APPENDIX D - Hydrologic Models

Input

- **Spring Event**
- **Summer Event**

SPRING EVENT INPUT

```
20    Metric units / ID numbers OFF
*#*************************************************************************
*#  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.
*
* Calibrated parameters for Spring 2003 data:  APII=50, APIK=0.80, CN=35,
*                                              SK=0.1, InterEventTime=6,
*                                              GWResk=0.850, VHydCond=0.01
*
*%-----------------|-------------------------------------------------------|
*%-----------------|-------------------------------------------------------|
*%  2 YR - 10 day SNOWMELT+RAIN based on OTTAWA CDA IDF Curves (12 hrs sinus)
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[002]
*%                   ["50021012.stm"]
*%-----------------|-------------------------------------------------------|
*%-----------------|-------------------------------------------------------|
READ STORM          STORM_FILENAME=["storm.001"]
*%-----------------|-------------------------------------------------------|
*
MODIFY STORM        ICASEms=[1],  NSHIFT=[0],
                    RedFACT=[0.90],
*%-----------------|-------------------------------------------------------|
COMPUTE API         APII=[50], APIK=[.80]/day
*%-----------------|-------------------------------------------------------|
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["JR_HW"], DT=[60]min, AREA=[3680](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[5.42]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_13"], DT=[60]min, AREA=[971](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[2.86]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["JR_GWM"], DT=[60]min, AREA=[3074](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[6.29]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["JR_ASH"], DT=[60]min, AREA=[1781](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
```

```
                    N=[3], TP=[3.91]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_11"], DT=[60]min, AREA=[500](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[1.24]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["NN_CK"], DT=[60]min, AREA=[1917](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[2.94]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_10"], DT=[60]min, AREA=[5666](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[5.28]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["KG_CK"], DT=[60]min, AREA=[8376](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[6.65]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_9"], DT=[60]min, AREA=[1132](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[1.49]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["NC_CK"], DT=[60]min, AREA=[4464](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[6.23]hrs,
```

```
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_8"], DT=[60]min, AREA=[131](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[0.50]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["HB_DR"], DT=[60]min, AREA=[3854](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[5.09]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_7"], DT=[60]min, AREA=[3197](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[3.66]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_6"], DT=[60]min, AREA=[165](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[2.38]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["VG_DR"], DT=[60]min, AREA=[1332](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[3.57]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_5"], DT=[60]min, AREA=[224](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[0.75]hrs,
                    Continuous simulation parameters:
```

```
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["FL_CK"], DT=[60]min, AREA=[4945](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[3.70]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_5A2"], DT=[60]min, AREA=[20](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[0.62]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_5A1"], DT=[60]min, AREA=[1412](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[4.96]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_4"], DT=[60]min, AREA=[585](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[1.75]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["LM_CK"], DT=[60]min, AREA=[1021](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[2.46]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_2"], DT=[60]min, AREA=[177](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[0.75]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
```

```
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SM_DR"], DT=[60]min, AREA=[1122](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[3.25]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["MO_DR"], DT=[60]min, AREA=[2737](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[3.03]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_1"], DT=[60]min, AREA=[3176](ha),
                    DWF=[0](cms),  CN/C=[35], IA=[1.5](mm),
                    N=[3], TP=[3.56]hrs,
                    Continuous simulation parameters:
                    IaRECper=[6](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.1]/(mm),
                    InterEventTime=[18](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[5](mm), GWResK=[0.850](mm/day/mm)
                    VHydCond=[0.01](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
*#
*# Routing hydrographs
*#
*# Starting with the addition of Jock River Headwater and Subwatershed 13
*#
ADD HYD             NHYDsum=["S_N13"], NHYDs to add=["JR_HW"+"SW_13"]
*%-----------------|-------------------------------------------------------------|
*#
*# 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
*#
ROUTE CHANNEL       NHYDout=["N13A"] ,NHYDin=["S_N13"],
                    RDT=[60](min),
                    CHLGTH=[9074](m),  CHSLOPE=[0.0220](%),
                                        FPSLOPE=[0.0220](%),
                    SECNUM=[1.0],       NSEG=[1]
                    ( SEGROUGH, SEGDIST (m))=[0.025,15.5] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                          [-40, 132.5]
                          [-30, 132]
                          [-25, 131.5]
                          [-13, 130]
                          [-8, 127.00]
                          [-7, 126.50]
                          [-6, 126]
                          [-5.5, 125.50]
                          [0, 123.75]
                          [4.5, 125.50]
                          [6, 126]
```

```
                        [7.5, 126.5]
                        [9, 127]
                        [10, 127.5]
                        [11.5, 128.0]
                        [15.5, 129.5]
*%----------------|------------------------------------------------------------|
*#
*# Addition of Subwatershed Jock River at Goodwood Marsh to Node 13A
*#
ADD HYD             NHYDsum=["SN13A"], NHYDs to add=["N13A"+"JR_GWM"]
*%----------------|------------------------------------------------------------|
*#
*# Insertion of a reservoir to simulate the effects of the Goodwood Marsh
*#
ROUTE RESERVOIR     NHYDout=["RES_GM"] ,NHYDin=["SN13A"],
                    RDT=[60](min),
                          TABLE of ( OUTFLOW-STORAGE ) values
                                     (cms) - (ha-m)
                                   [   0.0 ,  0.0 ]
                                   [ 1.991, 2.144    ]
                                   [ 2.693, 39.826   ]
                                   [3.509, 81.697      ]
                                   [4.578, 318.774   ]
                                   [5.647, 594.947    ]
                                   [7.109, 910.219   ]
                                   [8.616,1264.589   ]
                                   [10.371,1658.057    ]
                                   [12.402, 2090.622   ]
                                   [22.056, 3462.487   ]
                                   [   -1  ,  -1  ]  (max twenty pts)
                          NHYDovf["      "] ,
*%----------------|------------------------------------------------------------|
*#
*# 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
ROUTE CHANNEL       NHYDout=["N12"] ,NHYDin=["RES_GM"] ,
                    RDT=[60](min),
                    CHLGTH=[5926](m),  CHSLOPE=[0.0759](%),
                                       FPSLOPE=[0.0759](%),
                    SECNUM=[1.0],       NSEG=[1]
                    ( SEGROUGH, SEGDIST (m))=[0.025,15.5] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                          [-40, 132.5]
                          [-30, 132]
