HYDROLOGY REPORT

MOUNTAIN VISTA RANCH
REEMS ROAD FLOODPLAIN
REQUEST FOR CONDITIONAL
LETTER OF MAP REVISION

Prepared for:

Mountain Vista Ranch LLC
by Harvard Investments, Inc.

January 1999

Prepared by:
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RBF PROJECT # 45-098099.001

HYDROGLOGY REPORT

for

REEMS ROAD DRAINAGE CHANNEL
BETWEEN BELL & GREENWAY ROADS
January 6, 1999

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Introduction

This report discusses the hydrologic analysis performed for the Reems Road floodplain between Bell Road and Greenway Road in the City of Surprise, Maricopa County, Arizona. The hydrologic analysis has been performed in order to obtain a Conditional Letter of Map Revision (CLOMR) for the above mentioned portion of the Reems Road floodplain. The portion of Reems Road under investigation is located between sections 5 & 6 of Township 3 North Range 1 West.

The Reems Road floodplain is classified as Zone A on the Flood Insurance Rate Map (FIRM), Numbers 04013C1145F and 04013C1585F. Copies of the panels are provided as Exhibit A. The panels show an approximate delineation of the floodplain boundaries performed by the WLB group as presented in the White Tanks/ Agua Fria Area Drainage Master Study, dated October 1992.

The floodplain originally extended from Northern Avenue to Beardsley Road. The portion of floodplain north of Bell Road has been eliminated through a study performed by Stanley Consultants, Inc. Stanley Consultants performed a hydrologic analysis and obtained a Letter of Map Revision (LOMR) for the portion of Reems Road that bounds Del Webb's Sun City Grand. The LOMR obtained for Sun City Grand eliminated the floodplain between Beardsley and Bell Road, causing the floodplain to begin at Bell Road and extend southward.

There are three reasons for a new hydrologic analysis. First, the there are physical changes to the watershed which were not included in the Sun City Grand LOMR application. Second, the use of improved area-reduction factors is justified. Third, a channel is being designed to convey most of the flow on the west side of Reems Road between Bell and Greenway Roads, thus keeping most of the

road free of storm water. This channel will be built as part of the Mountain Vista Ranch development, and it will continue south of Greenway Road as part of a different project by another consulting firm.

The changes listed above have been modeled using the Army Corp of Engineering computer program HEC-1. The changes reflected in the HEC-1 models are discussed below for the Duplicate Effective Model, the Corrected Existing Conditions Model, and the Proposed Conditions model. Copies of the HEC-1 output for each of these models are provided in Appendix A, B, and C.

Duplicate Effective Model (D.E.M.)

In order to obtain a LOMR eliminating the Reems Road floodplain adjacent to Del Webb's Sun City Grand, Stanley Consultants updated a portion of the HEC-1 model "wtadms.24" produced by the WLB Group in conjunction with the Flood Control District of Maricopa County. The output to this model, entitled "13688lmr.op," is provided in Appendix A. "13688lmr" reflects physical changes that affect the Reems Road floodplain north of Bell Road that were not modeled in "wtadms.24." Therefore, "13688lmr" has been used as the D.E.M.

Rainfall runoff is the source of flooding on Reems Road. "13688lmr" shows that two flow paths combine at the intersection of Bell Road and Reems Road to peak at 578 cfs. The peak flow at Greenway Road combines with the runoff routed through and originating in sub-basin 122 to peak at 743 cfs. The major source for the runoff down Reems Road is overflow from Sun City Grand's retention basin on the northwest corner of Bell and Reems Roads.

Corrected Existing Conditions Model

Stanley's HEC-1 model "13688lmr" was modified to reflect two existing physical changes and one change of methodology. The corrected HEC-1 model output file, called "98099exist.out," is provided in Appendix B.

The first physical change which affects the Reems Road floodplain is the Arizona Traditions development located in Sub-basins 111 and 112. A HEC-1 model was performed on Arizona Traditions to evaluate the 100-year, 24-hour rainfall runoff leaving the development. The HEC-1 file for Arizona Traditions was obtained from the *Master Drainage Study for Arizona Traditions*, by Clouse Engineering, Inc., dated January 12, 1996. The original HEC-1 was performed using a 6 hour storm and Kinematic Wave Routing. Clouse's HEC-1 file was updated using a 24-hour storm and normal depth routing methods. A copy of the drainage map for Arizona Traditions is provided as Exhibit B. The HEC-1 file is provided in Appendix D.

Three 36 inch pipes have been constructed to convey the onsite runoff from Arizona Traditions beneath Bell Road. The combination of the three culverts and the numerous retention basins within Arizona Traditions eliminates allows the peak flow from the 100-year, 24-hour storm to flow beneath Bell Road, and does not affect the portion of the Reems Road floodplain in question. For this reason sub-basin 111 and a portion of sub-basin 112 have been eliminated from the HEC-1 model. A copy of the culvert analysis for the pipes under Bell Road is found in Appendix E.

The second physical change which affects the floodplain is the residential development of Mountain Vista Ranch in sub-basin 122. Currently 318 acres of Mountain Vista Ranch have been

Cohy 48.97 Ac-ft in HEC-1 See MB

developed, or are being constructed. This is 0.50 mi^2 of the 0.89 mi^2 which make up sub-basin 122. The developed area of Mountain Vista Ranch contains approximately 45 acre feet of retention basins. The HEC-1 model has been modified, splitting sub-basin 122 into two sub-basins (122A and 122B). The retention basins are modeled using diversions, similar to how Stanley Consultants modeled Sun City Grand's retention basins. Exhibit C is the composite retention plan for Mountain Vista Ranch. Each retention basin is shown and a table showing the amount of retention in each basin is provided. Temporary retention basins are not modeled in the HEC-1 files.

New area-reduction factors are used in both the existing and proposed conditions models . The WLB Group and Stanley Consultants modeled the rainfall runoff using area-reduction factors based on NOAA Atlas 2's general factors as presented in Maricopa County's 1990 Drainage Design Manual. These newer factors are reproduced in Appendix E. The Flood Control District of Maricopa County presents better 24-hour storm area-reduction factors in the new 1995 Drainage Design Manual. The new area reduction factors were originally presented in the article "Depth-Area Ratios in the Semi-Arid Southwest United States," NOAA Technical Memorandum NWS HYDRO-40 report by R.M. Zehr and V.A. Myers. These factors are better suited for Maricopa County than those found in NOAA Atlas 2 because they result from studies performed in Arizona.

A second reason the ne area-reduction factors should be used is that FEMA's FIRM classifies the Reems Road floodplain as Zone A, "No base flood elevations determined." As shown in Appendix F, the WLB Group performed an approximate delineation of the floodplain, and base flood elevations will not have to be matched at the reach boundaries as a result from the change in area-reduction

factors. In fact, there will be very little impact to the downstream floodplain since the portion of the floodplain between Bell and Greenway Roads is at the upper end of the watershed, and is the upper most reach in the floodplain. Appendix E contains the calculations for the corrected existing conditions model.

Proposed Conditions Model

The only differences between existing and proposed conditions is the construction of the channel and the location of the two outfall locations from Mountain Vista Ranch (sub-basins 122A and 122B) into the Reems Road channel.. The channel is modeled as normal depth routing in HEC-1, and a drawing showing the cross section of Reems Road and the channel is provided in Appendix E.

The east sub-basin of Mountain Vista Ranch, sub-basin 122B, will discharge into the channel on the south side of Parcel 4, south of Paradise Lane, 645 feet north of Greenway Road. Runoff from the western sub-basin (122A) will still join the Reems Road floodplain at the intersection of Reems Road and Greenway. The HEC-1 model has been modified to reflect these parameters, and is provided in Appendix C. Appendix E contains the calculations for the proposed conditions model.

Conclusions

The following table summarizes the peak flows at the following locations along Reems Road:

CP115B-	Intersection of Bell Road and Reems Road
R115-	Reems Rd. Channel (D.E.M.)
R115A-	Reems Rd. Channel from Bell Rd. to 645 feet north of Greenway

CP115C- Reems Rd. Channel 645 ft. north of Greenway where 122A combines flow
R115C- Reems Rd. Channel between CP115C and CP122
CP122- Reems Rd. Channel at the intersection of Greenway and Reems Roads

Peak Flows along Reems Road Floodplain between Bell and Greenway Roads

Location	D.E.M. 13688lmr.op	Corrected Existing Conditions Model 98099exist.out	Proposed Conditions Model 98099prop.out
CP115B	578 cfs	444 cfs	444 cfs
R115	515 cfs	384 cfs	N/A
R115A	N/A	N/A	408 cfs
CP115C	N/A	N/A	408 cfs
R115C	N/A	N/A	407 cfs
CP122	743 cfs	383 cfs	406 cfs

Appendix A
HEC-1 Duplicate Effective Model
13688lmr.op

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1****************************************                                    ****************************************
 *                                      *                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *           SEPTEMBER 1990             *                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.0               *                                    *          609 SECOND STREET           *
 *                                      *                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE  03/24/1998  TIME  20:27:46 *                                    *          (916) 756-1104              *
 *                                      *                                    *                                      *
 ****************************************                                    ****************************************

                                        X     X  XXXXXXX   XXXXX           X
                                        X     X  X        X     X         XX
                                        X     X  X        X               X
                                        XXXXXXX  XXXX     X        XXXXX  X
                                        X     X  X        X               X
                                        X     X  X        X     X         X
                                        X     X  XXXXXXX   XXXXX         XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

   1          ID
   2          ID        DEL WEBB SUN CITY GRAND REEMS ROAD FLOODLAIN LOMR HYDROLOGY
   3          ID
   4          ID        STANLEY CONSULTANTS, INC.
   5          ID        2929 E. CAMELBACK RD.  SUITE 130
   6          ID        PHOENIX, ARIZONA   85016
   7          ID        PHONE: (602)912-6500     FAX: (602)912-6599
   8          ID
   9          ID        SCI PROJECT # 13688     HEC-1 INPUT FILENAME: 13688LMR
  10          ID                                MODEL SUMMARY:
  11          ID                                ------------------------------
  12          ID                                -> MODEL BASED ON FCD/WLB WTADMS.24 MODEL (PHX
  13          ID                                     VALLEY S-GRAPH, GREEN & AMPT LOSS, 24HR
  14          ID                                     TYPE II STORM, P=4.03" W/AERIAL REDUCT);
  15          ID                                     TRUNCATED TO INCLUDE ONLY SUB-BASINS 101
  16          ID                                     THRU 122, INCLUSIVE
  17          ID                                -> BELL RD DIVERTS ADJACENT TO PHASE 2 ARE FROM
  18          ID                                     STANLEY'S DEL WEBB GRAND AVENUE PROPERTY
  19          ID                                     MASTER DRAINAGE REPORT EXISTING CONDITION
  20          ID                                     HEC-1 MODEL E12291.DAT
  21          ID                                -> SCG PHASES 1 AND 2 ASSUMED 100% CONSTRUCTED
  22          ID                                     AND REFLECTED BY MODIFIED LOSS RATE
  23          ID                                     PARAMETERS AND "S" GRAPHS AND BY CHANGING
  24          ID                                     THE ONSITE REACH ROUTING CROSS SECTION
  25          ID                                     GEOMETRY
  26          ID                                -> SUMMED DEAD STORAGE VOLUME DIVERT STEPS
  27          ID                                     REFLECT ONSITE RETENTION
  28          ID                                -> OFFSITE FLOWS ALONG BELL RD. KEPT SEPARATE
  29          ID                                     FROM ONSITE PHASE 2 RUNOFF AND RETENTION
  30          ID                                -> CORRECTED REACH ROUTING @ R102 AND R106
  31          ID        GENERAL MODEL NOTES:
  32          ID        --------------------
  33          ID        1. THIS MODEL IS BASED ON THE WHITE TANKS/AGUA FRIA AREA DRAINAGE
  34          ID           MASTER STUDY MODEL "WTADMS.24" PREPARED BY CONSULTANT "THE WLB GROUP"
  35          ID           FOR THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
  36          ID        2. THIS MODEL REPRESENTS ONLY THAT PORTION OF THE WTADMS.24 MODEL FROM
  37          ID           SUB-BASIN 101 THRU SUB-BASIN 122 INCLUSIVE. ALL OTHER HYDROGRAPH
  38          ID           OPERATIONS FROM THE ORIGINAL MODEL HAVE BEEN DELETED.
  39          ID        3. SUB-BASINS 100, 100A, 109 AND 116 ARE NOT CONSIDERED BY EITHER THE
  40          ID           WTADMS.24 MODEL OR THIS MODEL TO CONTRIBUTE RUNOFF TO THE OLD REEMS
  41          ID           ROAD ALIGNMENT FROM BELL ROAD TO BEARDSLEY ROAD.
  42          ID        4. ANY OF THE ORIGINAL INPUT RECORD FROM THE WTADMS.24 MODEL THAT WAS
  43          ID           MODIFIED OR NOT USED BY THIS STANLEY MODEL HAS BEEN RETAINED AS A
  44          ID           "*  COMMENT". IN MOST CASES, A "NOTE: EXPLANATION" IS FOUND EITHER
  45          ID           IMMEDIATELEY BEFORE OR AFTER THE REVISED OR UNUSED RECORD.
  46          ID        5. THE DIVERSION OPERATIONS ALONG BELL ROAD AT CITRUS ROAD AND AT
  47          ID           COTTON LANE ARE FROM THE ORIGINAL WTADMS.24 MODEL. BELL ROAD
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 48          ID          DIVERSION OPERATIONS AT SR303L, SARIVAL AVENUE AND D114 FROM THE
 49          ID          ORIGINAL WTADMS.24 MODEL HAVE BEEN REPLACED BY OPERATIONS FROM
 50          ID          STANLEY'S MASTER DRAINAGE REPORT FOR DEL WEBB'S GRAND AVENUE PROPERTY
 51          ID          EXISTING CONDITION MODEL E12291.DAT.
 52          ID       6. SUN CITY GRAND PHASES 1 AND 2, WHICH HAVE BEEN CONSTRUCTED IN SUB-
 53          ID          BASINS 100, 102, 103, 107, 108, 109, 113, 114, 115 AND 116 ARE
 54          ID          REFLECTED IN THIS MODEL IN THE FOLLOWING MANNER:
 55          ID          A. SUB-BASIN BOUNDARIES AND AREAS FROM WTADMS.24 WERE NOT CHANGED;
1                                    HEC-1 INPUT                                          PAGE  2

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 56          ID          B. INITIAL ABSTRACT AND PERCENT IMPERVIOUS WERE ADJUSTED ON AN AREA-
 57          ID             WEIGHTED BASIS TO REFLECT 100% DEVELOPED CONDITIONS; PSIF VALUE
 58          ID             HAS NOT BEEN CHANGED BUT DTHETA HAS BEEN ADJUSTED TO CORRESPOND
 59          ID             TO NORMAL INSTEAD OF SATURATED SOIL CONDITION AND XKSAT VALUES
 60          ID             HAVE BEEN ADJUSTED TO ACCOUNT FOR DEVELOPED CONDITION VEG COVER;
 61          ID          C. PHX VLLY S-GRAPHS FROM THE ORIGINAL WTADMS.24 HAVE BEEN MODIFIED
 62          ID             BY USING MCUHP2 WITH A NEW AREA-WEIGHTED ADJUSTED Kn (L, Lca AND
 63          ID             SLOPE USED IN MCUHP2 HAVE NOT BEEN MODIFIED FROM THE ORIGINAL
 64          ID             WTADMS.24 MODEL);
 65          ID          D. HYDROGRAPH REACH ROUTING STEPS WITHIN SUN CITY GRAND HAVE BEEN
 66          ID             MODIFIED FROM THE ORIGINAL WTADMS.24 MODEL BY UTILIZING A NEW
 67          ID             CROSS SECTION GEOMETRY THAT REFLECTS THE EXISTING GOLF COURSES;
 68          ID          E. THE DEAD STORAGE PORTION OF RETENTION BASIN VOLUME FOR BASINS IN
 69          ID             PHASE 1 AND THE NORTHERN PORTION OF PHASE 2 HAVE BEEN SUMMED AND
 70          ID             MODELED AS SINGLE VOLUME-DIVERTED RETENTION BASINS AT EACH OF THE
 71          ID             TWO CONCENTRATION POINTS ALONG REEMS ROAD AT BEARDSLEY ROAD AND
 72          ID             AT UNION HILLS DRIVE;
 73          ID          F. THE DEAD STORAGE PORTION OF PHASE 2 RETENTION BASIN VOLUME IN
 74          ID             SUB-BASINS 107, 113, 114 AND 115 HAVE BEEN SUMMED AND MODELED AS
 75          ID             SINGLE VOLUME-DIVERTED RETENTION BASINS AT EACH OF THE
 76          ID             CONCENTRATION POINTS CORRESPONDING TO THESE SUB-BASINS;
 77          ID          G. OFFSITE RUNOFF FROM THE WEST THAT CONCENTRATES ALONG BELL RD.
 78          ID             ADJACENT TO PHASE 2 IS MODELED SEPARATE FROM THE ONSITE RUNOFF
 79          ID             AND RETENTION;
 80          ID          H. ONSITE PHASE 2 HYDROGRAPHS CORRESPONDING TO SUB-BASINS 113, 114
 81          ID             AND 115 ARE ROUTED SEPARATE FROM OFFSITE HYDROGRAPHS TO A NEW
 82          ID             ONSITE CONCENTRATION POINT LOCATED AT THE NORTHWEST CORNER OF
 83          ID             BELL ROAD AND REEMS ROAD. THE OUTFLOW FROM THE RETENTION STEP
 84          ID             CORRESPONDING TO THIS NEW CONCENTRATION POINT IS THEN ADDED TO
 85          ID             THE OFFSITE FLOW THAT HAS BEEN ROUTED ALONG BELL ROAD FROM THE
 86          ID             WEST AT A SECOND CONCENTRATION POINT AT THE INTERSECTION OF REEMS
 87          ID             AND BELL. THE SECOND CONCENTRATION POINT CORRESPONDS TO WTADMS.24
 88          ID             CONCENTRATION POINT CP115.
 89          ID       7. APPARENT LENGTH AND SLOPE ERRORS ASSOCIATED WITH REACH ROUTING STEPS
 90          ID          R102 AND R106 FROM THE ORIGINAL WTADMS.24 MODEL HAVE BEEN CORRECTED.
 91          ID
             * ID
             * ID      FINAL HYDROLOGY RUN FOR WHITE TANKS ADMS ---- ENTIRE WATERSHED
             * ID      100-YEAR, 24-HOUR STORM                          WTADMS.24
             * ID
             *DIAGRAM
 92          IT       5                    300
             * IO     3
             * NOTE: CHANGE OUTPUT SPECIFICATION
 93          IO       5
 94          IN      15
 95          JD    4.03    .001
 96          PC    .000    .002    .005    .008    .011    .014    .017    .020    .023    .026
 97          PC    .029    .032    .035    .038    .041    .044    .048    .052    .056    .060
 98          PC    .064    .068    .072    .076    .080    .085    .090    .095    .100    .105
 99          PC    .110    .115    .120    .126    .133    .140    .147    .155    .163    .172
100          PC    .181    .191    .203    .218    .236    .257    .283    .387    .663    .707
101          PC    .735    .758    .776    .791    .804    .815    .825    .834    .842    .849
102          PC    .856    .863    .869    .875    .881    .887    .893    .898    .903    .908
103          PC    .913    .918    .922    .926    .930    .934    .938    .942    .946    .950
1                                    HEC-1 INPUT                                          PAGE  3

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

104          PC    .953    .956    .959    .962    .965    .968    .971    .974    .977    .980
105          PC    .983    .986    .989    .992    .995    .998    1.00   1.000   1.000   1.000
106          JD    3.99      10
107          JD    3.83      50
108          JD    3.76     100
109          JD    3.70     200

110          KK     101
111          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 101.
112          BA     .16
113          LG     .35     .32    3.61     .26     .00
114          UI     22.     76.    121.    165.    258.    205.    150.    106.     54.     34.
115          UI     22.      7.      7.      7.      0.      0.      0.      0.      0.      0.
116          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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117          KK    102A
118          KM        RUNOFF HYDROGRAPH FROM SUB-SUBIN 102.
             * NOTE: THE ABOVE MESSAGE SHOULD SAY "RUNOFF HYDROGRAPH FROM SUB-BASIN 102A"
119          BA     .51
120          LG     .40     .20    6.05     .21     .00
121          UI     40.     43.    142.    190.    228.    270.    327.    453.    484.    378.
122          UI    319.    263.    218.    176.    114.     71.     66.     44.     40.     15.
123          UI     12.     12.     12.     12.     12.      0.      0.      0.      0.      0.
124          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

125          KK   CP101
126          KM        ADD HYDROGRAPHS AT CP101
127          HC       2     .67

128          KK    R101
129          KM        ROUTE FLOW FROM CP101 TO CP102.
130          RS       2              -1       0
131          RC    .025    .022    .022    2750   .0062
132          RX    1000    1001    1030    1085    1120    1138    1139    1140
133          RY    1319    1319    1318    1316    1316    1317    1317    1317

134          KK     102
135          KM        RUNOFF FROM SUB-BASIN 102
136          BA     .10
             * LG   .50     .00    6.05     .29     .00
             * NOTE: REVISE ORIG WTADMS.24 LOSS PARAMETERS TO REFLECT SUN CITY GRAND
137          LG     .41     .11    6.05     .27    10.5
             * UI   10.     21.     44.     57.     70.     97.    122.     94.     75.    59.
             * UI   45.     26.     17.     13.     10.      3.      3.      3.      3.     3.
             * UI    0.      0.      0.      0.      0.      0.      0.      0.      0.     0.
             * UI    0.      0.      0.      0.      0.      0.      0.      0.      0.     0.
             * NOTE: REVISE ORIG WTADMS.24 S-GRAPH TO REFLECT SUN CITY GRAND
138          UI     13.     44.     72.     96.    151.    132.     97.     70.     41.    23.
139          UI     15.      7.      4.      4.      4.      0.      0.      0.      0.     0.
140          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.     0.
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

141          KK   CP102
142          KM        ADD HYDROGRAPHS AT CP102.
143          HC       2     .77

144          KK    R102
145          KM        ROUTE FLOW FROM CP102 TO CP108
             * RS    36              -1       0
             * RC  .075    .075    .075     702   .0054
             * RX  1000    1001    1120    1700    2030    2630    3070    3270
             * RY  1289    1289    1288    1286    1286    1288    1290    1292
             * NOTE: THERE IS AN APPARENT ERROR IN ROUTING LENGTH IN THE ORIGINAL WTADMS.24
             *       MODEL THAT RESULTS IN A ROUTED DOWNSTREAM PEAK FLOW THAT IS GREATER
             *       THAN THE UPSTREAM PEAK FLOW. REVISE ORIGINAL WTADMS.24 ROUTING LENGTH
             *       OF 702FT WITH CORRECTED LENGTH APPROXIMATED AT 7000FT. ALSO, REVISE
             *       REACH ROUTING CROSS SECTION GEOMETRY TO REFLECT DEVELOPED CONDITIONS.
             *       CONSEQUENTLY, NSTPS ON THE RS RECORD IS ALSO MODIFIED.
146          RS      15              -1       0
147          RC    .050    .050    .050    9000   .0042
148          RX    1000    1183    1244    1305    1430    1484    1538    1700
149          RY    1299    1296    1295    1294    1294    1295    1296    1299

150          KK     108
151          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 108.
152          BA     .79
             * LG   .44     .12    5.53     .25     .00
             * NOTE: REVISE ORIG WTADMS.24 LOSS PARAMETERS TO REFLECT SUN CITY GRAND
153          LG     .38     .20    5.53     .23    12.0
             * UI   31.     31.     31.     32.    101.    115.    136.    151.    167.  178.
             * UI  194.    213.    233.    257.    304.    366.    406.    353.    310.  281.
             * UI  259.    240.    217.    197.    181.    163.    148.    132.    108.   88.
             * UI   56.     54.     52.     51.     45.     31.     31.     31.     24.    9.
             * UI    9.      9.      9.      9.      9.      9.      9.      9.      9.    9.
             * UI    9.      0.      0.      0.      0.      0.      0.      0.      0.    0.
             * UI    0.      0.      0.      0.      0.      0.      0.      0.      0.    0.
             * NOTE: REVISE ORIG WTADMS.24 S-GRAPH TO REFLECT SUN CITY GRAND
154          UI     35.     35.     35.     78.    125.    151.    173.    193.    209.    230.
155          UI    258.    284.    340.    418.    459.    390.    340.    307.    281.    253.
156          UI    225.    205.    180.    166.    136.    101.     69.     62.     59.     58.
157          UI     41.     35.     35.     28.     11.     11.     11.     11.     11.     11.
158          UI     11.     11.     11.     11.     11.      0.      0.      0.      0.      0.
159          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

160          KK   1I108
161          KM        ADD HYDROGRAPHS AT CP108.
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162          HC       2    1.56

163          KK     103
164          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 103.
165          BA     .37
             * LG   .46     .09    4.33     .29     .00
             * NOTE: REVISE ORIG WTADMS.24 LOSS PARAMETERS TO REFLECT SUN CITY GRAND
166          LG     .30     .24    4.33     .31    24.0
             * UI   19.     19.     20.     64.     79.     93.    105.    116.    131.  148.
             * UI  175.    222.    248.    206.    178.    159.    143.    125.    111.   97.
             * UI   84.     64.     45.     34.     32.     32.     19.     19.     19.    6.
             * UI    6.      6.      6.      6.      6.      6.      6.      6.      0.    0.
             * UI    0.      0.      0.      0.      0.      0.      0.      0.      0.    0.
             * NOTE: REVISE ORIG WTADMS.24 S-GRAPH TO REFLECT SUN CITY GRAND
1                                          HEC-1 INPUT                                          PAGE  5

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

167          UI     32.     45.    119.    159.    190.    231.    308.    393.    316.    259.
168          UI    212.    172.    137.     81.     55.     48.     32.     23.     10.     10.
169          UI     10.     10.     10.      0.      0.      0.      0.      0.      0.      0.
170          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
             * NOTE: INSERT HYDROGRAPH STEP INTO ORIGINAL WTADMS.24 TO REFLECT RETENTION
             *       STORAGE - SUM OF ALL SUN CITY GRAND DEAD STORAGE RETENTION IN SUB-BASIN
             *       103

171          KK  103OUT
172          DT  103RET   34.66
173          DI       0   10000
174          DQ       0   10000

175          KK    R103
             * KM      ROUTE FLOW FROM CP103 TO CP108.
             * NOTE: ROUTE FLOW FROM 103OUT TO CP108
176          RS       4              -1       0
177          RC     .08    .022    .035    5380   .0041
178          RX    1000    1050    1080    1095    1130    1150    1300    1830
179          RY    1285    1284    1282    1280    1280    1282    1284    1286

180          KK   CP108
181          KM        ADD HYDROGRAPHS AT CP108.
182          HC       2    1.93
             * NOTE: INSERT HYDROGRAPH STEP INTO ORIGINAL WTADMS.24 TO REFLECT RETENTION
             *       STORAGE - SUM OF ALL SUN CITY GRAND DEAD STORAGE RETENTION IN SUB-BASIN
             *       108

183          KK  108OUT
184          DT  108RET  134.08
185          DI       0   10000
186          DQ       0   10000

187          KK    R108
             * KM    ROUTE FLOW FROM CP108 TO CP115.
             * NOTE: ROUTE FLOW FROM 108OUT TO CP115
188          RS       7              -1       0
189          RC    .035    .035    .075    5382   .0037
190          RX    1000    1001    1002    1030    1100    1370    1900    2290
191          RY    1259    1259    1259    1258    1258    1260    1262    1264

192          KK     106
193          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 106.
194          BA     .77
195          LG     .35     .29    6.63     .16     .00
196          UI     68.    109.    267.    353.    425.    523.    727.    830.    634.    523.
197          UI    422.    338.    237.    132.    114.     77.     65.     21.     21.     21.
198          UI     21.     21.      0.      0.      0.      0.      0.      0.      0.      0.
199          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1                                          HEC-1 INPUT                                          PAGE  6

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

200          KK    R106
201          KM        ROUTE FLOW FROM CP106 TO CP107
             * RS     3              -1       0
             * RC  .075     .03     .03    5382    .039
             * RX  1000    1430    1860    1890    1940    1960    1969    1970
             * RY  1292    1291    1290  1289.5  1289.5    1290  1290.5  1290.5
             * NOTE: THERE IS AN APPARENT ERROR IN ROUTING SLOPE IN THE ORIGINAL WTADMS.24
             *       REVISE ORIGINAL WTADMS.24 ROUTING SLOPE WITH CORRECTED SLOPE. ALSO,
             *       REVISE REACH ROUTING CROSS SECTION GEOMETRY TO REFLECT DEVELOPED
             *       CONDITIONS. CONSEQUENTLY, NSTPS ON THE RS RECORD IS ALSO MODIFIED.
202          RS      10              -1       0
203          RC     .05     .05     .05    6800   .0031
204          RX    1000    1021    1064    1085    1125    1191    1324    1390
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205          RY    1292    1291    1289    1288    1288    1289    1291    1292

206          KK     107
207          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 107.
208          BA     .60
             * LG   .46     .08    5.65     .29     .00
             * NOTE: REVISE ORIG WTADMS.24 LOSS PARAMETERS TO REFLECT SUN CITY GRAND
209          LG     .32     .22    5.65     .25    20.4
             * UI   26.     26.     26.     53.     91.    109.    125.    141.    152.  167.
             * UI  186.    203.    238.    291.    340.    308.    266.    238.    216.  199.
             * UI  177.    160.    143.    129.    114.     90.     71.     46.     46.   43.
             * UI   43.     27.     26.     26.     19.      8.      8.      8.      8.    8.
             * UI    8.      8.      8.      8.      8.      8.      0.      0.      0.    0.
             * UI    0.      0.      0.      0.      0.      0.      0.      0.      0.    0.
             * NOTE: REVISE ORIG WTADMS.24 S-GRAPH TO REFLECT SUN CITY GRAND
210          UI     38.     38.     88.    149.    186.    215.    244.    285.    344.    460.
211          UI    462.    374.    322.    282.    240.    205.    176.    128.     82.     66.
212          UI     63.     43.     38.     28.     12.     12.     12.     12.     12.     12.
213          UI     12.      0.      0.      0.      0.      0.      0.      0.      0.      0.
214          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

215          KK   CP107
216          KM        ADD HYDROGRAPHS AT CP107.
217          HC       2    1.37
             * NOTE: INSERT HYDROGRAPH STEP INTO ORIGINAL WTADMS.24 TO REFLECT RETENTION
             *       STORAGE - SUM OF ALL SUN CITY GRAND DEAD STORAGE RETENTION IN SUB-BASIN
             *       107

218          KK  107OUT
219          DT  107RET   72.83
220          DI       0   10000
221          DQ       0   10000

222          KK    R107
223          KM        ROUTE FLOW FROM CP107 TO CP115
             * RS     6              -1       0
             * RC  .035    .035    .075    6240   .0048
             * RX  1000    1001    1002    1030    1100    1370    1900    2290
             * RY  1259    1259    1259    1258    1258    1260    1262    1264
             * NOTE: REVISE REACH ROUTING CROSS SECTION GEOMETRY TO REFLECT DEVELOPED
             *       CONDITIONS. CONSEQUENTLY, NSTPS ON THE RS RECORD IS ALSO MODIFIED.
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

224          RS      11              -1       0
225          RC    .050    .050    .050    7000   .0028
226          RX    1000    1038    1152    1190    1220    1240    1300    1320
227          RY    1260    1259    1256    1255    1255    1256    1259    1260
             * NOTE: BEGIN NEW SUN CITY GRAND PHASE 2 ONSITE BRANCH IN MODEL

228          KK     113
229          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 113
230          BA     .50
             * LG   .50     .00    8.54     .11     .00
             * NOTE: REVISE ORIG WTADMS.24 LOSS PARAMETERS TO REFLECT SUN CITY GRAND
231          LG     .29     .15    8.54     .08    25.5
             * UI   22.     22.     22.     49.     79.     95.    108.    122.    132.  145.
             * UI  162.    178.    213.    261.    291.    248.    216.    195.    178.  161.
             * UI  143.    131.    114.    105.     88.     65.     46.     39.     37.   37.
             * UI   27.     22.     22.     20.      7.      7.      7.      7.      7.    7.
             * UI    7.      7.      7.      7.      7.      0.      0.      0.      0.    0.
             * UI    0.      0.      0.      0.      0.      0.      0.      0.      0.    0.
             * NOTE: REVISE ORIG WTADMS.24 S-GRAPH TO REFLECT SUN CITY GRAND
232          UI     53.    124.    244.    315.    400.    594.    594.    448.    350.    270.
233          UI    175.     93.     76.     53.     20.     16.     16.     16.      0.      0.
234          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
             * NOTE: DELETE HYDROGRAPH ADDITION AT CP113. IT IS NOT APLICABLE BECAUSE SUN
             *       CITY GRAND ONSITE RUNOFF AND RETENTION IS ESSENTIALLY SEPARATE FROM
             *       OFFSITE RUNOFF ALONG BELL RD.
             * KK CP113
             * KM      ADD HYDROGRAPHS AT CP113.
             * HC     2    2.83
             * NOTE: INSERT HYDROGRAPH STEP INTO ORIGINAL WTADMS.24 TO REFLECT RETENTION
             *       STORAGE - SUM OF ALL SUN CITY GRAND DEAD STORAGE RETENTION IN SUB-BASIN
             *       113

