01:S_N6      40240.010  27.687 No_date  59:30  17.00  n/a

#
# Sum of hydrographs from Node 6 routed to Node 5
# Section 6
#

```

```

005:0056-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:S_N6      40240.010  27.687 No_date  59:30  17.00  n/a
[RDT=30.00] out<- 30.0 01:N5       40240.010  27.652 No_date  59:30  17.00  n/a
[L/S/n= 1852./ .054/.035]
{Vmax= .396:Dmax= .997}

```

```

#
# Addition of Subwatershed 5 and Flowing Creek to Node 5
#

```

```

005:0057-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N5      40240.010  27.652 No_date  59:30  17.00  n/a
                +  30.0 03:SW_5    224.000    3.985 No_date  28:30  22.94  n/a
                +  30.0 04:FL_CK   4945.000   22.432 No_date  33:00  21.01  n/a
[DT=30.00] SUM=  30.0 01:S_N5   45409.010  43.197 No_date  35:00  17.47  n/a

```

```

#
# Sum of hydrographs from Node 5 routed to Node 5A
# Section 7
#

```

```

005:0058-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:S_N5      45409.010  43.197 No_date  35:00  17.47  n/a
[RDT=30.00] out<- 30.0 01:N5A     45409.010  43.159 No_date  35:30  17.47  n/a
[L/S/n= 556./ .090/.040]
{Vmax= .464:Dmax= 1.057}

```

```

#
# Addition of Subwatershed 5A1 and Subwatershed 5A2 to Node 5A
#

```

```

005:0059-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N5A     45409.010  43.159 No_date  35:30  17.47  n/a
                +  30.0 03:SW_5A2    20.000     .448 No_date  28:30  25.59  n/a
                +  30.0 04:SW_5A1   1412.000    4.515 No_date  37:30  21.96  n/a
[DT=30.00] SUM=  30.0 01:S_N5A   46841.010  47.514 No_date  35:30  17.61  n/a

```

```

#
# Sum of hydrographs from Node 5A routed to Node 4
# Section 8
#

```

```

005:0060-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:S_N5A     46841.010  47.514 No_date  35:30  17.61  n/a
[RDT=30.00] out<- 30.0 01:N4     46841.010  45.852 No_date  37:30  17.61  n/a
[L/S/n= 4630./ .043/.035]
{Vmax= .753:Dmax= 3.105}

```

```

#
# Addition of Subwatershed 4 and Leamy Creek to Node 4
#

```

```

005:0061-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N4     46841.010  45.852 No_date  37:30  17.61  n/a
                +  30.0 03:SW_4     585.000    6.551 No_date  29:30  25.59  n/a
                +  30.0 04:LM_CK   1021.000    8.738 No_date  30:30  25.04  n/a
[DT=30.00] SUM=  30.0 01:S_N4   48447.000  49.994 No_date  36:30  17.86  n/a

```

```

005:0062-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD        30.0 01:S_N4     48447.000  49.994 No_date  36:30  17.86  n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H-S_N4.005
remark:flow at S_N4

```

```

#
# Sum of hydrographs from Node 4 routed to Node 2
# Section 9
#

```

```

005:0063-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:S_N4     48447.000  49.994 No_date  36:30  17.86  n/a
[RDT=30.00] out<- 30.0 01:N2     48447.000  49.884 No_date  37:00  17.86  n/a
[L/S/n= 1667./ .060/.040]
{Vmax= .780:Dmax= 3.124}

```

```

#
# Addition of Subwatershed 2 with Monohan Drain and Smith Drain to Node 2
#

```

```

005:0064-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-

```



```

ADD HYD          30.0 02:N2          48447.000    49.884 No_date    37:00    17.86  n/a
                + 30.0 03:SW_2          177.000     3.149 No_date    28:30    22.94  n/a
                + 30.0 04:SM_DR         1122.000     8.043 No_date    31:30    25.59  n/a
                + 30.0 05:MO_DR         2737.000    17.548 No_date    31:30    22.44  n/a
[DT=30.00] SUM= 30.0 01:S_N2         52483.000    66.292 No_date    33:00    18.28  n/a
005:0065-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
SAVE HYD          30.0 01:S_N2         52483.000    66.292 No_date    33:00    18.28  n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN2.005
remark:flow at S_N2 Jock River Gauge at Moodie Dr.

```

```

#
# Sum of hydrographs from Node 2 routed to Node 1
# Section 10
#

```

```

005:0066-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ROUTE CHANNEL  -> 30.0 02:S_N2         52483.000    66.292 No_date    33:00    18.28  n/a
[RDT=30.00] out<- 30.0 01:N1         52483.000    59.697 No_date    37:00    18.28  n/a
[L/S/n=10046./ .050/.040]
{Vmax= .861:Dmax= 3.201}

```

```

#
# Addition of Subwatershed 1 to Node 1
#

```

```

005:0067-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ADD HYD          30.0 02:N1          52483.000    59.697 No_date    37:00    18.28  n/a
                + 30.0 03:SW_1          3176.000    19.206 No_date    32:00    23.45  n/a
[DT=30.00] SUM= 30.0 01:N1         55659.000    72.079 No_date    35:00    18.58  n/a
005:0068-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
SAVE HYD          30.0 01:N1         55659.000    72.079 No_date    35:00    18.58  n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H-N1.005
remark:total outflow of Jock River

```

```

#####
** END OF RUN : 9

```

```

*****

```

```

RUN:COMMAND#
010:0001-----
START
[TZERO = .00 hrs on 0]
[METOUT= 2 (1=imperial, 2=metric output)]
[NSTORM= 1 ]
[NRUN = 10 ]

```

```

#####
# SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
#####
# Project Name: [Jock River] Project Number: [411-02]
# Date : 06-06-2003
# Modeller : [JoF]
# Company : JFSAinc.
# License # : 2549237
#####

```

```

# CALIBRATION OF SUMMER MODEL PARAMETERS
# USING CONTINUOUS SIMULATIONS
# Rainfall data from JFSA raingauge installed at site + other gauges by the City
# Use data collected from May 1st to July 14, 2003

```

```

# -----
010:0002-----
READ STORM
Filename = storm.001
Comment = Pluie SCS de 24 hres 1:10 ans pour Ottawa CDA
[SDT=10.00:SDUR= 24.00:PTOT= 64.69]
010:0003-----
MODIFY STORM

```

```

[RFAC= 1.00:TSHIFT= 960.00 min]
[SDT=10.00:SDUR= 40.00:PTOT= 64.69]
010:0004-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
COMPUTE API
[APIini= 50.00: APIkdy= .8500: APIkdt= .9989]
{APImax= 97.81: APIavg= 62.29: APImin= 44.87}

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.32
010:0005-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:JR_HW 3680.000 11.582 No_date 36:30 20.20 .312
[CN= 64.0: N= 3.00]
[Tp= 7.13:DT=30.00]
[IaREC= 4.00: SMIN= 57.05: SMAX=380.32: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.32
010:0006-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_13 971.000 4.293 No_date 32:30 18.81 .291
[CN= 61.0: N= 3.00]
[Tp= 3.76:DT=30.00]
[IaREC= 4.00: SMIN= 64.50: SMAX=430.01: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.80
010:0007-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:JR_GWM 3074.000 5.604 No_date 39:30 16.19 .250
[CN= 55.0: N= 3.00]
[Tp=11.33:DT=30.00]
[IaREC= 4.00: SMIN= 83.24: SMAX=554.96: SK= .010]
[InterEventTime= 12.00]
010:0008-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:JR_ASH 1781.000 10.659 No_date 32:30 24.78 .383
[CN= 72.0: N= 3.00]
[Tp= 3.91:DT=30.00]
[IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]
[InterEventTime= 12.00]
010:0009-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_11 500.000 5.516 No_date 29:00 21.17 .327
[CN= 66.0: N= 3.00]
[Tp= 1.24:DT=30.00]
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.80
010:0010-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:NN_CK 1917.000 7.737 No_date 34:00 21.17 .327
[CN= 66.0: N= 3.00]
[Tp= 5.29:DT=30.00]
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.52
010:0011-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_10 5666.000 20.651 No_date 37:30 24.78 .383
[CN= 72.0: N= 3.00]
[Tp= 8.00:DT=30.00]
[IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)

```

```

# of 1.75
010:0012-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:KG_CK      8376.000   19.522 No_date   39:30   21.17 .327
  [CN= 66.0: N= 3.00]
  [Tp=11.66:DT=30.00]
  [IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
  [InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.68
010:0013-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:SW_9      1132.000    8.783 No_date   30:30   23.71 .366
  [CN= 70.0: N= 3.00]
  [Tp= 2.51:DT=30.00]
  [IaREC= 4.00: SMIN= 43.07: SMAX=287.10: SK= .010]
  [InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.82
010:0014-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:NC_CK      4464.000    9.718 No_date   39:30   19.27 .298
  [CN= 62.0: N= 3.00]
  [Tp=11.32:DT=30.00]
  [IaREC= 4.00: SMIN= 61.90: SMAX=412.66: SK= .010]
  [InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.80
010:0015-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD  30.0 01:SW_8      131.000    1.610 No_date   28:30   19.73 .305
  [CN= 63.0: N= 3.00]
  [Tp= .90:DT=30.00]
  [IaREC= 4.00: SMIN= 59.42: SMAX=396.11: SK= .010]
  [InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.65
010:0016-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:HB_DR      3854.000   11.473 No_date   38:30   21.17 .327
  [CN= 66.0: N= 3.00]
  [Tp= 8.42:DT=30.00]
  [IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
  [InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.82
010:0017-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:SW_7      3197.000    8.697 No_date   36:00   17.04 .263
  [CN= 57.0: N= 3.00]
  [Tp= 6.65:DT=30.00]
  [IaREC= 4.00: SMIN= 76.32: SMAX=508.81: SK= .010]
  [InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.75
010:0018-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:SW_6      165.000    .804 No_date   33:00   21.66 .335
  [CN= 67.0: N= 3.00]
  [Tp= 4.18:DT=30.00]
  [IaREC= 4.00: SMIN= 50.55: SMAX=336.97: SK= .010]
  [InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.67

```

```

010:0019-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:VG_DR 1332.000 5.936 No_date 35:00 24.78 .383
[CN= 72.0: N= 3.00]
[Tp= 5.95:DT=30.00]
[IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]
[InterEventTime= 12.00]
010:0020-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_5 224.000 5.097 No_date 28:30 28.21 .436
[CN= 77.0: N= 3.00]
[Tp= .75:DT=30.00]
[IaREC= 4.00: SMIN= 31.15: SMAX=207.66: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.20
010:0021-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:FL_CK 4945.000 28.428 No_date 33:00 25.89 .400
[CN= 74.0: N= 3.00]
[Tp= 4.45:DT=30.00]
[IaREC= 4.00: SMIN= 36.67: SMAX=244.49: SK= .010]
[InterEventTime= 12.00]
010:0022-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_5A2 20.000 .569 No_date 28:30 31.34 .484
[CN= 81.0: N= 3.00]
[Tp= .62:DT=30.00]
[IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.61
010:0023-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_5A1 1412.000 5.651 No_date 37:30 27.03 .418
[CN= 75.0: N= 3.00]
[Tp= 8.00:DT=30.00]
[IaREC= 4.00: SMIN= 33.81: SMAX=225.43: SK= .010]
[InterEventTime= 12.00]
010:0024-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_4 585.000 8.289 No_date 29:30 31.34 .484
[CN= 81.0: N= 3.00]
[Tp= 1.75:DT=30.00]
[IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
[InterEventTime= 12.00]
010:0025-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:LM_CK 1021.000 11.041 No_date 30:30 30.69 .474
[CN= 80.0: N= 3.00]
[Tp= 2.46:DT=30.00]
[IaREC= 4.00: SMIN= 26.32: SMAX=175.50: SK= .010]
[InterEventTime= 12.00]
010:0026-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_2 177.000 4.027 No_date 28:30 28.21 .436
[CN= 77.0: N= 3.00]
[Tp= .75:DT=30.00]
[IaREC= 4.00: SMIN= 31.15: SMAX=207.66: SK= .010]
[InterEventTime= 12.00]
010:0027-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SM_DR 1122.000 10.121 No_date 31:30 31.34 .484
[CN= 81.0: N= 3.00]
[Tp= 3.25:DT=30.00]
[IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
[InterEventTime= 12.00]
010:0028-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:MO_DR 2737.000 22.263 No_date 31:30 27.61 .427
[CN= 76.0: N= 3.00]
[Tp= 3.03:DT=30.00]
[IaREC= 4.00: SMIN= 32.46: SMAX=216.39: SK= .010]
[InterEventTime= 12.00]
010:0029-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_1 3176.000 24.273 No_date 32:00 28.81 .445
[CN= 78.0: N= 3.00]

```

[Tp= 3.56:DT=30.00]  
[IaREC= 4.00: SMIN= 29.88: SMAX=199.22: SK= .010]  
[InterEventTime= 12.00]