                          [-25, 131.5]
                          [-13, 130]
                          [-8, 127.00]
                          [-7, 126.50]
                          [-6, 126]
                          [-5.5, 125.50]
                          [0, 123.75]
                          [4.5, 125.50]
                          [6, 126]
                          [7.5, 126.5]
                          [9, 127]
                          [10, 127.5]
                          [11.5, 128.00]
                          [15.5, 129.5]
*%----------------|------------------------------------------------------------|
*#
*# Addition of Subwatershed Jock River at Ashton to Node 12
*#
ADD HYD             NHYDsum=["S_N12"], NHYDs to add=["N12"+"JR_ASH"]
SAVE HYD            NHYD=["S_N12"],  # OF PCYCLES=[-1],  ICASEsh=[-1]
                    HYD_FILENAME=["H_SN12"]
                    HYD_COMMENT=["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
ROUTE CHANNEL       NHYDout=["N11"] ,NHYDin=["S_N12"] ,
```

```
                    RDT=[60](min),
                    CHLGTH=[972](m),  CHSLOPE=[0.0514](%),
                                      FPSLOPE=[0.0514](%),
                    SECNUM=[1.0],       NSEG=[1]
                    ( SEGROUGH, SEGDIST (m))=[0.025,15.5] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                          [-40, 132.5]
                          [-30, 132]
                          [-25, 131.5]
                          [-13, 130]
                          [-8, 127.00]
                          [-7, 126.50]
                          [-6, 126]
                          [-5.5, 125.50]
                          [0, 123.75]
                          [4.5, 125.50]
                          [6, 126]
                          [7.5, 126.5]
                          [9, 127]
                          [10, 127.5]
                          [11.5, 128.00]
                          [15.5, 129.5]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed 11 and Cramed Creek to Node 11
*#
ADD HYD             NHYDsum=["S_N11"], NHYDs to add=["N11"+"SW_11"+"NN_CK"]
*%-----------------|-------------------------------------------------------------|
*#
*# 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
ROUTE CHANNEL       NHYDout=["N10"] ,NHYDin=["S_N11"] ,
                    RDT=[60](min),
                    CHLGTH=[14028](m),  CHSLOPE=[0.1568](%),
                                        FPSLOPE=[0.1568](%),
                    SECNUM=[1.0],       NSEG=[5]
                    ( SEGROUGH, SEGDIST (m))=
                     [0.025,-52.82
                      0.025,-6.47
                      -0.025,6.47
                      0.025,45.36
                      0.025,423.88] NSEG times
                   ( DISTANCE (m), ELEVATION (m))=
                          [-226.24 ,112.50]
                          [-167.50 ,111.50]
                          [-106.81 ,111.00]
                          [-92.37 ,110.00]
                          [-52.82 ,109.00]
                          [-24.90, 109.00]
                          [-17.02, 108.50]
                          [-6.47, 108.00]
                          [6.47, 108.00]
                          [15.67, 108.50]
                          [18.95, 109.00]
                          [45.36, 109.50]
                          [120.79, 110.00]
                          [145.72, 111.00]
                          [181.56, 111.50]
                          [423.88, 112.50]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed 10 and Kings Creek to Node 10
*#
ADD HYD             NHYDsum=["S_N10"], NHYDs to add=["N10"+"SW_10"+"KG_CK"]
SAVE HYD            NHYD=["S_N10"],  # OF PCYCLES=[-1],  ICASESh=[1]
                    HYD_COMMENT=["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
```

```
*#
ROUTE CHANNEL       NHYDout=["N9"] ,NHYDin=["S_N10"] ,
                    RDT=[60](min),
                    CHLGTH=[3982](m),  CHSLOPE=[0.0753](%),
                                        FPSLOPE=[0.0753](%),
                    SECNUM=[1.0],       NSEG=[4]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.025,-30.27
                       0.025,-18.42
                      -0.025,18.42
                      0.025,131.58] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                          [-446.74, 106.00]
                          [-415.68, 105.50]
                          [-285.40, 105.00]
                          [-173.77, 104.50]
                          [-144.95, 104.00]
                          [-111.18, 103.50]
                          [-94.06, 103.00]
                          [-71.02, 102.50]
                          [-30.27, 102.00]
                          [-19.33, 100.00]
                          [-18.42, 99.50]
                          [18.42, 99.50]
                          [20.77, 100.00]
                          [27.93, 101.00]
                          [52.29, 101.00]
                          [68.80, 101.50]
                          [79.66, 103.00]
                          [91.50, 103.50]
                          [131.58, 104.00]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed 9 and Nichols Creek to Node 9
*#
ADD HYD             NHYDsum=["S_N9"], NHYDs to add=["N9"+"SW_9"+"NC_CK"]
*%-----------------|-------------------------------------------------------------|
*#
*# 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
*#
ROUTE CHANNEL       NHYDout=["N8"] ,NHYDin=["S_N9"] ,
                    RDT=[60](min),
                    CHLGTH=[2269](m),  CHSLOPE=[0.0882](%),
                                        FPSLOPE=[0.0882](%),
                    SECNUM=[1.0],       NSEG=[3]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.025,-17.99
                      -0.025,17.31
                      0.025,456.58] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                          [-201.19,100.50]
                          [-135.21, 100.00]
                          [-94.83, 99.50]
                          [-67.05, 99.00]
                          [-17.99, 98.50]
                          [-16.02, 98.00]
                          [-13.95, 97.50]
                          [13.95, 97.50]
                          [15.64, 98.00]
                          [17.31, 98.50]
                          [162.02, 98.50]
                          [172.89 ,99.00]
                          [314.38, 99.00]
                          [343.78, 99.50]
                          [365.67, 100.00]
                          [376.68, 100.00 ]
                          [393.11, 99.50]
                          [404.97, 99.50]
                          [431.70, 100.00]
                          [456.58, 100.50 ]
*%-----------------|-------------------------------------------------------------|
```

```
*#
*# Addition of Subwatershed 8 and Hobb's Drain to Node 8
*#
ADD HYD             NHYDsum=["S_N8"], NHYDs to add=["N8"+"SW_8"+"HB_DR"]
*%-----------------|-------------------------------------------------------------|
*#
*# 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
*#
ROUTE CHANNEL       NHYDout=["N7"] ,NHYDin=["S_N8"],
                    RDT=[60](min),
                    CHLGTH=[3750](m),  CHSLOPE=[0.0533](%),
                                        FPSLOPE=[0.0533](%),
                    SECNUM=[1.0],       NSEG=[3]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.025,-18.11
                      -0.025,17.22
                      0.025,590.05] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                          [-433.21, 102.00]
                          [-425.34, 101.50]
                          [-377.56, 101.50]
                          [-366.23, 101.00]
                          [-202.60, 100.50]
                          [-96.25, 99.50]
                          [-68.36 99.00]
                          [-18.11, 98.50]
                          [-13.81, 97.50]
                          [13.81, 97.50]
                          [17.22, 98.50]
                          [161.95, 98.50]
                          [173.11, 99.00]
                          [314.05, 99.00]
                          [365.52, 100.00]
                          [404.70, 99.50]
                          [476.74, 100.50]
                          [502.31, 101.00]
                          [584.69, 101.00]
                          [585.79, 101.00]
                          [590.05, 102.00]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed 7 to Node 7
*#
ADD HYD             NHYDsum=["S_N7"], NHYDs to add=["N7"+"SW_7"]
*%-----------------|-------------------------------------------------------------|
SAVE HYD            NHYD=["S_N7"],  # OF PCYCLES=[-1],  ICASEsh=[1]
                    HYD_COMMENT=["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.
