APPENDIX F

OPERATIONAL RIVER FORECASTING PROGRAM WITH SNOW--INPUT AND OUTPUT SAMPLES

F.1 OPERATION PROGRAM WITH SNOW-INPUT SUMMARY

F.2 SAMPLE INPUT AND OUTPUT FOR OPERATION PROGRAM WITH SNOW - EXAMPLE ONE

F.3 SAMPLE INPUT AND OUTPUT FOR OPERATION PROGRAM WITH SNOW - EXAMPLE TWO

F.4 SAMPLE INPUT AND OUTPUT FOR OPERATIONAL PROGRAM WITH SNOW - EXAMPLE THREE

F.1 OPERATION PROGRAM WITH SNOW-INPUT SUMMARY

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C          INPUT SUMMARY FOR OPERATIONAL PROGRAM
*****************************************************************************
*CARD NO. FORMAT    CONTENTS
*****************************************************************************
C   1         I5      PUNCH 1 IN COLUMN 5
C             I5      =1 IF THE INITIAL RUN, =0 IF STARTING FROM PREVIOUS DATE
C                          (INITIAL)
C             I5      TAPE NO. OF PREVIOUS CARRYOVER TAPE(TAPE THAT CONTAINS
C                          PARAMETER VALUES AND INITIAL STORAGES)
C             I5      TAPE NO. OF CARRYOVER TAPE TO BE USED AT THE END OF THE RUN
C             I5      =1 INPUT NEW PARAMETER VALUES,   =0 NO   (INPM)
*****************************************************************************
C   2         I5      YEAR(LAST TWO DIGITS)
C             I5      MONTH NUMBER -- MONTH NO. OF INITIAL DAY
C             I5      DAY NUMBER OF INITIAL DAY
C             I5      PERIOD NUMBER OF INITIAL PERIOD (4 SIX HOUR PERIODS USED)
C             I5      CURRENT DAY NUMBER (IF IN NEXT MONTH USE DAY NO.=(DAYS IN
C                          PREVIOUS MONTH PLUS DAY NO.))
C             I5      PERIOD NUMBER OF CURRENT PERIOD
C             I5      =1 THIS IS A RERUN TO ADJUST PRECIPITATION VOLUME OR TO
C                          ROUTE NON-COMPUTER MADE FORECASTS DOWNSTREAM,
C                          =0 NO RERUN FOR ABOVE REASONS (RERUN)
C             I5      =1 INPUT NEW INITIAL SOIL MOISTURE STORAGES, =0 NO (INSTOR)
C             I5      =1 CHANGE FLOWS TO BE ROUTED DOWNSTREAM, =0 NO (INOBSER)
C             I5      =1 BEGINNING OF STORM, =0 NO
C             I5      =1 RUN TOTAL STORM INSTEAD OF JUST CURRENT UPDATE, =0 NO
C             I5      =1 ADJUST SNOWPACK CONDITIONS,  =0 NO SNOW ADJUSTMENTS
*****************************************************************************
*****************************************************************************
*FOLLOWING 300 SERIES CARDS ONLY NEEDED IF SNOWPACK CONDITIONS ARE
*                                                        TO BE ADJUSTED.
*****************************************************************************
*****************************************************************************
C 301       I5      NUMBER OF MBP AREAS TO ADJUST SNOWPACK CONDITIONS.
*****************************************************************************
C   ***NOTE*** REPEAT CARD 302 FOR EACH MBP AREA WHERE SNOW IS ADJUSTED.
C 302         I5      MBP AREA NUMBER
C     FOR THE FOLLOWING ADJUSTMENTS LEAVE THE COLUMNS BLANK IF NO ADJUSTMENT.
C           F5.2      NEW INITIAL TOTAL WATER-EQUIVALENT OF THE SNOWPACK.
C                          PROGRAM PROPORTIONS CHANGE BETWEEN SOLID AND LIQUID
C                          PHASE BY KEEPING PERCENT LIQUID WATER CONSTANT
C           F5.2      NEW AREAL EXTENT OF SNOW COVER (.GE.0.05 --.LE.1.0)
C                          PROGRAM COMPUTES RATIO BETWEEN NEW AREAL COVER AND
C                          OLD AREAL COVER AND USES THIS RATIO ON ALL FUTURE
C                          RUNS UNTIL AREAL COVER IS ADJUSTED AGAIN OR THE
C                          SNOWPACK IS GONE.
C           F5.2      ADJUSTMENT MULIPLYING FACTOR FOR NON-RAIN MELT-FACTOR.
C           F5.2      ADJUSTMENT MULTIPLYING FACTOR FOR WIND FUNCTION DURING
C                          RAIN ON SNOW EVENTS.
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C          F5.2     ADJUSTED GAGE CATCH DEFICIENCY FACTOR FOR SNOW OCCURING
C                        DURING THIS RUN.
C          F5.2     NEW INITIAL VALUE OF NEGATIVE HEAT STORAGE.
*************************************************************************
*************************************************************************
CARD5 3-4 NEEDED ONLY IF (INITIAL.EQ.0.AND.INSTOR.EQ.1)
*************************************************************************
C   3        I5      NO. OF MBP AREAS AT WHICH TO CHANGE INITIAL SOIL MOISTURE
C                        (NGCHGE)
*************************************************************************
C   4        I5      MBP AREA NUMBER FOR THE RUN
C         7F5.2      INITIAL SOIL MOISTURE VALUES
C                       (UZSI,LZSI,SGWI,GWSI,RESI,SRGXI,SCEPI)
C                        REPEAT CARD 4 FOR (NGCHGE) MBP AREAS)
*************************************************************************
CARD 5  ONLY NEEDED IF (INITIAL.EQ.0).AND.(INOBSER.EQ.1)
*************************************************************************
C    5      16I5      FLOW TO BE ROUTED DOWNSTREAM (1 TO NPTS)
C                        =1 ROUTE OBSERVED
C                        =0 ROUTE SIMULATED
*************************************************************************
CARD 6 ONLY NEEDED IF (INITIAL.EQ.0.AND.INPM.EQ.0)
*************************************************************************
C   6        I5      =1 OUTPUT PARAMETER VALUES, =0 NO
C            I5      LENGTH OF FORECAST IN DAYS -- THUS LAST FORECAST DAY WILL
C                        BE CURRENT DAY PLUS LENGTH    =0 IF NO FORECAST NEEDED
C            I5      =1 SNOW IS TO BE INCLUDED IN THIS RUN,  =0 NO SNOW PRESENT.
*************************************************************************
*    CARDS 7 THROUGH 23 (INCLUD. 200 SERIES CARDS) ARE ONLY NEEDED IF (INITIAL.
C                         EQ.1.OR.INPM.EQ.1)
*************************************************************************
C   7       20A4      BASIC RUN INFORMATION SUCH AS DATE,ETC.
*************************************************************************
C   8       20A4      BASIN NAME
*************************************************************************
C   9        I5      NO. OF MBP AREAS USED IN RUN (NGAGES)
C            I5      NO. OF PE STATIONS USED (NPEGS)
C            I5      NO. OF STREAM-FLOW-POINTS USED (NPTS)
C            I5      NO. OF UPSTREAM INFLOW POINTS NEEDED FROM OUTSIDE
C                       AREA BEING RUN (NPTSUP)
*************************************************************************
C  10       10A4      NAME OF PE STATION
C            I5      NEP
C            I5      NDUR
C   (REPEAT CARD 10 FOR EACH PE STATION(1 TO NPEGS))--ORDER OF READ DETERMINES
C                        PE STATION NUMBER FOR THE RUN)
*************************************************************************
C  11       16I5      ASSOCIATES PE STATIONS TO MBP AREAS
C                        1 TO (NGAGES) VALUES ARE NEEDED
C                     E.G. (NGAGES)=3,(NPEGS)=2, CARD 11=2,1,2
C                              THEN THE 1ST PRECIP AREA WILL USE PE FROM NO.2
C                                                                 PE STATION
C                                   THE 2ND PRECIP AREA WILL USE PE FROM NO.1
C                                                                 PE STATION
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C                                    THE 3RD PRECIP AREA WILL USE PE FROM NO.2
C                                                                  PE STATION
*******************************************************************************
C  12       16I5      DESCRIBES OBSERVED DISCHARGE TO BE READ IN AT EACH
C                          FLOW-POINT (1-NPTS)
C                     =0 NO OBSERVED SIX HOUR DISCHARGE
C                     =1 OBSERVED SIX HOUR DISCHARGE IN THE PAST (INITIAL DAY,
C                          INITIAL PERIOD TO CURRENT DAY,CURRENT PERIOD)