235          KK  113OUT
236          DT  113RET   39.94
237          DI       0   10000
238          DQ       0   10000

239          KK    R113
             * RS     6              -1       0
             * RC  .075     .04     .04    2100   .0038
```

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                 * RX  1000    1020    1100    1850    2030    2048    2049    2050
                 * RY  1266    1264    1262    1260    1260    1261    1261    1261
                 * NOTE: REVISE REACH ROUTING CROSS SECTION GEOMETRY TO REFLECT DEVELOPED
                 *       CONDITIONS. CONSEQUENTLY, NSTPS ON THE RS RECORD IS ALSO MODIFIED.
 240             RS       2              -1       0
 241             RC     .05     .05     .05    2100   .0038
 242             RX    1000    1006    1024    1030    1068    1074    1092    1098
 243             RY    1279    1278    1275    1274    1274    1275    1278    1279

 244             KK     114
 245             KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 114
 246             BA     .38
                 * LG   .50     .00    8.35     .13     .00
                 * NOTE: REVISE ORIG WTADMS.24 LOSS PARAMETERS TO REFLECT SUN CITY GRAND
 247             LG     .30     .15    8.35     .07    24.0
                 * UI   17.     17.     17.     41.     62.     75.     86.     95.    104.  115.
                 * UI  129.    144.    177.    215.    216.    183.    161.    146.    133.  118.
                 * UI  106.     95.     85.     74.     58.     44.     31.     30.     28.   25.
                 * UI   17.     17.     17.      6.      5.      5.      5.      5.      5.    5.
                 * UI    5.      5.      5.      5.      0.      0.      0.      0.      0.    0.
                 * UI    0.      0.      0.      0.      0.      0.      0.      0.      0.    0.
                 * NOTE: REVISE ORIG WTADMS.24 S-GRAPH TO REFLECT SUN CITY GRAND
1                                              HEC-1 INPUT                                          PAGE  8

LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 248             UI     35.     58.    137.    181.    220.    273.    392.    399.    307.    252.
 249             UI    202.    159.    102.     60.     53.     35.     24.     11.     11.     11.
 250             UI     11.     11.      0.      0.      0.      0.      0.      0.      0.      0.
 251             UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 252             KK   CP114
 253             KM        ADD HYDROGRAPHS AT CP114
                 * HC     2    3.21
                 * NOTE: AREA HAS BEEN REVISED TO ONLY INCLUDE SUB-BASINS 113 AND 114
 254             HC       2    0.88
                 * NOTE: INSERT HYDROGRAPH STEP INTO ORIGINAL WTADMS.24 TO REFLECT RETENTION
                 *       STORAGE - SUM OF ALL SUN CITY GRAND DEAD STORAGE RETENTION IN SUB-BASIN
                 *       114

 255             KK  114OUT
 256             DT  114RET   59.33
 257             DI       0   10000
 258             DQ       0   10000

 259             KK    R114
                 * RS     2              -1       0
                 * RC   .06    .022     .35    2652   .0034
                 * RX  1000    1380    1790    1800    1840    1850    1899    1900
                 * RY  1258    1256    1254    1250    1250    1252    1253    1253
                 * NOTE: REVISE REACH ROUTING CROSS SECTION GEOMETRY TO REFLECT DEVELOPED
                 *       CONDITIONS. CONSEQUENTLY, NSTPS ON THE RS RECORD IS ALSO MODIFIED.
 260             RS       6              -1       0
 261             RC     .05     .05     .05    2652   .0034
 262             RX    1000    1012    1025    1030    1068    1070    1080    1100
 263             RY    1279    1278    1275    1274    1274    1275    1278    1279

 264             KK     115
 265             KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 115.
 266             BA     .49
                 * LG   .50     .00    7.04     .24     .00
                 * NOTE: REVISE ORIG WTADMS.24 LOSS PARAMETERS TO REFLECT SUN CITY GRAND
 267             LG     .33     .16    7.04     .16    21.0
                 * UI   22.     22.     22.     45.     76.     91.    104.    117.    126.  138.
                 * UI  155.    170.    200.    245.    284.    247.    215.    192.    176.  161.
                 * UI  142.    129.    115.    103.     90.     69.     52.     38.     37.   35.
                 * UI   31.     22.     22.     22.     10.      7.      7.      7.      7.    7.
                 * UI    7.      7.      7.      7.      7.      0.      0.      0.      0.    0.
                 * UI    0.      0.      0.      0.      0.      0.      0.      0.      0.    0.
                 * NOTE: REVISE ORIG WTADMS.24 S-GRAPH TO REFLECT SUN CITY GRAND
 268             UI     37.     37.    123.    168.    203.    237.    283.    376.    464.    379.
 269             UI    315.    268.    223.    183.    141.     86.     64.     59.     37.     36.
 270             UI     11.     11.     11.     11.     11.     11.      0.      0.      0.      0.
 271             UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
                 * NOTE: DELETE UNNECESSARY HYDROGRAPH ADDITION STEPS FROM WTADMS.24 MODEL
                 * KK 1I115
                 * KM      ADD HYDROGRAPHS AT CP115.
                 * HC     2    1.86
                 * KK 2I115
                 * KM      ADD HYDROGRAPHS AT CP115.
                 * KKCP115B
                 * HC     2    3.79
1                                              HEC-1 INPUT                                          PAGE  9

LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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272          KK  CP115A
273          HC       4    4.67
             * NOTE: AREA HAS BEEN REVISED TO ONLY INCLUDE SUB-BASINS 101, 102A, 102, 103,
             *       106, 107, 108, 113, 114 AND 115
             * NOTE: INSERT HYDROGRAPH STEP INTO ORIGINAL WTADMS.24 TO REFLECT RETENTION
             *       STORAGE SUM OF ALL SUN CITY GRAND RETENTION IN SUB-BASIN 115

274          KK  115OUT
275          DT  115RET   44.75
276          DI       0   10000
277          DQ       0   10000
             * NOTE: RESUME HYDROGRAPH STEPS FROM WTADMS.24

278          KK     111
279          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 111.
280          BA     .50
281          LG     .40     .21    5.55     .22     .00
282          UI     32.     32.     78.    129.    160.    184.    211.    246.    304.    406.
283          UI    374.    307.    266.    230.    196.    167.    139.     99.     58.     55.
284          UI     50.     32.     32.     15.     10.     10.     10.     10.     10.     10.
285          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
286          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

287          KK    D111
288          KM        DIVERT TO CP119 FROM CP111
289          DT   DI119
290          DI       0      32     109     228     389     599     858    1170    1539    1967
291          DQ       0      11      39      83     145     228     333     462     617     799

292          KK    R111
293          KM        ROUTE REMAINDER FROM CP111 TO CP112
294          RS       9              -1       0
295          RC    .075    .035    .035    5280   .0040
296          RX    1000    1570    2040    2370    2440    2468    2469    2470
297          RY    1312    1310    1308    1306    1306    1307    1307    1307

298          KK     104
299          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 104
300          BA     .15
301          LG     .35     .31    4.93     .23     .00
302          UI     26.    101.    151.    242.    249.    169.    112.     50.     31.     14.
303          UI      7.      7.      0.      0.      0.      0.      0.      0.      0.      0.
304          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

305          KK    R104
306          KM        ROUTE FLOW FROM CP104 TO CP112
307          RS      53              -1       0
308          RC    .075    .075    .075    6552   .0056
309          RX    1000    1001    1230    1270    1750    2000    2380    2650
310          RY    1321    1321    1320    1318    1318    1319    1318    1320
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

311          KK     112
312          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 112
313          BA     .97
314          LG     .50     .00    3.65     .50     .00
315          UI     35.     35.     35.     35.     92.    123.    142.    165.    179.    193.
316          UI    207.    224.    245.    266.    290.    340.    400.    464.    424.    371.
317          UI    335.    308.    286.    267.    243.    220.    206.    185.    170.    155.
318          UI    131.    101.     77.     62.     61.     58.     58.     45.     35.     35.
319          UI     35.     28.     11.     11.     11.     11.     11.     11.     11.     11.
320          UI     11.     11.     11.     11.     11.      0.      0.      0.      0.      0.
321          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

322          KK   1I112
323          KM        ADD HYDROGRAPHS AT CP112.
324          HC       2    1.12

325          KK   2I112
326          KM        ADD HYDROGRAPHS AT CP112.
327          HC       2    1.62

328          KK     105
329          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 105
330          BA     .21
331          LG     .35     .27    7.68     .10     .00
332          UI     32.    129.    195.    295.    362.    246.    171.     88.     50.     28.
333          UI     10.     10.     10.      0.      0.      0.      0.      0.      0.      0.
334          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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335          KK    R105
336          KM        ROUTE FLOW FROM CP105 TO CP112
337          RS       3              -1       0
338          RC    .022    .022     .03    5220   .0044
339          RX    1000    1001    1010    1020    1040    1050    1099    1100
340          RY    1303    1303    1303    1302    1302    1304    1305    1305

341          KK   CP112
342          KM        ADD HYDROGRAPHS AT CP112.
343          HC       2    1.83

344          KK    D112
345          KM        DIVERT TO CP120 FROM CP112
346          DT   DI120
347          DI       0      48     165     355     625     981    1434    1990
348          DQ       0      16      55     118     208     327     478     663

349          KK    D112
350          KM        DIVERT TO CP121A FROM CP112
351          DT  1D121A
352          DI       0      32     110     237     417     654     956    1327
353          DQ       0      16      55     118     208     327     478     663
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


354          KK    R112
355          KM        ROUTE REMAINDER FROM CP112 TO CP113A
356          RS       6              -1       0
357          RC    .075    .035    .035    2640   .0023
358          RX    1000    1490    1830    2600    2770    2788    2789    2790
359          RY    1290    1288    1286    1284    1284    1285    1285    1285

360          KK    113A
361          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 113A
362          BA     .50
363          LG     .50     .00    7.93     .15     .00
364          UI     22.     22.     22.     42.     75.     89.    103.    115.    125.    137.
365          UI    152.    167.    192.    238.    276.    260.    224.    199.    181.    167.
366          UI    149.    134.    121.    108.     98.     79.     62.     40.     38.     36.
367          UI     35.     26.     22.     22.     20.      7.      7.      7.      7.      7.
368          UI      7.      7.      7.      7.      7.      7.      0.      0.      0.      0.
369          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

370          KK  CP113A
371          KM        ADD HYDROGRAPHS AT CP113A
372          HC       2    2.33
             * KK D113A
             * KM      DIVERT TO CP121A FROM CP113A
             * DT2D121A
             * DI     0      26      67     134     232     278     399     561     799    11
             * DQ     0       0       0       0       0       4      22      58     120     2
             * NOTE: REPLACE WTADMS.24 DIVERSION OPERATION WITH STANLEY'S DIVERSION OPERATION
             *       FROM THE MASTER DRAINAGE REPORT FOR DEL WEBB'S GRAND AVENUE PROPERTY
             *       EXISTING CONDITION MODEL E12291.DAT.

373          KK   D113A
374          KM          DIVERT TO CP121A FROM  CP113A
375          DT  2D121A
376          DI       0     185     545     642     893    1913
377          DQ       0       0       0      12      74     467

378          KK   R113A
379          KM        ROUTE REMAINDER FROM CP113A TO CP113
             * NOTE: THIS ROUTING IS CONSIDERED TO OCCUR ALONG BELL RD SEPARATE FROM SUN
             *       CITY GRAND PHASE 2. REVISE ROUTING TO REFLECT DEVELOPED CONDITIONS
             * RS    25              -1       0
             * RC  .075    .035    .035    5280   .0032
             * RX  1000    1080    2620    2725    2735    2798    2799    2800
             * RY  1278    1277    1277    1276    1276    1277    1277    1277
380          RS       8              -1       0
381          RC    .035    .035    .035    5280   .0032
382          RX    1000    1010    1200    1201    1300    1301    1320    1340
383          RY    1276    1274    1275    1274    1274    1275    1274    1275
             * NOTE: SET ASIDE SUB-BASIN 113 AND CP113 HYDROGRAPH STEPS. SUB-BASIN 113
             *       STEP WAS PREVIOUSLY USED TO BEGIN SEPARATE BRANCH IN MODEL. CP113
             *       HYDROGRAPH ADDITION STEP IS UNNECESSARY.
             * KK   113
             * KM      RUNOFF HYDROGRAPH FROM SUB-BASIN 113
             * BA   .50
             * LG   .50     .00    8.54     .11     .00
             * UI   22.     22.     22.     49.     79.     95.    108.    122.    132.  145.
             * UI  162.    178.    213.    261.    291.    248.    216.    195.    178.  161.
             * UI  143.    131.    114.    105.     88.     65.     46.     39.     37.   37.
```

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* UI   27.     22.     22.     20.      7.      7.      7.      7.      7.    7.
* UI    7.      7.      7.      7.      7.      0.      0.      0.      0.    0.
* UI    0.      0.      0.      0.      0.      0.      0.      0.      0.    0.
* KK CP113
* KM      ADD HYDROGRAPHS AT CP113.
* HC     2    2.83
* KK  D113
* KM      DIVERT TO CP122 FROM CP113
* DT 1D122
* DI     0      79     257     523     872    1307    1829
* DQ     0      63     205     416     692    1033    1422
* NOTE: REPLACE WTADMS.24 DIVERSION OPERATION WITH STANLEY'S DIVERSION OPERATION
*       FROM THE MASTER DRAINAGE REPORT FOR DEL WEBB'S GRAND AVENUE PROPERTY
*       EXISTING CONDITION MODEL E12291.DAT.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 384          KK    D113
 385          KM          DIVERT TO CP122 FROM CP113
 386          DT   1D122
 387          DI       0     105     354     622    1153    1882
 388          DQ       0       0     195     395     845    1480

 389          KK    R113
 390          KM        ROUTE REMAINDER FROM CP113 TO CP114
              * NOTE: THIS ROUTING IS CONSIDERED TO OCCUR ALONG BELL RD SEPARATE FROM SUN
              *       CITY GRAND PHASE 2. REVISE ROUTING TO REFLECT DEVELOPMENT CONDITIONS
              * RS     6              -1       0
              * RC  .075     .04     .04    2100   .0038
              * RX  1000    1020    1100    1850    2030    2048    2049    2050
              * RY  1266    1264    1262    1260    1260    1261    1261    1261
 391          RS       4              -1       0
 392          RC    .035    .035    .035    2100   .0038
 393          RX    1000    1010    1200    1201    1300    1301    1320    1340
 394          RY    1276    1274    1275    1274    1274    1275    1274    1275
              * NOTE: SET ASIDE SUB-BASIN 114 AND CP114 HYDROGRAPH STEPS WHICH WERE PREVIOUSLY
              *       USED AS PART OF SEPARATE BRANCH IN MODEL.
              * KK   114
              * KM      RUNOFF HYDROGRAPH FROM SUB-BASIN 114
              * BA   .38
              * LG   .50     .00    8.35     .13     .00
              * UI   17.     17.     17.     41.     62.     75.     86.     95.    104.  115.
              * UI  129.    144.    177.    215.    216.    183.    161.    146.    133.  118.
              * UI  106.     95.     85.     74.     58.     44.     31.     30.     28.   25.
              * UI   17.     17.     17.      6.      5.      5.      5.      5.      5.    5.
              * UI    5.      5.      5.      5.      0.      0.      0.      0.      0.    0.
              * UI    0.      0.      0.      0.      0.      0.      0.      0.      0.    0.
              * KK CP114
              * KM      ADD HYDROGRAPHS AT CP114.
              * HC     2    3.21
              * KK  D114
              * KM      DIVERT TO CP122 FROM CP114
              * DT 2D122
              * DI     0      17      54      80     333     952    2066
              * DQ     0       0       0       0      70     438    1217
              * NOTE: REPLACE WTADMS.24 DIVERSION OPERATION WITH STANLEY'S DIVERSION OPERATION
              *       FROM THE MASTER DRAINAGE REPORT FOR DEL WEBB'S GRAND AVENUE PROPERTY
              *       EXISTING CONDITION MODEL E12291.DAT.

 395          KK    D114
 396          KM          DIVERT TO CP122 FROM CP114
 397          DT   2D122
 398          DI       0     235     313     480     717    1056
 399          DQ       0       0       2      81     225     462

 400          KK    R114
              * KM      ROUTE REMAINDER FROM CP114 TO CP115
              * NOTE: ROUTE REMAINDER FROM CP114 TO CP115B
              * NOTE: THIS ROUTING IS CONSIDERED TO OCCUR ALONG BELL RD. SEPARATE FROM SUN
              *       CITY GRAND PHASE 2. REVISE ROUTING TO REFLECT DEVELOPMENT CONDITIONS
              * RS     2              -1       0
              * RC   .06    .022     .35    2652   .0034
              * RX  1000    1380    1790    1800    1840    1850    1899    1900
              * RY  1258    1256    1254    1250    1250    1252    1253    1253
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 401          RS       5              -1       0
 402          RC    .035    .035    .035    2652   .0034
 403          RX    1000    1010    1200    1201    1300    1301    1320    1340
 404          RY    1276    1274    1275    1274    1274    1275    1274    1275
              * NOTE: ADD OUTFLOW HYDROGRAPH FROM 115OUT TO OFFSITE HYDROGRAPH ROUTED ALONG
```

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                    *       BELL RD FROM WEST AT INTERSECTION OF BELL AND REEMS RDS. THIS
                    *       CONCENTRATION POINT CORRESPONDS TO WTADMS.24 CONCENTRATION POINT CP115.

 405                KK  CP115B
 406                HC       2    7.00

 407                KK    R115
                    * KM      ROUTE FLOWS FROM CP115 TO CP122
                    * NOTE: ROUTE FLOW FROM 115B TO CP122
 408                RS       6              -1       0
 409                RC    .035    .035    .075    5280   .0038
 410                RX    1000    1001    1002    1015    1035    1360    1920    2460
 411                RY    1239    1239    1239    1238    1238    1240    1241    1242

 412                KK    D113
 413                KM        RETURN DIVERT AT CP113
 414                DR   1D122

 415                KK    R113
 416                KM        ROUTE FLOW FROM CP113 TO CP122
 417                RS      36              -1       0
 418                RC     .08     .08     .08    7488   .0049
 419                RX    1000    1001    1610    1820    1990    2010    3059    3060
 420                RY    1248    1248    1246    1245    1245    1246    1248    1248

 421                KK    D114
 422                KM        RETURN DIVERT AT CP114
 423                DR   2D122

 424                KK    R114
 425                KM        ROUTE FLOW FROM CP114 TO CP122
 426                RS      45              -1       0
 427                RC    .075    .075    .075    6240   .0046
 428                RX    1000    1001    1610    1820    1990    2010    3059    3060
 429                RY    1248    1248    1246    1245    1245    1246    1248    1248

 430                KK     122
 431                KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 122
 432                BA     .89
 433                LG     .50     .00    5.83     .32     .00
 434                UI     32.     32.     32.     32.     87.    114.    132.    153.    166.    179.
 435                UI    193.    207.    229.    247.    272.    319.    378.    428.    385.    338.
 436                UI    306.    281.    262.    243.    220.    201.    188.    167.    155.    138.
 437                UI    114.     93.     63.     57.     56.     53.     53.     36.     32.     32.
 438                UI     32.     20.     10.     10.     10.     10.     10.     10.     10.     10.
 439                UI     10.     10.     10.     10.     10.      0.      0.      0.      0.      0.
 440                UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1                                                HEC-1 INPUT                                          PAGE 14

LINE                ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 441                KK   1I122
 442                KM        ADD HYDROGRAPHS AT CP122
 443                HC       3     4.1

 444                KK   CP122
 445                KM        ADD HYDROGRAPHS AT CP122
 446                HC       2    7.89
 447                ZZ
1
              SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

   110         101
                 .
                 .
   117           .        102A
                 .           .
                 .           .
   125       CP101............
                 V
                 V
   128        R101
                 .
                 .
   134           .         102
                 .           .
                 .           .
   141       CP102............
                 V
                 V
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144        R102
              .
              .
150           .         108
              .           .
              .           .
160       1I108............
              .
              .
163           .         103
              .           .
              .           .
172           .           .-------> 103RET
171           .      103OUT
              .          V
              .          V
175           .        R103
              .           .
              .           .
180       CP108............
              .
              .
184           .-------> 108RET
183      108OUT
             V
             V
187        R108
              .
              .
192           .         106
              .           V
              .           V
200           .        R106
              .           .
              .           .
206           .           .         107
              .           .           .
              .           .           .
215           .       CP107............
              .           .
              .           .
219           .           .-------> 107RET
218           .      107OUT
              .          V
              .          V
222           .        R107
              .           .
              .           .
228           .           .         113
              .           .           .
              .           .           .
236           .           .           .-------> 113RET
235           .           .      113OUT
              .           .          V
              .           .          V
239           .           .        R113
              .           .           .
              .           .           .
244           .           .           .         114
              .           .           .           .
              .           .           .           .
252           .           .       CP114............
              .           .           .
              .           .           .
256           .           .           .-------> 114RET
255           .           .      114OUT
              .           .          V
              .           .          V
259           .           .        R114
              .           .           .
              .           .           .
264           .           .           .         115
              .           .           .           .
              .           .           .           .
272      CP115A...................................
              .
              .
275           .-------> 115RET
274      115OUT
              .
              .
278           .         111
              .           .
              .           .
289           .           .------->   DI119
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287          .        D111
             .           V
             .           V
292          .        R111
             .           .
             .           .
298          .           .        104
             .           .          V
             .           .          V
305          .           .       R104
             .           .          .
             .           .          .
311          .           .          .         112
             .           .          .           .
             .           .          .           .
322          .           .      1I112............
             .           .          .
             .           .          .
325          .      2I112............
             .           .
             .           .
328          .           .        105
             .           .          V
             .           .          V
335          .           .       R105
             .           .          .
             .           .          .
341          .      CP112............
             .           .
             .           .
346          .           .-------->   DI120
344          .        D112
             .           .
             .           .
351          .           .-------->  1D121A
349          .        D112
             .           V
             .           V
354          .        R112
             .           .
             .           .
360          .           .       113A
             .           .          .
             .           .          .
370          .     CP113A............
             .           .
             .           .
375          .           .-------->  2D121A
373          .       D113A
             .           V
             .           V
378          .       R113A
             .           .
             .           .
386          .           .-------->   1D122
384          .        D113
             .           V
             .           V
389          .        R113
             .           .
             .           .
397          .           .-------->   2D122
395          .        D114
             .           V
             .           V
400          .        R114
             .           .
             .           .
405     CP115B.578.......
             V
             V
407       R115 515
             .
             .
414          .           .<--------   1D122
412          .        D113
             .           V
             .           V
415          .        R113
             .           .
             .           .
423          .           .          .<--------   2D122
421          .           .       D114
             .           .          V
             .           .          V
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424          .          .        R114
             .          .          .
             .          .          .
430          .          .          .          122
             .          .          .            .
             .          .          .            .
441          .       1I122.........................
             .          .551
             .          .
444       CP122.743.......
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

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1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            SEPTEMBER 1990            *
*             VERSION 4.0              *
*                                      *
*  RUN DATE  03/24/1998  TIME  20:27:46 *
*                                      *
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****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
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DEL WEBB SUN CITY GRAND REEMS ROAD FLOODLAIN LOMR HYDROLOGY

STANLEY CONSULTANTS, INC.
2929 E. CAMELBACK RD. SUITE 130
PHOENIX, ARIZONA 85016
PHONE: (602)912-6500 FAX: (602)912-6599

SCI PROJECT # 13688 HEC-1 INPUT FILENAME: 13688LMR

MODEL SUMMARY:

-> MODEL BASED ON FCD/WLB WTADMS.24 MODEL (PHX VALLEY S-GRAPH, GREEN & AMPT LOSS, 24HR TYPE II STORM, P=4.03" W/AERIAL REDUCT); TRUNCATED TO INCLUDE ONLY SUB-BASINS 101 THRU 122, INCLUSIVE
-> BELL RD DIVERTS ADJACENT TO PHASE 2 ARE FROM STANLEY'S DEL WEBB GRAND AVENUE PROPERTY MASTER DRAINAGE REPORT EXISTING CONDITION HEC-1 MODEL E12291.DAT
-> SCG PHASES 1 AND 2 ASSUMED 100% CONSTRUCTED AND REFLECTED BY MODIFIED LOSS RATE PARAMETERS AND "S" GRAPHS AND BY CHANGING THE ONSITE REACH ROUTING CROSS SECTION GEOMETRY
-> SUMMED DEAD STORAGE VOLUME DIVERT STEPS REFLECT ONSITE RETENTION
-> OFFSITE FLOWS ALONG BELL RD. KEPT SEPARATE FROM ONSITE PHASE 2 RUNOFF AND RETENTION
-> CORRECTED REACH ROUTING @ R102 AND R106

GENERAL MODEL NOTES:
---
1. THIS MODEL IS BASED ON THE WHITE TANKS/AGUA FRIA AREA DRAINAGE MASTER STUDY MODEL "WTADMS.24" PREPARED BY CONSULTANT "THE WLB GROUP" FOR THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
2. THIS MODEL REPRESENTS ONLY THAT PORTION OF THE WTADMS.24 MODEL FROM SUB-BASIN 101 THRU SUB-BASIN 122 INCLUSIVE. ALL OTHER HYDROGRAPH OPERATIONS FROM THE ORIGINAL MODEL HAVE BEEN DELETED.
3. SUB-BASINS 100, 100A, 109 AND 116 ARE NOT CONSIDERED BY EITHER THE WTADMS.24 MODEL OR THIS MODEL TO CONTRIBUTE RUNOFF TO THE OLD REEMS ROAD ALIGNMENT FROM BELL ROAD TO BEARDSLEY ROAD.
4. ANY OF THE ORIGINAL INPUT RECORD FROM THE WTADMS.24 MODEL THAT WAS MODIFIED OR NOT USED BY THIS STANLEY MODEL HAS BEEN RETAINED AS A "* COMMENT". IN MOST CASES, A "NOTE: EXPLANATION" IS FOUND EITHER IMMEDIATELEY BEFORE OR AFTER THE REVISED OR UNUSED RECORD.
5. THE DIVERSION OPERATIONS ALONG BELL ROAD AT CITRUS ROAD AND AT COTTON LANE ARE FROM THE ORIGINAL WTADMS.24 MODEL. BELL ROAD DIVERSION OPERATIONS AT SR303L, SARIVAL AVENUE AND D114 FROM THE ORIGINAL WTADMS.24 MODEL HAVE BEEN REPLACED BY OPERATIONS FROM STANLEY'S MASTER DRAINAGE REPORT FOR DEL WEBB'S GRAND AVENUE PROPERTY

EXISTING CONDITION MODEL E12291.DAT.

6. SUN CITY GRAND PHASES 1 AND 2, WHICH HAVE BEEN CONSTRUCTED IN SUB-BASINS 100, 102, 103, 107, 108, 109, 113, 114, 115 AND 116 ARE REFLECTED IN THIS MODEL IN THE FOLLOWING MANNER:
   A. SUB-BASIN BOUNDARIES AND AREAS FROM WTADMS.24 WERE NOT CHANGED;
   B. INITIAL ABSTRACT AND PERCENT IMPERVIOUS WERE ADJUSTED ON AN AREA-WEIGHTED BASIS TO REFLECT 100% DEVELOPED CONDITIONS; PSIF VALUE HAS NOT BEEN CHANGED BUT DTHETA HAS BEEN ADJUSTED TO CORRESPOND TO NORMAL INSTEAD OF SATURATED SOIL CONDITION AND XKSAT VALUES HAVE BEEN ADJUSTED TO ACCOUNT FOR DEVELOPED CONDITION VEG COVER;
   C. PHX VLLY S-GRAPHS FROM THE ORIGINAL WTADMS.24 HAVE BEEN MODIFIED BY USING MCUHP2 WITH A NEW AREA-WEIGHTED ADJUSTED Kn (L, Lca AND SLOPE USED IN MCUHP2 HAVE NOT BEEN MODIFIED FROM THE ORIGINAL WTADMS.24 MODEL);
   D. HYDROGRAPH REACH ROUTING STEPS WITHIN SUN CITY GRAND HAVE BEEN MODIFIED FROM THE ORIGINAL WTADMS.24 MODEL BY UTILIZING A NEW CROSS SECTION GEOMETRY THAT REFLECTS THE EXISTING GOLF COURSES;
   E. THE DEAD STORAGE PORTION OF RETENTION BASIN VOLUME FOR BASINS IN PHASE 1 AND THE NORTHERN PORTION OF PHASE 2 HAVE BEEN SUMMED AND MODELED AS SINGLE VOLUME-DIVERTED RETENTION BASINS AT EACH OF THE TWO CONCENTRATION POINTS ALONG REEMS ROAD AT BEARDSLEY ROAD AND AT UNION HILLS DRIVE;
   F. THE DEAD STORAGE PORTION OF PHASE 2 RETENTION BASIN VOLUME IN SUB-BASINS 107, 113, 114 AND 115 HAVE BEEN SUMMED AND MODELED AS SINGLE VOLUME-DIVERTED RETENTION BASINS AT EACH OF THE CONCENTRATION POINTS CORRESPONDING TO THESE SUB-BASINS;
   G. OFFSITE RUNOFF FROM THE WEST THAT CONCENTRATES ALONG BELL RD. ADJACENT TO PHASE 2 IS MODELED SEPARATE FROM THE ONSITE RUNOFF AND RETENTION;
   H. ONSITE PHASE 2 HYDROGRAPHS CORRESPONDING TO SUB-BASINS 113, 114 AND 115 ARE ROUTED SEPARATE FROM OFFSITE HYDROGRAPHS TO A NEW ONSITE CONCENTRATION POINT LOCATED AT THE NORTHWEST CORNER OF BELL ROAD AND REEMS ROAD. THE OUTFLOW FROM THE RETENTION STEP CORRESPONDING TO THIS NEW CONCENTRATION POINT IS THEN ADDED TO THE OFFSITE FLOW THAT HAS BEEN ROUTED ALONG BELL ROAD FROM THE WEST AT A SECOND CONCENTRATION POINT AT THE INTERSECTION OF REEMS AND BELL. THE SECOND CONCENTRATION POINT CORRESPONDS TO WTADMS.24 CONCENTRATION POINT CP115.
7. APPARENT LENGTH AND SLOPE ERRORS ASSOCIATED WITH REACH ROUTING STEPS R102 AND R106 FROM THE ORIGINAL WTADMS.24 MODEL HAVE BEEN CORRECTED.

```
93 IO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT          HYDROGRAPH TIME DATA
                      NMIN           5  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1    0  STARTING DATE
                     ITIME        0000  STARTING TIME
                        NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      2    0  ENDING DATE
                    NDTIME        0055  ENDING TIME
                     ICENT          19  CENTURY MARK

               COMPUTATION INTERVAL     .08 HOURS
                    TOTAL TIME BASE   24.92 HOURS

        ENGLISH UNITS
             DRAINAGE AREA          SQUARE MILES
             PRECIPITATION DEPTH    INCHES
             LENGTH, ELEVATION      FEET
             FLOW                   CUBIC FEET PER SECOND
             STORAGE VOLUME         ACRE-FEET
             SURFACE AREA           ACRES
             TEMPERATURE            DEGREES FAHRENHEIT

95 JD          INDEX STORM NO. 1
                      STRM        4.03  PRECIPITATION DEPTH
                      TRDA         .00  TRANSPOSITION DRAINAGE AREA

96 PI            PRECIPITATION PATTERN
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

106 JD INDEX STORM NO. 2

STRM 3.99 PRECIPITATION DEPTH

TRDA 10.00 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.01	.00	.01
.01	.01	.01	.01	.01	.01	.01	.01	.03	.03
.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

107 JD INDEX STORM NO. 3

STRM 3.83 PRECIPITATION DEPTH

TRDA 50.00 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATION PATTERN

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.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
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108 JD INDEX STORM NO. 4
STRM 3.76 PRECIPITATION DEPTH
TRDA 100.00 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATION PATTERN

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109 JD INDEX STORM NO. 5
STRM 3.70 PRECIPITATION DEPTH
TRDA 200.00 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATION PATTERN

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RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	101	233.	12.25	22.	5.	5.	.16		
+	HYDROGRAPH AT									

+		102A	525.	12.58	73.	18.	18.	.51
+	2 COMBINED AT	CP101	635.	12.50	95.	24.	23.	.67
+	ROUTED TO	R101	629.	12.50	95.	24.	23.	.67
+	HYDROGRAPH AT	102	151.	12.25	16.	4.	4.	.10
+	2 COMBINED AT	CP102	725.	12.42	111.	28.	27.	.77
+	ROUTED TO	R102	576.	13.42	111.	28.	27.	.77
+	HYDROGRAPH AT	108	545.	13.08	128.	35.	34.	.79
+	2 COMBINED AT	1I108	964.	13.33	236.	63.	60.	1.56
+	HYDROGRAPH AT	103	416.	12.50	64.	19.	18.	.37
+	DIVERSION TO	103RET	416.	12.50	64.	17.	17.	.37
+	HYDROGRAPH AT	103OUT	6.	15.92	4.	1.	1.	.37
+	ROUTED TO	R103	5.	17.33	4.	1.	1.	.37
+	2 COMBINED AT	CP108	964.	13.33	237.	64.	62.	1.93
+	DIVERSION TO	108RET	964.	13.33	237.	64.	62.	1.93
+	HYDROGRAPH AT	108OUT	0.	.08	0.	0.	0.	1.93
+	ROUTED TO	R108	0.	.08	0.	0.	0.	1.93
+	HYDROGRAPH AT	106	871.	12.50	111.	28.	27.	.77
+	ROUTED TO	R106	689.	13.08	111.	28.	27.	.77
+	HYDROGRAPH AT	107	546.	12.75	103.	30.	28.	.60
+	2 COMBINED AT	CP107	1014.	13.00	212.	57.	55.	1.37
+	DIVERSION TO	107RET	1014.	13.00	142.	37.	35.	1.37
+	HYDROGRAPH AT	107OUT	675.	13.33	78.	21.	20.	1.37
+	ROUTED TO	R107	366.	14.33	75.	20.	19.	1.37
+	HYDROGRAPH AT	113	741.	12.33	110.	32.	30.	.50
+	DIVERSION TO	113RET	741.	12.33	76.	20.	19.	.50
+	HYDROGRAPH AT	113OUT	500.	12.58	41.	11.	11.	.50
+	ROUTED TO	R113	322.	12.83	41.	11.	11.	.50
+	HYDROGRAPH AT	114	514.	12.50	86.	24.	23.	.38
+	2 COMBINED AT	CP114	613.	12.75	124.	36.	34.	.88

+	DIVERSION TO	114RET	613.	12.75	115.	30.	29.	.88
+	HYDROGRAPH AT	114OUT	55.	14.08	17.	6.	6.	.88
+	ROUTED TO	R114	39.	14.67	16.	5.	5.	.88
+	HYDROGRAPH AT	115	550.	12.58	93.	26.	25.	.49
+	4 COMBINED AT	CP115A	548.	12.58	172.	52.	50.	4.67
+	DIVERSION TO	115RET	548.	12.58	86.	23.	22.	4.67
+	HYDROGRAPH AT	115OUT	384.	14.33	100.	29.	28.	4.67
+	HYDROGRAPH AT	111	443.	12.67	71.	18.	17.	.50
+	DIVERSION TO	DI119	166.	12.67	26.	7.	6.	.50
+	HYDROGRAPH AT	D111	276.	12.67	45.	11.	11.	.50
+	ROUTED TO	R111	232.	13.33	45.	11.	11.	.50
+	HYDROGRAPH AT	104	236.	12.17	20.	5.	5.	.15
+	ROUTED TO	R104	89.	14.67	20.	5.	5.	.15
+	HYDROGRAPH AT	112	534.	13.33	138.	34.	33.	.97
+	2 COMBINED AT	1I112	534.	13.33	157.	40.	38.	1.12
+	2 COMBINED AT	2I112	765.	13.33	202.	51.	49.	1.62
+	HYDROGRAPH AT	105	354.	12.25	34.	9.	8.	.21
+	ROUTED TO	R105	316.	12.42	34.	9.	8.	.21
+	2 COMBINED AT	CP112	790.	13.33	236.	59.	57.	1.83
+	DIVERSION TO	DI120	263.	13.33	79.	20.	19.	1.83
+	HYDROGRAPH AT	D112	527.	13.33	158.	40.	38.	1.83
+	DIVERSION TO	1D121A	263.	13.33	79.	20.	19.	1.83
+	HYDROGRAPH AT	D112	264.	13.33	79.	20.	19.	1.83
+	ROUTED TO	R112	241.	13.75	79.	20.	19.	1.83
+	HYDROGRAPH AT	113A	409.	13.08	106.	27.	26.	.50
+	2 COMBINED AT	CP113A	560.	13.08	183.	46.	45.	2.33
+	DIVERSION TO	2D121A	2.	13.08	0.	0.	0.	2.33
+	HYDROGRAPH AT	D113A	558.	13.08	183.	46.	45.	2.33