*#
ROUTE RESERVOIR     NHYDout=["RES_RF"] ,NHYDin=["S_N7"] ,
                    RDT=[60](min),
                          TABLE of ( OUTFLOW-STORAGE ) values
                                     (cms) - (ha-m)
                                    [   0.0,     0.0 ]
                                    [ 2.076,     2.40]
                                    [ 6.224,     4.13]
                                    [20.393,     9.18]
                                    [42.929,    14.96]
                                    [72.880,   310.21]
                                    [161.51,   605.46]
                                    [226.87,   900.71]
                                    [306.85,  2892.00]
                                    [   -1  ,  -1  ]  (max twenty pts)
                          NHYDovf=["      "] ,
*%-----------------|-------------------------------------------------------------|
```

```
*#
SAVE HYD            NHYD=["RES_RF"],  # OF PCYCLES=[-1],  ICASEsh=[1]
                    HYD_COMMENT=["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
*#
ROUTE CHANNEL       NHYDout=["N6"] ,NHYDin=["RES_RF"] ,
                    RDT=[60](min),
                    CHLGTH=[3056](m),  CHSLOPE=[0.0818](%),
                                        FPSLOPE=[0.0818](%),
                    SECNUM=[1.0],       NSEG=[4]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.025,-23.9
                      -0.025,23.9
                      0.025,39.8
                      0.025,94.9] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                                       [-70.8, 96.50]
                                       [-52.0, 96.00]
                                       [-35.1, 95.50]
                                       [-30.6, 95.00]
                                       [-23.9, 94.54]
                                       [23.9, 94.54]
                                       [39.8, 95.00]
                                       [50.4, 95.50]
                                       [93.5, 96.00]
                                       [94.9, 96.50]
*%-----------------|------------------------------------------------------------|
*#
*# Addition of Subwatershed 6 and Van Gaal Drain to Node 6
*#
ADD HYD             NHYDsum=["S_N6"], NHYDs to add=["N6"+"SW_6"+"VG_DR"]
*%-----------------|------------------------------------------------------------|
*#
*# 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
*#
ROUTE CHANNEL       NHYDout=["N5"] ,NHYDin=["S_N6"] ,
                    RDT=[60](min),
                    CHLGTH=[1852](m),  CHSLOPE=[0.0540](%),
                                        FPSLOPE=[0.0540](%),
                    SECNUM=[1.0],       NSEG=[3]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.025,-131.59
                      -0.025,48.96
                      0.025,239.04] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                                       [-686.30, 94.50]
                                       [-675.70, 94.00]
                                       [-492.52, 93.00]
                                       [-467.28, 94.00]
                                       [-131.59, 94.00]
                                       [-92.79, 92.50]
                                       [-18.06, 91.00]
                                       [18.06, 91.00]
                                       [43.47, 92.50]
                                       [48.96, 94.00]
                                       [177.43, 94.00]
                                       [239.04,94.50]
*%-----------------|------------------------------------------------------------|
*#
*# Addition of Subwatershed 5 and Flowing Creek to Node 5
*#
ADD HYD             NHYDsum=["S_N5"], NHYDs to add=["N5"+"SW_5"+"FL_CK"]
*%-----------------|------------------------------------------------------------|
*#
*# 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
```

```
*#
ROUTE CHANNEL       NHYDout=["N5A"] ,NHYDin=["S_N5"] ,
                    RDT=[60](min),
                    CHLGTH=[556](m),  CHSLOPE=[0.0900](%),
                                        FPSLOPE=[0.0900](%),
                    SECNUM=[1.0],       NSEG=[4]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.025,-41.5
                      0.025,-14.0
                      -0.025,14.0
                      0.025,41.1] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                                      [-275.8, 93.00]
                                      [-248.6, 92.50]
                                      [-237.0, 92.00]
                                      [-219.3, 91.50]
                                      [-202.1, 91.50]
                                      [-186.0, 92.00]
                                      [-129.2, 92.00]
                                      [-117.6, 91.50]
                                      [-100.6, 91.00]
                                      [-41.5, 91.00]
                                      [-20.0, 91.00]
                                      [-14.0, 90.54]
                                      [14.0, 90.54]
                                      [15.3, 91.00]
                                      [17.3, 91.50]
                                      [38.4, 92.00]
                                      [39.8, 92.50]
                                      [41.1, 93.00]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed 5A1 and Subwatershed 5A2 to Node 5A
*#
ADD HYD             NHYDsum=["S_N5A"], NHYDs to add=["N5A"+"SW_5A2"+"SW_5A1"]
*%-----------------|-------------------------------------------------------------|
*#
*# 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
*#
ROUTE CHANNEL       NHYDout=["N4"] ,NHYDin=["S_N5A"] ,
                    RDT=[60](min),
                    CHLGTH=[4630](m),  CHSLOPE=[0.0432](%),
                                        FPSLOPE=[0.0432](%),
                    SECNUM=[1.0],       NSEG=[3]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.025,-28.2
                      -0.025,28.2
                      0.025,173.1] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                                      [-38.9, 92.00]
                                      [-35.8, 91.50]
                                      [-33.3, 91.00]
                                      [-28.2, 90.50]
                                      [-15.0, 87.48]
                                      [-5.0, 88.34]
                                      [5.0, 86.20]
                                      [15.0, 88.55]
                                      [28.2, 90.50]
                                      [29.7, 91.00]
                                      [46.5, 91.00]
                                      [127.8, 91.00]
                                      [148.7, 91.50]
                                      [170.3, 92.00]
                                      [172.0, 92.50]
                                      [173.1, 93.00]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed 4 and Leamy Creek to Node 4
*#
ADD HYD             NHYDsum=["S_N4"], NHYDs to add=["N4"+"SW_4"+"LM_CK"]
SAVE HYD            NHYD=["S_N4"],  # OF PCYCLES=[-1],  ICASEsh=[1]
```

```
                    HYD_COMMENT=["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
*#
ROUTE CHANNEL       NHYDout=["N2"] ,NHYDin=["S_N4"] ,
                    RDT=[60](min),
                    CHLGTH=[1667](m),  CHSLOPE=[0.0600](%),
                                       FPSLOPE=[0.0600](%),
                    SECNUM=[1.0],       NSEG=[4]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.025,-28.0
                      -0.025,28.4
                      0.025,31.7
                      0.025,80.2] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                           [-36.3, 92.00]
                           [-32.6, 91.50]
                           [-30.2, 91.00]
                           [-28.0, 90.45]
                           [-15.0, 87.48]
                           [-5.0, 88.34]
                           [5.0, 86.20]
                           [15.0, 88.55]
                           [28.0, 90.45]
                           [28.4, 90.50]
                           [30.4, 91.00]
                           [31.7, 91.50]
                           [80.2, 92.00]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed 2 with Monohan Drain and Smith Drain to Node 2
*#
ADD HYD             NHYDsum=["S_N2"], NHYDs to add=["N2"+"SW_2"+"SM_DR"+"MO_DR"]
SAVE HYD            NHYD=["S_N2"],  # OF PCYCLES=[-1],  ICASEsh=[1]
                    HYD_COMMENT=["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
*#
ROUTE CHANNEL       NHYDout=["N1"] ,NHYDin=["S_N2"] ,
                    RDT=[60](min),
                    CHLGTH=[10046](m),  CHSLOPE=[0.0498](%),
                                        FPSLOPE=[0.0498](%),
                    SECNUM=[1.0],       NSEG=[5]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.025,-27.6