C                     =2 OBSERVED SIX HOUR Q IN PAST PLUS EST. OF SIX HOUR Q IN
C                          THE FUTURE (THROUGH CURRENT DAY PLUS LENGTH)
C                          IF FUTURE Q IS MISSING (NEGATIVE), THEN SIMULATED
C                          FORECAST IS USED.
*******************************************************************************
C  13       16I5      TYPE OF ROUTING TO BE APPLIED TO REACH ABOVE FLOW-
C                          POINT (1 TO NPTS) EQUAL TO 1 FOR NOW
C                     1 IS FOR LAG AND K ROUTING INCLUDING VARIABLE
C                     SEE CHAPTER 6 OF HYDRO-14 FOR ADDING OTHER ROUTING
C                          PROCEDURES.
*******************************************************************************
C  14       16I5      FLOW TO ROUTE DOWNSTREAM (1 TO NPTS)
C                     =1 ROUTE OBSERVED
C                     =0 ROUTE SIMULATED
*******************************************************************************
C  15          I5     =1 OUTPUT PARAMETER VALUES, =0 NO
C              I5     LENGTH OF FORECAST IN DAYS -- THUS LAST FORECAST DAY WILL
C                          BE CURRENT DAY PLUS LENGTH    =0 IF NO FORECAST NEEDED
C              I5     =1 SNOW IS TO BE INCLUDED IN THIS RUN,  =0 NO SNOW PRESENT.
C              I5     =1 IN COLUMN 20
C              I5     =1 INPUT SNOW PARAMETERS (CAN BE DONE EVEN IF THERE IS
C                                          CURRENTLY NO SNOW ON THE GROUND).
*******************************************************************************
C  16          I5     NUMBER OF FUTURE(QPF) AREAS TO BE USED  (NFPXGS)
*******************************************************************************
C  16A      16I5      ASSOCIATES QPF AREAS TO MBP AREAS -- SAME TYPE AS CARD 11
C           CARD 16A NEEDED ONLY IF (NFPXGS.ET.0)
C               IF (NFPXGS.EQ.0) THEN FUTURE PRECIP AND PE IS SET TO 0.0
C               IF FUTURE PRECIP IS INPUT THEN FUTURE PE MUST ALSO BE INPUT
C               FOR EACH PE STATION.
*******************************************************************************
C**NOTE**  REPEAT CARDS 17 THROUGH 20 FOR EACH MBP AREA (NGAGES)
C  17        5A4      NAME OF MBP AREA
C          4F5.2      SOIL-MOISTURE VOLUME PARAMETERS
C         ,F5.1,           MOD. STANFORD WATERSHED MODEL
C          F5.2,           ORDER OF PARAMETERS IS --
C         2F5.1,                K1,A,EPXM,UZSN,LZSN,CB,POWER,CC,K24L
C           F5.2          (PARAMETERS DEFINED IN SECTION 4.3 OF HYDRO-14)
*******************************************************************************
C  18       20X,      EVAPOTRANSPIRATION PARAMETERS FOR SOIL MOISTURE
C          5F5.2           ORDER IS  K3,GAGEPE,EHIGH,ELOW,K24EL
*******************************************************************************
C  19       20X,      SOIL MOISTURE  TIMING PARAMETERS
C         2F5.2,           ORDER IS---
C          F5.4,            SRC1,LIRC6,LKK6,KV,KGS
C         2F5.2
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*****************************************************************************
C  20       20X,      SOIL MOISTURE INITIAL CONDITIONS
C          7F5.1            ORDER IS---UZSI,LZSI,SGWI,GWSI,RESI,SRGXI,SCEPI
C                                  UZS=UPPER ZONE STORAGE
C                                  LZS=LOWER ZONE STORAGE
C                                  SGW=GROUNDWATER STORAGE
C                                  GWS=ANTECEDENT GW INFLOW INDEX
C                                  RES=SURFACE DETENTION
C                                  SRGX=INTERFLOW DETENTION
C                                  SCEP=INTERCEPTION STORAGE
***    *NOTE*.................CARD 20 IS NOT NEEDED IF(INITIAL.EQ.0)
C                INITIAL MOISTURE STORAGES ARE CARRIED OVER FROM PREVIOUS RUN
C                                                              IN THIS CASE
*****************************************************************************
*****************************************************************************
*****************************************************************************
*********NOTE*********  THE FOLLOWING 200 SERIES CARDS ARE NEEDED IF SNOW
C  PARAMETERS ARE NEEDED.     SNOW MAY OR MAY NOT CURRENTLY BE PRESENT.  ********
*****************************************************************************
*****************************************************************************
C 202          I5      NUMBER OF MAT AREAS USED IN THIS RUN (NTAG)
C              I5      NUMBER OF PREDICTED TEMPERATURE AREAS(FUTURE TEMP.) USED.
*****************************************************************************
C 203         5A4      NAME OF MAT AREA
C           F10.0      MEAN ELEVATION OF MAT AREA IN FEET
C           4F5.1      AIR TEMPERATURE LAPSE RATES FOR MID-6AM,6AM-NOON,
C                           NOON-6PM,6PM-MID.   DEG. F/1000 FT. ELEV. CHANGE
C                NOTE..REPEAT THIS CARD FOR EACH MAT AREA. CARD ORDER
C                      DEFINES MAT ORDER NUMBER FOR THIS RUN.
*****************************************************************************
C 204         5A4      NAME OF PREDICTED TEMPERATURE AREA
C           F10.0      MEAN ELEVATION OF PREDICTED TEMPERATURE AREA IN FEET.
C                NOTE..REPEAT THIS CARD FOR EACH PREDICTED TEMPERATURE AREA.
C                     CARD ORDER DEFINES PREDICTED TEMP. ORDER-NUMBER FOR THIS RUN.
*****************************************************************************
C 205        16I5      ASSOCIATES MAT AREAS TO MBP AREAS
C                           1 TO (NGAGES) VALUES ARE NEEDED
C                      E.G. (NGAGES)=3, (NTAG)=2,  CARD 205=2,1,1
C                           THEN THE 1 ST PRECIP AREA WILL USE AIR TEMPERATURE
C                                          FROM MAT AREA NO.2
C                                     2 ND PRECIP AREA WILL USE AIR TEMPERATURE
C                                          FROM MAT AREA NO.1
C                                     3 RD PRECIP AREA WILL USE AIR TEMPERATURE
C                                          FROM MAT AREA NO.1
*****************************************************************************
C 206        16I5     SAME AS CARD 205 EXCEPT FOR PREDICTED TEMPERATURE AREAS.
*****************************************************************************
*****************************************************************************
C NOTE..REPEAT CARDS 207 THRU 211 FOR EACH MEAN BASIN PRECIPITATION AREA IF
C         INITIAL RUN-(INITIAL=1).     IF NOT INITIAL RUN THEN INITIAL VALUES OF
C         SNOWPACK VARIABLES ALREADY EXIST.  THUS CARDS 208,209 ARE NOT NEEDED.
*****************************************************************************
C 207 20X,F10.0      MEAN AREA ELEVATION IN FEET
C           F5.2     PERCENT/100 OF AREA OVER WHICH EVAPOTRANSPIRATION CAN TAKE
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C                                PLACE WHEN THERE IS COMPLETE AREAL SNOW COVER (EFC)
C            F5.2        MULTIPLYING FACTOR TO CORRECT FOR GAGE CATCH DEFICIENCY
C                                IN THE CASE OF SNOWFALL. (SCF)
C            F5.4        MAXIMUM NON-RAIN MELT FACTOR -- OCCURS ON JUNE 21. (MFMAX)
C            F5.4        MINIMUM NON-RAIN MELT FACTOR -- OCCURS ON DEC. 21. (MFMIN)
C            F5.4        MAXIMUM NEGATIVE MELT FACTOR -- (NMF)
C                 NOTE..UNITS FOR MELT FACTORS ARE INCHES/DEG.F/SIX HOURS
C            F5.4        MEAN WIND FUNCTION VALUE DURING RAIN ON SNOW PERIODS
C                                UNITS ARE INCHES/INCH OF MERCURY (UADJ)
C            F5.1        AREAL WATER-EQUIVALENT (INCHES) ABOVE WHICH THERE IS
C                                ALWAYS COMPLETE AREAL SNOW COVER.  (SI)
C            F5.2        DAILY MELT AT THE SNOW-SOIL INTERFACE IN INCHES. (DAYGM)