+	ROUTED TO	R113A	529.	13.67	181.	46.	45.	2.33
+	DIVERSION TO	1D122	325.	13.67	83.	21.	20.	2.33
+	HYDROGRAPH AT	D113	203.	13.67	99.	26.	25.	2.33
+	ROUTED TO	R113	200.	14.00	98.	26.	25.	2.33
+	DIVERSION TO	2D122	0.	.08	0.	0.	0.	2.33
+	HYDROGRAPH AT	D114	200.	14.00	98.	26.	25.	2.33
+	ROUTED TO	R114	197.	14.42	96.	26.	25.	2.33
+	2 COMBINED AT	CP115B	578.	14.33	196.	55.	53.	7.00
+	ROUTED TO	R115	515.	14.92	193.	54.	52.	7.00
+	HYDROGRAPH AT	D113	325.	13.67	83.	21.	20.	2.33
+	ROUTED TO	R113	287.	15.33	81.	21.	20.	2.33
+	HYDROGRAPH AT	D114	0.	.08	0.	0.	0.	2.33
+	ROUTED TO	R114	0.	.08	0.	0.	0.	2.33
+	HYDROGRAPH AT	122	552.	13.33	146.	37.	35.	.89
+	3 COMBINED AT	1I122	551.	13.33	217.	57.	55.	4.10
+	2 COMBINED AT	CP122	743.	15.33	386.	111.	106.	7.89

*** NORMAL END OF HEC-1 ***

Appendix B
HEC-1 Corrected Existing Conditions Model
98099exist.out

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1****************************************                    ****************************************
*                                      *                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
*              MAY   1991              *                    *    HYDROLOGIC ENGINEERING CENTER     *
*            VERSION 4.0.1E            *                    *          609 SECOND STREET           *
*                                      *                    *       DAVIS, CALIFORNIA 95616        *
*  RUN DATE            TIME            *                    *          (916) 551-1748              *
*                                      *                    *                                      *
****************************************                    ****************************************

X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX


THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

                                          HEC-1 INPUT                                                PAGE  1

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID
  2           ID       MOUNTAIN VISTA RANCH (MVR) REEMS ROAD DRAINAGE CHANNEL EXISTING HYDROLOG
  3           ID
  4           ID       RBF & ASSOCIATES/ AMERICAN ENGINEERING COMPANY
  5           ID       21442 NORTH 20TH AVENUE
  6           ID       PHOENIX, ARIZONA   85027
  7           ID       PHONE: (602)582-0260     FAX: (602)582-0953
  8           ID
  9           ID       AEC PROJECT # 98099     HEC-1 INPUT FILENAME: 98099EXIST.HC1
 10           ID                               MODEL SUMMARY:
 11           ID                               ------------------------------
 12           ID                               -> MODEL BASED ON STANLEY CONSULANTS 13688LMR MO
 13           ID                                    (PHX VALLEY S-GRAPH, GREEN & AMPT LOSS, 24H
 14           ID                                    TYPE II STORM, P=4.03" W/AERIAL REDUCT);
 15           ID                               -> MVR PHASES  ASSUMED 100% CONSTRUCTED
 16           ID                                    AND REFLECTED BY MODIFIED LOSS RATE
 17           ID                                    PARAMETERS AND "S" GRAPHS AND BY CHANGING
 18           ID                                    THE ONSITE REACH ROUTING CROSS SECTION
 19           ID                                    GEOMETRY
 20           ID                            -> AREAL REDUCTION FACTORS CHANGED TO MATCH HYDRO 40'S
 21           ID                                 24 HOUR STORM AREAL REDUCTION RATIOS AS STATE
 22           ID                               THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY'S
 23           ID                               DRAINAGE DESIGN MANUAL, VOLUME I, HYDROLOGY
 24           ID
 25           ID       GENERAL MODEL NOTES:
 26           ID       --------------------
 27           ID       1. THIS MODEL IS BASED ON THE SUN CITY GRAND (SCG) REEMS ROAD FLOODPLAIN
 28           ID          HYDROLOGY MODEL (13688LMR) PREPARED BY STANLEY CONSULTANTS, INC. IN M
 29           ID       2. THE SCG 13688LMR MODEL REPRESENTS A PORTION OF THE WTADMS.24 MODEL PR
 30           ID          THE WLB GROUP FOR THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
 31           ID          THE SCG MODEL REPRESENTS ONLY THAT PORTION OF THE WTADMS.24 MODEL FRO
 32           ID          SUB-BASIN 101 THRU SUB-BASIN 122 INCLUSIVE. ALL OTHER HYDROGRAPH
 33           ID          OPERATIONS FROM THE ORIGINAL MODEL HAVE BEEN DELETED.
 34           ID       3. ANY OF THE ORIGINAL INPUT RECORD FROM THE 13688LMR MODEL THAT WAS
 35           ID          MODIFIED OR NOT USED BY THIS MODEL HAS BEEN RETAINED AS A
 36           ID          "*  COMMENT".
 37           ID       4. THE DIVERSION OPERATIONS ALONG BELL ROAD AT CITRUS ROAD AND AT
 38           ID          COTTON LANE ARE FROM THE ORIGINAL WTADMS.24 MODEL. BELL ROAD
 39           ID          DIVERSION OPERATIONS AT SR303L, SARIVAL AVENUE AND D114 FROM THE
 40           ID          ORIGINAL WTADMS.24 MODEL HAVE BEEN REPLACED BY OPERATIONS FROM
 41           ID          STANLEY'S MASTER DRAINAGE REPORT FOR DEL WEBB'S GRAND AVENUE PROPERTY
 42           ID          EXISTING CONDITION MODEL E12291.DAT.
 43           ID       5. THE HEC-1 MODEL "AZTRDS.HC1" REPRESENTS THE ARIZONA TRADITIONS DEVELO
 44           ID          THAT HAS BEEN BUILT IN SUB-BASIN 111 AND THE WEST HALF OF SUB-BASIN 1
 45           ID          RAINFALL RUNOFF FROM ARIZONA TRADITIONS (SUB-BASINS 111 AND PART OF 1
 46           ID          LONGER DRAINS TO REEMS ROAD BETWEEN BELL ROAD AND GREENWAY.  RATHER I
 47           ID          SOUTH ALONG THE NATURAL FLOW PATH.  THE CHANGE RESULTS FROM THE COMBI
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 48          ID          OF RETENTION BASINS AND CULVERTS BENEATH BELL ROAD WHICH HAVE BEEN CO
 49          ID          AS PART OF THE ARIZONA TRADITIONS DEVELOPMENT.
 50          ID       6. SUB-BASIN 111 HAS BEEN ELIMINATED FROM THIS MODEL BECAUSE OF THE PHYS
 51          ID          CHANGES IN HYDROLOGY AS DESCRIBED ABOVE IN 5.  SUB-BASIN 112 HAS ALSO
 52          ID          MODIFIED TO REFLECT THE NEW AREA DRAINING ONTO REEMS ROAD, AND MODIFI
 53          ID          PHOENIX VALLEY S-GRAPHS.
 54          ID       7. MOUNTAIN VISTA RANCH PARCELS 6,7,8,10,11,14,15, AND 16 HAVE BEEN
 55          ID          CONSTRUCTED IN SUB-BASIN 122.  THESE SUB-BASINS ARE REFLECTED IN
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 56          ID          THIS MODEL IN THE FOLLOWING MANNER:
 57          ID          A. SUB-BASIN 122 HAS BEEN SPLIT INTO 122A FOR PARCELS 11, 14,15 AND 1
 58          ID             AND SUB-BASIN 122B FOR DEVELOPED PARCELS 6, 7, 8, AND 10.
 59          ID          B. INITIAL ABSTRACT AND PERCENT IMPERVIOUS WERE ADJUSTED ON AN AREA-
 60          ID             WEIGHTED BASIS TO REFLECT 100% DEVELOPED CONDITIONS; PSIF VALUE
 61          ID             HAS NOT BEEN CHANGED BUT DTHETA HAS BEEN ADJUSTED TO CORRESPOND
 62          ID             TO NORMAL INSTEAD OF SATURATED SOIL CONDITION AND XKSAT VALUES
 63          ID             HAVE BEEN ADJUSTED TO ACCOUNT FOR DEVELOPED CONDITION VEG COVER;
 64          ID          C. PHX VLLY S-GRAPHS FROM THE ORIGINAL WTADMS.24 HAVE BEEN MODIFIED
 65          ID             BY USING MCUHP2 WITH A NEW AREA-WEIGHTED ADJUSTED Kn (L, Lca AND
 66          ID             SLOPE USED IN MCUHP2 HAVE NOT BEEN MODIFIED FROM THE ORIGINAL
 67          ID             WTADMS.24 MODEL);
 68          ID          D. THE DEAD STORAGE PORTION OF RETENTION BASIN VOLUME HAVE BEEN SUMME
 69          ID             MODELED AS SINGLE VOLUME-DIVERTED RETENTION BASINS AT EACH OF THE
 70          ID             TWO CONCENTRATION POINTS ALONG REEMS ROAD JUST SOUTH OF PARADISE L
 71          ID             AND AT GREENWAY ROAD.
 72          ID     8.  THE WTADMS.24 AND 13688LMR MODELS USED THE DEPTH AREA REDUCTION FACTORS
 73          ID         PRESENTED IN THE 1990 VERSION OF THE FLOOD CONTROL DISTRICT'S DRAINAGE
 74          ID         DESIGN MANUAL.  THESE FACTORS ARE BASED ON NOAA ATLAS 2, AND ARE GENERAL
 75          ID         FOR THE UNITED STATES.  THIS MODEL UPDATES THE DEPTH-AREA REDUCTION FACT
 76          ID         TO COMPLY WITH THE FLOOD CONTROL DISTRICTS CURRENT DRAINAGE DESIGN MANUAL
 77          ID         DATED JANUARY 1, 1995.  THE DRAINAGE DESIGN MANUAL BASES THEIR FACTORS ON
 78          ID         THE NATIONAL WEATHER SERVICES STUDY BY ZEHR AND MYERS' "DEPTH-AREA RATIOS
 79          ID         IN THE SEMI-ARID SOUTHWEST UNITED STATES" (1984) NWS HYDRO-40.  THESE RAT
 80          ID         ARE MORE APPROPRIATE FOR THE WATERSHED, ESPECIALLY SINCE THE FLOODPLAIN
 81          ID         CURRENTLY THE UPPERMOST REACH OF FLOODPLAIN IN THE WATERSHED.
 82          ID
             *DIAGRAM
 83          IT       5                    300
 84          IO       5
 85          IN      15
 86          JD    4.03    .001
 87          PC    .000    .002    .005    .008    .011    .014    .017    .020    .023    .026
 88          PC    .029    .032    .035    .038    .041    .044    .048    .052    .056    .060
 89          PC    .064    .068    .072    .076    .080    .085    .090    .095    .100    .105
 90          PC    .110    .115    .120    .126    .133    .140    .147    .155    .163    .172
 91          PC    .181    .191    .203    .218    .236    .257    .283    .387    .663    .707
 92          PC    .735    .758    .776    .791    .804    .815    .825    .834    .842    .849
 93          PC    .856    .863    .869    .875    .881    .887    .893    .898    .903    .908
 94          PC    .913    .918    .922    .926    .930    .934    .938    .942    .946    .950
 95          PC    .953    .956    .959    .962    .965    .968    .971    .974    .977    .980
 96          PC    .983    .986    .989    .992    .995    .998    1.00   1.000   1.000   1.000
 97          JD    3.79      10
 98          JD    3.51      50
 99          JD    3.39     100
100          JD    3.29     200
             * JD  3.70     200
             * JD  3.99      10
             * JD  3.83      50
             * JD  3.76     100
             * JD  3.70     200
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

101          KK     101
102          KM         RUNOFF HYDROGRAPH FROM SUB-BASIN 101.
103          BA     .16
104          LG     .35     .32    3.61     .26     .00
105          UI     22.     76.    121.    165.    258.    205.    150.    106.     54.     34.
106          UI     22.      7.      7.      7.      0.      0.      0.      0.      0.      0.
107          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

108          KK    102A
109          KM         RUNOFF HYDROGRAPH FROM SUB-SUBIN 102A.
110          BA     .51
111          LG     .40     .20    6.05     .21     .00
112          UI     40.     43.    142.    190.    228.    270.    327.    453.    484.    378.
113          UI    319.    263.    218.    176.    114.     71.     66.     44.     40.     15.
114          UI     12.     12.     12.     12.     12.      0.      0.      0.      0.      0.
```

```
115          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

116          KK   CP101
117          KM        ADD HYDROGRAPHS AT CP101
118          HC       2     .67

119          KK    R101
120          KM        ROUTE FLOW FROM CP101 TO CP102.
121          RS       2              -1       0
122          RC    .025    .022    .022    2750   .0062
123          RX    1000    1001    1030    1085    1120    1138    1139    1140
124          RY    1319    1319    1318    1316    1316    1317    1317    1317

125          KK     102
126          KM        RUNOFF FROM SUB-BASIN 102
127          BA     .10
128          LG     .41     .11    6.05     .27    10.5
129          UI     13.     44.     72.     96.    151.    132.     97.     70.     41.     23.
130          UI     15.      7.      4.      4.      4.      0.      0.      0.      0.      0.
131          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

132          KK   CP102
133          KM        ADD HYDROGRAPHS AT CP102.
134          HC       2     .77

135          KK    R102
136          KM        ROUTE FLOW FROM CP102 TO CP108
137          RS      15              -1       0
138          RC    .050    .050    .050    9000   .0042
139          RX    1000    1183    1244    1305    1430    1484    1538    1700
140          RY    1299    1296    1295    1294    1294    1295    1296    1299

141          KK     108
142          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 108.
143          BA     .79
144          LG     .38     .20    5.53     .23    12.0
145          UI     35.     35.     35.     78.    125.    151.    173.    193.    209.    230.
146          UI    258.    284.    340.    418.    459.    390.    340.    307.    281.    253.
147          UI    225.    205.    180.    166.    136.    101.     69.     62.     59.     58.
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

148          UI     41.     35.     35.     28.     11.     11.     11.     11.     11.     11.
149          UI     11.     11.     11.     11.     11.      0.      0.      0.      0.      0.
150          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

151          KK   1I108
152          KM        ADD HYDROGRAPHS AT CP108.
153          HC       2    1.56

154          KK     103
155          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 103.
156          BA     .37
157          LG     .30     .24    4.33     .31    24.0
158          UI     32.     45.    119.    159.    190.    231.    308.    393.    316.    259.
159          UI    212.    172.    137.     81.     55.     48.     32.     23.     10.     10.
160          UI     10.     10.     10.      0.      0.      0.      0.      0.      0.      0.
161          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

162          KK  103OUT
163          DT  103RET   34.66
164          DI       0   10000
165          DQ       0   10000

166          KK    R103
167          RS       4              -1       0
168          RC     .08    .022    .035    5380   .0041
169          RX    1000    1050    1080    1095    1130    1150    1300    1830
170          RY    1285    1284    1282    1280    1280    1282    1284    1286

171          KK   CP108
172          KM        ADD HYDROGRAPHS AT CP108.
173          HC       2    1.93

174          KK  108OUT
175          DT  108RET  134.08
176          DI       0   10000
177          DQ       0   10000

178          KK    R108
179          RS       7              -1       0
180          RC    .035    .035    .075    5382   .0037
181          RX    1000    1001    1002    1030    1100    1370    1900    2290
```

```
 182          RY    1259    1259    1259    1258    1258    1260    1262    1264

 183          KK     106
 184          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 106.
 185          BA     .77
 186          LG     .35     .29    6.63     .16     .00
 187          UI     68.    109.    267.    353.    425.    523.    727.    830.    634.    523.
 188          UI    422.    338.    237.    132.    114.     77.     65.     21.     21.     21.
 189          UI     21.     21.      0.      0.      0.      0.      0.      0.      0.      0.
 190          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 191          KK    R106
 192          KM        ROUTE FLOW FROM CP106 TO CP107
 193          RS      10              -1       0
 194          RC     .05     .05     .05    6800   .0031
 195          RX    1000    1021    1064    1085    1125    1191    1324    1390
 196          RY    1292    1291    1289    1288    1288    1289    1291    1292

 197          KK     107
 198          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 107.
 199          BA     .60
 200          LG     .32     .22    5.65     .25    20.4
 201          UI     38.     38.     88.    149.    186.    215.    244.    285.    344.    460.
 202          UI    462.    374.    322.    282.    240.    205.    176.    128.     82.     66.
 203          UI     63.     43.     38.     28.     12.     12.     12.     12.     12.     12.
 204          UI     12.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 205          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 206          KK   CP107
 207          KM        ADD HYDROGRAPHS AT CP107.
 208          HC       2    1.37

 209          KK  107OUT
 210          DT  107RET   72.83
 211          DI       0   10000
 212          DQ       0   10000

 213          KK    R107
 214          KM        ROUTE FLOW FROM CP107 TO CP115
 215          RS      11              -1       0
 216          RC    .050    .050    .050    7000   .0028
 217          RX    1000    1038    1152    1190    1220    1240    1300    1320
 218          RY    1260    1259    1256    1255    1255    1256    1259    1260

 219          KK     113
 220          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 113
 221          BA     .50
 222          LG     .29     .15    8.54     .08    25.5
 223          UI     53.    124.    244.    315.    400.    594.    594.    448.    350.    270.
 224          UI    175.     93.     76.     53.     20.     16.     16.     16.      0.      0.
 225          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 226          KK  113OUT
 227          DT  113RET   39.94
 228          DI       0   10000
 229          DQ       0   10000

 230          KK    R113
 231          RS       2              -1       0
 232          RC     .05     .05     .05    2100   .0038
 233          RX    1000    1006    1024    1030    1068    1074    1092    1098
 234          RY    1279    1278    1275    1274    1274    1275    1278    1279
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 235          KK     114
 236          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 114
 237          BA     .38
 238          LG     .30     .15    8.35     .07    24.0
 239          UI     35.     58.    137.    181.    220.    273.    392.    399.    307.    252.
 240          UI    202.    159.    102.     60.     53.     35.     24.     11.     11.     11.
 241          UI     11.     11.      0.      0.      0.      0.      0.      0.      0.      0.
 242          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 243          KK   CP114
 244          KM        ADD HYDROGRAPHS AT CP114
 245          HC       2    0.88
```

```
246          KK  114OUT
247          DT  114RET   59.33
248          DI       0   10000
249          DQ       0   10000

250          KK    R114
251          RS       6              -1       0
252          RC     .05     .05     .05    2652   .0034
253          RX    1000    1012    1025    1030    1068    1070    1080    1100
254          RY    1279    1278    1275    1274    1274    1275    1278    1279

255          KK     115
256          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 115.
257          BA     .49
258          LG     .33     .16    7.04     .16    21.0
259          UI     37.     37.    123.    168.    203.    237.    283.    376.    464.    379.
260          UI    315.    268.    223.    183.    141.     86.     64.     59.     37.     36.
261          UI     11.     11.     11.     11.     11.     11.      0.      0.      0.      0.
262          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

263          KK  CP115A
264          HC       4    4.67

265          KK  115OUT
266          DT  115RET   44.75
267          DI       0   10000
268          DQ       0   10000
             * DELETE SUB-BASIN 111, DIVERSION D11 AND ROUTING PARAMETER R11
             * TO REFLECT THE ARIZONA TRADITIONS DEVELOPMENT.
             * KK   111
             * KM      RUNOFF HYDROGRAPH FROM SUB-BASIN 111.
             * BA   .50
             * LG   .40     .21    5.55     .22     .00
             * UI   32.     32.     78.    129.    160.    184.    211.    246.    304.    40
             * UI  374.    307.    266.    230.    196.    167.    139.     99.     58.     5
             * UI   50.     32.     32.     15.     10.     10.     10.     10.     10.     1
             * UI    0.      0.      0.      0.      0.      0.      0.      0.      0.
             * UI    0.      0.      0.      0.      0.      0.      0.      0.      0.
             * KK  D111
             * KM      DIVERT TO CP119 FROM CP111
             * DT DI119
             * DI     0      32     109     228     389     599     858    1170    1539    19
             * DQ     0      11      39      83     145     228     333     462     617     7
             * KK  R111
             * KM      ROUTE REMAINDER FROM CP111 TO CP112
             * RS     9             ' -1       0
             * RC  .075    .035    .035    5280   .0040
             * RX  1000    1570    2040    2370    2440    2468    2469    2470
             * RY  1312    1310    1308    1306    1306    1307    1307    1307
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

269          KK     104
270          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 104
271          BA     .15
272          LG     .35     .31    4.93     .23     .00
273          UI     26.    101.    151.    242.    249.    169.    112.     50.     31.     14.
274          UI      7.      7.      0.      0.      0.      0.      0.      0.      0.      0.
275          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

276          KK    R104
277          KM        ROUTE FLOW FROM CP104 TO CP112
278          RS      53              -1       0
279          RC    .075    .075    .075    6552   .0056
280          RX    1000    1001    1230    1270    1750    2000    2380    2650
281          RY    1321    1321    1320    1318    1318    1319    1318    1320
             * MODIFY SUB-BASIN 112 TO REFLECT ARIZONA TRADITIONS DRAINAGE.  THE AREA DRAININ
             * ROAD AND THE PHOENIX VALLEY S-GRAPH PARAMETERS HAVE BEEN CHANGED.

282          KK     112
283          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 112
             * BA   .97
284          BA     .67
285          LG     .50     .00    3.65     .50     .00
             * UI   35.     35.     35.     35.     92.    123.    142.    165.    179.    19
             * UI  207.    224.    245.    266.    290.    340.    400.    464.    424.    37
             * UI  335.    308.    286.    267.    243.    220.    206.    185.    170.    15
             * UI  131.    101.     77.     62.     61.     58.     58.     45.     35.     3
             * UI   35.     28.     11.     11.     11.     11.     11.     11.     11.     1
             * UI   11.     11.     11.     11.     11.      0.      0.      0.      0.
             * UI    0.      0.      0.      0.      0.      0.      0.      0.      0.
```

```
286          UI     30.     98.    161.    215.    339.    295.    216.    157.     91.     50.
287          UI     33.     16.      9.      9.      9.      0.      0.      0.      0.      0.
288          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

289          KK   1I112
290          KM        ADD HYDROGRAPHS AT CP112.
291          HC       2     .82
             * DELETE THE UNNECESSARY HYDROGRAPH ADDITION STEPS RESULTING FROM THE DEVELOPMEN
             * ARIZONA TRADITIONS.
             * KK 2I112
             * KM      ADD HYDROGRAPHS AT CP112.
             * HC     2    1.62

292          KK     105
293          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 105
294          BA     .21
295          LG     .35     .27    7.68     .10     .00
296          UI     32.    129.    195.    295.    362.    246.    171.     88.     50.     28.
297          UI     10.     10.     10.      0.      0.      0.      0.      0.      0.      0.
298          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

299          KK    R105
300          KM        ROUTE FLOW FROM CP105 TO CP112
301          RS       3              -1       0
302          RC    .022    .022     .03    5220   .0044
303          RX    1000    1001    1010    1020    1040    1050    1099    1100
304          RY    1303    1303    1303    1302    1302    1304    1305    1305

305          KK   CP112
306          KM        ADD HYDROGRAPHS AT CP112.
307          HC       2    1.03

308          KK    D112
309          KM        DIVERT TO CP120 FROM CP112
310          DT   DI120
311          DI       0      48     165     355     625     981    1434    1990
312          DQ       0      16      55     118     208     327     478     663

313          KK    D112
314          KM        DIVERT TO CP121A FROM CP112
315          DT  1D121A
316          DI       0      32     110     237     417     654     956    1327
317          DQ       0      16      55     118     208     327     478     663

318          KK    R112
319          KM        ROUTE REMAINDER FROM CP112 TO CP113A
320          RS       6              -1       0
321          RC    .075    .035    .035    2640   .0023
322          RX    1000    1490    1830    2600    2770    2788    2789    2790
323          RY    1290    1288    1286    1284    1284    1285    1285    1285

324          KK    113A
325          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 113A
326          BA     .50
327          LG     .50     .00    7.93     .15     .00
328          UI     22.     22.     22.     42.     75.     89.    103.    115.    125.    137.
329          UI    152.    167.    192.    238.    276.    260.    224.    199.    181.    167.
330          UI    149.    134.    121.    108.     98.     79.     62.     40.     38.     36.
331          UI     35.     26.     22.     22.     20.      7.      7.      7.      7.      7.
332          UI      7.      7.      7.      7.      7.      7.      0.      0.      0.      0.
333          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

334          KK  CP113A
335          KM        ADD HYDROGRAPHS AT CP113A
336          HC       2    1.53

337          KK   D113A
338          KM         DIVERT TO CP121A FROM  CP113A
339          DT  2D121A
340          DI       0     185     545     642     893    1913
341          DQ       0       0       0      12      74     467
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

342          KK   R113A
343          KM        ROUTE REMAINDER FROM CP113A TO CP113
344          RS       8              -1       0
```

```
345          RC    .035    .035    .035    5280   .0032
346          RX    1000    1010    1200    1201    1300    1301    1320    1340
347          RY    1276    1274    1275    1274    1274    1275    1274    1275

348          KK    D113
349          KM          DIVERT TO CP122 FROM CP113
350          DT   1D122
351          DI       0     105     354     622    1153    1882
352          DQ       0       0     195     395     845    1480

353          KK    R113
354          KM        ROUTE REMAINDER FROM CP113 TO CP114
355          RS       4              -1       0
356          RC    .035    .035    .035    2100   .0038
357          RX    1000    1010    1200    1201    1300    1301    1320    1340
358          RY    1276    1274    1275    1274    1274    1275    1274    1275

359          KK    D114
360          KM          DIVERT TO CP122 FROM CP114
361          DT   2D122
362          DI       0     235     313     480     717    1056
363          DQ       0       0       2      81     225     462

364          KK    R114
365          RS       5              -1       0
366          RC    .035    .035    .035    2652   .0034
367          RX    1000    1010    1200    1201    1300    1301    1320    1340
368          RY    1276    1274    1275    1274    1274    1275    1274    1275

369          KK  CP115B
370          HC       2    6.20

371          KK    R115
372          RS       6              -1       0
373          RC    .035    .035    .075    5280   .0038
374          RX    1000    1001    1002    1015    1035    1360    1920    2460
375          RY    1239    1239    1239    1238    1238    1240    1241    1242

376          KK    D113
377          KM        RETURN DIVERT AT CP113
378          DR   1D122

379          KK    R113
380          KM        ROUTE FLOW FROM CP113 TO CP122
381          RS      36              -1       0
             * Change slope & distance to 0.0043 and 8513 feet from 0.0049 &
             * 7488 ft respectively
382          RC     .08     .08     .08    8513   .0043
383          RX    1000    1001    1610    1820    1990    2010    3059    3060
384          RY    1248    1248    1246    1245    1245    1246    1248    1248
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


385          KK    D114
386          KM        RETURN DIVERT AT CP114
387          DR   2D122

388          KK    R114
389          KM        ROUTE FLOW FROM CP114 TO CP122
390          RS      45              -1       0
391          RC    .075    .075    .075    6240   .0046
392          RX    1000    1001    1610    1820    1990    2010    3059    3060
393          RY    1248    1248    1246    1245    1245    1246    1248    1248
             * REPLACE SUB-BASIN 122 WITH 122A AND 122B TO REPRESENT MOUNTAIN VISTA RANCH
             * KK   122
             * KM     RUNOFF HYDROGRAPH FROM SUB-BASIN 122
             * BA   .89
             * LG   .50     .00    5.83     .32     .00
             * UI   32.     32.     32.     32.     87.    114.    132.    153.    166.     17
             * UI  193.    207.    229.    247.    272.    319.    378.    428.    385.     33
             * UI  306.    281.    262.    243.    220.    201.    188.    167.    155.     13
             * UI  114.     93.     63.     57.     56.     53.     53.     36.     32.      3
             * UI   32.     20.     10.     10.     10.     10.     10.     10.     10.      1
             * UI   10.     10.     10.     10.     10.      0.      0.      0.      0.
             * UI    0.      0.      0.      0.      0.      0.      0.      0.      0.

394          KK    122A
395          KM        RUNOFF WESTERN PORTION OF MOUNTAIN VISTA RANCH, SUB-BASIN 122
396          BA     .45
397          LG     .38     .13    5.83     .32   14.35
398          UI      0.     26.    101.    152.    243.    253.    171.    114.     51.     31.
399          UI     14.      7.      7.      0.      0.      0.      0.      0.      0.      0.
```

```
400          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

401          KK    122B
402          KM       RUNOFF FROM EASTERN PORTION OF MOUNTAIN VISTA RANCH, SUB-BASIN 122B
403          BA     .44
404          LG     .35     .13    5.83     .32    18.65
405          UI      0.     32.    114.    174.    288.    222.    147.     76.     38.     19.
406          UI      8.      8.      0.      0.      0.      0.      0.      0.      0.      0.
407          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

408          KK   1I122
409          KM        ADD HYDROGRAPHS AT CP122
410          HC       4     4.1
             * ADD THE MOUNTAIN VISTA RANCH RETENTION BASINS AS DIVERSIONS

411          KK  122OUT
412          DT  122RET   48.97
413          DI       0   10000
414          DQ       0   10000
```

? Test: 45 ac-ft


```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

415          KK   CP122
416          KM        ADD HYDROGRAPHS AT CP122
417          HC       2    7.09
418          ZZ
```

minus 111 and 112 (0.97) 0.5

7.89 - 0.5 - 0.97

=

```
     SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
 LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.     (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