                      0.025,-15.0
                      -0.025,15.0
                      0.025,25.4
                      0.025,122.6] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                                  [-87.0, 91.50]
                                  [-32.4, 91.00]
                                  [-27.6, 90.50]
                                  [-25.0, 90.00]
                                  [-22.9, 89.57]
                                  [-15.0, 86.20]
                                  [-5.0, 84.83]
                                  [5.0, 84.83]
                                  [15.0, 88.11]
                                  [22.9, 89.57]
                                  [25.4, 90.00]
                                  [27.9, 90.50]
                                  [38.0, 91.00]
                                  [112.5, 91.00]
                                  [114.3, 90.50]
                                  [115.1, 90.26]
```

```
                                    [116.3, 90.50]
                                    [119.0, 91.00]
                                    [121.0, 91.50]
                                    [122.6, 92.00]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed 1 to Node 1
*#
ADD HYD             NHYDsum=["N1"], NHYDs to add=["N1"+"SW_1"]
*%-----------------|-------------------------------------------------------------|
*%  2 YR - 10 day SNOWMELT+RAIN based on OTTAWA CDA IDF Curves (12 hrs sinus)
*START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[002]
*%                   ["50021012.stm"]
*%-----------------|-------------------------------------------------------------|
*%  5 YR - 10 day SNOWMELT+RAIN based on OTTAWA CDA IDF Curves (12 hrs sinus)
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[005]
*%                   ["50051012.stm"]
*%-----------------|-------------------------------------------------------------|
*%-----------------|-------------------------------------------------------------|
*%  10 YR - 10 day SNOWMELT+RAIN based on OTTAWA CDA IDF Curves (12 hrs sinus)
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[010]
*%                   ["50101012.stm"]
*%-----------------|-------------------------------------------------------------|
*%-----------------|-------------------------------------------------------------|
*%  25 YR - 10 day SNOWMELT+RAIN based on OTTAWA CDA IDF Curves (12 hrs sinus)
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[025]
*%                   ["50251012.stm"]
*%-----------------|-------------------------------------------------------------|
*%-----------------|-------------------------------------------------------------|
*%  50 YR - 10 day SNOWMELT+RAIN based on OTTAWA CDA IDF Curves (12 hrs sinus)
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[050]
*%                   ["50501012.stm"]
*%-----------------|-------------------------------------------------------------|
*%-----------------|-------------------------------------------------------------|
*%  100 YR - 10 day SNOWMELT+RAIN based on OTTAWA CDA IDF Curves (12 hrs sinus)
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[100]
*%                   ["51001012.stm"]
*%-----------------|-------------------------------------------------------------|
*%-----------------|-------------------------------------------------------------|
*%XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
*%XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
*%  Jock River Snowmelt+Rain based on 2003 measured events and RVCA Snow Data
*%  Melt Factor of 366 -> Representative of the Ontario Province
START               TZERO=[2003.0101],  METOUT=[2],  NSTORM=[1],  NRUN=[106]
*%                   ["MF366_03.stm"]
*%-----------------|-------------------------------------------------------------|
*%  Melt Factor of 270 -> Representative of the Quebec City Area
START               TZERO=[2003.0101],  METOUT=[2],  NSTORM=[1],  NRUN=[107]
*%                   ["MF270_03.stm"]
*%-----------------|-------------------------------------------------------------|
*%  Melt Factor of 199 -> Representative of the Gatineau Area
START               TZERO=[2003.0101],  METOUT=[2],  NSTORM=[1],  NRUN=[109]
*%                   ["MF199_03.stm"]
*%-----------------|-------------------------------------------------------------|
*%XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
*%-----------------|-------------------------------------------------------------|
*% Melt Factor of 199 -> Calibration with year 1978
START               TZERO=[0.0]hrs or date,  METOUT=[2],  NSTORM=[1],  NRUN=[178]
*                   ["MF199_78.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-------------------------------------------------------------|
*% Melt Factor of 199 -> Calibration with year 1993
START               TZERO=[0.0]hrs or date,  METOUT=[2],  NSTORM=[1],  NRUN=[193]
*                   ["MF199_93.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-------------------------------------------------------------|
*% Melt Factor of 199 -> Calibration with year 1997
START               TZERO=[0.0]hrs or date,  METOUT=[2],  NSTORM=[1],  NRUN=[197]
*                   ["MF199_97.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-------------------------------------------------------------|
*% Melt Factor of 199 -> Calibration with year 1998
START               TZERO=[0.0]hrs or date,  METOUT=[2],  NSTORM=[1],  NRUN=[198]
*                   ["MF199_98.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-------------------------------------------------------------|
*%-----------------|-------------------------------------------------------------|
```

```
*% Melt Factor of 270 -> Calibration with year 1978
START              TZERO=[0.0]hrs or date,  METOUT=[2],  NSTORM=[1],  NRUN=[278]
*                  ["MF270_78.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-----------------------------------------------------------|
*% Melt Factor of 270 -> Calibration with year 1993
START              TZERO=[0.0]hrs or date,  METOUT=[2],  NSTORM=[1],  NRUN=[293]
*                  ["MF270_93.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-----------------------------------------------------------|
*% Melt Factor of 270 -> Calibration with year 1997
START              TZERO=[0.0]hrs or date,  METOUT=[2],  NSTORM=[1],  NRUN=[297]
*                  ["MF270_97.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-----------------------------------------------------------|
*% Melt Factor of 270 -> Calibration with year 1998
START              TZERO=[0.0]hrs or date,  METOUT=[2],  NSTORM=[1],  NRUN=[298]
*                  ["MF270_98.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-----------------------------------------------------------|
*%-----------------|-----------------------------------------------------------|
*% Melt Factor of 366 -> Calibration with year 1978
START              TZERO=[0.0]hrs or date,  METOUT=[2],  NSTORM=[1],  NRUN=[378]
*                  ["MF366_78.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-----------------------------------------------------------|
*% Melt Factor of 366 -> Calibration with year 1993
START              TZERO=[0.0]hrs or date,  METOUT=[2],  NSTORM=[1],  NRUN=[393]
*                  ["MF366_93.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-----------------------------------------------------------|
*% Melt Factor of 366 -> Calibration with year 1997
START              TZERO=[0.0]hrs or date,  METOUT=[2],  NSTORM=[1],  NRUN=[397]
*                  ["MF366_97.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-----------------------------------------------------------|
*% Melt Factor of 366 -> Calibration with year 1998
START              TZERO=[0.0]hrs or date,  METOUT=[2],  NSTORM=[1],  NRUN=[398]
*                  ["MF366_98.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-----------------------------------------------------------|
*%XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
FINISH
```

SUMMER EVENT INPUT

```
20    Metric units / ID numbers OFF
*#*************************************************************************
*#  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
*
* Calibrated parameters for Summer 2003 data:  APII=50, APIK=0.85, CN=varies,
*                                              SK=0.01, InterEventTime=12,
*                                              GWResk=0.96, VHydCond=0.055
*
*# ------------------------------------------------------------------------
*
*START               TZERO=[2003.0501],  METOUT=[2],  NSTORM=[1],  NRUN=[001]
*                    ["XAVG0315.STM"] average storm data a 15 minute time step
*                    The above rainf file is an average of the JFSA gauge data
*                    with the City of Ottawa rainfall data collected during
*                    the same period.