*************************************************************************************
C 208             INITIAL VALUES OF SOME SNOW COVER VARIABLES.
C        20X,F5.0        ANTECEDENT SNOW TEMP. INDEX  (DEG. F)  (ATI)
C            F5.2        FREE WATER IN SNOW IN EXCESS OF THAT HELD AGAINST GRAVITY
C                                DRAINAGE  (INCHES)
C            F5.2        POINT SB ON AREAL DEPLETION CURVE  (INCHES)
C            F5.2        PERCENT/100 AREAL SNOW COVER AT POINT SB.
C            F5.2        POINT SBWS ON AREAL DEPLETION CURVE (INCHES)
C       NOTE..SEE CHAP. 3  FOR FURTHER EXPLANATION OF THESE INITIAL VALUES.
*************************************************************************************
C 209             INITIAL VALUES OF MAJOR SNOW COVER VARIABLES
C        20X,F5.2        INITIAL WATER-EQUIVALENT OF SOLID PORTION OF THE
C                                SNOWPACK.   (INCHES)
C            F5.2        INITIAL NEGATIVE HEAT STORAGE  (INCHES)
C            F5.2        INITIAL AMOUNT OF FREE WATER HELD AGAINST GRAVITY
C                                DRAINAGE (INCHES).  MAXIMUM EQUALS PERCENT LIQUID
C                                WATER HOLDING CAPACITY TIMES INITIAL WATER-EQUIVALENT.
*************************************************************************************
*************************************************************************************
C 210             ADDITIONAL SNOW PARAMETERS
C        20X,F5.0        MELT FACTOR BASE TEMPERATURE  (DEG. F)  (MBASE)
C            F5.0        TEMPERATURE (DEG. F) TO DIVIDE RAIN FROM SNOW  (PXTEMP)
C                                IF AIR TEMPERATURE GREATER,THEN RAIN
C                                IF AIR TEMPERATURE LESS THAN OR EQUAL,THEN SNOW
C            F5.2        PERCENT/100 LIQUID WATER HOLDING CAPACITY (PLWHC)
C                                MAXIMUM AMOUNT OF FREE WATER HELD AGAINST GRAVITY.
C            F5.2        ANTECEDENT SNOW TEMP. INDEX PARAMETER  (TIPM)
C                                (.GE.0.0 --.LE.1.0)
*************************************************************************************
C 211 20X,9F5.2          AREAL SNOW COVER DEPLETION CURVE
C                                PERCENT/100 AREAL EXTENT OF SNOW COVER AT
C                                WATER EQUIVALENT/AI RATIOS OF  0.1,0.2,0.3,0.4,0.5,
C                                     0.6,0.7,0.8,0.9  (SEE SECTION 3.3.3 FOR DEFINITION
C                                     OF AI)     FOR RATIO=0.0  AREAL COVER=0.05
C                                                RATIO=1.0  AREAL COVER=1.00
*************************************************************************************
*************************************************************************************
*************************************************************************************
C**NOTE**CARD 21A IS ONLY NEEDED WHEN THE NUMBER OF UPSTREAM INFLOWS
C          FROM OUTSIDE THE AREA BEING RUN IS.GT.0 (NPTSUP.GT.0)
C  21A        7A4        NAME OF UPSTREAM INFLOW POINT
C        2X,F10.0        AREA OF UPSTREAM INFLOW POINT  (TOTAL AREA ABOVE GAGE SQ.MI)
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C         REPEAT CARD 21A FOR EACH UPSTREAM INFLOW POINT (1 TO NPTSUP))
C               ORDER OF CARDS DETERMINES FLOW-POINT NUMBER FOR RUN
C               FIRST UPSTREAM INFLOW POINT IS ASSIGNED FLOW-POINT NUMBER
C                    EQUAL TO (NPTS+1) ETC. E.G. IF NPTS=3 THEN THE FIRST
C                    UPSTREAM INFLOW POINT BECOMES FLOW-POINT 4 FOR
C                    THE RUN.
*****************************************************************************
C**NOTE** REPEAT CARDS 21 THROUGH 23 (IF ALL NEEDED) FOR EACH FLOW-POINT
C          WITHIN RUN AREA (NPTS)
C         ORDER OF CARDS DETERMINES FLOW-POINT NUMBER FOR THE RUN.
C         NOTE...ALL FLOW-POINTS UPSTREAM FROM GAGE MUST HAVE A SMALLER RUN
C              NUMBER THAN THE GIVEN GAGE--EXCEPT FOR UPSTREAM INFLOW-POINTS
C              FROM OUTSIDE THE AREA BEING RUN(SEE CARD 21A)
C  21        7A4      NAME OF FLOW-POINT
C       2X,F10.0      TOTAL AREA ABOVE FLOW-POINT IN SQUARE MILES
C         ,F5.2,      CONSTANT K ROUTING FACTOR IN HOURS   =0.0 IF VAR. K USED
C            I5       =1 USE VARIABLE K    =0 NO
C            I5       =1 USE VARIABLE LAG =0 NO
C            I5       ROUTING INTERVAL IN HOURS  (MUST=6 FOR NOW)
C            I5       NO. OF VALUES  IN TIME-DELAY HISTOGRAM FOR LOCAL AREA
C            I5       NO. OF UPSTREAM  INFLOW POINTS TO LOCAL AREA (NUPIN)
C                          THESE CAN BE UPSTREAM INFLOWS FROM OUTSIDE OR
C                          INSIDE THE RUN AREA
C            I5       NO.OF POINTS TO DEFINE VARIABLE K VS OUTFLOW CURVE
C            I5       NO. OF POINTS TO DEFINE VARIABLE LAG VS INFLOW CURVE
*****************************************************************************
C  21B    8F10.0      VARIABLE K VS.OUTFLOW CURVE IF NEEDED    K IN HOURS
C                          MAXIMUM POINTS TO DEFINE CURVE IS 10 (THUS 3 CARDS)
C                          VALUES READ IN PAIRS  (FLOW,K)
C                               SO 4 PAIRS OF (FLOW,K) CAN GO ON A CARD
C                          K AT ZERO FLOW MUST BE FIRST POINT
C                          CALCULATIONS USING K ARE BASED ON A LINEAR
C                               INTERPOLATION BETWEEN POINTS
C                          K VALUE FOR HIGHEST DEFINED FLOW IS USED FOR
C                               ALL FLOWS ABOVE THAT DISCHARGE
*****************************************************************************
C  21C    8F10.0      VARIABLE LAG VS. INFLOW CURVE IF NEEDED   LAG IN HOURS
C                          MAX.PTS=10, VALUES IN PAIRS(FLOW,LAG), 4 PAIRS PER CARD
C                          LAG AT ZERO FLOW MUST BE FIRST POINT
C                          CALCULATIONS USING VARIABLE LAG ARE BASE ON
C                               LAGGING THE VOLUME OF FLOW IN THE INTERVAL
C                               FLOW(N) TO FLOW(N+1) BY THE AVERAGE LAG FOR
C                               THAT INTERVAL (LAG(N)+LAG(N+1))*0.5
C                          LAG VALUE FOR HIGHEST DEFINED FLOW IS USED FOR
C                               ALL FLOW ABOVE THAT DISCHARGE
*****************************************************************************
C  22       30X,      TIME DELAY HISTOGRAM (MAX.NO OF POINTS=30)
C        10F5.2           HISTOGRAM IS FOR LOCAL AREA   SUMMATION OF VALUES=1.0
*****************************************************************************
C  23       30X,      MBP AREAS TO BE ASSIGNED TO EACH ELEMENT OF THE TIME-DELAY
C           10I5           HISTOGRAM ---  MBP AREAS DESIGNATED BY RUN NO. WHICH
C                          IS DETERMINED BY THE ORDER CARDS 17 TO 20 WERE READ.
*****************************************************************************
C  21D      30X,      RUN NO. OF EACH UPSTREAM INFLOW POINT TO LOCAL AREA
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C          5I5                    NEEDED IF (NUPIN.GT.0)
*****************************************************************************
C  21E     30X,      CONSTANT LAG FOR EACH UPSTREAM INFLOW POINT
C         5F5.1          (LAG IN HOURS)
C              **NOTE** TOTAL LAG CONSISTS OF CONSTANT PLUS VARIABLE COMPONENT
*****************************************************************************
*****************************************************************************
*NEXT GROUP OF CARDS INPUTS DATA FOR THE PERIOD FROM (INITIAL DAY-INITIAL PERIOD
*              TO CURRENT DAY-CURRENT PERIOD)  FROM SUBROUTINE DATAIN
*****************************************************************************
*****************************************************************************
C  24         I5      MONTH NUMBER
C             I5      DAY NUMBER
C         4F5.2       PRECIPITATION FOR EACH SIX HOUR PERIOD
C              (REPEAT CARD 24 FOR EACH DAY THAT PRECIPITATION IS .GT.0.0