 101        101
              .
              .
 108          .        102A
              .           .
              .           .
 116      CP101............
              V
              V
 119       R101
              .
              .
 125          .         102
              .           .
              .           .
 132      CP102............
              V
              V
 135       R102
              .
              .
 141          .         108
              .           .
              .           .
 151      1I108............
              .
              .
 154          .         103
              .           .
              .           .
 163          .           .-------> 103RET
 162          .      103OUT
              .          V
              .          V
 166          .        R103
              .           .
              .           .
 171      CP108............
              .
              .
 175          .-------> 108RET
 174     108OUT
              V
              V
 178       R108
              .
              .
 183          .         106
              .           V
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                 .          V
191              .        R106
                 .          .
                 .          .
197              .          .         107
                 .          .           .
                 .          .           .
206              .       CP107............
                 .          .
                 .          .
210              .          .-------> 107RET
209              .      107OUT
                 .          V
                 .          V
213              .        R107
                 .          .
                 .          .
219              .          .         113
                 .          .           .
                 .          .           .
227              .          .           .-------> 113RET
226              .          .      113OUT
                 .          .           V
                 .          .           V
230              .          .        R113
                 .          .           .
                 .          .           .
235              .          .           .         114
                 .          .           .           .
                 .          .           .           .
243              .          .      CP114............
                 .          .           .
                 .          .           .
247              .          .           .-------> 114RET
246              .          .      114OUT
                 .          .           V
                 .          .           V
250              .          .        R114
                 .          .           .
                 .          .           .
255              .          .           .         115
                 .          .           .           .
                 .          .           .           .
263         CP115A.................................
                 .
                 .
266              .-------> 115RET
265         115OUT
                 .
                 .
269              .         104
                 .          V
                 .          V
276              .        R104
                 .          .
                 .          .
282              .          .         112
                 .          .           .
                 .          .           .
289              .       1I112............
                 .          .
                 .          .
292              .          .         105
                 .          .           V
                 .          .           V
299              .          .        R105
                 .          .           .
                 .          .           .
305              .       CP112............
                 .          .
                 .          .
310              .          .------->  DI120
308              .        D112
                 .          .
                 .          .
315              .          .-------> 1D121A
313              .        D112
                 .          V
                 .          V
318              .        R112
                 .          .
                 .          .
324              .          .        113A
                 .          .           .
                 .          .           .
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334          .      CP113A............
             .          .
             .          .
339          .          .-------> 2D121A
337          .       D113A
             .          V
             .          V
342          .       R113A
             .          .
             .          .
350          .          .------->  1D122
348          .        D113
             .          V
             .          V
353          .        R113
             .          .
             .          .
361          .          .------->  2D122
359          .        D114
             .          V
             .          V
364          .        R114
             .          .
             .          .
369      CP115B.....
             V 444
             V
371        R115
             . 384
             .
             .                    27|  (325)
378          .       .<-------  1D122
376          .        D113
             .          V 185
             .          V
379          .        R113
             .          . 180
             .          .
387          .          .          .<-------  2D122
385          .          .       D114
             .          .          V          0   (0)
             .          .          V
388          .          .       R114
             .          .          .
             .          .          .
394          .          .          .       122A
             .          .          .          .
             .          .          .          .
401          .          .          .       237      122B
             .          .          .          .      245
             .          .          .          .
408          .       1I122.472.....................
             .          .
             .          .
412          .          .-------> 122RET
411          .      122OUT
             .          . 7 cfs
             .          .
415        CP122..383.....
```

Stanley

Stanley

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

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1****************************************
 *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
 *              MAY   1991              *
 *            VERSION 4.0.1E            *
 *                                      *
 *  RUN DATE            TIME            *
 *                                      *
 ****************************************
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*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748             *
*                                      *
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MOUNTAIN VISTA RANCH (MVR) REEMS ROAD DRAINAGE CHANNEL EXISTING HYDROLOG

RBF & ASSOCIATES/ AMERICAN ENGINEERING COMPANY
21442 NORTH 20TH AVENUE
PHOENIX, ARIZONA 85027
PHONE: (602)582-0260 FAX: (602)582-0953

AEC PROJECT # 98099 HEC-1 INPUT FILENAME: 98099EXIST.HC1
MODEL SUMMARY:

98099EXIST.OUT
-> MODEL BASED ON STANLEY CONSULANTS 13688LMR MO
(PHX VALLEY S-GRAPH, GREEN & AMPT LOSS, 24H
TYPE II STORM, P=4.03" W/AERIAL REDUCT);
-> MVR PHASES ASSUMED 100% CONSTRUCTED
AND REFLECTED BY MODIFIED LOSS RATE
PARAMETERS AND "S" GRAPHS AND BY CHANGING
THE ONSITE REACH ROUTING CROSS SECTION
GEOMETRY
-> AREAL REDUCTION FACTORS CHANGED TO MATCH HYDRO 40'S
24 HOUR STORM AREAL REDUCTION RATIOS AS STATE
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY'S
DRAINAGE DESIGN MANUAL, VOLUME I, HYDROLOGY

GENERAL MODEL NOTES:
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1. THIS MODEL IS BASED ON THE SUN CITY GRAND (SCG) REEMS ROAD FLOODPLAIN HYDROLOGY MODEL (13688LMR) PREPARED BY STANLEY CONSULTANTS, INC. IN M
2. THE SCG 13688LMR MODEL REPRESENTS A PORTION OF THE WTADMS.24 MODEL PR THE WLB GROUP FOR THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY. THE SCG MODEL REPRESENTS ONLY THAT PORTION OF THE WTADMS.24 MODEL FRO SUB-BASIN 101 THRU SUB-BASIN 122 INCLUSIVE. ALL OTHER HYDROGRAPH OPERATIONS FROM THE ORIGINAL MODEL HAVE BEEN DELETED.
3. ANY OF THE ORIGINAL INPUT RECORD FROM THE 13688LMR MODEL THAT WAS MODIFIED OR NOT USED BY THIS MODEL HAS BEEN RETAINED AS A "* COMMENT".
4. THE DIVERSION OPERATIONS ALONG BELL ROAD AT CITRUS ROAD AND AT COTTON LANE ARE FROM THE ORIGINAL WTADMS.24 MODEL. BELL ROAD DIVERSION OPERATIONS AT SR303L, SARIVAL AVENUE AND D114 FROM THE ORIGINAL WTADMS.24 MODEL HAVE BEEN REPLACED BY OPERATIONS FROM STANLEY'S MASTER DRAINAGE REPORT FOR DEL WEBB'S GRAND AVENUE PROPERTY EXISTING CONDITION MODEL E12291.DAT.
5. THE HEC-1 MODEL "AZTRDS.HC1" REPRESENTS THE ARIZONA TRADITIONS DEVELO THAT HAS BEEN BUILT IN SUB-BASIN 111 AND THE WEST HALF OF SUB-BASIN 1 RAINFALL RUNOFF FROM ARIZONA TRADITIONS (SUB-BASINS 111 AND PART OF 1 LONGER DRAINS TO REEMS ROAD BETWEEN BELL ROAD AND GREENWAY. RATHER I SOUTH ALONG THE NATURAL FLOW PATH. THE CHANGE RESULTS FROM THE COMBI OF RETENTION BASINS AND CULVERTS BENEATH BELL ROAD WHICH HAVE BEEN CO AS PART OF THE ARIZONA TRADITIONS DEVELOPMENT.
6. SUB-BASIN 111 HAS BEEN ELIMINATED FROM THIS MODEL BECAUSE OF THE PHYS CHANGES IN HYDROLOGY AS DESCRIBED ABOVE IN 5. SUB-BASIN 112 HAS ALSO MODIFIED TO REFLECT THE NEW AREA DRAINING ONTO REEMS ROAD, AND MODIFI PHOENIX VALLEY S-GRAPHS.
7. MOUNTAIN VISTA RANCH PARCELS 6,7,8,10,11,14,15, AND 16 HAVE BEEN CONSTRUCTED IN SUB-BASIN 122. THESE SUB-BASINS ARE REFLECTED IN THIS MODEL IN THE FOLLOWING MANNER:
   A. SUB-BASIN 122 HAS BEEN SPLIT INTO 122A FOR PARCELS 11, 14,15 AND 1 AND SUB-BASIN 122B FOR DEVELOPED PARCELS 6, 7, 8, AND 10.
   B. INITIAL ABSTRACT AND PERCENT IMPERVIOUS WERE ADJUSTED ON AN AREA-WEIGHTED BASIS TO REFLECT 100% DEVELOPED CONDITIONS; PSIF VALUE HAS NOT BEEN CHANGED BUT DTHETA HAS BEEN ADJUSTED TO CORRESPOND TO NORMAL INSTEAD OF SATURATED SOIL CONDITION AND XKSAT VALUES HAVE BEEN ADJUSTED TO ACCOUNT FOR DEVELOPED CONDITION VEG COVER;
   C. PHX VLLY S-GRAPHS FROM THE ORIGINAL WTADMS.24 HAVE BEEN MODIFIED BY USING MCUHP2 WITH A NEW AREA-WEIGHTED ADJUSTED Kn (L, Lca AND SLOPE USED IN MCUHP2 HAVE NOT BEEN MODIFIED FROM THE ORIGINAL WTADMS.24 MODEL);
   D. THE DEAD STORAGE PORTION OF RETENTION BASIN VOLUME HAVE BEEN SUMME MODELED AS SINGLE VOLUME-DIVERTED RETENTION BASINS AT EACH OF THE TWO CONCENTRATION POINTS ALONG REEMS ROAD JUST SOUTH OF PARADISE L AND AT GREENWAY ROAD.
8. THE WTADMS.24 AND 13688LMR MODELS USED THE DEPTH AREA REDUCTION FACTORS PRESENTED IN THE 1990 VERSION OF THE FLOOD CONTROL DISTRICT'S DRAINAGE DESIGN MANUAL. THESE FACTORS ARE BASED ON NOAA ATLAS 2, AND ARE GENERAL FOR THE UNITED STATES. THIS MODEL UPDATES THE DEPTH-AREA REDUCTION FACT TO COMPLY WITH THE FLOOD CONTROL DISTRICTS CURRENT DRAINAGE DESIGN MANUAL DATED JANUARY 1, 1995. THE DRAINAGE DESIGN MANUAL BASES THEIR FACTORS ON THE NATIONAL WEATHER SERVICES STUDY BY ZEHR AND MYERS' "DEPTH-AREA RATIOS IN THE SEMI-ARID SOUTHWEST UNITED STATES" (1984) NWS HYDRO-40. THESE RAT ARE MORE APPROPRIATE FOR THE WATERSHED, ESPECIALLY SINCE THE FLOODPLAIN CURRENTLY THE UPPERMOST REACH OF FLOODPLAIN IN THE WATERSHED.

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84 IO        OUTPUT CONTROL VARIABLES
                   IPRNT          5  PRINT CONTROL
                   IPLOT          0  PLOT CONTROL
                   QSCAL         0.  HYDROGRAPH PLOT SCALE

   IT        HYDROGRAPH TIME DATA
                    NMIN          5  MINUTES IN COMPUTATION INTERVAL
                   IDATE      1   0  STARTING DATE
                   ITIME       0000  STARTING TIME
                      NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                  NDDATE      2   0  ENDING DATE
                  NDTIME       0055  ENDING TIME
                   ICENT         19  CENTURY MARK
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          COMPUTATION INTERVAL     .08 HOURS
               TOTAL TIME BASE   24.92 HOURS

     ENGLISH UNITS
          DRAINAGE AREA          SQUARE MILES
          PRECIPITATION DEPTH    INCHES
          LENGTH, ELEVATION      FEET
          FLOW                   CUBIC FEET PER SECOND
          STORAGE VOLUME         ACRE-FEET
          SURFACE AREA           ACRES
          TEMPERATURE            DEGREES FAHRENHEIT

86 JD       INDEX STORM NO. 1
                 STRM        4.03  PRECIPITATION DEPTH
                 TRDA         .00  TRANSPOSITION DRAINAGE AREA

87 PI         PRECIPITATION PATTERN
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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                .03       .09       .09       .09       .01       .01       .01       .01       .01       .01
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97 JD       INDEX STORM NO. 2
                 STRM        3.79  PRECIPITATION DEPTH
                 TRDA       10.00  TRANSPOSITION DRAINAGE AREA

 0 PI         PRECIPITATION PATTERN
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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98 JD       INDEX STORM NO. 3
                 STRM        3.51  PRECIPITATION DEPTH
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                TRDA       50.00  TRANSPOSITION DRAINAGE AREA

 0 PI         PRECIPITATION PATTERN
                .00        .00        .00        .00        .00        .00        .00        .00        .00        .00
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99 JD         INDEX STORM NO. 4
                STRM        3.39  PRECIPITATION DEPTH
                TRDA      100.00  TRANSPOSITION DRAINAGE AREA

 0 PI         PRECIPITATION PATTERN
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100 JD        INDEX STORM NO. 5
                STRM        3.29  PRECIPITATION DEPTH
                TRDA      200.00  TRANSPOSITION DRAINAGE AREA

 0 PI         PRECIPITATION PATTERN
                .00        .00        .00        .00        .00        .00        .00        .00        .00        .00
                .00        .00        .00        .00        .00        .00        .00        .00        .00        .00
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.00	.00	.00	.00	.00	.00	.00	.01	.00	.01
.01	.01	.01	.01	.01	.01	.01	.01	.03	.03
.03	.09	.09	.09	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	101	224.	12.25	21.	5.	5.	.16		
+	HYDROGRAPH AT	102A	500.	12.58	69.	17.	17.	.51		
+	2 COMBINED AT	CP101	603.	12.50	90.	22.	22.	.67		
+	ROUTED TO	R101	597.	12.50	90.	22.	22.	.67		
+	HYDROGRAPH AT	102	147.	12.25	16.	4.	4.	.10		
+	2 COMBINED AT	CP102	687.	12.42	105.	27.	26.	.77		
+	ROUTED TO	R102	535.	13.42	105.	27.	26.	.77		
+	HYDROGRAPH AT	108	518.	13.08	121.	33.	32.	.79		
+	2 COMBINED AT	1I108	889.	13.42	222.	59.	57.	1.56		
+	HYDROGRAPH AT	103	398.	12.50	62.	18.	17.	.37		
+	DIVERSION TO	103RET	398.	12.50	62.	17.	17.	.37		
+	HYDROGRAPH AT	103OUT	3.	23.58	2.	1.	1.	.37		
+	ROUTED TO	R103	2.	24.67	2.	1.	1.	.37		
+	2 COMBINED AT	CP108	887.	13.42	222.	59.	57.	1.93		
+	DIVERSION TO	108RET	887.	13.42	222.	59.	57.	1.93		
+	HYDROGRAPH AT	108OUT	0.	.00	0.	0.	0.	1.93		
+	ROUTED TO	R108	0.	.00	0.	0.	0.	1.93		
+	HYDROGRAPH AT	106	827.	12.50	105.	26.	25.	.77		
+	ROUTED TO	R106	647.	13.08	105.	26.	25.	.77		
+	HYDROGRAPH AT	107	521.	12.75	98.	28.	27.	.60		

+	2 COMBINED AT	CP107	948.	13.08	200.	54.	52.	1.37
+	DIVERSION TO	107RET	948.	13.08	142.	37.	35.	1.37
+	HYDROGRAPH AT	107OUT	522.	13.50	66.	17.	17.	1.37
+	ROUTED TO	R107	276.	14.42	63.	17.	16.	1.37
+	HYDROGRAPH AT	113	713.	12.33	105.	30.	29.	.50
+	DIVERSION TO	113RET	713.	12.33	76.	20.	19.	.50
+	HYDROGRAPH AT	113OUT	400.	12.67	36.	10.	10.	.50
+	ROUTED TO	R113	256.	12.83	35.	10.	10.	.50
+	HYDROGRAPH AT	114	496.	12.50	82.	23.	22.	.38
+	2 COMBINED AT	CP114	501.	12.83	114.	33.	32.	.88
+	DIVERSION TO	114RET	501.	12.83	110.	30.	29.	.88
+	HYDROGRAPH AT	114OUT	21.	13.83	8.	3.	3.	.88
+	ROUTED TO	R114	14.	14.33	7.	3.	3.	.88
	HYDROGRAPH AT	115	527.	12.58	89.	25.	24.	.49
+	4 COMBINED AT	CP115A	517.	12.58	142.	43.	41.	4.67
+	DIVERSION TO	115RET	517.	12.58	86.	23.	22.	4.67
+	HYDROGRAPH AT	115OUT	282.	14.50	69.	20.	20.	4.67
+	HYDROGRAPH AT	104	227.	12.17	19.	5.	5.	.15
+	ROUTED TO	R104	80.	14.75	19.	5.	5.	.15
+	HYDROGRAPH AT	112	313.	12.25	30.	8.	7.	.67
+	2 COMBINED AT	1I112	313.	12.25	49.	12.	12.	.82
+	HYDROGRAPH AT	105	341.	12.25	33.	8.	8.	.21
+	ROUTED TO	R105	303.	12.42	33.	8.	8.	.21
+	2 COMBINED AT	CP112	580.	12.33	81.	20.	20.	1.03
+	DIVERSION TO	DI120	193.	12.33	27.	7.	7.	1.03
+	HYDROGRAPH AT	D112	387.	12.33	54.	14.	13.	1.03
+	DIVERSION TO	1D121A	193.	12.33	27.	7.	7.	1.03
	HYDROGRAPH AT	D112	194.	12.33	27.	7.	7.	1.03

+	ROUTED TO	R112	133.	12.92	27.	7.	7.	1.03
+	HYDROGRAPH AT	113A	393.	13.08	102.	25.	25.	.50
+	2 COMBINED AT	CP113A	499.	13.08	126.	32.	31.	1.53
+	DIVERSION TO	2D121A	0.	.00	0.	0.	0.	1.53
+	HYDROGRAPH AT	D113A	499.	13.08	126.	32.	31.	1.53
+	ROUTED TO	R113A	456.	13.58	124.	32.	31.	1.53
+	DIVERSION TO	1D122	271.	13.58	51.	13.	12.	1.53
+	HYDROGRAPH AT	D113	185.	13.58	74.	19.	19.	1.53
+	ROUTED TO	R113	180.	13.83	73.	19.	19.	1.53
+	DIVERSION TO	2D122	0.	.00	0.	0.	0.	1.53
+	HYDROGRAPH AT	D114	180.	13.83	73.	19.	19.	1.53
+	ROUTED TO	R114	175.	14.25	72.	19.	19.	1.53
+	2 COMBINED AT	CP115B	444.	14.50	137.	39.	38.	6.20
+	ROUTED TO	R115	384.	15.08	134.	38.	37.	6.20
+	HYDROGRAPH AT	D113	271.	13.58	51.	13.	12.	1.53
+	ROUTED TO	R113	182.	15.92	49.	13.	12.	1.53
+	HYDROGRAPH AT	D114	0.	.00	0.	0.	0.	1.53
+	ROUTED TO	R114	0.	.00	0.	0.	0.	1.53
+	HYDROGRAPH AT	122A	237.	12.25	23.	6.	6.	.45
+	HYDROGRAPH AT	122B	245.	12.25	23.	7.	6.	.44
+	4 COMBINED AT	1I122	472.	12.25	83.	25.	24.	4.10
+	DIVERSION TO	122RET	472.	12.25	83.	25.	24.	4.10
+	HYDROGRAPH AT	122OUT	7.	22.00	2.	1.	1.	4.10
+	2 COMBINED AT	CP122	383.	15.08	134.	39.	37.	7.09

*** NORMAL END OF HEC-1 ***

Appendix C
HEC-1 Proposed Conditions Model
98099propr.out

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1****************************************                                    ****************************************
*                                      *                                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *    U.S. ARMY CORPS OF ENGINEERS      *
*              MAY   1991              *                                    *    HYDROLOGIC ENGINEERING CENTER     *
*           VERSION 4.0.1E             *                                    *          609 SECOND STREET           *
*                                      *                                    *       DAVIS, CALIFORNIA 95616        *
*  RUN DATE            TIME            *                                    *           (916) 551-1748             *
*                                      *                                    *                                      *
****************************************                                    ****************************************


                                        X     X  XXXXXXX   XXXXX           X
                                        X     X  X        X     X         XX
                                        X     X  X        X                X
                                        XXXXXXX  XXXX     X        XXXXX   X
                                        X     X  X        X                X
                                        X     X  X        X     X          X
                                        X     X  XXXXXXX   XXXXX         XXX


THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

                                        HEC-1 INPUT                                                    PAGE  1

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID
  2           ID       MOUNTAIN VISTA RANCH (MVR) REEMS ROAD DRAINAGE CHANNEL CLOMR HYDROLOGY
  3           ID
  4           ID       RBF & ASSOCIATES/ AMERICAN ENGINEERING COMPANY
  5           ID       21442 NORTH 20TH AVENUE
  6           ID       PHOENIX, ARIZONA   85027
  7           ID       PHONE: (602)582-0260     FAX: (602)582-0953
  8           ID
  9           ID       AEC PROJECT # 98099     HEC-1 INPUT FILENAME: 98099CLMR.HC1
 10           ID                               MODEL SUMMARY:
 11           ID                               ------------------------------
 12           ID                               -> MODEL BASED ON STANLEY CONSULANTS 13688LMR MO
 13           ID                                    (PHX VALLEY S-GRAPH, GREEN & AMPT LOSS, 24H
 14           ID                                    TYPE II STORM, P=4.03" W/AERIAL REDUCT);
 15           ID                               -> MVR PHASES  ASSUMED 100% CONSTRUCTED
 16           ID                                    AND REFLECTED BY MODIFIED LOSS RATE
 17           ID                                    PARAMETERS AND "S" GRAPHS AND BY CHANGING
 18           ID                                    THE ONSITE REACH ROUTING CROSS SECTION
 19           ID                                    GEOMETRY
 20           ID                            -> AREAL REDUCTION FACTORS CHANGED TO MATCH HYDRO 40'S
 21           ID                                 24 HOUR STORM AREAL REDUCTION RATIOS AS STATE
 22           ID                               THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY'S
 23           ID                               DRAINAGE DESIGN MANUAL, VOLUME I, HYDROLOGY
 24           ID
 25           ID       GENERAL MODEL NOTES:
 26           ID       --------------------
 27           ID       1. THIS MODEL IS BASED ON THE SUN CITY GRAND (SCG) REEMS ROAD FLOODPLAIN
 28           ID          HYDROLOGY MODEL (13688LMR) PREPARED BY STANLEY CONSULTANTS, INC. IN M
 29           ID       2. THE SCG 13688LMR MODEL REPRESENTS A PORTION OF THE WTADMS.24 MODEL PR
 30           ID          THE WLB GROUP FOR THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
 31           ID          THE SCG MODEL REPRESENTS ONLY THAT PORTION OF THE WTADMS.24 MODEL FRO
 32           ID          SUB-BASIN 101 THRU SUB-BASIN 122 INCLUSIVE. ALL OTHER HYDROGRAPH
 33           ID          OPERATIONS FROM THE ORIGINAL MODEL HAVE BEEN DELETED.
 34           ID       3. ANY OF THE ORIGINAL INPUT RECORD FROM THE 13688LMR MODEL THAT WAS
 35           ID          MODIFIED OR NOT USED BY THIS MODEL HAS BEEN RETAINED AS A
 36           ID          "*  COMMENT".
 37           ID       4. THE DIVERSION OPERATIONS ALONG BELL ROAD AT CITRUS ROAD AND AT
 38           ID          COTTON LANE ARE FROM THE ORIGINAL WTADMS.24 MODEL. BELL ROAD
 39           ID          DIVERSION OPERATIONS AT SR303L, SARIVAL AVENUE AND D114 FROM THE
 40           ID          ORIGINAL WTADMS.24 MODEL HAVE BEEN REPLACED BY OPERATIONS FROM
 41           ID          STANLEY'S MASTER DRAINAGE REPORT FOR DEL WEBB'S GRAND AVENUE PROPERTY
 42           ID          EXISTING CONDITION MODEL E12291.DAT.
 43           ID       5. THE HEC-1 MODEL "AZTRDS.HC1" REPRESENTS THE ARIZONA TRADITIONS DEVELO
 44           ID          THAT HAS BEEN BUILT IN SUB-BASIN 111 AND THE WEST HALF OF SUB-BASIN 1
 45           ID          RAINFALL RUNOFF FROM ARIZONA TRADITIONS (SUB-BASINS 111 AND PART OF 1
 46           ID          LONGER DRAINS TO REEMS ROAD BETWEEN BELL ROAD AND GREENWAY.  RATHER I
 47           ID          SOUTH ALONG THE NATURAL FLOW PATH.  THE CHANGE RESULTS FROM THE COMBI
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 48          ID          OF RETENTION BASINS AND CULVERTS BENEATH BELL ROAD WHICH HAVE BEEN CO
 49          ID          AS PART OF THE ARIZONA TRADITIONS DEVELOPMENT.
 50          ID       6. SUB-BASIN 111 HAS BEEN ELIMINATED FROM THIS MODEL BECAUSE OF THE PHYS
 51          ID          CHANGES IN HYDROLOGY AS DESCRIBED ABOVE IN 5.  SUB-BASIN 112 HAS ALSO
 52          ID          MODIFIED TO REFLECT THE NEW AREA DRAINING ONTO REEMS ROAD, AND MODIFI
 53          ID          PHOENIX VALLEY S-GRAPHS.
 54          ID       7. MOUNTAIN VISTA RANCH PARCELS 6,7,8,10,11,14,15, AND 16 HAVE BEEN
 55          ID          CONSTRUCTED IN SUB-BASIN 122.  THESE SUB-BASINS ARE REFLECTED IN
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 56          ID          THIS MODEL IN THE FOLLOWING MANNER:
 57          ID          A. SUB-BASIN 122 HAS BEEN SPLIT INTO 122A FOR PARCELS 11, 14,15 AND 1
 58          ID             AND SUB-BASIN 122B FOR DEVELOPED PARCELS 6, 7, 8, AND 10.
 59          ID          B. INITIAL ABSTRACT AND PERCENT IMPERVIOUS WERE ADJUSTED ON AN AREA-
 60          ID             WEIGHTED BASIS TO REFLECT 100% DEVELOPED CONDITIONS; PSIF VALUE
 61          ID             HAS NOT BEEN CHANGED BUT DTHETA HAS BEEN ADJUSTED TO CORRESPOND
 62          ID             TO NORMAL INSTEAD OF SATURATED SOIL CONDITION AND XKSAT VALUES
 63          ID             HAVE BEEN ADJUSTED TO ACCOUNT FOR DEVELOPED CONDITION VEG COVER;
 64          ID          C. PHX VLLY S-GRAPHS FROM THE ORIGINAL WTADMS.24 HAVE BEEN MODIFIED
 65          ID             BY USING MCUHP2 WITH A NEW AREA-WEIGHTED ADJUSTED Kn (L, Lca AND
 66          ID             SLOPE USED IN MCUHP2 HAVE NOT BEEN MODIFIED FROM THE ORIGINAL
 67          ID             WTADMS.24 MODEL);
 68          ID          D. THE DEAD STORAGE PORTION OF RETENTION BASIN VOLUME HAVE BEEN SUMME
 69          ID             MODELED AS SINGLE VOLUME-DIVERTED RETENTION BASINS AT EACH OF THE
 70          ID             TWO CONCENTRATION POINTS ALONG REEMS ROAD JUST SOUTH OF PARADISE L
 71          ID             AND AT GREENWAY ROAD.
 72          ID     8.  THE WTADMS.24 AND 13688LMR MODELS USED THE DEPTH AREA REDUCTION FACTORS
 73          ID         PRESENTED IN THE 1990 VERSION OF THE FLOOD CONTROL DISTRICT'S DRAINAGE
 74          ID         DESIGN MANUAL.  THESE FACTORS ARE BASED ON NOAA ATLAS 2, AND ARE GENERAL
 75          ID         FOR THE UNITED STATES.  THIS MODEL UPDATES THE DEPTH-AREA REDUCTION FACT
 76          ID         TO COMPLY WITH THE FLOOD CONTROL DISTRICTS CURRENT DRAINAGE DESIGN MANUAL
 77          ID         DATED JANUARY 1, 1995.  THE DRAINAGE DESIGN MANUAL BASES THEIR FACTORS ON
 78          ID         THE NATIONAL WEATHER SERVICES STUDY BY ZEHR AND MYERS' "DEPTH-AREA RATIOS
 79          ID         IN THE SEMI-ARID SOUTHWEST UNITED STATES" (1984) NWS HYDRO-40.  THESE RAT
 80          ID         ARE MORE APPROPRIATE FOR THE WATERSHED, ESPECIALLY SINCE THE FLOODPLAIN
 81          ID         CURRENTLY THE UPPERMOST REACH OF FLOODPLAIN IN THE WATERSHED.
 82          ID
             *DIAGRAM
 83          IT       5                    300
 84          IO       5
 85          IN      15
 86          JD    4.03    .001
 87          PC    .000    .002    .005    .008    .011    .014    .017    .020    .023    .026
 88          PC    .029    .032    .035    .038    .041    .044    .048    .052    .056    .060
 89          PC    .064    .068    .072    .076    .080    .085    .090    .095    .100    .105
 90          PC    .110    .115    .120    .126    .133    .140    .147    .155    .163    .172
 91          PC    .181    .191    .203    .218    .236    .257    .283    .387    .663    .707
 92          PC    .735    .758    .776    .791    .804    .815    .825    .834    .842    .849
 93          PC    .856    .863    .869    .875    .881    .887    .893    .898    .903    .908
 94          PC    .913    .918    .922    .926    .930    .934    .938    .942    .946    .950
 95          PC    .953    .956    .959    .962    .965    .968    .971    .974    .977    .980
 96          PC    .983    .986    .989    .992    .995    .998    1.00   1.000   1.000   1.000
 97          JD    3.79      10
 98          JD    3.51      50
 99          JD    3.39     100
100          JD    3.29     200
             * JD  3.70     200
             * JD  3.99      10
             * JD  3.83      50
             * JD  3.76     100
             * JD  3.70     200
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

101          KK     101
102          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 101.
103          BA     .16
104          LG     .35     .32    3.61     .26     .00
105          UI     22.     76.    121.    165.    258.    205.    150.    106.     54.     34.
106          UI     22.      7.      7.      7.      0.      0.      0.      0.      0.      0.
107          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

108          KK    102A
109          KM        RUNOFF HYDROGRAPH FROM SUB-SUBIN 102A.
110          BA     .51
111          LG     .40     .20    6.05     .21     .00
112          UI     40.     43.    142.    190.    228.    270.    327.    453.    484.    378.
113          UI    319.    263.    218.    176.    114.     71.     66.     44.     40.     15.
114          UI     12.     12.     12.     12.     12.      0.      0.      0.      0.      0.
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115          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

116          KK   CP101
117          KM        ADD HYDROGRAPHS AT CP101
118          HC       2     .67

119          KK    R101
120          KM        ROUTE FLOW FROM CP101 TO CP102.
121          RS       2              -1       0
122          RC    .025    .022    .022    2750   .0062
123          RX    1000    1001    1030    1085    1120    1138    1139    1140
124          RY    1319    1319    1318    1316    1316    1317    1317    1317

125          KK     102
126          KM        RUNOFF FROM SUB-BASIN 102
127          BA     .10
128          LG     .41     .11    6.05     .27    10.5
129          UI     13.     44.     72.     96.    151.    132.     97.     70.     41.     23.
130          UI     15.      7.      4.      4.      4.      0.      0.      0.      0.      0.
131          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

132          KK   CP102
133          KM        ADD HYDROGRAPHS AT CP102.
134          HC       2     .77

135          KK    R102
136          KM        ROUTE FLOW FROM CP102 TO CP108
137          RS      15              -1       0
138          RC    .050    .050    .050    9000   .0042
139          RX    1000    1183    1244    1305    1430    1484    1538    1700
140          RY    1299    1296    1295    1294    1294    1295    1296    1299

141          KK     108
142          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 108.
143          BA     .79
144          LG     .38     .20    5.53     .23    12.0
145          UI     35.     35.     35.     78.    125.    151.    173.    193.    209.    230.
146          UI    258.    284.    340.    418.    459.    390.    340.    307.    281.    253.
147          UI    225.    205.    180.    166.    136.    101.     69.     62.     59.     58.
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

148          UI     41.     35.     35.     28.     11.     11.     11.     11.     11.     11.
149          UI     11.     11.     11.     11.     11.      0.      0.      0.      0.      0.
150          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

151          KK   1I108
152          KM        ADD HYDROGRAPHS AT CP108.
153          HC       2    1.56

154          KK     103
155          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 103.
156          BA     .37
157          LG     .30     .24    4.33     .31    24.0
158          UI     32.     45.    119.    159.    190.    231.    308.    393.    316.    259.
159          UI    212.    172.    137.     81.     55.     48.     32.     23.     10.     10.
160          UI     10.     10.     10.      0.      0.      0.      0.      0.      0.      0.
161          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

162          KK  103OUT
163          DT  103RET   34.66
164          DI       0   10000
165          DQ       0   10000

166          KK    R103
167          RS       4              -1       0
168          RC     .08    .022    .035    5380   .0041
169          RX    1000    1050    1080    1095    1130    1150    1300    1830
170          RY    1285    1284    1282    1280    1280    1282    1284    1286

171          KK   CP108
172          KM        ADD HYDROGRAPHS AT CP108.
173          HC       2    1.93

174          KK  108OUT
175          DT  108RET  134.08
176          DI       0   10000
177          DQ       0   10000

178          KK    R108
179          RS       7              -1       0
180          RC    .035    .035    .075    5382   .0037
181          RX    1000    1001    1002    1030    1100    1370    1900    2290
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182          RY    1259    1259    1259    1258    1258    1260    1262    1264

183          KK     106
184          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 106.
185          BA     .77
186          LG     .35     .29    6.63     .16     .00
187          UI     68.    109.    267.    353.    425.    523.    727.    830.    634.    523.
188          UI    422.    338.    237.    132.    114.     77.     65.     21.     21.     21.
189          UI     21.     21.      0.      0.      0.      0.      0.      0.      0.      0.
190          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

191          KK    R106
192          KM        ROUTE FLOW FROM CP106 TO CP107
193          RS      10              -1       0
194          RC     .05     .05     .05    6800   .0031
195          RX    1000    1021    1064    1085    1125    1191    1324    1390
196          RY    1292    1291    1289    1288    1288    1289    1291    1292

197          KK     107
198          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 107.
199          BA     .60
200          LG     .32     .22    5.65     .25    20.4
201          UI     38.     38.     88.    149.    186.    215.    244.    285.    344.    460.
202          UI    462.    374.    322.    282.    240.    205.    176.    128.     82.     66.
203          UI     63.     43.     38.     28.     12.     12.     12.     12.     12.     12.
204          UI     12.      0.      0.      0.      0.      0.      0.      0.      0.      0.
205          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

206          KK   CP107
207          KM        ADD HYDROGRAPHS AT CP107.
208          HC       2    1.37

209          KK  107OUT
210          DT  107RET   72.83
211          DI       0   10000
212          DQ       0   10000

213          KK    R107
214          KM        ROUTE FLOW FROM CP107 TO CP115
215          RS      11              -1       0
216          RC    .050    .050    .050    7000   .0028
217          RX    1000    1038    1152    1190    1220    1240    1300    1320
218          RY    1260    1259    1256    1255    1255    1256    1259    1260

219          KK     113
220          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 113
221          BA     .50
222          LG     .29     .15    8.54     .08    25.5
223          UI     53.    124.    244.    315.    400.    594.    594.    448.    350.    270.
224          UI    175.     93.     76.     53.     20.     16.     16.     16.      0.      0.
225          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

226          KK  113OUT
227          DT  113RET   39.94
228          DI       0   10000
229          DQ       0   10000

230          KK    R113
231          RS       2              -1       0
232          RC     .05     .05     .05    2100   .0038
233          RX    1000    1006    1024    1030    1068    1074    1092    1098
234          RY    1279    1278    1275    1274    1274    1275    1278    1279
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

235          KK     114
236          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 114
237          BA     .38
238          LG     .30     .15    8.35     .07    24.0
239          UI     35.     58.    137.    181.    220.    273.    392.    399.    307.    252.
240          UI    202.    159.    102.     60.     53.     35.     24.     11.     11.     11.
241          UI     11.     11.      0.      0.      0.      0.      0.      0.      0.      0.
242          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

243          KK   CP114
244          KM        ADD HYDROGRAPHS AT CP114
245          HC       2    0.88
```

```
246          KK  114OUT
247          DT  114RET   59.33
248          DI       0   10000
249          DQ       0   10000

250          KK    R114
251          RS       6              -1       0
252          RC     .05     .05     .05    2652   .0034
253          RX    1000    1012    1025    1030    1068    1070    1080    1100
254          RY    1279    1278    1275    1274    1274    1275    1278    1279

255          KK     115
256          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 115.
257          BA     .49
258          LG     .33     .16    7.04     .16    21.0
259          UI     37.     37.    123.    168.    203.    237.    283.    376.    464.    379.
260          UI    315.    268.    223.    183.    141.     86.     64.     59.     37.     36.
261          UI     11.     11.     11.     11.     11.     11.      0.      0.      0.      0.
262          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

263          KK  CP115A
264          HC       4    4.67

265          KK  115OUT
266          DT  115RET   44.75
267          DI       0   10000
268          DQ       0   10000
             * DELETE SUB-BASIN 111, DIVERSION D11 AND ROUTING PARAMETER R11
             * TO REFLECT THE ARIZONA TRADITIONS DEVELOPMENT.
             * KK   111
             * KM      RUNOFF HYDROGRAPH FROM SUB-BASIN 111.
             * BA   .50
             * LG   .40     .21    5.55     .22     .00
             * UI   32.     32.     78.    129.    160.    184.    211.    246.    304.     40
             * UI  374.    307.    266.    230.    196.    167.    139.     99.     58.      5
             * UI   50.     32.     32.     15.     10.     10.     10.     10.     10.      1
             * UI    0.      0.      0.      0.      0.      0.      0.      0.      0.
             * UI    0.      0.      0.      0.      0.      0.      0.      0.      0.
             * KK  D111
             * KM      DIVERT TO CP119 FROM CP111
             * DT DI119
             * DI     0      32     109     228     389     599     858    1170    1539     19
             * DQ     0      11      39      83     145     228     333     462     617      7
             * KK  R111
             * KM      ROUTE REMAINDER FROM CP111 TO CP112
             * RS     9              -1       0
             * RC  .075    .035    .035    5280   .0040
             * RX  1000    1570    2040    2370    2440    2468    2469    2470
             * RY  1312    1310    1308    1306    1306    1307    1307    1307
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

269          KK     104
270          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 104
271          BA     .15
272          LG     .35     .31    4.93     .23     .00
273          UI     26.    101.    151.    242.    249.    169.    112.     50.     31.     14.
274          UI      7.      7.      0.      0.      0.      0.      0.      0.      0.      0.
275          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

276          KK    R104
277          KM        ROUTE FLOW FROM CP104 TO CP112
278          RS     53              -1       0
279          RC    .075    .075    .075    6552   .0056
280          RX    1000    1001    1230    1270    1750    2000    2380    2650
281          RY    1321    1321    1320    1318    1318    1319    1318    1320
             * MODIFY SUB-BASIN 112 TO REFLECT ARIZONA TRADITIONS DRAINAGE.  THE AREA DRAININ
             * ROAD AND THE PHOENIX VALLEY S-GRAPH PARAMETERS HAVE BEEN CHANGED.

282          KK     112
283          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 112
             * BA   .97
284          BA     .67
285          LG     .50     .00    3.65     .50     .00
             * UI   35.     35.     35.     35.     92.    123.    142.    165.    179.     19
             * UI  207.    224.    245.    266.    290.    340.    400.    464.    424.     37
             * UI  335.    308.    286.    267.    243.    220.    206.    185.    170.     15
             * UI  131.    101.     77.     62.     61.     58.     58.     45.     35.      3
             * UI   35.     28.     11.     11.     11.     11.     11.     11.     11.      1
             * UI   11.     11.     11.     11.     11.      0.      0.      0.      0.
             * UI    0.      0.      0.      0.      0.      0.      0.      0.      0.
```

```
286          UI     30.     98.    161.    215.    339.    295.    216.    157.     91.     50.
287          UI     33.     16.      9.      9.      9.      0.      0.      0.      0.      0.
288          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

289          KK   1I112
290          KM        ADD HYDROGRAPHS AT CP112.
291          HC       2     .82
             * DELETE THE UNNECESSARY HYDROGRAPH ADDITION STEPS RESULTING FROM THE DEVELOPMEN
             * ARIZONA TRADITIONS.
             * KK 2I112
             * KM       ADD HYDROGRAPHS AT CP112.
             * HC      2    1.62

292          KK     105
293          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 105
294          BA     .21
295          LG     .35     .27    7.68     .10     .00
296          UI     32.    129.    195.    295.    362.    246.    171.     88.     50.     28.
297          UI     10.     10.     10.      0.      0.      0.      0.      0.      0.      0.
298          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

299          KK    R105
300          KM        ROUTE FLOW FROM CP105 TO CP112
301          RS       3              -1       0
302          RC    .022    .022     .03    5220   .0044
303          RX    1000    1001    1010    1020    1040    1050    1099    1100
304          RY    1303    1303    1303    1302    1302    1304    1305    1305

305          KK   CP112
306          KM        ADD HYDROGRAPHS AT CP112.
307          HC       2    1.03

308          KK    D112
309          KM        DIVERT TO CP120 FROM CP112
310          DT   DI120
311          DI       0      48     165     355     625     981    1434    1990
312          DQ       0      16      55     118     208     327     478     663

313          KK    D112
314          KM        DIVERT TO CP121A FROM CP112
315          DT  1D121A
316          DI       0      32     110     237     417     654     956    1327
317          DQ       0      16      55     118     208     327     478     663

318          KK    R112
319          KM        ROUTE REMAINDER FROM CP112 TO CP113A
320          RS       6              -1       0
321          RC    .075    .035    .035    2640  .0023
322          RX    1000    1490    1830    2600    2770    2788    2789    2790
323          RY    1290    1288    1286    1284    1284    1285    1285    1285

324          KK    113A
325          KM        RUNOFF HYDROGRAPH FROM SUB-BASIN 113A
326          BA     .50
327          LG     .50     .00    7.93     .15     .00
328          UI     22.     22.     22.     42.     75.     89.    103.    115.    125.    137.
329          UI    152.    167.    192.    238.    276.    260.    224.    199.    181.    167.
330          UI    149.    134.    121.    108.     98.     79.     62.     40.     38.     36.
331          UI     35.     26.     22.     22.     20.      7.      7.      7.      7.      7.
332          UI      7.      7.      7.      7.      7.      7.      0.      0.      0.      0.
333          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

334          KK  CP113A
335          KM        ADD HYDROGRAPHS AT CP113A
336          HC       2    1.53

337          KK   D113A
338          KM         DIVERT TO CP121A FROM  CP113A
339          DT  2D121A
340          DI       0     185     545     642     893    1913
341          DQ       0       0       0      12      74     467
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

342          KK   R113A
343          KM        ROUTE REMAINDER FROM CP113A TO CP113
344          RS       8              -1       0
```

```
345          RC    .035    .035    .035    5280   .0032
346          RX    1000    1010    1200    1201    1300    1301    1320    1340
347          RY    1276    1274    1275    1274    1274    1275    1274    1275

348          KK    D113
349          KM          DIVERT TO CP122 FROM CP113
350          DT   1D122
351          DI       0     105     354     622    1153    1882
352          DQ       0       0     195     395     845    1480

353          KK    R113
354          KM        ROUTE REMAINDER FROM CP113 TO CP114
355          RS       4              -1       0
356          RC    .035    .035    .035    2100   .0038
357          RX    1000    1010    1200    1201    1300    1301    1320    1340
358          RY    1276    1274    1275    1274    1274    1275    1274    1275

359          KK    D114
360          KM          DIVERT TO CP122 FROM CP114
361          DT   2D122
362          DI       0     235     313     480     717    1056
363          DQ       0       0       2      81     225     462

364          KK    R114
365          RS       5              -1       0
366          RC    .035    .035    .035    2652   .0034
367          RX    1000    1010    1200    1201    1300    1301    1320    1340
368          RY    1276    1274    1275    1274    1274    1275    1274    1275

369          KK  CP115B
370          HC       2    6.20
             * CHANGE ROUTING DOWN REEMS ROAD (R115) TO REFLECT CHANNEL
             * KK  R115
             * RS     6              -1       0
             * RC  .035    .035    .075    5280   .0038
             * RX  1000    1001    1002    1015    1035    1360    1920    2460
             * RY  1239    1239    1239    1238    1238    1240    1241    1242
             * CHANGE R115 TO R115A AND R115B TO ACCOUNT FOR THE RETENTION BASIN OUTFALLS
             * FROM MOUNTAIN VISTA RANCH

371          KK   R115A
372          RS       2              -1       0
373          RC   0.016   0.027   0.027    4635  0.0038       0
374          RX    1000    1038    1038    1047    1056    1074    1083    1083
375          RY   48.41   47.65   48.24   48.36   45.36   45.36   48.36    50.5
             * PLACE MOUNTAIN VISTA RANCH PARCELS 6,7, 8 AND 10 HERE TO ACCOUNT FOR THE
             * RETENTION BASIN OUTFALL INTO THE REEMS ROAD CHANNEL
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

376          KK    122B
377          KM       RUNOFF FROM EASTERN PORTION OF MOUNTAIN VISTA RANCH, SUB-BASIN 122B
378          BA     .44
379          LG     .35     .13    5.83     .32    18.65
380          UI      0.     32.    114.    174.    288.    222.    147.     76.     38.     19.
381          UI      8.      8.      0.      0.      0.      0.      0.      0.      0.      0.
382          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

383          KK  122BOU
384          KM   COMPOSITE RETETNTION BASIN VOLUME FOR MVR PARCELS 5, 7, 8 AND 10
385          DT  122BRE   23.68
386          DI       0   10000
387          DQ       0   10000

388          KK  CP115C
389          HC       2    6.64
             * FINNISH MODELING REEMS ROAD CHANNEL

390          KK   R115C
391          RS       1              -1       0
392          RC   0.016   0.027   0.027     645  0.0038       0
393          RX    1000    1038    1038    1047    1056    1074    1083    1083
394          RY   48.41   47.65   48.24   48.36   45.36   45.36   48.36    50.5

395          KK    D113
396          KM        RETURN DIVERT AT CP113
397          DR   1D122

398          KK    R113
399          KM        ROUTE FLOW FROM CP113 TO CP122
400          RS      36              -1       0
             * Change slope & distance to 0.0043 and 8513 feet from 0.0049 &
```

```
                 * 7488 ft respectively
401              RC     .08     .08     .08    8513   .0043
402              RX    1000    1001    1610    1820    1990    2010    3059    3060
403              RY    1248    1248    1246    1245    1245    1246    1248    1248

404              KK    D114
405              KM        RETURN DIVERT AT CP114
406              DR   2D122

407              KK    R114
408              KM        ROUTE FLOW FROM CP114 TO CP122
409              RS      45              -1       0
410              RC    .075    .075    .075    6240   .0046
411              RX    1000    1001    1610    1820    1990    2010    3059    3060
412              RY    1248    1248    1246    1245    1245    1246    1248    1248
                 * REPLACE SUB-BASIN 122 WITH 122A AND 122B TO REPRESENT MOUNTAIN VISTA RANCH
                 * KK   122
                 * KM     RUNOFF HYDROGRAPH FROM SUB-BASIN 122
                 * BA   .89
                 * LG   .50     .00    5.83     .32     .00
                 * UI   32.     32.     32.     32.     87.    114.    132.    153.    166.     17
                 * UI  193.    207.    229.    247.    272.    319.    378.    428.    385.     33
                 * UI  306.    281.    262.    243.    220.    201.    188.    167.    155.     13
                 * UI  114.     93.     63.     57.     56.     53.     53.     36.     32.      3
                 * UI   32.     20.     10.     10.     10.     10.     10.     10.     10.      1
                 * UI   10.     10.     10.     10.     10.      0.      0.      0.      0.
                 * UI    0.      0.      0.      0.      0.      0.      0.      0.      0.
```



```
LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

413              KK    122A
414              KM        RUNOFF WESTERN PORTION OF MOUNTAIN VISTA RANCH, SUB-BASIN 122
415              BA     .45
416              LG     .38     .13    5.83     .32   14.35
417              UI      0.     26.    101.    152.    243.    253.    171.    114.     51.     31.
418              UI     14.      7.      7.      0.      0.      0.      0.      0.      0.      0.
419              UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

420              KK   1I122
421              KM        ADD HYDROGRAPHS AT CP122
422              HC       3    3.66
                 * ADD THE MOUNTAIN VISTA RANCH RETENTION BASINS AS DIVERSIONS

423              KK  122AOU
424              DT  122ARE   25.29
425              DI       0   10000
426              DQ       0   10000

427              KK   CP122
428              KM        ADD HYDROGRAPHS AT CP122
429              HC       2    7.09
430              ZZ
```