```
#
# Routing hydrographs
#
# Starting with the addition of Jock River Headwater and Subwatershed 13
#
010:0030-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD                30.0 02:JR_HW    3680.000    11.582 No_date    36:30    20.20  n/a
                        +   30.0 03:SW_13    971.000     4.293 No_date    32:30    18.81  n/a
  [DT=30.00] SUM=       30.0 01:S_N13    4651.000    14.791 No_date    35:00    19.91  n/a
```

```
#
# Sum of hydrographs from Node 13 routed to Node 13A
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
#
```

```
010:0031-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL  ->   30.0 02:S_N13    4651.000    14.791 No_date    35:00    19.91  n/a
  [RDT=30.00] out<- 30.0 01:N13A    4651.000    11.868 No_date    39:30    19.91  n/a
  [L/S/n= 9074./ .022/.040]
  {Vmax= .505:Dmax= 3.276}
```

```
#
# Addition of Subwatershed Jock River at Goodwood Marsh to Node 13A
#
```

```
010:0032-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD                30.0 02:N13A    4651.000    11.868 No_date    39:30    19.91  n/a
                        +   30.0 03:JR_GWM    3074.000     5.604 No_date    39:30    16.19  n/a
  [DT=30.00] SUM=       30.0 01:SN13A    7725.000    17.472 No_date    39:30    18.43  n/a
```

```
#
# Insertion of a reservoir to simulate the effects of the Goodwood Marsh
#
```

```
010:0033-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE RESERVOIR ->  30.0 02:SN13A    7725.000    17.472 No_date    39:30    18.43  n/a
  [RDT=30.00] out<-  30.0 01:RES_GM    7725.000     3.517 No_date    59:00    18.43  n/a
  {MxStoUsed=.8337E+02}
```

```
#
010:0034-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  SAVE HYD                30.0 01:RES_GM    7725.000     3.517 No_date    59:00    18.43  n/a
  fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_RESGM.010
  remark:Outflow from Res GM
```

```
# Output of Reservoir Goodwood Marsh routed from Node 13A to Node 12
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
```

```
010:0035-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ROUTE CHANNEL  ->   30.0 02:RES_GM    7725.000     3.517 No_date    59:00    18.43  n/a
  [RDT=30.00] out<-  30.0 01:N12     7725.000     3.511 No_date    63:00    18.43  n/a
  [L/S/n= 5926./ .076/.040]
  {Vmax= .546:Dmax= 1.498}
```

```
#
# Addition of Subwatershed Jock River at Ashton to Node 12
#
```

```
010:0036-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  ADD HYD                30.0 02:N12     7725.000     3.511 No_date    63:00    18.43  n/a
                        +   30.0 03:JR_ASH    1781.000    10.659 No_date    32:30    24.78  n/a
  [DT=30.00] SUM=       30.0 01:S_N12    9506.000    12.656 No_date    32:30    19.62  n/a
010:0037-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  SAVE HYD                30.0 01:S_N12    9506.000    12.656 No_date    32:30    19.62  n/a
  fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN12.010
  remark:flow at S_N12
```

```
#
# Sum of hydrographs from Node 12 routed to Node 11
# (Approximated cross-section - see cross-section 258)
```

```

# Use n=0.04 for summer conditions and n=0.025 for spring conditions
010:0038-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:S_N12      9506.000  12.656 No_date  32:30  19.62  n/a
[RDT=30.00] out<-  30.0 01:N11       9506.000  12.477 No_date  33:00  19.62  n/a
[L/S/n=  972./ .051/.040]
{Vmax=  .665:Dmax= 2.609}

#
# Sum of hydrographs from Node 12 routed to Node 11 with Dummy section 248
#
010:0039-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:S_N12      9506.000  12.656 No_date  32:30  19.62  n/a
[RDT=30.00] out<-  30.0 01:Dum11     9506.000  12.493 No_date  33:00  19.62  n/a
[L/S/n=  972./ .054/.040]
{Vmax=  .677:Dmax= 2.584}

#
# Addition of Subwatershed 11 and No Name Creek to Node 11
#
010:0040-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 30.0 02:Dum11     9506.000  12.493 No_date  33:00  19.62  n/a
      + 30.0 03:SW_11      500.000   5.516 No_date  29:00  21.17  n/a
      + 30.0 04:NN_CK     1917.000   7.737 No_date  34:00  21.17  n/a
[DT=30.00] SUM=  30.0 01:S_N11    11923.000  21.461 No_date  33:00  19.93  n/a

#
# Sum of hydrographs from Node 11 routed to Node 10
# Section 1
#
010:0041-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:S_N11     11923.000  21.461 No_date  33:00  19.93  n/a
[RDT=30.00] out<-  30.0 01:N10     11923.000  14.609 No_date  39:30  19.93  n/a
[L/S/n=14028./ .157/.040]
{Vmax=  .451:Dmax= 1.206}

#
# Addition of Subwatershed 10 to Node 10
#
010:0042-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 30.0 02:N10     11923.000  14.609 No_date  39:30  19.93  n/a
      + 30.0 03:SW_10     5666.000  20.651 No_date  37:30  24.78  n/a
[DT=30.00] SUM=  30.0 01:S_N10    17589.000  35.073 No_date  38:30  21.50  n/a
010:0043-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD
      30.0 01:S_N10     17589.000  35.073 No_date  38:30  21.50  n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN10.010
remark:flow at S_N10: N10 + SW_10

# Addition of Kings Creek to S_N10
#
010:0044-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 30.0 02:S_N10     17589.000  35.073 No_date  38:30  21.50  n/a
      + 30.0 03:KG_CK     8376.000  19.522 No_date  39:30  21.17  n/a
[DT=30.00] SUM=  30.0 01:S_N10A   25965.000  54.317 No_date  39:30  21.39  n/a

#
# Sum of hydrographs from Node 10 routed to Node 9
# Section 2
#
010:0045-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:S_N10A   25965.000  54.317 No_date  39:30  21.39  n/a
[RDT=30.00] out<-  30.0 01:N9      25965.000  52.431 No_date  39:30  21.39  n/a
[L/S/n= 3982./ .075/.040]
{Vmax=  .679:Dmax= 1.676}

#
# Addition of Subwatershed 9 and Nichols Creek to Node 9
#
010:0046-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD
      + 30.0 02:N9       25965.000  52.431 No_date  39:30  21.39  n/a
      + 30.0 03:SW_9      1132.000   8.783 No_date  30:30  23.71  n/a
      + 30.0 04:NC_CK     4464.000   9.718 No_date  39:30  19.27  n/a

```

```

[DT=30.00] SUM= 30.0 01:S_N9 31561.000 64.367 No_date 39:30 21.17 n/a
#
# Sum of hydrographs from Node 9 routed to Node 8
# Section 3
#
010:0047-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N9 31561.000 64.367 No_date 39:30 21.17 n/a
[RD=30.00] out<- 30.0 01:N8 31561.000 60.135 No_date 40:00 21.17 n/a
[L/S/n= 2269./ .088/.045]
{Vmax= .364:Dmax= 1.604}
#
# Addition of Subwatershed 8 and Hobb's Drain to Node 8
#
010:0048-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:N8 31561.000 60.135 No_date 40:00 21.17 n/a
+ 30.0 03:SW_8 131.000 1.610 No_date 28:30 19.73 n/a
+ 30.0 04:HB_DR 3854.000 11.473 No_date 38:30 21.17 n/a
[DT=30.00] SUM= 30.0 01:S_N8 35546.000 71.021 No_date 39:30 21.17 n/a
#
# Sum of hydrographs from Node 8 routed to Node 7
# Section 4
#
010:0049-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N8 35546.000 71.021 No_date 39:30 21.17 n/a
[RD=30.00] out<- 30.0 01:N7 35546.000 59.731 No_date 44:30 21.17 n/a
[L/S/n= 3750./ .053/.070]
{Vmax= .216:Dmax= 1.966}
#
# Addition of Subwatershed 7 to Node 7
#
010:0050-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:N7 35546.000 59.731 No_date 44:30 21.17 n/a
+ 30.0 03:SW_7 3197.000 8.697 No_date 36:00 17.04 n/a
[DT=30.00] SUM= 30.0 01:S_N7 38743.000 64.039 No_date 44:00 20.83 n/a
010:0051-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD 30.0 01:S_N7 38743.000 64.039 No_date 44:00 20.83 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN7.010
remark:flow at S_N7: N7 + SW_7
#
# Insertion of a reservoir to simulate the effects of the Richmond Fen.
# Storage area and volumes were estimated from available topo maps.
# Release rate from fen was assumed to be controlled by the downstream
# river cross-section for summer conditions. It is assumed that for up to
# 0.75 m of water, the main channel of the river provided the storage. Above
# this depth, the wetland starts to significantly store water.
#
010:0052-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE RESERVOIR -> 30.0 02:S_N7 38743.000 64.039 No_date 44:00 20.83 n/a
[RD=30.00] out<- 30.0 01:RES_RF 38743.000 31.370 No_date 60:30 20.83 n/a
{MxStoUsed=.2507E+03}
010:0053-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD 30.0 01:RES_RF 38743.000 31.370 No_date 60:30 20.83 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_ResRF.010
remark:outflow of Richmond Fen
#
# Sum of hydrographs from Node 7 routed to Node 6
# Section 5
#
010:0054-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:RES_RF 38743.000 31.370 No_date 60:30 20.83 n/a
[RD=30.00] out<- 30.0 01:N6 38743.000 31.314 No_date 62:00 20.83 n/a
[L/S/n= 3056./ .082/.025]
{Vmax= .475:Dmax= .953}
#
# Addition of Subwatershed 6 and Van Gaal Drain to Node 6

```

```

#
010:0055-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  ADD HYD          30.0 02:N6          38743.000    31.314 No_date    62:00    20.83 n/a
                +   30.0 03:SW_6          165.000         .804 No_date    33:00    21.66 n/a
                +   30.0 04:VG_DR         1332.000        5.936 No_date    35:00    24.78 n/a
  [DT=30.00] SUM=  30.0 01:S_N6         40240.010       31.366 No_date    61:00    20.96 n/a

```

```

#
# Sum of hydrographs from Node 6 routed to Node 5
# Section 6
#

```

```

010:0056-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  ROUTE CHANNEL  ->  30.0 02:S_N6         40240.010       31.366 No_date    61:00    20.96 n/a
  [RDT=30.00] out<- 30.0 01:N5          40240.010       31.341 No_date    62:00    20.96 n/a
  [L/S/n= 1852./ .054/.035]
  {Vmax= .411:Dmax= 1.064}

```

```

#
# Addition of Subwatershed 5 and Flowing Creek to Node 5
#

```

```

010:0057-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  ADD HYD          30.0 02:N5          40240.010    31.341 No_date    62:00    20.96 n/a
                +   30.0 03:SW_5          224.000         5.097 No_date    28:30    28.21 n/a
                +   30.0 04:FL_CK         4945.000        28.428 No_date    33:00    25.89 n/a
  [DT=30.00] SUM=  30.0 01:S_N5         45409.010       50.940 No_date    34:30    21.53 n/a

```

```

#
# Sum of hydrographs from Node 5 routed to Node 5A
# Section 7
#

```

```

010:0058-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  ROUTE CHANNEL  ->  30.0 02:S_N5          45409.010       50.940 No_date    34:30    21.53 n/a
  [RDT=30.00] out<- 30.0 01:N5A         45409.010       50.883 No_date    35:00    21.53 n/a
  [L/S/n= 556./ .090/.040]
  {Vmax= .484:Dmax= 1.127}

```