*%  2 yr, 24 hr SCS storm based on OTTAWA CDA IDF Curves
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[2]
*%                   ["C24SC002.stm"] <--storm filename, one per line for NSTORM
time
*%-----------------|-------------------------------------------------------|
*%-----------------|-------------------------------------------------------|
READ STORM          STORM_FILENAME=["storm.001"]
*%-----------------|-------------------------------------------------------|
MODIFY STORM        ICASEms=[1],  NSHIFT=[96],
                    RedFACT=[1],
*%-----------------|-------------------------------------------------------|
COMPUTE API         APII=[50], APIK=[.85]/day
*%-----------------|-------------------------------------------------------|
*%-----------------|-------------------------------------------------------|
*#
*# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
*# of 1.32
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["JR_HW"], DT=[30]min, AREA=[3680](ha),
                    DWF=[0](cms),  CN/C=[64], IA=[2.5](mm),
                    N=[3.0], TP=[7.13]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
```

```
*#
*# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
*# of 1.32
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_13"], DT=[30]min, AREA=[971](ha),
                    DWF=[0](cms),  CN/C=[61], IA=[2.5](mm),
                    N=[3.0], TP=[3.76]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
*#
*# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
*# of 1.80
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["JR_GWM"], DT=[30]min, AREA=[3074](ha),
                    DWF=[0](cms),  CN/C=[55], IA=[2.5](mm),
                    N=[3], TP=[11.33]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["JR_ASH"], DT=[30]min, AREA=[1781](ha),
                    DWF=[0](cms),  CN/C=[72], IA=[2.5](mm),
                    N=[3.0], TP=[3.91]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_11"], DT=[30]min, AREA=[500](ha),
                    DWF=[0](cms),  CN/C=[66], IA=[2.5](mm),
                    N=[3.0], TP=[1.24]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
*#
```

```
*# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
*# of 1.80
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["NN_CK"], DT=[30]min, AREA=[1917](ha),
                    DWF=[0](cms),  CN/C=[66], IA=[2.5](mm),
                    N=[3.0], TP=[5.29]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
*#
*# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
*# of 1.52
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_10"], DT=[30]min, AREA=[5666](ha),
                    DWF=[0](cms),  CN/C=[72], IA=[2.5](mm),
                    N=[3.0], TP=[8.00]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
*#
*# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
*# of 1.75
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["KG_CK"], DT=[30]min, AREA=[8376](ha),
                    DWF=[0](cms),  CN/C=[66], IA=[2.5](mm),
                    N=[3.0], TP=[11.66]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
*#
*# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
*# of 1.68
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_9"], DT=[30]min, AREA=[1132](ha),
                    DWF=[0](cms),  CN/C=[70], IA=[2.5](mm),
                    N=[3.0], TP=[2.51]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
```

```
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
*#
*# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
*# of 1.82
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["NC_CK"], DT=[30]min, AREA=[4464](ha),
                    DWF=[0](cms),  CN/C=[62], IA=[2.5](mm),
                    N=[3.0], TP=[11.32]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
*#
*# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
*# of 1.80
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_8"], DT=[30]min, AREA=[131](ha),
                    DWF=[0](cms),  CN/C=[63], IA=[2.5](mm),
                    N=[3.0], TP=[0.90]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
*#
*# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
*# of 1.65
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["HB_DR"], DT=[30]min, AREA=[3854](ha),
                    DWF=[0](cms),  CN/C=[66], IA=[2.5](mm),
                    N=[3.0], TP=[8.42]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
*#
*# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
*# of 1.82
```

```
*%-----------------|---------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_7"], DT=[30]min, AREA=[3197](ha),
                    DWF=[0](cms),  CN/C=[57], IA=[2.5](mm),
                    N=[3.0], TP=[6.65]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|---------------------------------------------------------|
*#
*# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
*# of 1.75
*%-----------------|---------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_6"], DT=[30]min, AREA=[165](ha),
                    DWF=[0](cms),  CN/C=[67], IA=[2.5](mm),
                    N=[3.0], TP=[4.18]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|---------------------------------------------------------|
*#
*# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
*# of 1.67
*%-----------------|---------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["VG_DR"], DT=[30]min, AREA=[1332](ha),
                    DWF=[0](cms),  CN/C=[72], IA=[2.5](mm),
                    N=[3.0], TP=[5.95]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|---------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_5"], DT=[30]min, AREA=[224](ha),
                    DWF=[0](cms),  CN/C=[77], IA=[2.5](mm),
                    N=[3.0], TP=[0.75]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|---------------------------------------------------------|
```

```
*#
*# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
*# of 1.20
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["FL_CK"], DT=[30]min, AREA=[4945](ha),
                    DWF=[0](cms),  CN/C=[74], IA=[2.5](mm),
                    N=[3.0], TP=[4.45]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_5A2"], DT=[30]min, AREA=[20](ha),
                    DWF=[0](cms),  CN/C=[81], IA=[2.5](mm),
                    N=[3.0], TP=[0.62]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
*#
*# The Tp was modified according to a Peak Reduction factor (MTO-Chart B2-4)
*# of 1.61
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_5A1"], DT=[30]min, AREA=[1412](ha),
                    DWF=[0](cms),  CN/C=[75], IA=[2.5](mm),
                    N=[3.0], TP=[8.00]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_4"], DT=[30]min, AREA=[585](ha),
                    DWF=[0](cms),  CN/C=[81], IA=[2.5](mm),
                    N=[3.0], TP=[1.75]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["LM_CK"], DT=[30]min, AREA=[1021](ha),
```

```
                    DWF=[0](cms),  CN/C=[80], IA=[2.5](mm),
                    N=[3.0], TP=[2.46]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_2"], DT=[30]min, AREA=[177](ha),
                    DWF=[0](cms),  CN/C=[77], IA=[2.5](mm),
                    N=[3.0], TP=[0.75]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SM_DR"], DT=[30]min, AREA=[1122](ha),
                    DWF=[0](cms),  CN/C=[81], IA=[2.5](mm),
                    N=[3.0], TP=[3.25]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["MO_DR"], DT=[30]min, AREA=[2737](ha),
                    DWF=[0](cms),  CN/C=[76], IA=[2.5](mm),
                    N=[3.0], TP=[3.03]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------|
CONTINUOUS NASHYD   NHYD=["SW_1"], DT=[30]min, AREA=[3176](ha),
                    DWF=[0](cms),  CN/C=[78], IA=[2.5](mm),
                    N=[3.0], TP=[3.56]hrs,
                    Continuous simulation parameters:
                    IaRECper=[4](hrs),
                    SMIN=[-1](mm),  SMAX=[-1](mm), SK=[0.010]/(mm),
                    InterEventTime=[12](hrs)
                    Baseflow simulation parameters:
                    BaseFlowOption=[1] ,
                    InitGWResVol=[50](mm), GWResK=[0.96](mm/day/mm)
```

```
                    VHydCond=[0.055](mm/hr),   END=-1
*%-----------------|-------------------------------------------------------------|
*#
*# Routing hydrographs
*#
*# Starting with the addition of Jock River Headwater and Subwatershed 13
*#
ADD HYD             NHYDsum=["S_N13"], NHYDs to add=["JR_HW"+"SW_13"]
*%-----------------|-------------------------------------------------------------|
*#
*# 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
*#
ROUTE CHANNEL       NHYDout=["N13A"] ,NHYDin=["S_N13"],