Wrong
should use 5 min
for ~~NCH~~ MCKHP2

```
          SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
 LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.     (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  101        101
               .
               .
  108          .        102A
               .           .
               .           .
  116      CP101............
               V
               V
  119       R101
               .
               .
  125          .         102
               .           .
               .           .
  132      CP102............
               V
               V
  135       R102
               .
               .
  141          .         108
               .           .
```

```
                .           .
151       1I108............
                .
                .
154             .         103
                .           .
                .           .
163             .           .-------> 103RET
162             .      103OUT
                .           V
                .           V
166             .        R103
                .           .
                .           .
171       CP108............
                .
                .
175             .-------> 108RET
174      108OUT
             V
             V
178       R108
                .
                .
183             .         106
                .           V
                .           V
191             .        R106
                .           .
                .           .
197             .           .         107
                .           .           .
                .           .           .
206             .       CP107............
                .           .
                .           .
210             .           .-------> 107RET
209             .      107OUT
                .           V
                .           V
213             .        R107
                .           .
                .           .
219             .           .         113
                .           .           .
                .           .           .
227             .           .           .-------> 113RET
226             .           .      113OUT
                .           .           V
                .           .           V
230             .           .        R113
                .           .           .
                .           .           .
235             .           .           .         114
                .           .           .           .
                .           .           .           .
243             .           .       CP114............
                .           .           .
                .           .           .
247             .           .           .-------> 114RET
246             .           .      114OUT
                .           .           V
                .           .           V
250             .           .        R114
                .           .           .
                .           .           .
255             .           .           .         115
                .           .           .           .
                .           .           .           .
263      CP115A.................................
                .
                .
266             .-------> 115RET
265      115OUT
                .
                .
269             .         104
                .           V
                .           V
276             .        R104
                .           .
                .           .
282             .           .         112
                .           .           .
                .           .           .
```

```
289          .       1I112............
             .           .
             .           .
292          .           .         105
             .           .           V
             .           .           V
299          .           .        R105
             .           .           .
             .           .           .
305          .       CP112............
             .           .
             .           .
310          .           .-------->   DI120
308          .        D112
             .           .
             .           .
315          .           .-------->  1D121A
313          .        D112
             .           V
             .           V
318          .        R112
             .           .
             .           .
324          .           .        113A
             .           .           .
             .           .           .
334          .      CP113A............
             .           .
             .           .
339          .           .-------->  2D121A
337          .       D113A
             .           V
             .           V
342          .       R113A
             .           .
             .           .
350          .           .-------->   1D122
348          .        D113
             .           V
             .           V
353          .        R113
             .           .
             .           .
361          .           .-------->   2D122
359          .        D114
             .           V
             .           V
364          .        R114
             .           .
             .           .
369      CP115B............
             V
             V
371       R115A
             .
             .
376          .        122B
             .           .
             .           .
385          .           .-------->  122BRE
383          .      122BOU
             .           .
             .           .
388      CP115C............
             V
             V
390       R115C
             .
             .
397          .           .<--------   1D122
395          .        D113
             .           V
             .           V
398          .        R113
             .           .
             .           .
406          .           .           .<--------   2D122
404          .           .        D114
             .           .           V
             .           .           V
407          .           .        R114
             .           .           .
             .           .           .
413          .           .           .        122A
             .           .           .           .
```

```
                .          .          .          .
  420           .       1I122.......................
                .          .
                .          .
  424           .          .-------> 122ARE
  423           .      122AOU
                .          .
                .          .
  427       CP122............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              MAY   1991              *
*           VERSION 4.0.1E             *
*                                      *
*  RUN DATE            TIME            *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748             *
*                                      *
****************************************
```

MOUNTAIN VISTA RANCH (MVR) REEMS ROAD DRAINAGE CHANNEL CLOMR HYDROLOGY

RBF & ASSOCIATES/ AMERICAN ENGINEERING COMPANY
21442 NORTH 20TH AVENUE
PHOENIX, ARIZONA 85027
PHONE: (602)582-0260 FAX: (602)582-0953

AEC PROJECT # 98099 HEC-1 INPUT FILENAME: 98099CLMR.HC1

MODEL SUMMARY:

-> MODEL BASED ON STANLEY CONSULANTS 13688LMR MO
(PHX VALLEY S-GRAPH, GREEN & AMPT LOSS, 24H
TYPE II STORM, P=4.03" W/AERIAL REDUCT);
-> MVR PHASES ASSUMED 100% CONSTRUCTED
AND REFLECTED BY MODIFIED LOSS RATE
PARAMETERS AND "S" GRAPHS AND BY CHANGING
THE ONSITE REACH ROUTING CROSS SECTION
GEOMETRY
-> AREAL REDUCTION FACTORS CHANGED TO MATCH HYDRO 40'S
24 HOUR STORM AREAL REDUCTION RATIOS AS STATE
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY'S
DRAINAGE DESIGN MANUAL, VOLUME I, HYDROLOGY

GENERAL MODEL NOTES:
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1. THIS MODEL IS BASED ON THE SUN CITY GRAND (SCG) REEMS ROAD FLOODPLAIN HYDROLOGY MODEL (13688LMR) PREPARED BY STANLEY CONSULTANTS, INC. IN M
2. THE SCG 13688LMR MODEL REPRESENTS A PORTION OF THE WTADMS.24 MODEL PR THE WLB GROUP FOR THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY. THE SCG MODEL REPRESENTS ONLY THAT PORTION OF THE WTADMS.24 MODEL FRO SUB-BASIN 101 THRU SUB-BASIN 122 INCLUSIVE. ALL OTHER HYDROGRAPH OPERATIONS FROM THE ORIGINAL MODEL HAVE BEEN DELETED.
3. ANY OF THE ORIGINAL INPUT RECORD FROM THE 13688LMR MODEL THAT WAS MODIFIED OR NOT USED BY THIS MODEL HAS BEEN RETAINED AS A "* COMMENT".
4. THE DIVERSION OPERATIONS ALONG BELL ROAD AT CITRUS ROAD AND AT COTTON LANE ARE FROM THE ORIGINAL WTADMS.24 MODEL. BELL ROAD DIVERSION OPERATIONS AT SR303L, SARIVAL AVENUE AND D114 FROM THE ORIGINAL WTADMS.24 MODEL HAVE BEEN REPLACED BY OPERATIONS FROM STANLEY'S MASTER DRAINAGE REPORT FOR DEL WEBB'S GRAND AVENUE PROPERTY EXISTING CONDITION MODEL E12291.DAT.
5. THE HEC-1 MODEL "AZTRDS.HC1" REPRESENTS THE ARIZONA TRADITIONS DEVELO THAT HAS BEEN BUILT IN SUB-BASIN 111 AND THE WEST HALF OF SUB-BASIN 1 RAINFALL RUNOFF FROM ARIZONA TRADITIONS (SUB-BASINS 111 AND PART OF 1 LONGER DRAINS TO REEMS ROAD BETWEEN BELL ROAD AND GREENWAY. RATHER I SOUTH ALONG THE NATURAL FLOW PATH. THE CHANGE RESULTS FROM THE COMBI OF RETENTION BASINS AND CULVERTS BENEATH BELL ROAD WHICH HAVE BEEN CO AS PART OF THE ARIZONA TRADITIONS DEVELOPMENT.
6. SUB-BASIN 111 HAS BEEN ELIMINATED FROM THIS MODEL BECAUSE OF THE PHYS CHANGES IN HYDROLOGY AS DESCRIBED ABOVE IN 5. SUB-BASIN 112 HAS ALSO MODIFIED TO REFLECT THE NEW AREA DRAINING ONTO REEMS ROAD, AND MODIFI PHOENIX VALLEY S-GRAPHS.
7. MOUNTAIN VISTA RANCH PARCELS 6,7,8,10,11,14,15, AND 16 HAVE BEEN CONSTRUCTED IN SUB-BASIN 122. THESE SUB-BASINS ARE REFLECTED IN THIS MODEL IN THE FOLLOWING MANNER:
   A. SUB-BASIN 122 HAS BEEN SPLIT INTO 122A FOR PARCELS 11, 14,15 AND 16 AND SUB-BASIN 122B FOR DEVELOPED PARCELS 6, 7, 8, AND 10.
   B. INITIAL ABSTRACT AND PERCENT IMPERVIOUS WERE ADJUSTED ON AN AREA-WEIGHTED BASIS TO REFLECT 100% DEVELOPED CONDITIONS; PSIF VALUE

HAS NOT BEEN CHANGED BUT DTHETA HAS BEEN ADJUSTED TO CORRESPOND TO NORMAL INSTEAD OF SATURATED SOIL CONDITION AND XKSAT VALUES HAVE BEEN ADJUSTED TO ACCOUNT FOR DEVELOPED CONDITION VEG COVER;

C. PHX VLLY S-GRAPHS FROM THE ORIGINAL WTADMS.24 HAVE BEEN MODIFIED BY USING MCUHP2 WITH A NEW AREA-WEIGHTED ADJUSTED Kn (L, Lca AND SLOPE USED IN MCUHP2 HAVE NOT BEEN MODIFIED FROM THE ORIGINAL WTADMS.24 MODEL);

D. THE DEAD STORAGE PORTION OF RETENTION BASIN VOLUME HAVE BEEN SUMME MODELED AS SINGLE VOLUME-DIVERTED RETENTION BASINS AT EACH OF THE TWO CONCENTRATION POINTS ALONG REEMS ROAD JUST SOUTH OF PARADISE L AND AT GREENWAY ROAD.

8. THE WTADMS.24 AND 13688LMR MODELS USED THE DEPTH AREA REDUCTION FACTORS PRESENTED IN THE 1990 VERSION OF THE FLOOD CONTROL DISTRICT'S DRAINAGE DESIGN MANUAL. THESE FACTORS ARE BASED ON NOAA ATLAS 2, AND ARE GENERAL FOR THE UNITED STATES. THIS MODEL UPDATES THE DEPTH-AREA REDUCTION FACT TO COMPLY WITH THE FLOOD CONTROL DISTRICTS CURRENT DRAINAGE DESIGN MANUAL DATED JANUARY 1, 1995. THE DRAINAGE DESIGN MANUAL BASES THEIR FACTORS ON THE NATIONAL WEATHER SERVICES STUDY BY ZEHR AND MYERS' "DEPTH-AREA RATIOS IN THE SEMI-ARID SOUTHWEST UNITED STATES" (1984) NWS HYDRO-40. THESE RAT ARE MORE APPROPRIATE FOR THE WATERSHED, ESPECIALLY SINCE THE FLOODPLAIN CURRENTLY THE UPPERMOST REACH OF FLOODPLAIN IN THE WATERSHED.

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84 IO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT          HYDROGRAPH TIME DATA
                      NMIN           5  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1    0  STARTING DATE
                     ITIME        0000  STARTING TIME
                        NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      2    0  ENDING DATE
                    NDTIME        0055  ENDING TIME
                     ICENT          19  CENTURY MARK

               COMPUTATION INTERVAL     .08 HOURS
                    TOTAL TIME BASE   24.92 HOURS

        ENGLISH UNITS
             DRAINAGE AREA          SQUARE MILES
             PRECIPITATION DEPTH    INCHES
             LENGTH, ELEVATION      FEET
             FLOW                   CUBIC FEET PER SECOND
             STORAGE VOLUME         ACRE-FEET
             SURFACE AREA           ACRES
             TEMPERATURE            DEGREES FAHRENHEIT

86 JD          INDEX STORM NO. 1
                      STRM        4.03  PRECIPITATION DEPTH
                      TRDA         .00  TRANSPOSITION DRAINAGE AREA

87 PI            PRECIPITATION PATTERN
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97 JD INDEX STORM NO. 2

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                STRM        3.79  PRECIPITATION DEPTH
                TRDA       10.00  TRANSPOSITION DRAINAGE AREA

 0 PI         PRECIPITATION PATTERN
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98 JD         INDEX STORM NO. 3
                STRM        3.51  PRECIPITATION DEPTH
                TRDA       50.00  TRANSPOSITION DRAINAGE AREA

 0 PI         PRECIPITATION PATTERN
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99 JD         INDEX STORM NO. 4
                STRM        3.39  PRECIPITATION DEPTH
                TRDA      100.00  TRANSPOSITION DRAINAGE AREA

 0 PI         PRECIPITATION PATTERN
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100 JD INDEX STORM NO. 5

STRM 3.29 PRECIPITATION DEPTH

TRDA 200.00 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATION PATTERN

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RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	101	224.	12.25	21.	5.	5.	.16		
+	HYDROGRAPH AT	102A	500.	12.58	69.	17.	17.	.51		
+	2 COMBINED AT	CP101	603.	12.50	90.	22.	22.	.67		
+	ROUTED TO	R101	597.	12.50	90.	22.	22.	.67		
+	HYDROGRAPH AT	102	147.	12.25	16.	4.	4.	.10		
+	2 COMBINED AT	CP102	687.	12.42	105.	27.	26.	.77		
+	ROUTED TO	R102	535.	13.42	105.	27.	26.	.77		
	HYDROGRAPH AT	108	518.	13.08	121.	33.	32.	.79		

+	2 COMBINED AT	1I108	889.	13.42	222.	59.	57.	1.56
+	HYDROGRAPH AT	103	398.	12.50	62.	18.	17.	.37
+	DIVERSION TO	103RET	398.	12.50	62.	17.	17.	.37
+	HYDROGRAPH AT	103OUT	3.	23.58	2.	1.	1.	.37
+	ROUTED TO	R103	2.	24.67	2.	1.	1.	.37
+	2 COMBINED AT	CP108	887.	13.42	222.	59.	57.	1.93
+	DIVERSION TO	108RET	887.	13.42	222.	59.	57.	1.93
+	HYDROGRAPH AT	108OUT	0.	.00	0.	0.	0.	1.93
+	ROUTED TO	R108	0.	.00	0.	0.	0.	1.93
+	HYDROGRAPH AT	106	827.	12.50	105.	26.	25.	.77
+	ROUTED TO	R106	647.	13.08	105.	26.	25.	.77
+	HYDROGRAPH AT	107	521.	12.75	98.	28.	27.	.60
+	2 COMBINED AT	CP107	948.	13.08	200.	54.	52.	1.37
	DIVERSION TO	107RET	948.	13.08	142.	37.	35.	1.37
+	HYDROGRAPH AT	107OUT	522.	13.50	66.	17.	17.	1.37
+	ROUTED TO	R107	276.	14.42	63.	17.	16.	1.37
+	HYDROGRAPH AT	113	713.	12.33	105.	30.	29.	.50
+	DIVERSION TO	113RET	713.	12.33	76.	20.	19.	.50
+	HYDROGRAPH AT	113OUT	400.	12.67	36.	10.	10.	.50
+	ROUTED TO	R113	256.	12.83	35.	10.	10.	.50
+	HYDROGRAPH AT	114	496.	12.50	82.	23.	22.	.38
+	2 COMBINED AT	CP114	501.	12.83	114.	33.	32.	.88
+	DIVERSION TO	114RET	501.	12.83	110.	30.	29.	.88
+	HYDROGRAPH AT	114OUT	21.	13.83	8.	3.	3.	.88
+	ROUTED TO	R114	14.	14.33	7.	3.	3.	.88
+	HYDROGRAPH AT	115	527.	12.58	89.	25.	24.	.49
+	4 COMBINED AT	CP115A	517.	12.58	142.	43.	41.	4.67
	DIVERSION TO	115RET	517.	12.58	86.	23.	22.	4.67

+	HYDROGRAPH AT	115OUT	282.	14.50	69.	20.	20.	4.67
+	HYDROGRAPH AT	104	227.	12.17	19.	5.	5.	.15
+	ROUTED TO	R104	80.	14.75	19.	5.	5.	.15
+	HYDROGRAPH AT	112	313.	12.25	30.	8.	7.	.67
+	2 COMBINED AT	1I112	313.	12.25	49.	12.	12.	.82
+	HYDROGRAPH AT	105	341.	12.25	33.	8.	8.	.21
+	ROUTED TO	R105	303.	12.42	33.	8.	8.	.21
+	2 COMBINED AT	CP112	580.	12.33	81.	20.	20.	1.03
+	DIVERSION TO	DI120	193.	12.33	27.	7.	7.	1.03
+	HYDROGRAPH AT	D112	387.	12.33	54.	14.	13.	1.03
+	DIVERSION TO	1D121A	193.	12.33	27.	7.	7.	1.03
+	HYDROGRAPH AT	D112	194.	12.33	27.	7.	7.	1.03
+	ROUTED TO	R112	133.	12.92	27.	7.	7.	1.03
+	HYDROGRAPH AT	113A	393.	13.08	102.	25.	25.	.50
+	2 COMBINED AT	CP113A	499.	13.08	126.	32.	31.	1.53
+	DIVERSION TO	2D121A	0.	.00	0.	0.	0.	1.53
+	HYDROGRAPH AT	D113A	499.	13.08	126.	32.	31.	1.53
+	ROUTED TO	R113A	456.	13.58	124.	32.	31.	1.53
+	DIVERSION TO	1D122	271.	13.58	51.	13.	12.	1.53
+	HYDROGRAPH AT	D113	185.	13.58	74.	19.	19.	1.53
+	ROUTED TO	R113	180.	13.83	73.	19.	19.	1.53
+	DIVERSION TO	2D122	0.	.00	0.	0.	0.	1.53
+	HYDROGRAPH AT	D114	180.	13.83	73.	19.	19.	1.53
+	ROUTED TO	R114	175.	14.25	72.	19.	19.	1.53
+	2 COMBINED AT	CP115B	444.	14.50	137.	39.	38.	6.20
+	ROUTED TO	R115A	408.	14.75	136.	39.	37.	6.20
+	HYDROGRAPH AT	122B	245.	12.25	23.	7.	6.	.44
	DIVERSION TO	122BRE	245.	12.25	23.	7.	6.	.44
	HYDROGRAPH AT							

+		122BOU	0.	.00	0.	0.	0.	.44
+	2 COMBINED AT	CP115C	408.	14.75	136.	39.	37.	6.64
+	ROUTED TO	R115C	407.	14.75	136.	39.	37.	6.64
+	HYDROGRAPH AT	D113	271.	13.58	51.	13.	12.	1.53
+	ROUTED TO	R113	182.	15.92	49.	13.	12.	1.53
+	HYDROGRAPH AT	D114	0.	.00	0.	0.	0.	1.53
+	ROUTED TO	R114	0.	.00	0.	0.	0.	1.53
+	HYDROGRAPH AT	122A	237.	12.25	23.	6.	6.	.45
+	3 COMBINED AT	1I122	232.	12.25	61.	19.	18.	3.66
+	DIVERSION TO	122ARE	232.	12.25	49.	13.	12.	3.66
+	HYDROGRAPH AT	122AOU	94.	16.83	23.	6.	6.	3.66
+	2 COMBINED AT	CP122	406.	14.75	154.	45.	43.	7.09

*** NORMAL END OF HEC-1 ***

Appendix D
HEC-1 Arizona Traditions Model
Aztrds.out

```
1****************************************                    ****************************************
*                                      *                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
*              MAY  1991               *                    *    HYDROLOGIC ENGINEERING CENTER     *
*           VERSION 4.0.1E             *                    *          609 SECOND STREET           *
*                                      *                    *       DAVIS, CALIFORNIA 95616        *
*  RUN DATE            TIME            *                    *          (916) 551-1748              *
*                                      *                    *                                      *
****************************************                    ****************************************

                                        X     X  XXXXXXX   XXXXX          X
                                        X     X  X        X     X        XX
                                        X     X  X        X               X
                                        XXXXXXX  XXXX     X        XXXXX  X
                                        X     X  X        X               X
                                        X     X  X        X     X         X
                                        X     X  XXXXXXX   XXXXX        XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

HEC-1 INPUT PAGE 1

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID       ARIZONA TRADITIONS HEC-1 MODEL
  2           ID
  3           ID
              *DIAGRAM
  4           IT       5  1JAN94       0     300
  5           IO       5

  6           KK     3A1
  7           BA   0.016
  8           PB   3.256
  9           IN       6  1JAN94       0
              * typeII-24hour
 10           PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
 11           PC  0.0105   0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
 12           PC   0.022   0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
 13           PC  0.0345   0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
 14           PC   0.048   0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
 15           PC   0.063   0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
 16           PC    0.08   0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
 17           PC   0.099    0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
 18           PC    0.12   0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
 19           PC   0.147   0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
 20           PC   0.181   0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
 21           PC   0.235   0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
 22           PC   0.663    0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
 23           PC   0.772    0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
 24           PC    0.82   0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
 25           PC  0.8535   0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
 26           PC    0.88   0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
 27           PC  0.9018   0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
 28           PC   0.921   0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
 29           PC  0.9377   0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
 30           PC   0.952   0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
 31           PC  0.9648    0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
 32           PC   0.977   0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
 33           PC  0.9888   0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
 34           PC       1
 35           LG    0.25     0.15     8.2    0.04      30
 36           UC   0.188    0.161
              * TIME-AREA 1
 37           UA       0        5      16      30      65      77      84      90      94      97
 38           UA     100

 39           KK   CP 18    CNAME   CP 18
 40           RS       1     FLOW      -1       0
 41           RC    0.03    0.025    0.03     900   0.002       0
              * CP7, CP9 & CP18
```

```
 42          RX       1       5      10      25      34      39      44      49
 43          RY  1300.2  1300.1    1300    1296    1297    1300  1300.1  1300.2
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 44          KK     3A2
 45          KM         SUB-BASIN 3A2
 46          BA   0.013
 47          PB   3.256
 48          IN       6  1JAN94       0
             * typeII-24hour
 49          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
 50          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
 51          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
 52          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
 53          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
 54          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
 55          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
 56          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
 57          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
 58          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
 59          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
 60          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
 61          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
 62          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
 63          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
 64          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
 65          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
 66          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
 67          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
 68          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
 69          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
 70          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
 71          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
 72          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
 73          PC       1
 74          LG    0.25    0.15     8.2    0.04      30
 75          UC    0.15   0.117
             * TIME-AREA 1
 76          UA       0       5      16      30      65      77      84      90      94      97
 77          UA     100

 78          KK    CP19   CNAME     39R
 79          KM         COMBINE CP18 AND 3A2
 80          HC       2

 81          KK     3A3
 82          KM         SUB-BASIN 3A3
 83          BA   0.013
 84          PB   3.256
 85          IN       6  1JAN94       0
             * typeII-24hour
 86          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
 87          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
 88          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
 89          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
 90          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
 91          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
 92          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 93          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
 94          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
 95          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
 96          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
 97          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
 98          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
 99          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
100          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
101          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
102          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
103          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
104          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
105          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
106          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
107          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
108          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
109          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
110          PC       1
```

```
111          LG    0.25    0.25     3.5    0.25      30
112          UC   0.167   0.118
             * TIME-AREA 1
113          UA       0       5      16      30      65      77      84      90      94      97
114          UA     100

115          KK    CP20   CNAME    CP20
116          HC       2

117          KK     3G1
118          KM         SUB-BASIN 3G1
119          BA   0.031
120          PB   3.256
121          IN       6  1JAN94       0
             * typeII-24hour
122          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
123          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
124          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
125          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
126          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
127          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
128          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
129          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
130          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
131          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
132          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
133          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
134          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
135          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
136          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
137          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
138          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
139          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
140          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
141          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
142          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
143          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

144          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
145          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
146          PC       1
147          LG    0.25    0.25     3.9   0.325       5
148          UC   0.367   0.345
             * TIME-AREA 1
149          UA       0       5      16      30      65      77      84      90      94      97
150          UA     100

151          KK     3A4
152          KM         SUB-BASIN 3A4
153          BA   0.022
154          PB   3.256
155          IN       6  1JAN94       0
             * typeII-24hour
156          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
157          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
158          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
159          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
160          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
161          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
162          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
163          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
164          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
165          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
166          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
167          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
168          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
169          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
170          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
171          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
172          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
173          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
174          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
175          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
176          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
177          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
178          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
179          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
180          PC       1
181          LG    0.25    0.25     3.9   0.325      30
182          UC   0.171   0.111
             * TIME-AREA 1
```

```
183          UA       0       5      16      30      65      77      84      90      94      97
184          UA     100

185          KK    CP21   CNAME     3B1
186          KM         COMBINE CP20, 3A4, AND 3G1
187          HC       3
```

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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


188          KK     3B1
             * RESERVOIR STORAGE
189          RS       1    ELEV    1316       0
             * VOL 3B1
190          SV       0    2.42     5.8   10.18   15.58
             * Q 3B1
191          SQ       0       0       0       0       0
             * ELEV 3B1
192          SE    1316    1317    1318    1319    1320

193          KK     4A1
194          KM         SUB-BASIN 4A1
195          BA   0.036
196          PB   3.256
197          IN       6  1JAN94       0
             * typeII-24hour
198          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
199          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
200          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
201          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
202          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
203          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
204          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
205          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
206          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
207          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
208          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
209          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
210          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
211          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
212          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
213          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
214          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
215          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
216          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
217          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
218          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
219          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
220          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
221          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
222          PC       1
223          LG    0.25    0.25     3.5    0.25      30
224          UC   0.233   0.211
             * TIME-AREA 1
225          UA       0       5      16      30      65      77      84      90      94      97
226          UA     100

227          KK    CP22
228          KM         COMBINE 3B1 AND 4A1
229          HC       2
```

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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


230          KK    CP23
231          RS       1    FLOW      -1       0
232          RC    0.03    0.03    0.03     700   0.006       0
             * SOUTH DRAINAGE CHANNEL
233          RX       1       5      10      32      44      49      54      59
234          RY  1300.1 1300.05    1300    1296    1296    1300 1300.05  1300.1

235          KK     4A2
236          KM         SUB-BASIN 4A2
237          BA   0.021
238          PB   3.256
239          IN       6  1JAN94       0
             * typeII-24hour
240          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
241          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
242          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
243          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
```

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244          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
245          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
246          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
247          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
248          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
249          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
250          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
251          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
252          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
253          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
254          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
255          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
256          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
257          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
258          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
259          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
260          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
261          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
262          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
263          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
264          PC       1
265          LG    0.25    0.25     3.5    0.25      30
266          UC   0.208   0.212
             * TIME-AREA 1
267          UA       0       5      16      30      65      77      84      90      94      97
268          UA     100

269          KK    CP24
270          HC       2

271          KK    CP25   CNAME    CP25
272          RS       1    FLOW      -1       0
273          RC    0.03    0.03    0.06     480   0.006       0
             * SOUTH DRAINAGE CHANNEL
274          RX       1       5      10      22      32      44      49      54
275          RY  1300.1 1300.05    1300    1296    1296    1300 1300.05  1300.1
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

276          KK     4R2
277          KM         SUB-BASIN 4R2
278          BA   0.005
279          PB   3.256
280          IN       6  1JAN94       0
             * typeII-24hour
281          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
282          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
283          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
284          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
285          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
286          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
287          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
288          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
289          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
290          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
291          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
292          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
293          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
294          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
295          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
296          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
297          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
298          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
299          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
300          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
301          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
302          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
303          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
304          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
305          PC       1
306          LG    0.05    0.25     3.5    0.25      80
307          UC   0.204   0.401
             * TIME-AREA 1
308          UA       0       5      16      30      65      77      84      90      94      97
309          UA     100

310          KK     4A3
311          KM         SUB-BASIN 4A3
312          BA   0.035
313          PB   3.256
314          IN       6  1JAN94       0
             * typeII-24hour
```

```
315          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
316          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
317          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
318          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
319          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
320          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
321          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
322          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
323          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
324          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
325          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

326          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
327          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
328          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
329          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
330          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
331          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
332          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
333          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
334          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
335          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
336          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
337          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
338          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
339          PC       1
340          LG    0.25    0.25     3.5    0.25      30
341          UC   0.242   0.243
             * TIME-AREA 1
342          UA       0       5      16      30      65      77      84      90      94      97
343          UA     100