C                     PLUS ALWAYS HAVE A CARD FOR THE CURRENT DAY)
C          (REPEAT CARD 24 FOR EACH MBP AREA AFTER IT IS REPEATED FOR EACH DAY)
*****************************************************************************
C  25      10X,       PE FOR EACH PE STATION (1-NPEGS)
C        14F5.3
C               (REPEAT CARD 25 FOR EACH DAY(INITIAL DAY THROUGH CURRENT DAY)
*****************************************************************************
C  25A          THIS CARD IS ONLY NEEDED IF SNOW IS INCLUDED IN THIS RUN.
C          10X,       AIR TEMPERATURE FOR EACH SIX HOUR PERIOD.
C         4F5.0         (REPEAT CARD 25A FOR EACH MAT AREA AFTER IT IS
C                          REPEATED FOR EACH DAY AT A GIVEN MAT AREA.)
*****************************************************************************
C  26      10X,       STAGE TENDENCY PLUS DISCHARGE AT END OF EACH SIX HOUR PERIOD
C     4(F1.0,F9.0)      STAGE TENDENCY--  ZERO OR BLANK (NO REPORT)
C                       =1 (RISING)  =2 (FALLING)  =3 (STATIONARY)
C                (REPEAT CARD 26 FOR EACH DAY (INITIAL THROUGH CURRENT))
C           NOTE.GROUPS OF CARD 26 ARE NEEDED AT EACH FLOW-POINT WHERE SIX-HOUR
C               DISCHARGE IS TO BE READ IN--(SEE CARD 12)
C               PLUS ALL UPSTREAM FLOW-POINTS FROM OUTSIDE THE BASIN
C                     FOR UPSTREAM INFLOWS STAGE TENDENCY CAN BE BLANK
C      NOTE..INPUT OF CARD 26 GROUPS IS IN ORDER OF FLOW-POINT RUN NUMBER
C      NOTE.IF OBSERVED FLOW IS TO BE ROUTED DOWNSTREAM THEN A FLOW VALUE
C           MUST BE SUPPLIED FOR EACH SIX HOURS -- IF SIMULATED ROUTED
C           DOWNSTREAM FLOW VALUES DO NOT HAVE TO BE SUPPLIED EACH SIX HOURS
C           BUT ONLY WHEN READINGS ARE AVAILABLE.
*****************************************************************************
*****************************************************************************
*NEXT GROUP OF CARDS ONLY NEEDED IF(LENGTH.GT.0.)
*****************************************************************************
*****************************************************************************
C        CARDS 27 AND 28 ONLY NEEDED IF (NFPXGS.GT.0)
*****************************************************************************
C  27    SAME AS CARD 24 GROUP ONLY FOR (CURRENT DAY TO CURRENT DAY PLUS LENGTH
C              AND FOR QPF AREAS INSTEAD OF MBP AREAS)
*****************************************************************************
C  28    SAME AS CARD 25 GROUP ONLY FOR FUTURE PE DATA
*****************************************************************************
C        CARD 28A IS ONLY NEEDED IF SNOW IS INCLUDED IN THIS RUN.
*****************************************************************************
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```
C  28A    SAME AS CARD 25A GROUP EXCEPT FOR PREDICTED TEMPERATURE AREAS AND
C              FOR CURRENT DAY TO CURRENT DAY PLUS LENGTH. (FUTURE TEMP. DATA)
*************************************************************************
***                        CARD 29 NEEDED IF THERE ARE FLOW POINTS WITH A CARD
C          12 VALUE EQUAL 2 OR UPSTREAM FLOW-POINTS FROM OUTSIDE THE BASIN
*************************************************************************
C  29     SAME AS CARD 26 GROUP ONLY FOR FORECAST FLOWS FROM ALL FLOW-POINTS
C              WITH A CARD 12 VALUE OF 2 OR UPSTREAM INFLOWS FROM OUTSIDE THE
C              CURRENT RUN AREA (IN ORDER OF THEIR RUN NUMBER) (TENDENCY=BLANK)
*************************************************************************
*************************************************************************
*NEXT GROUP OF CARDS ONLY NEEDED IF RERUN.EQ.1
*************************************************************************
*************************************************************************
C  30         I5     NO. OF MBP AREAS TO ADJUST PRECIP BY A MULTIPICATION FACTOR
C             I5     NO. OF FLOW-POINTS TO INPUT A FORECAST (THESE ARE
C                         POINTS WHERE THE HYDROLOGIST WANTS TO CHANGE THE
C                         COMPUTER FORECAST)
*************************************************************************
C  31         I5     MBP AREA NUMBER
C           F5.2     ADJUSTMENT MULTIPLYING FACTOR
C                (REPEAT CARD 31 FOR EACH MBP AREA TO BE ADJUSTED)
C             NOTE..CARD 31 NEEDED ONLY IF AT LEAST ONE MBP AREA IS ADJUSTED
*************************************************************************
CARDS  32,33 ONLY NEEDED IF HYDROLOGIST WANTS TO CHANGE A COMPUTER FORECAST
*************************************************************************
C  32       16I5     FLOW-POINT NUMBERS WHERE FORECAST IS TO BE CHANGED
C                       NOTE..A HIGHER NUMBER CANNOT PRECEED A LOWER NUMBER
*************************************************************************
C  33       10X,     HYDROLOGIST FORECAST (CFS) FOR EACH SIX HOURS
C         4F10.0
C                 (REPEAT CARD 33 FOR EACH DAY (CURRENT DAY-CURRENT DAY+LENGTH))
C                 (REPEAT CARD 31 GROUPS FOR EACH FLOW-POINT WHERE FORECAST
C                    IS TO BE CHANGED -- IN ORDER GIVEN BY CARD 32)
*************************************************************************
*************************************************************************
*************************************************************************
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F.2 SAMPLE INPUT AND OUTPUT FOR OPERATION PROGRAM WITH SNOW - EXAMPLE ONE

```
    1    1    0    1    1
   69    4    1    1    5    1    0    0    0    0    0    0
 SAMPLE INPUT DATA FOR NWSRFS OPERATIONAL RIVER FORECASTING PROGRAM    JUNE,1973
 ROCK RIVER AT ROCK RAPIDS,IOWA
    1    1    1    0
SIOUX CITY,IOWA -- T.R.NO. 38 PE DATA      91  136
    1
    1
    1
    0
    1    0    1    1    1
    1
    1
MBP AB. ROCK RAPIDS   1.0  0.0  .30  .75  4.0  .02  2.5  1.4  0.0       VOL PARM
MBP AB. ROCK RAPIDS   .20  .92  1.1  0.0  0.0                           ET PARM
MBP AB. ROCK RAPIDS    .9  .07.0075  4.0  .98                          TIME PARM
MBP AB. ROCK RAPIDS   1.0  4.2  .15  .10  0.0  0.0  .30                 INITIAL
    1    1
MAT AB. ROCK RAPIDS      1600.  -1.  -3.  -5.  -3.
SW MINN. FORECAST TA     1600.
    1
    1
AREA AB. ROCK RAPIDS     1600.  0.0  1.3  .04  .02.0075  .15  1.5  0.0
AREA AB. ROCK RAPIDS  32.  0.0  7.2  1.0  7.2
AREA AB. ROCK RAPIDS  6.0  0.0  1.2
BASINWIDE SNOW PARM.  32.  33.  .20   .5
AREA DEPLETION CURVE  .24  .39  .52  .64  .75  .81  .87  .92  .96
ROCK RIVER ABOVE ROCK RAPIDS        788.  3.4    0    0    6   16    0    0    0
TIME-DELAY-ROCK RAPIDS         .037 .071 .094 .087 .090 .097 .111 .125 .104 .073
TIME-DELAY-ROCK RAPIDS         .048 .028 .019 .009 .005 .002
GAGE-AREA -ROCK RAPIDS            1    1    1    1    1    1    1    1    1    1
GAGE-AREA -ROCK RAPIDS            1    1    1    1    1    1
    4    4       .01
    4    5  0.0
    4    1 .103
    4    2 .106
    4    3 .110
    4    4 .113
    4    5 .116
    4    1   32   37   40   32
    4    2   29   34   37   32
    4    3   30   37   42   36
    4    4   33   38   40   31
    4    5   27
    4    1          3      53.
    4    2          3      53.
    4    3          1     166.
    4    4          1     760.1    1370.3     2299
    4    52    2244.
```

```
                    ROCK RIVER AT ROCK RAPIDS,IOWA

SAMPLE INPUT DATA FOR NWSRFS OPERATIONAL RIVER FORECASTING PROGRAM    JUNE,1973

                                                BASIC RUN INFORMATION

NUMBER OF PRECIPITATION GAGES= 1     NUMBER OF FLOW-POINTS= 1     NUMBER OF POTENTIAL ET STATIONS= 1     QPF AREAS= 1
        EVAPORATION PARAMETERS ARE     SIOUX CITY,IOWA -- T.R.NO. 38 PE DATA     NEP= 91     NDUR=136
                    OPERATIONAL FORECAST MODE     APR ,1969     DAY  1-1  TO DAY  5-1     FORECAST  0 DAYS

                    SNOW IS INCLUDED
```

ROCK RIVER AT ROCK RAPIDS,IOWA

SAMPLE INPUT DATA FOR NWSRFS OPERATIONAL RIVER FORECASTING PROGRAM JUNE,1973

SOIL MOISTURE VOLUME PARAMETERS

RG	PRECIP. GAGE NAME	K1	A	EPXM	UZSN	LZSN	CB	POWER	CC	K24L	K3	GAGEPE	EHIGH	ELOW	K24E
1	MBP AB. ROCK RAPIDS	1.000	0.000	.300	.750	4.000	.020	2.500	1.400	0.000	.200	.920	1.100	0.000	0.00

SOIL MOISTURE TIMING PARAMETERS

RG	SRC1	LIRC6	LKK6	KV	KGS
1	.900	.070	.0075	4.000	.9800

SOIL MOISTURE INITIAL VALUES

RG	UZS	LZS	SGW	GWS	RES	SRGX	SCEP
1	1.00	4.20	.15	.10	0.00	0.00	.30

SNOW PARAMETERS--CASE=1

INPUT GAGES USED

RG	TA GAGE	PREDICTED TEMPERATURE AREA	
1	MAT AB. ROCK RAPIDS	SW MINN. FORECAST TA	1600. FEET

TA GAGE	ELEV.	PERIOD TA LAPSE RATES			
MAT AB. ROCK RAPIDS	1600.	-1.0	-3.0	-5.0	-3.0

AREA SNOW PARAMETERS

RG	ELEV	EFC	SCF	MFMAX	MFMIN	NMF	UADJ	SI	DAYGM
1	1600.	0.00	1.30	.0400	.0200	.0075	.1500	1.50	0.000

INTIAL SNOW VALUES

RG	WE	NEGHS	LIQW STORAGE	SB	SBAESC	SBWS	TINDEX
1	6.00	0.000	1.200	0.000	7.200	1.000	7.200	32.

BASINWIDE PARAMETERS

MELT-BASE	PX-TEMP	PLWHC	TI-PARM
32.0	33.0	.200	.500

AREAL DEPLETION CURVE

WE/AI	0.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	1.0
AESC	.05	.24	.39	.52	.64	.75	.81	.87	.92	.96	1.00

ROCK RIVER AT ROCK RAPIDS,IOWA

SAMPLE INPUT DATA FOR NWSRFS OPERATIONAL RIVER FORECASTING PROGRAM JUNE,1973

FLOW-POINT PARAMETERS

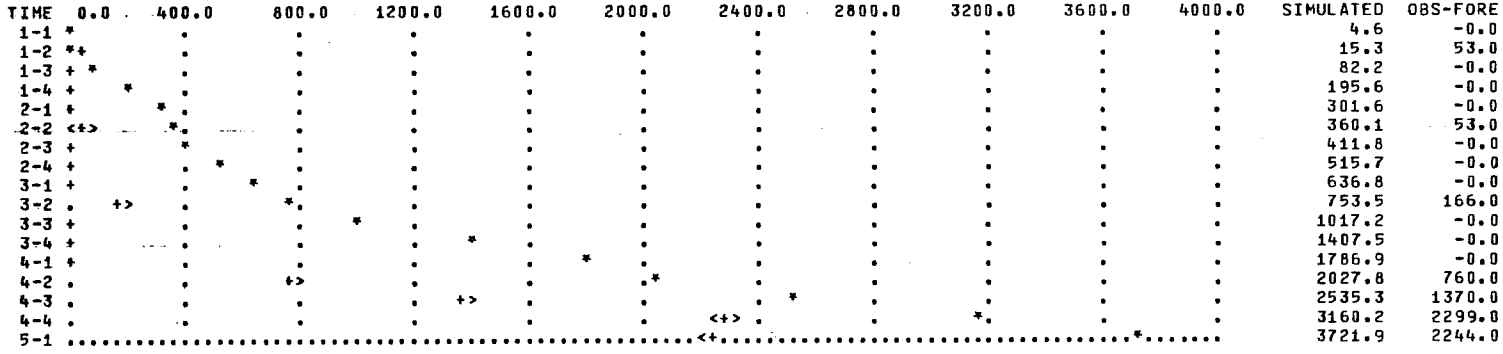
FP	FLOW-POINT NAME	AREA	KS1	OBSER	SIXIN	CHECK
1	ROCK RIVER ABOVE ROCK RAPIDS	788.00	3.40	0	1	1

HISTOGRAMS

TIME-DELAY	.037	.071	.094	.087	.090	.097	.111	.125	.104	.073
	.048	.028	.019	.009	.005	.002				
GAGE AREA	1	1	1	1	1	1	1	1	1	1
	1	1	.1	1	1	1				

SIX HOUR FLOW PLOT ROCK RIVER ABOVE ROCK RAPIDS APR ,1969 *=SIMULATED +=OBSERVED $=FORECAST

STAGE TENDENCY (+) NOT REPORTED (+>) RISING (<+) FALLING (<+>) STATIONARY



	SIMULATED	OBS-FORE
1-1	4.6	-0.0
1-2	15.3	53.0
1-3	82.2	-0.0
1-4	195.6	-0.0
2-1	301.6	-0.0
2-2	360.1	53.0
2-3	411.8	-0.0
2-4	515.7	-0.0
3-1	636.8	-0.0
3-2	753.5	166.0
3-3	1017.2	-0.0
3-4	1407.5	-0.0
4-1	1786.9	-0.0
4-2	2027.8	760.0
4-3	2535.3	1370.0
4-4	3160.2	2299.0
5-1	3721.9	2244.0

MOISTURE STORAGES AND VOLUMES AT THE CURRENT TIME

PRECIP GAGE NAME	UZS	LZS	SGW	GWS	RES	SRGX	SCEP	RECIP	TOTAL RO	GW RO	PXC
MBP AB. ROCK RAPIDS	1.75	4.47	.41	.36	0.00	.24	.30	2.05	.541	.075	1.00

SNOW PACK STORAGES,VOLUMES AND CORRECTIONS AT THE CURRENT TIME

PRECIP GAGE NAME	WE	LIQW	TOTAL WATER	AREAL COVER	NEGHS	SNOWFALL	RAIN	PACK RUNOFF	**********CORRECTIONS********** MELT	WIND	SNOWFALL	AEADJ	AWEADJ
MBP AB. ROCK RAPIDS	4.29	.86	5.16	1.00	.03	0.00	.01	2.055	1.00	1.00	1.30	1.00	1.00

F.3 SAMPLE INPUT AND OUTPUT FOR OPERATION PROGRAM WITH SNOW - EXAMPLE TWO

```
 1    0    1    2    0
69    4    5    2    6    1    0    0    0    1    0    0
 1    4    1
 4    6  0.0
 4    5 .116
 4    6 .119
 4    5         36   41   31
 4    6   26
 4    5           1    3938.          3    9875.
 4   62    7770.
 4    8  .10  .10
 4   10  0.0  0.0  0.0  0.0
 4    6 .119
 4    7 .122
 4    8 .125
 4    9 .128
 4   10 .131
 4    6         42   52   43
 4    7   38    52   60   50
 4    8   45    55   60   45
 4    9   40    50   55   40
 4   10   32    45   55   40
```

```
                    ROCK RIVER AT ROCK RAPIDS,IOWA

 SAMPLE INPUT DATA FOR NWSRFS OPERATIONAL RIVER FORECASTING PROGRAM    JUNE,1973

                                                BASIC RUN INFORMATION

NUMBER OF PRECIPITATION GAGES= 1     NUMBER OF FLOW-POINTS= 1     NUMBER OF POTENTIAL ET STATIONS= 1     QPF AREAS= 1
         EVAPORATION PARAMETERS ARE     SIOUX CITY,IOWA -- T.R.NO. 38 PE DATA     NEP= 91     NDUR=136
                        OPERATIONAL FORECAST MODE     APR ,1969     DAY  5-2  TO DAY  6-1     FORECAST  4 DAYS

                        SNOW IS INCLUDED

                        BEGIN STORM PERIOD
```

ROCK RIVER AT ROCK RAPIDS,IOWA

SAMPLE INPUT DATA FOR NWSRFS OPERATIONAL RIVER FORECASTING PROGRAM JUNE,1973

SOIL MOISTURE VOLUME PARAMETERS

RG	PRECIP.	GAGE NAME	K1	A	EPXM	UZSN	LZSN	CB	POWER	CC	K24L	K3	GAGEPE	EHIGH	ELOW	K24EL
1	MBP AB.	ROCK RAPIDS	1.000	0.000	.300	.750	4.000	.020	2.500	1.400	0.000	.200	.920	1.100	0.000	0.000

SOIL MOISTURE TIMING PARAMETERS

RG	SRC1	LIRC6	LKK6	KV	KGS
1	.900	.070	.0075	4.000	.9800

SOIL MOISTURE INITIAL VALUES

RG	UZS	LZS	SGW	GWS	RES	SRGX	SCEP
1	1.75	4.47	.41	.36	0.00	.24	.30

SNOW PARAMETERS--CASE=1

INPUT GAGES USED

RG	TA GAGE	PREDICTED TEMPERATURE AREA	
1	MAT AB. ROCK RAPIDS	SW MINN. FORECAST TA	1600. FEET

TA GAGE	ELEV.	PERIOD TA LAPSE RATES			
MAT AB. ROCK RAPIDS	1600.	-1.0	-3.0	-5.0	-3.0

AREA SNOW PARAMETERS

RG	ELEV	EFC	SCF	MFMAX	MFMIN	NMF	UADJ	SI	DAYGM
1	1600.	0.00	1.30	.0400	.0200	.0075	.1500	1.50	0.000

INTIAL SNOW VALUES

RG	WE	NEGHS	LIQW	STORAGE	SB	SBAESC	SBWS	TINDEX
1	4.29	.034	.859	.003	5.152	1.000	7.200	29.

BASINWIDE PARAMETERS

MELT-BASE	PX-TEMP	PLWHC	TI-PARM
32.0	33.0	.200	.500

AREAL DEPLETION CURVE

WE/AI	0.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	1.0
AESC	.05	.24	.39	.52	.64	.75	.81	.87	.92	.96	1.00

ROCK RIVER AT ROCK RAPIDS,IOWA

SAMPLE INPUT DATA FOR NWSRFS OPERATIONAL RIVER FORECASTING PROGRAM JUNE,1973

FLOW-POINT PARAMETERS

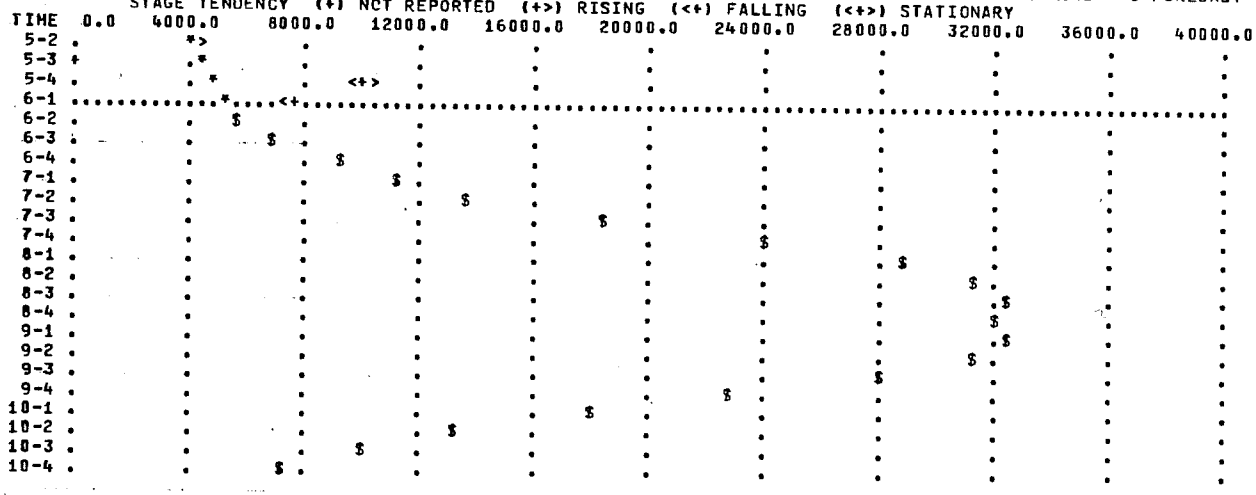
FP	FLOW-POINT NAME	AREA	KS1	OBSER	SIXIN	CHECK
1	ROCK RIVER ABOVE ROCK RAPIDS	788.00	3.40	0	1	1

HISTOGRAMS

TIME-DELAY	.037	.071	.094	.087	.090	.097	.111	.125	.104	.073	
	.048	.028	.019	.009	.005	.002					
GAGE AREA	1	1	1	1	1	1	1	1	1	1	
	1	1	1	1	1	1					

SIX HOUR FLOW PLOT ROCK RIVER ABOVE ROCK RAPIDS APR ,1969 *=SIMULATED +=OBSERVED $=FORECAST

STAGE TENDENCY (+) NOT REPORTED (+>) RISING (<+) FALLING (<+>) STATIONARY



SIMULATED	OBS-FORE
4034.8	3938.0
4458.6	-0.0
4872.0	9875.0
5218.7	7770.0
5436.4	5436.4
6881.2	6881.2
9088.8	9088.8
11247.1	11247.1
13732.0	13732.0
18526.6	18526.6
24082.9	24082.9
28625.6	28625.6
31340.7	31340.7
32295.7	32295.7
32196.3	32196.3
32212.5	32212.5
31380.9	31380.9
27995.2	27995.2
22985.7	22985.7
17832.7	17832.7
13278.4	13278.4
9859.1	9859.1
7362.0	7362.0

MOISTURE STORAGES AND VOLUMES AT THE CURRENT TIME

PRECIP GAGE NAME	UZS	LZS	SGW	GWS	RES	SRGX	SCEP	PRECIP	TOTAL RO	GW RO	PXC
MBP AB. ROCK RAPIDS	1.81	4.52	.45	.40	0.00	.29	.30	.46	.257	.035	1.00

SNOW PACK STORAGES,VOLUMES AND CORRECTIONS AT THE CURRENT TIME

PRECIP GAGE NAME	WE	LIQW	TOTAL WATER	AREAL COVER	NEGHS	SNOWFALL	RAIN	PACK RUNOFF	**********CORRECTIONS********** MELT	WIND	SNOWFALL	AEADJ	AWEADJ
MBP AB. ROCK RAPIDS	3.91	.78	4.70	1.00	.04	0.00	0.00	.458	1.00	1.00	1.30	1.00	1.00

F.4 SAMPLE INPUT AND OUTPUT FOR OPERATIONAL PROGRAM WITH SNOW - EXAMPLE THREE

```
 1     0     1     2     0
69     4     5     2     6     1     0     0     0     1     0     1
 1
 1  4.25        1.5
 0     4     1
 4     6   0.0
 4     5  .116
 4     6  .119
 4     5          36    41    31
 4     6    26
 4     5            1     3938.          3     9875.
 4    62     7770.
 4     8   .10   .10
 4    10   0.0   0.0   0.0   0.0
 4     6  .119
 4     7  .122
 4     8  .125
 4     9  .128
 4    10  .131
 4     6          42    52    43
 4     7    38    52    60    50
 4     8    45    55    60    45
 4     9    40    50    55    40
 4    10    32    45    55    40
```

```
                    ROCK RIVER AT ROCK RAPIDS,IOWA

 SAMPLE INPUT DATA FOR NWSRFS OPERATIONAL RIVER FORECASTING PROGRAM    JUNE,1973

                                                BASIC RUN INFORMATION

NUMBER OF PRECIPITATION GAGES= 1     NUMBER OF FLOW-POINTS= 1     NUMBER OF POTENTIAL ET STATIONS= 1     QPF AREAS= 1
                        OPERATIONAL FORECAST MODE     APR ,1969     DAY  5-2  TO DAY  6-1     FORECAST  4 DAYS

                        SNOW IS INCLUDED

                        BEGIN STORM PERIOD
```

SIX HOUR FLOW PLOT ROCK RIVER ABOVE ROCK RAPIDS APR ,1969 *=SIMULATED +=OBSERVED $=FORECAST

STAGE TENDENCY (+) NOT REPORTED (+>) RISING (<+) FALLING (<+>) STATIONARY

```
TIME  0.0    3000.0    6000.0    9000.0   12000.0   15000.0   18000.0   21000.0   24000.0   27000.0   30000.0
 5-2 .        .  +*>    .         .         .         .         .         .         .         .         .
 5-3 +        .     *   .         .         .         .         .         .         .         .         .
 5-4 .        .         *         . <+>     .         .         .         .         .         .         .
 6-1 ..................*..<+.......................................................................................
 6-2 .        .         . $       .         .         .         .         .         .         .         .
 6-3 .        .         .     $   .         .         .         .         .         .         .         .
 6-4 .        .         .         .     $   .         .         .         .         .         .         .
 7-1 .        .         .         .         .     $   .         .         .         .         .         .
 7-2 .        .         .         .         .         .     $   .         .         .         .         .
 7-3 .        .         .         .         .         .         .     $   .         .         .         .
 7-4 .        .         .         .         .         .         .         .     $   .         .         .
 8-1 .        .         .         .         .         .         .         .         . $       .         .
 8-2 .        .         .         .         .         .         .         .         .   $     .         .
 8-3 .        .         .         .         .         .         .         .         .   $     .         .
 8-4 .        .         .         .         .         .         .         .         . $       .         .
 9-1 .        .         .         .         .         .         .         .         $         .         .
 9-2 .        .         .         .         .         .         .         . $       .         .         .
 9-3 .        .         .         .         .         .         $         .         .         .         .
 9-4 .        .         .         .         .     $   .         .         .         .         .         .
10-1 .        .         .         . $       .         .         .         .         .         .         .
10-2 .        .         .     $   .         .         .         .         .         .         .         .
10-3 .        .         $.        .         .         .         .         .         .         .         .
10-4 .        .     $   .         .         .         .         .         .         .         .         .
```

TIME	SIMULATED	OBS-FORE
5-2	4055.9	3938.0
5-3	4997.0	-0.0
5-4	5927.2	9875.0
6-1	6528.9	7770.0
6-2	6817.2	6817.2
6-3	8397.2	8397.2
6-4	10785.4	10785.4
7-1	13158.0	13158.0
7-2	16100.5	16100.5
7-3	20049.4	20049.4
7-4	23179.8	23179.8
8-1	24720.6	24720.6
8-2	25232.2	25232.2
8-3	25222.3	25222.3
8-4	24480.2	24480.2
9-1	23850.2	23850.2
9-2	21685.0	21685.0
9-3	17505.8	17505.8
9-4	13244.1	13244.1
10-1	9846.5	9846.5
10-2	7463.8	7463.8
10-3	5826.2	5826.2
10-4	4619.5	4619.5

MOISTURE STORAGES AND VOLUMES AT THE CURRENT TIME

PRECIP GAGE NAME	UZS	LZS	SGW	GWS	RES	SRGX	SCEP	PRECIP	TOTAL RO	GW RO	PXC
MBP AB. ROCK RAPIDS	1.84	4.53	.46	.41	0.00	.31	.30	.71	.440	.036	1.00

SNOW PACK STORAGES,VOLUMES AND CORRECTIONS AT THE CURRENT TIME

PRECIP GAGE NAME	WE	LIQW	TOTAL WATER	AREAL COVER	NEGHS	SNOWFALL	RAIN	PACK RUNOFF	**********CORRECTIONS********** MELT	WIND	SNOWFALL	AEADJ	AWEADJ
MBP AB. ROCK RAPIDS	2.95	.59	3.54	1.00	.06	0.00	0.00	.709	1.50	1.00	1.30	1.00	1.00

APPENDIX G

LISTING OF PROGRAM TEMPADJ

```
      PROGRAM TEMPADJ(INPUT,OUTPUT,TAPE1,TAPE2)
C     PROGRAM TO TRANSFER NWSRFS DATA FROM ONE TAPE(TAPE 2)
C     TO ANOTHER(TAPE 1) AND ADJUST AIR TEMPERATURE RECORDS
C     IN THE PROCESS.
*************************************************************************
*************************************************************************
C     CARD NO.  FORMAT       CONTENTS
*************************************************************************
C     1            I5    NUMBER OF BASINS ON DATA TAPE (TAPE 2)
*************************************************************************
C     REPEAT CARDS 2 THROUGH 4 FOR EACH BASIN WITH DATA ON TAPE 2 EVEN
C         THOUGH SOME BASINS DO NO NEED TEMPERATURE ADJUSTMENTS OR MAY
C         NOT EVEN HAVE TEMPERATURE DATA.
*************************************************************************
C     2           8A10   GENERAL INFORMATION
*************************************************************************
C     3            I5    INITIAL MONTH ON TAPE
C                  I5    INITIAL YEAR(4 DIGITS)
C                  I5    LAST MONTH ON TAPE
C                  I5    LAST YEAR(4 DIGITS)
C                  I5    NO. OF PRECIPITATION RECORDS ON TAPE
C                  I5    NO.OF PE RECORDS ON TAPE
C                  I5    NO. OF AIR TEMPERATURE RECORDS ON TAPE
C                  I5    NO. OF OBSERVED WATER-EQUIVALENT AND
C                            MEAN DAILY FLOW RECORDS ON TAPE
C                  I5    NO. OF SIX HOUR DISCHARGE RECORDS ON TAPE
*************************************************************************
C     4            I5    MONTH OF TEMPERATURE ADJUSTMENT
C                  I5    YEAR(4 DIGITS)
C                  I5    STATION NUMBER
C                            E.G. IF ADJUSTING 2ND TA RECORD AND NO. OF
C                            PREC. RECORDS=3 AND NO. OF PE RECORDS=1,
C                            THEN STATION NUMBER=6.
C                            (6TH RECORD FOR THE MONTH ON TAPE)
C                  I5    DAY WHEN ADJUSTMENT BEGINS
C                  I5    SIX HOUR PERIOD WHEN ADJ. BEGINS
C                  I5    NUMBER OF PERIODS TO ADJUST (10 IS MAX)
C                10F5.0  NEW AIR TEMPERATURE VALUES FOR EACH PERIOD
*************************************************************************
C     REPEAT CARD 4 FOR EACH ADJUSTMENT PERIOD. ADJUSTMENTS
C     MUST BE INPUT SEQUENTIALLY,I.E. IN ORDER BY MONTH
C     AND WITHIN EACH MONTH, IN ORDER BY STATION NUMBER.
C     LAST CARD SHOULD HAVE 99 IN COL. 4-5 AND 9999
C     IN COL. 7-10.
*************************************************************************
*************************************************************************
      DIMENSION VAL(10),A6(124),A24(31),TA(124),A(8)
```

```
      READ 900,NBASIN
      REWIND 1
      REWIND 2
      DO 200 NB=1,NBASIN
      READ 904,A
  904 FORMAT (8A10)
      PRINT 905
  905 FORMAT (1H1,20X,34HMEAN AREAL TEMPERATURE ADJUSTMENTS)
      PRINT 906,A
  906 FORMAT (1H0,8A10)
      READ 900,IMO,IYR,LMO,LYR,NPX,NPE,NTA,NQ24,NQ6
  900 FORMAT (9I5)
      KMO=IMO
      KYR=IYR
      READ 901,MO,NYR,NSTA,ID,IP,NC,(VAL(I),I=1,NC)
  901 FORMAT (6I5,10F5.0)
      START MONTHLY LOOP
  120 IF (NPX.EQ.0) GO TO 111
      DO 100 I=1,NPX
      READ (2) A6
      WRITE (1) A6
  100 CONTINUE
  111 IF (NPE.EQ.0) GO TO 112
      DO 101 I=1,NPE
      READ (2) A24
      WRITE (1) A24
  101 CONTINUE
  112 IF (NTA.EQ.0) GO TO 119
      DO 102 I=1,NTA
      II=NPX+NPE+I
      IF ((MO.EQ.KMO).AND.(NYR.EQ.KYR)) GO TO 117
      GO TO 107
  117 IF (NSTA.EQ.II) GO TO 105
  107 READ (2) A6
      WRITE (1) A6
      GO TO 102
  105 READ (2) TA
  103 MP6=(ID-1)*4+IP
      LAST=MP6+NC-1
      DO 104 J=MP6,LAST
      L=J-MP6+1
      TA(J)=VAL(L)
  104 CONTINUE
      READ 901,MO,NYR,NSTA,ID,IP,NC,(VAL(J),J=1,NC)
      IF ((MO.EQ.KMO).AND.(NYR.EQ.KYR)) GO TO 118
      GO TO 108
  118 IF (NSTA.EQ.II) GO TO 103
  108 PRINT 902,II,KMO,KYR
  902 FORMAT (1H0,3HDAY,22X,7HSTATION,I4,5X,5HMONTH,I4,5X,4HYEAR,I6)
      L=1
  110 N1=(L-1)*4+1
      N2=N1+15
      IF (N2.GT.124) N2=124
      PRINT 903,L,(TA(J),J=N1,N2)
```

```
903 FORMAT (1H ,I2,4(4F8.2,1H/))
    L=L+4
    IF (L.GT.31) GO TO 109
    GO TO 110
109 WRITE (1) TA
102 CONTINUE
119 IF (NQ24.EQ.0) GO TO 115
    DO 113 I=1,NQ24
    READ (2) A24
    WRITE (1) A24
113 CONTINUE
115 IF (NQ6.EQ.0) GO TO 116
    DO 114 I=1,NQ6
    READ (2) A6
    WRITE (1) A6
114 CONTINUE
116 CONTINUE
C   END MONTHLY LOOP
    IF ((KMO.EQ.LMO).AND.(KYR.EQ.LYR)) GO TO 199
    KMO=KMO+1
    IF (KMO.LT.13) GO TO 120
    KMO=1
    KYR=KYR+1
    GO TO 120
199 CONTINUE
200 CONTINUE
    STOP
    END
```

APPENDIX H

```
*****  CHANGES TO OPERATIONAL RIVER FORECASTING PROGRAM (NWSRFS5)  *************
*
*
*******************************************************************************
*     STATEMENT                                                       CARD NUMBER
*******************************************************************************
*
********** CHANGES IN MAIN PROGRAM **********
*
     8AEADJ(10),SCFC(10),FGNAME(3,5),AWEADJ(10)                                0047
     2MFC(IRG),WINDC(IRG),SCORR,AEADJ(IRG),AWEADJ(IRG)                         0255
  231 AWEADJ(IRG)=1.0                                                          0274
     14X,36H**********CORRECTIONS***************)                              0305
     22X,8HSNOWFALL,2X,5HAEADJ,2X,6HAWEADJ)                                    0308
  931 FORMAT(1H ,5A4,5X,5F7.2,2F10.2,F10.3,2F7.2,F10.2,F7.2,F8.2)              0309
*
********** CHANGES IN SUBROUTINE READCO **********
*
     8AEADJ(10),SCFC(10),FGNAME(3,5),AWEADJ(10)                                0044
     4COVERI,COVERB,PWEI,PWEB,AEADJ,NTAG,NFTAGS,FGNAME,AWEADJ                  0062
*
********** CHANGES IN SUBROUTINE WRITCO **********
*
     8AEADJ(10),SCFC(10),FGNAME(3,5),AWEADJ(10)                                0044
     4COVERI,COVERB,PWEI,PWEB,AEADJ,NTAG,NFTAGS,FGNAME,AWEADJ                  0062
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