                    RDT=[30](min),
                    CHLGTH=[9074](m),  CHSLOPE=[0.0220](%),
                                        FPSLOPE=[0.0220](%),
                    SECNUM=[1.0],       NSEG=[1]
                    ( SEGROUGH, SEGDIST (m))=[0.04,15.5] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                          [-40, 132.5]
                          [-30, 132]
                          [-25, 131.5]
                          [-13, 130]
                          [-8, 127.00]
                          [-7, 126.50]
                          [-6, 126]
                          [-5.5, 125.50]
                          [0, 123.75]
                          [4.5, 125.50]
                          [6, 126]
                          [7.5, 126.5]
                          [9, 127]
                          [10, 127.5]
                          [11.5, 128.0]
                          [15.5, 129.5]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed Jock River at Goodwood Marsh to Node 13A
*#
ADD HYD             NHYDsum=["SN13A"], NHYDs to add=["N13A"+"JR_GWM"]
*%-----------------|-------------------------------------------------------------|
*#
*# Insertion of a reservoir to simulate the effects of the Goodwood Marsh
*#
ROUTE RESERVOIR     NHYDout=["RES_GM"] ,NHYDin=["SN13A"],
                    RDT=[30](min),
                          TABLE of ( OUTFLOW-STORAGE ) values
                                     (cms) - (ha-m)
                                   [   0.0 ,  0.0 ]
                                   [1.991, 2.144    ]
                                   [2.693, 39.826   ]
                                   [3.509, 81.697   ]
                                   [4.578, 318.774  ]
                                   [5.647, 594.947  ]
                                   [7.109, 910.219  ]
```

```
                                    [8.616, 1264.589  ]
                                    [10.371, 1658.057  ]
                                    [12.402, 2090.622 ]
                                    [22.056, 3462.487 ]
                                    [   -1  ,  -1  ]  (max twenty pts)
                           NHYDovf=["      "] ,
*%-----------------|-------------------------------------------------------------|
*#
SAVE HYD            NHYD=["RES_GM"],  # OF PCYCLES=[-1],  ICASEsh=[-1]
                    HYD_FILENAME=["H_RESGM"]
                    HYD_COMMENT=["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
ROUTE CHANNEL       NHYDout=["N12"] ,NHYDin=["RES_GM"] ,
                    RDT=[30](min),
                    CHLGTH=[5926](m),  CHSLOPE=[0.0759](%),
                                        FPSLOPE=[0.0759](%),
                    SECNUM=[1.0],       NSEG=[1]
                    ( SEGROUGH, SEGDIST (m))=[0.04,15.5] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                          [-40, 132.5]
                          [-30, 132]
                          [-25, 131.5]
                          [-13, 130]
                          [-8, 127.00]
                          [-7, 126.50]
                          [-6, 126]
                          [-5.5, 125.50]
                          [0, 123.75]
                          [4.5, 125.50]
                          [6, 126]
                          [7.5, 126.5]
                          [9, 127]
                          [10, 127.5]
                          [11.5, 128.00]
                          [15.5, 129.5]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed Jock River at Ashton to Node 12
*#
ADD HYD             NHYDsum=["S_N12"], NHYDs to add=["N12"+"JR_ASH"]
SAVE HYD            NHYD=["S_N12"],  # OF PCYCLES=[-1],  ICASEsh=[-1]
                    HYD_FILENAME=["H_SN12"]
                    HYD_COMMENT=["flow at S_N12 near Ashton"]
*%-----------------|-------------------------------------------------------------|
*#
*# 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
ROUTE CHANNEL       NHYDout=["N11"] ,NHYDin=["S_N12"] ,
                    RDT=[30](min),
                    CHLGTH=[972](m),  CHSLOPE=[0.0514](%),
                                        FPSLOPE=[0.0514](%),
                    SECNUM=[1.0],       NSEG=[1]
                    ( SEGROUGH, SEGDIST (m))=[0.04,15.5] NSEG times
```

```
                    ( DISTANCE (m), ELEVATION (m))=
                          [-40, 132.5]
                          [-30, 132]
                          [-25, 131.5]
                          [-13, 130]
                          [-8, 127.00]
                          [-7, 126.50]
                          [-6, 126]
                          [-5.5, 125.50]
                          [0, 123.75]
                          [4.5, 125.50]
                          [6, 126]
                          [7.5, 126.5]
                          [9, 127]
                          [10, 127.5]
                          [11.5, 128.00]
                          [15.5, 129.5]
*%-----------------|-------------------------------------------------------------|
*#
*# Sum of hydrographs from Node 12 routed to Node 11 with Dummy section 248
*#
ROUTE CHANNEL       NHYDout=["Dum11"] ,NHYDin=["S_N12"] ,
                    RDT=[30](min),
                    CHLGTH=[972](m),  CHSLOPE=[0.054](%),
                                        FPSLOPE=[0.054](%),
                    SECNUM=[1.0],       NSEG=[1]
                    ( SEGROUGH, SEGDIST (m))=[0.04,15.5] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                          [-40, 132.5]
                          [-30, 132]
                          [-25, 131.5]
                          [-13, 130]
                          [-8, 127.00]
                          [-7, 126.50]
                          [-6, 126]
                          [-5.5, 125.50]
                          [0, 123.75]
                          [4.5, 125.50]
                          [6, 126]
                          [7.5, 126.5]
                          [9, 127]
                          [10, 127.5]
                          [11.5, 128.00]
                          [15.5, 129.5]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed 11 and No Name Creek to Node 11
*#
ADD HYD             NHYDsum=["S_N11"], NHYDs to add=["Dum11"+"SW_11"+"NN_CK"]
*%-----------------|-------------------------------------------------------------|
*#
*# Sum of hydrographs from Node 11 routed to Node 10
*# Section 1
*#
ROUTE CHANNEL       NHYDout=["N10"] ,NHYDin=["S_N11"] ,
                    RDT=[30](min),
                    CHLGTH=[14028](m),  CHSLOPE=[0.1568](%),
```

```
                                    FPSLOPE=[0.1568](%),
                    SECNUM=[1.0],       NSEG=[5]
                    ( SEGROUGH, SEGDIST (m))=
                     [0.04,-52.82
                      0.1,-6.47
                      -0.05,6.47
                      0.1,45.36
                      0.04,423.88] NSEG times
                   ( DISTANCE (m), ELEVATION (m))=
                         [-226.24 ,112.50]
                         [-167.50 ,111.50]
                         [-106.81 ,111.00]
                         [-92.37 ,110.00]
                         [-52.82 ,109.00]
                         [-24.90, 109.00]
                         [-17.02, 108.50]
                         [-6.47, 108.00]
                         [6.47, 108.00]
                         [15.67, 108.50]
                         [18.95, 109.00]
                         [45.36, 109.50]
                         [120.79, 110.00]
                         [145.72, 111.00]
                         [181.56, 111.50]
                         [423.88, 112.50]
*%-----------------|---------------------------------------------------------|
*#
*# Addition of Subwatershed 10 to Node 10
*#
ADD HYD             NHYDsum=["S_N10"], NHYDs to add=["N10"+"SW_10"]
*%-----------------|---------------------------------------------------------|
SAVE HYD            NHYD=["S_N10"],  # OF PCYCLES=[-1],  ICASEsh=[-1]
                    HYD_FILENAME=["H_SN10"]
                    HYD_COMMENT=["flow at S_N10: N10 + SW_10"]
*%-----------------|---------------------------------------------------------|
*# Addition of Kings Creek to S_N10
*#
ADD HYD             NHYDsum=["S_N10A"], NHYDs to add=["S_N10"+"KG_CK"]
*%-----------------|---------------------------------------------------------|
*#
*# Sum of hydrographs from Node 10 routed to Node 9
*# Section 2
*#
ROUTE CHANNEL       NHYDout=["N9"] ,NHYDin=["S_N10A"] ,
                    RDT=[30](min),
                    CHLGTH=[3982](m),  CHSLOPE=[0.0753](%),
                                       FPSLOPE=[0.0753](%),
                    SECNUM=[1.0],       NSEG=[4]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.04,-30.27
                       0.05,-18.42
                      -0.05,18.42
                      0.04,131.58] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                         [-446.74, 106.00]
                         [-415.68, 105.50]
                         [-285.40, 105.00]
```

```
                          [-173.77, 104.50]
                          [-144.95, 104.00]
                          [-111.18, 103.50]
                          [-94.06, 103.00]
                          [-71.02, 102.50]
                          [-30.27, 102.00]
                          [-19.33, 100.00]
                          [-18.42, 99.50]
                          [18.42, 99.50]
                          [20.77, 100.00]
                          [27.93, 101.00]
                          [52.29, 101.00]
                          [68.80, 101.50]
                          [79.66, 103.00]
                          [91.50, 103.50]
                          [131.58, 104.00]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed 9 and Nichols Creek to Node 9
*#
ADD HYD             NHYDsum=["S_N9"], NHYDs to add=["N9"+"SW_9"+"NC_CK"]
*%-----------------|-------------------------------------------------------------|
*#
*# Sum of hydrographs from Node 9 routed to Node 8
*# Section 3
*#
ROUTE CHANNEL       NHYDout=["N8"] ,NHYDin=["S_N9"] ,
                    RDT=[30](min),
                    CHLGTH=[2269](m),  CHSLOPE=[0.0882](%),
                                        FPSLOPE=[0.0882](%),
                    SECNUM=[1.0],       NSEG=[3]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.1,-17.99
                      -0.045,17.31
                      0.1,456.58] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                          [-201.19,100.50]
                          [-135.21, 100.00]
                          [-94.83, 99.50]
                          [-67.05, 99.00]
                          [-17.99, 98.50]
                          [-16.02, 98.00]
                          [-13.95, 97.50]
                          [13.95, 97.50]
                          [15.64, 98.00]
                          [17.31, 98.50]
                          [162.02, 98.50]
                          [172.89 ,99.00]
                          [314.38, 99.00]
                          [343.78, 99.50]
                          [365.67, 100.00]
                          [376.68, 100.00 ]
                          [393.11, 99.50]
                          [404.97, 99.50]
                          [431.70, 100.00]
                          [456.58, 100.50 ]
*%-----------------|-------------------------------------------------------------|
```

```
*#
*# Addition of Subwatershed 8 and Hobb's Drain to Node 8
*#
ADD HYD             NHYDsum=["S_N8"], NHYDs to add=["N8"+"SW_8"+"HB_DR"]
*%-----------------|-------------------------------------------------------------|
*#
*# Sum of hydrographs from Node 8 routed to Node 7
*# Section 4
*#
ROUTE CHANNEL       NHYDout=["N7"] ,NHYDin=["S_N8"],
                    RDT=[30](min),
                    CHLGTH=[3750](m),  CHSLOPE=[0.0533](%),
                                        FPSLOPE=[0.0533](%),
                    SECNUM=[1.0],       NSEG=[3]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.12,-18.11
                      -0.07,17.22
                      0.12,590.05] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                         [-433.21, 102.00]
                         [-425.34, 101.50]
                         [-377.56, 101.50]
                         [-366.23, 101.00]
                         [-202.60, 100.50]
                         [-96.25, 99.50]
                         [-68.36 99.00]
                         [-18.11, 98.50]
                         [-13.81, 97.50]
                         [13.81, 97.50]
                         [17.22, 98.50]
                         [161.95, 98.50]
                         [173.11, 99.00]
                         [314.05, 99.00]
                         [365.52, 100.00]
                         [404.70, 99.50]
                         [476.74, 100.50]
                         [502.31, 101.00]
                         [584.69, 101.00]
                         [585.79, 101.00]
                         [590.05, 102.00]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed 7 to Node 7
*#
ADD HYD             NHYDsum=["S_N7"], NHYDs to add=["N7"+"SW_7"]
*%-----------------|-------------------------------------------------------------|
SAVE HYD            NHYD=["S_N7"],  # OF PCYCLES=[-1],  ICASEsh=[-1]
                    HYD_FILENAME=["H_SN7"]
                    HYD_COMMENT=["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.
*#
```

```
ROUTE RESERVOIR     NHYDout=["RES_RF"] ,NHYDin=["S_N7"] ,
                    RDT=[30](min),
                          TABLE of ( OUTFLOW-STORAGE ) values
                                     (cms) - (ha-m)
                          TABLE of ( OUTFLOW-STORAGE ) values
                                     (cms) - (ha-m)
                                    [   0.0 ,     0.0 ]
                                    [0.9051,    2.40]
                                    [2.907,     4.13]
                                    [9.744,     9.18]
                                    [20.304,   14.96]
                                    [34.167,  310.21]
                                    [74.993,  605.46]
                                    [104.876, 900.71]
                                    [140.56, 2892.00]
                                    [225.00, 3615.63]
                                    [   -1  ,  -1  ]  (max twenty pts)
                          NHYDovf=["      "] ,
*%-----------------|-------------------------------------------------------------|
SAVE HYD            NHYD=["RES_RF"],  # OF PCYCLES=[-1],  ICASEsh=[-1]
                    HYD_FILENAME=["H_ResRF"]
                    HYD_COMMENT=["outflow of Richmond Fen"]
*%-----------------|-------------------------------------------------------------|
*#
*# Sum of hydrographs from Node 7 routed to Node 6
*# Section 5
*#
ROUTE CHANNEL       NHYDout=["N6"] ,NHYDin=["RES_RF"] ,
                    RDT=[30](min),
                    CHLGTH=[3056](m),  CHSLOPE=[0.0818](%),
                                        FPSLOPE=[0.0818](%),
                    SECNUM=[1.0],       NSEG=[5]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.025,-70.8
                      0.1,-23.9
                      -0.05,23.9
                      0.06,39.8
                      0.05,96.3] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                                      [-100.8, 97.00]
                                      [-70.8, 96.50]
                                      [-52.0, 96.00]
                                      [-35.1, 95.50]
                                      [-30.6, 95.00]
                                      [-23.9, 94.54]
                                      [23.9, 94.54]
                                      [39.8, 95.00]
                                      [50.4, 95.50]
                                      [93.5, 96.00]
                                      [94.9, 96.50]
                                      [96.3, 97.00]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed 6 and Van Gaal Drain to Node 6
*#
ADD HYD             NHYDsum=["S_N6"], NHYDs to add=["N6"+"SW_6"+"VG_DR"]
*%-----------------|-------------------------------------------------------------|
```

```
*#
*# Sum of hydrographs from Node 6 routed to Node 5
*# Section 6
*#
ROUTE CHANNEL       NHYDout=["N5"] ,NHYDin=["S_N6"] ,
                    RDT=[30](min),
                    CHLGTH=[1852](m),  CHSLOPE=[0.0540](%),
                                        FPSLOPE=[0.0540](%),
                    SECNUM=[1.0],       NSEG=[3]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.035,-131.59
                      -0.045,48.96
                      0.1,239.04] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                                       [-686.30, 94.50]
                                       [-675.70, 94.00]
                                       [-492.52, 93.00]
                                       [-467.28, 94.00]
                                       [-131.59, 94.00]
                                       [-92.79, 92.50]
                                       [-18.06, 91.00]
                                       [18.06, 91.00]
                                       [43.47, 92.50]
                                       [48.96, 94.00]
                                       [177.43, 94.00]
                                       [239.04,94.50]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed 5 and Flowing Creek to Node 5
*#
ADD HYD             NHYDsum=["S_N5"], NHYDs to add=["N5"+"SW_5"+"FL_CK"]
*%-----------------|-------------------------------------------------------------|
*#
*# Sum of hydrographs from Node 5 routed to Node 5A
*# Section 7
*#
ROUTE CHANNEL       NHYDout=["N5A"] ,NHYDin=["S_N5"] ,
                    RDT=[30](min),
                    CHLGTH=[556](m),  CHSLOPE=[0.0900](%),
                                        FPSLOPE=[0.0900](%),
                    SECNUM=[1.0],       NSEG=[4]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.04,-41.5
                      0.1,-14.0
                      -0.045,14.0
                      0.1,41.1] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                                       [-275.8, 93.00]
                                       [-248.6, 92.50]
                                       [-237.0, 92.00]
                                       [-219.3, 91.50]
                                       [-202.1, 91.50]
                                       [-186.0, 92.00]
                                       [-129.2, 92.00]
                                       [-117.6, 91.50]
                                       [-100.6, 91.00]
                                       [-41.5, 91.00]
```

```
                                    [-20.0, 91.00]
                                    [-14.0, 90.54]
                                    [14.0, 90.54]
                                    [15.3, 91.00]
                                    [17.3, 91.50]
                                    [38.4, 92.00]
                                    [39.8, 92.50]
                                    [41.1, 93.00]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed 5A1 and Subwatershed 5A2 to Node 5A
*#
ADD HYD             NHYDsum=["S_N5A"], NHYDs to add=["N5A"+"SW_5A2"+"SW_5A1"]
*%-----------------|-------------------------------------------------------------|
*#
*# Sum of hydrographs from Node 5A routed to Node 4
*# Section 8
*#
ROUTE CHANNEL       NHYDout=["N4"] ,NHYDin=["S_N5A"] ,
                    RDT=[30](min),
                    CHLGTH=[4630](m),  CHSLOPE=[0.0432](%),
                                        FPSLOPE=[0.0432](%),
                    SECNUM=[1.0],       NSEG=[3]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.05,-28.2
                      -0.035,28.2
                      0.05,173.1] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                                    [-38.9, 92.00]
                                    [-35.8, 91.50]
                                    [-33.3, 91.00]
                                    [-28.2, 90.50]
                                    [-15.0, 87.48]
                                    [-5.0, 88.34]
                                    [5.0, 86.20]
                                    [15.0, 88.55]
                                    [28.2, 90.50]
                                    [29.7, 91.00]
                                    [46.5, 91.00]
                                    [127.8, 91.00]
                                    [148.7, 91.50]
                                    [173.1, 92.00]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed 4 and Leamy Creek to Node 4
*#
ADD HYD             NHYDsum=["S_N4"], NHYDs to add=["N4"+"SW_4"+"LM_CK"]
SAVE HYD            NHYD=["S_N4"],  # OF PCYCLES=[-1],  ICASEsh=[1]
                    HYD_COMMENT=["flow at S_N4"]
*%-----------------|-------------------------------------------------------------|
*#
*# Sum of hydrographs from Node 4 routed to Node 2
*# Section 9
*#
ROUTE CHANNEL       NHYDout=["N2"] ,NHYDin=["S_N4"] ,
                    RDT=[30](min),
                    CHLGTH=[1667](m),  CHSLOPE=[0.0600](%),
```

```
                                    FPSLOPE=[0.0600](%),
                    SECNUM=[1.0],       NSEG=[4]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.1,-28.0
                      -0.04,28.4
                      0.06,31.7
                      0.04,80.2] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                          [-36.3, 92.00]
                          [-32.6, 91.50]
                          [-30.2, 91.00]
                          [-28.0, 90.45]
                          [-15.0, 87.48]
                          [-5.0, 88.34]
                          [5.0, 86.20]
                          [15.0, 88.55]
                          [28.0, 90.45]
                          [28.4, 90.50]
                          [30.4, 91.00]
                          [31.7, 91.50]
                          [80.2, 92.00]
*%-----------------|-------------------------------------------------------------|
*#
*# Addition of Subwatershed 2 with Monohan Drain and Smith Drain to Node 2
*#
ADD HYD             NHYDsum=["S_N2"], NHYDs to add=["N2"+"SW_2"+"SM_DR"+"MO_DR"]
*%-----------------|-------------------------------------------------------------|
SAVE HYD            NHYD=["S_N2"],  # OF PCYCLES=[-1],  ICASEsh=[-1]
                    HYD_FILENAME=["H_SN2"]
                    HYD_COMMENT=["flow at S_N2 Jock River Gauge at Moodie Dr."]
*%-----------------|-------------------------------------------------------------|
*#
*# Sum of hydrographs from Node 2 routed to Node 1
*# Section 10
*#
ROUTE CHANNEL       NHYDout=["N1"] ,NHYDin=["S_N2"] ,
                    RDT=[30](min),
                    CHLGTH=[10046](m),  CHSLOPE=[0.0498](%),
                                        FPSLOPE=[0.0498](%),
                    SECNUM=[1.0],       NSEG=[5]
                    ( SEGROUGH, SEGDIST (m))=
                      [0.04,-27.6
                      0.06,-15.0
                      -0.045,15.0
                      0.06,25.4
                      0.04,122.6] NSEG times
                    ( DISTANCE (m), ELEVATION (m))=
                                    [-87.0, 91.50]
                                    [-32.4, 91.00]
                                    [-27.6, 90.50]
                                    [-25.0, 90.00]
                                    [-22.9, 89.57]
                                    [-15.0, 86.20]
                                    [-5.0, 84.83]
                                    [5.0, 84.83]
                                    [15.0, 88.11]
                                    [22.9, 89.57]
```

```
                                        [25.4, 90.00]
                                        [27.9, 90.50]
                                        [38.0, 91.00]
                                        [112.5, 91.00]
                                        [114.3, 90.50]
                                        [115.1, 90.26]
                                        [116.3, 90.50]
                                        [119.0, 91.00]
                                        [121.0, 91.50]
                                        [122.6, 92.00]
*%-----------------|---------------------------------------------------------|
*#
*# Addition of Subwatershed 1 to Node 1
*#
ADD HYD             NHYDsum=["N1"], NHYDs to add=["N1"+"SW_1"]
SAVE HYD            NHYD=["N1"],  # OF PCYCLES=[-1],  ICASEsh=[1]
                    HYD_COMMENT=["total outflow of Jock River"]
*%-----------------|---------------------------------------------------------|
*#########################################################################
*%  5 yr, 24 hr SCS storm based on OTTAWA CDA IDF Curves
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[5]
*%                   ["C24SC005.stm"] <--storm filename, one per line for NSTORM
time
*%-----------------|---------------------------------------------------------|
*%  10 yr, 24 hr SCS storm based on OTTAWA CDA IDF Curves
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[10]
*%                   ["C24SC010.stm"] <--storm filename, one per line for NSTORM
time
*%-----------------|---------------------------------------------------------|
*%  25 yr, 24 hr SCS storm based on OTTAWA CDA IDF Curves
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[25]
*%                   ["C24SC025.stm"] <--storm filename, one per line for NSTORM
time
*%-----------------|---------------------------------------------------------|
*%  50 yr, 24 hr SCS storm based on OTTAWA CDA IDF Curves
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[50]
*%                   ["C24SC050.stm"] <--storm filename, one per line for NSTORM
time
*%-----------------|---------------------------------------------------------|
*%  100 yr, 24 hr SCS storm based on OTTAWA CDA IDF Curves
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[100]
*%                   ["C24SC100.stm"] <--storm filename, one per line for NSTORM
time
FINISH
```