344          KK     4G1
345          KM         SUB-BASIN 4G1
346          KO       0       0    0.25
347          BA   0.012
348          PB   3.256
349          IN       6  1JAN94       0
             * typeII-24hour
350          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
351          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
352          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
353          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
354          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
355          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
356          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
357          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
358          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
359          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
360          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
361          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
362          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
363          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
364          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
365          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
366          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
367          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
368          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
369          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
370          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
371          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
372          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
373          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
374          PC       1
375          LG    0.15    0.25     3.5    0.25       5
376          UC   0.213   0.348
             * TIME-AREA 1
```

HEC-1 INPUT PAGE 9

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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

377          UA       0       5      16      30      65      77      84      90      94      97
378          UA     100

379          KK    CP26
380          KM    COMBINE CP25, 4A3, 4G1, AND 4R2
381          HC       4

382          KK     4R1
383          BA   0.001
```

```
384          PB   3.256
385          IN       6  1JAN94       0
             * typeII-24hour
386          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
387          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
388          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
389          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
390          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
391          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
392          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
393          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
394          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
395          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
396          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
397          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
398          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
399          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
400          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
401          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
402          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
403          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
404          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
405          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
406          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
407          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
408          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
409          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
410          PC       1
411          LG    0.05    0.25     3.5    0.25      80
412          UC   0.138    0.25
             * TIME-AREA 1
413          UA       0       5      16      30      65      77      84      90      94      97
414          UA     100

415          KK    CP27   CNAME    CP27
416          HC       2

417          KK     4A9
418          KM         SUB-BASIN 4A9
419          BA    0.01
420          PB   3.256
421          IN       6  1JAN94       0
             * typeII-24hour
422          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
423          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
424          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

425          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
426          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
427          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
428          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
429          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
430          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
431          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
432          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
433          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
434          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
435          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
436          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
437          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
438          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
439          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
440          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
441          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
442          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
443          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
444          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
445          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
446          PC       1
447          LG    0.25     0.2    5.85   0.145      50
448          UC   0.129    0.09
             * TIME-AREA 1
449          UA       0       5      16      30      65      77      84      90      94      97
450          UA     100

451          KK     4R3
452          KM         SUB-BASIN 4R3
453          BA   0.011
454          PB   3.256
455          IN       6  1JAN94       0
             * typeII-24hour
```

```
456          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
457          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
458          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
459          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
460          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
461          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
462          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
463          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
464          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
465          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
466          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
467          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
468          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
469          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
470          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
471          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
472          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
473          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
474          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
475          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
476          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

477          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
478          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
479          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
480          PC       1
481          LG    0.05    0.15     8.2    0.04      80
482          UC   0.188    0.65
             * TIME-AREA 1
483          UA       0       5      16      30      65      77      84      90      94      97
484          UA     100

485          KK    CP28   CNAME   CP 28
486          HC       3

487          KK     2G2
488          BA   0.005
489          PB   3.256
490          IN       6  1JAN94       0
             * typeII-24hour
491          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
492          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
493          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
494          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
495          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
496          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
497          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
498          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
499          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
500          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
501          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
502          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
503          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
504          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
505          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
506          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
507          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
508          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
509          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
510          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
511          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
512          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
513          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
514          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
515          PC       1
516          LG    0.15    0.15     8.2    0.04       5
517          UC   0.083   0.063
             * TIME-AREA 1
518          UA       0       5      16      30      65      77      84      90      94      97
519          UA     100

520          KK     2B3   CNAME     13C
521          RS       1    ELEV    1316       0
             * VOL 2B3
522          SV       0    0.21     0.6    1.17    1.92
             * Q 2B3
523          SQ       0       0       0       0       0       0
             * ELEV 3B1
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 524          SE    1316    1317    1318    1319    1320

 525          KK     2A1
 526          KM            SUB-BASIN 2A1
 527          BA   0.016
 528          PB   3.256
 529          IN       6  1JAN94       0
              * typeII-24hour
 530          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
 531          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
 532          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
 533          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
 534          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
 535          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
 536          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
 537          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
 538          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
 539          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
 540          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
 541          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
 542          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
 543          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
 544          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
 545          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
 546          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
 547          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
 548          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
 549          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
 550          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
 551          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
 552          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
 553          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
 554          PC       1
 555          LG    0.25    0.25     3.5    0.25      30
 556          UC    0.26   0.292
              * TIME-AREA 1
 557          UA       0       5      16      30      65      77      84      90      94      97
 558          UA     100

 559          KK     2B1   CNAME     14C
 560          KM            ROUTE RUNOFF FROM 2A1 THROUGH 2B1
 561          RS       1    ELEV    1323       0
              * VOL 2B1
 562          SV       0    0.32    0.66    1.02     1.4
              * Q 2B1
 563          SQ       0       0       0       0      16
              * ELEV 2B1
 564          SE    1323    1324    1325    1326    1327

 565          KK     2A3
 566          BA   0.021
 567          PB   3.256
 568          IN       6  1JAN94       0
              * typeII-24hour
 569          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 570          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
 571          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
 572          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
 573          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
 574          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
 575          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
 576          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
 577          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
 578          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
 579          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
 580          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
 581          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
 582          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
 583          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
 584          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
 585          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
 586          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
 587          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
 588          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
 589          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
 590          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
 591          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
 592          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
```

```
593          PC       1
594          LG    0.25    0.25     3.5    0.25      30
595          UC   0.183   0.146
             * TIME-AREA 1
596          UA       0       5      16      30      65      77      84      90      94      97
597          UA     100

598          KK     2A2
599          BA   0.035
600          PB   3.256
601          IN       6  1JAN94       0
             * typeII-24hour
602          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
603          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
604          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
605          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
606          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
607          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
608          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
609          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
610          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
611          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
612          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
613          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
614          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
615          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
616          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
617          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
618          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
619          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
620          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
621          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

622          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
623          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
624          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
625          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
626          PC       1
627          LG    0.25    0.25     4.3     0.4      30
628          UC   0.242   0.218
             * TIME-AREA 1
629          UA       0       5      16      30      65      77      84      90      94      97
630          UA     100

631          KK     CP2   CNAME     CP2
632          HC       3

633          KK     2R1
634          KM            SUB-BASIN 2R1
635          BA   0.004
636          PB   3.256
637          IN       6  1JAN94       0
             * typeII-24hour
638          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
639          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
640          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
641          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
642          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
643          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
644          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
645          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
646          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
647          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
648          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
649          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
650          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
651          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
652          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
653          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
654          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
655          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
656          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
657          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
658          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
659          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
660          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
661          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
662          PC       1
663          LG    0.05    0.25     3.5    0.25      80
664          UC   0.279   0.645
             * TIME-AREA 1
```

```
665          UA       0       5      16      30      65      77      84      90      94      97
666          UA     100
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

667          KK     2A4
668          KM            SUB-BASIN 2A4
669          BA   0.025
670          PB   3.256
671          IN       6  1JAN94       0
             * typeII-24hour
672          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
673          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
674          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
675          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
676          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
677          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
678          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
679          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
680          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
681          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
682          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
683          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
684          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
685          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
686          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
687          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
688          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
689          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
690          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
691          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
692          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
693          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
694          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
695          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
696          PC       1
697          LG    0.25    0.25     3.5    0.25      30
698          UC   0.246   0.231
             * TIME-AREA 1
699          UA       0       5      16      30      65      77      84      90      94      97
700          UA     100

701          KK     CP3   CNAME     CP3
702          HC       3

703          KK     2G1
704          BA   0.038
705          PB   3.256
706          IN       6  1JAN94       0
             * typeII-24hour
707          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
708          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
709          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
710          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
711          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
712          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
713          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
714          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
715          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

716          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
717          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
718          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
719          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
720          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
721          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
722          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
723          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
724          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
725          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
726          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
727          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
728          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
729          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
730          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
731          PC       1
732          LG    0.15     0.2    5.85   0.145       5
733          UC   0.217   0.223
```

```
                * TIME-AREA 1
 734            UA       0       5      16      30      65      77      84      90      94      97
 735            UA     100

 736            KK     CP4   CNAME     2B2
 737            HC       2

 738            KK     2B2
                * RESERVOIR STORAGE
 739            KM            COMBINE CP3 AND 2G1
 740            RS       1    ELEV    1312       0
                * VOL 2B2
 741            SV       0   0.045    1.63    3.96    7.35   11.76   17.15
                * 2B2
 742            SQ       0       0       0       0       0       0       0
                * ELEV 2B2
 743            SE    1312    1313    1314    1315    1316    1317    1318

 744            KK     2R2
 745            BA   0.005
 746            PB   3.256
 747            IN       6  1JAN94       0
                * typeII-24hour
 748            PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
 749            PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
 750            PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
 751            PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
 752            PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
 753            PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
 754            PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
 755            PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
 756            PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
 757            PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
 758            PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
 759            PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
 760            PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
 761            PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 762            PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
 763            PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
 764            PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
 765            PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
 766            PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
 767            PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
 768            PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
 769            PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
 770            PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
 771            PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
 772            PC       1
 773            LG    0.05    0.25     3.5    0.25      80
 774            UC   0.254   0.732
                * TIME-AREA 1
 775            UA       0       5      16      30      65      77      84      90      94      97
 776            UA     100

 777            KK     2G3
 778            BA   0.007
 779            PB   3.256
 780            IN       6  1JAN94       0
                * typeII-24hour
 781            PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
 782            PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
 783            PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
 784            PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
 785            PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
 786            PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
 787            PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
 788            PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
 789            PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
 790            PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
 791            PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
 792            PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
 793            PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
 794            PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
 795            PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
 796            PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
 797            PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
 798            PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
 799            PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
 800            PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
 801            PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
```

```
802          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
803          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
804          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
805          PC       1
806          LG    0.15    0.15     8.2    0.04       5
807          UC   0.112   0.104
             * TIME-AREA 1
808          UA       0       5      16      30      65      77      84      90      94      97
809          UA     100
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

810          KK     CP5
811          KM     COMBINE 2G3 AND 2R2
812          HC       2

813          KK     2B4
814          KM     ROUTE CP6 THROUGH BASIN 2B4
815          RS       1    ELEV    1312       0
             * VOL 2B4
816          SV       0    0.25    0.61    1.09    1.69
             * Q 2B3
817          SQ       0       0       0       0       0       0
             * ELEV 2B4
818          SE    1312    1313    1314    1315    1316

819          KK     CP6   CNAME     CP6
820          HC       3

821          KK     2A5
822          BA   0.017
823          PB   3.256
824          IN       6  1JAN94       0
             * typeII-24hour
825          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
826          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
827          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
828          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
829          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
830          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
831          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
832          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
833          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
834          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
835          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
836          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
837          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
838          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
839          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
840          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
841          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
842          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
843          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
844          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
845          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
846          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
847          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
848          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
849          PC       1
850          LG    0.25    0.25     3.5    0.25      30
851          UC     0.2   0.181
             * TIME-AREA 1
852          UA       0       5      16      30      65      77      84      90      94      97
853          UA     100
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

854          KK     CP7   CNAME     CP7
855          RS       1    FLOW      -1       0
856          RC    0.03   0.025    0.03     450  0.0035       0
             * CP7, CP9 & CP18
857          RX       1       5      10      25      34      39      44      49
858          RY  1300.2  1300.1    1300    1296    1297    1300  1300.1  1300.2

859          KK     2A6
860          BA   0.013
861          PB   3.256
862          IN       6  1JAN94       0
             * typeII-24hour
```

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863          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
864          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
865          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
866          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
867          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
868          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
869          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
870          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
871          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
872          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
873          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
874          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
875          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
876          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
877          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
878          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
879          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
880          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
881          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
882          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
883          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
884          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
885          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
886          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
887          PC       1
888          LG    0.25    0.25     3.9   0.325      30
889          UC   0.167   0.139
             * TIME-AREA 1
890          UA       0       5      16      30      65      77      84      90      94      97
891          UA     100

892          KK     CP8   CNAME     CP9
893          HC       2

894          KK     CP9   CNAME     CP9
895          RS       1    FLOW      -1       0
896          RC    0.03    0.03   0.025     700  0.0035       0
             * CP7, CP9 & CP18
897          RX       1       5      10      25      34      39      44      49
898          RY  1300.2  1300.1    1300    1296    1297    1300  1300.1  1300.2
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

899          KK     2A7
900          BA   0.016
901          PB   3.256
902          IN       6  1JAN94       0
             * typeII-24hour
903          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
904          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
905          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
906          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
907          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
908          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
909          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
910          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
911          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
912          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
913          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
914          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
915          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
916          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
917          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
918          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
919          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
920          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
921          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
922          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
923          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
924          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
925          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
926          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
927          PC       1
928          LG    0.25    0.25     3.9   0.325      30
929          UC   0.183   0.151
             * TIME-AREA 1
930          UA       0       5      16      30      65      77      84      90      94      97
931          UA     100

932          KK    CP10   CNAME     25R
933          HC       2
```

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934          KK     2A8
935          BA   0.022
936          PB   3.256
937          IN       6  1JAN94       0
             * typeII-24hour
938          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
939          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
940          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
941          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
942          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
943          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
944          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
945          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
946          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
947          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

948          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
949          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
950          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
951          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
952          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
953          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
954          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
955          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
956          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
957          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
958          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
959          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
960          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
961          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
962          PC       1
963          LG    0.25    0.25     4.3     0.4      30
964          UC   0.208   0.182
             * TIME-AREA 1
965          UA       0       5      16      30      65      77      84      90      94      97
966          UA     100

967          KK    CP11   CNAME     24R
968          HC       2

969          KK     2G4
970          BA   0.059
971          PB   3.256
972          IN       6  1JAN94       0
             * typeII-24hour
973          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
974          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
975          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
976          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
977          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
978          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
979          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
980          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
981          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
982          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
983          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
984          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
985          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
986          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
987          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
988          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
989          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
990          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
991          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
992          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
993          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
994          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
995          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
996          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
997          PC       1
998          LG    0.15     0.2    6.25    0.22       5
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

999          UC   0.404   0.421
             * TIME-AREA 1
1000         UA       0       5      16      30      65      77      84      90      94      97
1001         UA     100
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1002          KK    CP12   CNAME    CP12
1003          HC       2

1004          KK     2R3
1005          BA   0.012
1006          PB   3.256
1007          IN       6  1JAN94       0
              * typeII-24hour
1008          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
1009          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
1010          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
1011          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
1012          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
1013          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
1014          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
1015          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
1016          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
1017          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
1018          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
1019          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
1020          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
1021          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
1022          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
1023          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
1024          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
1025          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
1026          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
1027          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
1028          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
1029          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
1030          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
1031          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
1032          PC       1
1033          LG    0.05    0.25     3.9   0.325      80
1034          UC   0.338   0.928
              * TIME-AREA 1
1035          UA       0       5      16      30      65      77      84      90      94      97
1036          UA     100

1037          KK     2A9
1038          BA   0.019
1039          PB   3.256
1040          IN       6  1JAN94       0
              * typeII-24hour
1041          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
1042          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
1043          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
1044          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
1045          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
1046          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1047          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
1048          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
1049          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
1050          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
1051          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
1052          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
1053          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
1054          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
1055          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
1056          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
1057          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
1058          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
1059          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
1060          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
1061          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
1062          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
1063          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
1064          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
1065          PC       1
1066          LG    0.25     0.2    5.85   0.145      30
1067          UC   0.233    0.21
              * TIME-AREA 1
1068          UA       0       5      16      30      65      77      84      90      94      97
1069          UA     100

1070          KK    CP13   CNAME    CP13
1071          HC       2

1072          KK     2G5
1073          BA   0.013
```

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1074          PB   3.256
1075          IN       6  1JAN94       0
              * typeII-24hour
1076          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
1077          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
1078          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
1079          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
1080          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
1081          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
1082          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
1083          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
1084          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
1085          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
1086          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
1087          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
1088          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
1089          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
1090          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
1091          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
1092          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
1093          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
1094          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
1095          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
1096          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
1097          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1098          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
1099          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
1100          PC       1
1101          LG    0.15    0.15     8.2    0.04       5
1102          UC   0.175   0.132
              * TIME-AREA 1
1103          UA       0       5      16      30      65      77      84      90      94      97
1104          UA     100

1105          KK    CP14   CNAME    CP14
1106          HC       2

1107          KK    2A10
1108          BA   0.011
1109          PB   3.256
1110          IN       6  1JAN94       0
              * typeII-24hour
1111          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
1112          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
1113          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
1114          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
1115          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
1116          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
1117          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
1118          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
1119          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
1120          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
1121          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
1122          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
1123          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
1124          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
1125          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
1126          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
1127          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
1128          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
1129          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
1130          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
1131          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
1132          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
1133          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
1134          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
1135          PC       1
1136          LG    0.25    0.15     8.2    0.04      30
1137          UC    0.15   0.086
              * TIME-AREA 1
1138          UA       0       5      16      30      65      77      84      90      94      97
1139          UA     100

1140          KK    CP15   CNAME    CP15
1141          HC       2
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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1142          KK    CP16   CNAME     2B5
1143          HC       2

1144          KK     2B5   CNAME    CP16
1145          KM         COMBINE CP7 AND 2B4
1146          RS       1    ELEV    1306       0
              * VOL 2B5
1147          SV       0    1.42    3.63    6.65   10.52   15.75   22.83
              * Q 2B5
1148          SQ       0       0       0       0       0       0     140
              * ELEV 2B5
1149          SE    1306    1307    1308    1309    1310    1311    1312

1150          KK    CP17   CNAME    CP17
1151          HC       2

1152          KK    CP29   CNAME   CP 29
1153          HC       2

1154          KK     4A4
1155          KM         SUB-BASIN 4A4
1156          BA    0.03
1157          PB   3.256
1158          IN       6  1JAN94       0
              * typeII-24hour
1159          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
1160          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
1161          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
1162          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
1163          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
1164          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
1165          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
1166          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
1167          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
1168          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
1169          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
1170          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
1171          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
1172          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
1173          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
1174          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
1175          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
1176          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
1177          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
1178          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
1179          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
1180          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
1181          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
1182          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
1183          PC       1
1184          LG    0.25    0.25     3.9   0.325      30
1185          UC   0.192   0.153
              * TIME-AREA 1
1186          UA       0       5      16      30      65      77      84      90      94      97
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1187          UA     100

1188          KK     4B1
              * RESERVOIR STORAGE
1189          RS       1    ELEV    1311       0
              * VOL 4B1
1190          SV       0    0.68    1.42    2.22    3.08
              * Q 4B1
1191          SQ       0       0       0       0    38.4
              * ELEV 4B1
1192          SE    1311    1312    1313    1314    1315

1193          KK     4B1   CNAME     33C
1194          RN     4B1

1195          KK     4A5
1196          KM         SUB-BASIN 4A5
1197          BA   0.015
1198          PB   3.256
1199          IN       6  1JAN94       0
              * typeII-24hour
1200          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
1201          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
1202          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
1203          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
```

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1204          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
1205          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
1206          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
1207          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
1208          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
1209          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
1210          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
1211          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
1212          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
1213          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
1214          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
1215          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
1216          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
1217          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
1218          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
1219          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
1220          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
1221          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
1222          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
1223          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
1224          PC       1
1225          LG    0.25    0.25     3.9   0.325      30
1226          UC   0.192   0.186
              * TIME-AREA 1
1227          UA       0       5      16      30      65      77      84      90      94      97
1228          UA     100
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1229          KK    CP30
1230          KM         COMBINE 4A5 AND 4B1
1231          HC       2

1232          KK     4B2
1233          KM         ROUTE CP28 THROUGH BASIN 4B2
1234          RS       1    ELEV  1306.8       0
              * VOL 4B2
1235          SV       0     0.5    1.06    1.68    2.36
              * Q 4B2
1236          SQ       0       0       0       0      32
              * ELEV 4B2
1237          SE  1306.8  1307.8  1308.8  1309.8  1310.8

1238          KK     4A6
1239          KM         SUB-BASIN 4A6
1240          BA    0.03
1241          PB   3.256
1242          IN       6  1JAN94       0
              * typeII-24hour
1243          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
1244          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
1245          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
1246          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
1247          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
1248          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
1249          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
1250          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
1251          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
1252          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
1253          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
1254          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
1255          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
1256          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
1257          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
1258          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
1259          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
1260          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
1261          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
1262          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
1263          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
1264          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
1265          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
1266          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
1267          PC       1
1268          LG    0.25    0.25     3.9   0.325      30
1269          UC   0.221   0.163
              * TIME-AREA 1
1270          UA       0       5      16      30      65      77      84      90      94      97
1271          UA     100
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1272          KK    CP31
1273          KM         COMBINE 4B2 AND 4A6
1274          HC       2

1275          KK     4B3
1276          KM         ROUTE CP29 THROUGH BASIN 4B3
1277          RS       1    ELEV  1303.8       0
              * VOL 4B3
1278          SV       0     0.8    1.72    2.76    3.92
              * Q 4B3
1279          SQ       0       0       0       0     9.6
              * ELEV 4B3
1280          SE  1303.8  1304.8  1305.8  1306.8  1307.8

1281          KK     4A7
1282          KM         SUB-BASIN 4A7
1283          BA   0.041
1284          PB   3.256
1285          IN       6  1JAN94       0
              * typeII-24hour
1286          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
1287          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
1288          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
1289          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
1290          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
1291          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
1292          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
1293          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
1294          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
1295          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
1296          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
1297          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
1298          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
1299          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
1300          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
1301          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
1302          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
1303          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
1304          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
1305          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
1306          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
1307          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
1308          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
1309          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
1310          PC       1
1311          LG    0.25     0.1    10.3   0.025      30
1312          UC   0.296    0.29
              * TIME-AREA 1
1313          UA       0       5      16      30      65      77      84      90      94      97
1314          UA     100
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1315          KK    CP32   CNAME     4B4
1316          HC       2

1317          KK     4B4   CNAME    CP32
1318          KM         COMBINE 4A7 AND 4B3
1319          KM         ROUTE CP30 THROUGH BASIN 4B4
1320          RS       1    ELEV    1302       0
              * VOL 4B4
1321          SV       0    0.87    1.88    3.03    4.32
              * Q 4B4
1322          SQ       0       0       0       0    4.32
              * 1302.0ELEV 4B4
1323          SE    1302    1303    1304    1305    1306

1324          KK     4A8
1325          KM         SUB-BASIN 4A8
1326          BA   0.019
1327          PB   3.256
1328          IN       6  1JAN94       0
              * typeII-24hour
1329          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
1330          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
1331          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
1332          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
1333          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
1334          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
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1335          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
1336          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
1337          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
1338          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
1339          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
1340          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
1341          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
1342          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
1343          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
1344          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
1345          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
1346          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
1347          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
1348          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
1349          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
1350          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
1351          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
1352          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
1353          PC       1
1354          LG    0.25    0.15     8.2    0.04      30
1355          UC   0.158   0.126
              * TIME-AREA 1
1356          UA       0       5      16      30      65      77      84      90      94      97
1357          UA     100
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1358          KK    CP33   CNAME    CP33
1359          HC       2

1360          KK     4G2
1361          KM         SUB-BASIN 4G2
1362          BA    0.04
1363          PB   3.256
1364          IN       6  1JAN94       0
              * typeII-24hour
1365          PC       0   0.001   0.002  0.0031  0.0041  0.0051  0.0062  0.0073  0.0083  0.0094
1366          PC  0.0105  0.0116  0.0127  0.0138   0.015  0.0161  0.0173  0.0185  0.0196  0.0208
1367          PC   0.022  0.0232  0.0244  0.0256  0.0269  0.0281  0.0294  0.0307  0.0319  0.0332
1368          PC  0.0345  0.0358  0.0371  0.0384  0.0398  0.0411  0.0425  0.0439  0.0452  0.0466
1369          PC   0.048  0.0494  0.0508  0.0523  0.0538  0.0553  0.0568  0.0583  0.0598  0.0614
1370          PC   0.063  0.0646  0.0662  0.0679  0.0696  0.0712   0.073  0.0747  0.0764  0.0782
1371          PC    0.08  0.0818  0.0836  0.0855  0.0874  0.0892  0.0912  0.0931   0.095   0.097
1372          PC   0.099   0.101   0.103  0.1051  0.1072  0.1093  0.1114  0.1135  0.1156  0.1178
1373          PC    0.12  0.1223  0.1246  0.1271  0.1296  0.1323   0.135  0.1379  0.1408  0.1439
1374          PC   0.147  0.1502  0.1534  0.1566  0.1598   0.163  0.1663  0.1697  0.1733  0.1771
1375          PC   0.181  0.1851  0.1895  0.1941  0.1989   0.204  0.2094  0.2152  0.2214   0.228
1376          PC   0.235  0.2427  0.2513  0.2609  0.2715   0.283  0.3068  0.3544  0.4308  0.5679
1377          PC   0.663   0.682  0.6986   0.713  0.7252   0.735  0.7434  0.7514  0.7588  0.7656
1378          PC   0.772   0.778  0.7836   0.789  0.7942   0.799  0.8036   0.808  0.8122  0.8162
1379          PC    0.82  0.8237  0.8273  0.8308  0.8342  0.8376  0.8409  0.8442  0.8474  0.8505
1380          PC  0.8535  0.8565  0.8594  0.8622  0.8649  0.8676  0.8702  0.8728  0.8753  0.8777
1381          PC    0.88  0.8823  0.8845  0.8868   0.889  0.8912  0.8933  0.8955  0.8976  0.8997
1382          PC  0.9018  0.9038  0.9058  0.9078  0.9097  0.9117  0.9136  0.9155  0.9174  0.9192
1383          PC   0.921  0.9228  0.9245  0.9263   0.928  0.9297  0.9314   0.933  0.9346  0.9362
1384          PC  0.9377  0.9393  0.9408  0.9423  0.9437  0.9452  0.9466   0.948  0.9494  0.9507
1385          PC   0.952  0.9533  0.9546  0.9559  0.9572  0.9584  0.9597   0.961  0.9622  0.9635
1386          PC  0.9648   0.966  0.9672  0.9685  0.9697  0.9709  0.9722  0.9734  0.9746  0.9758
1387          PC   0.977  0.9782  0.9794  0.9806  0.9818  0.9829  0.9841  0.9853  0.9864  0.9876
1388          PC  0.9888  0.9899   0.991  0.9922  0.9933  0.9944  0.9956  0.9967  0.9978  0.9989
1389          PC       1
1390          LG    0.15    0.15     8.2    0.04       5
1391          UC   0.233   0.185
              * TIME-AREA 1
1392          UA       0       5      16      30      65      77      84      90      94      97
1393          UA     100

1394          KK    CP34   CNAME    CP34
1395          HC       2

1396          KK    CP35   CNAME     4B5
1397          HC       2

1398          KK     4B5   CNAME    CP35
1399          KM         COMBINE CP34 AND CP29
1400          KM         ROUTE CP35 THROUGH BASIN 4B5
1401          RS       1    ELEV    1300       0
              * Vol 4B5
1402          SV       0    1.78    4.24    7.87   12.88   19.01   22.39      26
              * OQ 4B5
1403          SQ       0       0       0       0       0       0       0      63
              * Elev 4B5
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1404          SE    1300    1301    1302    1303    1304    1305  1305.5    1306

1405          KK   C3OF1   CNAME   C3OF1
1406          KM      INPUT HYDROGRAPH FROM OFFSITE 104B USNING
1407          KM      QI CARDS WITH A TIME NCREMENT OF 15 MINUTES.  Q100 = 394 CFS
1408          KM      AT TIME TO PEAK OF 4-HOURS, 15-MINUTES
1409          KM
1410          BA       0
1411          IN      15  1JAN94       0
1412          QI       0       0       0       0       0       0       0       0       0       0
1413          QI       0       0       0       0      10     181     394     177      65      24
1414          QI       9       3       1       0

1415          KK    CP36
1416          KM    DIVERT 30 CFS INTO HAPPY TRAILS
1417          DT    DIV1
1418          DI       0     394
1419          DQ       0      30

1420          KK    CP37
1421          KM    DIVERT 71 CFS INTO HAPPY TRAILS
1422          DT    DIV2
1423          DI       0     364
1424          DQ       0      76

1425          KK    CP38
1426          KM    DIVERT 123 CFS INTO HAPPY TRAILS
1427          DT    DIV3
1428          DI       0     288
1429          DQ       0     126

1430          KK    CP39   CNAME    CP39
1431          HC       2
1432          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  6        3A1
             V
             V
 39       CP 18
             .
             .
 44          .         3A2
             .           .
             .           .
 78       CP19............
             .
             .
 81          .         3A3
             .           .
             .           .
115       CP20............
             .
             .
117          .         3G1
             .           .
             .           .
151          .           .         3A4
             .           .           .
             .           .           .
185       CP21........................
             V
             V
188        3B1
             .
             .
193          .         4A1
             .           .
             .           .
227       CP22............
             V
             V
230       CP23
             .
             .
```

```
235          .        4A2
             .          .
             .          .
269       CP24...........
             V
             V
271       CP25
             .
             .
276          .        4R2
             .          .
             .          .
310          .          .        4A3
             .          .          .
             .          .          .
344          .          .          .        4G1
             .          .          .          .
             .          .          .          .
379       CP26.................................
             .
             .
382          .        4R1
             .          .
             .          .
415       CP27...........
             .
             .
417          .        4A9
             .          .
             .          .
451          .          .        4R3
             .          .          .
             .          .          .
485       CP28......................
             .
             .
487          .        2G2
             .          V
             .          V
520          .        2B3
             .          .
             .          .
525          .          .        2A1
             .          .          V
             .          .          V
559          .          .        2B1
             .          .          .
             .          .          .
565          .          .          .        2A3
             .          .          .          .
             .          .          .          .
598          .          .          .          .        2A2
             .          .          .          .          .
             .          .          .          .          .
631          .          .        CP2........................
             .          .          .
             .          .          .
633          .          .          .        2R1
             .          .          .          .
             .          .          .          .
667          .          .          .          .        2A4
             .          .          .          .          .
             .          .          .          .          .
701          .          .        CP3........................
             .          .          .
             .          .          .
703          .          .          .        2G1
             .          .          .          .
             .          .          .          .
736          .          .        CP4............
             .          .          V
             .          .          V
738          .          .        2B2
             .          .          .
             .          .          .
744          .          .          .        2R2
             .          .          .          .
             .          .          .          .
777          .          .          .          .        2G3
             .          .          .          .          .
             .          .          .          .          .
810          .          .          .        CP5............
             .          .          .          V
             .          .          .          V
813          .          .          .        2B4
```

```
                 .          .          .          .
                 .          .          .          .
 819             .       CP6.......................
                 .          .
                 .          .
 821             .          .       2A5
                 .          .         V
                 .          .         V
 854             .          .       CP7
                 .          .          .
                 .          .          .
 859             .          .          .       2A6
                 .          .          .         .
                 .          .          .         .
 892             .          .       CP8............
                 .          .         V
                 .          .         V
 894             .          .       CP9
                 .          .          .
                 .          .          .
 899             .          .          .       2A7
                 .          .          .         .
                 .          .          .         .
 932             .          .      CP10............
                 .          .          .
                 .          .          .
 934             .          .          .       2A8
                 .          .          .         .
                 .          .          .         .
 967             .          .      CP11............
                 .          .          .
                 .          .          .
 969             .          .          .       2G4
                 .          .          .         .
                 .          .          .         .
1002             .          .      CP12............
                 .          .          .
                 .          .          .
1004             .          .          .       2R3
                 .          .          .         .
                 .          .          .         .
1037             .          .          .         .         2A9
                 .          .          .         .           .
                 .          .          .         .           .
1070             .          .          .      CP13............
                 .          .          .         .
                 .          .          .         .
1072             .          .          .         .         2G5
                 .          .          .         .           .
                 .          .          .         .           .
1105             .          .          .      CP14............
                 .          .          .         .
                 .          .          .         .
1107             .          .          .         .        2A10
                 .          .          .         .           .
                 .          .          .         .           .
1140             .          .          .      CP15............
                 .          .          .         .
                 .          .          .         .
1142             .          .      CP16............
                 .          .          .
                 .          .          .
1144             .          .       2B5
                 .          .          .
                 .          .          .
1150             .       CP17............
                 .          .
                 .          .
1152          CP29............
                 .
                 .
1154             .       4A4
                 .         V
                 .         V
1188             .       4B1
                 .         V
                 .         V
1193             .       4B1
                 .          .
                 .          .
1195             .          .       4A5
                 .          .          .
                 .          .          .
1229             .       CP30............
                 .         V
```

```
                 .          V
 1232            .        4B2
                 .          .
                 .          .
 1238            .          .         4A6
                 .          .           .
                 .          .           .
 1272            .       CP31............
                 .          V
                 .          V
 1275            .        4B3
                 .          .
                 .          .
 1281            .          .         4A7
                 .          .           .
                 .          .           .
 1315            .       CP32............
                 .          V
                 .          V
 1317            .        4B4
                 .          .
                 .          .
 1324            .          .         4A8
                 .          .           .
                 .          .           .
 1358            .       CP33............
                 .          .
                 .          .
 1360            .          .         4G2
                 .          .           .
                 .          .           .
 1394            .       CP34............
                 .          .
                 .          .
 1396         CP35............
                 V
                 V
 1398          4B5
                 .
                 .
 1405            .      C3OF1
                 .          .
                 .          .
 1417            .          .-------->    DIV1
 1415            .       CP36
                 .          .
                 .          .
 1422            .          .-------->    DIV2
 1420            .       CP37
                 .          .
                 .          .
 1427            .          .-------->    DIV3
 1425            .       CP38
                 .          .
                 .          .
 1430         CP39............
```

```
 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************
 *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
 *             MAY   1991               *
 *           VERSION 4.0.1E             *
 *                                      *
 *  RUN DATE            TIME            *
 *                                      *
 ****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748             *
*                                      *
****************************************
```

ARIZONA TRADITIONS HEC-1 MODEL

```
  5 IO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN           5  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1JAN94  STARTING DATE
                      ITIME        0000  STARTING TIME
                         NQ         300  NUMBER OF HYDROGRAPH ORDINATES
```

```
                NDDATE      2JAN94  ENDING DATE
                NDTIME        0055  ENDING TIME
                ICENT           19  CENTURY MARK

            COMPUTATION INTERVAL     .08 HOURS
                TOTAL TIME BASE   24.92 HOURS

      ENGLISH UNITS
           DRAINAGE AREA          SQUARE MILES
           PRECIPITATION DEPTH    INCHES
           LENGTH, ELEVATION      FEET
           FLOW                   CUBIC FEET PER SECOND
           STORAGE VOLUME         ACRE-FEET
           SURFACE AREA           ACRES
           TEMPERATURE            DEGREES FAHRENHEIT


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
344 KK    *       4G1  *
          *            *
          **************

346 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          5  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
```

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	3A1	29.	12.00	3.	1.	1.	.02		
+	ROUTED TO	CP 18	26.	12.08	3.	1.	1.	.02	1297.38	12.08
+	HYDROGRAPH AT	3A2	26.	12.00	3.	1.	1.	.01		
+	2 COMBINED AT	CP19	48.	12.00	6.	2.	2.	.03		
+	HYDROGRAPH AT	3A3	24.	12.00	2.	1.	1.	.01		
+	2 COMBINED AT	CP20	72.	12.00	8.	2.	2.	.04		
+	HYDROGRAPH AT	3G1	28.	12.17	3.	1.	1.	.03		
+	HYDROGRAPH AT	3A4	39.	12.00	3.	1.	1.	.02		
+	3 COMBINED AT	CP21	133.	12.00	14.	4.	4.	.09		
+	ROUTED TO	3B1	0.	.00	0.	0.	0.	.09	1318.48	24.83
+	HYDROGRAPH AT	4A1	51.	12.08	5.	2.	2.	.04		
+	2 COMBINED AT	CP22	51.	12.08	5.	2.	2.	.13		
+	ROUTED TO	CP23	50.	12.08	5.	2.	2.	.13	1296.98	12.08
+	HYDROGRAPH AT	4A2	30.	12.00	3.	1.	1.	.02		