```

#
# Addition of Subwatershed 5A1 and Subwatershed 5A2 to Node 5A
#

```

```

010:0059-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  ADD HYD          30.0 02:N5A         45409.010    50.883 No_date    35:00    21.53 n/a
                +   30.0 03:SW_5A2         20.000          .569 No_date    28:30    31.34 n/a
                +   30.0 04:SW_5A1        1412.000         5.651 No_date    37:30    27.03 n/a
  [DT=30.00] SUM=  30.0 01:S_N5A        46841.010       56.195 No_date    35:00    21.70 n/a

```

```

#
# Sum of hydrographs from Node 5A routed to Node 4
# Section 8
#

```

```

010:0060-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  ROUTE CHANNEL  ->  30.0 02:S_N5A         46841.010       56.195 No_date    35:00    21.70 n/a
  [RDT=30.00] out<- 30.0 01:N4          46841.010       54.050 No_date    36:30    21.70 n/a
  [L/S/n= 4630./ .043/.035]
  {Vmax= .790:Dmax= 3.283}

```

```

#
# Addition of Subwatershed 4 and Leamy Creek to Node 4
#

```

```

010:0061-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  ADD HYD          30.0 02:N4          46841.010    54.050 No_date    36:30    21.70 n/a
                +   30.0 03:SW_4           585.000          8.289 No_date    29:30    31.34 n/a
                +   30.0 04:LM_CK        1021.000        11.041 No_date    30:30    30.69 n/a
  [DT=30.00] SUM=  30.0 01:S_N4         48447.000       59.486 No_date    36:00    22.01 n/a
010:0062-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  SAVE HYD          30.0 01:S_N4         48447.000       59.486 No_date    36:00    22.01 n/a
  fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H-S_N4.010
  remark:flow at S_N4

```

```

#
# Sum of hydrographs from Node 4 routed to Node 2
# Section 9

```



```
#
010:0063-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N4 48447.000 59.486 No_date 36:00 22.01 n/a
[RD=30.00] out<- 30.0 01:N2 48447.000 59.258 No_date 36:00 22.01 n/a
[L/S/n= 1667./ .060/.040]
{Vmax= .822:Dmax= 3.316}
```

```
#
# Addition of Subwatershed 2 with Monohan Drain and Smith Drain to Node 2
#
```

```
010:0064-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ADD HYD          30.0 02:N2 48447.000 59.258 No_date 36:00 22.01 n/a
+               30.0 03:SW_2 177.000 4.027 No_date 28:30 28.21 n/a
+               30.0 04:SM_DR 1122.000 10.121 No_date 31:30 31.34 n/a
+               30.0 05:MO_DR 2737.000 22.263 No_date 31:30 27.61 n/a
[DT=30.00] SUM= 30.0 01:S_N2 52483.000 82.076 No_date 33:00 22.52 n/a
010:0065-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
SAVE HYD        30.0 01:S_N2 52483.000 82.076 No_date 33:00 22.52 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN2.010
remark:flow at S_N2 Jock River Gauge at Moodie Dr.
```

```
#
# Sum of hydrographs from Node 2 routed to Node 1
# Section 10
#
```

```
010:0066-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N2 52483.000 82.076 No_date 33:00 22.52 n/a
[RD=30.00] out<- 30.0 01:N1 52483.000 72.984 No_date 36:30 22.52 n/a
[L/S/n=10046./ .050/.040]
{Vmax= .924:Dmax= 3.539}
```

```
#
# Addition of Subwatershed 1 to Node 1
#
```

```
010:0067-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ADD HYD          30.0 02:N1 52483.000 72.984 No_date 36:30 22.52 n/a
+               30.0 03:SW_1 3176.000 24.273 No_date 32:00 28.81 n/a
[DT=30.00] SUM= 30.0 01:N1 55659.000 89.955 No_date 34:30 22.88 n/a
010:0068-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
SAVE HYD        30.0 01:N1 55659.000 89.955 No_date 34:30 22.88 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H-N1.010
remark:total outflow of Jock River
```

```
#####
** END OF RUN : 24
*****
```

```
RUN:COMMAND#
025:0001-----
START
[TZERO = .00 hrs on 0]
[METOUT= 2 (1=imperial, 2=metric output)]
[NSTORM= 1 ]
[NRUN = 25 ]
```

```
*****
# SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
*****
# Project Name: [Jock River] Project Number: [411-02]
# Date : 06-06-2003
# Modeller : [JoF]
# Company : JFSAinc.
# License # : 2549237
*****
# CALIBRATION OF SUMMER MODEL PARAMETERS
# USING CONTINUOUS SIMULATIONS
```

# Rainfall data from JFSA raingauge installed at site + other gauges by the City  
# Use data collected from May 1st to July 14, 2003

```
# -----  
025:0002-----  
  READ STORM  
  Filename = storm.001  
  Comment = Pluie SCS de 24 hres 1:25 ans pour Ottawa CDA  
  [SDT=10.00:SDUR= 24.00:PTOT= 74.39]  
025:0003-----  
  MODIFY STORM  
  [RFACT= 1.00:TSHIFT= 960.00 min]  
  [SDT=10.00:SDUR= 40.00:PTOT= 74.39]  
025:0004-----  
  COMPUTE API  
  [APIini= 50.00: APIkdy= .8500: APIkdt= .9989]  
  {APImax=106.76: APIavg= 65.09: APImin= 44.87}
```

#  
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)  
# of 1.32

```
025:0005-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 30.0 01:JR_HW 3680.000 15.104 No_date 36:30 25.77 .346  
[CN= 64.0: N= 3.00]  
[Tp= 7.13:DT=30.00]  
[IaREC= 4.00: SMIN= 57.05: SMAX=380.32: SK= .010]  
[InterEventTime= 12.00]
```

#  
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)  
# of 1.32

```
025:0006-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 30.0 01:SW_13 971.000 5.679 No_date 32:30 24.00 .323  
[CN= 61.0: N= 3.00]  
[Tp= 3.76:DT=30.00]  
[IaREC= 4.00: SMIN= 64.50: SMAX=430.01: SK= .010]  
[InterEventTime= 12.00]
```

#  
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)  
# of 1.80

```
025:0007-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 30.0 01:JR_GWM 3074.000 7.216 No_date 39:30 20.63 .277  
[CN= 55.0: N= 3.00]  
[Tp=11.33:DT=30.00]  
[IaREC= 4.00: SMIN= 83.24: SMAX=554.96: SK= .010]  
[InterEventTime= 12.00]
```

```
025:0008-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 30.0 01:JR_ASH 1781.000 13.927 No_date 32:30 31.47 .423  
[CN= 72.0: N= 3.00]  
[Tp= 3.91:DT=30.00]  
[IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]  
[InterEventTime= 12.00]
```

```
025:0009-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 30.0 01:SW_11 500.000 7.356 No_date 29:00 26.99 .363  
[CN= 66.0: N= 3.00]  
[Tp= 1.24:DT=30.00]  
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]  
[InterEventTime= 12.00]
```

#  
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)  
# of 1.80

```
025:0010-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-  
CONTINUOUS NASHYD 30.0 01:NN_CK 1917.000 10.139 No_date 34:00 26.99 .363  
[CN= 66.0: N= 3.00]  
[Tp= 5.29:DT=30.00]  
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]  
[InterEventTime= 12.00]
```

#

```

# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.52
025:0011-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_10 5666.000 26.665 No_date 37:30 31.47 .423
[CN= 72.0: N= 3.00]
[Tp= 8.00:DT=30.00]
[IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.75
025:0012-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:KG_CK 8376.000 25.107 No_date 39:30 26.99 .363
[CN= 66.0: N= 3.00]
[Tp=11.66:DT=30.00]
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.68
025:0013-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_9 1132.000 11.574 No_date 30:30 30.15 .405
[CN= 70.0: N= 3.00]
[Tp= 2.51:DT=30.00]
[IaREC= 4.00: SMIN= 43.07: SMAX=287.10: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.82
025:0014-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:NC_CK 4464.000 12.525 No_date 39:30 24.58 .330
[CN= 62.0: N= 3.00]
[Tp=11.32:DT=30.00]
[IaREC= 4.00: SMIN= 61.90: SMAX=412.66: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.80
025:0015-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_8 131.000 2.156 No_date 28:30 25.17 .338
[CN= 63.0: N= 3.00]
[Tp= .90:DT=30.00]
[IaREC= 4.00: SMIN= 59.42: SMAX=396.11: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.65
025:0016-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:HB_DR 3854.000 14.880 No_date 38:30 26.99 .363
[CN= 66.0: N= 3.00]
[Tp= 8.42:DT=30.00]
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.82
025:0017-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_7 3197.000 11.391 No_date 36:00 21.73 .292
[CN= 57.0: N= 3.00]
[Tp= 6.65:DT=30.00]
[IaREC= 4.00: SMIN= 76.32: SMAX=508.81: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)

```

```

# of 1.75
025:0018-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_6 165.000 1.056 No_date 33:00 27.61 .371
[CN= 67.0: N= 3.00]
[Tp= 4.18:DT=30.00]
[IaREC= 4.00: SMIN= 50.55: SMAX=336.97: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.67
025:0019-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:VG_DR 1332.000 7.707 No_date 35:00 31.47 .423
[CN= 72.0: N= 3.00]
[Tp= 5.95:DT=30.00]
[IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]
[InterEventTime= 12.00]
025:0020-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_5 224.000 6.682 No_date 28:30 35.63 .479
[CN= 77.0: N= 3.00]
[Tp= .75:DT=30.00]
[IaREC= 4.00: SMIN= 31.15: SMAX=207.66: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.20
025:0021-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:FL_CK 4945.000 36.990 No_date 33:00 32.82 .441
[CN= 74.0: N= 3.00]
[Tp= 4.45:DT=30.00]
[IaREC= 4.00: SMIN= 36.67: SMAX=244.49: SK= .010]
[InterEventTime= 12.00]
025:0022-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_5A2 20.000 .739 No_date 28:30 39.33 .529
[CN= 81.0: N= 3.00]
[Tp= .62:DT=30.00]
[IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.61
025:0023-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_5A1 1412.000 7.263 No_date 37:30 34.21 .460
[CN= 75.0: N= 3.00]
[Tp= 8.00:DT=30.00]
[IaREC= 4.00: SMIN= 33.81: SMAX=225.43: SK= .010]
[InterEventTime= 12.00]
025:0024-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_4 585.000 10.733 No_date 29:30 39.33 .529
[CN= 81.0: N= 3.00]
[Tp= 1.75:DT=30.00]
[IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
[InterEventTime= 12.00]
025:0025-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:LM_CK 1021.000 14.279 No_date 30:30 38.57 .519
[CN= 80.0: N= 3.00]
[Tp= 2.46:DT=30.00]
[IaREC= 4.00: SMIN= 26.32: SMAX=175.50: SK= .010]
[InterEventTime= 12.00]
025:0026-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_2 177.000 5.280 No_date 28:30 35.63 .479
[CN= 77.0: N= 3.00]
[Tp= .75:DT=30.00]
[IaREC= 4.00: SMIN= 31.15: SMAX=207.66: SK= .010]
[InterEventTime= 12.00]
025:0027-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SM_DR 1122.000 13.030 No_date 31:30 39.33 .529
[CN= 81.0: N= 3.00]
[Tp= 3.25:DT=30.00]

```

```

[IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
[InterEventTime= 12.00]
025:0028-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:MO_DR 2737.000 28.975 No_date 31:00 34.91 .469
[CN= 76.0: N= 3.00]
[Tp= 3.03:DT=30.00]
[IaREC= 4.00: SMIN= 32.46: SMAX=216.39: SK= .010]
[InterEventTime= 12.00]
025:0029-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_1 3176.000 31.429 No_date 32:00 36.35 .489
[CN= 78.0: N= 3.00]
[Tp= 3.56:DT=30.00]
[IaREC= 4.00: SMIN= 29.88: SMAX=199.22: SK= .010]
[InterEventTime= 12.00]

#
# Routing hydrographs
#
# Starting with the addition of Jock River Headwater and Subwatershed 13
#
025:0030-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:JR_HW 3680.000 15.104 No_date 36:30 25.77 n/a
+ 30.0 03:SW_13 971.000 5.679 No_date 32:30 24.00 n/a
[DT=30.00] SUM= 30.0 01:S_N13 4651.000 19.326 No_date 35:00 25.40 n/a

#
# Sum of hydrographs from Node 13 routed to Node 13A
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
#
025:0031-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N13 4651.000 19.326 No_date 35:00 25.40 n/a
[RDT=30.00] out<- 30.0 01:N13A 4651.000 15.622 No_date 39:00 25.40 n/a
[L/S/n= 9074./ .022/.040]
{Vmax= .545:Dmax= 3.628}

#
# Addition of Subwatershed Jock River at Goodwood Marsh to Node 13A
#
025:0032-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:N13A 4651.000 15.622 No_date 39:00 25.40 n/a
+ 30.0 03:JR_GWM 3074.000 7.216 No_date 39:30 20.63 n/a
[DT=30.00] SUM= 30.0 01:SN13A 7725.000 22.816 No_date 39:30 23.50 n/a

#
# Insertion of a reservoir to simulate the effects of the Goodwood Marsh
#
025:0033-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE RESERVOIR -> 30.0 02:SN13A 7725.000 22.816 No_date 39:30 23.50 n/a
[RDT=30.00] out<- 30.0 01:RES_GM 7725.000 3.669 No_date 61:00 23.50 n/a
{MxStoUsed=.1171E+03}

#
025:0034-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD 30.0 01:RES_GM 7725.000 3.669 No_date 61:00 23.50 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_RESGM.025
remark:Outflow from Res GM

# Output of Reservoir Goodwood Marsh routed from Node 13A to Node 12
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
025:0035-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:RES_GM 7725.000 3.669 No_date 61:00 23.50 n/a
[RDT=30.00] out<- 30.0 01:N12 7725.000 3.665 No_date 64:00 23.50 n/a
[L/S/n= 5926./ .076/.040]
{Vmax= .552:Dmax= 1.522}

#
# Addition of Subwatershed Jock River at Ashton to Node 12
#
025:0036-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-

```

```

ADD HYD          30.0 02:N12          7725.000      3.665 No_date    64:00    23.50  n/a
      +          30.0 03:JR_ASH       1781.000     13.927 No_date    32:30    31.47  n/a
[DT=30.00] SUM= 30.0 01:S_N12       9506.000     15.946 No_date    32:30    24.99  n/a
025:0037-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD        30.0 01:S_N12       9506.000     15.946 No_date    32:30    24.99  n/a
  fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN12.025
  remark:flow at S_N12

```

```

#
# Sum of hydrographs from Node 12 routed to Node 11
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
025:0038-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  -> 30.0 02:S_N12       9506.000     15.946 No_date    32:30    24.99  n/a
[RDT=30.00] out<- 30.0 01:N11       9506.000     15.700 No_date    33:00    24.99  n/a
[L/S/n= 972./ .051/.040]
{Vmax= .705:Dmax= 2.858}

```

```

#
# Sum of hydrographs from Node 12 routed to Node 11 with Dummy section 248
#
025:0039-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  -> 30.0 02:S_N12       9506.000     15.946 No_date    32:30    24.99  n/a
[RDT=30.00] out<- 30.0 01:Dum11     9506.000     15.719 No_date    33:00    24.99  n/a
[L/S/n= 972./ .054/.040]
{Vmax= .718:Dmax= 2.831}

```

```

#
# Addition of Subwatershed 11 and No Name Creek to Node 11
#
025:0040-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:Dum11       9506.000     15.719 No_date    33:00    24.99  n/a
      +          30.0 03:SW_11        500.000      7.356 No_date    29:00    26.99  n/a
      +          30.0 04:NN_CK       1917.000     10.139 No_date    34:00    26.99  n/a
[DT=30.00] SUM= 30.0 01:S_N11     11923.000    27.440 No_date    33:00    25.40  n/a

```

```

#
# Sum of hydrographs from Node 11 routed to Node 10
# Section 1
#
025:0041-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  -> 30.0 02:S_N11     11923.000    27.440 No_date    33:00    25.40  n/a
[RDT=30.00] out<- 30.0 01:N10     11923.000    17.756 No_date    40:00    25.40  n/a
[L/S/n=14028./ .157/.040]
{Vmax= .463:Dmax= 1.320}

```

```

#
# Addition of Subwatershed 10 to Node 10
#
025:0042-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N10       11923.000    17.756 No_date    40:00    25.40  n/a
      +          30.0 03:SW_10       5666.000    26.665 No_date    37:30    31.47  n/a
[DT=30.00] SUM= 30.0 01:S_N10     17589.000    44.045 No_date    38:30    27.35  n/a
025:0043-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD        30.0 01:S_N10     17589.000    44.045 No_date    38:30    27.35  n/a
  fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN10.025
  remark:flow at S_N10: N10 + SW_10

```

```

# Addition of Kings Creek to S_N10
#
025:0044-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:S_N10     17589.000    44.045 No_date    38:30    27.35  n/a
      +          30.0 03:KG_CK       8376.000    25.107 No_date    39:30    26.99  n/a
[DT=30.00] SUM= 30.0 01:S_N10A    25965.000    68.824 No_date    39:30    27.24  n/a

```

```

#
# Sum of hydrographs from Node 10 routed to Node 9
# Section 2
#
025:0045-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  -> 30.0 02:S_N10A    25965.000    68.824 No_date    39:30    27.24  n/a

```

```

[RDT=30.00] out<- 30.0 01:N9      25965.000  66.905 No_date  39:30  27.24  n/a
[L/S/n= 3982./ .075/.040]
{Vmax= .713:Dmax= 1.864}

#
# Addition of Subwatershed 9 and Nichols Creek to Node 9
#
025:0046-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N9      25965.000  66.905 No_date  39:30  27.24  n/a
                + 30.0 03:SW_9    1132.000  11.574 No_date  30:30  30.15  n/a
                + 30.0 04:NC_CK   4464.000  12.525 No_date  39:30  24.58  n/a
[DT=30.00] SUM=  30.0 01:S_N9    31561.000  82.190 No_date  39:30  26.97  n/a

#
# Sum of hydrographs from Node 9 routed to Node 8
# Section 3
#
025:0047-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N9    31561.000  82.190 No_date  39:30  26.97  n/a
[RDT=30.00] out<- 30.0 01:N8    31561.000  77.115 No_date  40:00  26.97  n/a
[L/S/n= 2269./ .088/.045]
{Vmax= .362:Dmax= 1.727}

#
# Addition of Subwatershed 8 and Hobb's Drain to Node 8
#
025:0048-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N8    31561.000  77.115 No_date  40:00  26.97  n/a
                + 30.0 03:SW_8    131.000   2.156 No_date  28:30  25.17  n/a
                + 30.0 04:HB_DR   3854.000  14.880 No_date  38:30  26.99  n/a
[DT=30.00] SUM=  30.0 01:S_N8    35546.000  91.271 No_date  39:30  26.96  n/a

#
# Sum of hydrographs from Node 8 routed to Node 7
# Section 4
#
025:0049-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N8    35546.000  91.271 No_date  39:30  26.96  n/a
[RDT=30.00] out<- 30.0 01:N7    35546.000  78.196 No_date  45:00  26.96  n/a
[L/S/n= 3750./ .053/.070]
{Vmax= .225:Dmax= 2.134}

#
# Addition of Subwatershed 7 to Node 7
#
025:0050-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N7    35546.000  78.196 No_date  45:00  26.96  n/a
                + 30.0 03:SW_7    3197.000  11.391 No_date  36:00  21.73  n/a
[DT=30.00] SUM=  30.0 01:S_N7    38743.000  84.011 No_date  44:00  26.53  n/a
025:0051-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD         30.0 01:S_N7    38743.000  84.011 No_date  44:00  26.53  n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN7.025
remark:flow at S_N7: N7 + SW_7

# Insertion of a reservoir to simulate the effects of the Richmond Fen.
# Storage area and volumes were estimated from available topo maps.
# Release rate from fen was assumed to be controlled by the downstream
# river cross-section for summer conditions. It is was assumed that for up to
# 0.75 m of water, the main channel of the river provided the storage. Above
# this depth, the wetland starts to signigicantly store water.
#
025:0052-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE RESERVOIR -> 30.0 02:S_N7    38743.000  84.011 No_date  44:00  26.53  n/a
[RDT=30.00] out<- 30.0 01:RES_RF  38743.000  40.725 No_date  60:30  26.53  n/a
{MxStoUsed=.3577E+03}
025:0053-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD         30.0 01:RES_RF  38743.000  40.725 No_date  60:30  26.53  n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_ResRF.025
remark:outflow of Richmond Fen

#

```

```

# Sum of hydrographs from Node 7 routed to Node 6
# Section 5
#
025:0054-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:RES_RF  38743.000  40.725 No_date  60:30  26.53  n/a
[RDT=30.00] out<-  30.0 01:N6    38743.000  40.549 No_date  61:30  26.53  n/a
[L/S/n= 3056./ .082/.025]
{Vmax= .510:Dmax= 1.101}

#
# Addition of Subwatershed 6 and Van Gaal Drain to Node 6
#
025:0055-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N6    38743.000  40.549 No_date  61:30  26.53  n/a
                +  30.0 03:SW_6    165.000    1.056 No_date  33:00  27.61  n/a
                +  30.0 04:VG_DR    1332.000   7.707 No_date  35:00  31.47  n/a
[DT=30.00] SUM=  30.0 01:S_N6  40240.010  40.613 No_date  61:30  26.70  n/a

#
# Sum of hydrographs from Node 6 routed to Node 5
# Section 6
#
025:0056-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:S_N6    40240.010  40.613 No_date  61:30  26.70  n/a
[RDT=30.00] out<-  30.0 01:N5    40240.010  40.523 No_date  62:30  26.70  n/a
[L/S/n= 1852./ .054/.035]
{Vmax= .440:Dmax= 1.203}

#
# Addition of Subwatershed 5 and Flowing Creek to Node 5
#
025:0057-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N5    40240.010  40.523 No_date  62:30  26.70  n/a
                +  30.0 03:SW_5     224.000    6.682 No_date  28:30  35.63  n/a
                +  30.0 04:FL_CK   4945.000   36.990 No_date  33:00  32.82  n/a
[DT=30.00] SUM=  30.0 01:S_N5  45409.010  61.906 No_date  34:00  27.41  n/a

#
# Sum of hydrographs from Node 5 routed to Node 5A
# Section 7
#
025:0058-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:S_N5    45409.010  61.906 No_date  34:00  27.41  n/a
[RDT=30.00] out<-  30.0 01:N5A   45409.010  61.890 No_date  34:30  27.41  n/a
[L/S/n= 556./ .090/.040]
{Vmax= .510:Dmax= 1.217}

#
# Addition of Subwatershed 5A1 and Subwatershed 5A2 to Node 5A
#
025:0059-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N5A   45409.010  61.890 No_date  34:30  27.41  n/a
                +  30.0 03:SW_5A2    20.000    .739 No_date  28:30  39.33  n/a
                +  30.0 04:SW_5A1  1412.000   7.263 No_date  37:30  34.21  n/a
[DT=30.00] SUM=  30.0 01:S_N5A  46841.010  68.494 No_date  34:30  27.62  n/a

#
# Sum of hydrographs from Node 5A routed to Node 4
# Section 8
#
025:0060-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:S_N5A   46841.010  68.494 No_date  34:30  27.62  n/a
[RDT=30.00] out<-  30.0 01:N4    46841.010  65.794 No_date  36:30  27.62  n/a
[L/S/n= 4630./ .043/.035]
{Vmax= .838:Dmax= 3.516}

#
# Addition of Subwatershed 4 and Leamy Creek to Node 4
#
025:0061-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N4    46841.010  65.794 No_date  36:30  27.62  n/a

```



```

+ 30.0 03:SW_4 585.000 10.733 No_date 29:30 39.33 n/a
+ 30.0 04:LM_CK 1021.000 14.279 No_date 30:30 38.57 n/a
[DT=30.00] SUM= 30.0 01:S_N4 48447.000 73.162 No_date 35:30 27.99 n/a
025:0062-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD 30.0 01:S_N4 48447.000 73.162 No_date 35:30 27.99 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H-S_N4.025
remark:flow at S_N4

```

```

#
# Sum of hydrographs from Node 4 routed to Node 2
# Section 9
#

```

```

025:0063-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N4 48447.000 73.162 No_date 35:30 27.99 n/a
[RDT=30.00] out<- 30.0 01:N2 48447.000 72.927 No_date 35:30 27.99 n/a
[L/S/n= 1667./ .060/.040]
{Vmax= .871:Dmax= 3.558}

```

```

#
# Addition of Subwatershed 2 with Monohan Drain and Smith Drain to Node 2
#

```

```

025:0064-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:N2 48447.000 72.927 No_date 35:30 27.99 n/a
+ 30.0 03:SW_2 177.000 5.280 No_date 28:30 35.63 n/a
+ 30.0 04:SM_DR 1122.000 13.030 No_date 31:30 39.33 n/a
+ 30.0 05:MO_DR 2737.000 28.975 No_date 31:00 34.91 n/a
[DT=30.00] SUM= 30.0 01:S_N2 52483.000 104.643 No_date 33:00 28.62 n/a
025:0065-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD 30.0 01:S_N2 52483.000 104.643 No_date 33:00 28.62 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN2.025
remark:flow at S_N2 Jock River Gauge at Moodie Dr.

```

```

#
# Sum of hydrographs from Node 2 routed to Node 1
# Section 10
#

```

```

025:0066-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N2 52483.000 104.643 No_date 33:00 28.62 n/a
[RDT=30.00] out<- 30.0 01:N1 52483.000 92.450 No_date 36:00 28.62 n/a
[L/S/n=10046./ .050/.040]
{Vmax= .998:Dmax= 3.955}

```

```

#
# Addition of Subwatershed 1 to Node 1
#

```

```

025:0067-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:N1 52483.000 92.450 No_date 36:00 28.62 n/a
+ 30.0 03:SW_1 3176.000 31.429 No_date 32:00 36.35 n/a
[DT=30.00] SUM= 30.0 01:N1 55659.000 115.838 No_date 34:30 29.06 n/a
025:0068-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD 30.0 01:N1 55659.000 115.838 No_date 34:30 29.06 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H-N1.025
remark:total outflow of Jock River

```

```

#####
** END OF RUN : 49

```

```

*****

```

```

RUN:COMMAND#
050:0001-----
START
[TZERO = .00 hrs on 0]
[METOUT= 2 (1=imperial, 2=metric output)]
[NSTORM= 1 ]
[NRUN = 50 ]

```

```

*****
# SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
*****
# Project Name: [Jock River] Project Number: [411-02]
# Date : 06-06-2003
# Modeller : [JoF]
# Company : JFSAinc.
# License # : 2549237
*****
# CALIBRATION OF SUMMER MODEL PARAMETERS
# USING CONTINUOUS SIMULATIONS
# Rainfall data from JFSA raingauge installed at site + other gauges by the City
# Use data collected from May 1st to July 14, 2003

# -----
050:0002-----
READ STORM
  Filename = storm.001
  Comment = Pluie SCS de 24 hres 1:50 ans pour Ottawa CDA
  [SDT=10.00:SDUR= 24.00:PTOT= 81.51]
050:0003-----
MODIFY STORM
  [RFACT= 1.00:TSHIFT= 960.00 min]
  [SDT=10.00:SDUR= 40.00:PTOT= 81.51]
050:0004-----
COMPUTE API
  [APIini= 50.00: APIkdy= .8500: APIkdt= .9989]
  {APImax=113.33: APIavg= 67.14: APImin= 44.87}

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.32
050:0005-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:JR_HW 3680.000 17.963 No_date 36:30 30.30 .372
  [CN= 64.0: N= 3.00]
  [Tp= 7.13:DT=30.00]
  [IaREC= 4.00: SMIN= 57.05: SMAX=380.32: SK= .010]
  [InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.32
050:0006-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_13 971.000 6.816 No_date 32:30 28.25 .347
  [CN= 61.0: N= 3.00]
  [Tp= 3.76:DT=30.00]
  [IaREC= 4.00: SMIN= 64.50: SMAX=430.01: SK= .010]
  [InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.80
050:0007-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:JR_GWM 3074.000 8.540 No_date 39:30 24.29 .298
  [CN= 55.0: N= 3.00]
  [Tp=11.33:DT=30.00]
  [IaREC= 4.00: SMIN= 83.24: SMAX=554.96: SK= .010]
  [InterEventTime= 12.00]
050:0008-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:JR_ASH 1781.000 16.547 No_date 32:30 36.82 .452
  [CN= 72.0: N= 3.00]
  [Tp= 3.91:DT=30.00]
  [IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]
  [InterEventTime= 12.00]
050:0009-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_11 500.000 8.861 No_date 29:00 31.71 .389
  [CN= 66.0: N= 3.00]
  [Tp= 1.24:DT=30.00]
  [IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
  [InterEventTime= 12.00]

```

```

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.80
050:0010-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:NN_CK      1917.000  12.088 No_date  34:00  31.71 .389
[CN= 66.0: N= 3.00]
[Tp= 5.29:DT=30.00]
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.52
050:0011-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:SW_10     5666.000  31.459 No_date  37:30  36.82 .452
[CN= 72.0: N= 3.00]
[Tp= 8.00:DT=30.00]
[IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.75
050:0012-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:KG_CK      8376.000  29.616 No_date  39:30  31.71 .389
[CN= 66.0: N= 3.00]
[Tp=11.66:DT=30.00]
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.68
050:0013-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:SW_9       1132.000  13.828 No_date  30:30  35.33 .433
[CN= 70.0: N= 3.00]
[Tp= 2.51:DT=30.00]
[IaREC= 4.00: SMIN= 43.07: SMAX=287.10: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.82
050:0014-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:NC_CK      4464.000  14.806 No_date  39:30  28.93 .355
[CN= 62.0: N= 3.00]
[Tp=11.32:DT=30.00]
[IaREC= 4.00: SMIN= 61.90: SMAX=412.66: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.80
050:0015-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD  30.0 01:SW_8       131.000   2.605 No_date  28:30  29.61 .363
[CN= 63.0: N= 3.00]
[Tp= .90:DT=30.00]
[IaREC= 4.00: SMIN= 59.42: SMAX=396.11: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.65
050:0016-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:HB_DR      3854.000  17.631 No_date  38:30  31.71 .389
[CN= 66.0: N= 3.00]
[Tp= 8.42:DT=30.00]
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
[InterEventTime= 12.00]

#

```

```

# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.82
050:0017-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_7 3197.000 13.606 No_date 36:00 25.59 .314
[CN= 57.0: N= 3.00]
[Tp= 6.65:DT=30.00]
[IaREC= 4.00: SMIN= 76.32: SMAX=508.81: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.75
050:0018-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_6 165.000 1.261 No_date 33:00 32.42 .398
[CN= 67.0: N= 3.00]
[Tp= 4.18:DT=30.00]
[IaREC= 4.00: SMIN= 50.55: SMAX=336.97: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.67
050:0019-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:VG_DR 1332.000 9.122 No_date 35:00 36.82 .452
[CN= 72.0: N= 3.00]
[Tp= 5.95:DT=30.00]
[IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]
[InterEventTime= 12.00]
050:0020-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_5 224.000 7.947 No_date 28:30 41.48 .509
[CN= 77.0: N= 3.00]
[Tp= .75:DT=30.00]
[IaREC= 4.00: SMIN= 31.15: SMAX=207.66: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.20
050:0021-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:FL_CK 4945.000 43.824 No_date 33:00 38.35 .470
[CN= 74.0: N= 3.00]
[Tp= 4.45:DT=30.00]
[IaREC= 4.00: SMIN= 36.67: SMAX=244.49: SK= .010]
[InterEventTime= 12.00]
050:0022-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_5A2 20.000 .873 No_date 28:30 45.57 .559
[CN= 81.0: N= 3.00]
[Tp= .62:DT=30.00]
[IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.61
050:0023-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_5A1 1412.000 8.537 No_date 37:30 39.90 .490
[CN= 75.0: N= 3.00]
[Tp= 8.00:DT=30.00]
[IaREC= 4.00: SMIN= 33.81: SMAX=225.43: SK= .010]
[InterEventTime= 12.00]
050:0024-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_4 585.000 12.656 No_date 29:30 45.57 .559
[CN= 81.0: N= 3.00]
[Tp= 1.75:DT=30.00]
[IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
[InterEventTime= 12.00]
050:0025-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:LM_CK 1021.000 16.828 No_date 30:30 44.74 .549
[CN= 80.0: N= 3.00]
[Tp= 2.46:DT=30.00]
[IaREC= 4.00: SMIN= 26.32: SMAX=175.50: SK= .010]

```

```

[InterEventTime= 12.00]
050:0026-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_2 177.000 6.279 No_date 28:30 41.48 .509
[CN= 77.0: N= 3.00]
[Tp= .75:DT=30.00]
[IaREC= 4.00: SMIN= 31.15: SMAX=207.66: SK= .010]
[InterEventTime= 12.00]
050:0027-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SM_DR 1122.000 15.311 No_date 31:30 45.57 .559
[CN= 81.0: N= 3.00]
[Tp= 3.25:DT=30.00]
[IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
[InterEventTime= 12.00]
050:0028-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:MO_DR 2737.000 34.329 No_date 31:00 40.69 .499
[CN= 76.0: N= 3.00]
[Tp= 3.03:DT=30.00]
[IaREC= 4.00: SMIN= 32.46: SMAX=216.39: SK= .010]
[InterEventTime= 12.00]
050:0029-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_1 3176.000 37.086 No_date 32:00 42.28 .519
[CN= 78.0: N= 3.00]
[Tp= 3.56:DT=30.00]
[IaREC= 4.00: SMIN= 29.88: SMAX=199.22: SK= .010]
[InterEventTime= 12.00]

```

```

#
# Routing hydrographs
#
# Starting with the addition of Jock River Headwater and Subwatershed 13
#

```

```

050:0030-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:JR_HW 3680.000 17.963 No_date 36:30 30.30 n/a
+ 30.0 03:SW_13 971.000 6.816 No_date 32:30 28.25 n/a
[DT=30.00] SUM= 30.0 01:S_N13 4651.000 23.017 No_date 35:00 29.87 n/a

```

```

#
# Sum of hydrographs from Node 13 routed to Node 13A
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
#

```

```

050:0031-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N13 4651.000 23.017 No_date 35:00 29.87 n/a
[RDT=30.00] out<- 30.0 01:N13A 4651.000 18.758 No_date 38:30 29.87 n/a
[L/S/n= 9074./ .022/.040]
{Vmax= .571:Dmax= 3.883}

```

```

#
# Addition of Subwatershed Jock River at Goodwood Marsh to Node 13A
#

```

```

050:0032-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:N13A 4651.000 18.758 No_date 38:30 29.87 n/a
+ 30.0 03:JR_GWM 3074.000 8.540 No_date 39:30 24.29 n/a
[DT=30.00] SUM= 30.0 01:SN13A 7725.000 27.242 No_date 39:30 27.65 n/a

```

```

#
# Insertion of a reservoir to simulate the effects of the Goodwood Marsh
#

```

```

050:0033-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE RESERVOIR -> 30.0 02:SN13A 7725.000 27.242 No_date 39:30 27.65 n/a
[RDT=30.00] out<- 30.0 01:RES_GM 7725.000 3.797 No_date 62:30 27.65 n/a
{MxStoUsed=.1456E+03}

```

```

#
050:0034-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD 30.0 01:RES_GM 7725.000 3.797 No_date 62:30 27.65 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_RESGM.050
remark:Outflow from Res GM

```

```

# Output of Reservoir Goodwood Marsh routed from Node 13A to Node 12
# (Approximated cross-section - see cross-section 258)

```

```

# Use n=0.04 for summer conditions and n=0.025 for spring conditions
050:0035-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:RES_GM   7725.000   3.797 No_date  62:30  27.65  n/a
[RDT=30.00] out<- 30.0 01:N12     7725.000   3.794 No_date  65:00  27.65  n/a
[L/S/n= 5926./ .076/.040]
{Vmax= .556:Dmax= 1.539}

#
# Addition of Subwatershed Jock River at Ashton to Node 12
#
050:0036-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N12     7725.000   3.794 No_date  65:00  27.65  n/a
      +          30.0 03:JR_ASH   1781.000  16.547 No_date  32:30  36.82  n/a
[DT=30.00] SUM=  30.0 01:S_N12   9506.000  18.583 No_date  32:30  29.37  n/a
050:0037-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD         30.0 01:S_N12   9506.000  18.583 No_date  32:30  29.37  n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN12.050
remark:flow at S_N12

#
# Sum of hydrographs from Node 12 routed to Node 11
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
050:0038-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:S_N12   9506.000  18.583 No_date  32:30  29.37  n/a
[RDT=30.00] out<- 30.0 01:N11     9506.000  18.279 No_date  32:30  29.37  n/a
[L/S/n= 972./ .051/.040]
{Vmax= .734:Dmax= 3.040}

#
# Sum of hydrographs from Node 12 routed to Node 11 with Dummy section 248
#
050:0039-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:S_N12   9506.000  18.583 No_date  32:30  29.37  n/a
[RDT=30.00] out<- 30.0 01:Dum11  9506.000  18.314 No_date  32:30  29.37  n/a
[L/S/n= 972./ .054/.040]
{Vmax= .748:Dmax= 3.010}

#
# Addition of Subwatershed 11 and No Name Creek to Node 11
#
050:0040-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:Dum11   9506.000  18.314 No_date  32:30  29.37  n/a
      +          30.0 03:SW_11    500.000   8.861 No_date  29:00  31.71  n/a
      +          30.0 04:NN_CK    1917.000  12.088 No_date  34:00  31.71  n/a
[DT=30.00] SUM=  30.0 01:S_N11  11923.000  32.241 No_date  33:00  29.84  n/a

#
# Sum of hydrographs from Node 11 routed to Node 10
# Section 1
#
050:0041-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  ->  30.0 02:S_N11  11923.000  32.241 No_date  33:00  29.84  n/a
[RDT=30.00] out<- 30.0 01:N10   11923.000  20.165 No_date  40:00  29.84  n/a
[L/S/n=14028./ .157/.040]
{Vmax= .473:Dmax= 1.413}

#
# Addition of Subwatershed 10 to Node 10
#
050:0042-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N10   11923.000  20.165 No_date  40:00  29.84  n/a
      +          30.0 03:SW_10   5666.000  31.459 No_date  37:30  36.82  n/a
[DT=30.00] SUM=  30.0 01:S_N10  17589.000  51.443 No_date  38:00  32.09  n/a
050:0043-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD         30.0 01:S_N10  17589.000  51.443 No_date  38:00  32.09  n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN10.050
remark:flow at S_N10: N10 + SW_10

# Addition of Kings Creek to S_N10
#

```

```

050:0044-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:S_N10      17589.000  51.443 No_date  38:00  32.09 n/a
                + 30.0 03:KG_CHK      8376.000  29.616 No_date  39:30  31.71 n/a
  [DT=30.00] SUM= 30.0 01:S_N10A    25965.000  80.385 No_date  39:30  31.97 n/a

```

```

#
# Sum of hydrographs from Node 10 routed to Node 9
# Section 2
#

```

```

050:0045-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  -> 30.0 02:S_N10A    25965.000  80.385 No_date  39:30  31.97 n/a
[RDT=30.00] out<- 30.0 01:N9      25965.000  78.483 No_date  39:30  31.97 n/a
[L/S/n= 3982./ .075/.040]
{Vmax= .739:Dmax= 1.990}

```

```

#
# Addition of Subwatershed 9 and Nichols Creek to Node 9
#

```

```

050:0046-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N9          25965.000  78.483 No_date  39:30  31.97 n/a
                + 30.0 03:SW_9        1132.000  13.828 No_date  30:30  35.33 n/a
                + 30.0 04:NC_CHK      4464.000  14.806 No_date  39:30  28.93 n/a
  [DT=30.00] SUM= 30.0 01:S_N9      31561.000  96.483 No_date  39:30  31.66 n/a

```

```

#
# Sum of hydrographs from Node 9 routed to Node 8
# Section 3
#

```

```

050:0047-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  -> 30.0 02:S_N9      31561.000  96.483 No_date  39:30  31.66 n/a
[RDT=30.00] out<- 30.0 01:N8      31561.000  91.152 No_date  40:00  31.66 n/a
[L/S/n= 2269./ .088/.045]
{Vmax= .367:Dmax= 1.816}

```

```

#
# Addition of Subwatershed 8 and Hobb's Drain to Node 8
#

```

```

050:0048-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N8          31561.000  91.152 No_date  40:00  31.66 n/a
                + 30.0 03:SW_8         131.000   2.605 No_date  28:30  29.61 n/a
                + 30.0 04:HB_DR      3854.000  17.631 No_date  38:30  31.71 n/a
  [DT=30.00] SUM= 30.0 01:S_N8      35546.000  108.049 No_date  39:30  31.66 n/a

```

```

#
# Sum of hydrographs from Node 8 routed to Node 7
# Section 4
#

```

```

050:0049-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL  -> 30.0 02:S_N8      35546.000  108.049 No_date  39:30  31.66 n/a
[RDT=30.00] out<- 30.0 01:N7      35546.000  92.806 No_date  44:30  31.66 n/a
[L/S/n= 3750./ .053/.070]
{Vmax= .230:Dmax= 2.266}

```

```

#
# Addition of Subwatershed 7 to Node 7
#

```

```

050:0050-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N7          35546.000  92.806 No_date  44:30  31.66 n/a
                + 30.0 03:SW_7         3197.000  13.606 No_date  36:00  25.59 n/a
  [DT=30.00] SUM= 30.0 01:S_N7      38743.000  100.010 No_date  43:30  31.16 n/a
050:0051-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD        30.0 01:S_N7      38743.000  100.010 No_date  43:30  31.16 n/a
  fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN7.050
  remark:flow at S_N7: N7 + SW_7

```

```

# Insertion of a reservoir to simulate the effects of the Richmond Fen.
# Storage area and volumes were estimated from available topo maps.
# Release rate from fen was assumed to be controlled by the downstream
# river cross-section for summer conditions. It is was assumed that for up to
# 0.75 m of water, the main channel of the river provided the storage. Above
# this depth, the wetland starts to significantly store water.

```

```

#
050:0052-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ROUTE RESERVOIR -> 30.0 02:S_N7 38743.000 100.010 No_date 43:30 31.16 n/a
[RDT=30.00] out<- 30.0 01:RES_RF 38743.000 50.512 No_date 59:00 31.16 n/a
{MxStoUsed=.4285E+03}
050:0053-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
SAVE HYD 30.0 01:RES_RF 38743.000 50.512 No_date 59:00 31.16 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_ResRF.050
remark:outflow of Richmond Fen

#
# Sum of hydrographs from Node 7 routed to Node 6
# Section 5
#
050:0054-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:RES_RF 38743.000 50.512 No_date 59:00 31.16 n/a
[RDT=30.00] out<- 30.0 01:N6 38743.000 50.296 No_date 60:30 31.16 n/a
[L/S/n= 3056./ .082/.025]
{Vmax= .534:Dmax= 1.234}

#
# Addition of Subwatershed 6 and Van Gaal Drain to Node 6
#
050:0055-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ADD HYD 30.0 02:N6 38743.000 50.296 No_date 60:30 31.16 n/a
+ 30.0 03:SW_6 165.000 1.261 No_date 33:00 32.42 n/a
+ 30.0 04:VG_DR 1332.000 9.122 No_date 35:00 36.82 n/a
[DT=30.00] SUM= 30.0 01:S_N6 40240.010 50.407 No_date 60:30 31.35 n/a

#
# Sum of hydrographs from Node 6 routed to Node 5
# Section 6
#
050:0056-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N6 40240.010 50.407 No_date 60:30 31.35 n/a
[RDT=30.00] out<- 30.0 01:N5 40240.010 50.300 No_date 61:00 31.35 n/a
[L/S/n= 1852./ .054/.035]
{Vmax= .466:Dmax= 1.333}

#
# Addition of Subwatershed 5 and Flowing Creek to Node 5
#
050:0057-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ADD HYD 30.0 02:N5 40240.010 50.300 No_date 61:00 31.35 n/a
+ 30.0 03:SW_5 224.000 7.947 No_date 28:30 41.48 n/a
+ 30.0 04:FL_CK 4945.000 43.824 No_date 33:00 38.35 n/a
[DT=30.00] SUM= 30.0 01:S_N5 45409.010 70.670 No_date 34:00 32.16 n/a

#
# Sum of hydrographs from Node 5 routed to Node 5A
# Section 7
#
050:0058-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N5 45409.010 70.670 No_date 34:00 32.16 n/a
[RDT=30.00] out<- 30.0 01:N5A 45409.010 70.588 No_date 34:30 32.16 n/a
[L/S/n= 556./ .090/.040]
{Vmax= .528:Dmax= 1.284}

#
# Addition of Subwatershed 5A1 and Subwatershed 5A2 to Node 5A
#
050:0059-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
ADD HYD 30.0 02:N5A 45409.010 70.588 No_date 34:30 32.16 n/a
+ 30.0 03:SW_5A2 20.000 .873 No_date 28:30 45.57 n/a
+ 30.0 04:SW_5A1 1412.000 8.537 No_date 37:30 39.90 n/a
[DT=30.00] SUM= 30.0 01:S_N5A 46841.010 78.358 No_date 34:30 32.40 n/a

#
# Sum of hydrographs from Node 5A routed to Node 4
# Section 8
#

```



050:0060-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
ROUTE CHANNEL -> 30.0 02:S\_N5A 46841.010 78.358 No\_date 34:30 32.40 n/a  
[RDT=30.00] out<- 30.0 01:N4 46841.010 75.078 No\_date 36:00 32.40 n/a  
[L/S/n= 4630./ .043/.035]  
{Vmax= .871:Dmax= 3.687}

#  
# Addition of Subwatershed 4 and Leamy Creek to Node 4  
#

050:0061-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
ADD HYD 30.0 02:N4 46841.010 75.078 No\_date 36:00 32.40 n/a  
+ 30.0 03:SW\_4 585.000 12.656 No\_date 29:30 45.57 n/a  
+ 30.0 04:LM\_CK 1021.000 16.828 No\_date 30:30 44.74 n/a  
[DT=30.00] SUM= 30.0 01:S\_N4 48447.000 84.137 No\_date 35:00 32.82 n/a  
050:0062-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
SAVE HYD 30.0 01:S\_N4 48447.000 84.137 No\_date 35:00 32.82 n/a  
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H-S\_N4.050  
remark:flow at S\_N4

#  
# Sum of hydrographs from Node 4 routed to Node 2  
# Section 9  
#

050:0063-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
ROUTE CHANNEL -> 30.0 02:S\_N4 48447.000 84.137 No\_date 35:00 32.82 n/a  
[RDT=30.00] out<- 30.0 01:N2 48447.000 83.911 No\_date 35:30 32.82 n/a  
[L/S/n= 1667./ .060/.040]  
{Vmax= .907:Dmax= 3.737}

#  
# Addition of Subwatershed 2 with Monohan Drain and Smith Drain to Node 2  
#

050:0064-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
ADD HYD 30.0 02:N2 48447.000 83.911 No\_date 35:30 32.82 n/a  
+ 30.0 03:SW\_2 177.000 6.279 No\_date 28:30 41.48 n/a  
+ 30.0 04:SM\_DR 1122.000 15.311 No\_date 31:30 45.57 n/a  
+ 30.0 05:MO\_DR 2737.000 34.329 No\_date 31:00 40.69 n/a  
[DT=30.00] SUM= 30.0 01:S\_N2 52483.000 122.469 No\_date 33:00 33.53 n/a  
050:0065-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
SAVE HYD 30.0 01:S\_N2 52483.000 122.469 No\_date 33:00 33.53 n/a  
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H\_SN2.050  
remark:flow at S\_N2 Jock River Gauge at Moodie Dr.

#  
# Sum of hydrographs from Node 2 routed to Node 1  
# Section 10  
#

050:0066-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
ROUTE CHANNEL -> 30.0 02:S\_N2 52483.000 122.469 No\_date 33:00 33.53 n/a  
[RDT=30.00] out<- 30.0 01:N1 52483.000 107.946 No\_date 35:30 33.53 n/a  
[L/S/n=10046./ .050/.040]  
{Vmax= 1.047:Dmax= 4.256}

#  
# Addition of Subwatershed 1 to Node 1  
#

050:0067-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
ADD HYD 30.0 02:N1 52483.000 107.946 No\_date 35:30 33.53 n/a  
+ 30.0 03:SW\_1 3176.000 37.086 No\_date 32:00 42.28 n/a  
[DT=30.00] SUM= 30.0 01:N1 55659.000 136.459 No\_date 34:00 34.03 n/a  
050:0068-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
SAVE HYD 30.0 01:N1 55659.000 136.459 No\_date 34:00 34.03 n/a  
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H-N1.050  
remark:total outflow of Jock River

#####  
\*\* END OF RUN : 99

\*\*\*\*\*

```

RUN:COMMAND#
100:0001-----
START
  [TZERO = .00 hrs on 0]
  [METOUT= 2 (1=imperial, 2=metric output)]
  [NSTORM= 1 ]
  [NRUN = 100 ]

*****
# SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
*****
# Project Name: [Jock River] Project Number: [411-02]
# Date : 06-06-2003
# Modeller : [JoF]
# Company : JFSAinc.
# License # : 2549237
*****
# CALIBRATION OF SUMMER MODEL PARAMETERS
# USING CONTINUOUS SIMULATIONS
# Rainfall data from JFSA raingauge installed at site + other gauges by the City
# Use data collected from May 1st to July 14, 2003

# -----
100:0002-----
READ STORM
  Filename = storm.001
  Comment = Pluie SCS de 24 hres 1:100 ans pour Ottawa CDA
  [SDT=10.00:SDUR= 24.00:PTOT= 88.57]
100:0003-----
MODIFY STORM
  [RFACT= 1.00:TSHIFT= 960.00 min]
  [SDT=10.00:SDUR= 40.00:PTOT= 88.57]
100:0004-----
COMPUTE API
  [APIini= 50.00: APIkdy= .8500: APIkdt= .9989]
  {APIimax=119.84: APIavg= 69.19: APIimin= 44.87}

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.32
100:0005-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:JR_HW 3680.000 21.054 No_date 36:30 35.15 .397
  [CN= 64.0: N= 3.00]
  [Tp= 7.13:DT=30.00]
  [IaREC= 4.00: SMIN= 57.05: SMAX=380.32: SK= .010]
  [InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.32
100:0006-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_13 971.000 8.058 No_date 32:30 32.81 .370
  [CN= 61.0: N= 3.00]
  [Tp= 3.76:DT=30.00]
  [IaREC= 4.00: SMIN= 64.50: SMAX=430.01: SK= .010]
  [InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.80
100:0007-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:JR_GWM 3074.000 9.983 No_date 39:30 28.27 .319
  [CN= 55.0: N= 3.00]
  [Tp=11.33:DT=30.00]
  [IaREC= 4.00: SMIN= 83.24: SMAX=554.96: SK= .010]
  [InterEventTime= 12.00]
100:0008-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:JR_ASH 1781.000 19.356 No_date 32:30 42.46 .479

```

```

[CN= 72.0: N= 3.00]
[Tp= 3.91:DT=30.00]
[IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]
[InterEventTime= 12.00]
100:0009-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_11 500.000 10.499 No_date 29:00 36.74 .415
[CN= 66.0: N= 3.00]
[Tp= 1.24:DT=30.00]
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.80
100:0010-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:NN_CK 1917.000 14.197 No_date 34:00 36.74 .415
[CN= 66.0: N= 3.00]
[Tp= 5.29:DT=30.00]
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.52
100:0011-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_10 5666.000 36.560 No_date 37:30 42.46 .479
[CN= 72.0: N= 3.00]
[Tp= 8.00:DT=30.00]
[IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.75
100:0012-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:KG_CK 8376.000 34.456 No_date 39:30 36.74 .415
[CN= 66.0: N= 3.00]
[Tp=11.66:DT=30.00]
[IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.68
100:0013-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_9 1132.000 16.257 No_date 30:30 40.80 .461
[CN= 70.0: N= 3.00]
[Tp= 2.51:DT=30.00]
[IaREC= 4.00: SMIN= 43.07: SMAX=287.10: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.82
100:0014-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:NC_CK 4464.000 17.270 No_date 39:30 33.59 .379
[CN= 62.0: N= 3.00]
[Tp=11.32:DT=30.00]
[IaREC= 4.00: SMIN= 61.90: SMAX=412.66: SK= .010]
[InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.80
100:0015-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_8 131.000 3.096 No_date 28:30 34.37 .388
[CN= 63.0: N= 3.00]
[Tp= .90:DT=30.00]
[IaREC= 4.00: SMIN= 59.42: SMAX=396.11: SK= .010]
[InterEventTime= 12.00]

```

```

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.65
100:0016-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:HB_DR      3854.000  20.590 No_date  38:00  36.74 .415
  [CN= 66.0: N= 3.00]
  [Tp= 8.42:DT=30.00]
  [IaREC= 4.00: SMIN= 52.62: SMAX=350.79: SK= .010]
  [InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.82
100:0017-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:SW_7      3197.000  16.027 No_date  36:00  29.76 .336
  [CN= 57.0: N= 3.00]
  [Tp= 6.65:DT=30.00]
  [IaREC= 4.00: SMIN= 76.32: SMAX=508.81: SK= .010]
  [InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.75
100:0018-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:SW_6      165.000   1.482 No_date  33:00  37.54 .424
  [CN= 67.0: N= 3.00]
  [Tp= 4.18:DT=30.00]
  [IaREC= 4.00: SMIN= 50.55: SMAX=336.97: SK= .010]
  [InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.67
100:0019-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:VG_DR      1332.000  10.635 No_date  35:00  42.46 .479
  [CN= 72.0: N= 3.00]
  [Tp= 5.95:DT=30.00]
  [IaREC= 4.00: SMIN= 39.75: SMAX=264.99: SK= .010]
  [InterEventTime= 12.00]
100:0020-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD  30.0 01:SW_5      224.000   9.294 No_date  28:30  47.59 .537
  [CN= 77.0: N= 3.00]
  [Tp= .75:DT=30.00]
  [IaREC= 4.00: SMIN= 31.15: SMAX=207.66: SK= .010]
  [InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.20
100:0021-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:FL_CK      4945.000  51.121 No_date  33:00  44.15 .498
  [CN= 74.0: N= 3.00]
  [Tp= 4.45:DT=30.00]
  [IaREC= 4.00: SMIN= 36.67: SMAX=244.49: SK= .010]
  [InterEventTime= 12.00]
100:0022-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD  30.0 01:SW_5A2      20.000   1.014 No_date  28:30  52.03 .587
  [CN= 81.0: N= 3.00]
  [Tp= .62:DT=30.00]
  [IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
  [InterEventTime= 12.00]

#
# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
# of 1.61
100:0023-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD  30.0 01:SW_5A1      1412.000   9.884 No_date  37:30  45.85 .518
  [CN= 75.0: N= 3.00]
  [Tp= 8.00:DT=30.00]
  [IaREC= 4.00: SMIN= 33.81: SMAX=225.43: SK= .010]
  [InterEventTime= 12.00]

```

```

100:0024-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_4 585.000 14.684 No_date 29:30 52.03 .587
[CN= 81.0: N= 3.00]
[Tp= 1.75:DT=30.00]
[IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
[InterEventTime= 12.00]
100:0025-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:LM_CK 1021.000 19.515 No_date 30:30 51.13 .577
[CN= 80.0: N= 3.00]
[Tp= 2.46:DT=30.00]
[IaREC= 4.00: SMIN= 26.32: SMAX=175.50: SK= .010]
[InterEventTime= 12.00]
100:0026-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
* CONTINUOUS NASHYD 30.0 01:SW_2 177.000 7.344 No_date 28:30 47.59 .537
[CN= 77.0: N= 3.00]
[Tp= .75:DT=30.00]
[IaREC= 4.00: SMIN= 31.15: SMAX=207.66: SK= .010]
[InterEventTime= 12.00]
100:0027-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SM_DR 1122.000 17.710 No_date 31:30 52.03 .587
[CN= 81.0: N= 3.00]
[Tp= 3.25:DT=30.00]
[IaREC= 4.00: SMIN= 25.21: SMAX=168.09: SK= .010]
[InterEventTime= 12.00]
100:0028-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:MO_DR 2737.000 40.026 No_date 31:00 46.72 .527
[CN= 76.0: N= 3.00]
[Tp= 3.03:DT=30.00]
[IaREC= 4.00: SMIN= 32.46: SMAX=216.39: SK= .010]
[InterEventTime= 12.00]
100:0029-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
CONTINUOUS NASHYD 30.0 01:SW_1 3176.000 43.079 No_date 32:00 48.46 .547
[CN= 78.0: N= 3.00]
[Tp= 3.56:DT=30.00]
[IaREC= 4.00: SMIN= 29.88: SMAX=199.22: SK= .010]
[InterEventTime= 12.00]

```

```

#
# Routing hydrographs
#
# Starting with the addition of Jock River Headwater and Subwatershed 13
#

```

```

100:0030-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:JR_HW 3680.000 21.054 No_date 36:30 35.15 n/a
+ 30.0 03:SW_13 971.000 8.058 No_date 32:30 32.81 n/a
[DT=30.00] SUM= 30.0 01:S_N13 4651.000 27.020 No_date 35:00 34.66 n/a

```

```

#
# Sum of hydrographs from Node 13 routed to Node 13A
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
#

```

```

100:0031-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N13 4651.000 27.020 No_date 35:00 34.66 n/a
[RDT=30.00] out<- 30.0 01:N13A 4651.000 22.149 No_date 38:30 34.66 n/a
[L/S/n= 9074./ .022/.040]
{Vmax= .594:Dmax= 4.138}

```

```

#
# Addition of Subwatershed Jock River at Goodwood Marsh to Node 13A
#

```

```

100:0032-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:N13A 4651.000 22.149 No_date 38:30 34.66 n/a
+ 30.0 03:JR_GWM 3074.000 9.983 No_date 39:30 28.27 n/a
[DT=30.00] SUM= 30.0 01:SN13A 7725.000 31.987 No_date 39:30 32.12 n/a

```

```

#
# Insertion of a reservoir to simulate the effects of the Goodwood Marsh
#

```

```

100:0033-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE RESERVOIR -> 30.0 02:SN13A 7725.000 31.987 No_date 39:30 32.12 n/a

```

```

[RDT=30.00] out<- 30.0 01:RES_GM 7725.000 3.938 No_date 63:30 32.12 n/a
{MxStoUsed=.1767E+03}

#
100:0034-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD 30.0 01:RES_GM 7725.000 3.938 No_date 63:30 32.12 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_RESGM.100
remark:Outflow from Res GM

# Output of Reservoir Goodwood Marsh routed from Node 13A to Node 12
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
100:0035-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:RES_GM 7725.000 3.938 No_date 63:30 32.12 n/a
[RDT=30.00] out<- 30.0 01:N12 7725.000 3.934 No_date 66:30 32.12 n/a
[L/S/n= 5926./ .076/.040]
{Vmax= .560:Dmax= 1.558}

#
# Addition of Subwatershed Jock River at Ashton to Node 12
#
100:0036-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:N12 7725.000 3.934 No_date 66:30 32.12 n/a
+ 30.0 03:JR_ASH 1781.000 19.356 No_date 32:30 42.46 n/a
[DT=30.00] SUM= 30.0 01:S_N12 9506.000 21.410 No_date 32:30 34.06 n/a
100:0037-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD 30.0 01:S_N12 9506.000 21.410 No_date 32:30 34.06 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN12.100
remark:flow at S_N12

#
# Sum of hydrographs from Node 12 routed to Node 11
# (Approximated cross-section - see cross-section 258)
# Use n=0.04 for summer conditions and n=0.025 for spring conditions
100:0038-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N12 9506.000 21.410 No_date 32:30 34.06 n/a
[RDT=30.00] out<- 30.0 01:N11 9506.000 21.115 No_date 33:00 34.06 n/a
[L/S/n= 972./ .051/.040]
{Vmax= .760:Dmax= 3.206}

#
# Sum of hydrographs from Node 12 routed to Node 11 with Dummy section 248
#
100:0039-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N12 9506.000 21.410 No_date 32:30 34.06 n/a
[RDT=30.00] out<- 30.0 01:Dum11 9506.000 21.111 No_date 32:30 34.06 n/a
[L/S/n= 972./ .054/.040]
{Vmax= .774:Dmax= 3.175}

#
# Addition of Subwatershed 11 and No Name Creek to Node 11
#
100:0040-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD 30.0 02:Dum11 9506.000 21.111 No_date 32:30 34.06 n/a
+ 30.0 03:SW_11 500.000 10.499 No_date 29:00 36.74 n/a
+ 30.0 04:NN_CK 1917.000 14.197 No_date 34:00 36.74 n/a
[DT=30.00] SUM= 30.0 01:S_N11 11923.000 37.433 No_date 33:00 34.60 n/a

#
# Sum of hydrographs from Node 11 routed to Node 10
# Section 1
#
100:0041-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N11 11923.000 37.433 No_date 33:00 34.60 n/a
[RDT=30.00] out<- 30.0 01:N10 11923.000 23.312 No_date 39:00 34.60 n/a
[L/S/n=14028./ .157/.040]
{Vmax= .484:Dmax= 1.483}

#
# Addition of Subwatershed 10 to Node 10
#

```

```

100:0042-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N10      11923.000  23.312 No_date  39:00  34.60 n/a
              + 30.0 03:SW_10    5666.000  36.560 No_date  37:30  42.46 n/a
[DT=30.00] SUM= 30.0 01:S_N10    17589.000  59.667 No_date  38:00  37.13 n/a
100:0043-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD        30.0 01:S_N10    17589.000  59.667 No_date  38:00  37.13 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN10.100
remark:flow at S_N10: N10 + SW_10

# Addition of Kings Creek to S_N10
#
100:0044-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:S_N10    17589.000  59.667 No_date  38:00  37.13 n/a
              + 30.0 03:KG_CK     8376.000  34.456 No_date  39:30  36.74 n/a
[DT=30.00] SUM= 30.0 01:S_N10A  25965.000  93.246 No_date  39:30  37.01 n/a

#
# Sum of hydrographs from Node 10 routed to Node 9
# Section 2
#
100:0045-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N10A  25965.000  93.246 No_date  39:30  37.01 n/a
[RDT=30.00] out<- 30.0 01:N9     25965.000  91.373 No_date  39:30  37.00 n/a
[L/S/n= 3982./ .075/.040]
{Vmax= .769:Dmax= 2.125}

#
# Addition of Subwatershed 9 and Nichols Creek to Node 9
#
100:0046-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N9      25965.000  91.373 No_date  39:30  37.00 n/a
              + 30.0 03:SW_9     1132.000  16.257 No_date  30:30  40.80 n/a
              + 30.0 04:NC_CK     4464.000  17.270 No_date  39:30  33.59 n/a
[DT=30.00] SUM= 30.0 01:S_N9    31561.000  112.264 No_date  39:30  36.66 n/a

#
# Sum of hydrographs from Node 9 routed to Node 8
# Section 3
#
100:0047-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N9    31561.000  112.264 No_date  39:30  36.66 n/a
[RDT=30.00] out<- 30.0 01:N8    31561.000  106.464 No_date  40:00  36.66 n/a
[L/S/n= 2269./ .088/.045]
{Vmax= .372:Dmax= 1.905}

#
# Addition of Subwatershed 8 and Hobb's Drain to Node 8
#
100:0048-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N8      31561.000  106.464 No_date  40:00  36.66 n/a
              + 30.0 03:SW_8      131.000    3.096 No_date  28:30  34.37 n/a
              + 30.0 04:HB_DR    3854.000  20.590 No_date  38:00  36.74 n/a
[DT=30.00] SUM= 30.0 01:S_N8    35546.000  126.233 No_date  39:30  36.66 n/a

#
# Sum of hydrographs from Node 8 routed to Node 7
# Section 4
#
100:0049-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL -> 30.0 02:S_N8    35546.000  126.233 No_date  39:30  36.66 n/a
[RDT=30.00] out<- 30.0 01:N7    35546.000  108.761 No_date  44:30  36.66 n/a
[L/S/n= 3750./ .053/.070]
{Vmax= .236:Dmax= 2.384}

#
# Addition of Subwatershed 7 to Node 7
#
100:0050-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD          30.0 02:N7      35546.000  108.761 No_date  44:30  36.66 n/a
              + 30.0 03:SW_7      3197.000  16.027 No_date  36:00  29.76 n/a
[DT=30.00] SUM= 30.0 01:S_N7    38743.000  117.353 No_date  43:30  36.09 n/a

```

```

100:0051-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD          30.0 01:S_N7      38743.000 117.353 No_date  43:30  36.09 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN7.100
remark:flow at S_N7: N7 + SW_7

# Insertion of a reservoir to simulate the effects of the Richmond Fen.
# Storage area and volumes were estimated from available topo maps.
# Release rate from fen was assumed to be controlled by the downstream
# river cross-section for summer conditions. It is was assumed that for up to
# 0.75 m of water, the main channel of the river provided the storage. Above
# this depth, the wetland starts to signigicantly store water.
#
100:0052-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE RESERVOIR ->  30.0 02:S_N7      38743.000 117.353 No_date  43:30  36.09 n/a
[RDT=30.00] out<-  30.0 01:RES_RF    38743.000  60.593 No_date  58:30  36.09 n/a
{MxStoUsed=.5014E+03}
100:0053-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
SAVE HYD          30.0 01:RES_RF    38743.000  60.593 No_date  58:30  36.09 n/a
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_ResRF.100
remark:outflow of Richmond Fen

#
# Sum of hydrographs from Node 7 routed to Node 6
# Section 5
#
100:0054-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL ->   30.0 02:RES_RF    38743.000  60.593 No_date  58:30  36.09 n/a
[RDT=30.00] out<-  30.0 01:N6      38743.000  60.336 No_date  60:00  36.09 n/a
[L/S/n= 3056./ .082/.025]
{Vmax= .553:Dmax= 1.353}

#
# Addition of Subwatershed 6 and Van Gaal Drain to Node 6
#
100:0055-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD           30.0 02:N6      38743.000  60.336 No_date  60:00  36.09 n/a
+                 30.0 03:SW_6     165.000    1.482 No_date  33:00  37.54 n/a
+                 30.0 04:VG_DR     1332.000  10.635 No_date  35:00  42.46 n/a
[DT=30.00] SUM=   30.0 01:S_N6    40240.010  60.497 No_date  59:30  36.31 n/a

#
# Sum of hydrographs from Node 6 routed to Node 5
# Section 6
#
100:0056-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL ->   30.0 02:S_N6    40240.010  60.497 No_date  59:30  36.31 n/a
[RDT=30.00] out<-  30.0 01:N5     40240.010  60.383 No_date  60:30  36.31 n/a
[L/S/n= 1852./ .054/.035]
{Vmax= .490:Dmax= 1.451}

#
# Addition of Subwatershed 5 and Flowing Creek to Node 5
#
100:0057-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ADD HYD           30.0 02:N5     40240.010  60.383 No_date  60:30  36.31 n/a
+                 30.0 03:SW_5      224.000    9.294 No_date  28:30  47.59 n/a
+                 30.0 04:FL_CK     4945.000  51.121 No_date  33:00  44.15 n/a
[DT=30.00] SUM=   30.0 01:S_N5    45409.010  79.891 No_date  34:00  37.22 n/a

#
# Sum of hydrographs from Node 5 routed to Node 5A
# Section 7
#
100:0058-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
ROUTE CHANNEL ->   30.0 02:S_N5     45409.010  79.891 No_date  34:00  37.22 n/a
[RDT=30.00] out<-  30.0 01:N5A     45409.010  79.815 No_date  34:00  37.22 n/a
[L/S/n= 556./ .090/.040]
{Vmax= .544:Dmax= 1.346}

#
# Addition of Subwatershed 5A1 and Subwatershed 5A2 to Node 5A

```



```

#
100:0059-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  ADD HYD                30.0 02:N5A      45409.010  79.815 No_date  34:00  37.22 n/a
                        +  30.0 03:SW_5A2    20.000    1.014 No_date  28:30  52.03 n/a
                        +  30.0 04:SW_5A1    1412.000   9.884 No_date  37:30  45.85 n/a
  [DT=30.00] SUM=       30.0 01:S_N5A    46841.010  88.619 No_date  34:30  37.48 n/a

```

```

#
# Sum of hydrographs from Node 5A routed to Node 4
# Section 8
#

```

```

100:0060-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  ROUTE CHANNEL  ->  30.0 02:S_N5A    46841.010  88.619 No_date  34:30  37.48 n/a
  [RDT=30.00] out<- 30.0 01:N4      46841.010  84.955 No_date  36:00  37.48 n/a
  [L/S/n= 4630./ .043/.035]
  {Vmax= .901:Dmax= 3.849}

```

```

#
# Addition of Subwatershed 4 and Leamy Creek to Node 4
#

```

```

100:0061-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  ADD HYD                30.0 02:N4      46841.010  84.955 No_date  36:00  37.48 n/a
                        +  30.0 03:SW_4      585.000   14.684 No_date  29:30  52.03 n/a
                        +  30.0 04:LM_CK    1021.000  19.515 No_date  30:30  51.13 n/a
  [DT=30.00] SUM=       30.0 01:S_N4    48447.000  95.694 No_date  34:30  37.95 n/a
100:0062-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  SAVE HYD                30.0 01:S_N4    48447.000  95.694 No_date  34:30  37.95 n/a
  fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H-S_N4.100
  remark:flow at S_N4

```

```

#
# Sum of hydrographs from Node 4 routed to Node 2
# Section 9
#

```

```

100:0063-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  ROUTE CHANNEL  ->  30.0 02:S_N4    48447.000  95.694 No_date  34:30  37.95 n/a
  [RDT=30.00] out<- 30.0 01:N2      48447.000  95.342 No_date  35:00  37.95 n/a
  [L/S/n= 1667./ .060/.040]
  {Vmax= .942:Dmax= 3.915}

```

```

#
# Addition of Subwatershed 2 with Monohan Drain and Smith Drain to Node 2
#

```

```

100:0064-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  ADD HYD                30.0 02:N2      48447.000  95.342 No_date  35:00  37.95 n/a
                        +  30.0 03:SW_2      177.000    7.344 No_date  28:30  47.59 n/a
                        +  30.0 04:SM_DR    1122.000  17.710 No_date  31:30  52.03 n/a
                        +  30.0 05:MO_DR    2737.000  40.026 No_date  31:00  46.72 n/a
  [DT=30.00] SUM=       30.0 01:S_N2    52483.000  141.415 No_date  32:30  38.74 n/a
100:0065-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  SAVE HYD                30.0 01:S_N2    52483.000  141.415 No_date  32:30  38.74 n/a
  fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H_SN2.100
  remark:flow at S_N2 Jock River Gauge at Moodie Dr.

```

```

#
# Sum of hydrographs from Node 2 routed to Node 1
# Section 10
#

```

```

100:0066-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  ROUTE CHANNEL  ->  30.0 02:S_N2    52483.000  141.415 No_date  32:30  38.74 n/a
  [RDT=30.00] out<- 30.0 01:N1      52483.000  124.304 No_date  35:00  38.74 n/a
  [L/S/n=10046./ .050/.040]
  {Vmax= 1.091:Dmax= 4.553}

```

```

#
# Addition of Subwatershed 1 to Node 1
#

```

```

100:0067-----DT-ID:NHYD-----AREA---QPEAK-TpeakDate_hh:mm---R.V.-R.C.-
  ADD HYD                30.0 02:N1      52483.000  124.304 No_date  35:00  38.74 n/a
                        +  30.0 03:SW_1      3176.000   43.079 No_date  32:00  48.46 n/a
  [DT=30.00] SUM=       30.0 01:N1      55659.000  158.420 No_date  34:00  39.29 n/a

```

100:0068-----DT-ID:NHYD-----AREA----QPEAK-TpeakDate\_hh:mm----R.V.-R.C.-  
SAVE HYD 30.0 01:N1 55659.000 158.420 No\_date 34:00 39.29 n/a  
fname :c:\JFSA\P411\SWMHYMO\SUMMER~1\H-N1.100  
remark:total outflow of Jock River

#####  
100:0002-----  
FINISH  
-----

\*\*\*\*\*  
WARNINGS / ERRORS / NOTES  
-----

002:0015 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

002:0020 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

002:0022 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

002:0026 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

005:0015 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

005:0020 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

005:0022 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

005:0026 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

010:0015 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

010:0020 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

010:0022 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

010:0026 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

025:0015 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

025:0020 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

025:0022 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

025:0026 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

050:0015 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

050:0020 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

050:0022 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.

050:0026 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.

R.V. may be ok. Peak flow could be off.  
100:0015 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.  
100:0020 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.  
100:0022 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.  
100:0026 CONTINUOUS NASHYD  
\*\*\* WARNING: Time step is too large for value of TP.  
R.V. may be ok. Peak flow could be off.  
Simulation ended on 2004-03-25 at 18:00:37  
=====