+	2 COMBINED AT	CP24	79.	12.08	8.	3.	2.	.15	
+	ROUTED TO	CP25	78.	12.08	8.	3.	2.	.15	1297.38 12.08
+	HYDROGRAPH AT	4R2	6.	12.08	1.	0.	0.	.00	
+	HYDROGRAPH AT	4A3	47.	12.08	5.	2.	2.	.04	
+	HYDROGRAPH AT	4G1	13.	12.08	1.	0.	0.	.01	
+	4 COMBINED AT	CP26	144.	12.08	16.	5.	5.	.20	
+	HYDROGRAPH AT	4R1	2.	12.00	0.	0.	0.	.00	
+	2 COMBINED AT	CP27	145.	12.08	16.	5.	5.	.20	
+	HYDROGRAPH AT	4A9	21.	12.00	2.	1.	1.	.01	
+	HYDROGRAPH AT	4R3	10.	12.08	3.	1.	1.	.01	
+	3 COMBINED AT	CP28	171.	12.08	21.	6.	6.	.23	
+	HYDROGRAPH AT	2G2	11.	12.00	1.	0.	0.	.00	
+	ROUTED TO	2B3	0.	.00	0.	0.	0.	.00	1317.64 24.08
+	HYDROGRAPH AT	2A1	20.	12.08	2.	1.	1.	.02	
+	ROUTED TO	2B1	3.	12.83	1.	0.	0.	.02	1326.19 12.83
+	HYDROGRAPH AT	2A3	35.	12.00	3.	1.	1.	.02	
+	HYDROGRAPH AT	2A2	45.	12.08	5.	1.	1.	.04	
+	3 COMBINED AT	CP2	77.	12.00	8.	3.	2.	.07	
+	HYDROGRAPH AT	2R1	4.	12.17	1.	0.	0.	.00	
+	HYDROGRAPH AT	2A4	34.	12.08	4.	1.	1.	.03	
+	3 COMBINED AT	CP3	114.	12.08	13.	4.	4.	.10	
+	HYDROGRAPH AT	2G1	53.	12.08	5.	1.	1.	.04	
+	2 COMBINED AT	CP4	167.	12.08	18.	5.	5.	.14	
+	ROUTED TO	2B2	0.	.00	0.	0.	0.	.14	1316.71 24.92
+	HYDROGRAPH AT	2R2	4.	12.17	1.	0.	0.	.00	
+	HYDROGRAPH AT	2G3	15.	12.00	1.	0.	0.	.01	
	2 COMBINED AT	CP5	18.	12.00	2.	1.	1.	.01	

+	ROUTED TO	2B4	0.	.00	0.	0.	0.	.01	
+									1315.49 24.92
+	3 COMBINED AT	CP6	0.	.00	0.	0.	0.	.16	
+	HYDROGRAPH AT	2A5	26.	12.00	3.	1.	1.	.02	
+	ROUTED TO	CP7	26.	12.08	3.	1.	1.	.02	
+									1297.23 12.08
+	HYDROGRAPH AT	2A6	22.	12.00	2.	1.	1.	.01	
+	2 COMBINED AT	CP8	45.	12.00	4.	1.	1.	.03	
+	ROUTED TO	CP9	44.	12.08	4.	1.	1.	.03	
+									1297.64 12.08
+	HYDROGRAPH AT	2A7	26.	12.00	2.	1.	1.	.02	
+	2 COMBINED AT	CP10	67.	12.08	7.	2.	2.	.05	
+	HYDROGRAPH AT	2A8	30.	12.00	3.	1.	1.	.02	
+	2 COMBINED AT	CP11	97.	12.08	10.	3.	3.	.07	
+	HYDROGRAPH AT	2G4	52.	12.17	7.	2.	2.	.06	
+	2 COMBINED AT	CP12	146.	12.08	16.	5.	4.	.13	
	HYDROGRAPH AT	2R3	8.	12.17	3.	1.	1.	.01	
+	HYDROGRAPH AT	2A9	28.	12.08	3.	1.	1.	.02	
+	2 COMBINED AT	CP13	36.	12.08	6.	2.	2.	.03	
+	HYDROGRAPH AT	2G5	25.	12.00	2.	1.	1.	.01	
+	2 COMBINED AT	CP14	58.	12.00	8.	2.	2.	.04	
+	HYDROGRAPH AT	2A10	24.	12.00	2.	1.	1.	.01	
+	2 COMBINED AT	CP15	82.	12.00	10.	3.	3.	.05	
+	2 COMBINED AT	CP16	221.	12.08	26.	8.	7.	.18	
+	ROUTED TO	2B5	0.	.00	0.	0.	0.	.18	
+									1310.90 24.92
+	2 COMBINED AT	CP17	0.	.00	0.	0.	0.	.34	
+	2 COMBINED AT	CP29	171.	12.08	21.	6.	6.	.56	
+	HYDROGRAPH AT	4A4	47.	12.00	4.	1.	1.	.03	
+	ROUTED TO	4B1	1.	14.17	0.	0.	0.	.03	
+									1314.02 14.17
	ROUTED TO	4B1	1.	14.17	0.	0.	0.	.03	

```
                HYDROGRAPH AT
+                          4A5       22.   12.00        2.        1.        1.      .01
                2 COMBINED AT
+                         CP30       22.   12.00        2.        1.        1.      .04
                ROUTED TO
+                          4B2        0.     .00        0.        0.        0.      .04
+                                                                                          1309.67      24.92
                HYDROGRAPH AT
+                          4A6       44.   12.00        4.        1.        1.      .03
                2 COMBINED AT
+                         CP31       44.   12.00        4.        1.        1.      .07
                ROUTED TO
+                          4B3        0.     .00        0.        0.        0.      .07
+                                                                                          1306.60      24.58
                HYDROGRAPH AT
+                          4A7       57.   12.08        9.        3.        2.      .04
                2 COMBINED AT
+                         CP32       57.   12.08        9.        3.        2.      .12
                ROUTED TO
+                          4B4        3.   13.75        3.        1.        1.      .12
+                                                                                          1305.76      13.75
                HYDROGRAPH AT
+                          4A8       38.   12.00        4.        1.        1.      .02
                2 COMBINED AT
+                         CP33       38.   12.00        6.        2.        2.      .13
                HYDROGRAPH AT
+                          4G2       65.   12.08        7.        2.        2.      .04
                2 COMBINED AT
+                         CP34      101.   12.00       13.        4.        4.      .17
                2 COMBINED AT
+                         CP35      269.   12.08       33.       10.       10.      .74
                ROUTED TO
+                          4B5        0.     .00        0.        0.        0.      .74
+                                                                                          1305.18      24.92
                HYDROGRAPH AT
+                        C3OF1      394.    4.00       37.       10.        9.      .00
                DIVERSION TO
+                         DIV1       30.    4.00        3.        1.        1.      .00
                HYDROGRAPH AT
+                         CP36      364.    4.00       34.        9.        9.      .00
                DIVERSION TO
+                         DIV2       76.    4.00        7.        2.        2.      .00
                HYDROGRAPH AT
+                         CP37      288.    4.00       27.        7.        7.      .00
                DIVERSION TO
+                         DIV3      126.    4.00       12.        3.        3.      .00
                HYDROGRAPH AT
+                         CP38      162.    4.00       15.        4.        4.      .00
                2 COMBINED AT
+                         CP39      162.    4.00       15.        4.        4.      .74

*** NORMAL END OF HEC-1 ***
```

Appendix E
Calcluations for Changes in Models

ROBERT BEIN, WILLIAM FROST & ASSOCIATES
AMERICAN ENGINEERING COMPANY
PROFESSIONAL ENGINEERS, PLANNERS & SURVEYORS
21442 NORTH 20TH AVENUE, PHOENIX, ARIZONA 85027-2600
602.582.0260 • Fax 602.582.0953 • WEB SITE: www.rbf.com

JOB
SHEET NO. OF
CALCULATED BY DATE
CHECKED BY DATE
SCALE

ARIZONA TRADITIONS

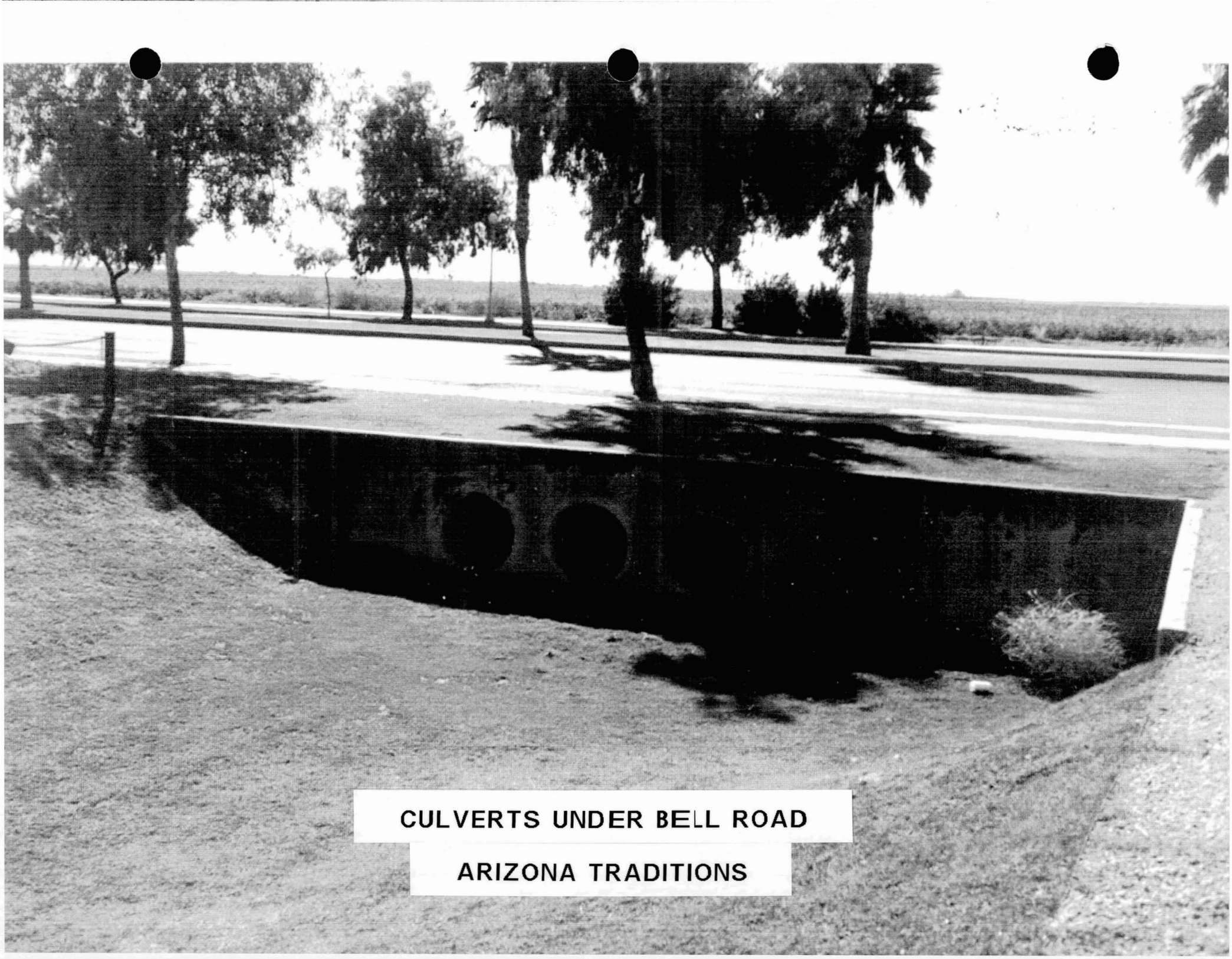
$A = 0.67\ mi^2$
$L = 1.703\ mi$
$L_{ca} = 0.96\ mi$

$S = 0.0173 \times 5280$
$= 11.93\ ft/mi$

$$L_{ag} = 20 K_n \left[\{ 1.2 (L L_{ca} / S^{.5})^{0.38} \} \times 60 \right]$$

$K_n = 0.07$ (from similar locations in the area)

$L_{ag} = 75.89$



CULVERTS UNDER BELL ROAD

ARIZONA TRADITIONS

PROJECT: ARIZONA TRADITIONS

DESIGNER: J. CHAPIN

DATE: 12/95

HYDROLOGIC AND CHANNEL INFORMATION

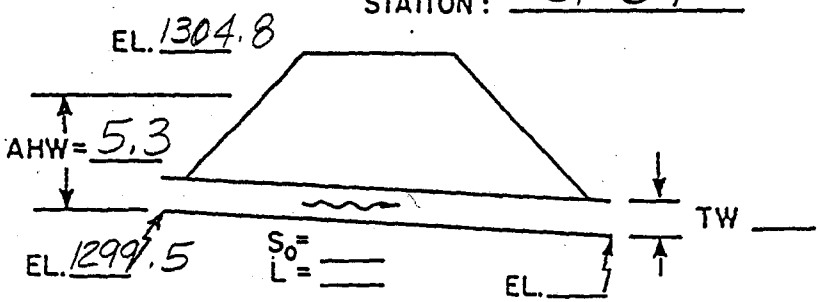
Q_1 = 161 cfs TW_1 = _____

Q_2 = _____ TW_2 = _____

(Q_1 = DESIGN DISCHARGE, SAY Q_{25}
Q_2 = CHECK DISCHARGE, SAY Q_{50} OR Q_{100})

SKETCH

STATION: CP39



MEAN STREAM VELOCITY = _____

MAX. STREAM VELOCITY = _____

CULVERT DESCRIPTION (ENTRANCE TYPE)	Q	SIZE	HEADWATER COMPUTATION: INLET CONT.		OUTLET CONTROL $HW = H + h_o - LS_o$								CONTROLLING HW	OUTLET VELOCITY	COST	COMMENTS
			$\frac{HW}{D}$	HW	K_e	H	d_c	$\frac{d_c+D}{2}$	TW	h_o	LS_o	HW				
4 36"Ø	40.5	36"	1.12	3.36												
3 36"Ø	54.0	36"	1.45	4.35												

FROM THE MASTER DRAINAGE REPORT FOR ARIZONA TRADITIONS BY

CLOUSE ENGINEERING, INC., JAN. 12,1996.

SUMMARY & RECOMMENDATIONS:

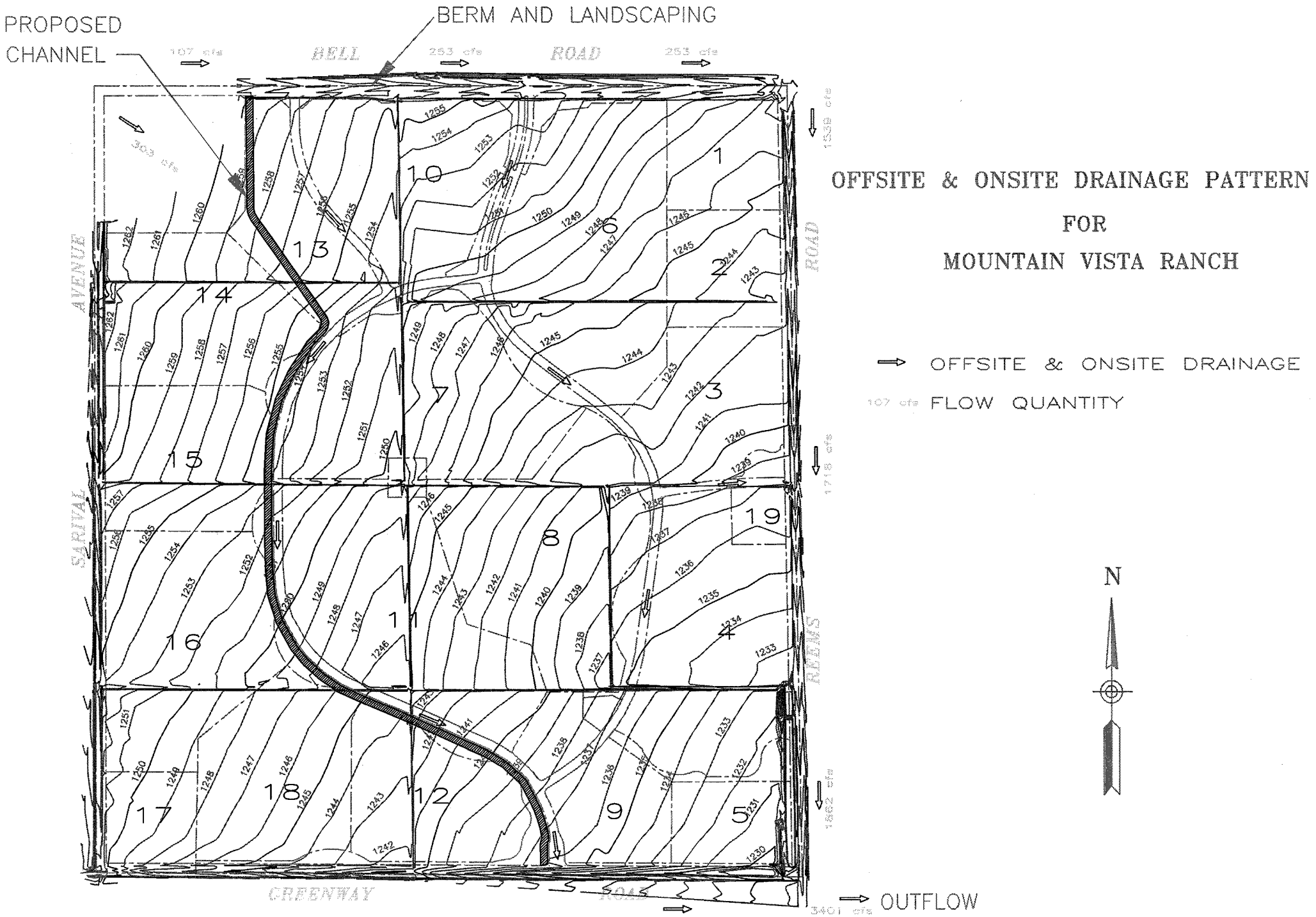
USE 3 36" Ø PIPES

Figure 7

Table 2.1a
Depth-Area Reduction Factors for 24-Hour Duration Rainfall

Area Square Miles	Ratio to Point Rainfall
0	1
10	0.94
20	0.91
30	0.90
40	0.88
50	0.87
60	0.86
70	0.856
80	0.855
90	0.846
100	0.842
110	0.838
120	0.834
130	0.833
140	0.829
150	0.825
200	0.817
300	0.80
400	0.79
500	0.78

FROM VOLUME I OF THE DRAINAGE DESIGN MANUAL FOR MARICOPA COUNTY, ARIZONA
BASED ON "DEPTH-AREA REDUCTION FACTORS IN THE SEMI-ARID SOUTHWEST UNITED STATES", BY ZEHR AND MYERS, NOAA TECHNICAL MEMORANDUM NWS HYDRO-40, 1984


PROPOSED CHANNEL
BERM AND LANDSCAPING
BELL ROAD
107 cfs
253 cfs
253 cfs
1538 cfs
1718 cfs
1862 cfs
3401 cfs
303 cfs
AVENUE
SARIVAL
ROAD
REEMS
GREENWAY
ROAD
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
OFFSITE & ONSITE DRAINAGE PATTERN
FOR
MOUNTAIN VISTA RANCH
OFFSITE & ONSITE DRAINAGE
107 cfs FLOW QUANTITY
N
OUTFLOW

RETETNION VOLUME, ACRE-FEET

PARCEL	BASIN 1	BASIN 2	BASIN 3	BASIN 4	BASIN 5	TOTAL		
6	67850	239840				7.06	122A	122B
7	293280					6.73	25.29	23.68
8	138985	86481	50382			6.33		
9						0.00		
10	224991					5.17		
11	335392	14078				8.02		
12						0.00		
13						0.00		
14	38320	65928	98490	12194		4.93		
15	82846	100499				4.21		
16	262906	20846				6.51		
17						0.00		
18						0.00		
						48.97401		

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JOB Mountain Vista Ranch Drainage
SHEET NO. _____ OF _____
CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE _____
SCALE _____

Sub-Basin 122A ~ MVR west

BA = 0.46 mi
L = 1.612
L_{ca} = 0.86
Δ elev = 30.58 ft
S = 22.47 ft. Mile

$$Lag = 20(0.07)\left[\left(1.2\left\{\frac{1.612 \times 0.86}{\sqrt{22.47}}\right\}\right)^{0.38}\right]60$$

Lag = 63.18 min

IA = 0.25, RTIMP = 30 for developed areas
Other G.A. Parameters stay the same

A_{Dev} = 0.22 mi²

$$\frac{(0.22)(30) + 0(0.24)}{0.46} = RTIMP$$

RTIMP = 14.35 %

$$IA = \frac{0.25(0.22) + 0.5(0.24)}{0.46} = 0.38$$

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602.582.0260 • Fax 602.582.0953 • WEB SITE: www.rbf.com

JOB
SHEET NO. OF
CALCULATED BY DATE
CHECKED BY DATE
SCALE

Sub-Basin 122B MVR East

BA = 0.438 mi² ~~0.4554~~

L = 1.408 mi Lca = 0.7452 mi ΔELEV = 29.13 ft

S = 20.69 ft/mi

$$Lag = 20(0.070)\left[(1.2\left[\frac{(1.408)(.745)}{\sqrt{20.69}}\right]^{0.38}\right] 60 \text{ min}$$

Lag = 57.72 min

IA = 0.25, RTIMP = 30 for developed areas.

$A_{Developed} = 0.27 mi^2$

$$\frac{0.27(30) + 0(A)}{0.4378} = RTIMP = 18.65\%$$

$$IA = \frac{0.25(0.27) + 0.5(0.1678)}{0.4378} = 0.3458$$

Use MCHHP2

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JOB
SHEET NO. OF
CALCULATED BY DATE
CHECKED BY DATE
SCALE

Reems Road Routing

V = 4.95 fps

L = 5280 ft

$$NSTPS = \frac{5280\ ft}{\frac{4.95\ ft}{s}\ \frac{60\ s}{min}\ 15\ min}$$

NSTPS = 1.19 ⇒ 2

Appendix F
Reems Road Floodplain
Approximate Delineation Documentation

FLOOD STUDY
TECHNICAL DATA NOTEBOOK

for

WHITE TANKS/AGUA FRIA AREA DRAINAGE MASTER STUDY

APPENDIX J
VOLUME 13 OF 15

HEC-2 OUTPUT RESULTS - WASH 10 THRU WASH 21 AND APPROXIMATE DELINEATION DOCUMENTATION

Prepared for:
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Prepared by:
THE WLB GROUP, INC.
333 East Osborn Road, Suite 380
Phoenix, Arizona 85012
(602) 279-1016

May 28, 1992

The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject WHITE TANKS/AGUA FRIA ADMS - APPROXIMATE DELINEATION ON REEMS ROAD. Prepared by JSE Date 2-19-92

NORTHERN AVENUE TO OLIVE AVENUE

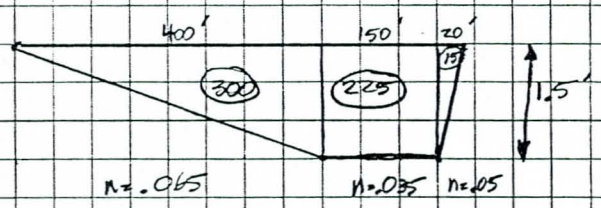
DISCHARGE = ROUTED FLOW FROM DI 193 TO CP 193 = 2255 CFS.

THIS DISCHARGE IS GREATER THAN CAPCITY OF REEMS, THEREFORE APPROXIMATE FLOODPLAIN IS BASED ON TOP OF LEFT BANK ELEVATION AND PROJECTED WEST TO SAME ELEVATION.

OLIVE AVENUE TO PEORIA AVENUE

USE DISCHARGE OF ROUTED FLOW R165 = 3090 cfs

Check Capacity of Typical Cross Section.



$S = .0044 \frac{1}{1}$

$A = 540 \text{ ft}^2$

$Q = \frac{1.49}{n} A R^{2/3} S^{1/2}$

$Q_1 = \frac{1.49}{.065} 300 \left(\frac{300}{400}\right)^{2/3} (.0044)^{1/2} + Q_2 = \frac{1.49}{.035} 225 \left(\frac{225}{150}\right)^{2/3} (.0044)^{1/2} + Q_3 = \frac{1.49}{.05} 15 \left(\frac{15}{20}\right)^{2/3} (.0044)^{1/2}$

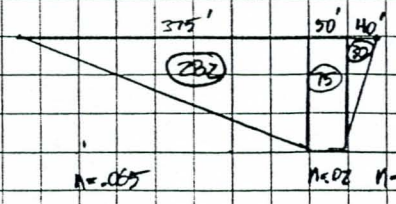
$Q_T = 376 + 832 + 25 = 1233 \text{ cfs} < 3090 \text{ cfs}$

∴ Use Top of Left Bank Projected West to Same Elevation for Approximate Delineation.

PEORIA AVENUE TO CACTUS ROAD

USE DISCHARGE OF ROUTED FLOW R146 = 1423 cfs

CHECK CAPACITY OF TYPICAL CROSS SECTION



$S = .0067 \frac{1}{1}$

$A = 387 \text{ ft}^2$

(cont.)

The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject REEMS ROAD APPROXIMATE DELINEATION Prepared by JSE Date 2-19-92

Cont. From Last Page

$$Q_1 = \frac{1.49}{.065}(282)\left(\frac{282}{375}\right)^{2/3}(.0067)^{1/2} + Q_2 = \frac{1.49}{.02}75\left(\frac{75}{50}\right)^{2/3}.0067^{1/2} + Q_3 = \frac{1.49}{.05}30\left(\frac{30}{40}\right)^{2/3}(.0067)^{1/2}$$

$$Q_T = 438 + 599 + 60 = 1097\text{cfs} < 1423\text{ cfs}$$

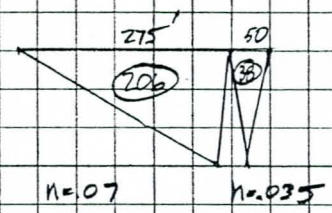
∴ Use Top of Left Bank Elevation Projected West to Same Elevation for Approximate Delineation.

CACTUS ROAD TO WADDELL ROAD

USE DISCHARGE FROM ROUTED FLOW R133 = 273 cfs

Check Capacity From Typical Cross Section

$S = .0067^{1/2}$
$A = 244\text{ ft}^2$



$$Q_1 = \frac{1.49}{.07}(206)\left(\frac{206}{275}\right)^{2/3}(.0067)^{1/2} + Q_2 = \frac{1.49}{.035}(38)\left(\frac{38}{50}\right)^{2/3}(.0067)^{1/2}$$

$$Q_T = 296 + 110 = 406\text{ cfs} > 273\text{ cfs}$$

This is very close so we will still use Top of Left Bank elevation projected west to same elevation for Approximate Delineation

The WLB Group Inc. WLB

COMPUTATION DATA SHEET

Subject REEMS ROAD APPROXIMATE DELINEATION Prepared by JSE Date 2-19-92

WADDELL ROAD TO GREENWAY ROAD

USE DISCHARGE = Q AT R122 = 308 cfs

CAPACITY CHECK

THIS CROSS SECTION IS VERY SIMILAR TO THE ONE BETWEEN CACTUS ROAD AND WADDELL ROAD WHICH HAD A CAPACITY OF 406 cfs > 308 cfs.

AGAIN THIS IS VERY CLOSE SO TOP OF LEFT BANK ELEVATION PROJECTED WEST TO SAME ELEVATION WILL BE UTILIZED FOR THE APPROXIMATE DELINEATION.

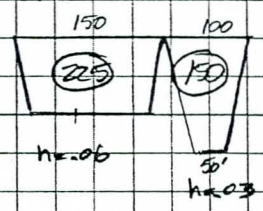
GREENWAY ROAD TO BELL ROAD

USE DISCHARGE = Q AT R115 = 2541 cfs

CHECK CAPACITY

S = .004 ft/ft

A = 375 ft²



$$Q_1 = \frac{1.49}{.06}(225)\left(\frac{225}{150}\right)^{2/3}(.004)^{1/2} + Q_2 = \frac{1.49}{.03}150\left(\frac{150}{100}\right)^{2/3}(.004)^{1/2}$$

$$Q_T = 463 + 617 \text{ cfs} = 1080 \text{ cfs} < 2541 \text{ cfs}$$

∴ USE TOP OF LEFT BANK PROJECTED WEST TO SAME ELEVATION FOR APPROXIMATE DELINEATION.

Form 209

The WLB Group Inc. WLB

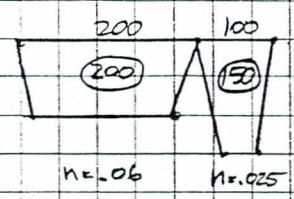
COMPUTATION DATA SHEET

Subject REEMS ROAD APPROXIMATE DELINEATION Prepared by JSE Date 2-19-92

BELL ROAD TO UNION HILLS DRIVE

USE DISCHARGE = Q AT R108 = 1123 cfs

CHECK CAPACITY



S = .0050 ft/ft
A = 350 ft²

$$Q_1 = \frac{1.49}{.06}(200)(1)^{2/3}(.005)^{1/2} + Q_2 = \frac{1.49}{.025}(150)(1.5)^{2/3}(.005)^{1/2}$$

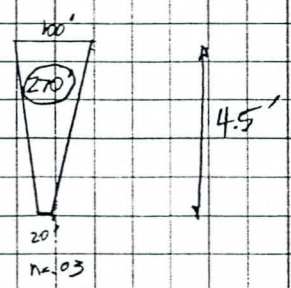
$$Q_T = 351 + 828 = 1180 \text{ cfs} > 1123 \text{ cfs}$$

∴ SINCE THIS IS ALMOST THE SAME USE TOP OF LEFT BANK ELEVATION PROJECTED WEST TO APPROXIMATELY THE SAME ELEVATION FOR APPROXIMATE DELINEATION.

UNION HILLS DRIVE TO BEARDSLEY ROAD

USE AVERAGE DISCHARGE BETWEEN CP108 AND CP103 = (1158 + 267)/2 = 712 cfs

CHECK CAPACITY



S = .005 ft/ft
A = 270 ft²

$$Q = \frac{1.49}{.03}(270)(27)^{2/3}(.005)^{1/2} = 1838 \text{ cfs} > 712 \text{ cfs}$$

STILL USE TOP OF LEFT BANK ELEVATION PROJECTED WEST FOR APPROXIMATE DELINEATION.

Form 209

Exhibit A
FEMA's Flood Insurance Rate Maps
04013C1145F & 04013C1485F

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FT. NGVD)	DESCRIPTION OF LOCATION
RM872	1,360.83	Brass cap in concrete on top of McMicken Dam, stamped 390.
RM873	1,361.16	Brass cap in concrete on top of McMicken Dam, stamped 415.
RM874	1,361.57	Brass cap in concrete on top of McMicken Dam, stamped 440.
RM875	1,334.41	5/8" copper-coated rod encased in a 5" iron pipe, Beardsley Canal at Cotton Lane, stamped L368.
RM876	1,361.25	Brass cap in concrete on top of McMicken Dam, stamped 465.
RM877	1,361.21	Brass cap in concrete on top of McMicken Dam, stamped 490
RM878	1,361.45	Brass cap in concrete on top of McMicken Dam, stamped 500.
RM879	1,339.78	Brass cap set in the top of the east end of the south wall of the concrete spillway at the McMicken Dam outlet structure, stamped H366.
RM880	1,338.96	About 7.0 miles northwest along U.S. Highways 60, 70, and 89 and State Highway 93 from the post office at El Mirage, in Section 13, T4N, R2W, 67 yards west of the center of the intersection of U.S. Highways 60, 70, and 89, State Highway 93, and Canal Road, 95.5 feet southwest of the centerline of the highways, 130 feet west of the northwest end of the southwest concrete headwall of a culvert under the highways, 18.5 feet southeast of a power pole that is braced by a guy wire, 1.7 feet northeast of a metal witness post, about 1.5 feet below the level of the highways, and on the top of a 5/8" copper-coated rod that is driven to a depth of 18 feet and is encased in a 5" iron pipe that projects 8 inches.
RM 2085	**1288.86**	**Brass Cap in Hand Hole Centerline Intersection Reems Rd. and Beardsley Rd. Southeast Corner Section 19, Township 4 North, Range 1 West**
RM 2086	**1264.34**	**Brass Cap in Hand Hole Centerline Intersection Reems Rd. and Union Hills Dr. Southeast Corner Section 30, Township 4 North, Range 1 West**
RM 2087	**1246.20**	**Brass Cap in Hand Hole Centerline Intersection Reems Rd. and Bell Rd. Southeast Corner Section 31 Township 4 North, Range 1 West**

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- **ZONE A** No base flood elevations determined.
- **ZONE AE** Base flood elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE A99** To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.
- **ZONE V** Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside 500-year flood plain.
- **ZONE D** Areas in which flood hazards are undetermined.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation In Feet*

D — D — Cross Section Line

(EL 987) — Base Flood Elevation In Feet Where Uniform Within Zone*

RM7X — Elevation Reference Mark

*Referenced to the National Geodetic Vertical Datum of 1929

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Areas of special flood hazard (100-year flood) include Zones A, A1-30, AE, AH, AO, A99, V, V1-30 AND VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

Coastal base flood elevations apply only landward of the shoreline.

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of the map.

For community map revision history prior to countywide mapping, see Section 6.0 of the Flood Insurance Study Report.

For adjoining map panels see separately printed Map Index

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF
COUNTYWIDE FLOOD INSURANCE RATE MAP:
APRIL 15, 1988

EFFECTIVE DATE (S) OF REVISION (S) TO THIS PANEL:
SEPTEMBER 4, 1991

Map revised SEPTEMBER 30, 1995 to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to change zone designations, to add and update roads and road names, to reflect updated topographic information, to incorporate previously issued letters of map revision, and to incorporate previously issued letters of map amendment.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

N

APPROXIMATE SCALE IN FEET
1000 0 1000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 1145 OF 4350

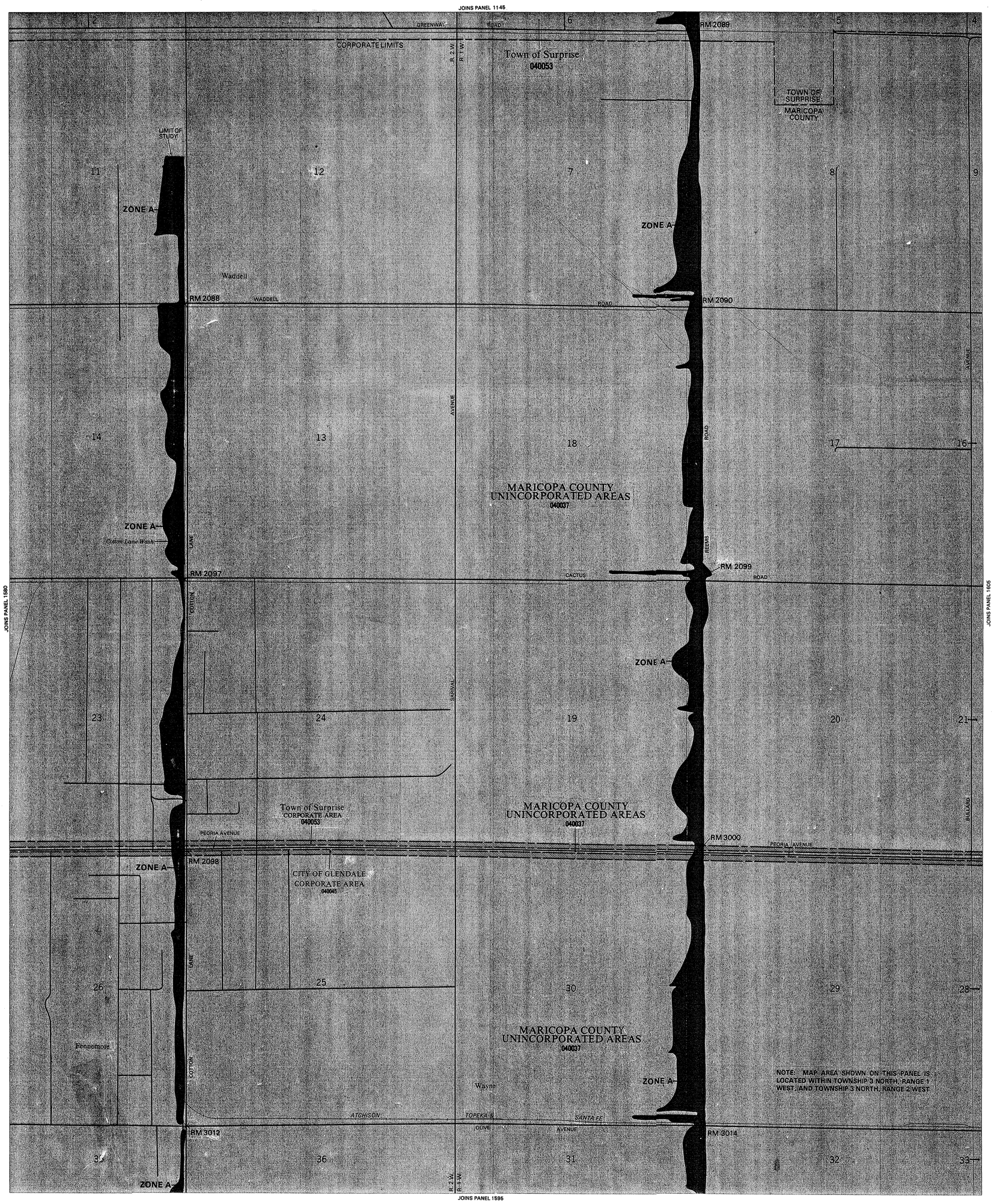
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY, UNINCORPORATED AREAS	040037	1145	F
SURPRISE, TOWN OF	040053	1145	F

MAP NUMBER
04013C1145 F

MAP REVISED:
SEPTEMBER 30, 1995

Federal Emergency Management



ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FT. NGVD)	DESCRIPTION OF LOCATION
RM 2088	1,246.77	Maricopa County Highway Department brass cap in handhole centerline intersection Cotton Lane and Waddell Road, southeast corner Section 11, Township 3 North, Range 1 West
RM 2089	1,226.08	Brass cap in handhole centerline intersection Reems Road and Greenway Road, southeast corner Section 6, Township 3 North, Range 1 West
RM 2090	1,206.38	Chiseled "x" in top concrete headwall southeast corner of intersection of Reems Road and Waddell Road, near southeast corner Section 7, Township 3 North, Range 1 West
RM 2097	1,220.43	Nail in headwall at northeast corner of intersection of Cotton Lane and Cactus Road, near southeast corner Section 14, Township 3 North, Range 2 West
RM 2098	1,203.33	Maricopa County Highway Department brass cap in handhole Cotton Lane and Peoria Avenue, southeast corner Section 23, Township 3 North, Range 2 West
RM 2099	1,170.68	Chiseled square in top concrete headwall southwest corner of intersection of Reems Road and Cactus Road, near southeast corner Section 18, Township 3 North, Range 1 West
RM 3000	1,143.93	Brass cap in handhole Reems Road and Peoria Avenue, southeast corner Section 19, Township 3 North, Range 1 West
RM 3012	1,182.40	Maricopa County Highway Department brass cap in handhole, Cotton Lane and Olive Avenue, southeast corner Section 26, Township 3 North, Range 2 West
RM 3014	1,124.83	Brass cap in handhole, Reems Road and Olive Avenue, southeast corner Section 30, Township 3 North, Range 1 West

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- **ZONE A** — No base flood elevations determined.
- **ZONE AE** — Base flood elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE A99** — To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.
- **ZONE V** — Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** — Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** — Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside 500-year flood plain.
- **ZONE D** — Areas in which flood hazards are undetermined.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

~~~513~~~ — Base Flood Elevation Line; Elevation in Feet*

(D)———(D) — Cross Section Line

(EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone*

RM7X — Elevation Reference Mark

*Referenced to the National Geodetic Vertical Datum of 1929

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Areas of special flood hazard (100-year flood) include Zones A, A1-30, AE, AH, AO, A99, V, V1-30 AND VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

Coastal base flood elevations apply only landward of the shoreline.

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of the map.

For community map revision history prior to countywide mapping, see Section 6.0 of the Flood Insurance Study Report.

For adjoining map panels see separately printed Map Index

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF
COUNTYWIDE FLOOD INSURANCE RATE MAP:
APRIL 15, 1988

EFFECTIVE DATE (S) OF REVISION (S) TO THIS PANEL:
SEPTEMBER 4, 1991

Map revised SEPTEMBER 30, 1995 to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to change zone designations, to add and update roads and road names, to reflect updated topographic information, to incorporate previously issued letters of map revision, and to incorporate previously issued letters of map amendment.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE IN FEET
1000 0 1000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
GLENDALE, CITY OF	040045	1585	F
MARICOPA COUNTY, UNINCORPORATED AREAS	040037	1585	F
SURPRISE, TOWN OF	040053	1585	F

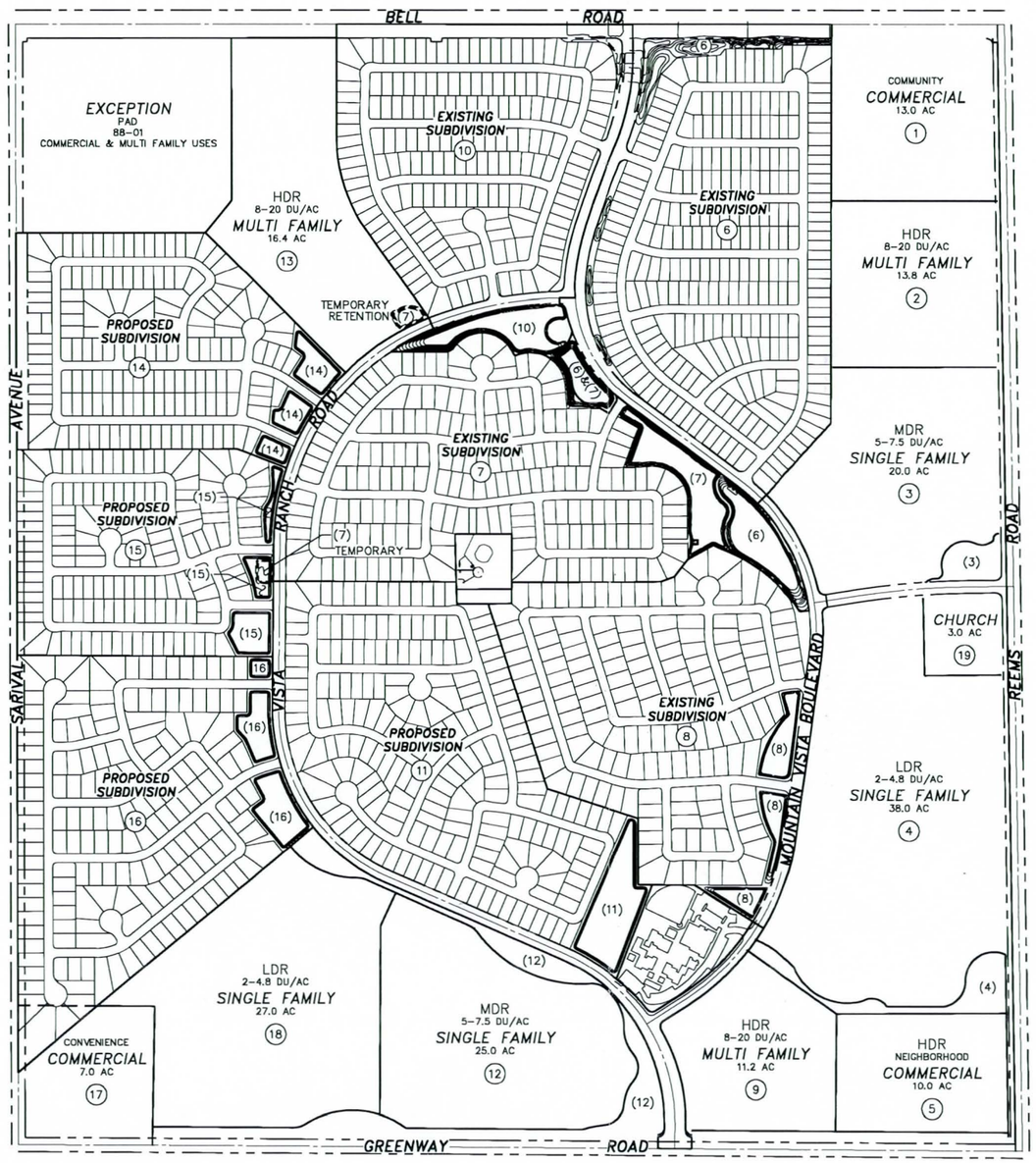
MAP NUMBER
04013C1585 F

MAP REVISED:
SEPTEMBER 30, 1995

Federal Emergency Management Agency
~~~

Exhibit B
Master Drainage Map
for
Arizona Traditions

MOUNTAIN VISTA RANCH
COMPOSITE RETENTION PLAN



N

SCALE: 1" = 700'

0 700 1400 2100

LEGEND

(11) PARCEL NUMBER

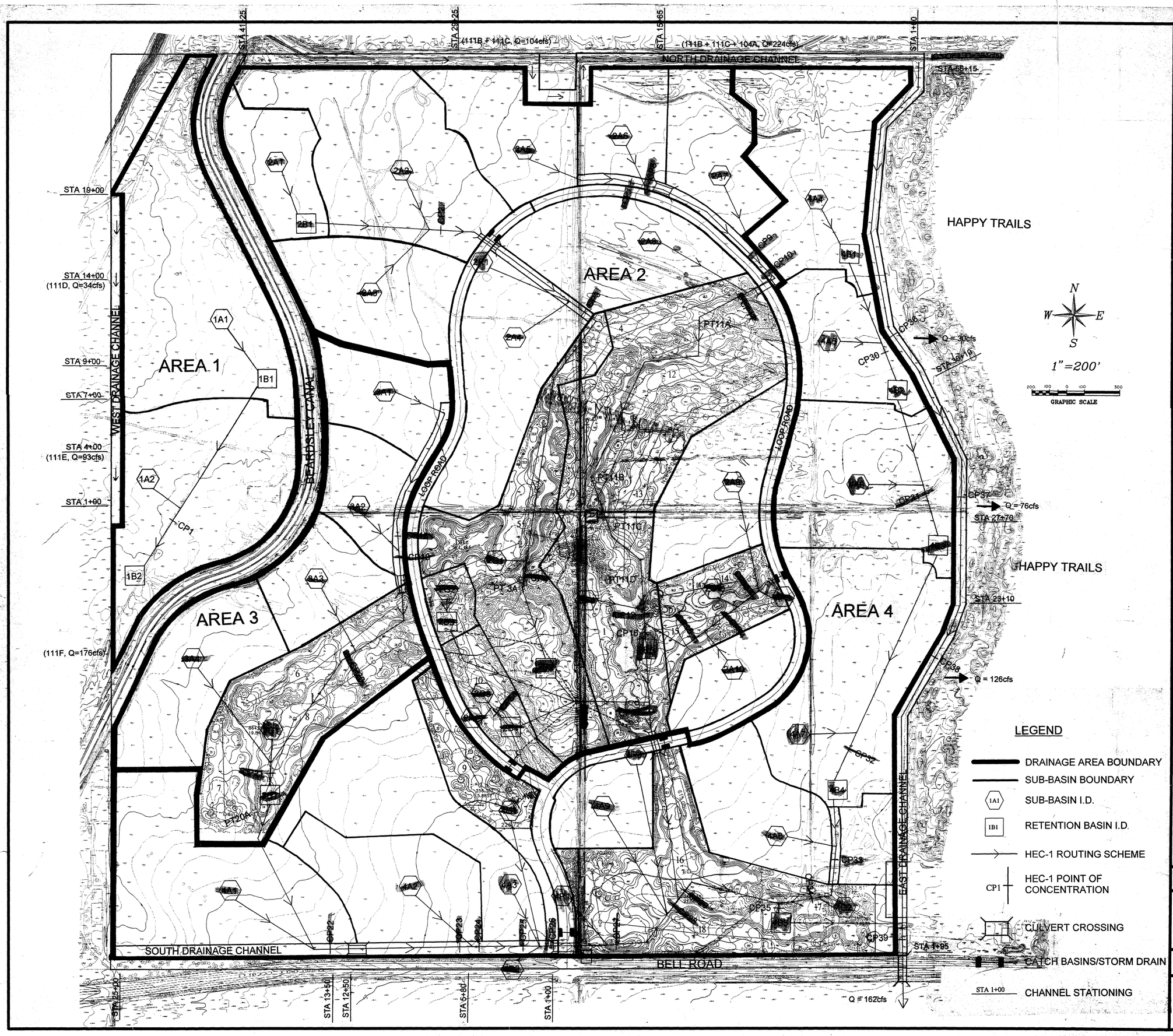
(11) CONTRIBUTING PARCEL NUMBER

AMERICAN ENGINEERING CO.
A DIVISION OF
Robert Bein, William Frost & Associates
Professional Engineers, Planners & Surveyors
21442 NORTH 20TH AVENUE . PHOENIX, ARIZONA 85027 . (602)-582-0260

MOUNTAIN VISTA RANCH PARCEL 16 97067
COMPOSITE RETENTION PLAN JUNE/1997

Exhibit C
Mountain Vista Ranch
Composite Retention Plan

Exhibit D
Overall Drainage Map



CLOUSE ENGINEERING, INC.
ENGINEERS AND SURVEYORS
3815 NORTH 32ND STREET PHOENIX, ARIZONA 85018
TEL. (602) 955-4690

MASTER DRAINAGE MAP
FOR
ARIZONA TRADITIONS
SURPRISE ARIZONA

Job No.
931007

Revisions

Date

SH.
OF

Bing Zhao - FCDX

From: Bing Zhao - FCDX
Sent: Thursday, July 08, 1999 11:06 AM
To: Lynn Thomas - FCDX; Shanna Yager - FCDX
Cc: Amir Motamedi - FCDX; Ed Raleigh - FCDX; Bing Zhao - FCDX
Subject: Mountain Vista Ranch

Roy from Amercian Engineering will be here 2:00PM at Alert Conference Room to discuss his revised hydrology on Mountain Vista Ranch. We will discuss each item in my review comments. The following is my previous review comments (4/5/99)

Hi, Roy:

I reviewed your Hydrology Report for Mountain Vista Ranch, which is to be used for your FEMA CLOMR package. I also reviewed the supporting document, the Arizona Tradition Master Drainage Report that you recently sent me. The following are my review comments.

1. Because eventually you will send your Hydrology Report to FEMA, I suggest you to re-write your report based on ADWR's Guidelines for Technical Date Book. If you follow the ADWR's TDN Guidelines, FEMA may speed up the approval.

2. Your hydrology is not for the entire Mountain Vista Ranch because a large portion of Mountain Vista Ranch area is not built yet and no plans are available for these areas as you said last Friday. FEMA will definitely question this. If you will submit your package in the near future, I suggest you to exclude these areas in your hydrology. If not, you can wait till the plans are available.

3. When you used MCUHP2 to compute the unit hydrographs for sub-basins 122A and 122B, you should select 5 minutes for computation interval to be consistent with the rest of unit hydrographs. Apparently, you selected 15 minutes computation interval. I was able to reproduce your results by selecting 15 minutes. My peak discharges at 122A and 122B increased significantly when I selected 5 minutes. Five minutes interval is the correct interval.

4. I think you should use DDMS to compute the Green-Ampt loss parameters for 122A and 122B. To do this, you need to get the soil and land use maps for sub-basins 122A and 122B, and other information for DDMS running.

5. The drainage areas in your HC cards should be manually adjusted to reflect the actual contributing area for each concentration point.

6. The removal of sub-basin 112 is questionable because Happy Trails (located east of Arizona Traditions) is also part of 112 and is not a part of Arizona Traditions. I looked at Arizona Tradition drainage map, there is significant amount of flow from Arizona Traditions to Happy Trails (232 cfs = 126+76+30). For example, Q = 126 cfs at CP38 in Arizona Traditions, Q= 76 cfs at CP37, and Q=30 cfs at CP36.

7. Arizona Tradition's HEC-1 model used 6-hr storm. Your model is for 24-hr. Therefore, you should use DDMS or MCUHP1 to re-compute 24-hour Clark unit hydrograph as I suggested a few weeks ago. I suggest you to get the DDMS digital file from CLOUSE Engr who did the Arizona Traditions. Then, you may modify the DDMS file to get the 24-hr Clark unit hydrograph. Then, you will run the modified HEC-1 for Arizona Traditions. If the peak discharge is less than the 6-hr peak discharge (162 cfs), then you may exclude the drainage area contributing to CP29 in Arizona Traditions because the 3 culverts carry 162 cfs across Bell Road southerly. This may be a lot of work for you though this is the correct way to do it. You may call me to see if we can find an alternative way to do this.

If you want, we can schedule a meeting this week to discuss your Hydrology TDN. Please let me know if you have any questions.

Bing Zhao, Ph.D., P.E.
Hydrology Branch
Engineering Division
Flood Control District of Maricopa County
2801 W. Durango
Phoenix, AZ 85009
(602)506-3203

ROBERT BEIN, WILLIAM FROST & ASSOCIATES
AMERICAN ENGINEERING COMPANY

FAX COVER SHEET

DATE April 1, 1999 FAX NUMBER 506-4601

TO Bing Zhao COMPANY FCD

FROM Roy McDaniel

SUBJECT Reems Road CLOMR / MVR

COMMENTS Our computer system went down at 11:30 for system maintenance. so this is all I could get. I'll get better copies to you, but hopefully this will do now.

JOB NAME Mountain Vista Ranch JOB NUMBER 98099

PLEASE GIVE COPIES OF THIS TRANSMISSION TO

TOTAL PAGES INCLUDING COVER SHEET 3

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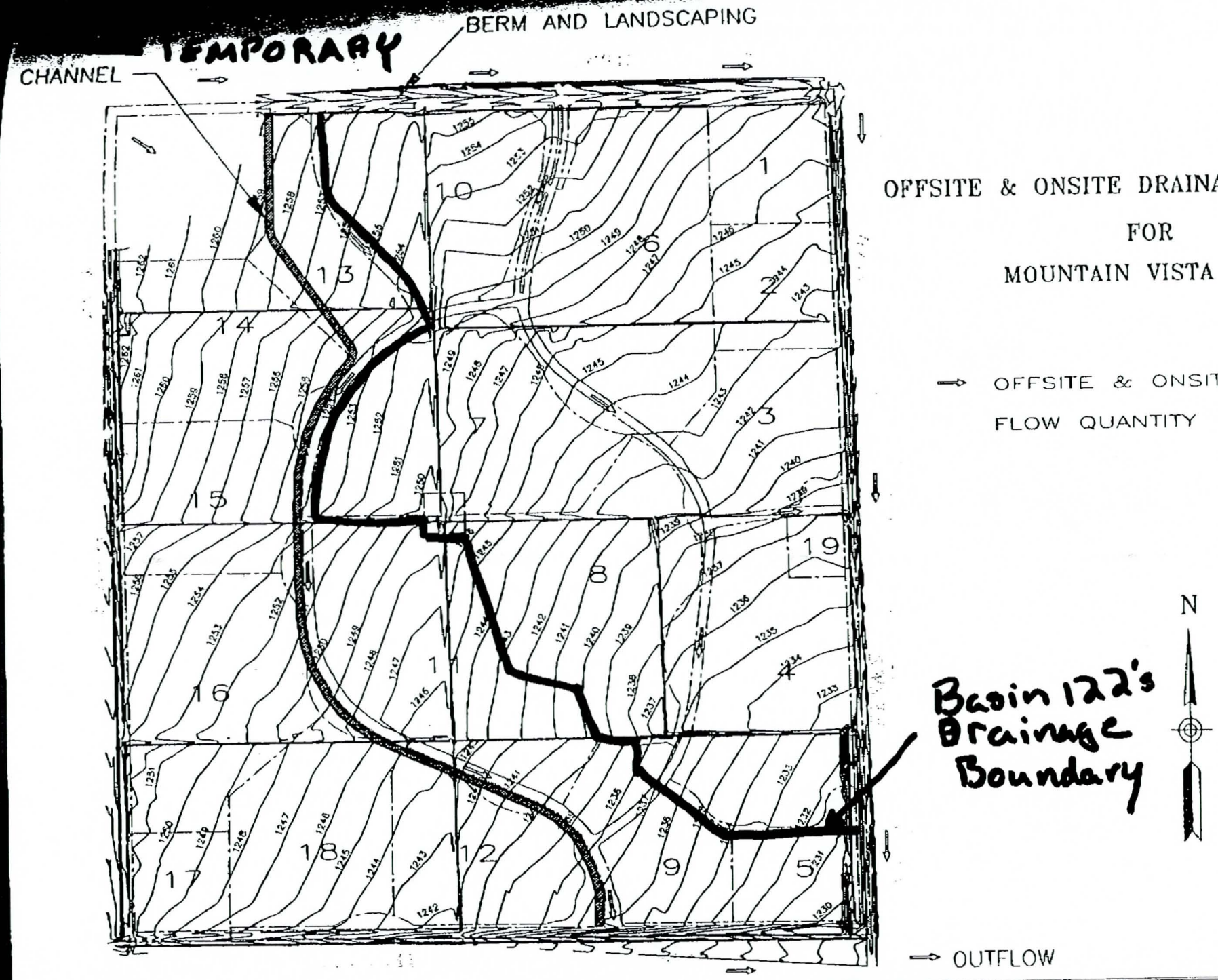
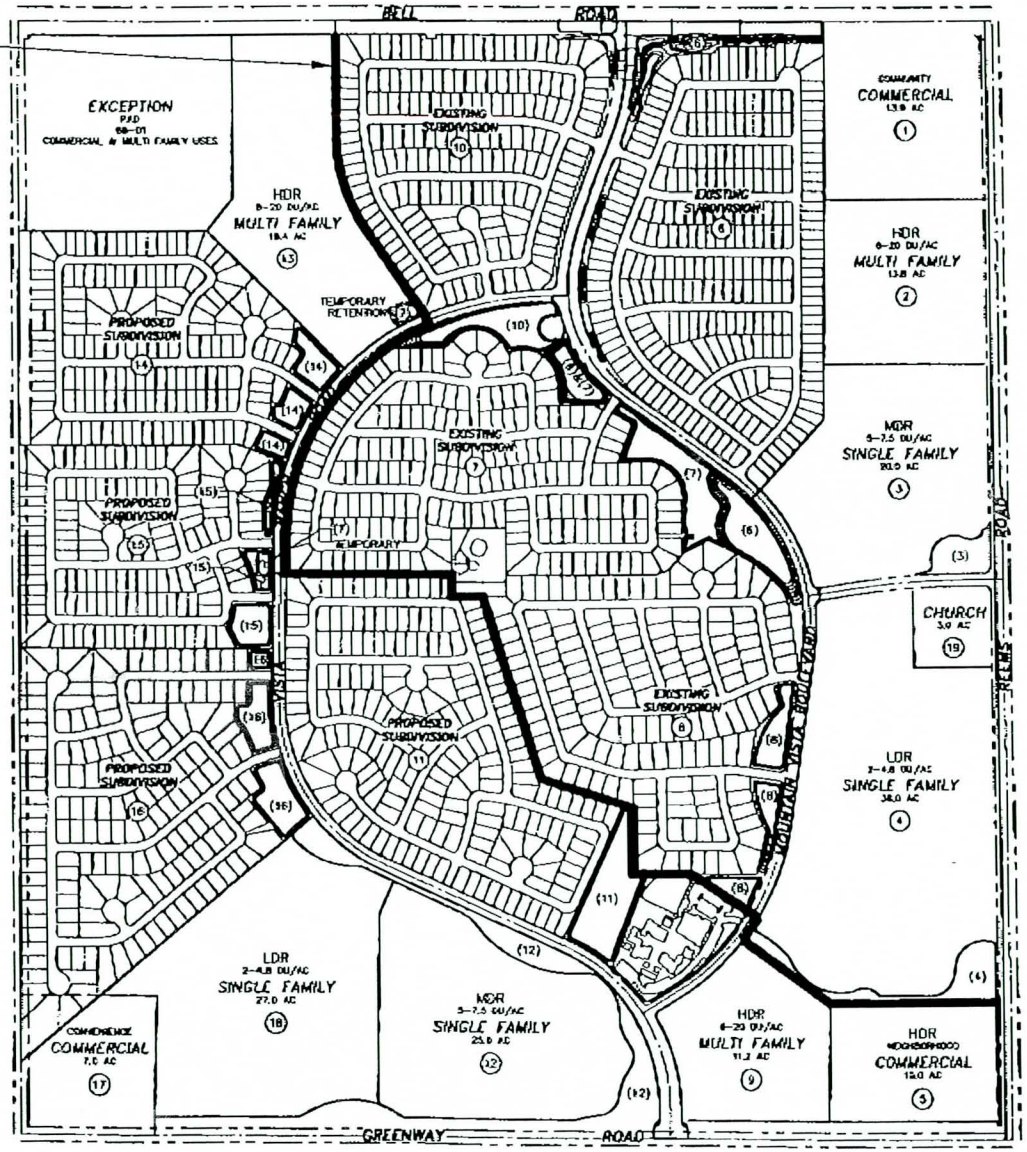

TEMPORARY
BERM AND LANDSCAPING
CHANNEL
OFFSITE & ONSITE DRAINAGE PATT
FOR
MOUNTAIN VISTA RANCH
OFFSITE & ONSITE DRAI
FLOW QUANTITY
N
Basin 122's Drainage Boundary
OUTFLOW

MOUNTAIN VISTA RANCH
COMPOSITE RETENTION PLAN

SECTION DRAINAGE BOUNDARY

-FEET N 2	BASIN 3	BASIN 4	TOTAL
140			7.06
			6.73
91	50,382		6.33
			0.00
			5.17
78			6.02
			0.00
			0.00
28	98,490	12,194	4.93
39			4.21
46			
			0.00
			0.00
		TOTAL	48.97



N

SCALE: 1" = 700'

0 700 1400 2100

LEGEND

(11) PARCEL NUMBER

(11) CONTRIBUTING PARCEL NUMBER

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21412 NORTH 20TH AVENUE . PHOENIX, ARIZONA 85027 . (602)-942-5960

MOUNTAIN VISTA RANCH
COMPOSITE RETENTION PLAN JUNE/1997

6025820260 AMERICAN ENGINEERING 004 P03 APR 02 '99 11:42

FAX ROUTING SLIP

TIME STAMP HERE

Initial

Fax for: Initial/Name: B 12

Extension called: 63293

Dept./Division: Eng

ACTION:

No answer: ✓

Busy:

Hold for pick up:

Send thru mail: ✓

Comments:

ROBERT BEIN, WILLIAM FROST & ASSOCIATES
AMERICAN ENGINEERING COMPANY

FAX COVER SHEET

DATE Feb 3, 1999 FAX NUMBER 506-4601

TO Bing Zhao COMPANY Flood Control District

FROM Ray McDaniel

SUBJECT Reems Road CLOMR Report

COMMENTS I believe these are the items left out of the report.

JOB NAME Mt. Vista Ranch Drainage JOB NUMBER 45098099

PLEASE GIVE COPIES OF THIS TRANSMISSION TO

TOTAL PAGES INCLUDING COVER SHEET 4

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OFFICES LOCATED THROUGHOUT ARIZONA, CALIFORNIA AND NEVADA • WEB SITE: www.rbf.com

PROJECT: ARIZONA TRADITIONS

DESIGNER: J. CHAPIN

DATE: 12/95

HYDROLOGIC AND CHANNEL INFORMATION

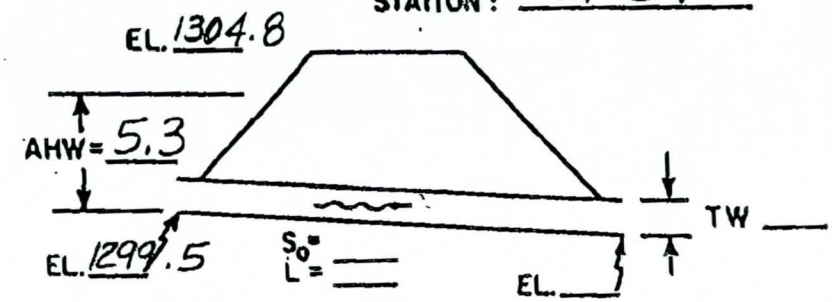
Q_1 = 161 cfs TW_1 = _____

Q_2 = _____ TW_2 = _____

(Q_1 = DESIGN DISCHARGE, SAY Q_{25}
Q_2 = CHECK DISCHARGE, SAY Q_{50} OR Q_{100})

SKETCH

STATION: CP39



MEAN STREAM VELOCITY = _____

MAX. STREAM VELOCITY = _____

CULVERT DESCRIPTION (ENTRANCE TYPE)	Q	SIZE	HEADWATER COMPUTATION: INLET CONT. $\frac{HW}{D}$	HW	OUTLET CONTROL $HW = H + h_o - LS_o$: K_e	H	d_c	$\frac{d_c+D}{2}$	TW	h_o	LS_o	HW	CONTROLLING HW	OUTLET VELOCITY	COST	COMMENTS
4 36"Ø	40.5	36"	1.12	3.36												
3 36"Ø	54.0	36"	1.45	4.35												

FROM THE MASTER DRAINAGE REPORT FOR ARIZONA TRADITIONS BY

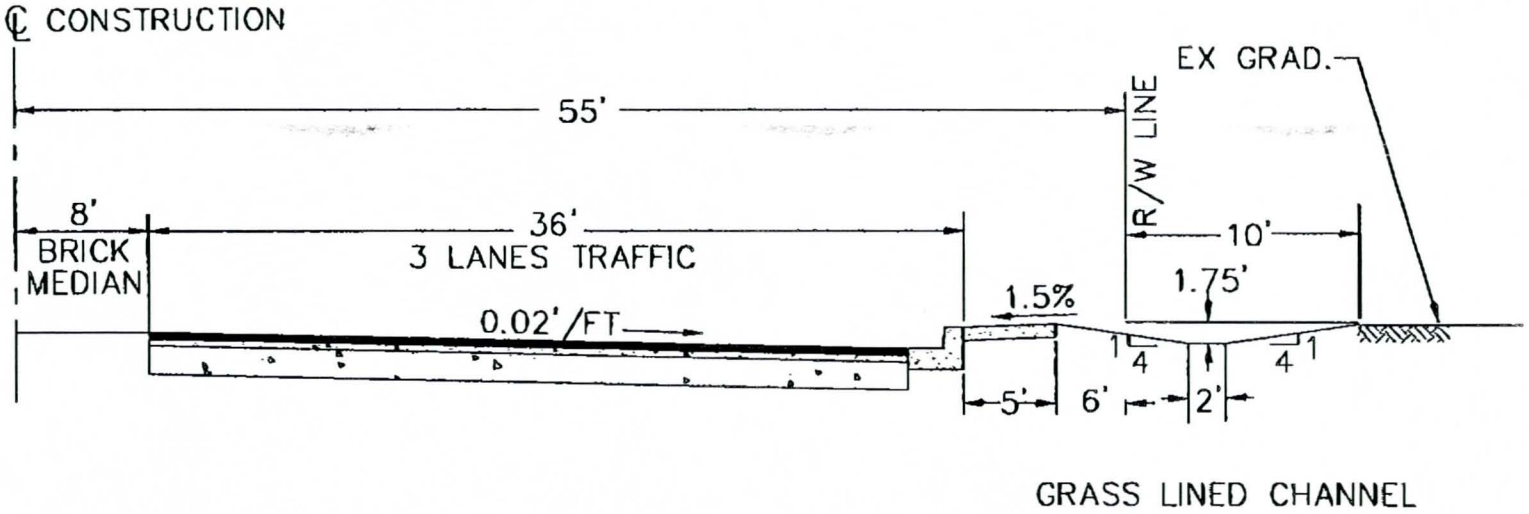
CLOUSE ENGINEERING, INC., JAN. 12, 1996.

SUMMARY & RECOMMENDATIONS:

USE 3 36" Ø PIPES

Figure 7

6025820260 AMERICAN ENGINEERING 697 P03/04 FEB 03 '99 10:08



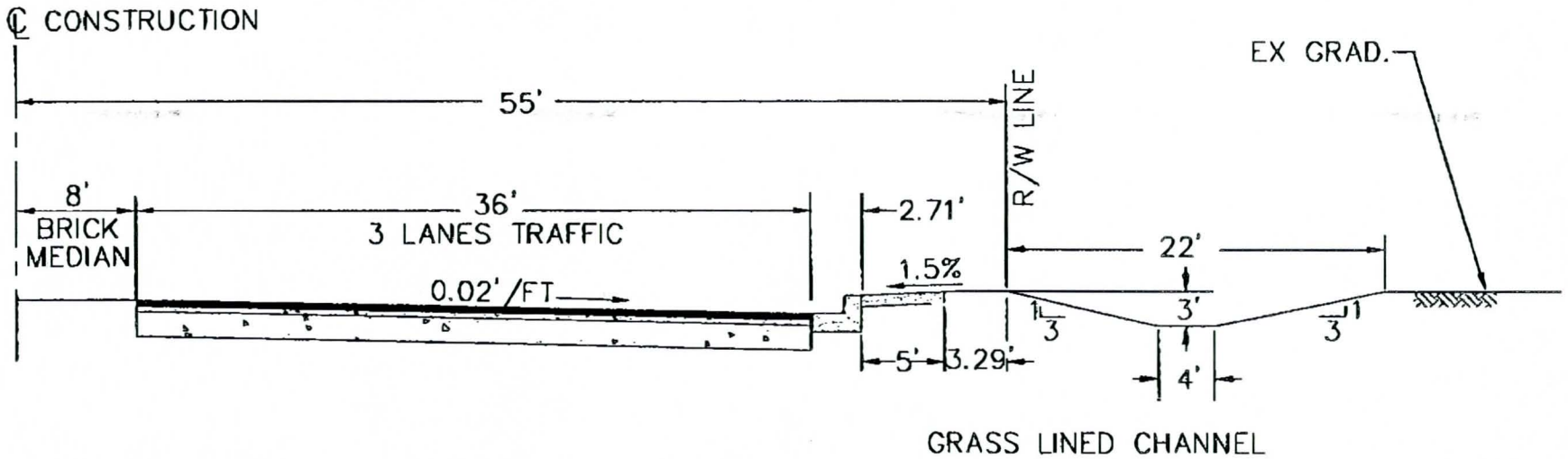
REAMS ROAD

GRASS CHANNEL NEXT TO COMMERCIAL PROPERTY

NTS

American Engineering Company

697 P04/01 FEB 03 '99 10:09
6025820260 AMERICAN ENGINEERING



REAMS ROAD & GRASS CHANNEL

NTS

American Engineering Company
CONSULTING ENGINEERS

FAX ROUTING SLIP

TIME STAMP HERE

Initial

Fax for: Initial/Name: B12

Extension called: 63293

Dept./Division: Eng

ACTION:

No answer:

Busy:

Hold for pick up:

Send thru mail: ✓

Comments: