FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

FOUNTAIN HILLS SOUTH FLOODPLAIN DELINEATION STUDY

FCD 92-05

TECHNICAL DATA NOTEBOOK HYDRAULICS

VOLUME 2 OF 2

FEBRUARY 1996
Revised November 1996

Prepared by

AGK ENGINEERS, INC.
2255 North 44th Street, Suite 330
Phoenix, Arizona 85008
(602) 244-2566

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APPENDIX E

HEC-2 OUTPUTS AND DETAILED CALCULATIONS

POWDER WASH

THIS RUN EXECUTED 23OCT95 07:30:36

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**************************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
**************************************


T1      Fountain Hills (South) - Floodplain Delineation        File:POWDER.H2
T1      For the Flood Control District of Maricopa County
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - POWDER WASH

T4 GR data from stereo model received October 93 from KAM
T4 Revised photogrametric x-sec. received May 94
T5 1"=200' 2-feet Contour mapping from KAM flown 8-91
T6 with survey control by Anderson Nelson 12-11-92, field survey Aug 91
T7 Supplemental cross section data surveyed by Valco Surveing
T8 Source of 100-yr flowrate from HEC-1 Analysis by AGK Enginers
T8            File 110-6CE.DAT
T9 Subcritical analysis
T9 This model was developed and configured to determine water surface elevation
T9 for a 100-year floodplain delineation study, Velocity from this model
T9 may not be accurate and should not be used

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                             .017                                  1562.8

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                                                          -1                            15


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        43        53        54        1         2         68        10        8         200

  Concen. point PW6 Dowstream from Leo Dr.

QT       2       583       583
NC    .060      .060      .035        .2        .4

   X-Sec. from 1" = 2000' 20' contour Quad map
   X-sec downstream from study area
   Included to obtain a more accurate water surface at x-sec 0.00
   Initial water surface elevation was determined by the normal depth method
ET                  0       9.1                                                 9925.77   10037.63
```

```
X1     9999       11      9990     10010
GR     1573     9688      1570      9725      1565      9838      1562      9960      1561      9990
GR     1560    10000      1561     10010      1563     10040      1565     10100      1570     10175
GR     1575    10312
```

X-Sec. from 1" = 200' contour map (KAM 8/91)
X-sec downstream from study area
Included to obtain a more accurate water surface at x-sec 0.00

```
ET                 0       9.1                                                          9962.92   10021.4
X1     10000      13      9996     10004       500       500       500
GR      1574    9920      1572      9938      1570      9955      1568      9977      1566      9996
GR      1565   10000      1566     10004      1568     10015      1570     10025      1572     10031
GR      1574   10041      1576     10051      1578     10180
```

Begining of Study

```
ET                 0       9.1                                                          9961.08   10041.02
X1      0.00      26    9981.8   10019.6       270       270       270
GR    1579.9  9723.1    1580.0    9736.7    1581.3    9744.4    1581.4    9759.8    1581.6    9786.6
GR    1582.3  9809.6    1582.7    9840.4    1583.0    9866.1    1582.4    9905.2    1581.2    9926.1
GR    1577.6  9942.3    1570.7    9965.9    1570.5    9981.8    1569.3    9990.3    1569.1   10000.0
GR    1569.6 10005.3    1570.5   10019.6    1570.5   10030.8    1573.7   10051.1    1578.8   10070.3
GR    1579.3 10095.1    1580.5   10116.7    1580.8   10147.1    1579.4   10157.6    1574.3   10173.2
GR    1579.1 10192.2

NC      .045      .055      .032        .1        .3

ET                 0       9.1                                                          9980.57   10026.58
X1      0.08      20    9990.5   10014.6       400       420       416
GR    1586.5  9769.2    1587.7    9782.2    1588.9    9802.5    1589.7    9832.3    1589.8    9859.8
GR    1589.1  9881.2    1587.8    9906.5    1583.5    9932.9    1581.8    9955.5    1580.6    9975.4
GR    1577.8  9990.5    1576.7   10000.0    1576.6   10004.1    1577.9   10014.6    1580.4   10031.8
GR    1581.1 10048.1    1587.4   10067.5    1588.1   10073.1    1588.7   10099.9    1589.0   10120.0

ET                 0       9.1                                                          9962.11   10047.7
X1      0.09      18    9970.3   10038.8        37        70        47
GR    1586.9  9755.2    1586.9    9759.6    1588.2    9765.2    1588.8    9794.7    1589.1    9820.4
GR    1588.6  9849.5    1586.7    9874.9    1583.4    9912.7    1582.0    9941.0    1580.6    9970.3
GR    1579.2 10000.0    1579.1   10014.2    1580.3   10038.8    1581.9   10059.4    1583.3   10086.5
GR    1585.3 10131.2    1587.5   10168.6    1589.3   10187.0
```

Concen. Point *PW6 Upstream from Leo Dr.

```
QT         2       560       560

ET                 0       9.1                                                          9952.11   10031.8
X1      0.10      14    9968.2   10018.3        55        30        51
GR    1590.7  9879.7    1590.4    9923.3    1588.7    9935.7    1580.5    9954.9    1580.3    9968.2
GR    1580.0 10000.0    1580.1   10018.3    1583.3   10045.4    1585.1   10065.3    1586.0   10093.3
GR    1586.7 10108.4    1586.9   10128.1    1588.7   10157.5    1589.4   10189.2
```

```
ET                    0       9.1                                                          9980.88   10036.8
X1      0.19         20    9987.3   10030.0      510       510       498
GR    1602.1     9801.8    1601.3    9818.2   1599.2    9835.6    1598.4    9859.3    1595.5    9879.5
GR    1594.7     9894.8    1596.7    9909.0   1596.4    9934.7    1595.7    9960.8    1586.7    9987.3
GR    1587.0    10000.0    1587.3   10030.0   1590.6   10044.2    1594.9   10067.5    1598.4   10085.3
GR    1600.2    10116.2    1600.9   10161.0   1601.0   10202.4    1600.8   10245.6    1601.4   10284.6

ET                    0       9.1                                                          9970.92   10038.5
X1      0.29         19    9975.9   10031.9      505       480       499
GR    1611.2     9789.4    1612.5    9808.1   1610.6    9824.3    1608.5    9835.3    1606.1    9861.9
GR    1604.8     9894.5    1603.0    9931.4   1603.1    9956.8    1597.3    9975.9    1597.4   10000.0
GR    1597.4    10031.9    1598.8   10038.3   1600.1   10060.8    1602.2   10080.1    1604.8   10103.1
GR    1607.5    10132.9    1609.3   10168.6   1610.6   10187.1    1610.9   10210.6

ET                    0       9.1                                                          9971.7    10089.91
X1      0.38         28   10038.1   10055.2      500       525       504
GR    1620.1     9765.1    1620.1    9768.9   1620.6    9771.6    1620.3    9792.5    1619.7    9825.9
GR    1618.3     9864.9    1617.0    9902.0   1616.2    9917.5    1615.7    9944.2    1611.7    9960.1
GR    1608.5     9974.6    1607.9    9990.1   1607.9   10000.0    1608.2   10028.2    1608.7   10038.1
GR    1607.3    10044.2    1607.3   10053.2   1608.5   10055.2    1609.0   10068.8    1608.3   10075.5
GR    1608.6    10086.8    1609.4   10091.4   1609.8   10119.3    1609.5   10134.9    1610.2   10166.0
GR    1614.7    10191.7    1619.5   10211.1   1622.2   10226.6

  Culvert outlet POW1
  Tail water flow Concen. Point PW5 culvert + Leo Dr. flow

QT                  529       529
NC                                    .3        .5
ET                            9.1                                                          9986      10014
X1      0.42         34       9986    10014      205       200       200
X3        10                                                          1620.25   1620.92
GR      1630    9726.16       1628   9731.88     1626    9736.96      1624   9742.05      1622   9747.02
GR      1622    9817.91       1624   9826.72     1626    9835.14      1628   9843.68      1628   9868.1
GR      1626    9876.53       1624   9885.67     1622    9895.49      1620   9906.78      1618   9924.4
GR      1616     9949.8       1614   9962.41     1612    9975.74    1611.4      9986    1611.4     10000
GR    1611.4      10014       1614   10023.6     1616    10052.1      1618   10068.4      1620     10173
GR      1618   10186.3       1616   10198.5     1616    10254.6      1620   10272.5      1622   10282.9
GR      1624   10295.5       1626   10308.7     1628    10319.9      1630   10330.5

  Culvert -POW1- 5 CMP 48" X 100'  Leo Dr.

QT        2        474       474
SC    5.020         .8         3                 4                   100       2.3    1612.6    1611.4

  Culvert inlet POW1
ET                            9.1                                                          9986      10014
X1      0.44         31       9986    10014      131       100       100
X2                              2
  Top of road lower on left side
X3        10                                                          1620.25   1620.92
BT        -7    9886.4    1620.25                9925    1620.98                9950   1620.99
```

```
BT              10000   1620.92              10050   1620.99              10075   1621.15
BT            10108.77  1621.69
GR      1638  9706.18      1636  9714.79      1634  9722.77      1632  9731.51      1630  9743.78
GR      1628  9754.51      1626  9760.94      1624  9767.32      1622     9774   1621.00  9838.23
GR    1620.5  9870.34   1620.25  9886.40      1620  9902.46      1618  9937.15      1616  9955.94
GR      1614  9971.84    1612.6     9986    1612.6    10000    1612.6    10014      1616  10039.4
GR      1620  10105.3   1621.13 10107.61   1621.69 10108.77   1622.25 10109.92   1624.50 10114.53
GR    1629.0 10123.75      1638 10142.2      1624  10287.6      1626  10324.8      1628  10338.8
GR      1630  10353

NC                                  .1        .3
  Conc. Point *PW4 flow upstream from culvert
QT         2      502       502

ET                      9.1                                                    9964.37  10035.0
X1      0.48       26  9965.39  10034.5       200       197       198
GR      1632  9659.84      1630     9680      1628  9706.19      1626  9729.45      1624  9752.12
GR      1624  9845.41      1624  9928.53      1622  9940.71      1620  9953.16      1618  9965.39
GR      1616    10000      1618  10034.5      1620  10040.8      1622  10046.9      1624  10052.9
GR      1626  10098.9      1628  10155.2      1628  10189.2      1626  10198.1      1626  10237.8
GR      1628  10257.1      1630  10275.1      1632  10290.7      1634    10305      1636  10318.9
GR      1638  10334.9

ET              0       9.1                                                    9969.31  10042.34
X1      0.53       29  9973.4   10038.4       270       275       272
GR    1627.0   9764.0   1626.5   9775.7    1627.1    9777.7    1627.9    9790.5    1627.8    9807.0
GR    1629.1   9815.4   1629.6   9826.9    1628.8    9851.6    1629.2    9872.0    1630.1    9899.7
GR    1630.6   9943.5   1627.5   9954.7    1620.7    9973.4    1620.7    9987.2    1620.6   10000.0
GR    1620.8  10017.4   1620.7  10038.4    1625.8   10051.9    1630.7   10067.5    1632.2   10084.9
GR    1633.3  10105.7   1634.5  10135.8    1634.9   10160.5    1634.9   10185.8    1636.4   10205.0
GR    1637.0  10227.3   1635.5  10244.6    1635.7   10255.7    1631.5   10269.6

ET              0       9.1                                                    9980.4   10060.7
X1      0.63       24  9982.6   10057.8       522       500       516
GR    1650.4   9749.0   1648.5   9765.3    1647.7    9778.1    1648.2    9793.9    1647.7    9812.5
GR    1648.2   9815.8   1648.2   9825.3    1641.6    9850.2    1641.4    9863.7    1639.7    9876.8
GR    1641.7   9888.9   1642.0   9914.0    1642.7    9927.0    1642.9    9958.4    1633.4    9982.6
GR    1632.9   9991.3   1633.1  10000.0    1632.9   10015.6    1633.4   10037.5    1632.7   10048.1
GR    1632.7  10057.8   1639.7  10070.8    1647.9   10092.1    1655.6   10116.4

ET              0       9.1                                                    9974.94  10030.88
X1      0.72       15  9981.9   10018.4       500       530       502
GR    1678.8   9797.9   1672.9   9824.8    1665.5    9866.2    1659.4    9904.1    1655.0    9929.1
GR    1653.4   9939.4   1652.5   9946.7    1645.6    9981.9    1645.2   10000.0    1644.8   10018.4
GR    1648.2  10038.0   1651.8  10051.5    1658.2   10067.3    1665.0   10094.8    1668.4   10113.2
```

```
ET                0       9.1                                                  9976.71  10025.26
X1      0.78     15    9986.0  10019.7     315     315     302
GR    1675.5 9903.7    1671.0   9926.5  1661.4  9950.8  1656.7  9965.5  1652.0   9986.0
GR    1652.2 10000.0   1652.4  10019.7  1657.1 10034.8  1658.8 10054.3  1660.4  10062.8
GR    1660.4 10077.2   1658.3  10100.2  1659.8 10119.8  1660.7 10142.8  1660.8  10165.3

ET                0       9.1                                                  9966.9   10030.1
X1      0.79     18    9986.5  10023.7      50      38      45
GR    1677.8 9859.9    1673.8   9884.1  1668.4  9911.3  1663.2  9933.6  1655.5   9957.4
GR    1654.5 9975.4    1653.2   9986.5  1653.2 10000.0  1653.5 10023.7  1656.8  10038.0
GR    1658.0 10053.0   1659.0  10066.4  1661.5 10083.9  1661.8 10093.9  1661.5  10119.7
GR    1661.5 10146.7   1661.5  10171.3  1661.1 10176.8

NC      .050     .050     .035
  Conc. Point *PW3 Flow downstream from Powderhorn Dr.
QT          2      423      423

ET                0       9.1                                                  9952.69  10048.46
X1      0.80     20    9978.1  10022.3      40      45      41
GR    1663.2 9820.3    1660.5   9863.9  1658.2  9909.3  1656.6  9944.7  1655.3   9978.1
GR    1654.9 10000.0   1655.1  10022.3  1656.3 10048.7  1657.8 10073.4  1659.1  10095.2
GR    1661.8 10104.1   1663.9  10119.2  1665.1 10141.8  1665.1 10164.9  1666.5  10194.5
GR    1666.1 10209.0   1668.1  10235.1  1671.7 10255.8  1675.5 10274.1  1679.0  10296.4

ET                0       9.1                                                  9986.72  10024.31
X1      0.89     14    9989.6  10016.7     460     470     483
GR    1690.1 9889.0    1685.2   9915.5  1680.0  9944.9  1676.6  9960.2  1669.7   9983.2
GR    1665.3 9989.6    1665.3  10000.0  1665.2 10016.7  1667.1 10022.8  1668.7  10036.1
GR    1671.4 10052.6   1677.8  10081.8  1682.2 10101.1  1686.7 10119.9

ET                0       9.1                                                  9985.18  10021.82
X1      0.97     13    9996.7  10003.3     462     497     459
GR    1701.8 9882.6    1693.8   9914.8  1687.5  9943.3  1681.6  9963.8  1681.0   9970.0
GR    1674.3 9996.7    1674.2  10000.0  1674.2 10003.3  1676.0 10012.3  1677.8  10026.7
GR    1681.7 10041.8   1690.5  10068.4  1697.7 10097.2
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .200 CEHV= .400
*SECNO 9999.000
3720 CRITICAL DEPTH ASSUMED

9999.000	2.86	1562.86	1562.86	1562.80	1563.50	.63	.00	.00	1561.00
583.0	151.3	368.0	63.7	56.1	47.3	26.0	.0	.0	1561.00
.00	2.70	7.79	2.45	.060	.035	.060	.000	1560.00	9924.89
.010753	0.	0.	0.	0	8	5	.00	113.06	10037.95

FLOW DISTRIBUTION FOR SECNO= 9999.00 CWSEL= 1562.86

STA=	9925.	9960.	9990.	10010.	10038.
PER Q=	3.8	22.1	63.1	10.9	
AREA=	15.2	40.9	47.3	26.0	
VEL=	1.5	3.2	7.8	2.4	
DEPTH=	.4	1.4	2.4	.9	

*SECNO 10000.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

10000.000	4.15	1569.15	1569.15	.00	1570.06	.91	5.31	.11	1566.00
583.0	184.2	294.5	104.3	48.0	29.2	26.9	1.3	1.0	1566.00
.02	3.83	10.09	3.88	.060	.035	.060	.000	1565.00	9964.38
.010481	500.	500.	500.	0	8	0	.00	56.36	10020.74

FLOW DISTRIBUTION FOR SECNO= 10000.00 CWSEL= 1569.15

STA=	9964.	9977.	9996.	10004.	10015.	10021.
PER Q=	2.2	29.4	50.5	16.9	1.0	
AREA=	7.2	40.8	29.2	23.6	3.3	
VEL=	1.7	4.2	10.1	4.2	1.7	
DEPTH=	.6	2.1	3.6	2.1	.6	

*SECNO .000

.000	2.80	1571.90	1571.53	.00	1572.35	.44	2.19	.09	1570.50
583.0	52.8	481.1	49.1	23.2	83.4	22.0	2.1	1.4	1570.50
.03	2.27	5.77	2.23	.060	.035	.060	.000	1569.10	9961.78
.006465	270.	270.	270.	2	14	0	.00	77.94	10039.72

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= .00 CWSEL= 1571.90

STA=	9962.	9966.	9982.	10020.	10031.	10040.
PER Q=	.6	8.5	82.5	6.7	1.7	
AREA=	2.5	20.8	83.4	15.7	6.3	
VEL=	1.4	2.4	5.8	2.5	1.6	
DEPTH=	.6	1.3	2.2	1.4	.7	

CHV= .100 CEHV= .300
ECNO .080

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.080	3.12	1579.72	1579.72	.00	1580.73	1.01	3.22	.17	1577.80
583.0	30.8	524.2	28.0	10.0	62.0	11.4	3.1	2.0	1577.90
.05	3.09	8.45	2.45	.045	.032	.055	.000	1576.60	9980.14
.009472	400.	416.	420.	0	8	0	.00	46.99	10027.13

FLOW DISTRIBUTION FOR SECNO= .08 CWSEL= 1579.72

STA=	9980.	9991.	10015.	10027.
PER Q=	5.3	89.9	4.8	
AREA=	10.0	62.0	11.4	
VEL=	3.1	8.5	2.5	
DEPTH=	1.0	2.6	.9	

*SECNO .090
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.090	1.89	1580.99	1580.99	.00	1581.62	.63	.52	.04	1580.60
583.0	2.0	576.3	4.7	1.6	90.3	3.1	3.2	2.1	1580.30
.05	1.27	6.38	1.52	.045	.032	.055	.000	1579.10	9962.11
.013078	37.	47.	70.	0	14	0	.00	85.58	10047.70

FLOW DISTRIBUTION FOR SECNO= .09 CWSEL= 1580.99

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

STA=	9962.	9970.	10039.	10048.
PER Q=	.3	98.9	.8	
AREA=	1.6	90.3	3.1	
VEL=	1.3	6.4	1.5	
DEPTH=	.2	1.3	.3	

*SECNO .100

.100	1.69	1581.69	1581.51	.00	1582.17	.49	.54	.01	1580.30
560.0	67.0	469.7	23.4	18.8	79.1	10.7	3.3	2.1	1580.10
.05	3.55	5.94	2.18	.045	.032	.055	.000	1580.00	9952.11
.008898	55.	51.	30.	2	15	0	.00	79.67	10031.78

FLOW DISTRIBUTION FOR SECNO= .10 CWSEL= 1581.69

STA=	9952.	9955.	9968.	10018.	10032.
PER Q=	.6	11.3	83.9	4.2	
AREA=	1.7	17.2	79.1	10.7	
VEL=	2.1	3.7	5.9	2.2	
DEPTH=	.6	1.3	1.6	.8	

*SECNO .190
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.190	2.04	1588.74	1588.74	.00	1589.54	.80	5.24	.09	1586.70
560.0	22.2	527.2	10.7	6.1	71.7	4.5	4.4	2.9	1587.30
.07	3.62	7.35	2.39	.045	.032	.055	.000	1586.70	9981.29
.012570	510.	498.	510.	0	11	0	.00	54.90	10036.19

```
 FLOW DISTRIBUTION FOR SECNO=       .19          CWSEL=    1588.74

 STA=    9981.    9987.   10030.   10036.
   PER Q=      4.0     94.1      1.9
    AREA=      6.1     71.7      4.5
     VEL=      3.6      7.4      2.4
   DEPTH=      1.0      1.7       .7

 *SECNO  .290
 7185 MINIMUM SPECIFIC ENERGY
1
    23OCT95       07:30:36                                                                                    PAGE     9

     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

 3720 CRITICAL DEPTH ASSUMED
       .290       1.51    1598.81    1598.81        .00    1599.49        .67       6.35        .01    1597.30
      560.0       11.4      537.7       11.0        3.8       80.3        4.6        5.4        3.6    1597.40
        .09       3.02       6.70       2.41       .045       .032       .055       .000    1597.30    9970.92
    .012878        505.       499.       480.          0         15          0        .00      67.58   10038.50

 FLOW DISTRIBUTION FOR SECNO=       .29          CWSEL=    1598.81

 STA=    9971.    9976.   10032.   10038.
   PER Q=      2.0     96.0      2.0
    AREA=      3.8     80.3      4.6
     VEL=      3.0      6.7      2.4
   DEPTH=       .8      1.4       .7

 *SECNO  .380
  185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
       .380       1.94    1609.24    1609.24        .00    1609.72        .48       6.81        .02    1608.70
      560.0      304.6      207.1       48.3       71.9       27.7       20.7        6.6        4.7    1608.50
        .12       4.24       7.48       2.34       .045       .032       .055       .000    1607.30    9971.25
    .014191        500.       504.       525.          0         11          0        .00      119.21   10090.47

 FLOW DISTRIBUTION FOR SECNO=       .38          CWSEL=    1609.24

 STA=    9971.    9975.    9990.   10000.   10028.   10038.   10055.   10069.   10076.   10087.   10090.
   PER Q=       .4     11.6     11.3     26.4      4.7     37.0      2.4      1.6      4.4       .3
    AREA=      1.2     16.1     13.2     33.5      7.8     27.7      6.6      3.9      8.9      1.2
     VEL=      2.0      4.0      4.8      4.4      3.4      7.5      2.0      2.3      2.7      1.5
   DEPTH=       .4      1.0      1.3      1.2       .8      1.6       .5       .6       .8       .3

 CCHV=     .300 CEHV=     .500
 *SECNO  .420

 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
1
    23OCT95       07:30:36                                                                                    PAGE    10

     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

 495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1620.25 ELREA=      1620.92
```

```
     .420      2.23   1613.63   1613.63       .00   1614.74      1.12      2.57       .32   1611.40
    529.0        .0     529.0        .0        .0      62.4        .0       7.0       5.1   1611.40
      .13       .00      8.48       .00      .000      .032      .000      .000   1611.40   9986.00
   .011458      205.      200.      200.         0         8         0       .00     28.00  10014.00


 FLOW DISTRIBUTION FOR SECNO=       .42         CWSEL=   1613.63

 STA=    9986.   10014.
   PER Q=    100.0
    AREA=     62.4
     VEL=      8.5
   DEPTH=      2.2


 SPECIAL CULVERT

 SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     5          .020       .80      3.00       .00      4.00       .00    100.00    2         3       1612.60   1611.40

 CHART  2 - CORRUGATED METAL PIPE CULVERT
 SCALE  3 - PIPE PROJECTING FROM FILL

 *SECNO  .440

 SPECIAL CULVERT INLET CONTROL
 EGIC =   1618.072  EGOC =   1618.030  PCWSE=   1613.628  ELTRD=   1620.250


 3301 HV CHANGED MORE THAN HVINS


 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.26

 SPECIAL CULVERT

    EGIC      EGOC       H4      QWEIR     QCULV      VCH      ACULV     ELTRD     WEIRLN
  1618.07   1618.03      3.33        0.      474.     3.185      62.8   1620.25         0.


 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1620.25 ELREA=      1620.92

     .440      5.31   1617.91       .00       .00   1618.07       .16      3.33       .00   1612.60
    474.0        .0     474.0        .0        .0     148.8        .0       7.2       5.1   1612.60
      .14       .00      3.19       .00      .000      .032      .000      .000   1612.60   9986.00
   .000507      131.      100.      100.         2         0         0       .00     28.00  10014.00


1
   23OCT95       07:30:36                                                                          PAGE   11

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


 FLOW DISTRIBUTION FOR SECNO=       .44         CWSEL=   1617.91

 STA=    9986.   10014.
   PER Q=    100.0
    AREA=    148.8
     VEL=      3.2
   DEPTH=      5.3

 CCHV=      .100 CEHV=      .300
 *SECNO  .480
 7185 MINIMUM SPECIFIC ENERGY
  720 CRITICAL DEPTH ASSUMED
     .480      2.17   1618.17   1618.17       .00   1618.77       .60       .30       .13   1618.00
```

502.0	.0	502.0	.0	.1	80.7	.0	7.8	5.3	1618.00
.15	.04	6.22	.03	.045	.032	.055	.000	1616.00	9964.37
.014655	200.	198.	197.	0	18	0	.00	70.66	10035.03

FLOW DISTRIBUTION FOR SECNO= .48 CWSEL= 1618.17

STA=	9964.	9965.	10035.	10035.
PER Q=	.0	100.0	.0	
AREA=	.1	80.7	.0	
VEL=	.0	6.2	.0	
DEPTH=	.1	1.2	.1	

*SECNO .530

.530	1.34	1621.94	1621.92	.00	1622.51	.57	3.73	.00	1620.70
502.0	5.6	491.9	4.4	2.1	80.8	2.1	8.3	5.8	1620.70
.16	2.63	6.09	2.14	.045	.032	.055	.000	1620.60	9969.97
.012883	270.	272.	275.	2	14	0	.00	71.74	10041.71

FLOW DISTRIBUTION FOR SECNO= .53 CWSEL= 1621.94

STA=	9970.	9973.	10038.	10042.
PER Q=	1.1	98.0	.9	
AREA=	2.1	80.8	2.1	
VEL=	2.6	6.1	2.1	
DEPTH=	.6	1.2	.6	

1

23OCT95 07:30:36 PAGE 12

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .630
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.630	1.43	1634.13	1634.13	.00	1634.68	.55	7.09	.00	1633.40
502.0	1.3	496.1	4.6	.7	82.7	1.9	9.3	6.7	1632.70
.18	1.95	6.00	2.41	.045	.032	.055	.000	1632.70	9980.74
.014707	522.	516.	500.	0	8	0	.00	79.71	10060.45

FLOW DISTRIBUTION FOR SECNO= .63 CWSEL= 1634.13

STA=	9981.	9983.	10058.	10060.
PER Q=	.3	98.8	.9	
AREA=	.7	82.7	1.9	
VEL=	1.9	6.0	2.4	
DEPTH=	.4	1.1	.7	

*SECNO .720
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.720	2.08	1646.88	1646.88	.00	1647.65	.77	6.82	.07	1645.60
502.0	11.4	452.2	38.4	4.2	61.5	12.5	10.2	7.5	1644.80
.20	2.71	7.35	3.08	.045	.032	.055	.000	1644.80	9975.36
.012517	500.	502.	530.	0	14	0	.00	55.05	10030.41

FLOW DISTRIBUTION FOR SECNO= .72 CWSEL= 1646.88

STA=	9975.	9982.	10018.	10030.
PER Q=	2.3	90.1	7.7	
AREA=	4.2	61.5	12.5	
VEL=	2.7	7.4	3.1	
DEPTH=	.6	1.7	1.0	

```
*SECNO  .780
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .780      2.02   1654.02   1654.02       .00   1654.85       .82      3.71       .02   1652.00
     502.0      32.0     459.4      10.6        8.9      60.9        4.2      10.8        7.8   1652.40
       .21      3.58      7.54      2.50       .045      .032       .055      .000   1652.00   9977.17
   .011969      315.      302.      315.          0         8          0       .00     47.75  10024.92
```


SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

```
FLOW DISTRIBUTION FOR SECNO=       .78          CWSEL=   1654.02

STA=    9977.    9986.   10020.   10025.
  PER Q=      6.4     91.5      2.1
   AREA=      8.9     60.9      4.2
    VEL=      3.6      7.5      2.5
  DEPTH=      1.0      1.8       .8

*SECNO  .790
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .790      1.77   1654.97   1654.97       .00   1655.67       .70       .53       .01   1653.20
     502.0      50.4     440.7      11.0       14.4      62.3        4.7      10.8        7.9   1653.50
       .22      3.49      7.07      2.34       .045      .032       .055      .000   1653.20   9966.92
   .011646       50.       45.       38.          0        11          0       .00     63.16  10030.08

.OW DISTRIBUTION FOR SECNO=       .79          CWSEL=   1654.97

STA=    9967.    9975.    9987.   10024.   10030.
  PER Q=       .5      9.5     87.8      2.2
   AREA=      2.0     12.4     62.3      4.7
    VEL=      1.4      3.8      7.1      2.3
  DEPTH=       .2      1.1      1.7       .7

*SECNO  .800
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .800      1.46   1656.36   1656.36       .00   1656.82       .47       .52       .02   1655.30
     423.0      32.8     344.4      45.8       14.4      57.9       17.4      10.9        8.0   1655.10
       .22      2.28      5.95      2.63       .050      .035       .050      .000   1654.90   9950.90
   .013727       40.       41.       45.          0        16          0       .00     98.76  10049.67

FLOW DISTRIBUTION FOR SECNO=       .80          CWSEL=   1656.36

STA=    9951.    9978.   10022.   10049.   10050.
  PER Q=      7.8     81.4     10.8       .0
   AREA=     14.4     57.9     17.4       .0
    VEL=      2.3      6.0      2.6       .0
  DEPTH=       .5      1.3       .7       .0
```


SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

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SECNO  .890
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7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .890      1.97   1667.17   1667.17       .00   1668.03       .86      6.61       .12   1665.30
    423.0       7.5     394.2      21.4       2.5      51.6       6.3      11.7       8.7   1665.20
      .24      2.93      7.65      3.42      .050      .035      .050      .000   1665.20   9986.88
   .013755      460.      483.      470.         0        11         0       .00     36.52  10023.40


FLOW DISTRIBUTION FOR SECNO=       .89          CWSEL=   1667.17

STA=    9987.    9990.   10017.   10023.   10023.
  PER Q=      1.8     93.2      5.1       .0
   AREA=      2.5     51.6      6.2       .0
    VEL=      2.9      7.6      3.4       .0
  DEPTH=       .9      1.9      1.0       .0

*SECNO  .970
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .970      3.20   1677.40   1677.40       .00   1678.31       .91      5.90       .02   1674.30
    423.0      80.8      207.9     134.3      19.2      21.0      28.6      12.4       9.1   1674.20
      .25      4.22      9.92      4.70      .050      .035      .050      .000   1674.20   9984.34
   .011694      462.      459.      497.         0        14         0       .00     39.16  10023.51


FLOW DISTRIBUTION FOR SECNO=       .97          CWSEL=   1677.40

STA=    9984.    9997.   10003.   10012.   10024.
  PER Q=     19.1     49.1     27.1      4.7
   AREA=     19.2     21.0     20.7      7.8
    VEL=      4.2      9.9      5.5      2.5
  DEPTH=      1.6      3.2      2.3       .7
```

THIS RUN EXECUTED 23OCT95 07:30:37

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	9999.000	583.00	9924.89	10037.95	1562.86	1562.86	.89	.63	2.86
*	9999.000	583.00	9925.77	10037.63	1562.89	1562.89	.86	.60	2.89
*	10000.000	583.00	9964.38	10020.74	1569.15	1569.15	.93	.91	4.15
*	10000.000	583.00	9964.43	10020.71	1569.14	1569.14	.93	.92	4.14
	.000	583.00	9961.78	10039.72	1571.90	1571.53	.68	.44	2.80
	.000	583.00	9961.77	10039.73	1571.91	1571.53	.68	.44	2.81
*	.080	583.00	9980.14	10027.13	1579.72	1579.72	.93	1.01	3.12
*	.080	583.00	9980.57	10026.58	1579.76	1579.76	.90	.97	3.16
*	.090	583.00	9962.11	10047.70	1580.99	1580.99	.98	.63	1.89
*	.090	583.00	9962.11	10047.70	1581.00	1581.00	.97	.61	1.90
	.100	560.00	9952.11	10031.78	1581.69	1581.51	.83	.49	1.69
	.100	560.00	9952.13	10031.70	1581.68	1581.51	.84	.49	1.68
*	.190	560.00	9981.29	10036.19	1588.74	1588.74	1.00	.80	2.04
*	.190	560.00	9981.31	10036.17	1588.73	1588.73	1.01	.81	2.03
*	.290	560.00	9970.92	10038.50	1598.81	1598.81	.99	.67	1.51
*	.290	560.00	9970.92	10038.50	1598.82	1598.82	.98	.67	1.52
*	.380	560.00	9971.25	10090.47	1609.24	1609.24	1.04	.48	1.94
*	.380	560.00	9971.70	10089.91	1609.24	1609.24	1.04	.48	1.94
*	.420	529.00	9986.00	10014.00	1613.63	1613.63	1.00	1.12	2.23
*	.420	529.00	9986.00	10014.00	1613.63	1613.63	1.00	1.12	2.23
*	.440	474.00	9986.00	10014.00	1617.91	.00	.24	.16	5.31
*	.440	474.00	9986.00	10014.00	1617.91	.00	.24	.16	5.31

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	.480	502.00	9964.37	10035.03	1618.17	1618.17	1.02	.60	2.17
*	.480	502.00	9964.37	10035.00	1618.17	1618.17	1.01	.60	2.17
	.530	502.00	9969.97	10041.71	1621.94	1621.92	.96	.57	1.34
	.530	502.00	9969.97	10041.70	1621.94	1621.92	.96	.57	1.34
*	.630	502.00	9980.74	10060.45	1634.13	1634.13	1.01	.55	1.43
*	.630	502.00	9980.74	10060.46	1634.13	1634.13	1.01	.55	1.43
*	.720	502.00	9975.36	10030.41	1646.88	1646.88	1.00	.77	2.08
*	.720	502.00	9975.32	10030.44	1646.89	1646.89	.99	.76	2.09
*	.780	502.00	9977.17	10024.92	1654.02	1654.02	.99	.82	2.02
*	.780	502.00	9977.22	10024.88	1654.01	1654.01	1.00	.84	2.01
*	.790	502.00	9966.92	10030.08	1654.97	1654.97	.96	.70	1.77
*	.790	502.00	9966.90	10030.10	1654.98	1654.98	.95	.69	1.78
*	.800	423.00	9950.90	10049.67	1656.36	1656.36	.92	.47	1.46
*	.800	423.00	9952.69	10048.46	1656.36	1656.36	.91	.46	1.46
*	.890	423.00	9986.88	10023.40	1667.17	1667.17	.98	.86	1.97
*	.890	423.00	9986.88	10023.39	1667.17	1667.17	.98	.86	1.97
*	.970	423.00	9984.34	10023.51	1677.40	1677.40	.98	.91	3.20
*	.970	423.00	9985.18	10021.82	1677.40	1677.40	.97	.90	3.20

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=   9999.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   9999.000  PROFILE=  2  CRITICAL DEPTH ASSUMED

CAUTION SECNO=  10000.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  10000.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  10000.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  10000.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .080  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .080  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .080  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .080  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .090  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .090  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .090  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .090  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .190  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .190  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .190  PROFILE=  2  CRITICAL DEPTH ASSUMED
 AUTION SECNO=       .190  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .290  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .290  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .290  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .290  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .380  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .380  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .380  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .380  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .420  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .420  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .420  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .420  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=       .440  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=       .440  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=       .480  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .480  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .480  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .480  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .630  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .630  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .630  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .630  PROFILE=  2  MINIMUM SPECIFIC ENERGY
```

```
CAUTION SECNO=      .720  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .720  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .720  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .720  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .780  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .780  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .780  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .780  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .790  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .790  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .790  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .790  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .800  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .800  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .800  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .800  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .890  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .890  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .890  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .890  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .970  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .970  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .970  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .970  PROFILE=  2  MINIMUM SPECIFIC ENERGY
```

FLOODWAY DATA, Fountain Hills (south) -
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
9999.000	112.	133.	4.4	1562.9	1562.9	.0
10000.000	56.	104.	5.6	1569.1	1569.1	.0
.000	78.	129.	4.5	1571.9	1571.9	.0
.080	46.	85.	6.9	1579.7	1579.7	.0
.090	86.	96.	6.1	1581.0	1581.0	.0
.100	80.	108.	5.2	1581.7	1581.7	.0
.190	55.	82.	6.8	1588.7	1588.7	.0
.290	68.	89.	6.3	1598.8	1598.8	.0
.380	118.	120.	4.7	1609.2	1609.2	.0
.420	28.	62.	8.5	1613.6	1613.6	.0
.440	28.	149.	3.2	1617.9	1617.9	.0
.480	71.	81.	6.2	1618.2	1618.2	.0
.530	72.	85.	5.9	1621.9	1621.9	.0
.630	80.	85.	5.9	1634.1	1634.1	.0
.720	55.	79.	6.4	1646.9	1646.9	.0
.780	48.	74.	6.8	1654.0	1654.0	.0
.790	63.	82.	6.1	1655.0	1655.0	.0
.800	96.	89.	4.7	1656.4	1656.4	.0
.890	37.	60.	7.0	1667.2	1667.2	.0
.970	37.	68.	6.2	1677.4	1677.4	.0

FOUNTAIN HILLS SOUTH FIS
Powder Wash

X-Sec	HEC-1 Conc. Point	100-Yr Discharge (cfs)	Left Overbank Lenght (ft)	Rigth Overbank Lenght (ft)	Channel Lenght (ft)	COMMENT
9999	POW6	583				
10000		583	500	500	500	Dowstream x-sec.
0.00		583	270	270	270	Dowstream x-sec.
0.08		583	400	420	416	
0.09		583	37	70	47	
0.10	*POW6	560	55	30	51	Leo Dr. wet Crossing
0.19		560	510	510	498	
0.29		560	505	480	499	
0.38		560	500	525	504	
0.42	PW5	529	205	200	200	Leo Dr.Culvert outlet
0.44	SPOW4	474	131	100	100	Leo Dr. Culvert inlet
0.48	*POW4	502	200	197	198	
0.53		502	270	275	272	
0.63		502	522	500	516	
0.72		502	500	530	502	
0.78		502	315	315	302	
0.79		502	50	38	45	
0.80	*POW3	423	40	45	41	Powderhorn Dr.
0.89		423	460	470	483	
0.97		423	462	497	459	

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    23OCT95    TIME   07:30:36   *
*********************************************
```


```
*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*         (916) 756-1104                *
*****************************************
```


```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                   X
X     X  X        X     X             X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

CEREUS WASH

FOUNTAIN HILLS SOUTH FIS
Cereus Wash

X-Sec	HEC-1 Conc. Point	100-Yr Discharge (cfs)	Left Overbank Length (ft)	Right Overbank Length (ft)	Channel Length (ft)	COMMENT
1000	CER14	2936				downstream flow
1001		2936	600	600	600	
2.56		2936	650	650	352	
2.65	*CER14	2935	460	480	478	
2.68		2935	170	160	160	
2.70		2935	130	150	124	Culvert outlet
2.73	SCER13	2933	130	130	130	Culvert inlet
2.74	CER13	2994	40	100	41	
2.78		2994	200	250	249	
2.80	*CER12	2958	75	120	99	
2.88		2958	412	405	404	
2.94		2958	340	330	332	
3.00	*CER11	2824	290	400	307	
3.02		2824	80	80	80	Culvert outlet
3.04	SCER9	2813	120	150	120	Culvert inlet
3.05	CER9	2868	60	100	59	
3.14		2868	550	420	472	
3.23		2868	460	530	498	
3.33		2868	520	420	487	
3.36		2868	130	190	171	
3.42	CER8	2842	260	460	333	
3.50		2842	440	250	431	Trevino Wash confluence
3.59	*CER8	2770	480	420	476	
3.69		2770	550	410	523	
3.74		2770	250	275	245	
3.83	*CER7	2682	525	475	469	
3.93		2682	480	530	534	
4.00		2682	480	400	404	Logan Wash Confluence
4.06	*CER6	2451	260	350	306	
4.10		2451	225	450	225	
4.19		2451	440	490	443	
4.23		2451	170	250	224	Chukar Wash Confluence
4.32	*CER5	2078	490	520	476	
4.39		2078	370	320	349	
4.45		2078	310	260	304	Wallnut Wash Confluence
4.54	*CER4	321	500	600	507	
4.60		321	275	340	305	Culvert outlet
4.64	SCER3	291	250	226	231	Culvert inlet
4.71	CER3	299	400	325	365	
4.78		299	340	370	356	
4.84		299	340	340	334	
4.92		299	400	400	424	
4.97		299	250	280	275	
5.02	CER2	140	250	260	264	Culvert outlet
5.06	SCER1	132	180	180	175	Culvert inlet
5.12	CER1	172	325	300	314	

```
*******************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    20JAN97    TIME   13:15:05  *
*******************************************
```

```
***************************************
*  U.S. ARMY CORPS OF ENGINEERS       *
*  HYDROLOGIC ENGINEERING CENTER      *
*  609 SECOND STREET, SUITE D         *
*  DAVIS, CALIFORNIA 95616-4687       *
*          (916) 756-1104             *
***************************************
```

```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 20JAN97 13:15:05

```
**************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
**************************************


T1      Fountain Hills (South) - Floodplain Delineation        File CEREUS.H2
T1      For the Flood Control District of Maricopa County
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - CEREUS WASH

T4 GR data from stereo model received October 93 from KAM
T4 Revised photogrametric x-sec. received May 94
T5 1"=200' 2-feet Contour mapping from KAM flown 8-91
T6 with survey control by Anderson Nelson 12-11-92, field survey Aug 91
T7 Supplemental cross section data surveyed by Valco Surveing
T8 Source of 100-yr flowrate from HEC-1 Analysis by AGK Enginers
T8            File 120-6CE.DAT
T9 Subcritical analysis
T9 This model was developed and configured to determine water surface elevation
T9 for a 100-year floodplain delineation study, Velocity from this model
T9 may not be accurate and should not be used

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                             0.01                                  1514.5

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                                                          -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38         43         53         54         1          2         68         10         8         200

   This model was depeloped and configured to determine water surface elevation
   for a 100-year floodplain delineation study

  Flow downstrem From Study area

QT        2       2936       2936
NC     .089       .099       .034         .2          .4

   X-Sec. from 1" = 2000' 20' contour Quad map
   X-sec downstream from study area
   Included to obtain a more accurate water surface at x-sec 2.56
   Initial water surface elevation was determined by the normal depth method
```

```
X1     1000          9       9990      10010
GR     1520       9940       1515       9960       1510      9980       1509       9990       1508      10000
GR     1509      10010       1510      10025       1515     10115       1520      10260
```

X-Sec. from 1" = 2000' 20' contour Quad map
X-sec downstream from study area
Included to obtaine a more accurate water surface at x-sec 2.56

```
X1     1001          9       9990      10010        600        600        600
GR     1526       9870       1525       9890       1520      9940       1518       9990       1517      10000
GR     1518      10010       1520      10030       1525     10165       1530      10300
```

Beginning of study

```
ET                             9.1                                                              9826.2    10048.8
X1     2.56         22      10000    10013.8        650        650        650
GR   1531.2       9698     1532.2     9720.4     1533.0     9750.7     1531.4       9765     1528.6     9784.1
GR   1528.5     9818.5     1523.6     9838.1     1520.0     9855.2     1519.2     9866.8     1521.4     9877.7
GR   1522.2     9922.4     1521.9       9969     1521.6     9985.4     1517.9      10000     1517.9    10013.8
GR   1519.8    10025.9     1524.9    10043.6     1530.7    10061.5     1532.4    10070.8     1533.6    10085.4
GR   1534.2      10103     1533.7    10131.2
```

```
NC                                        .1         .3
```

Conc. Point *CER14 Downstream from Shea Blvd.

```
             2       2935       2935
ET                             9.1                                                              9908.91   10090.51
X1     2.65         20      9980.3    10018.6        460        480        478
GR   1540.6       9844.3     1539.2     9875.5     1528.5     9914.1     1527.1       9944.4     1526.8     9980.3
GR   1525.8       9987.4     1525.9    10000.0     1525.7    10011.5     1527.2      10018.6     1527.6    10048.6
GR   1526.6      10074.6     1530.4    10092.7     1533.3    10109.3     1536.3      10129.7     1537.6    10143.4
GR   1537.8      10160.9     1537.0    10185.8     1536.0    10209.9     1537.4      10232.9     1538.6    10247.3

ET                             9.1                                                              9956.76   10087.62
X1     2.68         13      9971.4    10023.3        170        160        160
GR   1541.3       9910.2     1539.2     9936.2     1530.5     9961.6     1529.4       9971.4     1527.3     9983.9
GR   1527.7      10000.0     1527.8    10023.3     1529.5    10030.5     1529.8      10050.1     1530.4    10078.4
GR   1532.8      10091.0     1537.0    10106.1     1541.0    10127.9
```

Culvert outlet CER1

```
NC                                        .3         .5
ET                             9.1                                                                 9978      10022
X1     2.70         11       9978      10022        130        150        124
X3       10                                                                    1547.03    1546.9
GR   1548.2       9872.2     1548.0     9942.4     1547.2     9970.6     1545.4       9976.8       1529       9978
GR     1529      10000.0       1529      10022     1546.4    10032.4     1546.3      10082.3     1546.3    10145.8
GR   1546.6      10166.1
```

Culvert -CER1- 3 box culvert 12' X 12' X 135' Shea Blvd.
No weir flow expected dummy weir length of 100' used
Conc. Point SCER13 Flow throught Shea Blvd. culvert

```
QT        2       2933       2933
SC    3.013         .4          3                  12         12        135        8.1    1530.3        1529

  Culvert inlet CER1
ET                    0       9.11                                                          9978       10022
X1     2.73          15       9978      10022       135        135        135
X2                                2
  Road slope to Left
X3       10                                                                  1547.03      1546.9
BT       -5     9959.5       1548                10000     1547.03                10050      1547.5
BT              10100    1547.15               10145.9     1546.9
GR   1549.6     9816.2     1549.1      9875.6    1548.8     9912.1     1548.0     9959.5     1530.3        9978
GR   1530.3    10000.0     1530.3       10022    1544.1    10039.7     1545.0    10059.5     1546.5       10086.7
GR   1546.9    10130.3     1546.9     10145.9    1545.5    10162.6     1547.3    10187.0     1548.0       10191.4

  Conc. Point CER13 Flow upstream from Shea Blvd.

QT        2       2994       2994

ET                          9.1                                                             9968.56       10110.25
X1     2.74          16     9979.9       10017        40        100         41
GR   1549.5     9843.8     1549.4      9879.0    1548.9     9927.0     1547.8     9948.4     1542.9        9963.9
GR   1533.3     9979.9     1532.1      9992.0    1530.8     9994.9     1530.7    10000.0     1533.0       10017.0
     1533.7    10029.0     1533.5     10045.8    1534.1    10058.3     1532.8    10087.2     1536.1       10099.6
     1547.3    10129.4

NC                                        .1         .3

ET                          9.1                                                             9898.52       10073.65
X1     2.78          16       9986     10051.7       200        250         249
GR   1546.9     9869.9     1545.7      9882.8    1536.5     9910.5     1536.3     9921.5     1535.7        9937.5
GR   1536.0     9960.0     1536.4      9986.0    1534.2     9995.2     1534.0    10000.0     1534.5       10009.0
GR   1534.9    10043.9     1536.5     10051.7    1536.7    10060.6     1537.6    10069.9     1551.8       10088.4
GR   1551.9    10091.2

  Conc. point *CER12 Flow upstream from Last Trail Drain confluence

QT        2       2958       2958

ET                          9.1                                                             9942.7       10065.1
X1     2.80          11     9988.3     10005.5        75        120          99
GR   1547.6     9912.9     1544.1      9930.6    1538.3     9952.5     1537.2     9968.6     1535.8        9988.3
GR   1534.7    10000.0     1534.2     10005.5    1537.1    10015.7     1536.4    10038.4     1538.5       10052.1
GR   1540.6    10065.1


ET                          9.1                                                                9970       10054
X1     2.88          11     9984.7     10013.2        412        405         404
GR   1557.0     9944.3     1553.9      9954.6    1539.5     9984.7     1539.1    10000.0     1539.2       10013.2
GR   1540.0    10017.5     1540.8     10037.1    1546.4    10059.1     1550.2    10075.2     1551.6       10094.9
GR   1552.6    10107.2
```

```
NC    0.078      .078      .037       .1        .3

ET                          9.1                                                  9976      10051
X1     2.94        15    9989.1   10006.5       340       330       332
GR   1555.5    9902.6    1555.2    9929.5    1554.3    9949.8    1554.7    9951.2    1553.4    9968.7
GR   1542.0    9989.1    1542.1   10000.0    1542.7   10006.5    1544.1   10012.1    1544.3   10037.4
GR   1550.7   10054.8    1554.3   10071.8    1555.5   10082.6    1554.7   10102.7    1554.1   10113.1

  Conc. Point *CER11 Flow upstream from Laser Drain confluence

QT        2      2824      2824

ET                          9.1                                                  9959.8    10066.6
X1     3.00        14    9992.0     10013       290       400       307
GR   1561.2    9880.7    1560.6    9899.5    1557.8    9928.2    1553.3    9959.4    1547.1    9992.0
GR   1546.9   10000.0    1546.5   10010.0    1547.7   10013.0    1548.0   10019.1    1550.8   10042.0
GR   1552.8   10064.6    1557.1   10084.6    1562.1   10100.5    1562.1   10110.4

  Culvert Outlet CER2

NC                                    0.3       0.5
 T                          9.1                                                  9968.7    10048.8
 1     3.01        20       9987     10013        80        80        80
X3       10                                                       1554.31   1553.78
GR   1563.5    9905.5    1564.4    9943.9    1563.2    9951.4    1556.0    9964.0    1550.6    9979.7
GR   1547.3      9987   1547.31      9995   1547.31   10000.0   1547.31     10005   1547.31     10013
GR   1550.6   10023.8    1553.2   10038.7    1554.6   10050.3    1556.2   10064.5    1557.8   10078.8
GR   1559.6   10086.7    1561.8   10098.2    1563.7   10107.4    1564.3   10117.4    1564.3   10118.5

  Culvert - CER2 -  2-10' x 8' Box Culvert under Saguaro Blvd.
  Conc. point SCER9 Flow through Saguaro Blvd. Culvert

QT        2      2813      2813
SC    2.013        .4       2.7                    8        10        86       8.1    1549.37   1547.31

  Culvert inlet CER2
ET                          9.1                                                  9880.22   10111.6
X1     3.04        19       9987     10013       120       150       120
X2                             2              1563.53
X3       10                                                       1563.18   1563.11
BT       -7   9735.28      1566                 9950    1564.6                 10000    1563.2
BT            10050    1563.5              10082.9    1563.6                10104.9      1564
BT            10134      1566
GR     1566   9735.28      1564   9898.72    1563.8    9914.7    1563.4    9949.7    1561.4    9959.6
GR   1554.3    9979.9   1549.37      9987   1549.37    9993.4   1549.37      9994   1549.37   10000.0
GR   1549.3     10006   1549.37     10013    1555.9   10024.0    1563.5   10041.0    1561.1   10053.9
GR   1562.8   10065.8    1563.6   10082.9      1564   10104.9      1566   10164.0

  Conc. point CER9 Flow upstream from Saguaro Blvd.
```

```
QT        2       2868       2868
ET                            9.1                                                                  9905.28     10156.6
X1     3.05         14     9982.7    10020.2         60        100          59
GR     1566     9864.71     1564.0     9915.3     1563.7     9953.0     1562.3     9961.6     1551.8     9982.7
GR   1551.4    10000.0     1551.7    10020.2     1552.2    10029.7     1552.2    10033.9     1564.7    10061.4
GR   1563.4    10083.6     1563.5    10092.3       1564    10149.8       1566    10184.1

NC                                                .1         .3

ET                            9.1                                                                  9941.5     10067.6
X1     3.14         13     9986.3    10020.2        500        420        472
GR   1571.9     9900.0     1569.6     9920.0     1563.3     9946.5     1560.6     9970.5     1557.4     9986.3
GR   1557.1    10000.0     1557.5    10020.2     1558.6    10028.4     1559.1    10044.8     1560.5    10056.1
GR   1568.2    10078.3     1569.8    10098.2     1571.6    10113.4

ET                            9.1                                                                  9940.91    10024.41
X1     3.23         21       9976      10016        460        530        498
GR   1578.5     9882.3     1578.3     9900.4     1577.2     9915.8     1576.1     9924.8     1573.6     9932.7
GR   1569.2     9938.3     1565.2     9948.7     1563.5     9959.2     1565.6     9976.0     1563.1     9990.6
GR   1563.1    10000.0     1563.3    10010.1       1565      10016     1567.2    10021.9     1573.3    10037.3
GR   1577.6    10049.8     1580.2    10060.0     1581.5    10070.5     1582.1    10082.6     1582.0    10088.7
     1582.2    10091.2

ET                            9.1                                                                  9968.9     10079.4
X1     3.32         20     9981.8    10015.5        520        420        487
GR   1579.6     9847.5     1575.5     9872.6     1577.0     9879.7     1578.2     9904.6     1579.3     9925.9
GR   1579.2     9939.9     1578.2     9951.6     1576.4     9961.4     1574.0     9972.0     1573.3     9981.8
GR   1569.0     9994.7     1568.9    10000.0     1568.9    10003.5     1570.7    10015.5     1572.2    10029.6
GR   1571.9    10041.4     1570.8    10050.4     1570.3    10066.7     1577.8    10088.4     1583.1    10111.2

NC                                                .1         .3

ET                            9.1                                                                  9912.8     10027.96
X1     3.36         17     9986.3    10006.8        130        190        171
GR   1582.1     9773.8     1581.5     9800.5     1582.0     9825.2     1581.0     9845.6     1579.4     9869.5
GR   1579.1     9875.5     1578.7     9897.6     1576.2     9920.0     1574.3     9948.3     1572.4     9961.3
GR   1573.2     9986.3     1572.0    10000.0     1572.0    10006.8     1575.0    10021.0     1580.3    10039.4
GR   1581.7    10073.5     1584.1    10086.8

  Conc. point CER8 Flow dowstream from Trevino Wash confluence

QT        2       2842       2842

ET                            9.1                                                                  9980.63    10261.23
X1     3.42         24     9990.3     10006        260        460        333
GR   1587.7     9922.2     1588.3     9947.7     1588.8     9968.7     1576.7     9990.3     1576.6    10000.0
GR   1577.2    10006.0     1577.2    10017.4     1578.3    10032.3     1579.3    10061.5     1581.0    10106.3
GR   1581.0    10123.1     1581.7    10147.4     1581.8    10165.2     1581.7    10182.8     1582.0    10200.9
GR   1583.1    10213.0     1583.1    10228.9     1580.6    10251.0     1582.9    10266.5     1585.1    10276.8
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GR   1586.4    10300.1     1587.2    10327.3     1587.2    10349.5     1588.1    10373.7

NC                                        .1          .3

  Trevino Wash confluence
ET                            9.1                                                  9970.78     10166.6
X1      3.50          23     9979.1    10015.4         440         250         431
GR    1595.2      9947.4     1593.1     9958.3      1581.8      9979.1      1581.0      9989.0      1580.4      10000.0
GR    1580.4     10005.0     1582.6    10015.4      1583.4     10040.0      1584.2     10065.0      1584.8      10087.7
GR    1585.6     10117.3     1585.5    10148.2      1586.0     10165.1      1590.2     10185.0      1590.9      10198.4
GR    1590.5     10223.7     1590.0    10253.7      1590.5     10269.8      1591.6     10285.5      1590.8      10312.3
GR    1590.8     10323.9     1593.1    10352.6      1595.2     10375.1

  Conc. Point *CER8 Flow upstream from Travino Wash Confluence

QT         2         2770        2770
NC                                        .1          .3

ET                            9.1                                                  9952.05     10046.25
X1      3.59          16     9992.5    10004.9         480         420         476
GR    1597.9      9909.7     1597.9     9936.5      1589.3      9959.7      1587.5      9986.1      1585.7      9992.5
GR    1585.5     10000.0     1585.7    10004.9      1588.9     10023.6      1589.3     10028.8      1590.9      10040.8
GR    1593.1     10050.5     1594.8    10066.5      1595.0     10077.1      1600.6     10095.7      1601.3      10102.1
GR    1601.8     10115.9

ET                            9.1                                                  9961.95     10097.7
X1      3.69          18     9984.5    10014.7         550         410         523
GR    1608.7      9944.7     1599.6     9962.4      1596.7      9976.9      1596.4      9984.5      1594.6      9991.7
GR    1594.0     10000.0     1594.0    10006.5      1596.1     10014.7      1597.5     10058.0      1597.7      10088.4
GR    1601.7     10105.8     1602.5    10116.9      1602.0     10143.4      1602.2     10164.9      1602.4      10192.1
GR    1604.4     10203.6     1610.3    10226.7      1623.1     10277.6

NC       .058        .058        .041

  Basin 120-M confluence
ET                            9.1                                                  9949.42     10028.3
X1      3.74          15     9993.7    10010.1         250         275         245
GR    1627.3      9906.3     1616.7     9928.3      1602.0      9952.3      1599.8      9984.0      1597.4      9993.7
GR    1597.0     10000.0     1597.9    10010.1      1603.3     10026.1      1607.7     10047.1      1608.2      10063.6
GR    1608.8     10089.0     1609.0    10110.4      1610.4     10124.3      1614.0     10137.6      1623.1      10167.8

  Conc. point *CER7 Flow upstream from basin 120-M Confluence

QT         2         2682        2682

ET                            9.1                                                  9915.3      10034.1
X1      3.82          26     9991.7    10013.4         525         475         469
GR    1620.3      9603.5     1619.0     9628.2      1617.4      9661.2      1617.3      9688.5      1616.4      9731.1
GR    1615.4      9745.3     1615.7     9755.1      1614.5      9787.3      1612.9      9813.5      1612.8      9836.4
GR    1612.8      9861.1     1612.4     9880.4      1610.6      9902.6      1609.4      9918.3      1607.6      9927.5
GR    1607.3      9942.8     1605.6     9953.2      1604.1      9963.0      1606.6      9971.1      1606.7      9982.2
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GR   1604.1     9991.7     1602.5    10000.0     1604.8    10013.4     1603.3    10021.5     1610.4    10035.6
GR   1620.1    10052.6

NC      .044       .044       .042

ET                              9.1                                                            9980.4    10105.5
X1      3.93         39     9983.1    10015.4         480         530         534
GR   1632.2     9527.4     1628.2     9548.0     1624.9     9565.5     1624.4     9583.5     1622.4     9607.8
GR   1625.7     9622.6     1627.2     9638.3     1627.4     9653.8     1626.2     9681.7     1625.0     9715.0
GR   1624.6     9752.4     1625.0     9777.2     1624.5     9805.5     1624.1     9821.1     1624.4     9851.1
GR   1624.6     9869.3     1624.4     9889.0     1625.4     9922.8     1625.9     9947.8     1624.6     9971.5
GR   1620.9     9976.8     1612.2     9983.1     1611.0     9987.0     1610.1     9996.6     1610.5    10000.0
GR   1611.5    10004.7     1613.9    10015.4     1613.0    10032.9     1613.0    10050.2     1614.3    10058.5
GR   1614.1    10072.3     1614.9    10088.7     1616.1    10108.5     1617.5    10133.8     1617.9    10149.7
GR   1619.7    10165.0     1622.2    10185.1     1624.4    10195.4     1628.3    10205.2

  Logan Wash Confluence

ET                              9.1                                                            9898.8    10112.9
X1      4.00         20     9908.7       10078         480         400         404
GR   1639.6     9795.2     1636.6     9815.8     1635.3     9823.2     1634.9     9835.0     1631.4     9855.9
GR   1626.4     9876.9     1617.4     9908.7     1617.1     9940.1     1617.2     9976.8     1617.5    10000.0
GR   1617.3    10034.8     1617.6    10038.3     1617.8    10050.9     1617.9    10078.0     1617.9    10102.4
GR   1621.8    10120.3     1627.9    10145.9     1632.8    10170.1     1633.0    10194.3     1639.7    10216.8

  Conc. point *CER6 Flow Upstream From Logan Wash Confluence

QT         2       2451       2451
NC      .056       .056       .039

ET                              9.1                                                            9945.1    10062.9
X1      4.06         16     9990.2    10011.7         260         350         306
GR   1647.8     9786.6     1644.2     9817.1     1641.3     9840.8     1637.8     9861.3     1637.4     9892.0
GR   1636.8     9913.7     1634.0     9936.4     1630.8     9961.3     1628.8     9990.2     1625.9    10000.0
GR   1629.5    10011.7     1629.3    10018.2     1631.6    10047.9     1632.9    10063.1     1633.7    10077.3
GR   1634.8    10101.2

ET                              9.1                                                            9983.9       10247
X1      4.10         23     9974.8    10009.5         225         450         225
GR   1649.3     9888.4     1644.7     9928.0     1640.1     9953.7     1639.5     9968.3     1638.3     9974.8
GR   1628.6    10000.0     1632.9    10009.5     1629.8    10019.4     1630.6    10038.0     1630.5    10077.0
GR   1630.8    10127.0     1632.1    10146.1     1632.3    10182.0     1632.8    10224.0     1633.7    10238.5
GR   1637.0    10263.7     1639.1    10280.1     1640.9    10298.3     1642.4    10317.5     1644.4    10344.9
GR   1646.6    10376.6     1648.0    10400.5     1649.0    10420.5

ET                              9.1                                                            9950.9    10050.4
X1      4.19         18     9993.3    10004.1         440         490         443
GR   1650.7     9903.8     1644.1     9922.7     1640.3     9934.6     1639.4     9941.6     1635.6     9959.2
GR   1635.4     9979.5     1633.0     9993.3     1632.7    10000.0     1632.9    10004.1     1634.2    10014.1
GR   1634.1    10030.6     1635.2    10043.6     1642.8    10067.3     1643.4    10088.3     1645.5    10113.4
GR   1647.4    10144.6     1648.2    10177.4     1649.2    10220.1
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NC      .051       .051       .037

  Chuckar Wash Confluence
ET                           9.1                                                          9878.3     10047.5
X1      4.23         22     9991.7    10008.0       170        250        224
GR    1659.8     9799.4    1651.6     9821.7    1644.5     9843.5    1641.6     9869.8    1639.2     9889.7
GR    1639.6     9906.7    1639.0     9934.3    1639.1     9950.5    1637.5     9969.4    1637.8     9983.4
GR    1635.5     9991.7    1634.3    10000.0    1634.4    10008.0    1638.3    10021.7    1638.9    10041.1
GR    1642.8    10056.0    1651.0    10076.8    1651.6    10085.8    1650.9    10102.0    1649.7    10131.0
GR    1652.6    10145.5    1653.7    10166.0

  Conc. point *CER5 Flow Upstrem from Chuckar Wash Confluence

QT         2       2078       2078

ET                           9.1                                                          9990.7       10090
X1      4.32         20       9995      10012       490        520        476
GR    1665.0     9966.3    1659.2     9977.3    1643.5       9995    1642.4     9997.4    1642.4    10000.0
GR    1642.4    10004.2    1643.5    10012.0    1644.1    10031.3    1646.1    10050.0    1646.2    10076.5
GR    1646.3    10086.9    1651.7    10103.9    1655.1    10118.2    1656.1    10131.8    1656.6    10142.6
GR    1655.9    10167.7    1654.6    10189.0    1653.3    10198.4    1652.3    10219.4    1652.3    10228.0

ET                           9.1                                                            9928     10018.7
X1      4.39         23     9981.7    10007.9       370        320        349
GR    1669.2     9860.0    1658.3     9882.8    1655.3     9896.4    1652.5     9941.6    1651.5     9959.4
GR    1650.3     9967.7    1650.1     9981.7    1648.3    10000.0    1648.4    10007.9    1658.3    10029.5
GR    1660.2    10050.2    1660.8    10072.7    1661.6    10109.6    1662.4    10132.6    1662.3    10160.5
GR    1661.9    10191.9    1662.6    10219.0    1662.9    10239.1    1662.4    10266.3    1662.2    10286.4
GR    1661.1    10301.5    1660.8    10323.9    1660.5    10344.9

NC      .047       .047       .040

  Wallnut Wash Confluence
ET                           9.1                                                          9990.2     10164.1
X1      4.44         24      10000     10018.6       310        260        304
GR    1671.2     9897.0    1666.4     9929.4    1664.4     9939.8    1662.7     9967.4    1661.3     9984.9
GR    1652.6    10000.0    1652.6    10003.8    1653.0    10018.6    1655.5    10034.8    1657.2    10050.2
GR    1657.8    10075.4    1658.9    10099.0    1658.8    10117.6    1658.2    10130.6    1657.3    10142.4
GR    1657.1    10152.1    1658.6    10168.1    1659.5    10188.8    1660.2    10207.8    1662.2    10235.9
GR    1664.7    10257.3    1668.5    10282.0    1669.0    10295.7    1668.5    10325.0

  Conc. point *CER4 Flow upstrem from Wallnut wash confluence

QT         2        321        321

ET                           9.1                                                          9986.4     10016.8
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X1     4.54        15      9989.5    10006.3       500       600       507
GR   1683.9    9942.6      1679.2     9968.1    1670.2    9989.5    1669.2   10000.0    1669.3   10006.3
GR   1670.5   10010.9      1673.8    10029.9    1674.9   10048.6    1675.9   10057.6    1676.4   10071.0
GR   1677.4   10095.0      1677.7    10107.6    1678.6   10132.4    1680.1   10153.4    1682.2   10173.6

  Culvert outlet CER4

NC                                      .3        .5
ET                 0       9.1                                                        9996.5   10003.5
X1     4.60        14      9996.5    10003.5       275       340       305
X3       10                                                          1713.4    1715.1
GR   1698.7    9843.0      1696.8     9865.0    1691.2    9900.1    1685.7    9944.7    1682.0    9976.8
GR   1680.4    9994.8    1675.74     9996.5  1675.74   10000.0  1675.74   10003.5    1680.5   10009.4
GR   1678.7   10031.7      1682.4    10045.8    1684.7   10058.8    1688.6   10076.2

  Culvert - CER4 -   1 CMP 84" X 231'  Shea Blvd.

QT         2       291       291
SC     1.028        .5         3                   7                 231       2.1   1687.29   1675.74

  Culvert inlet CER4
X1     4.64        19      9996.5    10003.5       250       226       231
X2                              2               1713.4
  Road Slope to left
               10                                                          1713.4    1715.1
ET         -4      9825    1713.4                10000    1715.1                    10078.5    1715.7
BT                10125    1715.7
GR   1713.4        9825    1708.1     9860.4    1702.4    9887.5    1697.9    9912.9    1695.4    9934.3
GR   1693.8      9958.3    1689.7     9972.4    1694.5    9989.4  1687.29     9996.5  1687.29   10000.0
GR   1687.3     10003.5    1694.6    10010.3    1698.4   10025.8    1704.6   10044.0    1711.6   10055.7
GR   1714.0     10064.7    1715.7    10078.5    1715.6   10089.7  1715.75     10125

  Conc. point CER3 Flow upstream from Shea Blvd. culvert

QT         2       299       299
NC      .047      .047      .040

ET                         9.1                                                        9953.8   10010.9
X1     4.71        12      9994.9    10004.8       400       325       365
GR   1712.0    9826.5      1707.0     9858.1    1702.1    9897.3    1698.1    9939.4    1694.7    9958.8
GR   1694.1    9988.7      1692.6     9994.9    1692.4   10000.0    1692.4   10004.8    1701.7   10022.6
GR   1716.8   10047.2      1718.1    10063.0


NC                                      .1        .3

ET                         9.1                                                          9988     10015
X1     4.78        17      9994.3    10003.0       340       370       356
GR   1718.4    9846.8      1715.6     9875.6    1712.3    9907.3    1710.3    9930.0    1708.0    9947.2
GR   1706.1    9962.6      1704.3     9984.3    1700.1    9994.3    1700.2   10000.0    1700.4   10003.0
GR   1703.9   10021.4      1704.8    10038.4    1706.7   10074.9    1707.8   10082.5    1711.2   10096.4
GR   1716.0   10124.5      1719.3    10147.2
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ET                          9.1                                                 9988.11     10017.7
X1      4.84         13    9991.5    10009.4       340       340       334
GR    1732.5     9890.1    1727.5     9917.3    1724.1    9938.4    1720.2    9964.7    1716.3     9980.2
GR    1709.9     9991.5    1709.7    10000.0    1710.2   10009.4    1713.6   10026.8    1714.1    10041.9
GR    1719.1    10062.2    1726.1    10087.9    1732.5   10118.1

ET                          9.1                                                 9924.66     10002.7
X1      4.92         18    9937.5     9948.7       400       400       424
GR    1736.5     9840.6    1731.7     9861.6    1728.3    9882.4    1726.3    9904.2    1726.5     9914.5
GR    1725.1     9925.0    1724.7     9937.5    1723.0    9944.5    1724.0    9948.7    1724.6     9966.5
GR    1724.4     9988.1    1723.7    10000.0    1723.6   10002.3    1734.7   10005.2    1737.4    10015.6
GR    1740.6    10031.3    1745.1    10058.0    1750.7   10085.9

ET                          9.1                                                    9989       10037
X1      4.97         18    9991.8    10012.5       250       280       275
GR    1761.3     9868.3    1756.4     9879.3    1752.2    9906.5    1749.4    9926.0    1747.9     9937.3
GR    1743.9     9958.4    1739.8     9978.9    1731.1    9991.8    1731.2   10000.0    1732.5    10012.5
GR    1733.6    10043.3    1736.1    10058.6    1736.2   10093.1    1737.2   10109.0    1739.1    10121.3
GR    1743.1    10143.9    1750.7    10182.4    1758.0   10220.5

  Conc. point CER2 Culvert tailwater flow

QT        2        140        140

  Culvert Oulet CER5
NC                                .3         .5
ET                  0         9.1                                                 9997.5     10002.5
X1      5.02        15    9997.5    10002.5       250       260       264
X3        10                                                        1778.74    1773.85
GR    1780.0     9866.1    1774.8     9885.4    1768.8    9912.9    1764.7    9933.8    1761.4     9953.6
GR    1758.8     9968.8    1757.4     9986.8   1750.31    9997.5   1750.31   10000.0   1750.31    10002.5
GR    1757.3    10011.2    1762.6    10034.4    1762.9   10049.1    1762.8   10073.3    1762.0    10102.6

  Culvert - CER5 -  1 CMP 60" X 168'  Fountain Hills Blvd.

QT        2        132        132
SC    1.024         .5          3                    5                  168         2.1    1757.05    1750.31

  Culvert Inlet CER5
ET                  0         9.1                                                 9997.5     10002.5
X1      5.05        17    9997.5    10002.5       180       180       175
X2                            2
X3        10                                                        1778.74    1773.85
BT        -3     9892.9    1785.2                10000   1778.74              10036.65    1773.85
GR    1785.2     9892.9    1777.3     9913.9    1769.6    9939.1    1767.6    9953.4    1766.2     9974.0
GR    1763.8     9983.2    1758.9     9993.6   1757.05    9997.5   1757.05   10000.0   1757.05    10002.5
GR    1759.1    10005.6    1759.7    10009.6    1766.5   10024.9    1773.85   10036.65    1781.2    10048.4
GR    1780.9    10069.9    1780.2    10102.3
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NC      .047       .047       .040

  Conc. point CER1 Flow upstream from Fountain Hills Blvd. culvert
           2        172        172
                               9.1                                                                    9938.03     10015.4
X1      5.11         17     9995.9    10007.3        325        300        314
GR    1777.7     9837.7     1770.8     9867.7     1767.3     9885.0     1765.8     9904.3     1763.4     9928.5
GR    1762.0     9948.1     1761.6     9962.8     1759.6     9973.9     1759.0     9988.4     1758.3     9995.9
GR    1758.1    10000.0     1758.3    10007.3     1765.4    10020.3     1775.2    10033.3     1778.3    10040.7
GR    1778.6    10052.6     1779.5    10060.8
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .200 CEHV= .400
*SECNO 1000.000
3720 CRITICAL DEPTH ASSUMED

1000.000	6.57	1514.57	1514.57	1514.50	1516.56	1.99	.00	.00	1509.00
2936.0	365.5	1749.5	820.9	92.5	121.4	264.2	.0	.0	1509.00
.00	3.95	14.41	3.11	.089	.034	.099	.000	1508.00	9961.71
.009871	0.	0.	0.	0	8	3	.00	145.59	10107.30

*SECNO 1001.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1001.000	5.99	1522.99	1522.99	.00	1524.49	1.51	5.92	.10	1518.00
2936.0	926.9	1476.9	532.2	243.9	109.7	200.1	7.1	2.4	1518.00
.02	3.80	13.46	2.66	.089	.034	.099	.000	1517.00	9910.14
.009865	600.	600.	600.	0	11	0	.00	200.49	10110.63

*SECNO 2.560

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.46

2.560	8.67	1526.57	1524.10	.00	1526.88	.31	2.14	.24	1517.90
2936.0	1707.3	891.7	337.0	851.1	119.7	172.5	19.8	5.5	1517.90
.07	2.01	7.45	1.95	.089	.034	.099	.000	1517.90	9826.21
.001632	650.	650.	650.	4	8	0	.00	222.54	10048.76

CCHV= .100 CEHV= .300
*SECNO 2.650

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.650	4.24	1529.94	1529.94	.00	1531.34	1.40	1.65	.33	1526.80
2935.0	613.0	1781.8	540.2	176.0	149.8	176.7	28.6	7.7	1527.20
.08	3.48	11.89	3.06	.089	.034	.099	.000	1525.70	9908.90
.012106	460.	478.	480.	0	8	0	.00	181.62	10090.52

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 2.680
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.680	4.86	1532.16	1532.16	.00	1533.82	1.67	1.70	.08	1529.40
2935.0	64.0	2511.3	359.6	25.6	225.2	140.6	30.3	8.3	1527.80
.09	2.50	11.15	2.56	.089	.034	.099	.000	1527.30	9956.76
.009241	170.	160.	160.	0	8	0	.00	130.85	10087.62

CCHV= .300 CEHV= .500
*SECNO 2.700

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1547.03 ELREA= 1546.90

2.700	5.15	1534.15	1534.15	.00	1536.76	2.60	1.20	.47	1529.00
2935.0	.0	2935.0	.0	.0	226.7	.0	31.2	8.6	1529.00
.09	.00	12.95	.00	.000	.034	.000	.000	1529.00	9978.00
.009864	130.	124.	150.	0	8	0	.00	44.00	10022.00

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	3	.013	.40	3.00	.00	12.00	12.00	135.00	8	1	1530.30	1529.00

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

*SECNO 2.730

SPECIAL CULVERT OUTLET CONTROL
EGIC = 1539.715 EGOC = 1540.342 PCWSE= 1534.152 ELTRD= 1546.900

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.65

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1539.71	1540.34	3.59	0.	2933.	7.211	432.0	1546.90	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1547.03 ELREA= 1546.90

2.730	9.23	1539.53	.00	.00	1540.34	.81	3.59	.00	1530.30
2933.0	.0	2933.0	.0	.0	406.7	.0	32.2	8.7	1530.30
.10	.00	7.21	.00	.000	.034	.000	.000	1530.30	9978.00
.001403	135.	135.	135.	2	0	0	.00	44.00	10022.00

*SECNO 2.740

2.740	9.40	1540.10	1536.70	.00	1540.53	.42	.07	.11	1533.30
2994.0	47.7	1928.6	1017.6	38.6	302.7	552.8	33.2	8.8	1533.00
.10	1.24	6.37	1.84	.089	.034	.099	.000	1530.70	9968.56
.001317	40.	41.	100.	2	14	0	.00	141.69	10110.25

CCHV= .100 CEHV= .300
*SECNO 2.780

2.780	6.48	1540.48	1538.33	.00	1540.90	.42	.38	.00	1536.40
2994.0	666.5	2224.2	103.3	355.9	373.4	70.9	37.8	9.7	1536.50
.11	1.87	5.96	1.46	.089	.034	.099	.000	1534.00	9898.52
.001848	200.	249.	250.	2	14	0	.00	175.14	10073.65

*SECNO 2.800
3280 CROSS SECTION 2.80 EXTENDED .29 FEET

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.800	6.69	1540.89	1540.89	.00	1542.77	1.88	.36	.44	1535.80
2958.0	620.0	1510.0	828.0	149.9	101.5	212.3	39.1	10.0	1534.20
.12	4.14	14.88	3.90	.089	.034	.099	.000	1534.20	9942.70
.010930	75.	99.	120.	0	8	0	.00	122.40	10065.10

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 2.880

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.880	5.91	1545.01	1545.01	.00	1547.41	2.40	4.19	.16	1539.50
2958.0	96.5	2299.8	561.7	31.8	164.8	148.6	42.9	11.0	1539.20
.13	3.04	13.95	3.78	.089	.034	.099	.000	1539.10	9973.17
.009816	412.	404.	405.	0	11	0	.00	80.48	10053.66

CCHV= .100 CEHV= .300
*SECNO 2.940
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.940	6.92	1548.92	1548.92	.00	1551.31	2.38	3.51	.00	1542.00
2958.0	182.7	1797.3	978.0	42.9	117.3	179.5	45.5	11.6	1542.70
.13	4.26	15.32	5.45	.078	.037	.078	.000	1542.00	9976.71
.011443	340.	332.	330.	0	11	0	.00	73.26	10049.97

*SECNO 3.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.000	6.73	1553.23	1553.23	.00	1555.07	1.84	3.45	.05	1547.10
2824.0	382.8	1780.6	660.6	98.9	133.6	153.5	48.4	12.3	1547.70
.14	3.87	13.33	4.30	.078	.037	.078	.000	1546.50	9959.75
.009478	290.	307.	400.	0	8	0	.00	106.88	10066.62

CCHV= .300 CEHV= .500
*SECNO 3.010
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.010	7.07	1554.37	1554.37	.00	1556.19	1.82	.63	.00	1547.30
2824.0	225.8	2216.0	382.2	60.3	183.7	101.0	49.1	12.5	1547.31
.15	3.75	12.07	3.78	.078	.037	.078	.000	1547.30	9968.73
.006659	80.	80.	80.	0	10	0	.00	79.68	10048.41

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	2	.013	.40	2.70	.00	8.00	10.00	86.00	8	1	1549.37	1547.31

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

5130, EGIC= 1567.65..MAY BE TOO LARGE IF INLET CONTROLS.
*SECNO 3.040

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 1564.56

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 3.70

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1567.65	1564.09	8.37	385.	2420.	5.342	160.0	1563.53	162.

3.040	14.93	1564.23	.00	.00	1564.56	.33	8.37	.00	1549.37
2813.0	371.7	2065.7	375.6	264.7	386.7	284.1	51.0	12.9	1549.37
.15	1.40	5.34	1.32	.078	.037	.078	.000	1549.30	9880.22
.000484	120.	120.	150.	2	0	0	.00	231.36	10111.59

*SECNO 3.050

3265 DIVIDED FLOW

3.050	13.00	1564.40	1556.48	.00	1564.62	.22	.03	.03	1551.80
2868.0	216.8	2099.2	552.0	189.6	480.9	388.3	52.6	13.4	1551.70
.16	1.14	4.37	1.42	.078	.037	.078	.000	1551.40	9905.28
.000394	60.	59.	100.	2	17	0	.00	245.46	10156.60

CCHV= .100 CEHV= .300
*SECNO 3.140

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .39

3.140	7.39	1564.49	1562.23	.00	1565.12	.62	.38	.12	1557.40
2868.0	369.6	1861.7	636.7	150.9	244.6	221.4	61.5	15.3	1557.50
.18	2.45	7.61	2.88	.078	.037	.078	.000	1557.10	9941.48
.002578	500.	472.	420.	2	18	0	.00	126.14	10067.62

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3.230

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.230	5.15	1568.25	1568.25	.00	1570.22	1.96	2.45	.40	1565.60
2868.0	574.8	2247.2	46.0	115.3	180.6	14.1	66.7	16.5	1565.00
.19	4.99	12.44	3.26	.078	.037	.078	.000	1563.10	9940.76
.013045	460.	498.	530.	0	19	0	.00	83.79	10024.56

*SECNO 3.320

3.320	5.80	1574.70	1574.63	.00	1576.34	1.64	6.09	.03	1573.30
2868.0	23.6	1894.6	949.7	11.4	155.4	202.9	70.4	17.5	1570.70
.21	2.08	12.19	4.68	.078	.037	.078	.000	1568.90	9968.91
.012409	520.	487.	420.	2	8	0	.00	110.52	10079.43

CCHV= .100 CEHV= .300
*SECNO 3.360
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.360	5.23	1577.23	1577.23	.00	1578.89	1.66	2.25	.01	1573.20
2868.0	1184.2	1373.4	310.3	221.6	98.9	61.5	71.8	18.0	1572.00
.21	5.34	13.89	5.05	.078	.037	.078	.000	1572.00	9910.81
.014718	130.	171.	190.	0	11	0	.00	117.91	10028.72

*SECNO 3.420

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.420	5.70	1582.30	1582.30	.00	1583.44	1.14	4.42	.05	1576.70
2842.0	98.4	1116.3	1627.3	28.0	87.2	419.2	75.8	19.7	1577.20
.23	3.52	12.81	3.88	.078	.037	.078	.000	1576.60	9980.31
.010374	260.	333.	460.	0	8	0	.00	250.29	10262.43

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .100 CEHV= .300
*SECNO 3.500
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.500	5.92	1586.32	1586.32	.00	1587.69	1.37	3.26	.07	1581.80
2842.0	51.0	2066.7	724.4	18.8	190.2	252.6	79.4	21.1	1582.60
.24	2.71	10.87	2.87	.078	.037	.078	.000	1580.40	9970.78
.008124	440.	431.	250.	0	8	0	.00	195.83	10166.61

CCHV= .100 CEHV= .300
*SECNO 3.590
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.590	6.81	1592.31	1592.31	.00	1594.17	1.86	4.39	.15	1585.70
2770.0	781.5	1265.7	722.8	152.1	83.2	141.4	83.7	22.6	1585.70
.25	5.14	15.20	5.11	.078	.037	.078	.000	1585.50	9951.57
.011323	480.	476.	420.	0	8	0	.00	95.46	10047.03

SECNO 3.690
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.690	5.83	1599.83	1599.83	.00	1601.35	1.51	5.33	.03	1596.40
2770.0	170.9	1829.9	769.2	49.4	154.2	208.9	88.1	23.8	1596.10
.27	3.46	11.87	3.68	.078	.037	.078	.000	1594.00	9961.95
.010155	550.	523.	410.	0	15	0	.00	135.72	10097.67

*SECNO 3.740
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.740	6.90	1603.90	1603.90	.00	1605.75	1.86	2.75	.10	1597.40
2770.0	981.6	1473.6	314.7	149.4	107.3	53.6	90.2	24.5	1597.90
.27	6.57	13.73	5.87	.058	.041	.058	.000	1597.00	9949.20
.011767	250.	245.	275.	0	11	0	.00	79.76	10028.96

*SECNO 3.820

3301 HV CHANGED MORE THAN HVINS

3.820	6.87	1609.37	1608.56	.00	1610.27	.89	4.42	.10	1604.10
2682.0	1003.8	1244.9	433.3	212.8	127.1	79.7	94.4	25.6	1604.80
.29	4.72	9.79	5.43	.058	.041	.058	.000	1602.50	9918.44
.007065	525.	469.	475.	2	15	0	.00	115.12	10033.56

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3.930
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.930	5.88	1615.97	1615.97	.00	1617.25	1.28	4.77	.11	1612.20
2682.0	20.6	1557.7	1103.6	5.2	146.9	173.2	98.8	27.0	1613.90
.31	4.00	10.61	6.37	.044	.042	.044	.000	1610.10	9980.37
.012234	480.	534.	530.	0	15	0	.00	126.07	10106.44

*SECNO 4.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.49

4.000	3.04	1620.14	1619.28	.00	1620.53	.39	3.19	.09	1617.40
2682.0	40.0	2376.7	265.3	13.3	462.7	66.1	102.8	28.6	1617.90
.33	3.02	5.14	4.01	.044	.042	.044	.000	1617.10	9899.02
.005518	480.	404.	400.	4	18	0	.00	213.66	10112.68

*SECNO 4.060

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

4.060	6.99	1632.89	1632.89	.00	1634.27	1.38	2.28	.30	1628.80
2451.0	570.0	1355.4	525.6	106.1	114.9	104.7	105.9	29.8	1629.50
.34	5.37	11.79	5.02	.056	.039	.056	.000	1625.90	9945.07
.010862	260.	306.	350.	0	20	0	.00	117.87	10062.94

*SECNO 4.100

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.90

4.100	6.69	1635.29	1632.77	.00	1635.39	.10	.99	.13	1638.30
2451.0	.0	318.6	2132.4	.0	101.3	889.3	111.8	31.5	1632.90
.38	.00	3.15	2.40	.000	.039	.056	.000	1628.60	9982.62
.001289	225.	225.	450.	3	14	0	.00	268.03	10250.65

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 4.190

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

4.190	4.94	1637.64	1637.64	.00	1639.05	1.41	1.48	.39	1633.00
2451.0	635.7	714.1	1101.1	100.7	52.0	146.8	119.0	33.5	1632.90
.39	6.32	13.74	7.50	.056	.039	.056	.000	1632.70	9949.74
.016036	440.	443.	490.	0	19	0	.00	101.48	10051.22

*SECNO 4.230
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

4.230	6.19	1640.49	1640.49	.00	1641.61	1.12	2.36	.03	1635.50
2451.0	822.1	1104.0	524.9	195.0	95.6	98.3	120.6	34.2	1634.40
.40	4.22	11.55	5.34	.051	.037	.051	.000	1634.30	9878.98
.007881	170.	224.	250.	0	11	0	.00	168.21	10047.19

*SECNO 4.320
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

4.320	5.26	1647.66	1647.66	.00	1648.98	1.32	4.45	.06	1643.50
2078.0	39.5	996.0	1042.5	9.8	83.8	180.1	124.4	35.7	1643.50
.42	4.05	11.88	5.79	.051	.037	.051	.000	1642.40	9990.31
.010682	490.	476.	520.	0	15	0	.00	100.88	10091.19

*SECNO 4.390
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

4.390	5.27	1653.57	1653.57	.00	1655.00	1.43	3.59	.04	1650.10
2078.0	565.1	1361.3	151.6	106.5	121.2	29.1	126.5	36.5	1648.40
.43	5.31	11.23	5.20	.051	.037	.051	.000	1648.30	9924.34
.010196	370.	349.	320.	0	5	0	.00	94.84	10019.18

*SECNO 4.440

3265 DIVIDED FLOW

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
4.440	5.80	1658.40	1658.40	.00	1659.58	1.18	2.73	.03	1652.60
2078.0	156.6	1134.1	787.3	29.2	104.9	153.7	128.3	37.2	1653.00
.44	5.37	10.82	5.12	.047	.040	.047	.000	1652.60	9989.94
.008452	310.	304.	260.	0	8	0	.00	137.84	10165.93

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

*SECNO 4.540
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

4.540	2.36	1671.56	1671.56	.00	1672.38	.82	4.87	.04	1670.20
321.0	6.6	262.9	51.5	2.2	34.0	10.8	130.4	38.4	1669.30
.46	3.01	7.73	4.76	.047	.040	.047	.000	1669.20	9986.28
.016957	500.	507.	600.	0	18	0	.00	30.71	10016.98

CHV= .300 CEHV= .500
SECNO 4.600

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1713.40 ELREA= 1715.10

4.600	4.01	1679.75	1679.75	.00	1681.78	2.03	4.87	.60	1675.74
321.0	.0	321.0	.0	.0	28.1	.0	130.7	38.5	1675.74
.47	.00	11.43	.00	.000	.040	.000	.000	1675.74	9996.50
.014839	275.	305.	340.	0	14	0	.00	7.00	10003.50

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.028	.50	3.00	.00	7.00	.00	231.00	2	1	1687.29	1675.74

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 1 - HEADWALL

5130, EGIC= 1693.98..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1694.68 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 4.640

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT OUTLET CONTROL
EGIC = 1693.984 EGOC = 1694.683 PCWSE= 1679.753 ELTRD= 1713.400

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.42

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1693.98	1694.68	12.90	0.	291.	6.097	38.5	1713.40	0.

195 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1713.40 ELREA= 1715.10

4.640	6.82	1694.11	.00	.00	1694.68	.58	12.90	.00	1687.29
291.0	.0	291.0	.0	.0	47.7	.0	130.9	38.5	1687.30
.48	.00	6.10	.00	.000	.040	.000	.000	1687.29	9996.50
.002083	250.	231.	226.	2	0	0	.00	7.00	10003.50

*SECNO 4.710

4.710	3.18	1695.58	1695.01	.00	1695.81	.23	1.02	.10	1692.60
299.0	123.8	151.5	23.6	51.1	30.9	9.6	131.5	38.8	1692.40
.50	2.42	4.90	2.45	.047	.040	.047	.000	1692.40	9953.81
.003811	400.	365.	325.	3	22	0	.00	57.07	10010.88

CCHV= .100 CEHV= .300
*SECNO 4.780

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

4.780	2.68	1702.78	1702.78	.00	1703.65	.87	2.41	.19	1700.10
299.0	38.8	195.1	65.1	8.6	22.4	14.9	132.1	39.1	1700.40
.52	4.53	8.70	4.37	.047	.040	.047	.000	1700.10	9987.92
.015508	340.	356.	370.	0	15	0	.00	27.60	10015.52

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 4.840
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

4.840	2.12	1711.82	1711.82	.00	1712.63	.81	5.46	.01	1709.90
299.0	12.0	263.1	23.9	3.3	34.8	6.7	132.4	39.4	1710.20
.53	3.67	7.56	3.55	.047	.040	.047	.000	1709.70	9988.11
.017117	340.	334.	340.	0	15	0	.00	29.59	10017.70

*SECNO 4.920
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

4.920	2.15	1725.15	1725.15	.00	1725.55	.40	7.66	.04	1724.70
299.0	5.4	104.4	189.2	3.1	16.0	45.8	132.9	39.9	1724.00
.55	1.75	6.53	4.13	.047	.040	.047	.000	1723.00	9924.66
.019997	400.	424.	400.	0	5	0	.00	78.05	10002.70

*SECNO 4.970
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

4.970	2.30	1733.40	1733.40	.00	1734.04	.64	4.79	.07	1731.10
299.0	14.8	258.3	25.9	3.9	37.8	11.3	133.3	40.3	1732.50
.57	3.78	6.83	2.29	.047	.040	.047	.000	1731.10	9988.39
.015205	250.	275.	280.	0	8	0	.00	49.29	10037.68

CCHV= .300 CEHV= .500
*SECNO 5.020

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1778.74 ELREA= 1773.85

5.020	2.89	1753.20	1753.20	.00	1754.66	1.46	4.11	.41	1750.31
140.0	.0	140.0	.0	.0	14.4	.0	133.5	40.4	1750.31
.57	.00	9.69	.00	.000	.040	.000	.000	1750.31	9997.50
.016553	250.	264.	260.	0	11	0	.00	5.00	10002.50

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.024	.50	3.00	.00	5.00	.00	168.00	2	1	1757.05	1750.31

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 1 - HEADWALL

*SECNO 5.050

SPECIAL CULVERT OUTLET CONTROL
EGIC = 1762.034 EGOC = 1762.503 PCWSE= 1753.198 ELTRD= 1773.850

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.52

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1762.03	1762.50	7.85	0.	132.	5.249	19.6	1773.85	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1778.74 ELREA= 1773.85

5.050	5.03	1762.08	.00	.00	1762.50	.43	7.85	.00	1757.05
132.0	.0	132.0	.0	.0	25.1	.0	133.6	40.5	1757.05
.58	.00	5.25	.00	.000	.040	.000	.000	1757.05	9997.50
.002316	180.	175.	180.	2	0	0	.00	5.00	10002.50

*SECNO 5.110

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 5.03

5.110	4.62	1762.72	1759.77	.00	1762.73	.02	.11	.12	1758.30
172.0	95.8	65.2	11.0	120.8	51.5	17.9	134.4	40.8	1758.30
.67	.79	1.27	.61	.047	.040	.047	.000	1758.10	9938.03
.000155	325.	314.	300.	3	17	0	.00	77.36	10015.39

THIS RUN EXECUTED 20JAN97 13:15:07

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HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	1000.000	2936.00	9961.71	10107.30	1514.57	1514.57	1.03	1.99	6.57
*	1000.000	2936.00	9961.71	10107.30	1514.57	1514.57	1.03	1.99	6.57
	1001.000	2936.00	9910.14	10110.63	1522.99	1522.99	1.01	1.51	5.99
	1001.000	2936.00	9910.14	10110.63	1522.99	1522.99	1.01	1.51	5.99
*	2.560	2936.00	9826.21	10048.76	1526.57	1524.10	.45	.31	8.67
*	2.560	2936.00	9826.21	10048.76	1526.57	1524.10	.45	.31	8.67
*	2.650	2935.00	9908.90	10090.52	1529.94	1529.94	1.06	1.40	4.24
*	2.650	2935.00	9908.91	10090.51	1529.96	1529.96	1.05	1.38	4.26
*	2.680	2935.00	9956.76	10087.62	1532.16	1532.16	.94	1.67	4.86
*	2.680	2935.00	9956.76	10087.62	1532.16	1532.16	.94	1.66	4.86
*	2.700	2935.00	9978.00	10022.00	1534.15	1534.15	1.01	2.60	5.15
*	2.700	2935.00	9978.00	10022.00	1534.15	1534.15	1.01	2.60	5.15
*	2.730	2933.00	9978.00	10022.00	1539.53	.00	.42	.81	9.23
*	2.730	2933.00	9978.00	10022.00	1539.53	.00	.42	.81	9.23
	2.740	2994.00	9968.56	10110.25	1540.10	1536.70	.39	.42	9.40
	2.740	2994.00	9968.56	10110.25	1540.11	1536.70	.39	.42	9.41
	2.780	2994.00	9898.52	10073.65	1540.48	1538.33	.44	.42	6.48
	2.780	2994.00	9898.52	10073.65	1540.49	1538.33	.44	.42	6.49
*	2.800	2958.00	9942.70	10065.10	1540.89	1540.89	1.08	1.88	6.69
*	2.800	2958.00	9942.70	10065.10	1540.91	1540.91	1.08	1.86	6.71
*	2.880	2958.00	9973.17	10053.66	1545.01	1545.01	1.02	2.40	5.91
*	2.880	2958.00	9973.12	10053.76	1545.04	1545.04	1.01	2.37	5.94

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	2.940	2958.00	9976.71	10049.97	1548.92	1548.92	1.04	2.38	6.92
*	2.940	2958.00	9976.64	10050.07	1548.96	1548.96	1.03	2.35	6.96
*	3.000	2824.00	9959.75	10066.62	1553.23	1553.23	.93	1.84	6.73
*	3.000	2824.00	9959.80	10066.60	1553.24	1553.24	.93	1.83	6.74
*	3.010	2824.00	9968.73	10048.41	1554.37	1554.37	.80	1.82	7.07
*	3.010	2824.00	9968.70	10048.55	1554.39	1554.39	.80	1.81	7.09
*	3.040	2813.00	9880.22	10111.59	1564.23	.00	.24	.33	14.93
*	3.040	2813.00	9881.17	10111.25	1564.21	.00	.24	.33	14.91
	3.050	2868.00	9905.28	10156.60	1564.40	1556.48	.21	.22	13.00
	3.050	2868.00	9905.56	10156.40	1564.39	1556.48	.22	.22	12.99
*	3.140	2868.00	9941.48	10067.62	1564.49	1562.23	.50	.62	7.39
*	3.140	2868.00	9941.52	10067.58	1564.48	1562.23	.50	.63	7.38
*	3.230	2868.00	9940.76	10024.56	1568.25	1568.25	1.03	1.96	5.15
*	3.230	2868.00	9940.91	10024.41	1568.26	1568.26	1.03	1.96	5.16
	3.320	2868.00	9968.91	10079.43	1574.70	1574.63	1.00	1.64	5.80
	3.320	2868.00	9968.92	10079.40	1574.69	1574.64	1.00	1.64	5.79
*	3.360	2868.00	9910.81	10028.72	1577.23	1577.23	1.11	1.66	5.23
*	3.360	2868.00	9912.80	10027.96	1577.22	1577.22	1.11	1.66	5.22
*	3.420	2842.00	9980.31	10262.43	1582.30	1582.30	.96	1.14	5.70
*	3.420	2842.00	9980.63	10261.23	1582.30	1582.30	.96	1.14	5.70
*	3.500	2842.00	9970.78	10166.61	1586.32	1586.32	.84	1.37	5.92
*	3.500	2842.00	9970.78	10166.60	1586.32	1586.32	.83	1.36	5.92
*	3.590	2770.00	9951.57	10047.03	1592.31	1592.31	1.03	1.86	6.81
*	3.590	2770.00	9952.05	10046.25	1592.32	1592.32	1.03	1.85	6.82
*	3.690	2770.00	9961.95	10097.67	1599.83	1599.83	.93	1.51	5.83
*	3.690	2770.00	9961.95	10097.70	1599.84	1599.84	.92	1.51	5.84
*	3.740	2770.00	9949.20	10028.96	1603.90	1603.90	.95	1.86	6.90
*	3.740	2770.00	9949.42	10028.30	1603.89	1603.89	.95	1.86	6.89
	3.820	2682.00	9918.44	10033.56	1609.37	1608.56	.71	.89	6.87
	3.820	2682.00	9918.42	10033.57	1609.38	1608.56	.71	.89	6.88
*	3.930	2682.00	9980.37	10106.44	1615.97	1615.97	.88	1.28	5.88
*	3.930	2682.00	9980.40	10105.50	1616.01	1616.01	.86	1.24	5.91
*	4.000	2682.00	9899.02	10112.68	1620.14	1619.28	.55	.39	3.04
*	4.000	2682.00	9899.08	10112.60	1620.11	1619.28	.55	.39	3.01

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	4.060	2451.00	9945.07	10062.94	1632.89	1632.89	.90	1.38	6.99
*	4.060	2451.00	9945.10	10062.90	1632.89	1632.89	.90	1.37	6.99
*	4.100	2451.00	9982.62	10250.65	1635.29	1632.77	.29	.10	6.69
*	4.100	2451.00	9983.90	10247.00	1635.28	1632.77	.28	.10	6.68
*	4.190	2451.00	9949.74	10051.22	1637.64	1637.64	1.10	1.41	4.94
*	4.190	2451.00	9950.90	10050.40	1637.64	1637.64	1.11	1.41	4.94
*	4.230	2451.00	9878.98	10047.19	1640.49	1640.49	.84	1.12	6.19
*	4.230	2451.00	9878.90	10047.22	1640.50	1640.50	.84	1.11	6.20
*	4.320	2078.00	9990.31	10091.19	1647.66	1647.66	.94	1.32	5.26
*	4.320	2078.00	9990.70	10090.00	1647.66	1647.66	.95	1.32	5.26
*	4.390	2078.00	9924.34	10019.18	1653.57	1653.57	.92	1.43	5.27
*	4.390	2078.00	9928.00	10018.70	1653.57	1653.57	.92	1.43	5.27
*	4.440	2078.00	9989.94	10165.93	1658.40	1658.40	.80	1.18	5.80
*	4.440	2078.00	9990.20	10164.10	1658.39	1658.39	.80	1.18	5.79
*	4.540	321.00	9986.28	10016.98	1671.56	1671.56	.96	.82	2.36
	4.540	321.00	9986.40	10016.80	1671.57	1671.57	.95	.81	2.37
*	4.600	321.00	9996.50	10003.50	1679.75	1679.75	1.01	2.03	4.01
*	4.600	321.00	9996.50	10003.50	1679.75	1679.75	1.00	2.03	4.01
*	4.640	291.00	9996.50	10003.50	1694.11	.00	.41	.58	6.82
*	4.640	291.00	9996.50	10003.50	1694.11	.00	.41	.58	6.82
	4.710	299.00	9953.81	10010.88	1695.58	1695.01	.49	.23	3.18
	4.710	299.00	9953.80	10010.88	1695.58	1695.01	.49	.23	3.18
*	4.780	299.00	9987.92	10015.52	1702.78	1702.78	.95	.87	2.68
*	4.780	299.00	9988.00	10015.00	1702.81	1702.81	.93	.83	2.71
*	4.840	299.00	9988.11	10017.70	1711.82	1711.82	.96	.81	2.12
*	4.840	299.00	9988.11	10017.70	1711.85	1711.85	.93	.77	2.15
*	4.920	299.00	9924.66	10002.70	1725.15	1725.15	.96	.40	2.15
*	4.920	299.00	9924.76	10002.70	1725.13	1725.13	.99	.41	2.13
*	4.970	299.00	9988.39	10037.68	1733.40	1733.40	.89	.64	2.30
*	4.970	299.00	9989.00	10037.00	1733.44	1733.44	.85	.60	2.34
*	5.020	140.00	9997.50	10002.50	1753.20	1753.20	1.01	1.46	2.89
*	5.020	140.00	9997.50	10002.50	1753.20	1753.20	1.01	1.46	2.89
*	5.050	132.00	9997.50	10002.50	1762.08	.00	.41	.43	5.03
*	5.050	132.00	9997.50	10002.50	1762.07	.00	.41	.43	5.02

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	5.110	172.00	9938.03	10015.39	1762.72	1759.77	.10	.02	4.62
*	5.110	172.00	9938.03	10015.40	1762.73	1759.77	.10	.02	4.63

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=   1000.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1000.000  PROFILE=  2  CRITICAL DEPTH ASSUMED

CAUTION SECNO=   1001.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1001.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1001.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1001.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      2.560  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.560  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      2.650  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.650  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=      2.650  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      2.680  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.680  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.680  PROFILE=  2  CRITICAL DEPTH ASSUMED
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 UTION SECNO=      2.700  PROFILE=  1  CRITICAL DEPTH ASSUMED
 UTION SECNO=      2.700  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.700  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.700  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      2.730  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.730  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      2.800  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.800  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.800  PROFILE=  2  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      2.940  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.940  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.940  PROFILE=  2  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      3.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      3.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      3.010  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      3.010  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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WARNING SECNO=      3.040  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      3.140  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.140  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      3.230  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      3.230  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=      3.360  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      3.360  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=      3.420  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      3.420  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=      3.500  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      3.590  PROFILE=  2  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      3.690  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      3.690  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      3.690  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      3.740  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      3.740  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      3.740  PROFILE=  2  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      3.930  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      3.930  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      3.930  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      3.930  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      4.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      4.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      4.060  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      4.060  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=      4.060  PROFILE=  2  CRITICAL DEPTH ASSUMED
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WARNING SECNO=      4.100  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      4.100  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      4.190  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      4.190  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=      4.230  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      4.600  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      4.600  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      4.600  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      4.640  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      4.640  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      4.780  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      4.780  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=      4.840  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      4.920  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      5.020  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      5.020  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      5.020  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      5.020  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      5.050  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      5.050  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      5.110  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      5.110  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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FLOODWAY DATA, Fountain Hills (south) -
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
1000.000	146.	478.	6.1	1514.6	1514.6	.0
1001.000	200.	554.	5.3	1523.0	1523.0	.0
2.560	223.	1143.	2.6	1526.6	1526.6	.0
2.650	182.	506.	5.8	1529.9	1529.9	.0
2.680	131.	392.	7.5	1532.2	1532.2	.0
2.700	44.	227.	12.9	1534.2	1534.2	.0
2.730	44.	407.	7.2	1539.5	1539.5	.0
2.740	142.	895.	3.3	1540.1	1540.1	.0
2.780	175.	801.	3.7	1540.5	1540.5	.0
2.800	122.	465.	6.4	1540.9	1540.9	.0
2.880	81.	347.	8.5	1545.0	1545.0	.0
2.940	73.	342.	8.6	1548.9	1548.9	.0
3.000	107.	386.	7.3	1553.2	1553.2	.0
3.010	80.	346.	8.2	1554.4	1554.4	.0
3.040	230.	933.	3.0	1564.2	1564.2	.0
3.050	251.	1056.	2.7	1564.4	1564.4	.0
3.140	126.	616.	4.7	1564.5	1564.5	.0
3.230	83.	311.	9.2	1568.3	1568.3	.0
3.320	110.	369.	7.8	1574.7	1574.7	.0
3.360	115.	381.	7.5	1577.2	1577.2	.0
3.420	281.	534.	5.3	1582.3	1582.3	.0
3.500	196.	463.	6.1	1586.3	1586.3	.0
3.590	94.	377.	7.3	1592.3	1592.3	.0
3.690	136.	414.	6.7	1599.8	1599.8	.0
3.740	79.	310.	8.9	1603.9	1603.9	.0
3.820	115.	420.	6.4	1609.4	1609.4	.0
3.930	125.	330.	8.1	1616.0	1616.0	.0
4.000	214.	539.	5.0	1620.1	1620.1	.0
4.060	118.	327.	7.5	1632.9	1632.9	.0
4.100	263.	988.	2.5	1635.3	1635.3	.0
4.190	99.	298.	8.2	1637.6	1637.6	.0
4.230	168.	391.	6.3	1640.5	1640.5	.0
4.320	99.	273.	7.6	1647.7	1647.7	.0
4.390	91.	256.	8.1	1653.6	1653.6	.0
4.440	174.	287.	7.2	1658.4	1658.4	.0
4.540	30.	47.	6.8	1671.6	1671.6	.0
4.600	7.	28.	11.4	1679.8	1679.8	.0
4.640	7.	48.	6.1	1694.1	1694.1	.0
4.710	57.	92.	3.3	1695.6	1695.6	.0
4.780	27.	47.	6.4	1702.8	1702.8	.0
4.840	30.	46.	6.5	1711.8	1711.8	.0
4.920	78.	64.	4.7	1725.1	1725.1	.0

FLOODWAY DATA, Fountain Hills (south) -
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
4.970	48.	55.	5.5	1733.4	1733.4	.0
5.020	5.	14.	9.7	1753.2	1753.2	.0
5.050	5.	25.	5.3	1762.1	1762.1	.0
5.110	77.	191.	.9	1762.7	1762.7	.0

LOGAN WASH

FOUNTAIN HILLS SOUTH FIS
Logan Wash

X-Sec	HEC-1 Conc. Point	100-Yr Discharge (cfs)	Left Overbank Lenght (ft)	Rigth Overbank Lenght (ft)	Channel Lenght (ft)	COMMENT
3.93	LOG3	435				
0.00		435	400	410	404	Confluence CER - LOG
0.07		435	370	325	352	
0.11		435	310	225	250	
0.21		435	600	500	514	
0.25		435	175	180	187	
0.24		435	145	148	151	
0.31	*LOG2	296	340	390	357	
0.37		296	340	310	331	
0.43	124A	165	340	320	332	
0.48		165	190	240	237	
0.57		165	450	460	488	
0.59		165			129	

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    23OCT95    TIME   07:57:04   *
*********************************************
```


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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*          (916) 756-1104               *
*****************************************
```


```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 23OCT95 07:57:04

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****************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
****************************************


T1      Fountain Hills (South) - Floodplain Delineation        File:LOGAN.H2
T1      For the  Flood Control District of Maricopa County
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - LOGAN WASH

T4 GR data from stereo model received October 93 from KAM
T4 Revised photogrametric x-sec. received May 94
T5 1"=200' 2-feet Contour mapping from KAM flown 8-91
T6 with survey control by Anderson Nelson 12-11-92, field survey Aug 91
T7 Supplemental cross section data surveyed by Valco Surveing
T8 Source of 100-yr flowrate from HEC-1 Analysis by AGK Enginers
T8            File 120-6CE.DAT
T9 Subcritical analysis
T9 This model was developed and configured to determine water surface elevation
T9 for a 100-year floodplain delineation study, Velocity from this model
T9 may not be accurate and should not be used


J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              2                             .011                                  1613.06

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      1                                                           -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        43        53        54         1         2         68        10        8         200

  Logan Wash flow used for starting conditions
  Tributary area and time of concentration conciderable less than Cereus Wash

  Conc. point LOG3 flow in Logan Wash upstream from Cereus wash confluence

QT        2       435       435
NC     .044      .044      .042        .1        .3

   X-Sec. dowstream from confluence at Cereus wash
   Start WSE by normal depth S=0.011
ET                  0       9.1                                          9980.43   10016.3
```

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X1     3.93       31      9981.6   10020.7
GR   1632.0   9526.4   1628.4   9546.5   1624.6   9570.3   1624.6   9581.6   1622.4   9606.1
GR   1626.8   9630.7   1627.3   9652.2   1625.7   9686.5   1624.4   9708.1   1624.5   9731.9
GR   1624.6   9763.6   1624.2   9799.9   1623.8   9817.9   1624.2   9860.3   1624.2   9890.0
GR   1625.0   9920.0   1625.8   9946.5   1625.0   9970.9   1611.6   9981.6   1610.0   9993.9
GR   1610.0  10000.0   1610.4  10004.0   1613.9  10020.7   1613.0  10039.3   1613.9  10058.5
GR   1614.8  10083.1   1616.2  10120.6   1617.8  10151.4   1619.3  10165.1   1621.7  10188.3
GR   1627.8  10204.9

   Beginning of Study  -  Confluence of Logan Wash and Cereus Wash

ET                 0       9.1                                                 9904.29  10105.23
X1     0.00       17      9907.4     10000      400      410      404
GR   1639.9   9795.4   1639.2   9804.4   1635.2   9824.4   1633.7   9843.1   1627.0   9873.5
GR   1617.1   9907.4   1617.0   9937.0   1617.1   9987.3   1617.0  10000.0   1617.6  10038.6
GR   1617.8  10104.4   1622.6  10123.6   1628.4  10149.8   1631.9  10166.8   1633.1  10181.3
GR   1632.8  10196.6   1639.4  10216.9

NC      .054      .054      .039

ET                 0       9.1                                                 9914.2     10021
X1     0.07       11      9991.5   10008.4      370      325      352
GR   1634.8   9901.5   1634.0   9932.9   1634.1   9972.8   1632.5   9991.5   1631.8  10000.0
GR   1632.0  10008.4   1638.0  10038.9   1639.0  10050.7   1638.4  10062.1   1644.6  10085.1
GR   1649.5  10117.0

ET                 0       9.1                                                 9970.93  10028.86
X1     0.11       19      9982.9   10006.8      310      225      250
GR   1651.4   9765.0   1645.3   9790.9   1643.8   9805.0   1643.4   9821.8   1645.3   9839.2
GR   1646.3   9855.3   1645.5   9875.5   1642.9   9904.6   1643.7   9924.2   1642.1   9948.2
GR   1639.2   9966.8   1637.1   9982.9   1635.8  10000.0   1636.4  10006.8   1640.2  10014.1
GR   1637.1  10021.7   1640.0  10035.0   1644.9  10050.6   1648.0  10063.5

ET                 0       9.1                                                 9968.2   10039.2
X1     0.21       17      9991    10010.2      600      500      514
GR   1660.8   9856.3   1655.9   9893.4   1653.1   9910.5   1651.3   9928.6   1649.1   9935.5
GR   1643.3   9961.4   1643.0   9976.0   1642.1   9987.2   1640.6      9991  1639.7   9993.3
GR   1640.1  10000.0   1640.6  10010.2   1642.6  10029.0   1643.7  10049.0   1649.6  10066.6
GR   1655.9  10088.0   1660.0  10104.6

NC

ET                 0       9.1                                                    9983  10035.77
X1     0.25       19      9982    10045      175      180      187
GR   1660     9889   1658     9913   1656     9937   1654     9952   1652     9970
GR   1650     9973   1648     9977   1646     9982   1644     9986   1643    10000
GR   1644    10008   1646    10045   1648    10066   1650    10077   1652    10089
GR   1654    10102   1656    10119   1658    10136   1660    10150
```

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ET                    0       9.1                                                   9970.98   10033.7
X1      0.28         17    9979.1   10008.6       145       148       151
GR    1660.9     9851.9    1658.0    9877.4    1653.0    9924.4    1651.8    9943.6    1651.4    9952.6
GR    1646.5     9979.1    1645.8   10000.0    1646.0   10008.6    1645.8   10013.5    1645.9   10026.8
GR    1650.5    10041.9    1648.3   10058.2    1650.6   10074.4    1652.7   10089.3    1655.7   10101.8
GR    1660.3    10137.5    1661.7   10152.1
```

Conc. point *LOG2 Flow upstream from basin 124-C

```
QT         2         296       296

ET                    0                                                             9994.4      10025
X1      0.34         16    9996.7   10004.8       340       390       357
GR    1672.2     9964.2    1668.1    9981.1    1650.4    9996.7    1650.4   10000.0    1650.6   10004.8
GR    1653.3    10025.8    1658.7   10049.4    1660.4   10071.8    1662.4   10078.9    1662.5   10096.1
GR    1662.8    10112.6    1663.9   10125.6    1663.0   10147.8    1661.7   10168.9    1658.9   10195.6
GR    1659.5    10209.9

NC                                      .1        .3

ET                    0       9.1                                                   9988.42   10025.13
X1      0.41         16    9994.7   10006.5       340       310       331
GR    1679.0     9816.9    1680.2    9830.4    1678.1    9850.5    1674.3    9872.2    1672.0    9893.3
GR    1670.2     9913.4    1664.2    9940.4    1663.0    9978.8    1656.1    9994.7    1656.6   10000.0
GR    1656.6    10006.5    1658.0   10018.6    1659.9   10033.6    1661.8   10048.9    1664.6   10066.2
GR    1666.7    10082.0
```

Conc. point 124-A Flow from sub-basin 124-A

```
QT         2         165       165

ET                    0       9.1                                                   9992.83   10012.41
X1      0.47         10    9995.5   10005.2       340       320       332
GR    1673.1     9928.7    1673.4    9955.6    1671.7    9981.3    1663.6    9995.5    1663.0   10000.0
GR    1663.5    10005.2    1666.2   10017.2    1675.2   10042.1    1678.2   10060.9    1681.4   10083.0

ET                    0       9.1                                                   9991.77   10031.84
X1      0.51         14    9995     10005.6       190       240       237
GR    1676.5     9946.5    1677.2    9952.5    1677.1    9977.1    1675.5    9986.1    1670.6    9995.0
GR    1670.7    10000.0    1671.3   10005.6    1672.9   10044.5    1675.7   10068.9    1678.2   10090.3
GR    1679.3    10109.4    1679.9   10141.2    1679.6   10156.6    1680.5   10192.4

ET                    0       9.1                                                   9989.61   10019.8
X1      0.61         13    9992.7   10007.4       450       460       488
GR    1692.8     9936.2    1693.0    9957.0    1692.3    9973.1    1680.0    9992.7    1680.1   10000.0
GR    1681.3    10007.4    1682.6   10032.8    1682.4   10036.0    1682.3   10047.5    1682.0   10054.8
GR    1683.4    10059.2    1685.7   10078.7    1688.8   10102.9
```

ET		0	9.1						9990.8	10048.8
X1	0.63	13	9994.6	10009.8	129	129	129			
GR	1706.5	9880.5	1701.3	9915.4	1694.1	9953.9	1691.4	9977.0	1685.6	9994.6
GR	1685.5	10000.0	1685.6	10009.8	1686.4	10012.8	1686.2	10042.8	1688.0	10059.5
GR	1692.1	10073.8	1694.3	10090.5	1695.8	10125.1				

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 3.930

3.930	2.99	1612.99	1612.56	1613.06	1613.54	.56	.00	.00	1611.60
435.0	1.6	433.4	.0	.8	72.2	.0	.0	.0	1613.90
.00	2.03	6.00	.00	.044	.042	.000	.000	1610.00	9980.49
.011003	0.	0.	0.	0	12	5	.00	35.85	10016.34

*SECNO .000

.000	.99	1617.99	1617.86	.00	1618.17	.18	4.59	.04	1617.10
435.0	2.9	323.3	108.8	1.4	87.7	46.5	1.0	1.1	1617.00
.03	2.08	3.69	2.34	.044	.042	.044	.000	1617.00	9904.33
.011692	400.	404.	410.	4	14	0	.00	200.86	10105.19

*SECNO .070
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.070	2.68	1634.48	1634.48	.00	1635.01	.53	3.78	.10	1632.50
435.0	98.8	287.2	49.0	43.5	41.4	15.6	1.9	2.3	1632.00
.05	2.27	6.94	3.14	.054	.039	.054	.000	1631.80	9914.20
.010051	370.	352.	325.	0	27	0	.00	106.79	10020.99

*SECNO .110

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.110	2.67	1638.47	1638.47	.00	1639.29	.81	3.08	.09	1637.10
435.0	18.7	386.5	29.8	7.2	50.8	10.8	2.4	2.8	1636.40
.06	2.58	7.61	2.77	.054	.039	.054	.000	1635.80	9972.36
.014680	310.	250.	225.	0	5	0	.00	48.10	10028.00

*SECNO .210
1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.68

.210	3.46	1643.16	1642.58	.00	1643.56	.40	4.23	.04	1640.60
435.0	29.3	325.4	80.4	14.3	57.4	32.2	3.5	3.6	1640.60
.09	2.04	5.67	2.50	.054	.039	.054	.000	1639.70	9968.24
.005203	600.	514.	500.	4	8	0	.00	70.93	10039.17

*SECNO .250
7185 MINIMUM SPECIFIC ENERGY

```
3720 CRITICAL DEPTH ASSUMED
     .250      2.50   1645.50   1645.50       .00   1646.15       .65      1.73       .08   1646.00
    435.0        .0     435.0        .0        .0      67.1        .0       3.8       3.8   1646.00
      .10       .00      6.49       .00      .000      .039      .000      .000   1643.00   9983.00
   .021294      175.      187.      180.         0        19         0       .00     52.75  10035.75


*SECNO  .280

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.55

     .280      2.02   1647.82   1647.35       .00   1648.16       .34      1.97       .03   1646.50
    435.0       9.1     266.8     159.0       4.7      51.4      41.6       4.1       4.0   1646.00
      .11      1.94      5.20      3.82      .054      .039      .054      .000   1645.80   9971.97
   .008888      145.      151.      148.         3        14         0       .00     61.12  10033.10


*SECNO  .340

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     .340      2.67   1653.07   1653.07       .00   1653.98       .91      4.04       .17   1650.40
    296.0      10.0     192.0      94.0       3.1      21.2      23.8       4.7       4.4   1650.60
      .12      3.18      9.07      3.96      .054      .039      .054      .000   1650.40   9994.35
   .015762      340.      357.      390.         0        11         0       .00     29.68  10024.03


CCHV=     .100 CEHV=     .300
*SECNO  .410
7185 MINIMUM SPECIFIC ENERGY
1
   23OCT95      07:57:04                                                                          PAGE     7

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


3720 CRITICAL DEPTH ASSUMED
     .410      2.51   1658.61   1658.61       .00   1659.35       .75      5.21       .02   1656.10
    296.0      27.8     199.9      68.2       7.2      25.0      17.3       5.1       4.6   1656.60
      .14      3.85      8.00      3.95      .054      .039      .054      .000   1656.10   9988.92
   .016240      340.      331.      310.         0        11         0       .00     34.46  10023.38


*SECNO  .470
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     .470      2.20   1665.20   1665.20       .00   1665.95       .74      5.34       .00   1663.60
    165.0       6.1     139.1      19.8       2.3      18.7       6.4       5.4       4.8   1663.50
      .15      2.73      7.43      3.07      .054      .039      .054      .000   1663.00   9992.69
   .015980      340.      332.      320.         0        11         0       .00     20.07  10012.77


*SECNO  .510
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     .510      1.90   1672.50   1672.50       .00   1672.98       .48      3.61       .03   1670.60
    165.0       9.6     114.1      41.3       3.3      17.6      17.4       5.6       5.0   1671.30
      .16      2.95      6.48      2.37      .054      .039      .054      .000   1670.60   9991.55
   .014734      190.      237.      240.         0         9         0       .00     43.14  10034.70


*SECNO  .610
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     .610      1.94   1681.94   1681.94       .00   1682.54       .61      7.46       .04   1680.00
    165.0       9.2     149.3       6.5       3.0      22.9       4.0       5.9       5.4   1681.30
```

.18	3.08	6.51	1.64	.054	.039	.054	.000	1680.00	9989.61
.016313	450.	488.	460.	0	8	0	.00	30.22	10019.83

*SECNO .630
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.630	1.35	1686.85	1686.85	.00	1687.21	.36	2.04	.02	1685.60
165.0	5.7	110.9	48.4	2.4	19.7	21.0	6.0	5.5	1685.60
.19	2.41	5.62	2.31	.054	.039	.054	.000	1685.50	9990.81
.015346	129.	129.	129.	0	19	0	.00	58.01	10048.82

THIS RUN EXECUTED 23OCT95 07:57:05

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
	3.930	435.00	9980.49	10016.34	1612.99	1612.56	.73	.56	2.99
	3.930	435.00	9980.49	10016.30	1612.98	1612.55	.73	.56	2.98
	.000	435.00	9904.33	10105.19	1617.99	1617.86	.67	.18	.99
	.000	435.00	9904.33	10105.19	1617.99	1617.86	.67	.18	.99
*	.070	435.00	9914.20	10020.99	1634.48	1634.48	.78	.53	2.68
*	.070	435.00	9914.20	10021.00	1634.50	1634.50	.76	.50	2.70
*	.110	435.00	9972.36	10028.00	1638.47	1638.47	.92	.81	2.67
*	.110	435.00	9972.61	10027.85	1638.44	1638.44	.95	.85	2.64
*	.210	435.00	9968.24	10039.17	1643.16	1642.58	.58	.40	3.46
*	.210	435.00	9968.20	10039.20	1643.18	1642.58	.57	.38	3.48
*	.250	435.00	9983.00	10035.75	1645.50	1645.50	1.01	.65	2.50
*	.250	435.00	9983.01	10035.64	1645.49	1645.49	1.02	.66	2.49
*	.280	435.00	9971.97	10033.10	1647.82	1647.35	.69	.34	2.02
*	.280	435.00	9971.95	10033.11	1647.82	1647.35	.69	.34	2.02
*	.340	296.00	9994.35	10024.03	1653.07	1653.07	.99	.91	2.67
*	.340	296.00	9994.35	10024.00	1653.07	1653.07	.99	.92	2.67
*	.410	296.00	9988.92	10023.38	1658.61	1658.61	.97	.75	2.51
*	.410	296.00	9988.93	10023.37	1658.60	1658.60	.97	.75	2.50
*	.470	165.00	9992.69	10012.77	1665.20	1665.20	.94	.74	2.20
*	.470	165.00	9992.83	10012.41	1665.22	1665.22	.93	.73	2.22
*	.510	165.00	9991.55	10034.70	1672.50	1672.50	.89	.48	1.90
*	.510	165.00	9991.77	10031.84	1672.51	1672.51	.86	.46	1.91

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	.610	165.00	9989.61	10019.83	1681.94	1681.94	.92	.61	1.94
*	.610	165.00	9989.61	10019.80	1681.97	1681.97	.88	.57	1.97
*	.630	165.00	9990.81	10048.82	1686.85	1686.85	.87	.36	1.35
*	.630	165.00	9990.80	10048.80	1686.85	1686.85	.86	.35	1.35

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      .070  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .070  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .070  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .070  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .110  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .110  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .110  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .110  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .210  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .210  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .250  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .250  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .250  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .250  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .280  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .280  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .340  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .340  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .340  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .340  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .410  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .410  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .410  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .410  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .470  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .470  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .470  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .470  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .510  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .510  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .510  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .510  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .610  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .610  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .610  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .610  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .630  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .630  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .630  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .630  PROFILE=  2  MINIMUM SPECIFIC ENERGY
```

FLOODWAY DATA, Fountain Hills (south) -
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
3.930	36.	73.	6.0	1613.0	1613.0	.0
.000	201.	136.	3.2	1618.0	1618.0	.0
.070	107.	103.	4.2	1634.5	1634.5	.0
.110	55.	67.	6.5	1638.5	1638.5	.0
.210	71.	105.	4.1	1643.2	1643.2	.0
.250	53.	67.	6.5	1645.5	1645.5	.0
.280	61.	98.	4.4	1647.8	1647.8	.0
.340	30.	48.	6.2	1653.1	1653.1	.0
.410	34.	49.	6.0	1658.6	1658.6	.0
.470	20.	28.	6.0	1665.2	1665.2	.0
.510	40.	38.	4.3	1672.5	1672.5	.0
.610	30.	31.	5.3	1681.9	1681.9	.0
.630	58.	43.	3.8	1686.8	1686.8	.0

CHUKAR WASH

FOUNTAIN HILLS SOUTH FIS
Chukar Wash

X-Sec	HEC-1 Conc. Point	100-Yr Discharge (cfs)	Left Overbank Lenght (ft)	Rigth Overbank Lenght (ft)	Channel Lenght (ft)	COMMENT
4.19	CHU3	573				
0.00		573	250	250	250	Confluence CHU - CER
0.09		573	470	450	458	
0.11		573	140	110	128	
0.20		573	525	510	505	
0.26		573	240	290	253	End of study

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    23OCT95    TIME   07:58:23   *
*********************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*          (916) 756-1104               *
*****************************************
```


```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 23OCT95 07:58:23

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**************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
**************************************


T1      Fountain Hills (South) - Floodplain Delineation        File: CHUCKAR.H2
T1      For the Flood Control District of Maricopa County
T1      by AGK Engineers, Inc.
T1      File FH-CHU.H2

T2      Existing  conditions
T3      Fountain Hills (south) - CHUCKAR WASH

T4 GR data from stereo model received October 93 from KAM
T4 Revised photogrametric x-sec. received May 94
T5 1"=200' 2-feet Contour mapping from KAM flown 8-91
T6 with survey control by Anderson Nelson 12-11-92, field survey Aug 91
T7 Supplemental cross section data surveyed by Valco Surveing
T8 Source of 100-yr flowrate from HEC-1 Analysis by AGK Enginers
T8           File 120-6CE.DAT
T9 Subcritical analysis
T9 This model was developed and configured to determine water surface elevation
T9 for a 100-year floodplain delineation study, Velocity from this model
T9 may not be accurate and should not be used

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
                2                             .0152                                 1635.52
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     1                                                                    -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT
    38        43        53        54        1         2         68        10        8         200

  Chuckar Wash Flow used for initial conditions
  Tributary area and time of concentration considerably different

☑ Conc. Point CHU3 Flow upstream from Cereus Wash confluence

QT        2       573       573
NC     .056      .056      .039        .1        .3

   X-sec. dowstream from confluence at Cereus wash
   Starting WSE normal depth S=0.0152
ET                          9.1                                          9958.13   10044.9
```

```
X1    4.19        18      9993.3   10004.1
GR  1650.7      9903.8    1644.1    9922.7   1640.3    9934.6   1639.4    9941.6   1635.6    9959.2
GR  1635.4      9979.5    1633.0    9993.3   1632.7   10000.0   1632.9   10004.1   1634.2   10014.1
GR  1634.1     10030.6    1635.2   10043.6   1642.8   10067.3   1643.4   10088.3   1645.5   10113.4
GR  1647.4     10144.6    1648.2   10177.4   1649.2   10220.1

NC    .046        .046      .039

   Confluenfe of Chukar and Cereus Washes
ET                          9.1                                                    9963.1   10020.8
X1    0.00        22      9991.7   10008.0     220       220      220
GR  1659.8      9799.4    1651.6    9821.7   1644.5    9843.5   1641.6    9869.8   1639.2    9889.7
GR  1639.6      9906.7    1639.0    9934.3   1639.1    9950.5   1637.5    9969.4   1637.8    9983.4
GR  1635.5      9991.7    1634.3   10000.0   1634.4   10008.0   1638.3   10021.7   1638.9   10041.1
GR  1642.8     10056.0    1651.0   10076.8   1651.6   10085.8   1650.9   10102.0   1649.7   10131.0
GR  1652.6     10145.5    1653.7   10166.0

ET                          9.1                                                    9962.57  10018.3
X1    0.09        16      9991.7   10008.8     470       450      458
GR  1652.0      9877.4    1651.9    9892.7   1654.1    9908.5   1654.3    9920.6   1652.2    9945.6
GR  1648.1      9958.7    1645.7    9969.2   1645.6    9991.7   1644.5   10000.0   1645.7   10008.8
GR  1647.4     10019.4    1653.3   10034.2   1654.5   10066.7   1656.4   10073.8   1660.3   10104.0
GR  1661.9     10113.9

ET                          9.1                                                    9966.9   10018.4
X1    0.11        16      9977.9   10012.5     140       110      128
GR  1663.6      9778.4    1661.7    9817.4   1660.7    9853.2   1660.7    9878.4   1660.4    9920.4
GR  1659.1      9946.9    1657.9    9953.8   1656.3    9960.8   1650.3    9970.3   1651.5    9977.9
GR  1650.6     10000.0    1650.1   10012.5   1654.8   10024.2   1658.3   10044.9   1662.0   10068.6
GR  1666.3     10095.8

ET                          9.1                                                    9979.6   10085.2
X1    0.20        15       10000   10018.1     525       510      505
GR  1677.2      9931.5    1667.5    9966.7   1667.4    9975.9   1664.8    9984.1   1664.7   10000.0
GR  1664.2     10012.2    1665.1   10018.1   1664.6   10023.8   1668.0   10033.3   1664.5   10042.8
GR  1665.8     10057.8    1665.9   10079.2   1666.9   10096.8   1668.7   10109.9   1677.8   10134.9

ET                          9.1                                                    9992.4   10042.5
X1    0.26        11       10000    10037      240       290      253
GR  1691.0      9901.6    1680.2    9954.0   1675.0    9980.9   1669.2   10000.0   1669.9   10008.7
GR  1669.4     10037.0    1671.8   10043.3   1673.6   10056.9   1675.9   10082.5   1679.4   10093.9
GR  1689.6     10128.5
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 4.190
3720 CRITICAL DEPTH ASSUMED

4.190	2.92	1635.62	1635.62	1635.52	1636.28	.67	.00	.00	1633.00
573.0	76.3	261.5	235.2	21.9	30.1	57.7	.0	.0	1632.90
.00	3.49	8.69	4.08	.056	.039	.056	.000	1632.70	9959.13
.013312	0.	0.	0.	0	8	3	.00	85.77	10044.89

*SECNO .000

.000	3.62	1637.92	1637.67	.00	1638.75	.83	2.42	.05	1635.50
573.0	43.7	433.2	96.1	15.4	53.7	21.8	.5	.4	1634.40
.01	2.83	8.07	4.41	.046	.039	.046	.000	1634.30	9964.41
.009227	220.	220.	220.	3	11	0	.00	55.97	10020.37

*SECNO .090
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.090	2.78	1647.28	1647.28	.00	1648.07	.79	5.60	.00	1645.60
573.0	231.9	313.5	27.6	42.1	37.7	7.8	1.4	1.0	1645.70
.03	5.51	8.32	3.55	.046	.039	.046	.000	1644.50	9962.29
.016818	470.	458.	450.	0	15	0	.00	56.36	10018.65

*SECNO .110
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.110	2.38	1652.48	1652.48	.00	1653.30	.82	2.40	.01	1651.50
573.0	90.9	447.4	34.7	15.8	58.3	7.1	1.7	1.1	1650.10
.03	5.76	7.68	4.92	.046	.039	.046	.000	1650.10	9966.85
.020280	140.	128.	110.	0	15	0	.00	51.58	10018.43

*SECNO .200

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3720 CRITICAL DEPTH ASSUMED

.200	2.10	1666.30	1666.30	.00	1666.85	.55	9.58	.03	1664.70
573.0	152.5	237.9	182.6	28.1	32.3	44.8	2.8	2.0	1665.10
.06	5.42	7.37	4.07	.046	.039	.046	.000	1664.20	9979.38
.017433	525.	505.	510.	0	15	0	.00	97.44	10086.20

SECNO .260
185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

.260	2.23	1671.43	1671.43	.00	1672.28	.85	4.61	.09	1669.20
573.0	37.6	512.4	23.0	8.2	66.8	5.4	3.4	2.4	1669.40
.07	4.58	7.67	4.24	.046	.039	.046	.000	1669.20	9992.65
.018420	240.	253.	290.	0	8	0	.00	49.69	10042.34

THIS RUN EXECUTED 23OCT95 07:58:23

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	4.190	573.00	9959.13	10044.89	1635.62	1635.62	.92	.67	2.92
*	4.190	573.00	9959.13	10044.89	1635.61	1635.61	.92	.67	2.92
	.000	573.00	9964.41	10020.37	1637.92	1637.67	.78	.83	3.62
	.000	573.00	9964.40	10020.37	1637.92	1637.67	.78	.82	3.62
*	.090	573.00	9962.29	10018.65	1647.28	1647.28	.99	.79	2.78
*	.090	573.00	9962.57	10018.30	1647.29	1647.29	.98	.78	2.79
*	.110	573.00	9966.85	10018.43	1652.48	1652.48	1.04	.82	2.38
*	.110	573.00	9966.90	10018.40	1652.49	1652.49	1.03	.81	2.39
*	.200	573.00	9979.38	10086.20	1666.30	1666.30	.97	.55	2.10
*	.200	573.00	9979.60	10085.20	1666.30	1666.30	.98	.56	2.10
*	.260	573.00	9992.65	10042.34	1671.43	1671.43	1.01	.85	2.23
*	.260	573.00	9992.61	10042.36	1671.44	1671.44	1.00	.84	2.24

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      4.190  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      4.190  PROFILE=  2  CRITICAL DEPTH ASSUMED

CAUTION SECNO=       .090  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .090  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .090  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .090  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .110  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .110  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .110  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .110  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .200  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .200  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .200  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .200  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .260  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .260  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .260  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .260  PROFILE=  2  MINIMUM SPECIFIC ENERGY
```

FLOODWAY DATA, Fountain Hills (south) -
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
4.190	86.	110.	5.2	1635.6	1635.6	.0
.000	56.	91.	6.3	1637.9	1637.9	.0
.090	56.	88.	6.5	1647.3	1647.3	.0
.110	51.	82.	7.0	1652.5	1652.5	.0
.200	106.	105.	5.5	1666.3	1666.3	.0
.260	50.	81.	7.1	1671.4	1671.4	.0

LASER DRAIN

FOUNTAIN HILLS SOUTH FIS
Laser Drain

X-Sec	HEC-1 Conc. Point	100-Yr Discharge (cfs)	Left Overbank Length (ft)	Right Overbank Length (ft)	Channel Length (ft)	COMMENT
2.800		470				Downstream
2.880		470	412	405	404	
0.000	LSR5	470	340	330	332	Confluence with Cereus
0.064		470	327	303	320	
0.093		470	120	155	155	
0.120		470	138	136	139	
0.123		470	19	17	17	
0.127		470	21	24	21	
0.145		470	87	121	93	
0.161		470	86	108	89	
0.197		470	228	147	189	
0.225	LSR3	410	280	132	146	Upstream from Saguaro Blvd.
0.271		410	244	240	243	
0.306		410	183	184	185	
0.362		410	304	284	294	
0.368		410	43	49	35	
0.388		410	113	121	104	

```
1  ****************************************
   HEC-2 WATER SURFACE PROFILES            *
*                                          *
*  Version   4.6.2;  May 1991              *
*                                          *
*  RUN DATE    14OCT96    TIME   08:08:12  *
********************************************
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**************************************
*  U.S. ARMY CORPS OF ENGINEERS      *
*  HYDROLOGIC ENGINEERING CENTER     *
*  609 SECOND STREET, SUITE D        *
*  DAVIS, CALIFORNIA 95616-4687      *
*          (916) 756-1104            *
**************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                   X
X     X  X        X     X             X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

THIS RUN EXECUTED 14OCT96 08:08:12

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**************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
**************************************


T1      Fountain Hills (South) - Floodplain Delineation        File LASER-D.H2
T1      For the Flood Control District of Maricopa County
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - LASER DRAIN

T4 GR data from stereo model received October 93 from KAM
T4 Revised photogrametric x-sec. received May 94
T5 1"=200' 2-feet Contour mapping from KAM flown 8-91
T6 with survey control by Anderson Nelson 12-11-92, field survey Aug 91
T7 Supplemental cross section data surveyed by Alcocer Land Surveyors
T8 Source of 100-yr flowrate from HEC-1 Analysis by AGK Enginers
T8            File 120-6CE.DAT
T9 Subcritical analysis
T9 This model was developed and configured to determine water surface elevation
T9 for a 100-year floodplain delineation study, Velocity from this model
T9 may not be accurate and should not be used

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                         0.0092                                  1535

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                                                          -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        43        53        54         1         2        68        10         8       200

   This model was depeloped and configured to determine water surface elevation
   for a 100-year floodplain delineation study

   Cereus wash x-sections used to obtain accurate water surface
   Cereus water surface was not used as initial water surface because
   The size of the watesheads and the time of concentrations are significantly
   different
   Initial water surface elevation was determined by the normal depth method
```

1


```
NC    0.089     0.099     0.034       .1        .3
QT        2       470       470

  Flow downstrem From Study area
X1     2.80        11    9988.3   10005.5
GR   1547.6    9912.9    1544.1    9930.6    1538.3    9952.5    1537.2    9968.6    1535.8    9988.3
GR   1534.7   10000.0    1534.2   10005.5    1537.1   10015.7    1536.4   10038.4    1538.5   10052.1
GR   1540.6   10065.1


ET                9.1                                                              9980.67   10039.57
X1     2.88        11    9984.7   10013.2       412       405       404
GR   1557.0    9944.3    1553.9    9954.6    1539.5    9984.7    1539.1   10000.0    1539.2   10013.2
GR   1540.0   10017.5    1540.8   10037.1    1546.4   10059.1    1550.2   10075.2    1551.6   10094.9
GR   1552.6   10107.2


NC    0.058     0.073     0.044       .1        .3

  Confluence with Cereus Wash
               9.1                                                              9983.72   10039.31
1         0        15    9989.1   10006.5       340       330       332
GR   1555.5    9902.6    1555.2    9929.5    1554.3    9949.8    1554.7    9951.2    1553.4    9968.7
```

GR	1542.0	9989.1	1542.1	10000.0	1542.7	10006.5	1544.1	10012.1	1544.3	10037.4
GR	1550.7	10054.8	1554.3	10071.8	1555.5	10082.6	1554.7	10102.7	1554.1	10113.1
X1	0.064	21	9993.4	10004.6	327	303	320			
GR	1562	9936.0	1560	9949.3	1558	9955.0	1556	9960.6	1554	9966.1
GR	1552	9971.6	1550	9977.1	1548	9993.4	1547.3	9996.70	1547.2	10000.0
GR	1547.3	10002.30	1548	10004.6	1550	10017.4	1552	10022.4	1554	10028.2
GR	1556	10033.9	1558	10041.6	1560	10048.3	1562	10056.0	1564	10062.2
GR	1566	10068.7								
X1	0.093	35	9990.74	10010.84	120	155	155			
GR	1562.9	9915.15	1562.46	9920.45	1562.17	9925.45	1560.1	9930.45	1557.56	9935.45
GR	1555.2	9940.45	1553.38	9945.45	1552.38	9950.15	1551.76	9955.45	1551.48	9960.35
GR	1551.4	9964.65	1551.5	9970.54	1551.6	9975.54	1551.74	9980.64	1551.81	9985.64
GR	1551.6	9990.74	1550.59	9995.74	1550	10000	1549.52	10000.83	1550.07	10005.84
GR	1551.4	10010.84	1553.48	10015.85	1555.82	10020.86	1557.87	10025.86	1559.16	10030.93
GR	1560.3	10035.94	1560.9	10040.94	1560.46	10045.94	1561.43	10050.95	1561.58	10055.95
GR	1561.4	10060.98	1561.8	10066	1562.21	10071.01	1563.45	10076.02	1564.46	10081.08
X1	0.120	50	9984.35	10010.18	138	136	139			
GR	1561.2	9896.1	1561.04	9901.29	1561.03	9901.96	1560.77	9906.52	1560.55	9911.8
GR	1560.3	9916.94	1560.19	9921.92	1560.18	9927.24	1560.14	9932.52	1560.02	9937.69
GR	1559.5	9942.83	1559.01	9947.97	1558.34	9953.11	1557.4	9958.28	1556.93	9960.56
GR	1556.3	9963.5	1555.69	9968.67	1555.16	9973.84	1554.69	9979.35	1554.39	9984.35
GR	1554.2	9989.66	1554.31	9994.88	1554.22	10000	1554.12	10005.08	1554.2	10010.18
GR	1554.8	10015.39	1555.03	10017.27	1555.48	10020.57	1555.88	10025.69	1556.21	10030.88

GR	1556.4	10036.07	1556.53	10037.6	1556.81	10041.19	1557.03	10046.38	1557.39	10051.55
GR	1557.7	10056.77	1557.92	10061.91	1558.07	10067.03	1558.16	10072.22	1558.25	10077.39
GR	1558.4	10082.58	1558.66	10087.8	1558.83	10092.99	1558.94	10096.25	1559.03	10098.11
GR	1559.4	10103.26	1559.7	10108.48	1559.91	10113.64	1559.99	10116.21	1560.09	10118.78
NC				.3	.5					
X1	0.123	7	9962.49	10040	19	17	17			
GR	1561.1	9894.22	1559.85	9924.12	1556.93	9962.49	1554.65	10000	1556.52	10040
GR	1558.7	10083.2	1561.24	10146.7						
NC	0.058	0.068	0.065							
X1	0.127	52	9988.44	10007.77	21	24	21			
GR	1560.6	9900.42	1560.34	9905.56	1559.99	9910.73	1559.81	9915.92	1559.65	9921.14
GR	1559.4	9926.28	1559.32	9929.6	1559.24	9931.53	1558.98	9936.65	1558.65	9941.84
GR	1558.3	9947.01	1558.21	9948.69	1558.03	9952.13	1557.56	9957.44	1557.07	9962.61
GR	1556.6	9967.8	1556.28	9972.9	1555.64	9978.18	1555.12	9983.3	1554.94	9988.44
GR	1554.8	9993.72	1554.78	9998.84	1554.75	10000	1554.73	10004.04	1554.9	10007.77
GR	1554.9	10009.16	1555.21	10014.48	1555.38	10019.56	1555.54	10024.81	1555.65	10027.14
GR	1555.8	10029.96	1556.17	10035.18	1556.56	10040.26	1556.88	10045.4	1557.01	10047.58
GR	1557.1	10050.65	1557.47	10055.87	1557.77	10061.01	1558.04	10066.18	1558.28	10071.37
GR	1558.4	10076.49	1558.54	10081.68	1558.64	10085.76	1558.71	10086.88	1558.85	10091.98
GR	1559	10097.2	1559.22	10102.34	1559.46	10107.34	1559.46	10107.44	1559.82	10112.63
GR	1560.3	10117.88	1560.96	10123.04						
X1	0.145	45	9992.31	10008.15	87	121	93			
X3						10023.93	1557			
GR	1563	9916.34	1562.81	9921.36	1562.6	9926.37	1562.39	9931.38	1562.19	9936.31
GR	1561.9	9941.41	1561.69	9946.31	1561.52	9951.43	1561.42	9956.45	1561.28	9961.53
GR	1560.9	9966.61	1560.63	9971.71	1559.97	9977.02	1558.85	9982.19	1557.92	9987.21
GR	1556.7	9992.31	1556.1	9997.56	1556.05	10000	1556.01	10002.83	1556.01	10002.93
GR	1556.5	10008.15	1557.14	10013.29	1557.26	10018.79	1557	10023.93	1556.6	10029.18
GR	1556.1	10034.4	1555.91	10037.1	1555.71	10039.63	1555.27	10044.94	1554.89	10050.19
GR	1554.8	10052.63	1554.82	10055.44	1555.52	10060.56	1556.74	10065.91	1557.61	10069.33
GR	1558.1	10071.2	1559.73	10076.42	1561.43	10081.64	1562.91	10086.1	1563.18	10086.95
GR	1564.7	10092.09	1566.05	10097.37	1566.9	10102.31	1566.98	10102.71	1567.01	10107.99
NC	0.058	0.043	0.065							
X1	0.161	95	9979.2	10020.54	86	108	89			
GR	1563.3	9860.41	1563.42	9865.72	1563.43	9868.28	1563.44	9871.07	1563.42	9876.62
GR	1563.4	9881.57	1563.43	9882.98	1563.4	9887.5	1563.34	9893	1563.31	9898.06
GR	1563.2	9903.89	1563.18	9910.31	1563.15	9914.49	1563.11	9919.88	1563.08	9925.05
GR	1562.8	9930.36	1562.66	9935.95	1562.66	9939.76	1562.61	9946.58	1562.6	9949.7
GR	1562.5	9955.8	1562.54	9961.79	1562.42	9967.52	1562.35	9973.48	1562.44	9979.2
GR	1557.7	10000	1557.9	10002.84	1557.9	10002.96	1559.3	10009.2	1560.2	10012.43

GR	1565.1	10020.54	1565.8	10022.09	1566.8	10026.71	1566.3	10030.1	1565.8	10033.93
GR	1565.6	10036.24	1565.1	10041.72	1564.9	10047.03	1564.1	10052.93	1563.6	10056.45
GR	1563.3	10058.84	1562.5	10064.74	1562.3	10066.04	1562.0	10070.37	1561.5	10076
GR	1561.4	10076.9	1561.5	10081.79	1561.5	10086.65	1561.6	10087.62	1561.9	10093.61

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GR	1562	10097.15	1562.0	10098.93	1562.1	10104.76	1562	10108.43	1561.9	10110.36
GR	1561.6	10116.37	1561.6	10118.74	1561.5	10121.88	1561.4	10127.73	1561.4	10128.43
GR	1561.4	10133.35	1561.4	10138.94	1561.4	10139.52	1561.5	10144.77	1561.6	10150.28
GR	1561.7	10155.82	1561.9	10161.41	1561.9	10161.58	1562.2	10167.57	1562.4	10170.84
GR	1562.6	10173.36	1562.9	10179.31	1563	10180.02	1563.2	10185.13	1563.5	10190.05
GR	1563.6	10190.84	1563.8	10196.45	1564	10201.87	1564.0	10208.03	1564.0	10211.27
GR	1564.1	10213.58	1564.3	10219.13	1564.4	10223.26	1564.5	10224.55	1564.9	10230.65
GR	1565.1	10232.89	1565.2	10236.24	1565.6	10242.35	1565.8	10247.66	1566.1	10253.6
GR	1566.3	10259.26	1566.5	10264.24	1566.5	10264.95	1566.8	10270.85	1566.9	10273.85

NC	0.059	0.059	0.018							
X1	0.197	89	9900.1	10000	228	147	189			
X3			116							
GR	1568.6	9726.87	1567.6	9731.87	1562.2	9751.99	1562.3	9762.09	1562.2	9775.83
GR	1562.1	9780.45	1562.0	9785.87	1561.9	9802.32	1561.8	9807.51	1561.9	9823.93
GR	1561.7	9829.39	1561.6	9834.67	1561.3	9841.34	1561.1	9845.56	1561.0	9851.11
GR	1560.9	9856.21	1560.8	9867.53	1560.7	9872.79	1560.6	9878.34	1560.7	9889.26
GR	1560.7	9893.88	1560.8	9900.1	1560.7	9911.2	1559.8	9927.35	1559.7	9932.63
GR	1559.8	9938.27	1559.9	9943.82	1560.0	9949.1	1561.6	9989.55	1561.7	10000
GR	1561.8	10005.11	1561.6	10011.21	1561.5	10014.13	1561.3	10017.55	1561.0	10024.44
GR	1560.9	10030.15	1561.0	10036	1561.1	10039.78	1561.3	10042.47	1561.6	10047.65
GR	1561.6	10055.46	1561.8	10061.24	1561.9	10064.74	1562.0	10067.35	1562.3	10073.51
GR	1562.5	10079.72	1562.6	10081.95	1562.7	10085.95	1562.9	10090	1563	10092.3
GR	1563.0	10097.97	1563.1	10098.67	1563.1	10099.07	1563.1	10104.79	1563.1	10107.43
GR	1563.1	10111.68	1563.5	10123.24	1563.8	10149.32	1563.8	10156.06	1563.9	10161.8
GR	1564.0	10168.37	1564.1	10172.99	1564.2	10182.01	1564.4	10186.85	1564.5	10193.19
GR	1564.6	10199.07	1564.8	10205.6	1564.9	10212.09	1565.0	10214.95	1565.1	10218.43
GR	1565.2	10224.57	1565.3	10230.48	1565.3	10232.76	1565.5	10237	1565.6	10243.39
GR	1565.7	10249.27	1565.9	10255.87	1566	10256.97	1566.2	10262.34	1566.3	10265.3
GR	1566.4	10268.98	1566.6	10272.78	1566.7	10275.26	1566.8	10281.03	1566.9	10282.3
GR	1567.0	10287.47	1567.0	10289.8	1567.1	10293.61	1567.1	10299.5		

QT	2	410	410							
X1	0.225	97	9978.95	10007.88	280	132	146			
X3										
GR	1575.8	9704.99	1575.7	9707.35	1575.5	9711.33	1575.3	9714.87	1575.1	9717.95
GR	1574.8	9722.77	1574.6	9724.43	1574.2	9731.02	1573.7	9737.95	1573.3	9744.23
GR	1573.1	9746.74	1572.8	9750.77	1572.3	9756.99	1571.9	9762.09	1571.6	9764.43
GR	1571.4	9770.4	1571.0	9776.62	1570.7	9782.96	1570.6	9786.65	1570.7	9789.69
GR	1570.8	9796.16	1571.2	9802.63	1571.1	9809.49	1570.0	9815.13	1569.4	9818.39
GR	1568.7	9822.08	1567.8	9825.76	1567.3	9828.7	1566.5	9833.73	1566.3	9835.29
GR	1566.1	9841.69	1566.3	9848.76	1566.8	9854.54	1567.5	9861.01	1570	9892.98
GR	1570.4	9899.91	1570.6	9904.44	1570.8	9907.41	1571.0	9913.88	1571.1	9918.58
GR	1571.2	9921.77	1571.2	9926.13	1571.3	9928.71	1571.3	9932.95	1571.4	9935.57
GR	1571.5	9939.96	1571.6	9942.79	1571.6	9946.76	1571.4	9950.45	1571.2	9953.93
GR	1570.8	9956.91	1563.3	9978.95	1562.8	9982.89	1562.6	9985.73	1562.5	9989.62
GR	1562.5	9992.6	1562.5	9997.13	1562.6	10000	1562.7	10000.29	1562.8	10004.35
GR	1563.0	10007.88	1563.2	10010.79	1563.6	10014.48	1567.2	10031.96	1567.3	10036.2
GR	1567.4	10039.26	1567.4	10042.87	1567.4	10046.78	1567.5	10050.3	1567.5	10053.34

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GR	1567.6	10057.82	1567.6	10060.4	1567.6	10064.3	1567.7	10067.36	1567.7	10071.47
GR	1567.7	10074.27	1567.7	10078.99	1567.8	10081.49	1567.8	10085.94	1567.9	10088.77
GR	1568	10093.63	1568.0	10095.66	1568.2	10100.77	1568.2	10102.71	1568.5	10107.52
GR	1568.8	10109.78	1569.7	10114.59	1570.2	10117.31	1571.1	10121.34	1571.6	10123.81
GR	1572.5	10128.9	1572.9	10131.02	1573.4	10135.63	1573.6	10137.92	1574.1	10143.16
GR	1574.1	10145.35	1573.9	10150.45						

NC				.1	.3					
X1	0.271	74	9982.47	10019.73	244	240	243			
GR	1576.9	9723.65	1576.89	9729.64	1576.77	9736.52	1576.65	9741.63	1576.48	9747.46
GR	1576.3	9753.45	1576.1	9758.95	1575.93	9765.81	1575.73	9771.86	1575.66	9773.7
GR	1575.5	9777.41	1575.3	9783.63	1575.08	9789.57	1575	9791.85	1574.85	9795.43
GR	1574.6	9801.53	1574.38	9807.81	1574.27	9810.36	1574.14	9813.55	1573.87	9819.54
GR	1573.5	9825.48	1573.44	9828.38	1573.25	9832.07	1572.86	9838.47	1572.53	9844.25
GR	1572.3	9847.22	1572.2	9850.4	1571.88	9856.28	1571.68	9862.11	1571.55	9866.16
GR	1571.5	9868.36	1571.44	9874.19	1571.44	9876.29	1571.58	9880.53	1571.77	9884.7

GR	1571.8	9886.54	1572.41	9893.56	1572.79	9898.47	1573.19	9902.83	1573.3	9904.41
GR	1573.6	9910.14	1573.78	9916.3	1573.79	9922.18	1573.65	9930.06	1573.55	9933.96
GR	1573.3	9940.3	1572.99	9946.58	1572.68	9951.97	1572.26	9958.44	1571.31	9966.06
GR	1570.3	9970.41	1569.02	9976.88	1568.21	9982.47	1567.78	9989	1567.57	9994.88
GR	1567.5	10000	1567.53	10001.61	1567.64	10007.29	1567.79	10011.07	1567.89	10013.26
GR	1568.3	10019.73	1568.97	10025.36	1569.5	10029.13	1569.86	10031.6	1570.74	10037.71
GR	1570.7	10037.88	1571.83	10043.74	1572.3	10047.26	1572.79	10049.82	1573.63	10055.67
GR	1573.7	10056.37	1574.38	10061.59	1574.64	10065.23	1574.81	10067.93		

X1	0.306	87	9979.07	10015.33	183	184	185
GR	1584.3	9683.66	1584.1	9689.05	1583.69	9694.19	1583.48
GR	1582.9	9704.75	1582.63	9710	1582.37	9715.04	1581.66
GR	1580.9	9735.87	1580.52	9740.97	1580.5	9746.28	1580.08
GR	1579.8	9761.93	1579.83	9767.1	1579.54	9772.16	1579.39
GR	1579	9787.78	1578.84	9793.03	1578.59	9798.25	1578.4
GR	1578.5	9813.75	1578.45	9818.94	1578.38	9824.06	1578.31
GR	1578.3	9839.83	1578.21	9844.97	1578.18	9846.3	1578.06
GR	1577.8	9859.18	1577.81	9861.15	1577.64	9867.68	1576.97
GR	1576.3	9880.37	1575.56	9884.53	1575.29	9886.72	1574.59
GR	1573.6	9901.26	1573.27	9905.38	1573.01	9909.38	1572.96
GR	1573.5	9924.04	1573.8	9926.68	1574.11	9929.98	1574.54
GR	1575	9948.55	1571.4	9972.79	1570.8	9979.07	1570.5
GR	1570.3	9990.91	1570.3	9997.13	1570.3	10000	1570.4
GR	1570.6	10009.39	1570.9	10015.33	1575.1	10069.16	1575.2
GR	1575.5	10079.33	1575.5	10081.6	1575.4	10087.59	1575.4
GR	1574.7	10097.58	1574.6	10099.33	1574.6	10105.8	1574.7
GR	1574.9	10117.8	1575.2	10123.85	1575.5	10130.07	1575.7
GR	1576.1	10141.98	1576.5	10148.32			

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	14OCT96	08:08:12							PAGE	6
NC	0.035	0.033	0.018							
X1	0.362	89	9980.52	10015.57	304	284	294			
GR	1582.8	9805.35	1582.44	9810.35	1581.84	9815.36	1581.23	9820.36	1580.87	9825.37
GR	1581.1	9830.37	1580.92	9835.37	1581.09	9840.37	1580.96	9845.37	1581.24	9850.37
GR	1581.5	9855.38	1581.54	9860.39	1581.4	9865.4	1581.24	9870.4	1581.1	9875.42
GR	1581.1	9880.43	1581.1	9885.43	1581.11	9890.43	1581.16	9895.44	1581.21	9900.44
GR	1581.3	9905.45	1581.36	9910.45	1581.31	9915.46	1580.59	9920.46	1580.45	9925.46
GR	1580	9930.46	1579.61	9935.46	1579.45	9940.46	1578.9	9945.46	1578.56	9950.46
GR	1578.6	9955.52	1578.96	9960.52	1578.97	9965.52	1578.21	9970.52	1576.65	9975.52
GR	1575.3	9980.52	1574.88	9985.52	1574.74	9990.54	1574.69	9995.54	1574.71	10000
GR	1574.7	10000.56	1574.84	10005.57	1575.03	10010.57	1575.27	10015.57	1575.96	10020.6
GR	1577.3	10025.63	1578.35	10030.63	1578.78	10035.67	1579.16	10040.67	1579.48	10045.67
GR	1579.7	10050.67	1580.01	10055.68	1580.21	10060.68	1580.37	10065.68	1580.49	10070.68
GR	1580.6	10075.68	1580.71	10080.7	1580.68	10085.73	1580.5	10090.74	1580.13	10095.74
GR	1579.6	10100.79	1579.21	10105.79	1578.77	10110.83	1578.24	10115.87	1577.75	10120.88
GR	1577.3	10125.88	1577.05	10130.96	1576.85	10135.96	1576.69	10140.96	1576.45	10146.04
GR	1576.7	10151.05	1577	10156.05	1577.32	10161.09	1577.71	10166.1	1578.16	10171.16
GR	1578.7	10176.17	1579.28	10181.18	1580.14	10186.18	1581.22	10191.19	1582.28	10196.22
GR	1582.8	10201.27	1583.33	10206.29	1582.86	10211.33	1583.23	10216.33	1583.62	10221.33
GR	1584.2	10226.34	1584.86	10231.35	1584.79	10236.35	1585.4	10241.42		

X1	0.368	9	9974.79	10053	43	49	35			
GR	1584.0	9747.91	1579.37	9883.49	1576.55	9974.79	1576.01	10000	1575.95	10033.4
GR	1576.5	10053	1578.06	10132.6	1579.13	10193.1	1579.48	10220.8		

X1	0.388	45	9978.12	10013.25	113	121	104			
GR	1580.8	9882.48	1580.64	9887.48	1580.45	9892.54	1580.28	9897.54	1580.1	9902.6
GR	1579.9	9907.85	1579.8	9912.99	1579.7	9917.99	1579.63	9922.99	1579.54	9927.99
GR	1579.4	9933.01	1579.16	9938.05	1578.78	9943.05	1578.35	9948.05	1577.99	9953.05
GR	1577.7	9958.07	1577.64	9963.07	1577.57	9968.07	1577.51	9973.07	1577.45	9978.12
GR	1577.4	9983.17	1577.38	9988.18	1577.37	9993.19	1577.37	9998.21	1577.39	10000
GR	1577.4	10003.23	1577.46	10008.23	1577.55	10013.25	1578.05	10018.25	1579.16	10023.25
GR	1580.3	10028.25	1581.35	10033.26	1582.07	10038.27	1582.95	10043.27	1583.8	10048.27
GR	1584.2	10053.28	1584.44	10058.28	1584.46	10063.3	1584.66	10068.3	1584.8	10073.32
GR	1584.9	10078.32	1584.86	10083.32	1584.67	10088.34	1584.46	10093.34	1584.25	10098.34

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 2.800

2.800	3.41	1537.61	1537.59	1535.00	1538.37	.75	.00	.00	1535.80
470.0	38.3	357.3	74.4	23.2	45.0	44.4	.0	.0	1534.20
.00	1.65	7.94	1.68	.089	.034	.099	.000	1534.20	9962.57
.009190	0.	0.	0.	0	26	6	.00	83.74	10046.31

*SECNO 2.880

3470 ENCROACHMENT STATIONS= 9980.7 10039.6 TYPE= 1 TARGET= 58.900

2.880	2.28	1541.38	1541.20	.00	1542.04	.66	3.67	.01	1539.50
470.0	5.2	421.7	43.1	3.7	61.2	27.5	1.0	.7	1539.20
.02	1.41	6.89	1.57	.089	.034	.099	.000	1539.10	9980.77
.008952	412.	404.	405.	2	14	0	.00	58.60	10039.38

CCHV= .100 CEHV= .300
*SECNO .000

3470 ENCROACHMENT STATIONS= 9983.7 10039.3 TYPE= 1 TARGET= 55.590

.000	2.95	1544.95	1544.92	.00	1545.74	.79	3.66	.04	1542.00
470.0	27.7	377.2	65.1	7.8	48.1	28.1	1.6	1.1	1542.70
.03	3.57	7.84	2.32	.058	.044	.073	.000	1542.00	9983.83
.013913	340.	332.	330.	0	11	0	.00	55.33	10039.15

SECNO .064
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.064	3.31	1550.51	1550.51	.00	1551.36	.86	4.70	.02	1548.00
470.0	103.7	301.8	64.5	25.0	34.3	19.6	2.2	1.5	1548.00
.04	4.15	8.81	3.29	.058	.044	.073	.000	1547.20	9975.70
.015660	327.	320.	303.	0	8	0	.00	42.97	10018.67

*SECNO .093

.093	3.35	1552.87	1552.70	.00	1553.34	.47	1.94	.04	1551.60
470.0	155.0	310.6	4.4	49.5	48.5	2.6	2.5	1.6	1551.40
.05	3.13	6.41	1.68	.058	.044	.073	.000	1549.52	9947.85
.011472	120.	155.	155.	2	10	0	.00	66.53	10014.38

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .120
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.120	1.95	1556.07	1556.07	.00	1556.74	.67	2.10	.06	1554.39
470.0	72.8	347.8	49.4	17.9	47.5	15.3	2.8	1.8	1554.20
.06	4.08	7.33	3.23	.058	.044	.073	.000	1554.12	9965.47
.020928	138.	139.	136.	0	11	0	.00	63.16	10028.64

CCHV= .300 CEHV= .500
*SECNO .123
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.123	2.05	1556.70	1556.70	.00	1557.25	.55	.42	.04	1556.93
470.0	.0	469.8	.2	.0	79.0	.3	2.8	1.9	1556.52
.06	.00	5.95	.68	.000	.044	.073	.000	1554.65	9966.31
.028288	19.	17.	17.	0	8	0	.00	77.22	10043.53

*SECNO .127

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.14

.127	2.75	1557.48	1556.52	.00	1557.62	.14	.25	.12	1554.94
470.0	118.8	178.6	172.6	40.8	51.6	68.2	2.9	1.9	1554.90
.06	2.91	3.46	2.53	.058	.065	.068	.000	1554.73	9958.33
.006175	21.	21.	24.	2	15	0	.00	97.65	10055.98

*SECNO .145

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .63

3470 ENCROACHMENT STATIONS= .0 10023.9 TYPE= 1 TARGET= 10023.930

.145	3.61	1558.41	1557.95	.00	1558.64	.24	.98	.05	1556.70
470.0	19.5	164.0	286.5	6.3	34.5	85.6	3.2	2.1	1556.50
.07	3.11	4.76	3.35	.058	.065	.068	.000	1554.80	9984.57
.015434	87.	93.	121.	3	11	0	.00	87.63	10072.19

*SECNO .161

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.161	3.48	1561.18	1561.18	.00	1562.20	1.01	2.46	.39	1562.44
470.0	.0	470.0	.0	.0	58.2	.0	3.4	2.3	1565.10
.07	.00	8.08	.00	.000	.065	.000	.000	1557.70	9984.71
.052298	86.	89.	108.	0	10	0	.00	29.34	10014.06

*SECNO .197

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 13.25

3470 ENCROACHMENT STATIONS= 9892.0 10008.0 TYPE= 2 TARGET= 116.000

.197	2.89	1562.59	1561.36	.00	1562.67	.08	.19	.28	1560.80
470.0	9.0	458.5	2.5	15.0	201.6	6.8	4.1	2.6	1561.70
.09	.60	2.27	.37	.059	.018	.059	.000	1559.70	9892.05
.000298	228.	189.	147.	4	14	0	.00	116.00	10008.05

*SECNO .225

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 9935.4 10051.4 TYPE= 1 TARGET= 116.000

.225	1.99	1564.49	1564.49	.00	1565.33	.84	.10	.38	1563.30
410.0	2.2	391.7	16.1	2.1	52.0	10.0	4.6	2.9	1563.00
.10	1.06	7.53	1.62	.059	.018	.059	.000	1562.50	9975.46
.003823	280.	146.	132.	0	19	0	.00	43.34	10018.79

CCHV= .100 CEHV= .300
*SECNO .271
7185 MINIMUM SPECIFIC ENERGY

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA

SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 9943.1 10059.1 TYPE= 1 TARGET= 116.000

.271	1.83	1569.33	1569.33	.00	1570.05	.73	.94	.01	1568.21
410.0	5.1	399.9	5.0	4.2	57.7	4.4	4.9	3.1	1568.30
.11	1.21	6.92	1.15	.059	.018	.059	.000	1567.50	9975.32
.003928	244.	243.	240.	0	11	0	.00	52.58	10027.91

*SECNO .306
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 9939.2 10055.2 TYPE= 1 TARGET= 116.000

.306	1.74	1572.04	1572.04	.00	1572.75	.70	.72	.00	1570.80
410.0	9.9	391.2	9.0	7.3	56.9	8.4	5.2	3.4	1570.90
.12	1.35	6.88	1.07	.059	.018	.059	.000	1570.30	9968.45
.003809	183.	185.	184.	0	8	0	.00	61.55	10030.00

*SECNO .362
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 9940.0 10056.0 TYPE= 1 TARGET= 116.000

.362	1.79	1576.48	1576.48	.00	1577.22	.74	1.13	.01	1575.30
410.0	4.7	393.8	11.6	2.6	56.0	4.9	5.7	3.7	1575.27
.13	1.82	7.03	2.38	.035	.018	.033	.000	1574.69	9976.15
.003889	304.	294.	284.	0	8	0	.00	46.39	10022.55

*SECNO .368
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 9955.9 10071.9 TYPE= 1 TARGET= 116.000

.368	1.14	1577.09	1577.09	.00	1577.50	.42	.15	.03	1576.55
410.0	5.4	392.4	12.2	4.6	74.1	7.6	5.7	3.8	1576.50
.13	1.17	5.30	1.61	.035	.018	.033	.000	1575.95	9957.46
.004427	43.	35.	49.	0	14	0	.00	114.43	10071.89

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .388
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 9937.7 10053.7 TYPE= 1 TARGET= 116.000

.388	1.34	1578.71	1578.71	.00	1579.26	.55	.48	.04	1577.45
410.0	89.5	306.0	14.5	30.6	45.6	5.5	6.0	4.0	1577.55
.14	2.92	6.71	2.62	.035	.018	.033	.000	1577.37	9943.85
.004657	113.	104.	121.	0	11	0	.00	77.37	10021.23

THIS RUN EXECUTED 14OCT96 08:08:12

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
	2.800	470.00	9962.57	10046.31	1537.61	1537.59	.86	.75	3.41
	2.800	470.00	9962.57	10046.31	1537.61	1537.59	.86	.75	3.41
	2.880	470.00	9980.77	10039.38	1541.38	1541.20	.83	.66	2.28
	2.880	470.00	9980.77	10039.38	1541.38	1541.20	.83	.66	2.28
	.000	470.00	9983.83	10039.15	1544.95	1544.92	.83	.79	2.95
	.000	470.00	9983.82	10039.17	1544.94	1544.91	.83	.78	2.94
*	.064	470.00	9975.70	10018.67	1550.51	1550.51	.89	.86	3.31
*	.064	470.00	9975.70	10018.68	1550.51	1550.51	.89	.85	3.31
	.093	470.00	9947.85	10014.38	1552.87	1552.70	.73	.47	3.35
	.093	470.00	9947.86	10014.38	1552.87	1552.70	.73	.47	3.35
*	.120	470.00	9965.47	10028.64	1556.07	1556.07	.95	.67	1.95
*	.120	470.00	9965.47	10028.63	1556.07	1556.07	.95	.67	1.95
	.123	470.00	9966.31	10043.53	1556.70	1556.70	1.01	.55	2.05
*	.123	470.00	9966.32	10043.52	1556.70	1556.70	1.01	.55	2.05
*	.127	470.00	9958.33	10055.98	1557.48	1556.52	.37	.14	2.75
*	.127	470.00	9958.33	10055.98	1557.48	1556.52	.37	.14	2.75
*	.145	470.00	9984.57	10072.19	1558.41	1557.95	.57	.24	3.61
*	.145	470.00	9984.57	10072.19	1558.41	1557.95	.57	.24	3.61
*	.161	470.00	9984.71	10014.06	1561.18	1561.18	1.01	1.01	3.48
*	.161	470.00	9984.71	10014.06	1561.19	1561.19	1.01	1.01	3.49
*	.197	470.00	9892.05	10008.05	1562.59	1561.36	.28	.08	2.89
*	.197	470.00	9892.05	10008.05	1562.59	1561.36	.28	.08	2.89

1

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	.225	410.00	9975.46	10018.79	1564.49	1564.49	.99	.84	1.99
*	.225	410.00	9975.46	10018.79	1564.49	1564.49	.99	.84	1.99
*	.271	410.00	9975.32	10027.91	1569.33	1569.33	.98	.73	1.83
*	.271	410.00	9975.33	10027.90	1569.33	1569.33	.98	.73	1.83
*	.306	410.00	9968.45	10030.00	1572.04	1572.04	.97	.70	1.74
*	.306	410.00	9968.46	10029.99	1572.04	1572.04	.97	.70	1.74
*	.362	410.00	9976.15	10022.55	1576.48	1576.48	.98	.74	1.79
*	.362	410.00	9976.15	10022.55	1576.48	1576.48	.98	.74	1.79
*	.368	410.00	9957.46	10071.89	1577.09	1577.09	.96	.42	1.14
*	.368	410.00	9957.46	10071.89	1577.09	1577.09	.96	.42	1.14
*	.388	410.00	9943.85	10021.23	1578.71	1578.71	1.04	.55	1.34
*	.388	410.00	9943.84	10021.23	1578.71	1578.71	1.04	.55	1.34

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=       .064  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .064  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .064  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .064  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .120  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .120  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .120  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .120  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .123  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .123  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .123  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .123  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=       .127  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=       .127  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=       .145  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=       .145  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=       .161  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .161  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .161  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .161  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=       .197  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=       .197  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=       .225  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .225  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .225  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .225  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .271  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .271  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .271  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .271  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .306  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .306  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .306  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .306  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .362  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .362  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .362  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .362  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .368  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .368  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=       .368  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .368  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .388  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .388  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .388  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .388  PROFILE=  2  MINIMUM SPECIFIC ENERGY
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FLOODWAY DATA, Fountain Hills (south) -
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
2.800	84.	113.	4.2	1537.6	1537.6	.0
2.880	59.	92.	5.1	1541.4	1541.4	.0
.000	55.	84.	5.6	1545.0	1545.0	.0
.064	43.	79.	6.0	1550.5	1550.5	.0
.093	67.	101.	4.7	1552.9	1552.9	.0
.120	63.	81.	5.8	1556.1	1556.1	.0
.123	77.	79.	5.9	1556.7	1556.7	.0
.127	98.	161.	2.9	1557.5	1557.5	.0
.145	88.	126.	3.7	1558.4	1558.4	.0
.161	29.	58.	8.1	1561.2	1561.2	.0
.197	116.	223.	2.1	1562.6	1562.6	.0
.225	43.	64.	6.4	1564.5	1564.5	.0
.271	53.	66.	6.2	1569.3	1569.3	.0
.306	62.	73.	5.7	1572.0	1572.0	.0
.362	46.	63.	6.5	1576.5	1576.5	.0
.368	114.	86.	4.8	1577.1	1577.1	.0
.388	77.	82.	5.0	1578.7	1578.7	.0

CYPRUS POINT WASH

FOUNTAIN HILLS SOUTH FIS
Cyprus Point Wash

X-Sec	HEC-1 Conc. Point	100-Yr Dischar (cfs)	Left Overba Lenght (ft)	Rigth Overba Lenght (ft)	Channel Lenght (ft)	COMMENT
10000	CP4	331				Dowstream from Saguaro
20000		331	600	600	600	
2.25		331	420	420	420	
2.29		331	220	180	194	
2.30		331	60	75	68	
2.38		331	450	450	452	
2.39		331	37	42	35	
2.43	SCP3	303	187	187	187	Culvert Inlet
2.44		303	63	50	56	Culvert outlet
2.48		303	200	250	217	
2.52		303	230	250	238	
2.53		303	38	45	45	
2.54	*CP2	193	37	37	37	
2.55		193	50	45	45	
2.64		193	510	480	500	
2.69		193	250	240	250	
2.69		193	250	240	249	
2.74		193	280	280	284	

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    23OCT95    TIME   08:01:02   *
*********************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*         (916) 756-1104                *
*****************************************
```


```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
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THIS RUN EXECUTED 23OCT95 08:01:02

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**************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
**************************************


T1      Fountain Hills (South) - Flood Delineation              File:CYPRUS.H2
T1      For the Flood Control District of Maricopa County
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - CYPRUS POINT WASH

T4 GR data from stereo model received October 93 from KAM
T4 Revised photogrametric x-sec. received May 94
T5 1"=200' 2-feet Contour mapping from KAM flown 8-91
T6 with survey control by Anderson Nelson 12-11-92, field survey Aug 91
T7 Supplemental cross section data surveyed by Valco Surveing
T8 Source of 100-yr flowrate from HEC-1 Analysis by AGK Enginers
T8            File 130-6CE.DAT
T9 Subcritical analysis
T9 This model was developed and configured to determine water surface elevation
T9 for a 100-year floodplain delineation study, Velocity from this model
T9 may not be accurate and should not be used

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                             .012                                  1491.6

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                                                          -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        43        53        54         1         2        68        10         8        200


  Conc. point CP4 Flow dowstream from  Saguaro Blvd.

QT        2       331       331
NC    0.049      .049      .038       0.1       0.3

   X-Sec. from 1" = 2000' 20' contour Quad map
   X-sec downstream from study area
   Included to obtain a more accurate water surface at x-sec 2.25
   Initial water surface elevation was determined by the normal depth method
ET                          9.1                                                 9958     10019.6
```

```
X1    10000        7     9990    10010
GR     1500     9650     1495     9890     1490     9990     1489    10000     1490    10010
GR     1495    10040     1500    10090

   X-Sec. from 1" = 200' map (KAM 8/91)
   X-sec downstream from study area
   Included to obtain a more accurate water surface at x-sec 2.25

ET                       9.1                                                  9925.01  10011.1
X1     2.18       20   9934.6  10008.4      280      220      259
GR     1502   9870.9     1500   9883.7     1498   9896.8     1496   9909.5     1494   9934.6
GR     1492   9941.3   1491.5  9944.55     1492   9947.8     1494     9954   1494.5  9974.15
GR     1494   9994.3   1493.5    10000     1494  10008.4     1496  10015.5     1498  10023.6
GR     1500    10031   1499.5 10053.55     1500  10076.1     1502  10086.6     1504  10099.6

   Begin of study area
   X-Sec. from 1" = 200' map (KAM 8/91)

ET                       9.1                                                  9867.27  10098.5
X1     2.23       25   9989.8  10008.4      250      110    128.8
GR     1506   9852     1504   9855     1502   9861     1500   9869     1499   9877.4
GR     1500   9892     1502   9907     1504   9912     1506   9922.4   1508   9937.4
GR     1508   9952.4   1506   9964.3   1504   9974.6   1502   9982.3   1500   9989.8
GR   1498.1    10000   1500  10008.4   1500.5 10027.35  1500   10046.3  1499.5  10071.1
GR     1500  10095.9   1502  10107.9   1504   10120    1506   10131.3  1508   10165.2

ET                       9.1                                                  9893.93  10026.55
X1     2.25       29   9987.9  10012.4      420      420      420
GR   1511.4   9709.0   1509.6   9723.7   1510.6   9745.9   1512.5   9764.2   1513.2   9783.5
GR   1510.1   9807.7   1507.5   9825.2   1504.8   9839.1   1504.4   9861.4   1504.6   9891.2
GR   1503.6   9896.0   1503.3   9942.1   1503.9   9965.8   1502.2   9987.9   1500.5  10000.0
GR   1504.7  10012.4   1504.2  10016.4   1503.9  10026.3   1506.3  10030.8   1506.4  10043.1
GR   1510.5  10061.0   1512.1  10084.6   1512.9  10122.3   1512.7  10135.5   1511.0  10161.5
GR   1511.7  10185.4   1513.1  10219.8   1514.0  10235.9   1516.1  10257.8

ET                       9.1                                                  9840.76  10006.4
X1     2.29       21   9992.4    10000      220      180      194
GR   1516.6   9793.5   1516.4   9813.6   1515.0   9824.5   1512.5   9838.0   1511.5   9847.6
GR   1511.5   9860.0   1514.5   9871.1   1514.4   9898.6   1514.5   9960.4   1514.0   9974.7
GR   1509.3   9992.4   1508.8  10000.0   1513.7  10009.2   1514.1  10020.9   1513.6  10048.9
GR   1514.3  10068.2   1514.9  10091.6   1517.0  10117.4   1518.6  10139.1   1521.7  10165.0
GR   1524.2  10189.9

ET                       9.1                                                  9982.63  10010.82
X1     2.30       22   9989.9  10007.6       60       75       68
GR   1518.5   9754.0   1516.9   9764.1   1516.5   9832.0   1517.3   9843.1   1516.5   9893.8
GR   1514.9   9900.0   1514.4   9918.5   1514.7   9935.9   1514.6   9947.5   1514.8   9966.5
GR   1514.0   9980.0   1511.0   9989.9   1510.5  10000.0   1511.9  10007.6   1517.8  10022.2
GR   1519.0  10049.2   1519.2  10088.6   1525.4  10105.9   1526.7  10125.2   1527.2  10146.8
GR   1527.4  10157.6   1527.2  10176.3
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ET                          9.1                                                 9980.7    10008.6
X1      2.38        17      9970    10017.5     450       450       452
X3        10
GR    1519.0    9797.1    1519.8     9838.2  1520.2    9872.2    1521.5    9918.3    1522.1    9945.2
GR    1521.9    9956.6    1521.5     9970.0  1516.5    9988.9    1515.0   10000.0    1522.5   10017.5
GR    1523.5   10037.6    1524.3    10068.2  1523.9   10115.7    1525.4   10135.6    1525.9   10163.6
GR    1528.5   10178.0    1528.0    10188.0

NC                                      .3        .5

  Culvert outlet CPW1
ET                          9.1                                                 9987.6    10011.4
X1      2.39        15      9977.8    10024.5     37        42        35
X3        10                                                          1524      1524
GR    1518.9    9786.0    1519.5     9825.7  1520.7    9890.1    1522.1    9945.8    1522.0    9977.8
GR      1516      9998      1516    10000.0    1516     10002    1523.4   10024.5    1524.0   10079.8
GR    1525.5   10098.8    1525.7    10123.0  1527.8   10129.1    1528.0   10158.0    1527.7   10162.2

  Catch basin and culvert modeled as 48" CMP
  Conc. point SCP3 Flow throuhgt Saguaro Blvd. culvert

QT        2       303       303
SC    1.023        .2       2.8                 4                 187       2.1   1518.43      1516

  culvert inlet  - CPW1 - 48" CMP
ET                          9.1                                                 9962.61   10044.95
X1      2.43        16      9997.5    10002.5     187       187       187
X2                             2                1524
X3        10                                                          1524      1524
BT       -12   9954.43      1526                9978.44      1524                9998   1524.53
BT             9998        1524                 10000       1524               10001      1524
BT            10002        1524                 10002    1524.53             10032.1    1524.8
BT            10050        1526                10122.6     1528.1             10166.2    1529.9
GR      1534   9894.87      1532     9909.86      1530    9918.21      1528   9938.17      1526   9954.43
GR      1524   9978.44   1522.2      9997.5   1518.43     9997.5    1518.4   10000.0    1518.4   10002.5
GR    1522.2   10002.5   1524.8     10032.1    1526.3    10069.3    1528.1   10122.6    1529.9   10166.2
GR    1531.0   10193.9

NC     0.027     0.027     0.027
QT         2       303       303

ET                          9.1                                                 9972.11   10011.94
X1      2.44        14      9985.8    10002.8      63        50        56
GR    1530.0    9924.2    1527.9     9952.2  1525.5    9976.4    1524.2    9985.8    1523.6   10000.0
GR    1524.7   10002.8    1526.0    10012.5  1526.5   10025.7    1526.8   10059.8    1527.8   10077.4
GR    1527.7   10090.6    1528.9    10110.1  1530.5   10150.0    1531.5   10178.0
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NC                                        .1        .3

ET                          9.1                                                 9950.8    10039.26
X1      2.48          19    9974.5    10027.3       200       250       217
GR    1547.3      9807.4    1543.3     9815.3    1537.7    9828.8    1536.8    9840.2    1534.1     9863.2
GR    1533.0      9898.8    1531.5     9934.4    1529.6    9949.4    1528.6    9974.5    1528.2    10000.0
GR    1529.3     10027.3    1530.0    10061.6    1530.2   10086.9    1535.0   10110.8    1536.8    10127.0
GR    1537.2     10155.4    1538.5    10168.5    1541.0   10185.7    1544.9   10211.3

NC                                        .2        .4

ET                          9.1                                                 9978.16   10022.87
X1      2.52          19    9983.7    10014.6       230       250       238
GR    1550.5      9803.8    1549.8     9858.7    1548.3    9865.4    1543.9    9869.6    1543.7     9890.4
GR    1543.4      9935.8    1541.9     9948.3    1538.4    9964.0    1537.6    9975.2    1536.1     9983.7
GR    1535.5     10000.0    1535.7    10014.6    1537.8   10027.2    1541.0   10046.6    1542.2    10073.5
GR    1542.5     10104.0    1542.5    10137.7    1543.2   10153.0    1543.3   10165.8

NC                                        .1        .3

ET                          9.1                                                 9958.03   10026.29
X1      2.53          18    9990.1    10009.3        38        45        45
GR    1549.3      9799.4    1548.2     9830.6    1546.8    9852.0    1544.8    9865.0    1544.1     9893.8
GR    1541.6      9916.7    1539.9     9945.2    1539.2    9970.1    1538.1    9990.1    1537.7    10000.0
GR    1538.3     10009.3    1539.3    10024.3    1541.6   10043.4    1541.9   10050.2    1542.2    10081.3
GR    1542.2     10093.1    1544.5    10106.5    1545.2   10139.7

  Conc. point *CP2 Flow upstream from Nicklaus Dr.

QT          2         193       193

ET                          9.1                                                 9965.06   10026.86
X1      2.54          14    9965.5    10012.1        37        37        37
GR    1546.8      9847.8    1545.1     9878.0    1543.7    9914.9    1542.6    9940.7    1541.4     9960.5
GR    1539.9      9965.5    1538.9    10000.0    1539.1   10012.1    1540.4   10032.7    1540.9    10038.7
GR    1542.3     10071.8    1543.7    10100.7    1545.2   10132.2    1546.1   10145.9

NC       .068      .068      .032

ET                          9.1                                                 9979.35   10033.7
X1      2.55          14   10000    10017.1        50        45        45
GR    1554.3      9879.7    1551.6     9939.0    1547.3    9956.3    1540.3    9981.3    1539.6    10000.0
GR    1539.5     10017.1    1540.4    10024.7    1541.2   10040.8    1542.2   10054.6    1543.2    10065.8
GR    1545.2     10091.8    1546.7    10130.3    1547.8   10152.8    1548.0   10159.1
```

NC	0.037	.037	.032							
ET			9.1						9995.29	10057.26
X1	2.64	19	10000	10034.5	510	480	500			
GR	1571.9	9738.8	1569.1	9768.9	1557.9	9785.6	1558.8	9813.9	1558.0	9875.6
GR	1557.7	9888.0	1556.7	9898.6	1558.8	9909.8	1558.4	9932.5	1558.2	9961.2
GR	1557.0	9983.0	1553.3	10000.0	1553.4	10015.9	1553.6	10034.5	1554.4	10059.6
GR	1555.2	10085.8	1555.9	10105.7	1563.6	10129.6	1571.8	10161.3		
NC	.032	.032	.018							
ET			9.1						9954.19	10029.85
X1	2.69	9	9959	10018	210	225	220			
GR	1566	9887.1	1564	9935.5	1562	9944.4	1560	9959	1559.8	10000
GR	1560	10018	1562	10054	1564	10067.7	1566	10084		
ET			9.1						9990.17	10077.09
X1	2.74	19	10000	10018.6	275	279	279			
GR	1591.7	9799.0	1590.1	9827.7	1588.3	9843.8	1584.9	9877.7	1580.7	9916.0
GR	1578.3	9937.1	1574.8	9954.2	1572.1	9966.8	1571.5	9982.2	1569.8	9992.2
GR	1569.4	10000.0	1569.6	10018.6	1569.5	10066.6	1570.3	10079.6	1575.0	10113.1
GR	1581.3	10141.9	1594.5	10205.2	1599.5	10221.1	1599.7	10242.2		
NC				.1	.3					
ET			9.1						9977.18	10047.47
X1	2.79	18	9992.1	10008.1	280	280	284			
GR	1606.2	9803.6	1605.4	9827.6	1600.1	9858.3	1591.2	9900.3	1591.2	9900.3
GR	1583.4	9941.0	1581.4	9963.8	1580.2	9992.1	1579.4	10000.0	1580.0	10008.1
GR	1580.2	10031.9	1581.2	10056.5	1583.0	10087.6	1584.2	10099.7	1588.3	10129.5
GR	1594.7	10160.8	1601.6	10192.4	1608.4	10223.6				

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300

*SECNO 10000.000									
10000.000	2.44	1491.44	1491.39	1491.60	1492.00	.57	.00	.00	1490.00
331.0	55.4	259.1	16.5	20.6	38.7	6.2	.0	.0	1490.00
.00	2.68	6.69	2.66	.049	.038	.049	.000	1489.00	9961.27
.012202	0.	0.	0.	0	11	5	.00	57.35	10018.62
*SECNO 2.180									
2.180	3.26	1494.76	1494.54	.00	1495.03	.27	2.99	.03	1494.00
331.0	6.1	323.2	1.7	3.7	77.3	1.0	.4	.4	1494.00
.02	1.66	4.18	1.62	.049	.038	.049	.000	1491.50	9925.02
.010880	280.	259.	220.	4	8	0	.00	86.09	10011.11
*SECNO 2.230									

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.230	2.33	1500.43	1500.43	.00	1500.74	.30	1.76	.01	1500.00
331.0	76.5	148.5	106.0	22.9	25.7	41.5	.7	.8	1500.00
.03	3.35	5.77	2.56	.049	.038	.049	.000	1498.10	9867.27
.014550	250.	129.	110.	0	14	0	.00	133.16	10098.49

*SECNO 2.250

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.64

2.250	3.48	1503.98	1503.77	.00	1504.26	.27	3.52	.00	1502.20
331.0	91.3	239.7	.0	54.7	49.8	.1	1.7	2.0	1504.70
.06	1.67	4.81	.26	.049	.038	.049	.000	1500.50	9894.16
.005432	420.	420.	420.	5	17	0	.00	119.08	10026.46

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 2.290

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.290	3.41	1512.21	1512.21	.00	1512.94	.73	1.43	.14	1509.30
331.0	86.8	200.9	43.3	28.2	24.0	10.9	2.1	2.4	1508.80

```
      .07      3.08      8.36      3.96      .049      .038      .049      .000   1508.80   9840.76
   .009870      220.      194.      180.         0         8         0       .00     46.86  10006.41


*SECNO 2.300
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     2.300      2.57   1513.07   1513.07       .00   1513.99       .92       .82       .06   1511.00
     331.0      26.4     300.3       4.2       7.1      37.6       1.7       2.1       2.5   1511.90
       .07      3.74      7.98      2.50      .049      .038      .049      .000   1510.50   9983.07
   .015382       60.       68.       75.         0        15         0       .00     27.43  10010.50


*SECNO 2.380

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1521.50 ELREA=      1522.50

     2.380      3.68   1518.68   1518.15       .00   1519.20       .52      5.18       .04   1521.50
     331.0        .0     331.0        .0        .0      57.2        .0       2.7       2.8   1522.50
       .09       .00      5.78       .00      .000      .038      .000      .000   1515.00   9980.67
   .008858       450.      452.      450.         4        11         0       .00     27.91  10008.58


CCHV=     .300 CEHV=     .500
*SECNO 2.390
3280 CROSS SECTION      2.39 EXTENDED       .19 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1524.00 ELREA=      1524.00

     2.390      3.09   1519.09   1519.09       .00   1520.01       .92       .43       .20   1522.00
     331.0        .0     331.0        .0        .0      43.0        .0       2.7       2.8   1523.40
       .09       .00      7.71       .00      .000      .038      .000      .000   1516.00   9987.60
   .018616       37.       35.       42.         0        15         0       .00     23.80  10011.40


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   23OCT95      08:01:02                                                                    PAGE    8

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


SPECIAL CULVERT

SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
     1          .023       .20       2.80        .00       4.00        .00      187.00      2          1       1518.43    1516.00

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  1 - HEADWALL

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
5130, EGIC= 1543.20..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1547.84 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 2.430
5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
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5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =   1525.39

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.08

SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
  1543.20   1547.84     5.38       167.      136.     3.111      12.6   1524.00       79.


    2.430      6.90  1525.30       .00       .00  1525.39       .09      5.38       .00  1522.20
    303.0      96.9    107.3      98.8      52.3      34.5      56.6       3.1       3.0  1522.20
      .11      1.85     3.11      1.75      .049      .038      .049      .000  1518.40  9962.77
  .001648      187.     187.      187.         2         0         0       .00     81.86 10044.63


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   23OCT95       08:01:02                                                                    PAGE     9

    SECNO     DEPTH     CWSEL     CRIWS     WSELK        EG        HV        HL     OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB       ACH       AROB       VOL       TWA     R-BANK ELEV
    TIME      VLOB      VCH       VROB       XNL      XNCH       XNR       WTN     ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL     IDC      ICONT     CORAR     TOPWID    ENDST

*SECNO 2.440

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    2.440      2.32  1525.92   1525.92       .00  1526.58       .65       .17       .28  1524.20
    303.0      48.6    236.4      18.0      11.0      33.7       5.6       3.2       3.1  1524.70
      .12      4.42     7.01      3.21      .027      .027      .027      .000  1523.60  9972.12
  .006622        63.      56.       50.         0        22         0       .00     39.82 10011.94


CCHV=     .100 CEHV=     .300
*SECNO 2.480
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    2.480      1.34  1529.54   1529.54       .00  1529.93       .39      1.69       .03  1528.60
    303.0      36.2    264.9       1.9      11.2      50.8       1.4       3.5       3.4  1529.30
      .13      3.24     5.22      1.31      .027      .027      .027      .000  1528.20  9950.83
  .009463       200.     217.      250.         0        11         0       .00     88.37 10039.20


CCHV=     .200 CEHV=     .400
*SECNO 2.520
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    2.520      1.58  1537.08   1537.08       .00  1537.67       .59      2.18       .08  1536.10
    303.0       8.6    271.5      22.8       2.7      42.4       5.7       3.8       3.8  1535.70
      .14      3.18     6.40      4.01      .027      .027      .027      .000  1535.50  9978.16
  .008865       230.     238.      250.         0        11         0       .00     44.72 10022.87


CCHV=     .100 CEHV=     .300
*SECNO 2.530
```

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.530	1.84	1539.54	1539.54	.00	1539.98	.44	.33	.02	1538.10
303.0	76.3	186.0	40.7	19.8	30.5	11.3	3.9	3.8	1538.30
.14	3.85	6.09	3.60	.027	.027	.027	.000	1537.70	9958.03
.006599	38.	45.	45.	0	8	0	.00	68.26	10026.29

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 2.540
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.540	1.13	1540.03	1540.03	.00	1540.38	.35	.30	.01	1539.90
193.0	.0	168.2	24.8	.0	34.2	6.9	3.9	3.9	1539.10
.14	.06	4.91	3.62	.027	.027	.027	.000	1538.90	9965.06
.012024	37.	37.	37.	0	14	0	.00	61.78	10026.85

*SECNO 2.550
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.550	1.33	1540.83	1540.83	.00	1541.29	.46	.57	.03	1539.60
193.0	38.4	137.6	17.0	16.9	21.9	8.5	4.0	3.9	1539.50
.15	2.27	6.30	1.99	.068	.032	.068	.000	1539.50	9979.41
.013254	50.	45.	45.	0	8	0	.00	53.91	10033.32

*SECNO 2.640
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.640	1.05	1554.35	1554.35	.00	1554.72	.36	6.73	.01	1553.30
193.0	7.7	163.6	21.7	2.5	31.8	8.9	4.5	4.6	1553.60
.17	3.02	5.15	2.45	.037	.032	.037	.000	1553.30	9995.17
.013711	510.	500.	480.	0	12	0	.00	62.93	10058.09

*SECNO 2.690
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.690	.78	1560.58	1560.58	.00	1560.91	.32	1.76	.00	1560.00
193.0	1.8	186.7	4.5	1.2	40.3	3.1	4.7	4.9	1560.00
.19	1.47	4.63	1.48	.032	.018	.032	.000	1559.80	9954.75
.005241	210.	220.	225.	0	15	0	.00	73.74	10028.49

*SECNO 2.740
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.740	.78	1570.18	1570.18	.00	1570.48	.30	1.83	.00	1569.40
193.0	14.2	75.0	103.8	5.0	12.7	34.2	5.0	5.5	1569.60
.21	2.85	5.90	3.04	.032	.018	.032	.000	1569.40	9989.94
.008480	275.	279.	279.	0	5	0	.00	87.76	10077.71

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

```
CCHV=      .100 CEHV=      .300
*SECNO 2.790
/185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     2.790      1.56   1580.96   1580.96       .00   1581.33       .37      1.60       .02   1580.20
     193.0      10.7     116.0      66.3        6.9      19.4       27.7       5.4       6.0   1580.00
       .22      1.56      5.97      2.39       .032       .018       .032       .000   1579.40   9974.10
   .004065      280.      284.      280.          0         17          0       .00     76.57  10050.67
```

THIS RUN EXECUTED 23OCT95 08:01:04

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
	10000.000	331.00	9961.27	10018.62	1491.44	1491.39	.85	.57	2.44
	10000.000	331.00	9961.27	10018.62	1491.44	1491.36	.85	.57	2.44
	2.180	331.00	9925.02	10011.11	1494.76	1494.54	.72	.27	3.26
	2.180	331.00	9925.01	10011.10	1494.76	1494.54	.72	.27	3.26
*	2.230	331.00	9867.27	10098.49	1500.43	1500.43	.87	.30	2.33
*	2.230	331.00	9867.27	10098.49	1500.43	1500.43	.87	.31	2.33
*	2.250	331.00	9894.16	10026.46	1503.98	1503.77	.59	.27	3.48
*	2.250	331.00	9894.15	10026.46	1503.98	1503.77	.59	.27	3.48
*	2.290	331.00	9840.76	10006.41	1512.21	1512.21	.83	.73	3.41
*	2.290	331.00	9840.76	10006.40	1512.23	1512.23	.82	.71	3.43
*	2.300	331.00	9983.07	10010.50	1513.07	1513.07	.96	.92	2.57
*	2.300	331.00	9983.13	10010.45	1513.05	1513.05	.98	.93	2.55
	2.380	331.00	9980.67	10008.58	1518.68	1518.15	.71	.52	3.68
	2.380	331.00	9980.70	10008.60	1518.70	1518.15	.70	.51	3.70
*	2.390	331.00	9987.60	10011.40	1519.09	1519.09	1.01	.92	3.09
*	2.390	331.00	9987.62	10011.38	1519.08	1519.08	1.02	.93	3.08
*	2.430	303.00	9962.77	10044.63	1525.30	.00	.21	.09	6.90
*	2.430	303.00	9962.69	10044.79	1525.31	.00	.21	.09	6.91
*	2.440	303.00	9972.12	10011.94	1525.92	1525.92	.88	.65	2.32
*	2.440	303.00	9972.11	10011.94	1525.95	1525.95	.86	.63	2.35
*	2.480	303.00	9950.83	10039.20	1529.54	1529.54	.94	.39	1.34
*	2.480	303.00	9950.80	10039.26	1529.56	1529.56	.91	.37	1.36

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	2.520	303.00	9978.16	10022.87	1537.08	1537.08	.96	.59	1.58
*	2.520	303.00	9978.16	10022.87	1537.10	1537.10	.94	.57	1.60
*	2.530	303.00	9958.03	10026.29	1539.54	1539.54	.85	.44	1.84
*	2.530	303.00	9958.03	10026.29	1539.54	1539.54	.85	.44	1.84
*	2.540	193.00	9965.06	10026.85	1540.03	1540.03	1.01	.35	1.13
*	2.540	193.00	9965.06	10026.86	1540.04	1540.04	.99	.34	1.14
*	2.550	193.00	9979.41	10033.32	1540.83	1540.83	.98	.46	1.33
*	2.550	193.00	9979.41	10033.34	1540.83	1540.83	.98	.46	1.33
*	2.640	193.00	9995.17	10058.09	1554.35	1554.35	.95	.36	1.05
*	2.640	193.00	9995.29	10057.26	1554.36	1554.36	.92	.35	1.06
*	2.690	193.00	9954.75	10028.49	1560.58	1560.58	.99	.32	.78
*	2.690	193.00	9954.75	10028.49	1560.58	1560.58	.99	.32	.78
*	2.740	193.00	9989.94	10077.71	1570.18	1570.18	1.26	.30	.78
*	2.740	193.00	9990.17	10077.09	1570.18	1570.18	1.25	.29	.78
*	2.790	193.00	9974.10	10050.67	1580.96	1580.96	.96	.37	1.56
*	2.790	193.00	9977.18	10047.47	1580.96	1580.96	.96	.37	1.56

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=     2.230  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.230  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     2.230  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.230  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=     2.250  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     2.250  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     2.290  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.290  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     2.290  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.290  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=     2.300  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.300  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     2.300  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.300  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=     2.390  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.390  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     2.390  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.390  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=     2.430  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     2.430  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     2.440  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.440  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     2.440  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.440  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=     2.480  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.480  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     2.480  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.480  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=     2.520  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.520  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     2.520  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.520  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=     2.530  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.530  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     2.530  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.530  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=     2.540  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.540  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     2.540  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.540  PROFILE=  2  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=      2.550  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.550  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.550  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.550  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      2.640  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.640  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.640  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.640  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      2.690  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.690  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.690  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.690  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      2.740  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.740  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.740  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.740  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      2.790  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.790  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.790  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.790  PROFILE=  2  MINIMUM SPECIFIC ENERGY
```

FLOODWAY DATA, Fountain Hills (south) -
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
10000.000	57.	66.	5.1	1491.4	1491.4	.0
2.180	86.	82.	4.0	1494.8	1494.8	.0
2.230	231.	90.	3.7	1500.4	1500.4	.0
2.250	132.	105.	3.2	1504.0	1504.0	.0
2.290	166.	64.	5.2	1512.2	1512.2	.0
2.300	27.	46.	7.2	1513.1	1513.1	.0
2.380	28.	58.	5.7	1518.7	1518.7	.0
2.390	24.	43.	7.7	1519.1	1519.1	.0
2.430	82.	144.	2.1	1525.3	1525.3	.0
2.440	40.	51.	5.9	1525.9	1525.9	.0
2.480	88.	65.	4.7	1529.5	1529.5	.0
2.520	45.	52.	5.9	1537.1	1537.1	.0
2.530	68.	62.	4.9	1539.5	1539.5	.0
2.540	62.	42.	4.6	1540.0	1540.0	.0
2.550	54.	47.	4.1	1540.8	1540.8	.0
2.640	62.	44.	4.4	1554.4	1554.4	.0
2.690	74.	45.	4.3	1560.6	1560.6	.0
2.740	87.	52.	3.7	1570.2	1570.2	.0
2.790	70.	53.	3.6	1581.0	1581.0	.0

JACKLIN WASH

FOUNTAIN HILLS SOUTH
Jacklin Wash

X-Sec	HEC-1 Conc. Point	100-Yr Discharge (cfs)	Left Overbank Lenght (ft)	Rigth Overbank Lenght (ft)	Channel Lenght (ft)	COMMENT
2.20	JKL11	977				Dowstream from study
2.27		977	370	350	351	
2.32		977	225	250	246	
2.33		977	35	30	30	Culvert outlet
2.34	SJKL9	969	75	100	72	Culvert inlet
2.35	JKL9	972	40	40	37	
2.39		972	270	260	254	
2.45		972	325	250	271	
2.46		972	50	95	49	Culvert outlet
2.48	SJKL8	960	110	110	110	Culvert inlet
2.49	*JKL8	617+300	90	60	59	Spill from Kingstree Blvd.
2.58		617+300	560	500	498	
2.65		617+300	400	360	368	
2.68		617+300	170	150	157	Mangrum-Jacklin confluenc
2.73	*JKL7	352	275	245	246	
2.74		352	50	45	46	
2.75	JKL6	329	60	65	64	
2.76		329	30	40	37	
2.81		329	280	295	288	
2.91		329	545	500	511	
3.00		329	450	495	472	
3.09		329	550	520	518	
3.19		329	510	500	501	
3.29		329	520	500	508	
3.39		329	555	565	559	

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    23OCT95    TIME   08:12:37   *
*********************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*          (916) 756-1104               *
*****************************************
```


```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
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THIS RUN EXECUTED 23OCT95 08:12:37

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**************************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
**************************************


T1      Fountain Hills (South) - Floodplain Delineation       File: JACKLIN.H2
T1      For the Flood Control District of Maricopa County
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - JACKLIN WASH

T4 GR data from stereo model received October 93 from KAM
T4 Revised photogrametric x-sec. received May 94
T5 1"=200' 2-feet Contour mapping from KAM flown 8-91
T6 with survey control by Anderson Nelson 12-11-92, field survey Aug 91
T7 Supplemental cross section data surveyed by Valco Surveing
T8 Source of 100-yr flowrate from HEC-1 Analysis by AGK Enginers
T8           File 150-6CE.DAT
T9 Subcritical analysis
T9 This model was developed and configured to determine water surface elevation
T9 for a 100-year floodplain delineation study, Velocity from this model
T9 may not be accurate and should not be used

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                             .012                                  1493.1

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                                                          -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        43        53        54        1         2         68        10        8         200

   This model was depeloped and configured to determine water surface elevation
   for a 100-year floodplain delineation study

  Conc. point JKL11 Flow downstream from Indian Wells Dr. culvert

QT       2       977       977
NC    .085      .085      .045        .2        .4

   X-Sec. from 1" = 200' contour map (KAM 8/91)
   X-sec downstream from study area
   Included to obtain a more accurate water surface at x-sec 2.27
   Initial water surface elevation was determined by the normal depth method
ET                          9.1                                          9918    10108.27
```

```
X1      2.20        33      9930.6    10035.5
GR    1530.0    9676.2    1526.0     9701.1    1522.0    9726.3    1520.0    9740.3    1518.0    9751.5
GR    1516.0    9764.4    1514.0     9776.4    1512.0    9789.3    1510.0    9802.1    1508.0    9814.6
GR    1506.0    9826.8    1504.0     9842.2    1502.0    9856.1    1500.0    9869.3    1498.0    9882.5
GR    1496.0    9894.2    1494.0     9908.4    1492.0    9930.6    1490.2   10000.0    1492.0   10035.5
GR    1492.0   10075.9    1492.0    10102.6    1494.0   10112.6    1496.0   10122.8    1498.0   10133.4
GR    1500.0   10146.6    1502.0    10163.5    1502.0   10300.7    1502.0   10377.9    1504.0   10389.8
GR    1506.0   10401.2    1508.0    10412.6    1510.0   10424.2

  Study area begin

ET                                                                            9946.61     10023
X1      2.27        32      9973.4    10015.4       370       350       351
GR    1515.6    9786.4    1507.6     9809.8    1502.4    9827.3    1501.1    9841.3    1500.1    9872.6
GR    1499.8    9915.5    1498.0     9945.8    1496.3    9957.2    1496.4    9973.4    1495.1   10000.0
GR    1495.1   10015.4    1497.8    10022.7    1502.1   10040.7    1506.5   10052.1    1507.8   10063.9
GR    1507.8   10101.1    1508.0    10136.9    1507.7   10165.7    1507.4   10188.5    1508.8   10204.5
GR    1509.5   10233.8    1509.3    10259.9    1508.2   10280.2    1509.0   10289.6    1508.8   10309.4
GR    1509.0   10328.5    1509.2    10351.1    1508.8   10402.4    1508.2   10442.8    1509.0   10460.8
GR    1510.7   10493.7    1513.4    10508.4

ET                            9.1                                                     9967.26     10021.7
X1      2.32        42      9972.1    10016.7       225       250       246
GR    1520.2    9317.9    1520.0     9360.9    1519.9    9427.1    1520.2    9452.3    1519.7    9467.6
GR    1519.3    9512.9    1519.3     9566.0    1519.1    9597.5    1516.0    9609.5    1515.7    9662.3
GR    1515.2    9699.5    1515.5     9753.0    1515.4    9811.2    1514.7    9814.9    1514.5    9831.5
GR    1515.5    9838.7    1515.5     9884.8    1515.2    9939.0    1500.0    9972.1    1499.3   10000.0
GR    1499.2   10016.7    1508.5    10032.1    1511.2   10041.5    1511.5   10081.2    1511.8   10111.5
GR    1511.5   10147.3    1510.9    10165.6    1510.8   10203.7    1510.7   10243.9    1511.3   10270.3
GR    1510.6   10287.7    1511.0    10298.7    1510.7   10316.3    1511.3   10321.8    1511.2   10337.5
GR    1511.0   10364.0    1511.0    10381.6    1512.5   10411.4    1513.9   10435.6    1513.7   10500.0
GR    1513.9   10523.2    1515.4    10543.8

  Culvert outlet JKL1

NC                                      .3        .5

ET                                                                            9976     10028
X1      2.33        66      9995     10005        35        30        30
X3        10                                                          1504.47   1504.28
GR    1518.4    9273.4    1517.3     9294.9    1518.1    9309.1    1518.0    9328.0    1518.5    9377.5
GR    1517.5    9380.4    1517.1     9401.0    1519.8    9406.1    1520.4    9429.2    1520.6    9466.3
GR    1518.6    9475.6    1516.5     9485.8    1516.4    9497.0    1521.3    9513.1    1521.6    9533.9
GR    1521.0    9556.8    1514.9     9578.2    1514.8    9584.1    1514.6    9602.5    1515.8    9609.6
GR    1515.9    9633.5    1515.9     9655.1    1514.3    9659.4    1513.6    9677.1    1514.2    9683.0
GR    1512.4    9693.7    1512.4     9712.0    1514.6    9719.0    1515.2    9737.6    1515.1    9765.1
GR    1515.1    9790.2    1515.2     9823.7    1512.6    9830.0    1512.9    9849.4    1515.7    9857.8
GR    1515.9    9873.7    1515.1     9889.9    1515.3    9912.0    1515.4    9942.6    1509.6    9960.0
GR    1504.8    9974.3   1500.61     9995.    1500.61   10000.0   1500.61    10005.   1500.61   10021.3
GR    1511.0   10039.8    1511.3    10075.9    1511.8   10112.8    1511.8   10139.3    1511.4   10161.2
GR    1510.6   10198.9    1510.7    10238.1    1511.1   10254.8    1511.1   10282.2    1510.8   10293.3
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GR   1511.0    10305.0    1510.6    10322.2    1511.9    10333.2    1511.6    10346.8    1511.0    10372.8
GR   1511.2    10390.3    1512.6    10415.2    1513.6    10436.3    1513.9    10495.9    1514.6    10526.5
GR   1515.6    10541.0

  Culvert -JKL1- 2 CMP 60" X 72' Indian Wells Dr.
  Conc. point SJKL9 Flow through Indian Wells culvert

QT         2        969        969
SC     2.024        0.8          3                5                72        2.3    1501.73    1500.61

  Culvert inlet -JKL1-
NC     0.027       .027       .017
ET                                                                                  9734.63    10156.2
X1      2.34         22       9995      10005         75        100        72
X2                                2                1510.62
X3        10                                                              1510.8     1510.6
BT        -7     9894.8     1511.8                 9900     1511.1                  9950     1510.8
BT               10000    1510.62                10050     1510.6                 10100     1510.9
BT             10150.2     1511.3
GR    1522.5       9190     1520.5      9250     1518.5       9350     1516.5       9610     1514.5       9710
GR    1511.8     9894.8     1512.2    9915.2     1511.4     9956.8     1501.7       9995     1501.7    10000.0
GR    1501.7      10005     1511.5   10014.0     1511.8    10032.2     1512.4    10055.9     1511.3    10090.3
GR    1512.1    10118.6     1511.3   10150.2     1512.0    10171.4     1513.0    10202.9     1513.6    10227.4
GR    1513.6    10257.5     1514.9   10299.9

  Conc. Point JKL9 Flow upstream from Indian Wells Dr. Culvert

QT         2        972        972

ET                                9.1                                               9942.54    10039.73
X1      2.35         43       9965.8     10021.6         40         40         37
GR    1518.9       9308     1517.9      9343.2     1517.0       9401.3     1516.3       9470.7     1515.7       9517.3
GR    1515.4     9560.5     1515.2      9599.9     1515.2       9623.8     1515.2       9642.8     1515.1         9685
GR    1514.7     9707.1     1513.8        9712     1514.0       9730.5     1514.3        9761      1513.8       9787.9
GR    1514.6       9818     1513.8      9861.8     1513.6         9883     1514.2       9888.3     1514.4       9914.4
GR    1514.3     9936.6     1504.9      9957.3     1504.3       9965.8     1503.3        9972      1503.8        9979
GR    1503.7      10000     1503.7     10021.6     1513.9        10045     1514.1    10056.2      1514.9    10059.4
GR    1514.9    10084.7     1515.0     10143.7     1515.0    10180.8      1515.6    10214.2      1515.0    10261.9
GR    1515.3    10278.3     1515.7     10307.2     1515.4    10317.5      1516.5    10366.4      1517.3    10377.2
GR    1517.2    10445.3     1516.6     10472.5     1517.0    10495.7

NC                                                    .1          .3

ET                                9.1                                               9894.32    10067.27
X1      2.39         31       9993.2     10004.3        270        260        254
GR    1518.5     9431.2     1517.2      9496.5     1515.5       9571.1     1514.3       9636.2     1514.7       9656.8
GR    1514.3     9680.9     1514.5      9737.9     1514.6       9782.0     1513.7       9814.8     1512.6       9865.8
GR    1510.9     9914.6     1508.9      9948.8     1508.1       9971.0     1507.5       9993.2     1507.1      10000.0
GR    1507.8    10004.3     1508.4     10031.6     1509.8    10052.9      1512.0    10070.4      1513.0    10075.6
GR    1512.5    10084.9     1513.5     10098.5     1515.1    10102.1      1516.1    10119.4      1517.2    10138.9
GR    1517.3    10161.2     1518.1     10194.1     1518.2    10225.4      1519.1    10238.0      1519.4    10284.9
GR    1518.9    10319.4
```

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ET                          9.1                                                 9967.8    10077
X1      2.45        28    9991.8    10009.5       325       250       271
GR    1523.8    9748.3    1523.2     9785.7    1522.9    9831.2    1521.9    9865.9    1521.1    9883.3
GR    1521.0    9898.1    1521.7     9914.4    1521.7    9946.3    1517.3    9963.8    1514.0    9979.4
GR    1513.9    9991.8    1513.2    10000.0    1513.8   10009.5    1514.6   10018.2    1515.3   10034.9
GR    1515.4   10050.7    1516.2    10071.6    1517.2   10092.7    1518.3   10118.9    1520.1   10139.1
GR    1519.7   10171.4    1520.3    10185.2    1521.4   10195.8    1521.3   10213.1    1520.0   10219.8
GR    1520.7   10232.8    1520.8    10264.9    1519.9   10285.6

  Culvert -JKL2- outlet

NC                                      .3        .5
ET                          9.1                                                  9993    10007
X1      2.46        20      9993     10007        50        95        49
X3        10                                                        1524.25   1524.5
GR    1525.3    9760.8    1524.8     9801.0    1524.4    9862.5    1524.0    9893.4    1524.0    9894.9
GR    1523.7    9922.8    1523.4     9945.3    1523.1    9981.4    1513.8      9993    1513.8   10000.0
GR    1513.8     10007    1523.0    10013.1    1522.8   10028.9    1523.2   10054.0    1523.5   10083.3
GR    1523.5   10120.8    1523.5    10161.9    1523.1   10212.4    1522.7   10256.2    1522.0   10295.3

  Culvert - JKL2 - 1 box culvert 7' X 14' X 110' Saguaro Blvd.
  Conc. point SJKL8 Flow throught Saguaro Blvd. Culvert

QT        2       960       960
SC    1.013        .4       3.0                 7        14       110       8.1    1514.3    1513.8

  Culvert -JKL2- inlet
ET                          9.1                                                  9993    10007
X1      2.48        37      9993     10007       110       110       110
X2                              2                1524.3
X3        10                                                        1524.25   1524.5
BT       -10      9810      1528                9860      1526                 9861    1526.5
BT                9904   1524.53                9953.9 1524.25                 9954   1524.75
BT               10000   1524.52                10046   1524.5                10096   1524.32
BT               10215      1524
GR    1526.4    9631.4    1526.4     9680.9    1526.5    9716.9    1526.7    9766.6    1526.7    9789.3
GR    1526.7    9818.5    1526.5     9843.2    1525.0    9857.0    1525.4    9871.2    1524.9    9900.3
GR    1524.0    9932.7    1524.8     9936.2    1525.0    9947.9    1523.3    9963.9    1523.0    9970.6
GR    1518.2    9981.7      1517     9988.5    1515.5    9991.6    1514.3      9993    1514.3   10000.0
GR    1514.3     10007    1514.8    10007.5    1516.2   10013.5    1520.3   10016.5    1522.2   10026.9
GR    1523.6   10033.6    1524.7    10064.4    1524.8   10084.0    1524.6   10117.2    1524.0   10158.8
GR    1523.3   10182.9    1523.2    10219.2    1525.0   10230.0    1524.9   10256.1    1522.6   10267.1
GR    1522.9   10296.1    1523.2    10323.9

  Conc. point *JKL8 Flow upstream from saguaro Blvd.
  Flow at *JKL8 = 617cfs.  321 spills from kinstree Blvd total 917

QT        2       917       917

   Confluence of Kingstree and Jacklin washes
ET                          9.1                                                 9961.85   10052.32
```

```
X1    2.49      28    9995.2   10004.7      90      60      59
GR  1527.0  9943.2    1526.7    9950.9  1520.5  9973.2  1518.3  9979.5  1516.4  9995.2
GR  1516.2 10000.0    1516.2   10004.7  1518.3 10023.4  1523.2 10050.2  1527.8 10071.6
GR  1529.2 10087.8    1530.1   10102.5  1529.8 10134.7  1529.4 10163.5  1526.4 10179.7
GR  1525.1 10208.0    1525.5   10216.6  1525.9 10259.1  1527.1 10275.0  1527.3 10309.9
GR  1526.5 10324.4    1526.2   10363.2  1526.0 10383.9  1526.5 10426.3  1527.5 10433.5
GR  1527.1 10436.3    1529.3   10463.7  1530.2 10478.4

NC                                .1      .3

ET                     9.1                                              9923.12 10064.49
X1    2.58      25    9994.4   10004.8     560     500     498
GR  1533.8  9890.8    1530.0    9908.2  1525.1  9926.7  1524.8  9949.8  1524.7  9994.4
GR  1524.3 10000.0    1524.6   10004.8  1524.7 10028.4  1525.4 10046.8  1525.9 10063.6
GR  1529.7 10086.3    1533.0   10103.8  1534.3 10113.7  1534.6 10143.4  1534.9 10164.0
GR  1534.9 10198.1    1533.8   10220.9  1533.6 10241.5  1533.8 10260.7  1535.0 10278.5
GR  1536.2 10306.7    1537.0   10331.9  1537.9 10351.7  1537.9 10351.7  1541.1 10372.3

ET                     9.1                                              9949.75 10087.47
X1    2.65      27    9995.9   10014.1     400     360     368
GR  1539.2  9844.8    1539.3    9844.8  1539.9  9870.6  1538.7  9899.2  1538.6  9903.9
GR  1539.6  9916.2    1538.0    9926.7  1535.8  9939.6  1532.0  9953.5  1531.5  9973.8
GR  1531.8  9995.9    1531.3   10000.0  1531.7 10014.1  1532.0 10049.6  1532.3 10073.7
GR  1533.9 10104.1    1535.6   10141.2  1538.8 10160.6  1540.0 10183.3  1539.3 10195.0
GR  1540.7 10240.8    1539.7   10251.7  1540.5 10284.6  1541.3 10318.6  1542.4 10358.0
GR  1543.1 10367.9    1546.5   10383.6

   Confluence of Mangrum and Jacklin washes

ET                     9.1                                              9888.7  10037.5
X1    2.68      28    9993.8   10006.3     170     150     157
GR  1542.7  9818.8    1542.8    9826.3  1538.0  9861.0  1537.2  9892.8  1536.6  9923.7
GR  1535.8  9959.6    1535.3    9993.8  1535.1 10000.0  1535.6 10006.3  1536.0 10028.6
GR  1538.9 10048.5    1539.2   10060.6  1540.9 10075.3  1540.9 10075.3  1542.6 10096.8
GR  1542.9 10106.7    1541.5   10124.0  1542.4 10132.0  1542.9 10159.6  1543.2 10220.0
GR  1544.8 10235.0    1545.1   10235.0  1545.9 10242.2  1547.3 10268.9  1548.2 10284.4
GR  1549.5 10311.4    1551.3   10340.6  1553.7 10364.9

  Conc. point *JKL7 Flow upstream from Mangrum wash confluence

QT       2     352        352

ET                     9.1                                              9975.94 10036.68
X1    2.73      27    9994.8   10005.4     275     245     246
GR  1548.5  9908.1    1546.6    9912.0  1549.1  9918.6  1547.4  9924.8  1545.7  9947.0
GR  1544.6  9965.1    1541.6    9982.7  1541.5  9994.8  1541.2 10000.0  1541.7 10005.4
GR  1541.8 10033.1    1545.1   10045.5  1546.0 10067.5  1546.0 10082.8  1544.5 10089.7
GR  1545.3 10107.2    1545.5   10131.6  1545.6 10161.3  1546.2 10192.5  1546.5 10206.7
GR  1546.7 10225.9    1547.2   10231.3  1548.3 10252.0  1550.3 10279.4  1553.9 10308.1
GR  1558.3 10335.5    1558.9   10341.5
```

```
ET                          9.1                                                 9955.45   10052.95
X1     2.74        22    9992.4   10005.2       50        45        46
GR   1546.8    9872.6    1545.1    9901.4    1544.1    9933.2    1543.4    9962.5    1542.6    9992.4
GR   1541.9   10000.0    1541.8   10005.2    1542.7   10024.1    1543.0   10040.4    1544.3   10069.1
GR   1544.8   10098.0    1545.4   10130.3    1545.9   10164.8    1546.6   10190.0    1548.0   10213.2
GR   1547.5   10224.7    1548.1   10244.6    1549.1   10256.9    1552.6   10277.9    1556.2   10300.9
GR   1561.1   10334.7    1565.6   10360.4
```

Conc. Point JKL6 Flow upstream from Jacklin Wash

```
QT         2       329       329

ET                          9.1                                                 9971.77   10023.68
X1     2.75        35    9992.4   10007.5       60        65        64
GR   1560.4    9709.9    1560.1    9733.6    1558.2    9753.5    1556.9    9784.6    1555.3    9813.0
GR   1553.2    9853.2    1551.2    9882.5    1551.8    9898.8    1551.5    9906.1    1548.1    9925.7
GR   1545.9    9945.6    1545.9    9945.6    1544.6    9974.1    1543.2    9992.4    1542.9   10000.0
GR   1543.0   10007.5    1544.0   10021.5    1548.3   10034.8    1548.0   10040.7    1545.4   10050.5
GR   1546.5   10072.8    1546.2   10087.0    1547.4   10101.2    1548.2   10139.4    1549.1   10179.0
GR   1548.3   10190.8    1548.1   10207.2    1549.5   10215.2    1547.7   10225.1    1547.7   10236.9
GR   1550.0   10255.4    1554.3   10284.3    1558.5   10314.0    1561.5   10342.5    1569.0   10372.6

ET                          9.1                                                 9970.6    10015.76
X1     2.76        27    9988.5   10009.8       30        40        37
GR   1561.1    9748.5    1561.4    9779.1    1560.5    9811.7    1556.5    9820.8    1553.8    9874.5
GR   1552.3    9908.7    1550.5    9928.3    1551.2    9936.0    1547.3    9961.6    1544.4    9975.9
GR   1544.4    9988.5    1543.6   10000.0    1544.0   10009.8    1549.4   10031.6    1548.1   10048.1
GR   1548.2   10060.5    1547.7   10078.6    1548.1   10084.8    1548.6   10120.2    1549.2   10148.0
GR   1549.1   10179.7    1549.0   10196.3    1548.4   10224.1    1549.2   10234.6    1552.1   10247.8
GR   1560.5   10281.3    1567.3   10306.4

ET                          9.1                                                 9954.1    10014.52
X1     2.81        19    9990.5   10005.5      280       295       288
GR   1566.6    9914.9    1560.0    9929.3    1547.6    9957.0    1548.1    9990.5    1547.6   10000.0
GR   1548.2   10005.5    1548.0   10011.0    1553.7   10033.3    1554.2   10046.0    1553.7   10054.4
GR   1554.2   10072.9    1554.1   10104.4    1554.9   10112.1    1555.6   10151.4    1556.6   10166.7
GR   1557.5   10183.9    1560.3   10216.8    1563.0   10242.7    1570.2   10266.1

ET                          9.1                                                 9981.65   10027.25
X1     2.91        23    9987.4   10006.4      545       500       511
GR   1574.8    9706.1    1570.6    9733.4    1569.9    9763.6    1569.5    9787.4    1569.7    9801.7
GR   1564.1    9824.0    1564.1    9917.3    1568.4    9924.3    1569.4    9935.8    1569.7    9946.5
GR   1568.4    9953.6    1558.8    9987.4    1558.3   10000.0    1559.1   10006.4    1560.3   10026.6
GR   1562.1   10035.3    1563.8   10064.5    1564.7   10099.6    1565.9   10125.0    1568.1   10160.4
GR   1575.1   10180.9    1584.4   10200.8    1584.7   10206.2
```

NC	.038	.038	.027							
ET			9.1						9969.15	10019.97
X1	3.00	23	9980.2	10014.5	450	495	472			
GR	1587.5	9776.9	1584.6	9799.7	1579.3	9830.6	1577.8	9867.2	1575.1	9881.2
GR	1571.7	9898.3	1570.5	9917.4	1570.3	9931.8	1571.1	9937.2	1570.6	9954.3
GR	1567.5	9980.2	1567.4	10000.0	1567.7	10014.5	1571.6	10033.5	1575.7	10047.9
GR	1579.0	10067.3	1578.3	10074.7	1579.0	10114.0	1585.3	10133.5	1585.8	10143.4
GR	1585.8	10160.6	1582.9	10185.1	1583.5	10191.6				
ET			9.1						9983.37	10022.42
X1	3.09	15	9989.8	10010.1	550	520	518			
GR	1600.9	9914.0	1589.8	9954.6	1579.8	9989.8	1579.6	10000.0	1580.2	10010.1
GR	1582.6	10030.8	1585.4	10043.2	1587.1	10056.5	1587.9	10073.8	1588.9	10104.4
GR	1589.8	10125.9	1591.9	10145.5	1594.3	10165.1	1598.1	10187.6	1602.1	10217.3
NC	.051	.051	.035							
ET			9.1						9928.42	10031.94
X1	3.19	16	9966.7	10028.8	510	500	501			
GR	1610.2	9868.9	1607.0	9880.8	1596.5	9903.4	1589.1	9931.3	1588.9	9966.7
GR	1588.7	10000.0	1589.3	10028.8	1593.8	10053.9	1600.1	10086.3	1601.6	10101.0
GR	1602.5	10115.9	1605.3	10142.9	1606.7	10157.3	1608.1	10177.5	1611.2	10198.8
GR	1612.6	10210.8								
ET			9.1						9961.1	10024.6
X1	3.28	14	9993.8	10005.8	520	500	508			
GR	1620.3	9826.8	1614.8	9859.0	1611.4	9885.8	1609.4	9916.2	1607.9	9933.2
GR	1601.4	9955.3	1600.6	9974.7	1600.0	9993.8	1597.6	10000.0	1599.2	10005.8
GR	1600.9	10023.1	1605.3	10047.6	1615.2	10076.3	1623.8	10097.2		
ET			9.1						9951.9	10021.7
X1	3.39	14	9990.9	10004.3	555	565	559			
GR	1636.5	9908.5	1626.0	9921.3	1614.2	9943.1	1613.0	9961.9	1612.3	9990.9
GR	1610.8	10000.0	1612.0	10004.3	1613.2	10020.2	1620.5	10045.4	1621.7	10062.4
GR	1622.7	10086.5	1624.7	10111.6	1626.7	10133.7	1630.3	10158.1		

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .200 CEHV= .400
*SECNO 2.200

2.200	2.57	1492.77	1492.52	1493.10	1493.14	.37	.00	.00	1492.00
977.0	3.3	889.7	84.0	3.3	174.8	52.9	.0	.0	1492.00
.00	1.01	5.09	1.59	.085	.045	.085	.000	1490.20	9922.09
.012037	0.	0.	0.	0	16	6	.00	184.34	10106.43

*SECNO 2.270

3301 HV CHANGED MORE THAN HVINS

2.270	2.78	1497.88	1497.87	.00	1498.87	.99	5.48	.25	1496.40
977.0	101.1	843.8	32.1	33.1	99.4	10.4	1.5	1.1	1495.10
.01	3.05	8.49	3.07	.085	.045	.085	.000	1495.10	9946.61
.020951	370.	351.	350.	2	8	0	.00	76.42	10023.03

*SECNO 2.320

2.320	3.02	1502.22	1501.92	.00	1503.14	.92	4.26	.01	1500.00
977.0	11.4	946.5	19.0	5.4	121.3	7.6	2.3	1.4	1499.20
.02	2.13	7.80	2.52	.085	.045	.085	.000	1499.20	9967.26
.014694	225.	246.	250.	3	8	0	.00	54.44	10021.70

CCHV= .300 CEHV= .500
*SECNO 2.330
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.330	3.86	1504.47	1504.47	.00	1505.53	1.06	.50	.07	1500.61
977.0	134.4	428.3	414.4	36.8	38.6	76.2	2.4	1.5	1500.61
.02	3.65	11.09	5.44	.085	.045	.085	.000	1500.61	9975.93
.018640	35.	30.	30.	0	21	0	.00	52.24	10028.17

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	2	.024	.80	3.00	.00	5.00	.00	72.00	2	3	1501.73	1500.61

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 3 - PIPE PROJECTING FROM FILL

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
5130, EGIC= 1538.06..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1521.65 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 2.340

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 1511.60

265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 9.96

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN	
1538.06	1521.65	6.07	523.	448.	5.378	39.3	1510.62	254.	
2.340	9.63	1511.33	.00	.00	1511.60	.27	6.07	.00	1501.70
969.0	381.3	517.8	69.9	182.5	96.3	42.6	2.8	1.6	1501.70
.03	2.09	5.38	1.64	.027	.017	.027	.000	1501.70	9957.09
.000185	75.	72.	100.	2	0	0	.00	60.45	10151.02

*SECNO 2.350

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.53

2.350	8.32	1511.62	1505.77	.00	1511.67	.05	.00	.07	1504.30
972.0	96.0	825.5	50.5	109.4	441.3	71.9	3.2	1.6	1503.70
.03	.88	1.87	.70	.027	.017	.027	.000	1503.30	9942.50
.000029	40.	37.	40.	2	14	0	.00	97.26	10039.77

CCHV= .100 CEHV= .300
*SECNO 2.390

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .29

2.390	4.50	1511.60	1509.86	.00	1511.70	.11	.02	.02	1507.50
972.0	441.8	197.1	333.1	218.0	47.0	161.4	6.4	2.4	1507.80
.06	2.03	4.19	2.06	.027	.017	.027	.000	1507.10	9894.62
.000338	270.	254.	260.	2	26	0	.00	172.57	10067.19

*SECNO 2.450

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.450	3.26	1516.46	1516.46	.00	1517.26	.80	.21	.21	1513.90
972.0	211.2	484.7	276.1	45.4	52.0	76.8	8.3	3.4	1513.80
.08	4.65	9.33	3.59	.027	.017	.027	.000	1513.20	9967.78
.002720	325.	271.	250.	0	19	0	.00	109.28	10077.05

CCHV= .300 CEHV= .500
*SECNO 2.460

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1524.25 ELREA= 1524.50

2.460	5.29	1519.09	1519.09	.00	1521.76	2.67	.14	.94	1513.80
972.0	.0	972.0	.0	.0	74.1	.0	8.5	3.5	1513.80
.08	.00	13.12	.00	.000	.017	.000	.000	1513.80	9993.00
.002445	50.	49.	95.	0	14	0	.00	14.00	10007.00

SPECIAL CULVERT

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.013	.40	3.00	.00	7.00	14.00	110.00	8	1	1514.30	1513.80

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

*SECNO 2.480

SPECIAL CULVERT INLET CONTROL
EGIC = 1523.406 EGOC = 1523.247 PCWSE= 1519.091 ELTRD= 1524.300

3301 HV CHANGED MORE THAN HVINS

302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.97

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1523.41	1523.25	1.64	0.	960.	8.622	98.0	1524.30	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1524.25 ELREA= 1524.50

2.480	7.95	1522.25	.00	.00	1523.41	1.15	1.64	.00	1514.30
960.0	.0	960.0	.0	.0	111.3	.0	8.8	3.5	1514.30
.08	.00	8.62	.00	.000	.017	.000	.000	1514.30	9993.00
.000613	110.	110.	110.	3	0	0	.00	14.00	10007.00

*SECNO 2.490

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.00

2.490	7.43	1523.63	1519.84	.00	1523.74	.11	.02	.31	1516.40
917.0	276.0	274.6	366.4	142.7	70.1	196.7	9.2	3.6	1516.20
.09	1.93	3.92	1.86	.027	.017	.027	.000	1516.20	9961.96
.000140	90.	59.	60.	3	14	0	.00	90.22	10052.18

CCHV= .100 CEHV= .300
*SECNO 2.580
7185 MINIMUM SPECIFIC ENERGY

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
3720 CRITICAL DEPTH ASSUMED									
2.580	1.81	1526.11	1526.11	.00	1526.68	.57	.22	.14	1524.70
917.0	455.6	161.6	299.9	89.6	17.0	62.0	12.6	5.0	1524.60
.11	5.09	9.50	4.84	.027	.017	.027	.000	1524.30	9922.88
.006148	560.	498.	500.	0	14	0	.00	141.99	10064.87
*SECNO 2.650									
7185 MINIMUM SPECIFIC ENERGY									
3720 CRITICAL DEPTH ASSUMED									
2.650	1.86	1533.16	1533.16	.00	1533.74	.58	2.14	.01	1531.80
917.0	322.3	262.6	332.1	64.2	29.9	77.5	14.1	6.2	1531.70
.13	5.02	8.78	4.28	.027	.017	.027	.000	1531.30	9949.27
.005212	400.	368.	360.	0	5	0	.00	140.67	10089.95
*SECNO 2.680									
7185 MINIMUM SPECIFIC ENERGY									
3720 CRITICAL DEPTH ASSUMED									
2.680	2.20	1537.30	1537.30	.00	1537.89	.58	.78	.00	1535.30
917.0	501.8	237.2	178.0	112.2	25.3	39.3	14.8	6.8	1535.60
.14	4.47	9.36	4.52	.027	.017	.027	.000	1535.10	9888.71
.004482	170.	157.	150.	0	11	0	.00	148.82	10037.54
*SECNO 2.730									
7185 MINIMUM SPECIFIC ENERGY									
3720 CRITICAL DEPTH ASSUMED									
2.730	1.66	1542.86	1542.86	.00	1543.41	.55	1.20	.00	1541.50
352.0	89.2	125.8	136.9	20.5	15.5	32.9	15.5	7.4	1541.70
.15	4.35	8.13	4.16	.027	.017	.027	.000	1541.20	9975.30
.005244	275.	246.	245.	0	19	0	.00	61.78	10037.09
*SECNO 2.740									
7185 MINIMUM SPECIFIC ENERGY									
3720 CRITICAL DEPTH ASSUMED									
2.740	1.87	1543.67	1543.67	.00	1544.08	.41	.20	.01	1542.60
352.0	51.5	143.1	157.3	21.5	20.2	45.1	15.6	7.5	1541.80
.15	2.40	7.07	3.49	.027	.017	.027	.000	1541.80	9951.25
.003565	50.	46.	45.	0	8	0	.00	103.91	10055.16

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
*SECNO 2.750									
7185 MINIMUM SPECIFIC ENERGY									
3720 CRITICAL DEPTH ASSUMED									
2.750	1.93	1544.83	1544.83	.00	1545.43	.60	.22	.06	1543.20
329.0	51.3	205.4	72.3	17.7	27.7	19.8	15.7	7.6	1543.00
.16	2.90	7.42	3.66	.027	.017	.027	.000	1542.90	9968.96
.003209	60.	64.	65.	0	8	0	.00	55.12	10024.08
*SECNO 2.760									
7185 MINIMUM SPECIFIC ENERGY									
3720 CRITICAL DEPTH ASSUMED									
2.760	1.98	1545.58	1545.58	.00	1546.23	.65	.12	.02	1544.40

329.0	60.7	254.8	13.5	18.3	35.6	5.0	15.8	7.6	1544.00
.16	3.32	7.16	2.68	.027	.017	.027	.000	1543.60	9970.09
.003392	30.	37.	40.	0	5	0	.00	46.08	10016.17

*SECNO 2.810
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.810	1.36	1548.96	1548.96	.00	1549.48	.52	1.31	.01	1548.10
329.0	183.3	122.0	23.7	39.2	16.4	6.5	16.1	8.0	1548.20
.17	4.67	7.45	3.64	.027	.017	.027	.000	1547.60	9953.96
.006501	280.	288.	295.	0	19	0	.00	60.79	10014.75

*SECNO 2.910
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.910	2.27	1560.57	1560.57	.00	1561.24	.67	2.10	.04	1558.80
329.0	14.3	268.6	46.2	5.5	37.4	17.7	16.9	8.6	1559.10
.20	2.59	7.18	2.61	.027	.017	.027	.000	1558.30	9981.17
.002748	545.	511.	500.	0	14	0	.00	46.73	10027.90

*SECNO 3.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.000	1.44	1568.84	1568.84	.00	1569.44	.60	2.17	.01	1567.50
329.0	21.6	299.2	8.1	7.6	46.4	3.2	17.5	9.2	1567.70
.22	2.86	6.45	2.55	.038	.027	.038	.000	1567.40	9968.96
.009180	450.	472.	495.	0	14	0	.00	51.12	10020.08

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3.090
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.090	2.09	1581.69	1581.69	.00	1582.43	.74	4.35	.04	1579.80
329.0	20.2	282.1	26.8	6.3	38.4	9.6	18.2	9.7	1580.20
.24	3.21	7.35	2.80	.038	.027	.038	.000	1579.60	9983.15
.007639	550.	518.	520.	0	11	0	.00	39.80	10022.95

*SECNO 3.190
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.190	.96	1589.66	1589.66	.00	1590.03	.36	6.03	.04	1588.90
329.0	77.6	250.9	.5	24.1	47.9	.4	18.9	10.5	1589.30
.27	3.22	5.24	1.36	.051	.035	.051	.000	1588.70	9929.17
.021527	510.	501.	500.	0	14	0	.00	101.66	10030.83

*SECNO 3.280
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.280	3.56	1601.16	1601.16	.00	1601.77	.61	6.86	.07	1600.00
329.0	46.2	225.2	57.6	20.3	30.6	19.4	19.8	11.5	1599.20
.29	2.28	7.35	2.97	.051	.035	.051	.000	1597.60	9961.10
.009219	520.	508.	500.	0	26	0	.00	63.45	10024.55

*SECNO 3.390
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.390	2.84	1613.64	1613.64	.00	1614.11	.47	5.25	.01	1612.30
329.0	85.6	194.7	48.7	32.0	28.7	16.9	20.7	12.4	1612.00
.32	2.68	6.79	2.88	.051	.035	.051	.000	1610.80	9951.86
.009557	555.	559.	565.	0	14	0	.00	69.86	10021.72

THIS RUN EXECUTED 23OCT95 08:12:39

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
	2.200	977.00	9922.09	10106.43	1492.77	1492.52	.69	.37	2.57
	2.200	977.00	9922.09	10106.43	1492.77	1492.52	.69	.37	2.57
	2.270	977.00	9946.61	10023.03	1497.88	1497.87	.97	.99	2.78
	2.270	977.00	9946.61	10023.03	1497.88	1497.87	.97	.99	2.78
	2.320	977.00	9967.26	10021.70	1502.22	1501.92	.83	.92	3.02
	2.320	977.00	9967.26	10021.70	1502.22	1501.92	.83	.92	3.02
*	2.330	977.00	9975.93	10028.17	1504.47	1504.47	1.00	1.06	3.86
*	2.330	977.00	9975.93	10028.17	1504.47	1504.47	1.00	1.06	3.86
*	2.340	969.00	9957.09	10151.02	1511.33	.00	.31	.27	9.63
*	2.340	969.00	9957.09	10151.02	1511.33	.00	.31	.27	9.63
*	2.350	972.00	9942.50	10039.77	1511.62	1505.77	.12	.05	8.32
*	2.350	972.00	9942.54	10039.73	1511.62	1505.77	.12	.05	8.32
*	2.390	972.00	9894.62	10067.19	1511.60	1509.86	.36	.11	4.50
*	2.390	972.00	9894.61	10067.19	1511.60	1509.86	.36	.11	4.50
*	2.450	972.00	9967.78	10077.05	1516.46	1516.46	.96	.80	3.26
*	2.450	972.00	9967.80	10077.00	1516.47	1516.47	.95	.80	3.27
*	2.460	972.00	9993.00	10007.00	1519.09	1519.09	1.01	2.67	5.29
*	2.460	972.00	9993.00	10007.00	1519.09	1519.09	1.01	2.67	5.29
*	2.480	960.00	9993.00	10007.00	1522.25	.00	.54	1.15	7.95
*	2.480	960.00	9993.00	10007.00	1522.25	.00	.54	1.15	7.95
*	2.490	917.00	9961.96	10052.18	1523.63	1519.84	.25	.11	7.43
*	2.490	917.00	9961.95	10052.19	1523.63	1519.84	.25	.11	7.43

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	2.580	917.00	9922.88	10064.87	1526.11	1526.11	1.31	.57	1.81
*	2.580	917.00	9923.12	10064.49	1526.11	1526.11	1.31	.57	1.81
*	2.650	917.00	9949.27	10089.95	1533.16	1533.16	1.21	.58	1.86
*	2.650	917.00	9949.75	10087.47	1533.15	1533.15	1.21	.58	1.85
*	2.680	917.00	9888.71	10037.54	1537.30	1537.30	1.16	.58	2.20
*	2.680	917.00	9888.70	10037.50	1537.30	1537.30	1.16	.58	2.20
*	2.730	352.00	9975.30	10037.09	1542.86	1542.86	1.19	.55	1.66
*	2.730	352.00	9975.94	10036.68	1542.86	1542.86	1.19	.55	1.66
*	2.740	352.00	9951.25	10055.16	1543.67	1543.67	.99	.41	1.87
*	2.740	352.00	9955.45	10052.95	1543.66	1543.66	1.00	.42	1.86
*	2.750	329.00	9968.96	10024.08	1544.83	1544.83	.97	.60	1.93
*	2.750	329.00	9971.77	10023.68	1544.83	1544.83	.97	.61	1.93
*	2.760	329.00	9970.09	10016.17	1545.58	1545.58	.98	.65	1.98
*	2.760	329.00	9970.60	10015.76	1545.57	1545.57	.98	.65	1.97
*	2.810	329.00	9953.96	10014.75	1548.96	1548.96	1.26	.52	1.36
*	2.810	329.00	9954.10	10014.52	1548.96	1548.96	1.26	.52	1.36
*	2.910	329.00	9981.17	10027.90	1560.57	1560.57	.90	.67	2.27
*	2.910	329.00	9981.65	10027.25	1560.57	1560.57	.90	.67	2.27
*	3.000	329.00	9968.96	10020.08	1568.84	1568.84	.98	.60	1.44
*	3.000	329.00	9969.15	10019.97	1568.86	1568.86	.96	.58	1.46
*	3.090	329.00	9983.15	10022.95	1581.69	1581.69	.94	.74	2.09
*	3.090	329.00	9983.37	10022.42	1581.71	1581.71	.92	.71	2.11
*	3.190	329.00	9929.17	10030.83	1589.66	1589.66	1.05	.36	.96
*	3.190	329.00	9929.17	10030.83	1589.66	1589.66	1.05	.36	.96
*	3.280	329.00	9961.10	10024.55	1601.16	1601.16	.81	.61	3.56
*	3.280	329.00	9961.10	10024.60	1601.18	1601.18	.80	.59	3.58
*	3.390	329.00	9951.86	10021.72	1613.64	1613.64	.82	.47	2.84
*	3.390	329.00	9952.60	10021.56	1613.59	1613.59	.86	.52	2.79

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=      2.330  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.330  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.330  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.330  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      2.340  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.340  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      2.350  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.350  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      2.390  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.390  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      2.450  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.450  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.450  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.450  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      2.460  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.460  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.460  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.460  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      2.480  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.480  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      2.490  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.490  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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FLOODWAY DATA, Fountain Hills (south) -
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
2.200	184.	231.	4.2	1492.8	1492.8	.0
2.270	76.	143.	6.8	1497.9	1497.9	.0
2.320	54.	134.	7.3	1502.2	1502.2	.0
2.330	52.	152.	6.4	1504.5	1504.5	.0
2.340	194.	321.	3.0	1511.3	1511.3	.0
2.350	97.	623.	1.6	1511.6	1511.6	.0
2.390	173.	426.	2.3	1511.6	1511.6	.0
2.450	109.	175.	5.6	1516.5	1516.5	.0
2.460	14.	74.	13.1	1519.1	1519.1	.0
2.480	14.	111.	8.6	1522.3	1522.3	.0
2.490	90.	410.	2.2	1523.6	1523.6	.0
2.580	141.	168.	5.4	1526.1	1526.1	.0
2.650	138.	171.	5.4	1533.2	1533.2	.0
2.680	149.	177.	5.2	1537.3	1537.3	.0
2.730	61.	69.	5.1	1542.9	1542.9	.0
2.740	97.	86.	4.1	1543.7	1543.7	.0
2.750	52.	65.	5.1	1544.8	1544.8	.0
2.760	45.	59.	5.6	1545.6	1545.6	.0
2.810	60.	62.	5.3	1549.0	1549.0	.0
2.910	46.	61.	5.4	1560.6	1560.6	.0
3.000	51.	58.	5.7	1568.8	1568.8	.0
3.090	39.	55.	6.0	1581.7	1581.7	.0
3.190	102.	72.	4.5	1589.7	1589.7	.0
3.280	63.	71.	4.6	1601.2	1601.2	.0
3.390	69.	74.	4.4	1613.6	1613.6	.0

KINGSTREE DRAIN

FOUNTAIN HILLS SOUTH
Kingstree Wash

X-Sec	HEC-1 Conc. Point	100-Yr Discharge (cfs)	Left Overbank Lenght (ft)	Rigth Overbank Lenght (ft)	Channel Lenght (ft)	COMMENT
		480 *				
0.00	KGT6	160 **				Confluence JKL
0.09		166 **	495	500	498	
0.16		186 **	370	375	369	
0.20		186 **	180	185	176	
0.28		480 **	425	440	433	
0.35	KGT5	357	400	410	396	Spill from 0 .00 to 0.35
0.41			295	287	284	
0.47			315	295	312	
0.53	*KGT4	279	350	360	344	
0.62	*KGT3	263	460	445	452	Kingstree Wash
0.71			500	510	501	
0.81			515	495	508	

* Flow given by HEC-1 model, beffore split flow

** HEC-2 output flow after split flow

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    23OCT95    TIME   08:15:29   *
*********************************************
```


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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*          (916) 756-1104               *
*****************************************
```


```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
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THIS RUN EXECUTED 23OCT95 08:15:29

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**************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
**************************************


SPLIT FLOW BEING PERFORMED

SF      Split flow south side of Kingstree Blvd.


TW      Right bank between sections 0 and 9
WS      7    0.00    0.09      -1       3
WC         1526.95      21    1528   105.2    1530   271.3    1532   357.9    1534
WC 459.7    1536     495 1533.71

TW        Right bank between sections 9 and 16
WS      6    0.09    0.16      -1       3
WC         1533.7     119    1538   202.9    1540   253.4    1542     266    1542
WC   376 1539.86

TW        Right bank between sections 16 and 20
WS      4    0.16    0.20      -1       3
WC         1593.9    21.6    1542   109.1    1544     194 1542.82

TW        Right bank between sections 20 and 28
WS     11    0.20    0.28      -1       3
WC         1542.82   51.41    1544  204.57    1544  245.34    1546   251.9    1548
WC 258.8    1550   265.7    1552   267.3    1552     285    1552   398.2    1554
WC   447 1553.38

TW        Right bank between sections 28 and 35
WS     15    0.28    0.35      -1     2.7
WC         1553.38   52.67    1556    64.8    1554   89.94    1553   115.1    1554
WC124.87    1556   139.15    1558   200.4    1560   299.4    1562   315.3    1562
WC 371.6    1562   376.9     1564   382.6    1566     388    1568     412  1570.7
```

```
T1      Fountain Hills (South) - Floodplain Delineation        File: KINGSTR.H2
T1      For the Flood Control District of Maricopa County
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - KINGSTREE BLVD.

T4 GR data from stereo model received October 93 from KAM
T4 Revised photogrametric x-sec. received May 94
T5 1"=200' 2-feet Contour mapping from KAM flown 8-91
T6 with survey control by Anderson Nelson 12-11-92, field survey Aug 91
T7 Supplemental cross section data surveyed by Valco Surveing
T8 Source of 100-yr flowrate from HEC-1 Analysis by AGK Enginers
T8            File 150-6CE.DAT
T9 Subcritical analysis
T9 This model was developed and configured to determine water surface elevation
T9 for a 100-year floodplain delineation study, Velocity from this model
T9 may not be accurate and should not be used

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                             -1                            1520

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                                                          -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        43        53        54        1         2         68        10        8         200
     38        1         26

  Kingstree flow (KGT6) used
  Area and time of concentration are considerably different

  Conc. point KGT6 Flow upstream from Jacklin Wash Confluence

QT       2       480       480
NC    .075      .056      .018        .1        .3

   Confluence of Kingstree and Jacklin washes
   Critical depth assumed for initial W.S.E.
X1     0.00        12      9941   10002.8
X3                                          10013.3
GR   1531.9    9583.3    1531.1    9641.5    1530.1    9719.5    1529.8    9765.7    1529.2    9821.8
GR   1529.0    9878.2    1528.7    9925.6    1527.0    9941.0    1526.6    9972.2    1526.1   10000.0
GR   1526.6   10002.8    1527.0   10013.3
```

```
X1      0.09        15      9994.2    10075.3       495       500       498
X3                                                          10075.3
GR    1546.9    9808.1      1542.3     9830.1    1541.3    9849.6    1538.5    9854.1    1537.8    9872.2
GR    1538.2    9893.1      1537.9     9926.5    1536.1    9962.7    1534.4    9994.2    1533.4   10000.0
GR    1533.7   10005.6      1533.6    10028.4    1533.5   10050.0    1532.7   10060.7    1533.7   10075.3

X1      0.16        20     10000      10060.5       370       375       369
X3                                                          10098.7
GR    1548.6    9705.4      1547.3     9710.8    1546.9    9737.6    1544.8    9752.8    1544.7    9764.2
GR    1542.8    9770.5      1541.5     9802.4    1539.4    9817.9    1542.2    9830.9    1542.6    9844.8
GR    1541.6    9850.7      1541.9     9890.5    1541.7    9951.3    1540.9    9969.0    1541.6    9975.8
GR    1538.0   10000.0      1538.7    10028.0    1538.4   10060.5    1539.2   10072.9    1539.9   10098.7

X1      0.20        18     10000      10060.5       180       185       176
X3                                                          10109.8
GR    1549.8    9725.5      1550.2     9731.5    1548.9    9797.1    1546.7    9814.4    1547.5    9829.9
GR    1547.3    9896.9      1543.8     9917.8    1542.9    9943.6    1542.8    9980.2    1541.9    9989.7
GR    1540.3   10000.0      1540.9    10018.2    1541.2   10041.4    1540.6   10060.5    1543.1   10069.0
GR    1543.0   10090.2      1542.4    10095.8    1542.7   10109.8

X1      0.28        19     10000      10060.7       425       440       433
X3                                                          10130.2
GR    1558.8    9850.6      1558.3     9866.0    1555.4    9875.3    1555.9    9883.6    1555.5    9919.1
GR    1550.5    9942.8      1550.8     9954.0    1550.7    9976.8    1548.4   10000.0    1548.7   10024.5
GR    1548.8   10026.1      1548.6    10051.5    1548.1   10060.7    1549.3   10065.5    1550.5   10098.3
GR    1552.0   10102.7      1553.4    10130.2    1554.1   10135.4    1554.2   10181.1

  Conc. point KGT5 Flow upstream from basin 151-L

QT          2         357       357

X1      0.35        23     10000      10061.9       400       410       396
X3                                                          10300
GR    1569.1    9788.3      1569.1     9815.9    1568.4    9841.1    1566.1    9865.3    1565.3    9900.7
GR    1564.1    9942.6      1563.9     9973.5    1563.2    9989.4    1561.5   10000.0    1561.8   10014.6
GR    1562.2   10030.2      1561.8    10053.1    1561.6   10061.9    1566.9   10075.4    1569.9   10086.3
GR    1570.7   10109.2      1570.1    10148.7    1569.3   10181.1    1568.1   10188.1    1567.6   10201.3
GR    1568.6   10236.3      1569.0    10267.0   1570.72     10300

X1      0.41        15     10000      10060.7       295       287       284
GR    1595.0    9807.0      1591.0     9821.8    1583.7    9837.6    1578.1    9862.7    1573.0    9872.4
GR    1571.7    9896.1      1571.8     9932.3    1571.3    9985.9    1569.9   10000.0    1570.4   10024.9
GR    1570.0   10060.7      1576.9    10076.5    1582.5   10098.5    1585.7   10120.8    1589.4   10148.5
```

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X1      0.47        13      10000    10060.1       315       295       312
GR    1587.8    9904.1     1586.3     9945.7    1583.5    9968.4    1582.4    9981.2    1578.8    9998.6
GR    1578.8   10000.0     1579.6    10028.8    1578.4   10060.1    1580.6   10072.1    1581.0   10106.5
GR    1580.8   10127.5     1580.7    10147.1    1591.8   10170.0

  Conc. pont *KGT4 Flow upstream from basin 151-K

QT        2         279       279
NC     .051        .051      .033

X1      0.53        18      9987.6    10009.5       350       360       344
GR    1621.0    9846.4     1615.5     9881.2    1607.7    9927.6    1602.7    9952.5    1598.9    9970.9
GR    1592.7    9987.6     1591.6    10000.0    1591.4   10009.5    1592.0   10020.0    1592.2   10040.0
GR    1591.3   10073.1     1592.7    10079.1    1594.0   10089.0    1594.3   10119.9    1593.6   10139.1
GR    1597.6   10163.2     1603.8    10194.9    1610.9   10223.5

  Conc. point *KGT3 Flow upstream from Kingstree Blvd.

QT        2         263       263

X1      0.62        16      9989.6    10005.9       460       445       452
GR    1624.0    9883.6     1617.5     9916.8    1612.1    9945.4    1604.9    9989.6    1604.6    9999.3
GR    1604.6   10000.0     1605.5    10005.9    1606.5   10040.8    1605.8   10051.2    1606.7   10060.9
GR    1607.9   10081.7     1608.5    10094.6    1609.0   10109.7    1614.0   10132.3    1620.7   10161.0
GR    1627.6   10189.4

X1      0.71        16      9996.7    10003.3       500       510       501
GR    1630.1    9837.4     1623.6     9871.5    1623.5    9873.0    1619.5    9893.4    1617.1    9911.9
GR    1616.6    9932.3     1615.3     9960.5    1615.2    9973.3    1608.9    9996.7    1609.1   10000.0
GR    1609.0   10003.3     1610.4    10009.0    1612.2   10027.3    1614.4   10045.7    1619.9   10065.7
GR    1626.9   10082.0

X1      0.81        11      9987.9    10009.7       515       495       508
GR    1644.8    9876.7     1636.6     9917.3    1631.8    9944.8    1629.4    9969.5    1623.4    9987.9
GR    1623.1   10000.0     1623.2    10009.7    1629.1   10024.5    1636.7   10041.8    1640.5   10058.8
GR    1644.3   10075.8
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .100 CEHV= .300
*SECNO .000
3280 CROSS SECTION .00 EXTENDED .33 FEET

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= .0 10013.3 TYPE= 1 TARGET= 10013.300

.000	1.23	1527.33	1527.33	1520.00	1527.70	.38	.00	.00	1527.00
238.7	.2	231.6	6.9	.5	46.5	5.6	.0	.0	1526.60
.00	.43	4.99	1.24	.075	.018	.056	.000	1526.10	9938.02
.005343	0.	0.	0.	0	31	0	.00	75.28	10013.30

*SECNO .090
3280 CROSS SECTION .09 EXTENDED .42 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= .0 10075.3 TYPE= 1 TARGET= 10075.300

.090	1.42	1534.12	1534.12	.00	1534.46	.34	2.77	.00	1534.40
243.2	.0	243.2	.0	.0	51.8	.0	.6	.9	100000.00
.03	.00	4.70	.00	.000	.018	.000	.000	1532.70	9995.84
.005776	495.	498.	500.	0	11	0	.00	79.46	10075.30

*SECNO .160
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= .0 10098.7 TYPE= 1 TARGET= 10098.700

.160	1.23	1539.23	1539.23	.00	1539.62	.38	2.04	.01	1538.00
249.2	5.3	237.9	5.9	5.1	46.9	5.4	1.1	1.6	1538.40
.05	1.04	5.07	1.10	.075	.018	.056	.000	1538.00	9991.71
.005306	370.	369.	375.	0	15	0	.00	82.39	10074.10

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .200
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= .0 10109.8 TYPE= 1 TARGET= 10109.800

.200	1.34	1541.64	1541.64	.00	1542.04	.40	.95	.00	1540.30
249.2	6.4	240.5	2.3	5.8	46.8	1.8	1.3	1.9	1540.60
.06	1.11	5.14	1.23	.075	.018	.056	.000	1540.30	9991.37
.005448	180.	176.	185.	0	8	0	.00	72.67	10064.04

*SECNO .280
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= .0 10130.2 TYPE= 1 TARGET= 10130.200

.280	1.69	1549.79	1549.79	.00	1550.37	.58	2.07	.06	1548.40
480.0	10.2	457.8	12.0	9.8	73.2	8.6	2.0	2.7	1548.10
.08	1.04	6.25	1.40	.075	.018	.056	.000	1548.10	9985.94
.004469	425.	433.	440.	0	11	0	.00	93.06	10079.00

*SECNO .350
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= .0 10300.0 TYPE= 1 TARGET= 10300.000

.350	1.36	1562.86	1562.86	.00	1563.35	.50	1.85	.01	1561.50
357.0	6.1	348.3	2.6	5.7	60.8	2.0	2.7	3.5	1561.60
.10	1.07	5.73	1.30	.075	.018	.056	.000	1561.50	9991.54
.004932	400.	396.	410.	0	15	0	.00	73.56	10065.10

*SECNO .410
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.410	1.27	1571.17	1571.17	.00	1571.67	.50	1.39	.00	1569.90
357.0	8.3	346.7	1.9	8.2	60.3	1.6	3.2	4.0	1570.00
.11	1.02	5.75	1.23	.075	.018	.056	.000	1569.90	9987.17
.004884	295.	284.	287.	0	11	0	.00	76.21	10063.39

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .470
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.470	1.67	1580.07	1580.07	.00	1580.56	.49	1.56	.00	1578.80
357.0	6.9	337.5	12.6	5.6	58.3	7.6	3.7	4.5	1578.40
.13	1.23	5.79	1.66	.075	.018	.056	.000	1578.40	9992.48
.005115	315.	312.	295.	0	11	0	.00	76.71	10069.19

*SECNO .530
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.530	1.26	1592.56	1592.56	.00	1592.90	.34	3.13	.02	1592.70
279.0	.0	92.2	186.8	.0	15.3	48.7	4.2	5.2	1591.40
.15	.00	6.01	3.83	.000	.033	.051	.000	1591.30	9989.13
.026018	350.	344.	360.	0	16	0	.00	89.39	10078.52

*SECNO .620
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.620	2.04	1606.64	1606.64	.00	1607.07	.43	6.41	.03	1604.90
263.0	22.9	180.5	59.6	9.3	29.1	31.2	4.9	6.1	1605.50
.18	2.47	6.20	1.91	.051	.033	.051	.000	1604.60	9978.92
.008785	460.	452.	445.	0	14	0	.00	81.32	10060.25

*SECNO .710
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.710	2.70	1611.60	1611.60	.00	1612.36	.76	4.87	.10	1608.90

263.0	48.9	149.1	65.0	13.6	17.0	18.2	5.6	6.7	1609.00
.20	3.60	8.76	3.57	.051	.033	.051	.000	1608.90	9986.66
.010729	500.	501.	510.	0	11	0	.00	34.57	10021.23

*SECNO .810
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.810	1.70	1624.80	1624.80	.00	1625.54	.73	6.01	.00	1623.40
263.0	7.7	246.4	8.9	3.0	34.9	3.2	6.1	7.1	1623.20
.22	2.56	7.07	2.75	.051	.033	.051	.000	1623.10	9983.59
.013186	515.	508.	495.	0	14	0	.00	30.13	10013.72

1

TW Right bank between sections 0 and 9

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
4.49	4.53	.86	4.49	4.53	.86	7	1527.329	1534.117	.000	.090

TW Right bank between sections 9 and 16

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
5.94	5.97	.55	10.43	10.50	.68	7	1534.117	1539.233	.090	.160

TW Right bank between sections 16 and 20

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
.00	.00	.00	10.43	10.50	.68	7	1539.233	1541.641	.160	.200

TW Right bank between sections 20 and 28

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
230.84	230.90	.03	241.27	241.40	.05	7	1541.641	1549.794	.200	.280

TW Right bank between sections 28 and 35

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
.00	.00	.00	241.27	241.40	.05	7	1549.794	1562.857	.280	.350

THIS RUN EXECUTED 23OCT95 08:15:31

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HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	.000	238.73	9938.02	10013.30	1527.33	1527.33	1.01	.38	1.23
*	.090	243.23	9995.84	10075.30	1534.12	1534.12	1.02	.34	1.42
*	.160	249.16	9991.71	10074.10	1539.23	1539.23	1.02	.38	1.23
*	.200	249.16	9991.37	10064.04	1541.64	1541.64	1.03	.40	1.34
*	.280	480.00	9985.94	10079.00	1549.79	1549.79	1.00	.58	1.69
*	.350	357.00	9991.54	10065.10	1562.86	1562.86	1.02	.50	1.36
	.410	357.00	9987.17	10063.39	1571.17	1571.17	1.02	.50	1.27
*	.470	357.00	9992.48	10069.19	1580.07	1580.07	1.03	.49	1.67
*	.530	279.00	9989.13	10078.52	1592.56	1592.56	1.22	.34	1.26
*	.620	263.00	9978.92	10060.25	1606.64	1606.64	.82	.43	2.04
*	.710	263.00	9986.66	10021.23	1611.60	1611.60	.96	.76	2.70
*	.810	263.00	9983.59	10013.72	1624.80	1624.80	.99	.73	1.70

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	CWSEL	VCH
*	.000	1527.33	4.99
*	.090	1534.12	4.70
*	.160	1539.23	5.07
*	.200	1541.64	5.14
*	.280	1549.79	6.25
*	.350	1562.86	5.73
*	.410	1571.17	5.75
*	.470	1580.07	5.79
*	.530	1592.56	6.01
*	.620	1606.64	6.20
*	.710	1611.60	8.76
*	.810	1624.80	7.07

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      .000  PROFILE=  1  CRITICAL DEPTH ASSUMED

CAUTION SECNO=      .090  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .090  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .160  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .160  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .200  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .200  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .280  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .280  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .350  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .350  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .410  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .410  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .470  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .470  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .530  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .530  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .620  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .620  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .710  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .710  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .810  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .810  PROFILE=  1  MINIMUM SPECIFIC ENERGY
```

MANGRUM DRAIN

FOUNTAIN HILLS SOUTH
Mangrum Wash

X-Sec	HEC-1 Conc. Point	100-Yr Discharge (cfs)	Left Overbank Lenght (ft)	Rigth Overbank Lenght (ft)	Channel Lenght (ft)	COMMENT
2.65	MNG3	262+300 *				Downstream Spill from KGT
0.00		262+300 *	170	150	157	Jacklin-Mangrum confluence
0.06		262+300 *	300	312	293	
0.07		262+300 *	60	60	58	
0.10		262	240	160	165	Upstream from spill
0.17	*MNG2	202	390	410	397	
0.21		202	250	175	196	

* HEC-1 flow plus 300 cfs from split flow from Kingstree

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*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    23OCT95    TIME   08:18:23   *
*********************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*          (916) 756-1104               *
*****************************************
```


```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
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THIS RUN EXECUTED 23OCT95 08:18:23

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**************************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
**************************************


T1      Fountain Hills (South) - Floodplain Delineation        File: MANGRUM.H2
T1      For the Flood Control District of Maricopa County
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - MANGRUM DRAIN

T4 GR data from stereo model received October 93 from KAM
T4 Revised photogrametric x-sec. received May 94
T5 1"=200' 2-feet Contour mapping from KAM flown 8-91
T6 with survey control by Anderson Nelson 12-11-92, field survey Aug 91
T7 Supplemental cross section data surveyed by Valco Surveing
T8 Source of 100-yr flowrate from HEC-1 Analysis by AGK Enginers
T8            File 150-6CE.DAT
T9 Subcritical analysis
T> This model was developed and configured to determine water surface elevation
T> for a 100-year floodplain delineation study, Velocity from this model
T> may not be accurate and should not be used


J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                             -1                                  1532.3

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                                                          -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        43        53        54        1         2         68        10        8         200

  Mangrum Flow (MNG3) used for initial conditions
  Tributary area and time of concentration considerably different

  Conc. point MNG3 Flow upstream from Jacklin Wash confluence
  Flow MNG3=262 Spill from Kinstree Blvd. =300 total 562

QT       2       562       562
NC    .027      .027      .025       .1        .3

   Upstream from confluence
ET                          9.1                                                 9950.96   10081.18
```

```
X1     2.65       27     9995.9    10014.1
GR   1539.2   9844.8    1539.3     9844.8   1539.9    9870.6   1538.7    9899.2   1538.6    9903.9
GR   1539.6   9916.2    1538.0     9926.7   1535.8    9939.6   1532.0    9953.5   1531.5    9973.8
GR   1531.8   9995.9    1531.3    10000.0   1531.7   10014.1   1532.0   10049.6   1532.3   10073.7
GR   1533.9  10104.1    1535.6    10141.2   1538.8   10160.6   1540.0   10183.3   1539.3   10195.0
GR   1540.7  10240.8    1539.7    10251.7   1540.5   10284.6   1541.3   10318.6   1542.4   10358.0
GR   1543.1  10367.9    1546.5    10383.6

   Confluence of Mangrum and Jacklin washes

ET                      9.1                                                      9914.42  10033.95
X1     0.00       28     9993.8    10006.3    170       150      157
GR   1542.7   9818.8    1542.8     9826.3   1538.0    9861.0   1537.2    9892.8   1536.6    9923.7
GR   1535.8   9959.6    1535.3     9993.8   1535.1   10000.0   1535.6   10006.3   1536.0   10028.6
GR   1538.9  10048.5    1539.2    10060.6   1540.9   10075.3   1540.9   10075.3   1542.6   10096.8
GR   1542.9  10106.7    1541.5    10124.0   1542.4   10132.0   1542.9   10159.6   1543.2   10220.0
GR   1544.8  10235.0    1545.1    10235.0   1545.9   10242.2   1547.3   10268.9   1548.2   10284.4
GR   1549.5  10311.4    1551.3    10340.6   1553.7   10364.9


ET                      9.1                                                      9826.6   10047.68
X1     0.06       12     9975      10004.6    300       312      293
X3       10                                                      1546.2    1545.9
GR   1546.0   9826.6    1545.4     9844.8   1545.4    9875.6   1545.2    9892.3   1546.0    9946.2
     1546.1   9975.0    1545.2    10000.0   1545.8   10004.6   1545.7   10039.4   1546.8   10056.2
     1546.3  10058.0    1546.7    10069.1


ET                      9.1                                                      9838.5   10088.48
X1     0.07       13     9983.7    10033       60        60       58
GR   1546.9   9838.5    1546.6     9864.8   1547.4    9883.9   1548.0    9911.3   1548.1    9964.0
GR   1547.6   9983.7    1547.6    10000.0   1547.5   10033.0   1546.9   10063.6   1546.8   10072.0
GR   1550.0  10115.7    1552.0    10127.2   1554.0   10135.8

  Upstream from Kingstree spilling area

QT       2        262       262

ET                      9.1                                                      9958.78  10055.81
X1     0.10       17     9985.2    10008.7    240       160      165
GR   1558.0   9877.7    1556.0     9894.6   1554.0    9909.5   1552.0    9959.6   1551.3    9974.7
GR   1551.8   9979.7   1551.40     9985.20  1551.0    9990.7   1551.2   10000.0   1551.30  10008.70
GR   1551.4  10017.4    1551.3    10048.3   1551.9   10054.6   1554.1   10074.7   1554.9   10090.0
GR   1556.5  10107.1    1557.5    10127.1

  Conc. point *MNG2 Flow upstream from basin 152-F

QT       2        202       202

ET                      9.1                                                      9948.2   10030.56
```

X1	0.17	18	9990.2	10006.5	390	410	397			
GR	1568.7	9734.1	1568.1	9759.3	1567.3	9788.7	1567.5	9816.5	1567.2	9875.7
GR	1563.9	9892.1	1564.5	9923.4	1561.3	9950.3	1560.8	9990.2	1560.2	10000.0
GR	1560.5	10006.5	1561.6	10031.7	1562.9	10047.1	1564.0	10066.2	1564.5	10091.7
GR	1565.2	10111.2	1567.4	10130.3	1571.4	10142.0				
ET			9.1						9937.16	10035.99
X1	0.21	16	10000	10028.9	250	175	196			
GR	1579.8	9790.6	1580.2	9839.2	1577.2	9860.0	1573.1	9882.3	1569.5	9906.9
GR	1567.6	9937.8	1566.8	10000.0	1566.9	10028.9	1568.6	10045.2	1569.4	10055.6
GR	1569.2	10065.9	1570.0	10096.8	1571.0	10106.6	1573.9	10122.7	1577.3	10150.9
GR	1581.5	10173.1								

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .100 CEHV= .300
*SECNO 2.650
3720 CRITICAL DEPTH ASSUMED

2.650	1.41	1532.71	1532.71	1532.30	1533.13	.43	.00	.00	1531.80
562.0	228.5	138.7	194.8	43.8	21.8	45.6	.0	.0	1531.70
.00	5.22	6.36	4.27	.027	.025	.027	.000	1531.30	9950.91
.009019	0.	0.	0.	0	13	0	.00	130.57	10081.48

*SECNO .000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.000	1.70	1536.80	1536.80	.00	1537.25	.45	1.36	.01	1535.30
562.0	315.8	132.3	113.8	65.0	19.0	24.4	.4	.5	1535.60
.01	4.86	6.96	4.67	.027	.025	.027	.000	1535.10	9913.60
.007864	170.	157.	150.	0	11	0	.00	120.47	10034.06

*SECNO .060
3280 CROSS SECTION .06 EXTENDED .24 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.060	1.04	1546.24	1546.24	.00	1546.54	.30	2.75	.02	1546.10
562.0	414.1	81.4	66.5	91.8	18.2	19.4	1.2	1.6	1545.80
.03	4.51	4.46	3.43	.027	.025	.027	.000	1545.20	9826.60
.010759	300.	293.	312.	0	23	0	.00	221.10	10047.70

*SECNO .070

3265 DIVIDED FLOW

3280 CROSS SECTION .07 EXTENDED 1.11 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.070	1.41	1548.01	1548.01	.00	1548.31	.30	.55	.00	1547.60
562.0	302.9	66.7	192.4	64.0	21.7	44.4	1.4	1.9	1547.50
.03	4.73	3.07	4.33	.027	.025	.027	.000	1546.60	9838.50
.007938	60.	58.	60.	0	11	0	.00	197.57	10088.49

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .100
7185 MINIMUM SPECIFIC ENERGY
7 CRITICAL DEPTH ASSUMED

.100	1.04	1552.04	1552.04	.00	1552.35	.31	1.57	.00	1551.40

262.0	32.7	106.0	123.3	10.9	20.3	30.4	1.8	2.6	1551.30
.04	3.01	5.22	4.06	.027	.025	.027	.000	1551.00	9958.50
09361	240.	165.	160.	0	19	0	.00	97.41	10055.91

*SECNO .170
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.170	1.37	1561.57	1561.57	.00	1561.86	.29	3.28	.00	1560.80
202.0	62.6	99.5	40.0	21.2	18.5	13.2	2.4	3.4	1560.50
.07	2.96	5.39	3.03	.027	.025	.027	.000	1560.20	9948.01
.006981	390.	397.	410.	0	11	0	.00	83.06	10031.07

*SECNO .210
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.210	.85	1567.65	1567.65	.00	1567.91	.26	1.67	.00	1566.80
202.0	84.2	110.6	7.2	27.9	23.1	2.7	2.6	3.9	1566.90
.08	3.02	4.80	2.67	.027	.025	.027	.000	1566.80	9937.02
.008807	250.	196.	175.	0	14	0	.00	99.05	10036.07

THIS RUN EXECUTED 23OCT95 08:18:24

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	2.650	562.00	9950.91	10081.48	1532.71	1532.71	1.02	.43	1.41
*	2.650	562.00	9950.96	10081.18	1532.71	1532.71	1.02	.42	1.41
*	.000	562.00	9913.60	10034.06	1536.80	1536.80	.99	.45	1.70
*	.000	562.00	9914.42	10033.95	1536.79	1536.79	1.00	.46	1.69
*	.060	562.00	9826.60	10047.70	1546.24	1546.24	1.00	.30	1.04
*	.060	562.00	9826.60	10047.68	1546.24	1546.24	1.00	.30	1.04
*	.070	562.00	9838.50	10088.49	1548.01	1548.01	.81	.30	1.41
*	.070	562.00	9838.50	10088.48	1548.01	1548.01	.81	.30	1.41
	.100	262.00	9958.50	10055.91	1552.04	1552.04	.99	.31	1.04
	.100	262.00	9958.78	10055.81	1552.04	1552.04	.99	.31	1.04
*	.170	202.00	9948.01	10031.07	1561.57	1561.57	.89	.29	1.37
*	.170	202.00	9948.20	10030.56	1561.57	1561.57	.90	.29	1.37
*	.210	202.00	9937.02	10036.07	1567.65	1567.65	.95	.26	.85
*	.210	202.00	9937.16	10035.99	1567.65	1567.65	.94	.25	.85

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=     2.650  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.650  PROFILE=  2  CRITICAL DEPTH ASSUMED

CAUTION SECNO=      .000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .060  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .060  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .060  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .060  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .070  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .070  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .070  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .070  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .100  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .100  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .100  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .100  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .170  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .170  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .170  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .170  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .210  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .210  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .210  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .210  PROFILE=  2  MINIMUM SPECIFIC ENERGY
```

FLOODWAY DATA, Fountain Hills (south) -
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
2.650	130.	111.	5.1	1532.7	1532.7	.0
.000	120.	108.	5.2	1536.8	1536.8	.0
.060	221.	130.	4.3	1546.2	1546.2	.0
.070	250.	130.	4.3	1548.0	1548.0	.0
.100	97.	61.	4.3	1552.0	1552.0	.0
.170	82.	53.	3.8	1561.6	1561.6	.0
.210	99.	54.	3.7	1567.6	1567.6	.0

EMERELD WASH

FOUNTAIN HILLS SOUTH
Emerald Wash

X-Sec	HEC-1 Conc. Point	100-Yr Discharge (cfs)	Left Overbank Lenght (ft)	Rigth Overbank Lenght (ft)	Channel Lenght (ft)	COMMENT
2.10	EMRMLT	907				Combined flow EMR and ML
2.28			330	330	328	
2.30			200	105	122	
2.35	EMR13	536	250	150	272	Culvert outlet
2.39	SEMR12	529	300	325	197	Culvert inlet
2.45	*EMR12	357	300	335	295	
2.54			490	495	487	
2.64			500	525	508	
2.73			500	490	491	
2.82			510	490	500	
2.92			495	490	490	
2.99			410	415	413	
3.00			60	60	50	
3.03	SEMR10	236	130	130	122	Culvert outlet
3.04	EMR10	325	85	90	84	Culvert inlet
3.11	EMR9	302	300	300	339	
3.19			470	450	458	
3.25			295	310	295	
3.30			250	290	262	
3.33	EMR8	214	175	150	158	Culvert outlet
3.36	SEMR7	213	150	140	140	Culvert inlet
3.42	EMR7	495	340	340	325	
3.47			240	210	272	
3.51	*EMR6	463	220	150	218	
3.61			450	540	501	
3.69			490	425	465	
3.75			310	300	301	
3.82			390	390	392	
3.88			250	310	289	
3.90	EMR5	335	90	80	95	Culvert outlet
3.94	SEMR4	207	200	240	216	Culvert inlet
3.95	*EMR4	326	190	75	86	
4.01			300	310	301	
4.07			290	325	317	

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    23OCT95    TIME   08:31:08   *
*********************************************
```

```
*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*         (916) 756-1104                *
*****************************************
```

```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 23OCT95 08:31:08

```
**************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
**************************************


T1      Fountain Hills (South) - Floodplain Delineation        File: EMERALD.H2
T1      For the Flood Control District of Maricopa County
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - EMERALD WASH

T4 GR data from stereo model received October 93 from KAM
T4 Revised photogrametric x-sec. received May 94
T5 1"=200' 2-feet Contour mapping from KAM flown 8-91
T6 with survey control by Anderson Nelson 12-11-92, field survey Aug 91
T7 Supplemental cross section data surveyed by Valco Surveing
T8 Source of 100-yr flowrate from HEC-1 Analysis by AGK Enginers
T8            File 160-6CE.DAT
T9 Subcritical analysis
T9 This model was developed and configured to determine water surface elevation
T9 for a 100-year floodplain delineation study, Velocity from this model
T9 may not be used

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                             0.03                                  1501.75

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                                                          -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        43        53        54        1         2         68        10        8         200

  Starting water surface normal depth

  Conc. point EMRMLT Flow from Emerald and Malta combined

QT       2       907       907
NC    .065      .065      .048        .1        .3

   X-sec. from 1"=200' contour map (KAM 8/91)
   X-sec downstream from study area
   Included to obtain a more accurate water surface at x-sec 2.28
   Initial water surface elevation was determined by the normal depth method
ET                          9.1                                                 9828.03   10052.33
```

```
X1     2.10       30     9993    10048
GR   1524.0   9611.5   1522.0   9652.6   1520.0   9681.2   1518.0   9702.4   1516.0   9711.4
GR   1514.0   9720.0   1512.0   9728.7   1510.0   9737.6   1508.0   9745.9   1506.0   9754.4
GR   1504.0   9762.9   1502.0   9798.5   1500.4     9993   1500.3  10000.0   1500.0  10021.7
GR   1500.0  10040.2   1500.0  10047.2   1500.4    10048   1502.0  10053.1   1504.0  10058.9
GR   1506.0  10064.7   1508.0  10070.4   1510.0  10076.2   1512.0  10082.6   1514.0  10098.6
GR   1516.0  10114.8   1518.0  10131.3   1520.0  10147.8   1522.0  10164.5   1524.0  10181.0

  Begin of study area

ET                      9.1                                                  9833.23  10040.56
X1     2.28       34     9980    10018      330      330      328
GR   1532.9   9683.2   1529.7   9705.8   1527.4   9732.0   1521.5   9770.8   1516.9   9789.9
GR   1511.7   9807.6   1507.7   9836.0   1510.2   9845.6   1506.6   9874.5   1506.2   9900.5
GR   1507.1   9920.4   1507.7   9947.0   1507.6   9980.0   1505.4  10000.0   1505.9  10018.0
GR   1507.7  10035.3   1510.2  10069.0   1519.1  10091.5   1520.5  10106.8   1520.4  10127.6
GR   1519.3  10161.7   1518.3  10188.9   1518.6  10229.7   1517.2  10264.6   1517.7  10277.2
GR   1519.7  10291.9   1524.7  10326.6   1527.1  10359.3   1528.3  10399.7   1529.1  10434.1
GR   1528.9  10471.7   1528.8  10499.0   1529.7  10530.8   1531.9  10572.4

ET                      9.1                                                  9917.21  10089.06
X1     2.30       26  9992.6   10006.5      200      105      122
R    1532.7   9695.2   1529.1   9730.0   1524.6   9774.1   1521.3   9812.7   1519.4   9829.8
R    1517.7   9850.4   1517.2   9871.2   1515.9   9905.1   1509.9   9918.7   1510.1   9940.5
GR   1509.7   9961.9   1508.3   9973.0   1509.6   9978.1   1509.3   9992.6   1507.2  10000.0
GR   1508.7  10006.5   1509.2  10040.7   1509.7  10086.7   1516.7  10105.9   1520.2  10118.7
GR   1521.4  10132.7   1521.9  10162.4   1521.9  10215.4   1521.5  10251.0   1520.7  10275.1
GR   1520.3  10306.4

NC                                .3       .5

  Culvert EMR1 outlet
ET                      9.1                                                  9708.8   10005
X1     2.35       43     9995    10005      250      150      272
X3       10                                                      1514   1523.8
GR   1532.7     9514   1531.0   9539.3   1528.4   9581.8   1527.7   9602.8   1526.4   9610.5
GR   1524.9   9651.7   1523.8     9700   1512.6   9710.5   1512.3   9719.8   1512.2   9724.9
GR   1513.6   9738.4   1516.3   9761.3   1516.3   9774.8   1515.9   9796.1   1515.9   9833.6
GR   1514.7   9867.8   1513.4   9897.5   1512.3   9931.8   1513.3   9981.1   1512.0   9992.2
GR   1510.8     9995   1510.8  10000.0   1510.8    10005   1516.2  10010.1   1521.9  10023.4
GR   1523.0  10048.1   1523.7  10084.3   1524.2  10114.3   1524.5  10149.2   1524.4  10166.3
GR   1523.9  10186.2   1523.4  10188.5   1523.9  10201.7   1523.2  10220.4   1523.8  10227.7
GR   1525.1  10246.7   1526.3  10264.4   1526.1  10311.8   1525.3  10331.2   1524.4  10349.1
GR   1528.1  10352.8   1528.2  10398.1   1529.8  10406.2

  Culvert -EMR1- 2 CMP 60" X 192' Saguaro Blvd
  Conc. point SEMR12 Flow through the culvert
```

```
QT        2        529        529
SC    2.024        0.8        3.0                    5                  197       2.1   1514.86   1510.87

  Culvert  EMR1 inlet
ET                             9.1                                                            9971   10032.2
X1     2.39         21       9995    10005        300        325        197
X2                              2                1523.7
X3       10                                                              1523.38   1523.8
BT       -7     9962.6     1526.4                9987     1523.9                9987   1523.38
BT              10000    1523.59                10012     1523.8               10012    1524.3
BT            10036.3       1526
GR   1540.0     9779.9     1538.0    9783.9     1536.0     9787.9     1534.0     9791.9   1532.0    9795.9
GR   1530.0     9799.9     1528.0    9870.0     1527.9     9884.2     1526.9     9918.9   1526.4    9962.6
GR   1523.7     9972.8     1516.3    9988.2    1514.86       9995    1514.86    10000.0  1514.86     10005
GR   1516.3    10014.0     1525.0   10034.1     1526.0    10036.3     1528.0    10086.8   1530.0   10125.3
GR   1532.0    10186.3

  Conc. point *EMR12 Flow upstream from saguaro Blvd.

QT        2        357        357

ET                             9.1                                                            9964.48   10021.43
X1     2.45         28     9986.9    10014.0        300        335        295
GR   1544.8     9762.5     1544.7     9771.7     1544.7     9822.4     1543.6     9897.0   1542.4    9904.3
GR   1541.5     9913.1     1538.0     9928.6     1529.8     9942.6     1529.7     9953.1   1521.7    9969.8
GR   1521.3     9986.9     1520.7    10000.0     1520.7    10014.0     1526.0    10025.1   1534.6   10037.9
GR   1533.9    10045.4     1533.6    10059.1     1535.4    10071.9     1535.9    10088.3   1536.2   10120.6
GR   1536.1    10158.6     1535.5    10179.8     1535.8    10192.4     1536.2    10218.9   1536.0   10243.7
GR   1535.5    10258.9     1534.7    10266.0     1535.4    10278.0

NC      .055       .055       .049         .1          .3

ET                             9.1                                                            9975.47   10022.04
X1     2.54         15     9988.9    10005.1        490        495        487
GR   1546.1     9850.7     1545.9     9894.0     1545.2     9919.4     1543.8     9931.8   1534.2    9953.5
GR   1534.3     9958.2     1531.3     9977.0     1531.1     9988.9     1528.9    10000.0   1528.9   10005.1
GR   1531.6    10022.4     1541.8    10043.7     1542.8    10052.7     1541.9    10077.7   1541.5   10107.3

ET                             9.1                                                            9975.42   10008.25
X1     2.64         31     9988.5       10000        500        525        508
GR   1562.4     9705.4     1560.5     9723.1     1557.7     9737.2     1556.6     9769.9   1555.7    9806.4
GR   1554.0     9843.0     1552.1     9855.2     1552.8     9869.1     1552.0     9888.6   1552.7    9898.7
GR   1544.4     9917.4     1544.2     9935.0     1544.6     9962.6     1541.6     9971.3   1541.4    9975.4
GR   1539.3     9982.4     1539.4     9988.5     1537.8    10000.0     1544.2    10014.7   1550.5   10030.5
GR   1550.4    10042.2     1549.1    10052.1     1548.6    10081.2     1554.5    10092.1   1554.6   10114.8
GR   1555.0    10147.2     1555.2    10183.6     1554.9    10206.7     1557.3    10211.7   1559.7   10220.5
GR   1561.5    10245.4
```

ET			9.1						9977.04	10020.92
X1	2.73	28	9991.3	10019.6	500	490	491			
GR	1572.4	9744.4	1569.5	9772.6	1566.3	9805.0	1563.6	9834.5	1562.9	9864.3
GR	1561.8	9876.7	1562.0	9891.2	1561.4	9910.7	1563.0	9917.5	1563.0	9930.1
GR	1561.9	9936.7	1554.8	9949.4	1554.1	9970.1	1551.6	9977.6	1551.1	9991.3
GR	1549.2	10000.0	1549.2	10005.0	1551.2	10019.6	1559.0	10037.2	1559.0	10047.4
GR	1558.1	10056.2	1557.8	10068.9	1557.0	10084.7	1562.1	10095.3	1564.0	10105.6
GR	1565.1	10135.6	1567.7	10146.0	1570.8	10167.4				
NC	.044	.044	.038							
ET			9.1						9986.17	10027.31
X1	2.82	18	9989.3	10006.1	510	490	500			
GR	1580.5	9845.3	1578.5	9885.0	1575.3	9937.0	1572.2	9965.1	1568.4	9977.6
GR	1562.7	9989.3	1562.2	10000.0	1562.3	10006.1	1564.0	10026.8	1570.1	10040.6
GR	1570.5	10050.7	1568.4	10064.8	1568.6	10077.4	1568.3	10097.7	1573.8	10115.0
GR	1576.2	10128.1	1576.0	10218.8	1582.2	10234.3				
ET			9.1						9982.8	10023
X1	2.92	23	9986.5	10020.1	495	490	490			
GR	1596.9	9854.0	1597.2	9862.3	1590.9	9885.0	1587.1	9917.4	1584.3	9947.1
GR	1581.0	9968.6	1573.8	9986.5	1573.7	10000.0	1574.0	10020.1	1580.8	10035.4
GR	1581.2	10042.4	1579.6	10056.7	1579.2	10081.8	1578.8	10093.8	1581.2	10110.2
GR	1583.4	10128.8	1583.5	10136.5	1582.2	10146.6	1581.8	10157.8	1583.3	10184.4
GR	1586.0	10217.9	1590.0	10242.7	1602.1	10296.9				
ET			9.1						9977.21	10030.2
X1	2.99	28	9984	10015.2	410	415	413			
GR	1602.0	9842.0	1600.0	9848.5	1598.0	9855.1	1596.0	9861.7	1594.0	9887.6
GR	1592.0	9932.5	1590.0	9949.9	1588.0	9958.6	1586.0	9964.9	1584.0	9970.9
GR	1582.0	9977.2	1580.0	9984.0	1579.4	10000.0	1581.5	10015.2	1582.0	10030.3
GR	1584.0	10034.3	1586.0	10038.4	1588.0	10042.6	1590.0	10046.9	1590.0	10057.5
GR	1590.0	10097.7	1592.0	10104.4	1594.0	10110.9	1596.0	10116.1	1598.0	10121.2
GR	1600.0	10128.1	1602.0	10244.5	1604.0	10247.3				

Culvert EMR2 outlet

NC				.1	.3					
ET			9.1						9997.5	10002.5
X1	3.00	25	9997.5	10002.5	60	60	50			
X3	10							1588.8	1588.1	
GR	1603.7	9820.5	1603.4	9838.3	1596.2	9859.2	1595.5	9884.3	1593.9	9912.2
GR	1592.2	9921.0	1591.9	9931.7	1589.0	9955.4	1586.0	9966.2	1584.0	9975.9
GR	1580	9997.5	1580	10000.0	1580	10002.5	1582.0	10023.7	1586.0	10040.2
GR	1588.0	10044.7	1590.6	10050.8	1590.7	10065.9	1589.8	10069.5	1590.1	10081.3
GR	1589.4	10097.3	1593.5	10112.8	1599.5	10151.6	1599.7	10179.1	1600.4	10234.4

Culvert -EMR2- 1 CMP 60" X 122' Inca Av.

```
QT        2       239       239
SC    1.024       0.8       3.0                5                  122       2.1      1583      1580

  Culvert EMR2 inlet

ET                            9.11                                                              9997.5  10002.5
X1     3.03        25      9997.5   10002.5      130       130      122
X2                             2                1593
X3       10                                                                1593.7    1593.7
BT      -14   9893.03   1596.46                 9950    1595.67                9997.5    1593.7
BT            9997.6    1593.7                9997.98    1593.7                9998.5    1593.7
BT            9999.2    1593.7                10000      1593.7                10000.1   1593.7
BT            10001.    1593.7                10002.02   1593.7                10002.4   1593.7
BT           10002.5    1593.7                10039.84   1592.85
GR    1600.4   9872.9   1598.15   9884.40    1597.03    9890.15   1596.46   9893.03    1595.9    9895.9
GR    1593.3   9918.4   1588.3    9941.9     1588.3     9942.1    1586.3    9962.6     1585.8    9982.5
GR      1583   9997.5     1583     10000       1583    10002.5    1584.5    10014.5    1591.6   10030.0
GR    1592.6  10037.88   1592.8   10039.84    1593.1   10041.81    1593.6   10045.75    1594.6  10053.63
GR    1595.6  10061.5    1596.7   10078.1     1596.6   10095.2     1597.7   10111.4     1600.1  10164.4


  Conc. point EMR10 Flow upstream from culvert

QT        2       325       325
C      .046      .046      .039

ET                            9.1                                                               9918.2  10038.3
X1     3.04        20      9995.2   10016.1       85        90       84
GR    1606.0   9855.2    1604.0    9865.7     1602.0     9876.6    1600.0    9887.9     1598.0    9899.4
GR    1596.0   9906.8    1594.0    9914.4     1592.0     9922.2    1590.0    9958.2     1588.0    9973.5
GR    1586.0   9995.2      1585    10000.0     1586.0    10016.1    1588.0    10020.0    1590.0   10024.0
GR    1592.0  10027.8    1594.0    10048.3     1596.0   10060.2     1598.0    10069.4    1600.0   10078.5

  Conc. point EMR9 Flow upstrem from basin 160-S

QT        2       302       302
NC                                     .1        .3

ET                            9.1                                                               9941.1  10036.11
X1     3.11        20      9977.3   10025.1       300       300      339
GR    1609.7   9786.3    1606.5    9805.4     1604.4     9821.1    1602.5    9845.2     1599.2    9863.3
GR    1598.5   9875.8    1598.5    9875.8     1598.6     9892.3    1598.1    9924.0     1594.2    9936.6
GR    1592.9   9957.4    1593.9    9977.3     1592.2    10000.0    1593.9    10025.1    1592.5   10032.1
GR    1593.6  10034.3    1595.2    10043.4     1600.9   10057.5     1608.9   10075.1     1610.8   10086.6


ET                            9.1                                                              9986.73  10027.5
X1     3.19        18       10000   10020.6       470       450      458
GR    1621.5   9759.6    1616.7    9794.2     1613.3     9822.3    1612.2    9833.7     1611.6    9849.4
GR    1611.2   9869.4    1611.1    9896.9     1609.8     9909.7    1609.5    9917.3     1606.6    9935.1
GR    1608.0   9954.4    1605.6    9970.4     1603.5     9979.4    1603.5    9986.3     1601.4   10000.0
GR    1601.9  10020.6    1606.5    10041.3     1622.0   10076.5
```

ET			9.1						9983.29	10046.32
X1	3.25	14	9988.5	10000	295	310	295			
GR	1635.5	9787.6	1630.1	9827.1	1625.9	9869.7	1620.9	9924.1	1619.8	9944.3
GR	1617.6	9964.2	1607.2	9988.5	1607.3	10000.0	1608.9	10012.3	1609.2	10041.4
GR	1610.3	10065.1	1611.6	10087.1	1617.0	10107.7	1625.2	10154.2		

ET			9.1						9990.54	10024.55
X1	3.30	12	9994.5	10018.7	250	290	262			
GR	1635.2	9915.6	1630.0	9941.4	1626.0	9965.8	1615.1	9994.5	1614.9	10000.0
GR	1615.1	10018.7	1622.6	10047.9	1624.3	10083.0	1625.9	10094.5	1628.7	10133.2
GR	1631.1	10161.6	1633.1	10189.9						

Conc. point EMR8 Flow at culvert outlet

QT	2	214	214							
NC				.3	.5					

Culvert EMR3 outlet

ET			9.1						9991.3	10002.5
X1	3.33	23	9997.5	10002.5	175	150	158			
X3	10							1633	1633.6	
GR	1646.2	9739.6	1642.0	9782.7	1636.6	9834.0	1633.0	9867.3	1630.7	9888.4
GR	1631.5	9894.2	1631.4	9927.1	1631.7	9954.0	1632.0	9973.4	1629.0	9987.3
GR	1623	9997.5	1623	10000.0	1623	10002.5	1631.2	10012.8	1632.4	10030.0
GR	1632.9	10057.0	1632.7	10088.9	1633.0	10125.1	1634.4	10155.2	1635.0	10181.8
GR	1631.7	10195.4	1636.8	10228.2	1644.2	10271.8				

Culvert -EMR3- 1 CMP 60" X 140' Baron Dr.

QT	2	213	213							
SC	1.024	0.8	3.0		5		140	2.1	1628	1623

Culvert EMR3 inlet

ET			9.1						9973.18	10002.5
X1	3.36	33	9997.5	10002.5	150	140	140			
X2			2		1633					
X3	10							1633	1633.6	
BT	-8	9869.8	1635.6		9901	1634.9		9934	1633.95	
BT		9967	1633		10000	1633.6		10050	1635.1	
BT		10100	1637.7		10122.65	1639.05				
GR	1649.0	9752.0	1646.8	9760.8	1644.6	9785.4	1642.9	9809.4	1641.5	9815.1
GR	1640.3	9835.7	1637.5	9854.2	1635.6	9869.8	1634.4	9886.7	1634.6	9911.8
GR	1634.2	9934.8	1634.0	9972.0	1632.1	9980.9	1633.0	9984.9	1628	9997.5
GR	1628	10000.0	1628	10002.5	1633.5	10008.2	1634.6	10019.1	1635.2	10050.8
GR	1635.6	10077.9	1636.6	10099.2	1637.9	10116.0	1639.05	10122.65	1640.20	10129.30
GR	1642.5	10142.6	1644.8	10157.3	1644.8	10160.8	1646.1	10181.0	1647.4	10200.8
GR	1649.4	10209.5	1655.1	10224.6	1660.9	10241.1				

Conc. point EMR7 Flow upstream from Baron Dr.

```
QT        2       495       495
NC                            .1        .3

ET                          9.1                                                 9908.6    10032
X1      3.42        18     10000   10026.9       340       340       325
GR    1659.6    9690.9    1654.6    9723.5    1649.6    9754.5    1643.9    9791.0    1640.3    9835.7
GR    1638.2    9862.5    1637.0    9883.0    1635.5    9904.8    1635.0    9930.8    1635.0    9950.0
GR    1634.9    9973.8    1634.1    9994.5    1634.5   10000.0    1632.5   10026.9    1643.4   10045.6
GR    1650.5   10072.8    1656.3   10093.0    1659.6   10103.7

ET                          9.1                                                 9988.7   10141.01
X1      3.47        14     10063   10130.6       240       210       272
GR    1655.0    9921.0    1650.8    9949.9    1647.8    9971.1    1634.7    9991.5    1635.1   10000.0
GR    1635.0   10028.9    1634.7   10063.0    1634.2   10090.4    1633.8   10120.2    1633.5   10130.6
GR    1641.3   10157.7    1646.9   10181.3    1651.8   10201.1    1651.4   10201.4

  Conc. point *EMR6 Flow upstream from basin 160-P

QT        2       463       463

ET                          9.1                                                 9915.29   10005.95
X1      3.51        12      9967   10000.2       220       150       218
GR    1651.5    9833.4    1647.6    9864.4    1642.8    9893.1    1638.5    9917.3    1638.2    9941.0
GR    1637.9    9967.2    1636.7   10000.0    1642.1   10014.9    1643.0   10039.2    1644.5   10051.5
GR    1646.7   10072.4    1649.9   10091.0

ET                          9.1                                                 9937.84   10027.71
X1      3.61        19      9992   10020.1       450       540       501
GR    1670.5    9797.3    1663.3    9829.3    1656.7    9865.4    1652.9    9891.2    1651.0    9913.2
GR    1650.9    9927.1    1648.9    9938.0    1648.6    9950.7    1648.8    9968.3    1646.9    9991.7
GR    1646.0   10000.0    1648.7   10020.1    1649.1   10033.4    1650.4   10052.3    1651.5   10062.2
GR    1657.7   10080.4    1664.1   10102.1    1670.3   10126.6    1670.8   10131.5

ET                          9.1                                                 9949.76   10046.74
X1      3.69        16      9956   9976.6       490       425       465
GR    1680.3    9862.5    1672.5    9893.7    1664.2    9925.1    1656.8    9955.5    1655.4    9964.3
GR    1658.5    9976.6    1658.2    9988.2    1657.4   10000.0    1657.6   10019.9    1656.6   10041.4
GR    1662.4   10060.8    1667.3   10076.0    1670.0   10092.2    1672.7   10109.0    1676.3   10131.2
GR    1679.5   10159.0

ET                          9.1                                                 9965.97   10020.18
X1      3.75        16      9986   10006.4       310       300       301
GR    1687.1    9847.8    1681.6    9873.1    1675.0    9901.4    1667.1    9930.8    1665.5    9951.6
GR    1665.4    9963.3    1663.4    9986.1    1663.0   10000.0    1663.0   10006.4    1665.2   10020.4
GR    1667.4   10052.3    1669.6   10073.3    1672.7   10092.9    1677.0   10118.1    1680.5   10138.3
GR    1685.5   10161.0
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ET                          9.1                                                 9973.0    10010.08
X1      3.82        18    9994.3     10006       390       390       392
GR    1701.0    9847.7    1693.6    9847.7    1693.7    9847.7    1686.2    9878.3    1681.5    9901.0
GR    1680.1    9915.0    1677.5    9957.0    1670.9    9979.5    1671.0    9994.3    1669.9   10000.0
GR    1669.8   10002.1      1671     10006    1675.2   10015.5    1678.5   10035.6    1683.6   10055.6
GR    1689.8   10088.2    1695.4   10115.9    1700.4   10140.1

ET                          9.1                                                 9977.14   10031.45
X1      3.88        14    9988.2    10021.1       250       310       289
GR    1699.8    9817.5    1691.8    9865.1    1687.0    9900.2    1683.7    9928.9    1682.8    9944.0
GR    1683.3    9971.0    1681.2    9977.6    1679.8    9988.2    1679.7   10000.0    1679.6   10021.1
GR    1684.6   10050.7    1688.8   10073.2    1694.2   10111.3    1700.9   10150.4

  Conc. point EMR5 Flow at culvert outlet

QT        2       335       335
NC                                .3        .5

  Culvert outlet EMR4
  Culvert outlet higher than bottom of wash

ET                          9.1                                                 9997.5    10002.5
X1      3.90        24    9997.5    10002.5        90        80        95
X3        10                                                        1701.6    1702.7
GR    1709.2    9870.7    1709.6    9896.7    1709.8    9920.9    1698.2    9945.6    1689.9    9962.5
GR    1686.8    9971.3    1688.2    9978.8    1684.1    9992.6    1689.33   9997.5    1688.56   9997.62
GR    1688.8   9997.98    1687.83   9998.53   1687.83   9999.23   1687.83    10000    1687.83   10000.77
GR    1687.8   10001.47   1687.86   10002.02  1688.86   10002.38  1689.33   10002.5   1683.9    10015.4
GR    1686.4   10031.7    1688.7    10055.0   1697.2    10079.1   1709.9    10102.3

  Culvert -EMR4- 1 CMP 60" X 216' 1' sewer on bottom Fountain Hills Blvd
  Conc. point SEMR4 Flow through the culvert
  Special bridge used because of the sewer line at bottom of culvet changes the
  geometry enough so the culvert routine is not appropiate

QT        2       207       207
NC     .062      .062      .046
SB     1.25      3.85       2.8                2.94       .01      16.8        .1   1689.28   1687.83

  Culvert Inlet EMR4
ET                          9.1                                                 9997.5    10002.5
X1      3.94        32    9997.5    10002.5       200       240       216
X2                           1    1693.28    1708.2
X3        10                                                        1708.2    1709.3
BT       -21      9400      1720      1720      9800    1709.4    1709.4      9850    1708.6    1708.6
BT                9900    1708.2    1708.2      9950    1708.4    1708.4    9997.4      1709      1709
BT              9997.5   1708.27   1690.78    9997.6   1708.28   1691.55   9997.97   1708.29   1692.25
BT              9998.5    1709.3   1692.80    9999.2   1709.31   1693.15     10000   1709.32   1693.28
BT             10000.77   1709.33  1693.16   10001.47  1709.34   1692.80  10002.02   1709.35   1692.25
BT             10002.38   1709.36  1691.55   10002.5   1709.38   1690.78     10050   1710.92   1710.92
BT               10100    1713.2    1713.2     10150    1715.3    1715.3   10230.3   1727.68   1727.68
GR    1710.4    9729.4    1703.4    9767.8    1700.2    9795.2    1697.6    9803.3    1696.7    9826.9
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GR   1699.5     9846.2     1705.6     9876.6     1709.0     9910.7     1708.4     9926.1     1700.7     9941.8
GR   1695.5     9959.2     1690.3     9992.3     1690.78    9997.5     1690.07    9997.62    1689.31    9997.98
GR   1689.2     9998.53    1689.28    9999.23    1689.28    10000      1689.28    10000.77   1689.28    10001.47
GR   1689.3     10002.02   1690.01    10002.38   1690.78    10002.5    1691.0     10012.7    1692.2     10028.7
GR   1694.5     10055.2    1696.8     10092.9    1701.1     10120.0    1703.2     10152.1    1706.2     10187.9
GR   1710.9     10230.3    1727.68    10230.3
```

Conc. point *EMR4 Flow upstream from Fountain Hills Blvd.

```
QT        2        326        326
NC                                      .1         .3

ET                           9.1                                                    9930.2     10097.7
X1     3.95          15      10000      10046.7    190        75         86
GR   1713.5     9884.3     1706.7     9911.8     1701.7     9932.7     1698.7     9951.3     1694.0     9978.0
GR   1691.8     9990.9     1691.3     10000.0    1691.0     10018.9    1691.7     10046.7    1697.0     10056.1
GR   1698.9     10076.5    1702.1     10095.7    1704.3     10118.7    1707.7     10139.1    1710.3     10160.9


ET                           9.1                                                    9936.3     10024.3
X1     4.01          15      9988.6     10010.9    300        310        301
GR   1714.5     9855.1     1708.7     9886.0     1704.3     9911.1     1703.5     9917.4     1701.5     9950.5
GR   1698.9     9970.1     1697.6     9988.6     1697.1     10000.0    1697.0     10010.9    1703.9     10028.4
GR   1705.2     10040.0    1706.3     10089.6    1705.7     10123.7    1706.3     10135.3    1708.3     10141.2


ET                           9.1                                                    9969.74    10015.54
X1     4.07          14      9988.6     10000      290        325        317
GR   1730.3     9806.7     1724.1     9848.1     1719.7     9881.5     1717.1     9906.1     1713.8     9941.2
GR   1713.3     9948.5     1707.4     9971.3     1706.2     9982.9     1705.7     9988.6     1705.7     10000.0
GR   1707.5     10013.4    1712.0     10045.2    1722.4     10081.5    1729.9     10109.6
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 2.100
3720 CRITICAL DEPTH ASSUMED

2.100	1.76	1501.76	1501.76	1501.75	1502.24	.48	.00	.00	1500.40
907.0	301.4	597.9	7.7	111.9	90.8	2.9	.0	.0	1500.40
.00	2.69	6.59	2.61	.065	.048	.065	.000	1500.00	9828.03
.023266	0.	0.	0.	0	5	5	.00	224.29	10052.33

*SECNO 2.280

3265 DIVIDED FLOW

2.280	2.69	1508.09	1507.89	.00	1508.47	.38	6.22	.01	1507.60
907.0	368.2	462.6	76.1	114.9	75.6	23.3	1.6	1.5	1505.90
.02	3.21	6.12	3.27	.065	.048	.065	.000	1505.40	9833.25
.015674	330.	328.	330.	4	14	0	.00	182.20	10040.52

*SECNO 2.300

2.300	3.36	1510.56	1510.44	.00	1510.98	.42	2.50	.01	1509.30
907.0	226.0	262.3	418.7	68.4	34.1	107.1	2.3	2.2	1508.70
.03	3.30	7.70	3.91	.065	.048	.065	.000	1507.20	9917.20
.019567	200.	122.	105.	3	11	0	.00	171.85	10089.06

CCHV= .300 CEHV= .500
*SECNO 2.350

3265 DIVIDED FLOW

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1514.00 ELREA= 1523.80

2.350	3.40	1514.20	1514.09	.00	1514.60	.40	3.62	.00	1510.80
907.0	638.5	268.5	.0	195.6	34.1	.0	3.5	3.1	1510.80
.04	3.26	7.88	.00	.065	.048	.000	.000	1510.80	9708.99
.012613	250.	272.	150.	3	6	0	.00	160.57	10005.00

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	2	.024	.80	3.00	.00	5.00	.00	197.00	2	1	1514.86	1510.87

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 1 - HEADWALL

140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
130, EGIC= 1525.14..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1524.81 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 2.390

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 1524.23

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 4.10

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN	
1525.14	1524.81	9.62	39.	493.	2.190	39.3	1523.70	28.	
2.390	9.32	1524.18	.00	.00	1524.23	.04	9.62	.00	1514.86
529.0	145.4	204.2	179.4	123.4	93.2	149.2	5.4	3.8	1514.86
.09	1.18	2.19	1.20	.065	.048	.065	.000	1514.86	9970.97
.000255	300.	197.	325.	2	0	0	.00	61.24	10032.21

*SECNO 2.450

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .28

2.450	3.59	1524.29	1522.41	.00	1524.38	.09	.13	.02	1521.30
357.0	89.2	251.5	16.2	54.7	93.3	13.5	7.3	4.2	1520.70
.12	1.63	2.69	1.20	.065	.048	.065	.000	1520.70	9964.39
.001457	300.	295.	335.	2	25	0	.00	57.12	10021.52

CCHV= .100 CEHV= .300
*SECNO 2.540

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.540	2.70	1531.60	1531.60	.00	1532.25	.65	1.83	.17	1531.10
357.0	11.0	228.1	118.0	5.0	31.5	23.3	8.5	4.8	1528.90
.15	2.20	7.25	5.07	.055	.049	.055	.000	1528.90	9975.14
.023979	490.	487.	495.	0	19	0	.00	47.23	10022.38

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 2.640

2.640	3.45	1541.25	1540.91	.00	1541.84	.59	9.59	.01	1539.40
357.0	79.2	216.2	61.6	18.0	30.5	13.7	9.2	5.3	1537.80
.17	4.41	7.09	4.50	.055	.049	.055	.000	1537.80	9975.89
.015066	500.	508.	525.	5	8	0	.00	32.04	10007.93

*SECNO 2.730
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.730	2.58	1551.78	1551.78	.00	1552.48	.70	9.22	.03	1551.10
357.0	14.1	342.3	.7	6.0	50.2	.4	9.9	5.7	1551.20
.19	2.37	6.82	1.73	.055	.049	.055	.000	1549.20	9977.06
.023950	500.	491.	490.	0	19	0	.00	43.85	10020.91

*SECNO 2.820

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7185 MINIMUM SPECIFIC ENERGY
 720 CRITICAL DEPTH ASSUMED
     2.820      2.09   1564.29   1564.29       .00   1564.98       .69      9.49       .00   1562.70
     357.0       8.7     240.5     107.8       2.6      32.1      23.7      10.6       6.2   1562.30
       .21      3.36      7.49      4.55      .044      .038      .044      .000   1562.20   9986.04
   .015479      510.      500.      490.         0        15         0       .00     41.42  10027.45


*SECNO 2.920
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     2.920      1.59   1575.29   1575.29       .00   1576.00       .70      8.20       .00   1573.80
     357.0       9.9     341.1       6.0       2.8      49.8       1.9      11.2       6.7   1574.00
       .23      3.56      6.85      3.20      .044      .038      .044      .000   1573.70   9982.79
   .018142      495.      490.      490.         0        15         0       .00     40.22  10023.01


*SECNO 2.990
     2.990      2.36   1581.76   1581.63       .00   1582.37       .61      6.36       .01   1580.00
     357.0      18.3     337.6       1.0       5.3      52.9       1.0      11.7       7.1   1581.50
       .25      3.47      6.38      1.00      .044      .038      .044      .000   1579.40   9978.01
   .013252      410.      413.      415.         4        11         0       .00     45.08  10023.09


CCHV=      .100 CEHV=      .300
1
   23OCT95       08:31:08                                                                    PAGE   13

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


*SECNO 3.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1588.80 ELREA=      1588.10

     3.000      5.39   1585.39   1585.39       .00   1588.11      2.72       .64       .64   1580.00
     357.0        .0     357.0        .0        .0      27.0        .0      11.8       7.1   1580.00
       .25       .00     13.25       .00      .000      .038      .000      .000   1580.00   9997.50
   .012140       60.       50.       60.         0        17         0       .00      5.00  10002.50


SPECIAL CULVERT

SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
    1           .024        .80       3.00        .00       5.00        .00     122.00     2          1       1583.00    1580.00

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  1 - HEADWALL

*SECNO 3.030

SPECIAL CULVERT OUTLET CONTROL
EGIC =   1592.004  EGOC =   1593.033  PCWSE=   1585.390  ELTRD=   1593.000


3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.64

PECIAL CULVERT
```

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1592.00	1593.03	4.92	0.	239.	4.952	19.6	1593.00	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1593.70 ELREA= 1593.70

3.030	9.65	1592.65	.00	.00	1593.03	.38	4.92	.00	1583.00
239.0	.0	239.0	.0	.0	48.3	.0	11.9	7.1	1583.00
.26	.00	4.95	.00	.000	.038	.000	.000	1583.00	9997.50
.000780	130.	122.	130.	2	0	0	.00	5.00	10002.50

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3.040

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 5.89

3.040	8.07	1593.07	1587.39	.00	1593.08	.01	.01	.04	1586.00
325.0	149.4	149.2	26.5	270.7	158.2	53.7	12.4	7.2	1586.00
.29	.55	.94	.49	.046	.039	.046	.000	1585.00	9918.03
.000042	85.	84.	90.	2	11	0	.00	120.73	10038.76

CCHV= .100 CEHV= .300
*SECNO 3.110
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.110	1.74	1593.94	1593.94	.00	1594.27	.33	.05	.10	1593.90
302.0	59.2	215.1	27.7	19.5	42.7	7.5	14.4	8.0	1593.90
.31	3.03	5.04	3.69	.046	.039	.046	.000	1592.20	9940.70
.020362	300.	339.	300.	0	16	0	.00	95.55	10036.25

*SECNO 3.190
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.190	1.89	1603.29	1603.29	.00	1603.96	.67	8.80	.10	1601.40
302.0	48.1	239.5	14.5	11.6	33.7	4.3	15.0	8.7	1601.90
.33	4.14	7.10	3.34	.046	.039	.046	.000	1601.40	9987.69
.018026	470.	458.	450.	0	8	0	.00	39.15	10026.84

*SECNO 3.250
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.250	2.29	1609.49	1609.49	.00	1610.01	.52	4.24	.01	1607.20
302.0	22.0	180.3	99.7	6.1	25.7	30.7	15.4	9.1	1607.30
.35	3.59	7.01	3.25	.046	.039	.046	.000	1607.20	9983.15
.011550	295.	295.	310.	0	8	0	.00	64.45	10047.61

*SECNO 3.300
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.300	1.72	1616.62	1616.62	.00	1617.34	.72	3.79	.06	1615.10
302.0	10.5	275.7	15.8	3.0	39.2	4.5	15.8	9.4	1615.10
.36	3.44	7.04	3.53	.046	.039	.046	.000	1614.90	9990.50
.017948	250.	262.	290.	0	15	0	.00	34.11	10024.61

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
3.330	3.83	1626.83	1626.83	.00	1628.77	1.94	2.58	.61	1623.00
214.0	.0	214.0	.0	.0	19.2	.0	15.9	9.5	1623.00
.36	.00	11.17	.00	.000	.039	.000	.000	1623.00	9997.50
.014338	175.	158.	150.	0	17	0	.00	5.00	10002.50

CCHV= .300 CEHV= .500
*SECNO 3.330

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1633.00 ELREA= 1633.60

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.024	.80	3.00	.00	5.00	.00	140.00	2	1	1628.00	1623.00

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 1 - HEADWALL

*SECNO 3.360
5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG = 1633.89

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 4.30

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1635.82	1636.33	5.12	74.	137.	3.404	19.6	1633.00	74.

3.360	5.79	1633.79	.00	.00	1633.89	.11	5.12	.00	1628.00
213.0	88.3	98.5	26.2	53.0	28.9	17.7	16.1	9.5	1628.00
.38	1.67	3.40	1.48	.046	.039	.046	.000	1628.00	9973.00
.000768	150.	140.	140.	2	0	0	.00	38.04	10011.04

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
3.420	2.95	1635.45	1635.45	.00	1635.90	.45	1.09	.10	1634.50
495.0	136.8	328.3	29.9	51.4	52.3	7.4	16.9	10.2	1632.50

CCHV= .100 CEHV= .300
*SECNO 3.420
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.39	2.66	6.27	4.01	.046	.039	.046	.000	1632.50	9907.63
.011199	340.	325.	340.	0	8	0	.00	124.33	10031.95

*SECNO 3.470

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 3.44

3.470	2.97	1636.47	1635.30	.00	1636.53	.05	.59	.04	1634.70
495.0	147.8	327.9	19.4	112.4	158.6	15.4	18.1	10.9	1633.50
.43	1.31	2.07	1.26	.046	.039	.046	.000	1633.50	9988.74
.000944	240.	272.	210.	4	11	0	.00	152.20	10140.94

*SECNO 3.510
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.510	2.17	1638.87	1638.87	.00	1639.37	.50	.50	.14	1637.90
463.0	107.4	329.2	26.4	34.0	51.4	6.5	19.0	11.5	1636.70
.44	3.16	6.41	4.08	.046	.039	.046	.000	1636.70	9915.24
.015574	220.	218.	150.	0	19	0	.00	90.74	10005.98

*SECNO 3.610
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.610	2.95	1648.95	1648.95	.00	1649.51	.56	7.04	.02	1646.90
463.0	111.8	350.3	1.0	32.7	52.9	1.0	20.0	12.5	1648.70
.47	3.42	6.62	.93	.046	.039	.046	.000	1646.00	9937.73
.013301	450.	501.	540.	0	11	0	.00	90.70	10028.42

*SECNO 3.690

3265 DIVIDED FLOW

185 MINIMUM SPECIFIC ENERGY

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3720 CRITICAL DEPTH ASSUMED

3.690	2.88	1658.28	1658.28	.00	1658.79	.51	6.72	.00	1656.80
463.0	14.8	247.5	200.7	4.5	35.6	51.3	20.9	13.5	1658.50
.49	3.29	6.95	3.91	.046	.039	.046	.000	1655.40	9949.43
.016137	490.	465.	425.	0	5	0	.00	88.15	10047.01

*SECNO 3.750
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.750	2.24	1665.24	1665.24	.00	1665.94	.70	4.65	.06	1663.40
463.0	71.4	323.9	67.7	19.3	42.7	16.0	21.5	14.0	1663.00
.50	3.70	7.59	4.24	.046	.039	.046	.000	1663.00	9965.13
.014725	310.	301.	300.	0	12	0	.00	55.85	10020.98

*SECNO 3.820
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.820	3.00	1672.80	1672.80	.00	1673.69	.89	6.09	.06	1671.00
463.0	194.9	254.7	13.3	33.5	28.9	3.7	22.2	14.4	1671.00
.52	5.82	8.80	3.64	.046	.039	.046	.000	1669.80	9973.03
.016481	390.	392.	390.	0	11	0	.00	37.04	10010.07

*SECNO 3.880
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.880	1.77	1681.37	1681.37	.00	1682.06	.69	4.70	.02	1679.80
463.0	35.5	391.6	35.9	9.3	55.5	9.3	22.6	14.7	1679.60
.53	3.81	7.05	3.86	.046	.039	.046	.000	1679.60	9977.05
.017037	250.	289.	310.	0	11	0	.00	54.55	10031.60

CCHV= .300 CEHV= .500
*SECNO 3.900

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1701.60 ELREA= 1702.70

3.900	5.40	1693.20	1693.20	.00	1695.82	2.61	1.77	.96	1689.33
335.0	.0	335.0	.0	.0	25.8	.0	22.7	14.7	1689.33
.53	.00	12.97	.00	.000	.039	.000	.000	1687.80	9997.50
.021770	90.	95.	80.	0	20	0	.00	5.00	10002.50

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	3.85	2.80	.00	2.94	.01	16.80	.10	1689.28	1687.83

*SECNO 3.940

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 3.88

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1702.28	1695.82	.10	0.	207.	17.	13.	1693.28	1708.20	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1708.20 ELREA= 1709.30

3.940	12.91	1702.11	.00	.00	1702.28	.16	6.46	.00	1690.78
207.0	.0	207.0	.0	.0	63.7	.0	22.9	14.8	1690.78
.55	.00	3.25	.00	.000	.046	.000	.000	1689.20	9997.50
.000553	200.	216.	240.	2	0	0	.00	5.00	10002.50

CCHV= .100 CEHV= .300
*SECNO 3.950

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 15.21

3.950	11.29	1702.29	1692.35	.00	1702.30	.00	.00	.02	1691.30
326.0	92.8	200.7	32.5	417.4	514.9	198.0	24.6	15.0	1691.70

.64	.22	.39	.16	.062	.046	.062	.000	1691.00	9930.21
.000006	190.	86.	75.	2	24	0	.00	167.52	10097.74

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 4.010

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .14

4.010	5.28	1702.28	1698.98	.00	1702.31	.03	.01	.01	1697.60
326.0	108.6	190.2	27.2	120.4	113.2	35.4	29.4	15.9	1697.00
.70	.90	1.68	.77	.062	.046	.062	.000	1697.00	9937.59
.000310	300.	301.	310.	2	25	0	.00	86.70	10024.29

*SECNO 4.070

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

4.070	2.01	1707.71	1707.71	.00	1708.35	.64	.31	.18	1705.70
326.0	89.3	178.8	57.9	20.8	23.0	15.1	30.6	16.4	1705.70
.71	4.28	7.79	3.84	.062	.046	.062	.000	1705.70	9970.09
.022859	290.	317.	325.	0	22	0	.00	44.82	10014.91

THIS RUN EXECUTED 23OCT95 08:31:11

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	2.100	907.00	9828.03	10052.33	1501.76	1501.76	.90	.48	1.76
*	2.100	907.00	9828.03	10052.33	1501.80	1501.80	.85	.44	1.80
	2.280	907.00	9833.25	10040.52	1508.09	1507.89	.76	.38	2.69
	2.280	907.00	9833.56	10039.92	1508.04	1507.89	.80	.41	2.64
	2.300	907.00	9917.20	10089.06	1510.56	1510.44	.87	.42	3.36
	2.300	907.00	9917.21	10089.06	1510.59	1510.45	.84	.39	3.39
	2.350	907.00	9708.99	10005.00	1514.20	1514.09	.75	.40	3.40
	2.350	907.00	9708.95	10005.00	1514.25	1514.01	.62	.30	3.45
*	2.390	529.00	9970.97	10032.21	1524.18	.00	.13	.04	9.32
*	2.390	529.00	9971.03	10032.17	1524.17	.00	.13	.04	9.31
*	2.450	357.00	9964.39	10021.52	1524.29	1522.41	.26	.09	3.59
*	2.450	357.00	9964.48	10021.43	1524.28	1522.41	.26	.09	3.58
*	2.540	357.00	9975.14	10022.38	1531.60	1531.60	.92	.65	2.70
*	2.540	357.00	9975.47	10022.04	1531.58	1531.58	.92	.67	2.68
	2.640	357.00	9975.89	10007.93	1541.25	1540.91	.77	.59	3.45
	2.640	357.00	9975.86	10007.95	1541.26	1540.91	.76	.59	3.46
*	2.730	357.00	9977.06	10020.91	1551.78	1551.78	.90	.70	2.58
*	2.730	357.00	9977.05	10020.92	1551.78	1551.78	.90	.69	2.58
*	2.820	357.00	9986.04	10027.45	1564.29	1564.29	.95	.69	2.09
*	2.820	357.00	9986.17	10027.31	1564.29	1564.29	.95	.68	2.09
*	2.920	357.00	9982.79	10023.01	1575.29	1575.29	.99	.70	1.59
*	2.920	357.00	9982.80	10023.00	1575.30	1575.30	.98	.69	1.60

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
	2.990	357.00	9978.01	10023.09	1581.76	1581.63	.86	.61	2.36
	2.990	357.00	9978.05	10022.79	1581.75	1581.63	.87	.62	2.35
*	3.000	357.00	9997.50	10002.50	1585.39	1585.39	1.01	2.72	5.39
*	3.000	357.00	9997.50	10002.50	1585.39	1585.39	1.01	2.72	5.39
*	3.030	239.00	9997.50	10002.50	1592.65	.00	.28	.38	9.65
*	3.030	239.00	9997.50	10002.50	1592.65	.00	.28	.38	9.65
*	3.040	325.00	9918.03	10038.76	1593.07	1587.39	.06	.01	8.07
*	3.040	325.00	9918.20	10038.30	1593.07	1587.39	.06	.01	8.07
*	3.110	302.00	9940.70	10036.25	1593.94	1593.94	.94	.33	1.74
*	3.110	302.00	9941.32	10036.03	1593.90	1593.90	1.01	.37	1.70
*	3.190	302.00	9987.69	10026.84	1603.29	1603.29	.98	.67	1.89
*	3.190	302.00	9987.73	10026.81	1603.28	1603.28	.98	.68	1.88
*	3.250	302.00	9983.15	10047.61	1609.49	1609.49	.83	.52	2.29
*	3.250	302.00	9983.29	10046.32	1609.48	1609.48	.83	.53	2.28
*	3.300	302.00	9990.50	10024.61	1616.62	1616.62	.97	.72	1.72
*	3.300	302.00	9990.54	10024.55	1616.63	1616.63	.96	.70	1.73
	3.330	214.00	9997.50	10002.50	1626.83	1626.83	1.01	1.94	3.83
*	3.330	214.00	9997.50	10002.50	1626.83	1626.83	1.01	1.94	3.83
*	3.360	213.00	9973.00	10011.04	1633.79	.00	.25	.11	5.79
*	3.360	213.00	9973.18	10002.50	1633.78	.00	.22	.11	5.78
*	3.420	495.00	9907.63	10031.95	1635.45	1635.45	.79	.45	2.95
*	3.420	495.00	9908.60	10031.96	1635.45	1635.45	.79	.45	2.95
*	3.470	495.00	9988.74	10140.94	1636.47	1635.30	.24	.05	2.97
*	3.470	495.00	9988.74	10140.93	1636.47	1635.30	.24	.05	2.97
*	3.510	463.00	9915.24	10005.98	1638.87	1638.87	.90	.50	2.17
*	3.510	463.00	9915.29	10005.95	1638.87	1638.87	.90	.50	2.17
*	3.610	463.00	9937.73	10028.42	1648.95	1648.95	.85	.56	2.95
*	3.610	463.00	9937.84	10027.71	1648.95	1648.95	.85	.56	2.95
*	3.690	463.00	9949.43	10047.01	1658.28	1658.28	.94	.51	2.88
*	3.690	463.00	9949.76	10046.74	1658.31	1658.31	.91	.48	2.91
*	3.750	463.00	9965.13	10020.98	1665.24	1665.24	.92	.70	2.24
*	3.750	463.00	9965.97	10020.18	1665.24	1665.24	.92	.70	2.24
*	3.820	463.00	9973.03	10010.07	1672.80	1672.80	.99	.89	3.00
*	3.820	463.00	9973.00	10010.08	1672.81	1672.81	.98	.88	3.01

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	3.880	463.00	9977.05	10031.60	1681.37	1681.37	.96	.69	1.77
*	3.880	463.00	9977.14	10031.45	1681.39	1681.39	.94	.67	1.79
*	3.900	335.00	9997.50	10002.50	1693.20	1693.20	1.01	2.61	5.40
*	3.900	335.00	9997.50	10002.50	1693.20	1693.20	1.01	2.61	5.40
*	3.940	207.00	9997.50	10002.50	1702.11	.00	.16	.16	12.91
*	3.940	207.00	9997.50	10002.50	1702.12	.00	.16	.16	12.92
*	3.950	326.00	9930.21	10097.74	1702.29	1692.35	.02	.00	11.29
*	3.950	326.00	9930.21	10097.70	1702.30	1692.35	.02	.00	11.30
*	4.010	326.00	9937.59	10024.29	1702.28	1698.98	.13	.03	5.28
*	4.010	326.00	9937.56	10024.30	1702.28	1698.98	.13	.03	5.28
*	4.070	326.00	9970.09	10014.91	1707.71	1707.71	.97	.64	2.01
*	4.070	326.00	9970.08	10014.92	1707.72	1707.72	.97	.63	2.02

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=      2.100  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.100  PROFILE=  2  CRITICAL DEPTH ASSUMED

WARNING SECNO=      2.390  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.390  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      2.450  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.450  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      2.540  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.540  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.540  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.540  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      2.730  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.730  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.730  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.730  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      2.820  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.820  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.820  PROFILE=  2  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      3.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      3.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      3.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      3.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      3.030  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.030  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      3.040  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.040  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      3.110  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      3.110  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      3.110  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      3.110  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      3.190  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      3.190  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      3.250  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=     3.250  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     3.250  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     3.250  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=     3.300  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     3.300  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=     3.300  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=     3.330  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     3.330  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     3.330  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     3.330  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=     3.360  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     3.360  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     3.420  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     3.420  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     3.420  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     3.420  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=     3.470  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     3.470  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     3.510  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     3.510  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     3.510  PROFILE=  2  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=     3.610  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     3.610  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=     3.690  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=     3.750  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=     3.820  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=     3.880  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     3.880  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     3.880  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     3.880  PROFILE=  2  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=      3.900  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      3.900  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      3.900  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      3.900  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      3.940  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.940  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      3.950  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.950  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      4.010  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      4.010  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      4.070  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      4.070  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      4.070  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      4.070  PROFILE=  2  MINIMUM SPECIFIC ENERGY
```

FLOODWAY DATA, Fountain Hills (south) -
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
2.100	224.	215.	4.2	1501.8	1501.8	.0
2.280	206.	206.	4.4	1508.1	1508.1	.0
2.300	172.	215.	4.2	1510.6	1510.6	.0
2.350	296.	237.	3.8	1514.2	1514.2	.0
2.390	61.	365.	1.4	1524.2	1524.2	.0
2.450	57.	161.	2.2	1524.3	1524.3	.0
2.540	47.	59.	6.0	1531.6	1531.6	.0
2.640	32.	62.	5.7	1541.3	1541.3	.0
2.730	44.	57.	6.3	1551.8	1551.8	.0
2.820	41.	59.	6.1	1564.3	1564.3	.0
2.920	40.	55.	6.5	1575.3	1575.3	.0
2.990	45.	59.	6.1	1581.8	1581.8	.0
3.000	5.	27.	13.2	1585.4	1585.4	.0
3.030	5.	48.	5.0	1592.7	1592.7	.0
3.040	120.	483.	.7	1593.1	1593.1	.0
3.110	95.	66.	4.6	1593.9	1593.9	.0
3.190	39.	49.	6.1	1603.3	1603.3	.0
3.250	63.	62.	4.8	1609.5	1609.5	.0
3.300	34.	47.	6.4	1616.6	1616.6	.0
3.330	5.	19.	11.2	1626.8	1626.8	.0
3.360	29.	82.	2.6	1633.8	1633.8	.0
3.420	123.	111.	4.4	1635.4	1635.4	.0
3.470	152.	286.	1.7	1636.5	1636.5	.0
3.510	91.	92.	5.0	1638.9	1638.9	.0
3.610	90.	87.	5.3	1649.0	1649.0	.0
3.690	97.	94.	4.9	1658.3	1658.3	.0
3.750	54.	78.	6.0	1665.2	1665.2	.0
3.820	37.	67.	7.0	1672.8	1672.8	.0
3.880	54.	75.	6.2	1681.4	1681.4	.0
3.900	5.	26.	13.0	1693.2	1693.2	.0
3.940	5.	64.	3.3	1702.1	1702.1	.0
3.950	167.	1131.	.3	1702.3	1702.3	.0
4.010	87.	269.	1.2	1702.3	1702.3	.0
4.070	45.	59.	5.5	1707.7	1707.7	.0

MALTA DRAIN

FOUNTAIN HILLS SOUTH
Malta Drain

X-Sec	HEC-1 Conc. Point	100-Yr Discharge (cfs)	Left Overbank Lenght (ft)	Rigth Overbank Lenght (ft)	Channel Lenght (ft)	COMMENT
0.00	MLT6	466				Malta Emereald confluenc
0.03			200	170	180	Culvert outlet
0.06	SMLT5	440	135	190	132	Culvert inlet
0.07	MLT5	431	75	75	80	
0.16			420	440	429	
0.17			55	70	58	
0.18	MLT4	366	80	75	73	
0.19			45	35	37	Rand Dr.
0.27			440	430	430	
0.36			505	490	500	
0.40			175	160	173	
0.41			75	60	70	
0.42			50	25	35	
0.46			240	255	240	
0.47			50	75	51	
0.48			45	50	46	
0.55			365	400	371	
0.56			75	90	51	
0.57			50	45	35	
0.64			360	400	364	
0.65			65	100	56	
0.66			70	65	67	
0.71			280	270	269	
0.72			50	100	52	
0.73			30	30	33	
0.78			300	325	301	

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    23OCT95    TIME   08:50:16   *
*********************************************
```

```
****************************************
*  U.S. ARMY CORPS OF ENGINEERS        *
*  HYDROLOGIC ENGINEERING CENTER       *
*  609 SECOND STREET, SUITE D          *
*  DAVIS, CALIFORNIA 95616-4687        *
*          (916) 756-1104              *
****************************************
```

```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
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THIS RUN EXECUTED 23OCT95 08:50:16

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**************************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
**************************************


T1      Fountain Hills (South) - Floodplain Delineation        File MALTA.H2
T1      For the Flood Control District of Maricopa County
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - MALTA DRAIN

T4 GR data from stereo model received October 93 from KAM
T4 Revised photogrametric x-sec. received May 94
T5 1"=200' 2-feet Contour mapping from KAM flown 8-91
T6 with survey control by Anderson Nelson 12-11-92, field survey Aug 91
T7 Supplemental cross section data surveyed by Valco Surveing
T8 Source of 100-yr flowrate from HEC-1 Analysis by AGK Enginers
T8            File 130-6CE.DAT
T9 Subcritical analysis
T9 This model was developed and configured to determine water surface elevation
T9 for a 100-year floodplain delineation study, Velocity from this model
T9 may not be accurate and should not be used


J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                             0.03                                  1510

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      1                                                           -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        43        53        54         1         2        68        10         8        200

  Starting conditions normal depth
  Malta Drain flow used
  Tributary area and time of concentration considerably different

  Conc. point MLT6 Flow upstream from Emeral confluence

QT        2       466       466
NC     .065       .065      .048        .1        .3

ET                           9.1                                                  9918.6    10087.37
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```
X1     0.00        26      9992.6    10006.5
GR   1532.7    9695.2    1529.1     9730.0    1524.6    9774.1    1521.3    9812.7    1519.4    9829.8
GR   1517.7    9850.4    1517.2     9871.2    1515.9    9905.1    1509.9    9918.7    1510.1    9940.5
GR   1509.7    9961.9    1508.3     9973.0    1509.6    9978.1    1509.3    9992.6    1507.2   10000.0
GR   1508.7   10006.5    1509.2    10040.7    1509.7   10086.7    1516.7   10105.9    1520.2   10118.7
GR   1521.4   10132.7    1521.9    10162.4    1521.9   10215.4    1521.5   10251.0    1520.7   10275.1
GR   1520.3   10306.4

NC     .065      .065      .048        .3        .5

  Culvert MLT1 outlet
ET                        9.1                                                          9990.8   10018.6
X1     0.03        18     9990.7    10018.6       200       170       180
  Assuming overtoping contained within channel
X3                                                  10041.5
GR   1532.7    9794.2    1531.0     9819.5    1528.4    9862.0    1527.7    9883.0    1526.4    9890.7
GR   1524.9    9931.9    1523.8     9980.2    1512.6    9990.7    1512.3   10000.0    1512.2   10005.1
GR   1513.6   10018.6    1516.3    10041.5    1516.3   10055.0    1515.9   10076.3    1515.9   10113.8
GR   1514.7   10148.0    1513.4    10177.7    1512.3   10212.0

  Culvert MLT1 2 CMP 48" X 132' Saguaro Blvd.
  Conc. point SMLT5 Flow Through the culvert

QT       2       440       440
S    2.020       0.8       3.0                  4                  132       2.1   1516.23   1513.97

  Culvert MLT1 inlet
ET                        9.1                                                          9987.5   10024.38
X1     0.06        26     9995.5    10004.5       135       190       132
X2                        2
X3       10                                                                 1524.4      1524
BT       -4    9812.4    1538.9                  9965   1525.22                10050   1522.7
BT          10098.7      1528
GR   1538.3    9749.8    1538.8     9772.5    1539.2    9799.5    1538.9    9812.4    1532.0    9945.7
GR   1530.0    9956.9    1528.0     9963.2    1524.0    9974.5    1522.0    9980.2    1520.0    9986.1
GR   1516.2    9995.5    1516.23   10000.0    1516.23   10004.5    1520.0   10011.7    1522.0   10017.5
GR   1524.0   10023.8    1526.0    10029.7    1528.0   10098.7    1527.6   10125.5    1527.9   10163.0
GR   1527.1   10191.8    1529.0    10215.9    1529.6   10235.0    1529.3   10256.6    1530.6   10264.8
GR   1531.1   10289.9

QT       2       431       431

ET                        9.1                                                          9984.37  10025.6
X1     0.07        23     9992.8    10008.3        75        75        80
GR   1539.8    9801.6    1539.1     9841.9    1531.7    9857.4    1531.7    9864.8    1531.8    9886.5
GR   1531.6    9929.6    1531.7     9972.4    1519.0    9992.8    1519.0   10000.0    1519.0   10005.1
GR   1520.0   10008.3    1520.2    10017.2    1526.9   10031.1    1527.7   10046.2    1527.8   10123.1
GR   1528.0   10137.9    1528.5    10152.9    1529.8   10171.6    1529.0   10184.8    1530.3   10211.5
GR   1530.5   10245.6    1533.1    10256.5    1542.6   10279.2
```

```
NC                                        .1        .3

ET                          9.1                                                 9986    10017.72
X1      0.16          16    9990.3    10012.9       420       440       429
GR    1544.6      9834.8    1545.2     9877.4    1541.4    9889.0    1540.8    9944.4    1540.9     9967.7
GR    1538.6      9977.4    1532.4     9990.3    1532.4   10000.0    1532.3   10012.9    1536.8    10022.9
GR    1536.7     10034.1    1537.9    10053.9    1539.9   10057.5    1541.2   10081.2    1540.9    10140.8
GR    1541.5     10157.4

NC                                        .2        .4

ET                          9.1                                                 9989.61  10012.03
X1      0.17          19    9995.4    10005.2        55        70        58
GR    1544.2      9822.3    1543.3     9872.0    1541.5    9880.7    1540.9    9911.4    1540.6     9941.5
GR    1541.7      9950.2    1539.9     9960.2    1538.5    9986.3    1533.2    9995.4    1533.2    10000.0
GR    1533.2     10005.2    1537.0    10012.9    1538.7   10038.5    1540.0   10076.8    1540.8    10107.0
GR    1543.0     10126.5    1543.4    10141.0    1542.6   10147.8    1543.0   10155.7

  Conc. point MLT4 Flow upstream from Rand Dr.

QT          2         366       366

ET                          9.1                                                 9975.1   10014.31
Y       0.18          32    9984.0    10009.5        80        75        73
        1550.0      9692.3    1549.8     9696.7    1546.6    9704.9    1546.9    9714.7    1546.3     9725.4
GR    1546.9      9730.2    1546.5     9767.4    1546.5    9804.2    1546.7    9834.2    1546.4     9853.2
GR    1541.9      9868.3    1541.5     9886.0    1540.7    9901.3    1541.7    9909.8    1543.5     9919.7
GR    1544.0      9934.3    1543.6     9951.7    1541.7    9967.6    1537.2    9984.0    1537.8     9993.1
GR    1538.1     10000.0    1538.2    10009.5    1542.1   10022.5    1543.9   10045.5    1544.0    10064.3
GR    1544.8     10097.1    1542.6    10109.8    1543.2   10125.4    1543.7   10144.4    1546.8    10155.7
GR    1547.8     10166.7    1550.4    10194.4

ET                          9.1                                                 9983    10017.09
X1      0.19          22    9988.2    10012.0        45        35        37
GR    1550.1      9822.4    1550.0     9827.7    1546.2    9839.5    1546.7    9853.8    1545.9     9874.6
GR    1547.1      9878.6    1547.3     9916.3    1546.8    9957.3    1546.4    9970.8    1538.6     9988.2
GR    1539.0     10000.0    1539.0    10012.0    1542.8   10022.0    1544.4   10034.3    1544.2    10045.0
GR    1544.4     10061.4    1545.1    10091.3    1542.9   10103.1    1543.3   10114.8    1543.6    10133.9
GR    1546.2     10141.2    1548.6    10172.1

NC                                        .1        .3

ET                          9.1                                                 9984.39  10017.01
X1      0.27          21    9994.9    10008.1       440       430       430
GR    1558.4      9805.8    1558.6     9816.0    1558.2    9832.6    1558.8    9834.6    1558.1     9876.9
GR    1557.5      9911.5    1556.7     9943.4    1555.9    9972.3    1551.7    9980.5    1547.2     9989.4
GR    1547.3      9994.9    1545.7    10000.0    1547.4   10008.1    1552.4   10027.2    1551.4    10034.0
GR    1551.3     10042.2    1550.2    10063.2    1552.2   10076.0    1552.7   10088.6    1556.8    10116.5
GR    1561.2     10147.1
```

ET			9.1						9985.9	10069.03
X1	0.36	25	9988.2	10010.4	505	490	500			
GR	1572.8	9804.0	1573.1	9818.9	1571.5	9832.4	1571.1	9849.8	1571.0	9888.7
GR	1569.6	9910.4	1568.6	9941.6	1567.5	9972.8	1563.6	9980.3	1558.8	9988.2
GR	1557.9	10000.0	1558.2	10010.4	1562.2	10026.3	1562.3	10034.5	1560.7	10039.7
GR	1561.1	10046.1	1560.7	10061.2	1559.7	10066.4	1561.1	10073.8	1562.6	10086.7
GR	1563.0	10104.7	1562.6	10157.8	1566.2	10174.7	1572.0	10204.0	1577.2	10235.3

ET			9.1						9985.78	10072.6
NC				.3	.5					
X1	0.40	19	9989.7	10014.2	175	160	173			
GR	1572.5	9832.0	1572.8	9865.5	1572.3	9907.6	1571.9	9939.8	1571.0	9973.2
GR	1562.5	9989.7	1562.4	10000.0	1562.2	10014.2	1565.0	10026.4	1563.8	10040.3
GR	1564.2	10052.2	1563.2	10066.7	1565.3	10076.1	1566.1	10085.6	1565.6	10109.2
GR	1564.9	10139.9	1571.2	10156.9	1576.4	10172.1	1580.0	10185.5		

Quinto Dr.

ET			9.1						9966.61	10067.33
X1	0.41	13	10000	10038.7	75	60	70			
[illegible]	1572.0	9764.3	1570.0	9849.7	1568.0	9933.6	1567	10000.0	1566.0	10025.8
[illegible]	1566.0	10038.7	1568.0	10076.8	1570.0	10102.2	1572.0	10115.3	1574.0	10125.4
GR	1576.0	10135.1	1578.0	10144.8	1580.0	10154.5				

ET			9.1						9982.33	10077.5
NC	.047	.047	.035							
X1	0.42	24	9990.7	10012.4	50	25	35			
GR	1580.8	9759.7	1576.9	9774.0	1576.4	9812.0	1572.4	9831.7	1572.1	9857.3
GR	1570.8	9865.3	1572.0	9875.2	1572.3	9907.6	1572.3	9928.0	1571.2	9933.5
GR	1572.6	9945.3	1572.0	9974.3	1563.9	9990.7	1563.7	10000.0	1564.0	10012.4
GR	1568.0	10022.7	1566.9	10032.5	1566.7	10051.6	1564.7	10065.6	1566.3	10071.1
GR	1570.6	10087.0	1573.7	10104.8	1578.8	10133.4	1581.3	10147.2		

ET			9.1						9981.12	10008.57
X1	0.46	31	9992.4	10002.8	240	255	240			
GR	1588.7	9672.7	1586.4	9678.3	1586.3	9713.8	1586.5	9746.5	1586.5	9786.4
GR	1584.4	9794.1	1584.2	9828.9	1584.1	9857.2	1581.5	9863.5	1581.2	9897.7
GR	1581.4	9925.3	1581.1	9942.3	1580.2	9964.6	1574.5	9975.8	1570.0	9983.2
GR	1569.6	9992.4	1568.2	10000.0	1568.2	10002.8	1574.1	10013.9	1574.2	10024.3
GR	1572.0	10029.1	1572.5	10037.9	1572.8	10051.1	1571.9	10061.2	1575.2	10073.1
GR	1579.4	10089.9	1579.5	10129.1	1579.7	10164.9	1587.0	10179.5	1593.5	10190.9
GR	1594.8	10199.2								

Mission Bell Court

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ET                          9.1                                                 9988.6      10073
X1    0.47        15      9970.3    10006.1       50        75        51
GR  1584.0    9824.8      1582.0     9880.5   1580.0    9925.1    1578.0    9970.3    1576.3    10000.0
GR  1576.0   10006.1      1576.0    10068.9   1578.0   10077.5    1580.0   10086.2    1582.0    10095.9
GR  1582.0   10107.7      1582.0    10178.5   1584.0   10182.3    1586.0   10186.2    1588.0    10190.0

ET                          9.1                                                 9976.7      10077.5
X1    0.48        21      9984.6    10016.1       45        50        46
GR  1583.3    9843.8      1586.2     9853.8   1588.5    9869.0    1588.7    9889.9    1581.5     9905.0
GR  1582.2    9933.6      1582.8     9967.7   1572.9    9984.6    1572.7   10000.0    1572.7    10016.1
GR  1575.8   10024.0      1575.9    10036.4   1576.2   10053.0    1575.6   10070.3    1580.4    10088.6
GR  1581.6   10097.0      1581.3    10133.1   1581.4   10190.2    1589.5   10203.1    1597.4    10218.3
GR  1597.9   10229.0

ET                          9.1                                                 9984.54     10013.66
X1    0.55        21      9987.5    10025.5      365       400       371
GR  1596.4    9727.2      1595.4     9756.9   1595.4    9807.2    1595.5    9848.0    1593.3     9854.2
GR  1592.6    9866.8      1591.4     9876.3   1590.4    9903.0    1592.3    9947.1    1590.5     9974.4
GR  1583.9    9987.5      1582.5    10000.0   1587.9   10025.5    1586.5   10035.8    1586.6    10069.2
GR  1591.8   10089.6      1594.4    10115.6   1596.3   10140.0    1597.4   10157.8    1598.5    10176.2
GR  1598.6   10191.4

   n Ridge Court

ET                          9.1                                                 9934.14     10074.8
X1    0.56        13      9998.4    10070.1       75        90        51
GR  1598.0    9822.9      1598.0     9836.0   1596.0    9841.3    1594.0    9846.6    1592.0     9852.0
GR  1590.0    9998.4        1590    10000.0   1590.0   10070.1    1592.0   10081.2    1594.0    10090.6
GR  1596.0   10099.8      1598.0    10167.9   1598.0   10193.7

ET                          9.1                                                 9855.6      10076
X1    0.57        20      9983.6    10025.4       50        45        35
GR  1596.5    9748.1      1596.7     9778.6   1596.0    9837.7    1590.6    9858.1    1590.6     9886.2
GR  1590.2    9907.9      1592.0     9921.8   1592.9    9940.3    1593.4    9971.0    1585.9     9983.6
GR  1586.0   10000.0      1590.3    10025.4   1588.6   10034.8    1588.6   10066.6    1596.1    10093.0
GR  1596.4   10151.5      1599.0    10174.4   1597.2   10189.7    1597.4   10204.1    1596.9    10209.0

  Culvert outlet MLT5

NC     .057      .057       .035
ET                          9.1                                                 9980.27     10010.05
X1    0.64        16      9983.7    10015.9       360       400       364
GR  1609.0    9889.3      1605.0     9899.5   1604.6    9933.6    1603.4    9967.4    1595.0     9983.7
GR  1594.3   10000.0      1598.2    10015.9   1598.7   10029.4    1597.5   10035.6    1597.7    10066.7
GR  1600.2   10092.6      1603.2    10113.0   1605.5   10132.4    1606.9   10158.6    1607.7    10191.8
GR  1607.5   10210.8

  Oasis Dr.
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ET                          9.1                                                 9969.5    10081.1
X1      0.65        12      9972    10083.3      65       100        56
GR    1608.0    9885.4    1606.0     9913.4   1604.0    9945.3   1602.0    9972.0    1601.0    10000.0
GR    1602.0   10083.3    1604.0    10102.6   1606.0   10117.9   1608.0   10132.9    1610.0    10148.7
GR    1612.0   10202.7    1614.0    10276.6
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Culvert inlet MLT5

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ET                          9.1                                                 9981.32   10092.6
X1      0.66        19    9972.6    10021.6      70        65        67
GR    1614.7    9804.6    1610.2     9821.9   1609.8    9853.9   1605.5    9903.6    1604.9     9934.8
GR    1605.5    9972.6    1596.9    10000.0   1599.9   10021.6   1600.3   10030.9    1599.8    10039.9
GR    1599.7   10072.1    1603.8    10100.4   1607.5   10128.0   1610.2   10153.9    1611.3    10179.6
GR    1611.6   10203.0    1611.9    10228.9   1613.1   10260.9   1613.9   10264.0
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Culvert outlet MLT6

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ET                          9.1                                                 9988.96   10016.12
X1      0.71        20    9968.9    10023.4      280       270       269
GR    1618.6    9772.2    1618.6     9813.5   1618.7    9843.3   1615.6    9855.6    1614.7     9902.9
GR    1614.9    9948.7    1614.6     9968.9   1604.7   10000.0   1609.8   10023.4    1609.7    10031.8
GR    1608.6   10036.9    1608.3    10069.9   1610.9   10091.8   1611.9   10104.7    1617.0    10154.4
GR    1620.0   10189.1    1619.7    10217.8   1619.7   10244.5   1619.8   10271.4    1620.3    10273.5
```

tingale Cir.

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ET                          9.1                                                 9980.9    10086.3
X1      0.72        11      9990    10080.2       50       100        52
GR    1620.0    9801.0    1618.0     9809.8   1616.0    9868.7   1614.0    9938.1    1612.0     9990.0
GR    1611.1   10000.0    1612.0    10080.2   1614.0   10115.0   1616.0   10131.6    1618.0    10149.2
GR    1620.0   10166.8
```

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ET                          9.1                                                 9972.21   10097.1
X1      0.73        18    9982.7    10010.5       30        30        33
GR    1619.3    9817.9    1615.3     9852.9   1616.0    9881.3   1616.2    9902.8    1616.0     9940.0
GR    1616.3    9965.7    1607.3     9982.7   1608.3   10000.0   1611.8   10010.5    1610.3    10032.1
GR    1610.5   10063.6    1611.0    10075.5   1613.6   10106.0   1616.4   10120.9    1619.8    10150.5
GR    1620.5   10173.6    1620.2    10202.4   1620.3   10211.3
```

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NC                                      .1        .3
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ET                          9.1                                                 9990.91   10012.5
X1      0.78        20    9976.1    10021.3      300       325       301
GR    1624.2    9775.0    1626.8     9791.9   1627.4    9842.4   1626.5    9866.5    1623.4     9876.0
GR    1623.4    9933.7    1622.9     9976.1   1612.1   10000.0   1619.1   10021.3    1619.6    10035.6
GR    1618.4   10040.8    1618.8    10042.0   1619.6   10074.2   1622.6   10086.5    1624.1    10102.3
GR    1625.2   10126.1    1626.4    10145.1   1627.3   10161.7   1628.8   10176.0    1630.3    10190.6
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO .000

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED

.000	2.86	1510.06	1510.06	1510.00	1510.42	.36	.00	.00	1509.30
466.0	84.4	182.6	199.0	31.3	27.1	66.4	.0	.0	1508.70
.00	2.70	6.73	3.00	.065	.048	.065	.000	1507.20	9918.33
.020221	0.	0.	0.	0	5	6	.00	163.23	10087.69

CCHV= .300 CEHV= .500
*SECNO .030
3280 CROSS SECTION .03 EXTENDED 2.39 FEET

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3 NCROACHMENT STATIONS= .0 10041.5 TYPE= 1 TARGET= 10041.500

.030	2.49	1514.69	1514.69	.00	1515.60	.91	3.97	.28	1512.60
466.0	5.8	448.2	12.0	2.1	57.5	5.1	.4	.4	1513.60
.01	2.85	7.79	2.37	.065	.048	.065	.000	1512.20	9988.74
.024212	200.	180.	170.	0	11	0	.00	39.13	10027.87

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	2	.020	.80	3.00	.00	4.00	.00	132.00	2	1	1516.23	1513.97

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 1 - HEADWALL

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
5130, EGIC= 1530.57..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1529.07 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO .060

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 1524.28

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

```
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.20

S    L CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
  1530.57   1529.07     8.68       143.      298.     4.276      25.1   1522.70       68.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1524.40 ELREA=      1524.00

      .060      7.87   1524.07       .00       .00   1524.28       .22      8.68       .00   1516.20
     440.0        .0     301.8     138.2        .0      70.6      67.4        .7        .5   1516.23
       .02       .00      4.28      2.05      .000      .048      .065      .000   1516.20   9995.50
   .001224      135.     132.      190.         2         0         0       .00     28.49  10023.99


*SECNO  .070
      .070      5.25   1524.25   1521.64       .00   1524.41       .15       .11       .02   1519.00
     431.0      34.1     288.1     108.9      22.2      79.9      54.1       1.0        .6   1520.00
       .02      1.53      3.60      2.01      .065      .048      .065      .000   1519.00   9984.35
   .001542       75.      80.       75.          2        17         0       .00     41.27  10025.62


CCHV=      .100 CEHV=      .300
*SECNO  .160

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .160      2.21   1534.51   1534.51       .00   1535.48       .96      1.70       .24   1532.40
     431.0      16.3     394.8      19.9       4.6      48.4       5.4       2.1        1.0   1532.30
       .04      3.51      8.15      3.65      .065      .048      .065      .000   1532.30   9985.90
   .025124       420.     429.      440.         0        14         0       .00     31.92  10017.82


C.        .200 CEHV=      .400
1
   23OCT95       08:50:16                                                                    PAGE     9


    SECNO      DEPTH      CWSEL      CRIWS      WSELK         EG         HV         HL      OLOSS   L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB        VOL        TWA   R-BANK ELEV
    TIME       VLOB       VCH        VROB        XNL       XNCH        XNR        WTN      ELMIN   SSTA
    SLOPE      XLOBL      XLCH       XLOBR     ITRIAL        IDC     ICONT      CORAR     TOPWID   ENDST


*SECNO  .170
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .170      3.39   1536.59   1536.59       .00   1537.91      1.32       1.35       .14   1533.20
     431.0      42.3     337.6      51.2       9.9      33.2      11.6        2.1        1.0   1533.20
       .04      4.29     10.17      4.40      .065      .048      .065       .000   1533.20   9989.58
   .021181       55.      58.       70.          0        14         0        .00     22.48  10012.07


*SECNO  .180

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .180      2.33   1539.53   1539.53       .00   1540.30       .78       1.80       .11   1537.20
     366.0      41.8     315.7       8.5       9.9      42.5       2.9        2.2        1.1   1538.20
       .04      4.23      7.44      2.89      .065      .048      .065       .000   1537.20   9975.51
   .029288       80.      73.       75.          0        19         0        .00     38.42  10013.93


*SECNO  .190
7    INIMUM SPECIFIC ENERGY
3.   RITICAL DEPTH ASSUMED
```

.190	2.14	1540.74	1540.74	.00	1541.58	.85	1.06	.03	1538.60
366.0	18.9	334.1	13.0	5.1	43.7	4.0	2.3	1.1	1539.00
.05	3.70	7.65	3.28	.065	.048	.065	.000	1538.60	9983.43
.027127	45.	37.	35.	0	11	0	.00	33.14	10016.57

CCHV= .100 CEHV= .300
*SECNO .270

.270	3.67	1549.37	1549.06	.00	1550.08	.71	8.49	.01	1547.30
366.0	66.7	279.1	20.2	16.4	37.5	7.4	2.9	1.4	1547.40
.06	4.08	7.44	2.71	.065	.048	.065	.000	1545.70	9985.10
.014928	440.	430.	430.	5	14	0	.00	30.54	10015.64

*SECNO .360

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3720 CRITICAL DEPTH ASSUMED

.360	2.28	1560.18	1560.18	.00	1561.01	.83	9.42	.04	1558.80
366.0	3.9	333.2	28.8	1.6	43.7	9.0	3.5	1.8	1558.20
.08	2.52	7.62	3.20	.065	.048	.065	.000	1557.90	9985.93
.024565	505.	500.	490.	0	14	0	.00	37.38	10068.94

(.300 CEHV= .500
*[illegible] .400

3265 DIVIDED FLOW

.400	2.05	1564.25	1564.24	.00	1564.81	.57	3.72	.08	1562.50
366.0	7.9	302.4	55.6	3.0	46.1	23.6	3.8	2.0	1562.20
.09	2.68	6.56	2.36	.065	.048	.065	.000	1562.20	9986.31
.019290	175.	173.	160.	2	11	0	.00	73.05	10071.38

*SECNO .410
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.410	1.55	1567.55	1567.55	.00	1567.99	.44	1.57	.04	1567.00
366.0	16.0	276.6	73.4	9.9	47.0	22.8	3.9	2.1	1566.00
.10	1.61	5.89	3.22	.065	.048	.065	.000	1566.00	9963.67
.027962	75.	70.	60.	0	15	0	.00	104.50	10068.17

*SECNO .420

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 7.37

.420	4.38	1568.08	1565.84	.00	1568.15	.07	.05	.11	1563.90
366.0	19.3	233.6	113.0	17.7	92.3	105.7	4.0	2.2	1564.00
.10	1.09	2.53	1.07	.047	.035	.047	.000	1563.70	9982.23
.000515	50.	35.	25.	2	11	0	.00	95.47	10077.70

*SECNO .460

3301 HV CHANGED MORE THAN HVINS

7 [illegible]INIMUM SPECIFIC ENERGY
3 [illegible]RITICAL DEPTH ASSUMED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
.460	3.19	1571.39	1571.39	.00	1572.35	.95	.34	.44	1569.60
366.0	73.7	250.3	42.1	16.2	27.9	9.6	4.8	2.6	1568.20
.11	4.53	8.98	4.39	.047	.035	.047	.000	1568.20	9980.91
.012202	240.	240.	255.	0	16	0	.00	27.89	10008.81

*SECNO .470

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.470	.95	1576.95	1576.95	.00	1577.37	.42	1.15	.16	1578.00
366.0	.0	39.8	326.2	.0	8.6	61.7	4.8	2.7	1576.00
.11	.00	4.62	5.29	.000	.035	.047	.000	1576.00	9988.61
.030571	50.	51.	75.	0	17	0	.00	84.38	10072.99

*SECNO .480

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 11.31

.480	4.79	1577.49	1574.32	.00	1577.53	.04	.04	.11	1572.90
366.0	13.8	276.2	76.0	18.0	149.2	103.9	5.0	2.8	1572.70
.12	.77	1.85	.73	.047	.035	.047	.000	1572.70	9976.77
000239	45.	46.	50.	2	14	0	.00	100.72	10077.49

*SECNO .550

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.550	2.90	1585.40	1585.40	.00	1586.28	.88	.28	.42	1583.90
366.0	6.5	359.4	.0	2.2	47.3	.0	6.4	3.3	1587.90
.13	2.95	7.61	.00	.047	.035	.000	.000	1582.50	9984.53
.014886	365.	371.	400.	0	14	0	.00	29.15	10013.68

*SECNO .560

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.560	.84	1590.84	1590.84	.00	1591.17	.34	.87	.16	1590.00
366.0	60.3	301.1	4.5	25.6	60.0	1.9	6.5	3.5	1590.00
.14	2.35	5.02	2.33	.047	.035	.047	.000	1590.00	9937.14
017713	75.	51.	90.	0	14	0	.00	137.61	10074.75

*SECNO .570

3 IVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 9.63

.570	5.37	1591.27	1588.09	.00	1591.29	.02	.02	.09	1585.90
366.0	33.6	243.7	88.7	67.0	166.4	114.4	6.7	3.6	1590.30
.15	.50	1.46	.78	.047	.035	.047	.000	1585.90	9855.58
.000191	50.	35.	45.	2	17	0	.00	161.96	10075.99

*SECNO .640

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.640	2.48	1596.78	1596.78	.00	1597.65	.88	.23	.43	1595.00
366.0	8.3	357.7	.0	3.1	47.2	.0	8.4	4.4	1598.20
.16	2.72	7.58	.00	.057	.035	.000	.000	1594.30	9980.25
.014943	360.	364.	400.	0	14	0	.00	29.84	10010.10

*SECNO .650

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.650	1.19	1602.19	1602.19	.00	1602.54	.35	.98	.16	1602.00
366.0	.2	365.7	.1	.2	76.8	.2	8.5	4.5	1602.00
.16	.78	4.76	.78	.057	.035	.057	.000	1601.00	9969.46
.020617	65.	56.	100.	0	14	0	.00	115.67	10085.13

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .660

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 8.87

.660	5.77	1602.67	1600.17	.00	1602.70	.03	.06	.10	1605.50
366.0	.0	231.1	134.9	.0	145.0	171.5	8.8	4.7	1599.90
.18	.00	1.59	.79	.000	.035	.057	.000	1596.90	9981.64
.000262	70.	67.	65.	2	27	0	.00	110.92	10092.56

*SECNO .710

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.710	3.52	1608.22	1608.22	.00	1609.13	.91	.22	.44	1614.60
366.0	.0	366.0	.0	.0	47.9	.0	9.9	5.1	1609.80
.19	.00	7.64	.00	.000	.035	.000	.000	1604.70	9988.94
.015916	280.	269.	270.	0	15	0	.00	27.22	10016.16

*SECNO .720

3. HV CHANGED MORE THAN HVINS

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7185 MINIMUM SPECIFIC ENERGY
3  CRITICAL DEPTH ASSUMED
      .720      1.25   1612.35   1612.35       .00   1612.74       .39       .90       .15   1612.00
     366.0       1.8     363.0       1.2       1.6      72.1       1.1      10.0       5.2   1612.00
       .19      1.12      5.03      1.12      .057      .035      .057      .000   1611.10   9980.93
   .018949       50.       52.       100.         0        22         0       .00    105.36  10086.28


*SECNO  .730

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  7.78

      .730      5.54   1612.84   1610.02       .00   1612.88       .04       .03       .11   1607.30
     366.0      24.3     224.0     117.7      29.0     116.4     160.1      10.2       5.3   1611.80
       .20       .84      1.92       .74      .057      .035      .057      .000   1607.30   9972.24
   .000313       30.       33.       30.         2        17         0       .00    124.83  10097.07


1
   23OCT95       08:50:16                                                                    PAGE   14

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


CCHV=      .100 CEHV=      .300
*SECNO  .780

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .780      4.11   1616.21   1616.21       .00   1617.27      1.06       .29       .31   1622.90
     366.0        .0     366.0        .0        .0      44.4        .0      11.4       5.8   1619.10
       .21       .00      8.25       .00      .000      .035      .000      .000   1612.10   9990.91
   .015859       300.      301.      325.         0        19         0       .00     21.59  10012.50
```

THIS RUN EXECUTED 23OCT95 08:50:18

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	.000	466.00	9918.33	10087.69	1510.06	1510.06	.85	.36	2.86
*	.000	466.00	9918.60	10087.37	1510.06	1510.06	.85	.36	2.86
*	.030	466.00	9988.74	10027.87	1514.69	1514.69	.96	.91	2.49
*	.030	466.00	9988.74	10027.88	1514.69	1514.69	.96	.91	2.49
*	.060	440.00	9995.50	10023.99	1524.07	.00	.27	.22	7.87
*	.060	440.00	9995.50	10023.99	1524.06	.00	.27	.22	7.86
	.070	431.00	9984.35	10025.62	1524.25	1521.64	.28	.15	5.25
	.070	431.00	9984.37	10025.60	1524.25	1521.64	.28	.15	5.25
*	.160	431.00	9985.90	10017.82	1534.51	1534.51	.98	.96	2.21
*	.160	431.00	9986.00	10017.72	1534.52	1534.52	.98	.95	2.22
*	.170	431.00	9989.58	10012.07	1536.59	1536.59	.97	1.32	3.39
*	.170	431.00	9989.61	10012.03	1536.64	1536.64	.95	1.27	3.44
*	.180	366.00	9975.51	10013.93	1539.53	1539.53	1.02	.78	2.33
*	.180	366.00	9975.47	10013.96	1539.54	1539.54	1.01	.76	2.34
*	.190	366.00	9983.43	10016.57	1540.74	1540.74	.99	.85	2.14
*	.190	366.00	9983.44	10016.56	1540.73	1540.73	1.00	.85	2.13
	.270	366.00	9985.10	10015.64	1549.37	1549.06	.78	.71	3.67
	.270	366.00	9985.09	10015.65	1549.38	1549.07	.78	.71	3.68
*	.360	366.00	9985.93	10068.94	1560.18	1560.18	.96	.83	2.28
*	.360	366.00	9985.91	10068.99	1560.19	1560.19	.95	.82	2.29
	.400	366.00	9986.31	10071.38	1564.25	1564.24	.84	.57	2.05
	.400	366.00	9986.33	10071.34	1564.24	1564.24	.85	.58	2.04

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	.410	366.00	9963.67	10068.17	1567.55	1567.55	.94	.44	1.55
*	.410	366.00	9966.61	10067.33	1567.57	1567.57	.90	.41	1.57
*	.420	366.00	9982.23	10077.70	1568.08	1565.84	.22	.07	4.38
*	.420	366.00	9982.33	10077.50	1568.06	1565.83	.22	.07	4.36
*	.460	366.00	9980.91	10008.81	1571.39	1571.39	.97	.95	3.19
*	.460	366.00	9981.12	10008.57	1571.38	1571.38	.97	.96	3.18
*	.470	366.00	9988.61	10072.99	1576.95	1576.95	1.16	.42	.95
*	.470	366.00	9988.60	10073.00	1576.96	1576.96	1.15	.42	.96
*	.480	366.00	9976.77	10077.49	1577.49	1574.32	.15	.04	4.79
*	.480	366.00	9976.77	10077.49	1577.48	1574.32	.15	.04	4.78
*	.550	366.00	9984.53	10013.68	1585.40	1585.40	1.00	.88	2.90
*	.550	366.00	9984.54	10013.66	1585.40	1585.40	1.00	.89	2.90
*	.560	366.00	9937.14	10074.75	1590.84	1590.84	.97	.34	.84
*	.560	366.00	9937.41	10074.72	1590.83	1590.83	.97	.34	.83
*	.570	366.00	9855.58	10075.99	1591.27	1588.09	.13	.02	5.37
*	.570	366.00	9855.60	10075.99	1591.27	1588.09	.13	.02	5.37
*	.640	366.00	9980.25	10010.10	1596.78	1596.78	1.00	.88	2.48
*	.640	366.00	9980.27	10010.05	1596.78	1596.78	1.00	.88	2.48
*	.650	366.00	9969.46	10085.13	1602.19	1602.19	1.01	.35	1.19
*	.650	366.00	9969.50	10081.10	1602.20	1602.20	1.00	.35	1.20
*	.660	366.00	9981.64	10092.56	1602.67	1600.17	.15	.03	5.77
*	.660	366.00	9981.63	10092.58	1602.67	1600.16	.15	.03	5.77
*	.710	366.00	9988.94	10016.16	1608.22	1608.22	1.01	.91	3.52
*	.710	366.00	9988.97	10016.11	1608.21	1608.21	1.02	.92	3.51
*	.720	366.00	9980.93	10086.28	1612.35	1612.35	.99	.39	1.25
*	.720	366.00	9980.90	10086.30	1612.35	1612.35	.98	.39	1.25
*	.730	366.00	9972.24	10097.07	1612.84	1610.02	.17	.04	5.54
*	.730	366.00	9972.24	10097.05	1612.84	1610.02	.17	.04	5.54
*	.780	366.00	9990.91	10012.50	1616.21	1616.21	1.01	1.06	4.11
*	.780	366.00	9990.93	10012.47	1616.20	1616.20	1.02	1.07	4.10

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=      .000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .000  PROFILE=  2  CRITICAL DEPTH ASSUMED

CAUTION SECNO=      .030  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .030  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .030  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .030  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .060  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .060  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .160  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .160  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .160  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .160  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .170  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .170  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .170  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .170  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .180  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .180  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .180  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .180  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .190  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .190  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .190  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .190  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .360  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .360  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .360  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .360  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .410  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .410  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .410  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .410  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .420  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .420  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .460  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .460  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .460  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .460  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .470  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .470  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=      .470  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .470  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .480  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .480  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .550  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .550  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .550  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .550  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .560  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .560  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .560  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .560  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .570  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .570  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .640  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .640  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .640  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .640  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .650  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .650  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .650  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .650  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .660  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .660  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

( ON SECNO=         .710  PROFILE=  1  CRITICAL DEPTH ASSUMED
C. ON SECNO=        .710  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .710  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .710  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .720  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .720  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .720  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .720  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .730  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .730  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .780  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .780  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .780  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .780  PROFILE=  2  MINIMUM SPECIFIC ENERGY
```

FLOODWAY DATA, Fountain Hills (south) -
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
.000	169.	125.	3.7	1510.1	1510.1	.0
.030	39.	65.	7.2	1514.7	1514.7	.0
.060	28.	138.	3.2	1524.1	1524.1	.0
.070	41.	156.	2.8	1524.3	1524.3	.0
.160	32.	59.	7.3	1534.5	1534.5	.0
.170	22.	56.	7.7	1536.6	1536.6	.0
.180	38.	56.	6.6	1539.5	1539.5	.0
.190	33.	53.	6.9	1540.7	1540.7	.0
.270	31.	61.	6.0	1549.4	1549.4	.0
.360	83.	55.	6.7	1560.2	1560.2	.0
.400	85.	72.	5.1	1564.2	1564.2	.0
.410	101.	82.	4.4	1567.5	1567.5	.0
.420	95.	214.	1.7	1568.1	1568.1	.0
.460	27.	53.	6.9	1571.4	1571.4	.0
.470	84.	71.	5.2	1577.0	1577.0	.0
.480	101.	271.	1.4	1577.5	1577.5	.0
.550	29.	49.	7.4	1585.4	1585.4	.0
.560	137.	87.	4.2	1590.8	1590.8	.0
.570	220.	348.	1.1	1591.3	1591.3	.0
.640	30.	50.	7.3	1596.8	1596.8	.0
.650	112.	77.	4.7	1602.2	1602.2	.0
.660	111.	317.	1.2	1602.7	1602.7	.0
.710	27.	48.	7.7	1608.2	1608.2	.0
.720	105.	75.	4.9	1612.3	1612.3	.0
.730	125.	305.	1.2	1612.8	1612.8	.0
.780	22.	44.	8.3	1616.2	1616.2	.0

COLONY WASH

FOUNTAIN HILLS SOUTH
Colony Wash

X-Sec	HEC-1 Conc. Point	100-Yr Discharge (cfs)	Left Overbank Lenght (ft)	Rigth Overbank Lenght (ft)	Channel Lenght (ft)	COMMENT
2.52	*CLN10	1333	250	250	247	Confluence PAN-COL
2.54			85	110	81	
2.59			290	310	298	
2.68			475	525	491	
2.78			510	490	499	
2.84			300	290	298	
2.87			185	200	196	
2.88	CLN9	1327	60	65	57	Culvert outlet
2.91	SCLN8	1295	130	130	121	Culvert inlet
2.92	CLN8	1312	90	125	74	
2.97	*CLN8	1276	260	290	238	Confluence spillway
3.02			390	293	309	Confluence Fountain Channel
3.12	*CLN7	643	550	460	519	
3.22			460	500	490	
3.27			295	280	295	
3.28	CLN6	635	75	80	67	Culvert Oulet
3.32	SCLN5	613	200	205	166	Culvert inlet
3.33	CLN5	655	60	65	58	
3.41			480	460	466	
3.47			310	275	312	
3.52			290	250	249	Confluence COL-NCL
3.56	CLN4	367	230	225	231	
3.59			140	135	139	
3.64			260	250	258	
3.65			60	60	50	Culvert outlet
3.67	SCLN3	303	100	100	94	Culvert inlet
3.68	CLN3	354	75	75	47	
3.77			490	550	488	
3.83			300	375	309	
3.90			331	410	377	
3.92	CLN2	313	125	225	114	Culvert outlet
3.95	SCLN1	289	170	170	168	Culvert inlet
3.98	*CLN1	217	180	190	158	
4.05			390	350	385	
4.15			475	512	485	
4.20			320	305	307	
4.24			210	200	198	
4.29			250	290	246	Culvert outlet
4.32	SSNB6	94	160	160	157	Culvert inlet (Dam)
4.37	SNB6	569	300	310	291	Confluence SYC-COL
4.41	GRS3	461	150	260	201	
4.44			200	170	175	
4.45			40	50	35	Culvert outlet
4.47	SGRS2	396	90	90	80	Culvert inlet

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    23OCT95    TIME   09:04:19   *
*********************************************
```


```
*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*         (916) 756-1104                *
*****************************************
```


```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X         XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 23OCT95 09:04:19

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**************************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
**************************************


T1      Fountain Hills (South) - Floodplain Delineation        File COLONY.H2
T1      For the Flood Control District of Maricopa County
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - COLONY WASH

T4 GR data from stereo model received October 93 from KAM
T4 Revised photogrametric x-sec. received May 94
T5 1"=200' 2-feet Contour mapping from KAM flown 8-91
T6 with survey control by Anderson Nelson 12-11-92, field survey Aug 91
T7 Supplemental cross section data surveyed by Valco Surveing
T8 Source of 100-yr flowrate from HEC-1 Analysis by AGK Enginers
T8            File 180-6CE.DAT
T9 Subcritical analysis
T9 This model was developed and configured to determine water surface elevation
T  or a 100-year floodplain delineation study, Velocity from this model
   y not be accurate and should not be used


J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                             -1                                    1515.9

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                                                          -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        43        53        54        1         2         68        10        8         200

  Conc. point *CLN10 Flow upstream from Panorama wash.
  Critical depth used for initial conditions

QT       2      1333      1333
NC    .048      .048      .037        .2        .4

ET                         9.1                                                    9953.9    10067.2
X1    2.52        20     10000   10007.6
GR    1520      9905      1518      9915    1516.2    9949.9    1515.3    9975.7    1512.2    9988.4
GR  1511.2   10000.0    1511.5   10007.6    1514.9   10017.8    1514.7   10058.2    1517.2   10074.7
GR  1518.0   10087.4    1517.2   10109.7    1518.4   10128.3    1520.3   10155.1    1521.4   10181.5
GR  1522.4   10213.4    1522.0   10239.0    1522.9   10257.3    1523.8   10279.6    1523.5   10287.1
```

ET			9.1						9958.4	10103.1
X1	2.54	25	9995.7	10012.9	85	110	81			
GR	1524.0	9899.3	1522.0	9911.1	1520.0	9923.6	1518.6	9928.0	1518.9	9946.7
GR	1516.0	9975.3	1513.2	9995.7	1513.2	10000.0	1514.0	10012.9	1517.1	10025.2
GR	1518.2	10037.2	1518.3	10061.5	1516.7	10087.1	1517.7	10103.0	1522.1	10116.6
GR	1524.6	10129.4	1525.7	10159.1	1526.6	10189.0	1526.2	10213.9	1524.2	10249.2
GR	1525.2	10282.7	1525.5	10309.1	1526.9	10336.7	1528.1	10367.3	1528.0	10387.1

ET			9.1						9957.84	10077
X1	2.59	32	9988.0	10007.9	290	310	298			
GR	1529.8	9558.0	1532.0	9581.3	1530.0	9600.8	1528.6	9666.4	1527.8	9681.9
GR	1527.8	9724.5	1527.0	9770.7	1525.7	9780.9	1526.3	9801.8	1526.0	9818.9
GR	1527.0	9825.2	1527.0	9881.2	1526.9	9895.2	1528.2	9904.3	1527.0	9926.3
GR	1524.3	9943.3	1519.7	9970.2	1519.5	9988.0	1518.6	10000.0	1519.7	10007.9
GR	1520.1	10034.5	1520.3	10073.5	1527.4	10089.9	1527.1	10097.7	1527.1	10118.6
GR	1532.0	10145.4	1535.0	10158.4	1536.3	10194.4	1536.6	10215.9	1533.5	10225.2
GR	1536.6	10249.9	1537.0	10260.6						

ET			9.1						9937.66	10048.7
[illegible]	2.68	19	9987.4	10008.4	475	525	491			
[illegible]	1533.4	9691.4	1532.9	9733.0	1532.8	9794.2	1532.5	9811.3	1533.2	9818.0
GR	1533.1	9867.2	1533.0	9924.2	1527.9	9944.7	1528.1	9968.3	1528.3	9987.4
GR	1526.3	10000.0	1527.9	10008.4	1527.6	10032.6	1530.6	10054.6	1540.0	10089.3
GR	1540.1	10103.3	1538.7	10109.5	1539.0	10113.3	1538.3	10138.5		

ET			9.1						9940.52	10074.83
X1	2.78	30	10000	10029.7	510	490	499			
GR	1541.7	9736.7	1541.7	9745.9	1542.8	9752.3	1543.0	9774.4	1540.7	9786.2
GR	1541.0	9799.8	1540.5	9816.7	1541.1	9820.7	1541.6	9850.1	1541.6	9885.2
GR	1541.1	9924.0	1534.8	9950.3	1536.2	9989.3	1534.6	10000.0	1534.8	10021.2
GR	1535.4	10029.7	1534.9	10063.2	1535.7	10070.5	1540.8	10085.8	1547.0	10097.5
GR	1547.5	10107.2	1545.6	10116.0	1545.5	10134.1	1545.1	10142.3	1549.9	10159.5
GR	1551.2	10200.2	1551.4	10235.5	1551.8	10270.7	1552.4	10294.0	1553.4	10324.1

ET			9.1						9953.13	10066.45
X1	2.84	26	10000	10056.6	300	290	298			
GR	1548.3	9685.5	1548.4	9741.7	1550.9	9748.2	1550.2	9756.4	1550.6	9769.5
GR	1550.2	9787.1	1550.6	9790.3	1550.5	9831.7	1550.6	9866.9	1550.4	9896.4
GR	1549.9	9918.0	1545.7	9935.4	1539.2	9959.1	1540.1	9971.7	1538.4	10000.0
GR	1538.5	10012.9	1538.3	10056.6	1543.4	10076.4	1550.6	10093.3	1549.7	10102.1
GR	1549.8	10115.9	1549.7	10138.1	1556.1	10159.7	1556.8	10184.5	1557.1	10209.5
GR	1557.8	10250.3								

```
ET                          9.1                                                 9959.87   10048.9
X1     2.87        32    9983.9   10005.3      185       200       196
GR   1556.1    9732.8    1557.6    9747.9   1557.4    9749.2    1557.8    9762.9    1557.7    9777.8
GR   1558.2    9782.6    1556.3    9793.3   1555.9    9830.7    1556.0    9860.1    1555.8    9887.6
GR   1555.5    9918.7    1550.0    9938.6   1545.9    9959.9    1543.7    9983.9    1542.4   10000.0
GR   1542.9   10005.3    1543.8   10037.2   1548.1   10061.1    1548.6   10075.0    1549.2   10090.0
GR   1552.8   10111.2    1555.7   10127.6   1556.9   10140.4    1557.1   10152.0    1556.0   10158.7
GR   1556.8   10169.2    1560.7   10185.1   1561.8   10204.3    1562.3   10233.3    1563.2   10272.7
GR   1563.8   10297.7    1564.2   10314.2

  Conc. point CLN9 Flow at culvert outlet

QT        2      1327      1327
NC     .060      .060      .033        .3        .5

  Culvert CLN1 outlet
ET                          9.1                                                    9983   10017
X1     2.88        32      9983     10017        60        65        57
X3       10                                                          1557.9    1557.9
GR   1556.5    9704.6    1556.8    9729.9   1557.1    9745.6    1557.0    9776.4    1557.6    9780.1
GR   1557.1    9797.1    1557.0    9839.5   1557.1    9868.8    1556.7    9893.3    1556.4    9907.1
GR   1553.9    9936.8    1554.4    9943.2   1552.2    9955.5    1551.0    9978.1    1544.6      9983
GP   1544.6   10000.0    1544.6     10017   1550.9   10018.4    1552.1   10043.0    1552.9   10057.5
     1554.7   10074.5    1555.6   10097.0   1558.2   10112.8    1558.7   10128.2    1558.5   10140.6
L    1557.6   10145.3    1559.0   10158.5   1560.8   10199.8    1562.3   10230.6    1562.9   10245.3
GR   1562.9   10274.1    1564.2   10305.2

  Culvert -CLN1- 4 Boxes 6' X 8' X 121' Panorama Blvd
  Conc. point SCLN8 Flow through culvert

QT        2      1295      1295
SC    4.015       0.4       2.8                  6         8       121       8.1   1546.44   1544.64

  Culvert CLN inlet
ET                          9.1                                                    9983   10017
X1     2.91        32      9983     10017       130       130       121
X2                             2              1557.84
X3       10                                                          1557.9    1557.9
BT      -12    9911.85      1558                9937    1557.9                    9938    1557.9
BT              9983    1557.85                9983   1557.84                   10000   1557.84
BT             10017     1557.9               10017   1557.95                   10037    1558.1
BT             10077    1558.89               10137   1558.19                  10146.1   1558.65
GR   1560.5    9745.3    1560.2    9748.3   1560.8    9759.7    1560.5    9775.3    1560.8    9776.9
GR   1560.9    9798.3    1561.2    9825.9   1561.0    9853.0    1559.8    9873.6    1558.6    9896.7
GR   1558.2    9906.80   1558.00   9911.85  1557.8    9916.9    1556.3    9943.2    1554.9    9960.1
GR   1553.7    9969.7    1549.4      9983   1546.4      9983    1546.4   10000.0    1546.4     10017
GR   1549.4     10017    1553.9   10038.7   1554.6   10072.5    1555.3   10123.0    1556.5   10139.6
GR   1557.5  10142.85    1558.6  10146.10   1560.8   10152.6    1561.3   10174.0    1561.2   10189.7
GR   1562.3   10222.5    1563.0   10242.3

  Conc. poit CLN8 Flow upstream from Panorama Dr.
```

```
QT        2       1312       1312

ET                            9.1                                                                  9898.1     10080.4
X1     2.92         28       9984.6     10036.4        90        110        74
GR   1561.7     9707.1       1561.9      9712.5    1561.7     9714.8    1562.0     9727.5       1561.6      9743.8
GR   1562.3     9746.2       1563.7      9763.9    1564.0     9779.6    1563.5     9848.0       1562.7      9874.4
GR   1556.1     9889.9       1548.6      9909.3    1548.6     9936.3    1548.8     9976.0       1548.7      9984.6
GR   1548.0    10000.0       1548.0     10010.6    1548.5    10013.9    1549.0    10036.4       1549.0     10063.8
GR   1551.1    10073.9       1555.4     10089.1    1557.3    10103.5    1556.3    10114.6       1555.0     10134.2
GR   1561.1    10158.7       1562.9     10197.9    1563.4    10219.8
```

Conc. point *CLN8 Flow upstream from Spillway confluence

```
QT        2       1276       1276
NC                                        .1         .3

ET                            9.1                                                                  9859.18    10037.6
X1     2.97         31       9989.6     10025.7        260        290        238
GR   1561.9     9476.4       1563.2      9519.7    1563.4     9564.9    1563.6     9604.6       1563.9      9670.5
GR   1563.2     9682.3       1564.3      9728.1    1564.5     9805.9    1563.1     9839.5       1552.5      9864.8
GR   1552.9     9881.7       1553.6      9912.5    1554.4     9948.3    1554.3     9948.4       1554.6      9965.7
GR   1554.1     9989.6       1551.0     10000.0    1551.7    10016.2    1553.6    10025.7       1555.9     10051.2
GR   1556.6    10070.7       1559.1     10084.8    1559.9    10100.1    1567.6    10132.0       1568.6     10152.4
GP   1568.4    10187.5       1568.2     10208.3    1567.7    10216.3    1568.7    10225.9       1569.5     10254.7
     1570.3    10272.9

ET                            9.1                                                                  9906.2    10019.75
X1     3.02         24       9976.2     10008.9        390        293        309
GR   1574.5     9857.6       1568.0      9871.5    1562.2     9886.4    1561.0     9914.4       1560.6      9942.6
GR   1558.8     9949.9       1559.0      9976.2    1558.4    10000.0    1558.4    10008.9       1563.6     10027.7
GR   1564.0    10038.4       1563.1     10051.9    1566.1    10071.1    1568.4    10087.1       1569.8     10107.2
GR   1570.3    10126.9       1571.9     10141.7    1572.9    10148.9    1573.1    10158.6       1572.3     10168.9
GR   1572.5    10182.7       1573.3     10190.3    1573.3    10206.5    1572.3    10222.6
```

Conc. point *CLN7 Flow upstream from Fountain Channel Confluence

```
QT        2       643        643

ET                            9.1                                                                  9944.29    10017.48
X1     3.12         17       9987.8     10007.5        550        460        519
GR   1582.0     9851.8       1581.0      9876.8    1580.5     9914.1    1572.0     9932.7       1565.9      9948.1
GR   1566.0     9978.9       1564.4      9987.8    1563.7    10000.0    1563.7    10007.5       1569.2     10022.3
GR   1575.4    10036.9       1575.2     10046.2    1575.3    10054.3    1575.6    10100.6       1575.8     10145.5
GR   1576.2    10190.7       1575.9     10239.2

ET                            9.1                                                                  9971.9    10016.34
X1     3.22         18       9982       10010.2        460        500        490
GR   1590.2     9800.6       1589.4      9810.8    1586.7     9824.6    1587.6     9838.8       1587.2      9859.5
GR   1588.7     9864.4       1589.2      9878.2    1581.8     9897.8    1581.3     9922.8       1581.4      9948.7
GR   1573.6     9982.0       1573.4     10000.0    1573.8    10010.2    1581.0    10031.5       1590.3     10061.0
GR   1590.8    10081.5       1594.1     10105.9    1595.9    10121.4
```

ET			9.1						9966.65	10049.19
X1	3.27	27	9973.3	10045.8	295	280	295			
GR	1602.3	9754.4	1602.7	9787.6	1602.7	9824.1	1601.9	9853.5	1596.9	9873.4
GR	1597.2	9876.8	1596.9	9878.4	1597.0	9892.4	1596.8	9909.7	1597.7	9920.4
GR	1597.4	9934.3	1588.1	9952.2	1580.0	9973.3	1580.5	10000.0	1581.5	10017.8
GR	1580.4	10045.8	1587.0	10056.2	1588.5	10068.1	1597.2	10086.0	1604.3	10101.4
GR	1607.9	10117.7	1608.2	10130.3	1609.5	10154.9	1612.8	10184.8	1613.0	10202.1
GR	1610.0	10210.6	1610.4	10231.5						

Conc. point CLN6 Flowat culvert outlet

QT	2	635	635							
NC				.3	.5					

Culvert CLN2 outlet

ET			9.1						9985.5	10007.5
X1	3.28	28	9997	10003	75	80	67			
X3	10									
GR	1604.3	9751.5	1604.9	9782.5	1605.9	9813.8	1605.7	9844.9	1597.7	9865.6
GR	1597.2	9871.9	1596.8	9903.6	1597.7	9910.9	1597.3	9938.4	1595.0	9954.1
GR	1594.0	9963.2	1592.0	9973.0	1590.0	9980.5	1582.4	9997	1582.4	10000
GR	1582.4	10003	1590.0	10010.0	1592.0	10018.7	1594.0	10027.7	1595.2	10038.6
GR	1597.0	10070.7	1602.6	10082.4	1603.0	10090.3	1605.9	10108.1	1609.2	10124.1
GR	1609.7	10143.9	1610.0	10195.6	1610.4	10224.3				

Culvert -CLN2- 1 CMP 72" X 166' Saguaro Blvd.
Conc. point SCLN6 Flow Thuoght culvert

QT	2	613	613							
SC	1.026	0.8	2.8		6		166	2.3	1584.83	1582.41

Culvert CLN2 inlet

NC	.045	.045	.038							
ET			9.1						9904.83	10060.59
X1	3.32	20	9997	10003	200	205	166			
X2			2		1595.86					
X3	10							1595.86	1595.86	
BT	-5	9890	1597.35		9950	1596.23		10000	1595.86	
BT		10050	1596.20		10100	1596.45				
GR	1605.5	9804.2	1605.2	9884.4	1596.7	9905.1	1595.5	9931.4	1594.3	9944.4
GR	1590.1	9955.6	1592.0	9968.7	1590.0	9975.8	1584.8	9997	1584.8	10000
GR	1584.8	10003	1590.0	10006.6	1592.0	10011.7	1594.0	10016.5	1595.4	10025.4
GR	1597.1	10067.8	1602.6	10085.8	1604.6	10095.9	1604.7	10103.7	1605.7	10139.6

Conc. point CLN5 Flow upstream from Saguaro Blvd.

QT	2	655	655							
ET			9.1						9901.26	10069.97

X1	3.33	20	9948.3	10037.5	60	65	58			
GR	1605.7	9754.6	1605.4	9802.0	1605.3	9858.0	1605.1	9888.7	1596.0	9902.5
GR	1595.5	9925.0	1590.7	9936.7	1586.9	9948.3	1587.2	9973.2	1587.6	9992.3
GR	1587.6	10000.0	1587.2	10037.5	1595.2	10055.3	1595.3	10067.8	1603.9	10080.1
GR	1615.7	10104.7	1620.2	10108.8	1620.4	10187.4	1620.5	10190.3	1620.2	10218.6
NC				.1	.3					
ET			9.1						9930.89	10038.17
X1	3.41	20	9958.5	10013.8	480	460	466			
GR	1618.7	9867.0	1618.6	9872.7	1618.7	9877.5	1608.8	9894.7	1597.9	9915.5
GR	1598.0	9927.7	1591.0	9947.0	1591.1	9955.0	1590.1	9958.5	1590.4	9973.4
GR	1589.6	10000.0	1589.5	10013.8	1597.0	10038.7	1597.6	10058.7	1598.0	10082.3
GR	1608.3	10103.8	1609.0	10129.1	1609.0	10155.1	1609.7	10172.6	1612.9	10186.3
ET			9.1						9974	10025.5
X1	3.47	18	9988.2	10011.5	310	275	312			
GR	1602.1	9936.3	1600.4	9946.9	1600.5	9961.1	1594.2	9980.9	1594.5	9988.2
GR	1593.9	10000.0	1594.1	10011.5	1596.3	10025.2	1601.2	10039.6	1602.2	10073.3
GR	1603.3	10097.1	1603.5	10107.2	1603.3	10120.5	1604.3	10150.9	1604.2	10161.1
GR	1605.8	10182.0	1606.2	10193.7	1613.2	10224.9				

North Colony Wash confluence

ET			9.1						9972.74	10042.34
X1	3.52	20	10006.6	10021.9	290	250	249			
GR	1620.3	9901.0	1610.4	9919.4	1604.9	9938.8	1603.8	9959.0	1600.6	9976.8
GR	1598.7	9994.3	1600.9	10000.0	1601.3	10006.6	1596.8	10015.4	1600.4	10021.9
GR	1600.2	10038.5	1605.4	10056.2	1605.1	10084.9	1604.6	10122.6	1604.6	10158.0
GR	1610.4	10179.6	1612.7	10205.1	1613.7	10231.2	1614.8	10253.4	1615.5	10275.7

Conc. point CLN4 Flow upstream from North Colony Wash confluence

QT	2	367	367							
ET			9.1						9960.42	10010.86
X1	3.56	19	9994.8	10005	230	225	231			
GR	1614.1	9909.4	1613.9	9935.9	1610.1	9952.3	1606.0	9961.3	1604.6	9994.8
GR	1603.0	10000.0	1604.9	10005.0	1609.5	10023.0	1609.6	10033.6	1608.0	10044.9
GR	1607.6	10071.1	1608.4	10088.6	1616.8	10114.5	1617.6	10124.6	1617.6	10145.3
GR	1615.8	10164.0	1615.5	10185.3	1616.1	10198.3	1616.4	10210.9		
ET			9.1						9980.46	10026.42
X1	3.59	25	9992	10009	140	135	139			
GR	1633.6	9808.3	1631.0	9825.0	1617.9	9854.7	1617.8	9887.6	1616.9	9904.4
GR	1617.0	9935.8	1616.4	9959.5	1613.1	9974.2	1608.7	9982.4	1607.5	9992.0
GR	1607.7	10000.0	1608.8	10009.0	1609.2	10024.7	1613.4	10038.0	1613.6	10045.0
GR	1611.6	10058.7	1611.5	10084.1	1610.7	10091.0	1610.6	10105.3	1618.8	10122.2
GR	1620.6	10132.1	1621.4	10142.8	1621.1	10169.4	1620.4	10184.5	1619.2	10208.1

```
ET                          9.1                                                   9970.53  10018.04
X1    3.64        22      9974.2   10012.4      260       250       258
GR  1632.0    9792.8      1630.0    9805.3   1628.0    9820.5    1626.0    9852.5  1624.0    9918.6
GR  1622.0    9953.9      1620.0    9958.7   1618.0    9963.7    1616.0    9968.6  1614.0    9974.2
GR  1613.8   10000.0      1614.0   10012.4   1616.0   10021.0    1618.0   10030.2  1620.0   10056.1
GR  1622.0   10064.3      1624.0   10072.6   1624.0   10147.5    1624.0   10156.2  1626.0   10173.0
GR  1628.0   10191.8      1630.0   10207.8

NC     .040        .044       .033        .3        .5

  Culvert COL3 outlet
ET                          9.1                                                    9995     10005
X1    3.65        24         9995     10005        60        60        60
X3      10                                                          1628.8    1628.8
GR  1632.0    9804.6      1630.0    9827.0   1628.0    9856.7    1626.0    9906.5  1624.0    9953.2
GR  1622.0    9961.8      1620.0    9972.7   1618.0    9980.3    1616.0    9985.4  1614.53      9995
GR  1614.5   10000.0      1614.5      10005  1618.0   10018.9    1620.0   10022.4  1622.0   10026.8
GR  1624.0   10033.1      1626.0   10056.9   1628.0   10082.3    1630.0   10131.7  1632.0   10156.7
GR  1634.0   10172.8      1636.0   10188.8   1638.0   10199.7    1640.0   10213.7

  Culvert COL3 2 CMP 60" X 94' Arroyo Vista Dr.
  Conc. point SCLN3 Flow through culvert

         2        303        303
SU 2.024          0.8        3.0                  5                  94       2.3  1616.6  1614.53

  Culvert COL3 inlet
ET                          9.1                                                    9995     10005
X1    3.67        19         9995      10005      100       100        94
X2                             2
X3      10                                                          1628.8    1628.8
BT      -7      9870       1630                 9900    1629.7                   9950    1629.2
BT              10000     1628.8                10050    1629.5                  10100    1630.9
BT              10136       1632
GR  1632.0    9805.0      1630.0    9870.0   1628.0    9950.4    1626.0    9959.9  1624.0    9970.9
GR  1622.0    9982.8      1620.0    9991.2   1616.6      9995    1616.6   10000.0  1616.6     10005
GR  1622.0   10015.1      1624.0   10022.3   1626.0   10028.7    1628.0   10034.8  1630.0   10087.1
GR  1632.0   10136.1      1634.0   10171.2   1636.0   10192.5    1638.0   10210.6

  Conc. point CLN3 Flow upstream from Arroyo Vista Dr.

QT         2        354        354

ET                          9.1                                                   9941.39  10033.89
X1    3.68        21       9956.4   10021.7       75        75        47
GR  1632.0    9790.7      1632.0    9796.3   1630.0    9848.7    1628.0    9914.1  1626.0    9928.3
GR  1624.0    9937.4      1622.0    9946.9   1620.0    9956.4    1617.5      9978    1617   10000.0
GR  1620.0   10021.7      1622.0   10029.2   1624.0   10037.3    1626.0   10135.0  1628.0   10149.2
GR  1630.0   10158.0      1632.0   10164.6   1634.0   10172.0    1636.0   10179.1  1638.0   10186.7
GR  1640.0   10194.2
```

```
NC                                        .1        .3

ET                          9.1                                                 9979.4    10021.4
X1      3.77         20     9994.6    10011.4       490       550       488
GR    1638.3     9885.5    1637.7     9894.5    1637.5    9901.2    1638.6    9905.4    1638.5    9916.6
GR    1635.1     9929.5    1632.7     9945.5    1631.2    9957.0    1624.3    9975.1    1623.5    9987.3
GR    1622.2     9994.6    1621.8    10000.0    1622.0   10011.4    1623.1   10018.8    1626.2   10027.6
GR    1625.9    10053.3    1625.7    10068.5    1624.4   10081.2    1624.3   10111.5    1635.2   10134.0

ET                          9.1                                                 9990.76   10038.46
X1      3.83         19     9994.7    10004.6       300       375       309
GR    1641.2     9913.0    1641.0     9928.1    1642.6    9936.5    1642.2    9944.6    1636.7    9963.1
GR    1636.0     9973.1    1628.3     9990.3    1625.2    9994.7    1625.2   10000.0    1626.8   10004.6
GR    1627.3    10036.1    1632.1    10048.9    1632.2   10083.8    1631.4   10113.0    1631.2   10138.8
GR    1631.6    10162.0    1631.6    10175.7    1633.8   10183.0    1661.8   10207.8

ET                          9.1                                                 9986.3    10023.7
X1      3.90         31     9996      10003.9       330       410       377
GR    1664.0     9606.3    1662.0     9640.7    1660.0    9658.5    1660.0    9683.5    1660.0    9777.0
GP    1658.0     9868.6    1656.0     9878.8    1654.0    9895.5    1652.0    9923.0    1650.0    9935.7
      1648.0     9942.4    1646.0     9948.5    1644.0    9955.3    1642.0    9974.4    1640.0    9991.9
L     1638.0     9996.0      1637    10000.0    1638.0   10003.9    1640.0   10018.5    1642.0   10034.9
GR    1644.0    10043.3    1646.0    10051.3    1648.0   10134.5    1650.0   10155.5    1652.0   10180.6
GR    1654.0    10193.8    1656.0    10206.9    1658.0   10220.0    1660.0   10231.0    1662.0   10241.4
GR    1664.0    10252.0

  Conc. point CLN2 Flow at Culvert outlet

QT        2         313       313

NC                                        .3        .5

  Culvert COL4 outlet
ET                          9.1                                                 9995      10005
X1      3.92         24     9995      10005       125       225       114
X3        10                                                        1656.8    1656.9
GR    1668.0     9678.6    1666.0     9745.9    1664.0    9786.8    1662.0    9834.7    1662.0    9851.6
GR    1662.0     9877.6    1660.0     9893.8    1658.0    9966.2    1656.0    9972.3    1654.0    9977.5
GR    1652.0     9981.6    1650.0     9985.6    1648.0    9991.4   1646.76      9995    1646.7   10000.0
GR    1646.7      10005    1650.0    10043.8    1652.0   10064.8    1654.0   10136.9    1656.0   10202.3
GR    1658.0    10219.2    1660.0    10236.0    1662.0   10263.9    1664.0   10273.9

  Culvert COL4 2 CMP 60" X 168' Fountain Hills Blvd.
  Sewer line and fill on bottom 1-ft of one of the pipes Equivalent pipe size
  of 4.81 was used in the model
  invert increased by 0.5 ft (average invert of both pipes)
  Conc. point SCLN1 Flow Through the culvert
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```
QT        2       289       289
SC    2.024       0.8       3.0                4.81                  168       2.3   1650.13   1647.26

  Culvert COL4 inlet
ET                            9.1                                                          9995     10005
X1     3.95        33      9995     10005       170       170       168
X2                             2                1663.2
X3       10                                                                1663.3    1663.4
BT       -7    9906.7      1664                9950    1663.2                10000    1663.3
BT             10050    1663.8               10100    1664.8                10150    1666.1
BT           10496.1      1670
GR   1680.0    9664.2    1678.0    9692.3    1676.0    9704.1    1674.0    9713.2    1672.0    9729.2
GR   1670.0    9806.1    1668.0    9834.9    1667.0    9879.5    1666.0    9899.6    1664.0    9906.7
GR   1662.0    9914.1    1660.0    9959.2    1658.0    9966.1    1656.0    9988.5   1649.63      9995
GR   1649.6   10000.0    1649.6     10005    1654.0   10006.8    1652.0   10021.7    1652.0   10063.4
GR   1652.0   10187.5    1652.0   10201.6    1654.0   10398.9    1656.0   10433.1    1658.0   10451.2
GR   1660.0   10465.0    1662.0   10474.3    1664.0   10483.5    1666.0   10488.0    1668.0   10492.7
GR   1670.0   10496.1    1672.0   10500.2    1674.0   10504.6

  Conc. point *CLN1 Flow upstream from Fountain Hills Blvd.

QT        2       217       217

F                             9.1                                                          9955.2   10088.8
          3.98        30      9963    10033.3       180       190       158
G    1692.0    9674.3    1690.0    9687.8    1688.0    9700.5    1686.0    9713.2    1684.0    9726.2
GR   1682.0    9739.0    1680.0    9758.5    1678.0    9770.3    1676.0    9794.9    1674.0    9852.8
GR   1672.0    9860.2    1670.0    9868.1    1668.0    9875.2    1666.0    9882.0    1664.0    9888.0
GR   1662.0    9894.4    1660.0    9904.2    1658.0    9916.0    1658.0    9938.3    1658.0    9951.5
GR   1656.0    9957.0    1654.0    9963.0      1653   10000.0    1654.0   10033.3    1656.0   10065.5
GR   1658.0   10136.2    1658.0   10147.1    1658.0   10184.9    1660.0   10221.1    1660.0   10289.3


NC                                     .1        .3

ET                            9.1                                                       9958.33  10023.48
X1     4.05        15      9977.5    10017.9       390       350       385
GR   1680.7    9835.6    1678.3    9862.9    1675.3    9889.9    1673.2    9915.5    1665.3    9936.3
GR   1659.8    9955.3    1658.9    9965.0    1658.9    9977.5    1658.3   10000.0    1658.7   10017.9
GR   1659.8   10025.4    1663.9   10036.7    1662.1   10059.2    1661.2   10089.5    1659.6   10104.1


ET                            9.1                                                       9973.21  10048.4
X1     4.15        33      9987.0    10006.1       475       512       485
GR   1682.1    9850.9    1674.9    9873.6    1669.2    9893.1    1667.6    9906.9    1667.3    9921.8
GR   1666.4    9927.0    1667.6    9934.5    1667.9    9945.4    1665.8    9959.8    1665.4    9973.2
GR   1664.4    9979.0    1664.7    9987.0    1664.2   10000.0    1664.7   10006.1    1664.6   10027.6
GR   1664.2   10034.5    1664.6   10046.8    1671.8   10061.2    1674.4   10075.8    1675.0   10088.9
GR   1674.9   10126.1    1674.3   10139.8    1673.2   10151.9    1673.1   10172.4    1673.5   10179.6
GR   1673.3   10205.7    1672.7   10228.1    1674.1   10247.2    1674.8   10277.2    1675.0   10306.5
GR   1677.5   10327.8    1681.1   10348.8    1695.9   10412.8
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ET                          9.1                                                 9990.13   10078.85
X1     4.20        23    10046.8   10077.2       320       305       307
GR     1692.8    9841.3   1680.9    9864.9     1674.6    9880.4    1676.0    9902.6    1674.8    9919.4
GR     1673.2    9928.3   1672.4    9952.3     1671.4    9974.8    1668.0    9991.9    1668.0   10000.0
GR     1668.3   10018.5   1667.2   10046.8     1666.9   10063.6    1667.4   10077.2    1679.7   10098.5
GR     1680.6   10123.0   1680.4   10159.1     1679.9   10185.4    1680.7   10205.8    1682.0   10228.8
GR     1683.8   10251.4   1686.4   10272.9     1689.8   10298.8

ET                          9.1                                                 9969.03   10104.22
X1     4.24        25     9979.9   10000       210       200       198
GR     1699.2    9777.6   1693.9    9799.7     1683.5    9827.0    1681.9    9838.5    1680.3    9864.0
GR     1679.9    9904.6   1679.5    9929.4     1678.2    9954.0    1672.6    9969.8    1672.6    9979.9
GR     1671.9    9986.8   1671.9    9988.0     1672.2   10000.0    1672.2   10020.0    1672.7   10032.4
GR     1672.5   10056.1   1672.5   10092.3     1672.6   10103.7    1684.5   10126.4    1685.9   10144.8
GR     1690.2   10190.4   1689.9   10200.5     1690.9   10221.2    1691.8   10229.6    1699.1   10255.9

  Dam COL5 outlet

NC                                    .3        .5
ET                          9.1                                                 9998.75   10001.25
X1     4.29        24     9998.75  10001.25     250       290       246
X3       10                                                          1698      1698
GR     1707.9    9772.4   1701.1    9809.2     1694.9    9836.6    1687.9    9851.8    1687.0    9874.1
GR     1686.0    9899.4   1686.1    9931.8     1686.0    9965.4    1679.4    9990.5    1676.2    9993.9
GR     1676.1   9998.75   1676.1   10000.0     1676.1   10001.25   1676.1   10004.9    1679.8   10007.3
GR     1681.5   10020.6   1687.9   10040.4     1690.6   10059.1    1694.6   10086.2    1688.0   10111.1
GR     1689.5   10142.8   1692.3   10182.3     1695.8   10222.6    1724.5   10243.1

  Dam COL5 1 RCP 30" X 145' Dam structurre # 19
  Conc. point SSNB6 Flow through the dam outlet

QT         2        94        94
SC     1.013       0.2       3.0                 2.5                 157       3.1    1678.86   1677.21

  Dam COL5 inlet
ET                          9.1                                                 9998.75   10001.25
X1     4.32        26     9998.75  10001.25     160       160       157
X2                             2                1702.7
  Rigth side effective at Spillway elev. Left at top of dam
X3       10                                                          1710      1703
BT      -16     9775.3    1710.4                9814.2    1709.7              9838.0    1710.3
BT              9868.7    1710.5                9904.8    1710.4              9947.6    1710.3
BT              9981.6    1710.0               10000.0    1710.1             10027.9    1710.2
BT             10074.0    1709.9               10103.3    1710.2             10132.4    1710.0
BT             10150.9    1703.6               10184.4    1703.4             10252.9    1702.7
BT             10277.5    1733.2
GR     1708.2    9763.4   1703.4    9781.4     1701.0    9794.9    1694.5    9818.7    1686.3    9834.7
GR     1683.6    9848.0   1683.1    9876.7     1683.0    9921.3    1684.0    9961.5    1684.0    9983.9
GR     1678.8   9998.75   1678.86  10000.0     1678.86  10001.25   1683.9   10009.8    1684.8   10023.6
GR     1684.7   10050.8   1686.5   10070.8     1689.4   10098.4    1693.5   10119.8    1696.4   10141.3
GR     1700.3   10169.1   1702.1   10183.5     1702.7   10204.0    1702.7   10242.2    1703.0   10278.8
GR     1712.1   10293.3
```

Conc. point SNB6 Flow upstream from the dam

QT	2	569	569							
ET			9.1						9843.49	10076.87
X1	4.37	25	9982.8	10010.9	300	310	291			
GR	1709.8	9615.5	1700.3	9662.7	1698.4	9681.2	1697.6	9708.7	1698.1	9735.8
GR	1699.0	9772.6	1698.9	9809.3	1697.4	9842.8	1695.0	9869.5	1692.8	9886.7
GR	1691.6	9904.7	1692.4	9924.3	1688.0	9950.9	1686.6	9982.8	1685.1	10000.0
GR	1688.8	10010.9	1689.8	10049.2	1698.9	10082.6	1700.6	10118.8	1699.8	10151.7
GR	1700.9	10187.6	1702.0	10215.5	1703.2	10243.2	1703.6	10250.8	1708.0	10280.5

Conc. point *GRS3 Flow Upstream from confluence with Sunburst

QT	2	461	461							
NC	.045	.045	.039	.1	.3					
ET			9.1						9767.58	10070.64
X1	4.41	22	9990.4	10017	150	260	201			
X3				9848.3						
GR	1697.7	9754.5	1697.0	9780.4	1697.4	9796.9	1698.9	9821.5	1700.0	9838.8
GR	1700.6	9848.3	1700.0	9856.3	1699.9	9874.9	1699.2	9886.5	1698.9	9906.5
GR	1698.2	9927.6	1699.2	9948.0	1698.9	9964.0	1692.2	9979.4	1688.9	9990.4
GR	1688.6	10000.0	1688.7	10017.0	1690.8	10033.0	1694.3	10056.2	1700.8	10087.0
GR	1704.2	10103.3	1708.9	10122.4						
ET			9.1						9976.2	10039.9
X1	4.44	22	9983.9	10027.4	200	170	175			
GR	1719.6	9753.1	1714.4	9787.0	1711.9	9812.0	1709.6	9835.0	1704.4	9874.1
GR	1704.0	9876.1	1704.0	9942.7	1702.0	9965.0	1698.0	9974.6	1694.0	9983.9
GR	1691	10000.0	1694.0	10027.4	1696.0	10035.4	1698.0	10042.3	1700.0	10049.9
GR	1702.0	10055.3	1704.0	10067.3	1706.0	10077.1	1708.0	10090.1	1710.0	10106.4
GR	1719.3	10183.7	1720.4	10193.8						
NC				.3	.5					

Culvert COL6 outlet

ET			9.1						9992	10008
X1	4.45	20	9992	10008	40	50	35			
X3	10							1700.6	1700.9	
GR	1711.0	9822.9	1706.9	9853.0	1706.6	9880.2	1705.5	9915.2	1704.0	9987.7
GR	1702.0	9991.9	1691.8	9992	1691.8	10000.0	1691.8	10008	1702.0	10009.2
GR	1704.0	10013.6	1706.0	10017.3	1706.7	10061.7	1707.9	10080.9	1709.9	10110.6
GR	1711.8	10131.2	1714.9	10155.4	1718.2	10175.6	1720.4	10192.5	1721.5	10200.1

Culvert COL6 1 CMP 48" X 80', 2 CMP 60" X 80' Sycamore Dr.
Conc. point SGRS2 Flow Through culvert

QT	2	396	396							
SC	3.024	0.8	3.0		4.7		80	2.3	1695.54	1691.8
Culvert COL6 inlet										
ET			9.1						9992	10008
X1	4.47	29	9992	10008	90	90	80			
y			2		1704.3					
	10							1704.3	1705.7	
B1	-5	9934.48	1704.5		9950	1704.3		10000	1705.4	
BT		10050	1707.6		10075	1709.1				
GR	1711.9	9754.4	1710.3	9771.4	1709.4	9796.4	1708.5	9838.3	1708.1	9869.2
GR	1706.9	9894.8	1705.7	9922.3	1706.0	9930.5	1705.00	9933.15	1704.50	9934.48
GR	1704.0	9935.8	1702.0	9940.9	1700.0	9988.3	1695.54	9992	1695.5	10000.0
GR	1695.5	10008	1700.0	10016.0	1702.0	10019.4	1702.0	10023.4	1700.0	10052.5
GR	1702.0	10058.1	1704.0	10063.2	1706.0	10068.2	1708.0	10073.1	1709.1	10075.0
GR	1710.0	10080.5	1710.9	10099.2	1712.0	10114.9	1713.6	10131.7		

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .200 CEHV= .400
*SECNO 2.520
3720 CRITICAL DEPTH ASSUMED

2.520	4.86	1516.06	1516.06	1515.90	1516.98	.92	.00	.00	1511.20
1333.0	572.7	394.6	365.7	88.2	35.8	86.2	.0	.0	1511.50
.00	6.49	11.02	4.24	.048	.037	.048	.000	1511.20	9953.90
.009549	0.	0.	0.	0	7	0	.00	113.28	10067.18

*SECNO 2.540

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.540	4.52	1517.72	1517.72	.00	1518.76	1.05	.83	.05	1513.20
1333.0	439.6	729.4	164.0	78.1	72.5	45.1	.4	.2	1514.00
.00	5.63	10.06	3.63	.048	.037	.048	.000	1513.20	9958.38
.009231	85.	81.	110.	0	12	0	.00	105.73	10103.05

*SECNO 2.590
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.590	3.05	1521.65	1521.65	.00	1522.48	.83	3.61	.04	1519.50
1333.0	277.8	490.8	564.4	47.7	51.0	105.4	1.8	1.0	1519.70
.01	5.83	9.62	5.36	.048	.037	.048	.000	1518.60	9958.78
.016487	290.	298.	310.	0	19	0	.00	117.84	10076.63

*SECNO 2.680

2.680	3.50	1529.80	1529.78	.00	1530.64	.84	8.15	.00	1528.30
1333.0	434.8	512.4	385.8	79.8	54.0	66.9	4.1	2.3	1527.90
.03	5.45	9.50	5.76	.048	.037	.048	.000	1526.30	9937.11
.016200	475.	491.	525.	2	8	0	.00	111.55	10048.65

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 2.780

2.780	2.48	1537.08	1536.85	.00	1537.65	.57	6.96	.05	1534.60
1333.0	409.0	511.6	412.5	90.3	67.2	80.4	6.6	3.8	1535.40
.06	4.53	7.61	5.13	.048	.037	.048	.000	1534.60	9940.79
.012091	510.	499.	490.	4	14	0	.00	133.84	10074.63

*SECNO 2.840

2.840	2.40	1540.70	1540.68	.00	1541.55	.85	3.79	.11	1538.40
1333.0	246.8	1042.2	44.0	57.9	129.0	11.1	8.1	4.6	1538.30

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      .07       4.26       8.08       3.96       .048       .037       .048       .000    1538.30    9953.66
     3487        300.       298.        290.         2          8          0        .00     112.22   10065.88

*SECNO 2.870
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     2.870       3.51    1545.91    1545.91        .00    1546.92       1.01       2.70        .06    1543.70
    1333.0      104.3      620.9      607.9        26.5       63.2       93.9        9.0         5.0    1542.90
       .08       3.93       9.82       6.48        .048       .037       .048       .000    1542.40    9959.87
   .014161        185.       196.       200.          0         14          0        .00      89.03   10048.90


CCHV=      .300 CEHV=      .500
*SECNO 2.880

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1557.90 ELREA=      1557.90

     2.880       3.60    1548.20    1548.20        .00    1550.03       1.82        .71        .40    1544.60
    1327.0         .0     1327.0         .0         .0      122.6         .0        9.2         5.1    1544.60
       .08        .00      10.83        .00        .000       .033       .000       .000    1544.60    9983.00
   .010460         60.        57.        65.          0          8          0        .00       34.00   10017.00


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    SECNO       DEPTH       CWSEL       CRIWS       WSELK       EG          HV          HL          OLOSS       L-BANK ELEV
    Q           QLOB        QCH         QROB        ALOB        ACH         AROB        VOL         TWA         R-BANK ELEV
    TIME        VLOB        VCH         VROB        XNL         XNCH        XNR         WTN         ELMIN       SSTA
    SLOPE       XLOBL       XLCH        XLOBR       ITRIAL      IDC         ICONT       CORAR       TOPWID      ENDST


SPECIAL CULVERT

SC  CUNO        CUNV        ENTLC       COFQ        RDLEN       RISE        SPAN        CULVLN      CHRT        SCL         ELCHU       ELCHD
     4           .015         .40        2.80         .00        6.00        8.00       121.00         8          1      1546.44     1544.64

CHART  8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE  1 - WINGWALLS FLARED 30 TO 75 DEGREES

*SECNO 2.910

SPECIAL CULVERT OUTLET CONTROL
EGIC =   1552.382  EGOC =   1552.739  PCWSE=   1548.205  ELTRD=   1557.840


3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.89

SPECIAL CULVERT

     EGIC        EGOC          H4       QWEIR       QCULV         VCH       ACULV       ELTRD      WEIRLN
   1552.38     1552.74        2.71          0.        1295.       6.768       192.0     1557.84          0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1557.90 ELREA=      1557.90

     2.910       5.63    1552.03        .00        .00    1552.74        .71       2.71        .00    1549.40
    1295.0         .0     1295.0         .0         .0      191.3         .0        9.6         5.2    1549.40
       .08        .00       6.77        .00        .000       .033       .000       .000    1546.40    9983.00
   .002802        130.       121.       130.          3          0          0        .00       34.00   10017.00
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) 2.920

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.40

2.920	4.94	1552.94	1550.13	.00	1553.01	.07	.08	.19	1548.70
1312.0	490.0	637.6	184.4	345.6	232.6	143.0	10.5	5.4	1549.00
.09	1.42	2.74	1.29	.060	.033	.060	.000	1548.00	9898.08
.000501	90.	74.	110.	2	22	0	.00	182.31	10080.39

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .100 CEHV= .300
*SECNO 2.970

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.970	3.85	1554.85	1554.85	.00	1555.63	.77	.32	.21	1554.10
1276.0	408.0	853.1	14.9	141.9	101.6	8.7	13.4	6.5	1553.60
.10	2.87	8.40	1.71	.060	.033	.060	.000	1551.00	9859.18
.008958	260.	238.	290.	0	19	0	.00	180.40	10039.59

*SECNO 3.020
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.020	2.95	1561.35	1561.35	.00	1562.34	.99	3.36	.06	1559.00
1276.0	382.8	840.5	52.7	93.5	89.4	15.7	15.2	7.7	1558.40
.12	4.09	9.40	3.35	.060	.033	.060	.000	1558.40	9906.20
.011418	390.	309.	293.	0	15	0	.00	113.37	10019.57

*SECNO 3.120
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.120	3.17	1566.87	1566.87	.00	1567.75	.88	5.35	.01	1564.40
643.0	109.5	493.6	40.0	44.5	58.2	13.5	17.1	8.9	1563.70
.14	2.46	8.48	2.95	.060	.033	.060	.000	1563.70	9945.65
.008371	550.	519.	460.	0	8	0	.00	70.39	10016.04

*SECNO 3.220
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.220	2.56	1575.96	1575.96	.00	1577.03	1.08	4.73	.06	1573.60
643.0	34.3	590.3	18.4	11.8	68.2	6.9	18.2	9.5	1573.80
.15	2.89	8.65	2.68	.060	.033	.060	.000	1573.40	9971.94
.011375	460.	490.	500.	0	15	0	.00	44.63	10016.58

*SECNO 3.270
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV

Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
ME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
OPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
3.270	2.00	1582.00	1582.00	.00	1582.67	.66	3.86	.04	1580.00
643.0	15.3	622.9	4.8	5.2	94.2	2.0	18.9	9.9	1580.40
.17	2.92	6.62	2.36	.060	.033	.060	.000	1580.00	9968.08
.015250	295.	295.	280.	0	15	0	.00	80.24	10048.33

CCHV= .300 CEHV= .500
*SECNO 3.280

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.280	5.56	1587.96	1587.96	.00	1589.92	1.96	.78	.65	1582.40
635.0	144.0	440.8	50.2	33.5	33.3	14.2	19.0	10.0	1582.40
.17	4.30	13.22	3.53	.060	.033	.060	.000	1582.40	9984.94
.008754	75.	67.	80.	0	20	0	.00	23.18	10008.12

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.026	.80	2.80	.00	6.00	.00	166.00	2	3	1584.83	1582.41

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 3 - PIPE PROJECTING FROM FILL

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
5130, EGIC= 1614.02..MAY BE TOO LARGE IF INLET CONTROLS.
5[illegible] EGOC= 1608.11 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
[illegible]) 3.320

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 1596.82

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 10.51

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1614.02	1608.11	6.90	255.	356.	1.761	28.3	1595.86	181.

3.320	12.00	1596.80	.00	.00	1596.82	.02	6.90	.00	1584.80
613.0	405.1	126.8	81.1	410.1	72.0	124.6	20.6	10.4	1584.80
.21	.99	1.76	.65	.045	.038	.045	.000	1584.80	9904.87
.000074	200.	166.	205.	2	0	0	.00	155.36	10060.22

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3.330

3[illegible] WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.46

3.330	9.92	1596.82	1588.47	.00	1596.82	.01	.00	.00	1586.90

655.0	59.8	555.1	40.1	161.0	847.2	121.2	21.8	10.6	1587.20
.24	.37	.66	.33	.045	.038	.045	.000	1586.90	9901.26
.0014	60.	58.	65.	2	17	0	.00	168.71	10069.97

CCHV= .100 CEHV= .300
*SECNO 3.410

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .40

3.410	7.32	1596.82	1591.53	.00	1596.84	.02	.01	.00	1590.10
655.0	95.4	496.8	62.9	114.9	380.1	89.1	31.0	12.1	1589.50
.35	.83	1.31	.71	.045	.038	.045	.000	1589.50	9930.93
.000085	480.	466.	460.	1	21	0	.00	107.20	10038.13

*SECNO 3.470

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.470	2.50	1596.40	1596.40	.00	1597.29	.89	.09	.26	1594.50
655.0	130.3	449.6	75.1	22.6	53.6	16.5	33.3	12.7	1594.10
.36	5.76	8.39	4.55	.045	.038	.045	.000	1593.90	9973.98
.015156	310.	312.	275.	0	17	0	.00	51.52	10025.50

*SECNO 3.520
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.520	4.61	1601.41	1601.41	.00	1602.16	.75	3.99	.01	1601.30
655.0	240.8	326.0	88.2	43.9	39.0	20.9	33.9	13.0	1600.40
.37	5.49	8.35	4.21	.045	.038	.045	.000	1596.80	9972.29
.015421	290.	249.	250.	0	17	0	.00	70.33	10042.62

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3.560
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.560	3.47	1606.47	1606.47	.00	1607.06	.59	3.16	.02	1604.60
367.0	152.7	200.2	14.1	39.4	26.5	4.8	34.4	13.4	1604.90
.38	3.88	7.56	2.92	.045	.038	.045	.000	1603.00	9960.27
.011310	230.	231.	225.	0	14	0	.00	50.87	10011.14

*SECNO 3.590
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.590	2.28	1609.78	1609.78	.00	1610.44	.66	1.83	.02	1607.50
367.0	96.0	227.3	43.7	17.2	31.2	12.8	34.6	13.5	1608.80
.39	5.57	7.28	3.41	.045	.038	.045	.000	1607.50	9980.38
.015480	140.	139.	135.	0	14	0	.00	46.16	10026.54

*SECNO 3.640
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.640	1.48	1615.28	1615.28	.00	1615.93	.65	4.34	.00	1614.00
367.0	7.4	348.0	11.6	2.3	52.9	3.5	35.0	13.8	1614.00
.40	3.20	6.58	3.27	.045	.038	.045	.000	1613.80	9970.60
.018354	260.	258.	250.	0	14	0	.00	47.32	10017.92

C .300 CEHV= .500
*, 3.650

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1628.80 ELREA= 1628.80

3.650	3.47	1617.97	1617.97	.00	1619.71	1.75	.82	.55	1614.53
367.0	.0	367.0	.0	.0	34.6	.0	35.0	13.8	1614.50
.40	.00	10.61	.00	.000	.033	.000	.000	1614.50	9995.00
.010605	60.	60.	60.	0	17	0	.00	10.00	10005.00

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	2	.024	.80	3.00	.00	5.00	.00	94.00	2	3	1616.60	1614.53

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 3 - PIPE PROJECTING FROM FILL

) 3.670

SPECIAL CULVERT OUTLET CONTROL
EGIC = 1622.788 EGOC = 1623.053 PCWSE= 1617.967 ELTRD= 1628.800

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.55

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1622.79	1623.05	3.34	0.	303.	4.993	39.3	1628.80	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1628.80 ELREA= 1628.80

3.670	6.07	1622.67	.00	.00	1623.05	.39	3.34	.00	1616.60
303.0	.0	303.0	.0	.0	60.7	.0	35.1	13.8	1616.60
.41	.00	4.99	.00	.000	.033	.000	.000	1616.60	9995.00
.001111	100.	94.	100.	2	0	0	.00	10.00	10005.00

*SECNO 3.680

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 4.95

3.680	6.16	1623.16	1618.87	.00	1623.17	.02	.01	.11	1620.00
354.0	10.5	336.0	7.5	23.7	326.1	18.9	35.4	13.9	1620.00
.42	.44	1.03	.40	.040	.033	.044	.000	1617.00	9941.41
000062	75.	47.	75.	2	17	0	.00	92.47	10033.88

CCHV= .100 CEHV= .300
*SECNO 3.770

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.770	2.22	1624.02	1624.02	.00	1624.74	.72	.11	.21	1622.20
354.0	38.9	264.4	50.7	10.6	35.0	12.1	37.8	14.7	1622.00
.44	3.68	7.55	4.20	.040	.033	.044	.000	1621.80	9979.40
.010553	490.	488.	550.	0	15	0	.00	42.00	10021.41

*SECNO 3.830
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.830	2.98	1628.18	1628.18	.00	1628.82	.64	3.13	.01	1625.20
354.0	25.2	203.8	125.0	6.3	25.9	36.7	38.3	15.0	1626.80
.46	3.99	7.88	3.40	.040	.033	.044	.000	1625.20	9990.46
.008831	300.	309.	375.	0	11	0	.00	47.99	10038.46

*SECNO 3.900
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.900	3.64	1640.64	1640.64	.00	1641.46	.82	3.33	.06	1638.00
354.0	32.6	216.3	105.2	8.5	24.8	25.5	38.8	15.4	1638.00
.47	3.84	8.73	4.12	.040	.033	.044	.000	1637.00	9986.34
.008534	330.	377.	410.	0	11	0	.00	37.37	10023.71

CCHV= .300 CEHV= .500
*SECNO 3.920

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1656.80 ELREA= 1656.90

3.920	3.13	1649.83	1649.83	.00	1651.40	1.57	1.25	.37	1646.76
313.0	.0	313.0	.0	.0	31.1	.0	39.0	15.5	1646.70
.48	.00	10.05	.00	.000	.033	.000	.000	1646.70	9995.00
.010959	125.	114.	225.	0	11	0	.00	10.00	10005.00

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
2	.024	.80	3.00	.00	4.81	.00	168.00	2	3	1650.13	1647.26

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C       2 - CORRUGATED METAL PIPE CULVERT
S       3 - PIPE PROJECTING FROM FILL

*SECNO 3.950

SPECIAL CULVERT OUTLET CONTROL
EGIC =   1656.443  EGOC =   1656.555  PCWSE=   1649.829  ELTRD=   1663.200


3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.55

SPECIAL CULVERT

     EGIC      EGOC        H4      QWEIR      QCULV       VCH      ACULV     ELTRD    WEIRLN
  1656.44   1656.55      5.16         0.       289.     4.343       36.3   1663.20        0.



3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1663.30 ELREA=      1663.40

    3.950      6.66   1656.26       .00       .00   1656.55       .29      5.16       .00   1649.63
    289.0        .0     289.0        .0        .0      66.6        .0      39.2      15.5   1649.60
      .49       .00      4.34       .00      .000      .033      .000      .000   1649.60   9995.00
  .000743      170.      168.      170.         2         0         0       .00     10.00  10005.00


*SECNO 3.980

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.33

    3.980      3.66   1656.66   1654.16       .00   1656.67       .01       .03       .08   1654.00
    217.0       4.5     189.2      23.3      10.6     222.2      61.2      39.8      15.8   1654.00
      .54       .43       .85       .38      .040      .033      .044      .000   1653.00   9955.18
  .000077      180.      158.      190.         2        25         0       .00    133.68  10088.87


CCHV=     .100 CEHV=     .300
*SECNO 4.050
7185 MINIMUM SPECIFIC ENERGY
1
   23OCT95       09:04:19                                                                    PAGE   23

    SECNO      DEPTH      CWSEL      CRIWS      WSELK         EG         HV         HL      OLOSS   L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB          ACH        AROB       VOL       TWA   R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL           XNCH       XNR        WTN       ELMIN  SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL        IDC        ICONT      CORAR     TOPWID ENDST


3720 CRITICAL DEPTH ASSUMED
    4.050      1.15   1659.45   1659.45       .00   1659.83       .38       .10       .11   1658.90
    217.0      24.7     188.1       4.2       8.6      36.3       1.9      41.3      16.7   1658.70
      .57      2.88      5.18      2.16      .040      .033      .044      .000   1658.30   9959.03
  .015305      390.      385.      350.         0        17         0       .00     64.01  10023.04


*SECNO 4.150
    4.150      1.22   1665.42   1665.20       .00   1665.61       .19      5.76       .02   1664.70
    217.0      29.3      78.0     109.8       9.9      18.4      36.6      42.0      17.5   1664.70
      .61      2.95      4.23      3.00      .040      .033      .044      .000   1664.20   9972.70
  .009271      475.      485.      512.         5        15         0       .00     75.73  10048.43


*SECNO 4.200

3215 DIVIDED FLOW

    4.200      1.36   1668.26   1668.19       .00   1668.58       .32      2.93       .04   1667.20
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     217.0      40.5     175.4      1.1      19.0      35.6       .6      42.4      18.0   1667.40
       .62      2.13      4.93     1.73      .040      .033      .044      .000   1666.90   9990.57
     9738       320.      307.     305.         3         8         0       .00     85.01  10078.70


*SECNO 4.240
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     4.240      1.03   1672.93  1672.93       .00   1673.14       .21      2.42       .01   1672.60
     217.0       7.6     81.1     128.3       3.5      16.5      48.5      42.7      18.5   1672.20
       .64      2.17      4.91     2.64      .040      .033      .044      .000   1671.90   9968.86
   .015470       210.      198.     200.         0        14         0       .00     135.47  10104.33


CCHV=     .300 CEHV=     .500
*SECNO 4.290

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1698.00 ELREA=      1698.00

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


     4.290      6.14   1682.24  1682.24       .00   1685.34       3.10      2.96       1.45   1676.10
     217.0        .0     217.0       .0        .0      15.3         .0      42.9       19.0   1676.10
       .65       .00     14.14      .00      .000      .033      .000      .000   1676.10   9998.75
    08765       250.      246.     290.         0        26         0       .00      2.50  10001.25


SPECIAL CULVERT

SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
    1           .013        .20       3.00         .00       2.50        .00     157.00        3          1     1678.86    1677.21

CHART  3 - CONCRETE PIPE CULVERT; BEVELED RING ENTRANCE
SCALE  1 - (A) SMALL BEVEL = 0.042D

5135, EGOC= 1697.32 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 4.320

SPECIAL CULVERT OUTLET CONTROL
EGIC =   1691.698  EGOC =   1697.318  PCWSE=   1682.240  ELTRD=   1702.700


3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  6.23

SPECIAL CULVERT

     EGIC       EGOC         H4       QWEIR      QCULV       VCH       ACULV      ELTRD     WEIRLN
   1691.70    1697.32      11.98          0.         94.     2.043         4.9    1702.70         0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1710.00 ELREA=      1703.00

     4.320      18.45   1697.25       .00       .00   1697.32       .06      11.98       .00   1678.80
      94.0         .0      94.0        .0        .0      46.0         .0       43.0      19.0   1678.86
```

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      .67       .00      2.04       .00      .000      .033      .000      .000   1678.80   9998.75
    00042       160.      157.      160.         2         0         0       .00      2.50  10001.25


*SECNO 4.370

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 15.78

     4.370     12.24   1697.34   1688.37       .00   1697.34       .00       .00       .02   1686.60
     569.0     273.4     170.7     124.9     796.6     310.8     412.0      48.4      19.8   1688.80
       .87       .34       .55       .30      .040      .033      .044      .000   1685.10   9843.50
   .000006       300.      291.      310.         2        22         0       .00    233.36  10076.86


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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


CCHV=     .100 CEHV=     .300
*SECNO 4.410

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .32


3470 ENCROACHMENT STATIONS=     9848.3   10122.4  TYPE=       1  TARGET=    -9848.300
     4.410      8.73   1697.33   1690.60       .00   1697.34       .01       .00       .00   1688.90
     461.0      64.6     230.2     166.2     105.1     230.2     254.6      53.2      20.6   1688.70
       .94       .61      1.00       .65      .045      .039      .045      .000   1688.60   9967.58
   .000039       150.      201.      260.         0        20         0       .00    103.03  10070.61


*SECNO 4.440

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .33

     4.440      6.31   1697.31   1693.99       .00   1697.37       .06       .02       .02   1694.00
     461.0      10.6     429.1      21.3      12.8     209.4      21.5      54.9      20.9   1694.00
       .97       .83      2.05       .99      .045      .039      .045      .000   1691.00   9976.20
   .000361       200.      175.      170.         2        22         0       .00     63.73  10039.93


CCHV=     .300 CEHV=     .500
*SECNO 4.450

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .41


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1700.60 ELREA=      1700.90

     4.450      5.34   1697.14   1694.74       .00   1697.60       .45       .03       .19   1691.80
     461.0        .0     461.0        .0        .0      85.5        .0      55.1      21.0   1691.80
       .97       .00      5.39       .00      .000      .039      .000      .000   1691.80   9992.00
   .002142        40.       35.       50.         2        14         0       .00     16.00  10008.00


SPECIAL CULVERT

1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST
```

S	NO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
		.024	.80	3.00	.00	4.70	.00	80.00	2	3	1695.54	1691.80

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 3 - PIPE PROJECTING FROM FILL

*SECNO 4.470

SPECIAL CULVERT INLET CONTROL
EGIC = 1701.387 EGOC = 1699.736 PCWSE= 1697.144 ELTRD= 1704.300

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1701.39	1699.74	3.79	0.	396.	4.442	52.0	1704.30	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1704.30 ELREA= 1705.70

4.470	5.58	1701.08	.00	.00	1701.39	.31	3.79	.00	1695.54
396.0	.0	396.0	.0	.0	89.1	.0	55.2	21.0	1695.50
.97	.00	4.44	.00	.000	.039	.000	.000	1695.50	9992.00
.001376	90.	80.	90.	2	0	0	.00	16.00	10008.00

THIS RUN EXECUTED 23OCT95 09:04:23

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	2.520	1333.00	9953.90	10067.18	1516.06	1516.06	.90	.92	4.86
*	2.520	1333.00	9954.04	10067.15	1516.06	1516.06	.90	.92	4.86
*	2.540	1333.00	9958.38	10103.05	1517.72	1517.72	.86	1.05	4.52
*	2.540	1333.00	9958.40	10103.08	1517.73	1517.73	.86	1.04	4.53
*	2.590	1333.00	9958.78	10076.63	1521.65	1521.65	1.06	.83	3.05
*	2.590	1333.00	9958.79	10076.62	1521.65	1521.65	1.06	.83	3.05
	2.680	1333.00	9937.11	10048.65	1529.80	1529.78	1.04	.84	3.50
	2.680	1333.00	9937.66	10048.65	1529.80	1529.79	1.04	.84	3.50
	2.780	1333.00	9940.79	10074.63	1537.08	1536.85	.89	.57	2.48
	2.780	1333.00	9940.79	10074.63	1537.08	1536.85	.89	.57	2.48
	2.840	1333.00	9953.66	10065.88	1540.70	1540.68	.94	.85	2.40
	2.840	1333.00	9953.66	10065.89	1540.70	1540.68	.94	.85	2.40
*	2.870	1333.00	9959.87	10048.90	1545.91	1545.91	1.01	1.01	3.51
*	2.870	1333.00	9959.87	10048.90	1545.91	1545.91	1.00	1.00	3.51
*	2.880	1327.00	9983.00	10017.00	1548.20	1548.20	1.01	1.82	3.60
*	2.880	1327.00	9983.00	10017.00	1548.20	1548.20	1.01	1.82	3.60
*	2.910	1295.00	9983.00	10017.00	1552.03	.00	.50	.71	5.63
*	2.910	1295.00	9983.00	10017.00	1552.03	.00	.50	.71	5.63
*	2.920	1312.00	9898.08	10080.39	1552.94	1550.13	.23	.07	4.94
*	2.920	1312.00	9898.10	10080.40	1552.94	1550.13	.23	.07	4.94
*	2.970	1276.00	9859.18	10039.59	1554.85	1554.85	.88	.77	3.85
*	2.970	1276.00	9859.18	10037.60	1554.86	1554.86	.88	.77	3.86

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	3.020	1276.00	9906.20	10019.57	1561.35	1561.35	1.00	.99	2.95
*	3.020	1276.00	9906.20	10019.61	1561.36	1561.36	.99	.98	2.96
*	3.120	643.00	9945.65	10016.04	1566.87	1566.87	.87	.88	3.17
*	3.120	643.00	9945.65	10016.03	1566.87	1566.87	.87	.88	3.17
*	3.220	643.00	9971.94	10016.58	1575.96	1575.96	.98	1.08	2.56
*	3.220	643.00	9971.90	10016.34	1575.99	1575.99	.96	1.04	2.59
*	3.270	643.00	9968.08	10048.33	1582.00	1582.00	1.02	.66	2.00
*	3.270	643.00	9968.08	10048.33	1582.00	1582.00	1.02	.66	2.00
*	3.280	635.00	9984.94	10008.12	1587.96	1587.96	.99	1.96	5.56
*	3.280	635.00	9985.50	10007.50	1587.97	1587.97	.98	1.93	5.57
*	3.320	613.00	9904.87	10060.22	1596.80	.00	.09	.02	12.00
*	3.320	613.00	9904.88	10060.04	1596.79	.00	.09	.02	11.99
*	3.330	655.00	9901.26	10069.97	1596.82	1588.47	.04	.01	9.92
*	3.330	655.00	9901.27	10069.96	1596.81	1588.47	.04	.01	9.91
*	3.410	655.00	9930.93	10038.13	1596.82	1591.53	.09	.02	7.32
*	3.410	655.00	9930.95	10038.11	1596.81	1591.53	.09	.02	7.31
*	3.470	655.00	9973.98	10025.50	1596.40	1596.40	.97	.89	2.50
*	3.470	655.00	9974.00	10025.50	1596.41	1596.41	.97	.88	2.51
*	3.520	655.00	9972.29	10042.62	1601.41	1601.41	.92	.75	4.61
*	3.520	655.00	9972.74	10042.34	1601.41	1601.41	.92	.75	4.61
*	3.560	367.00	9960.27	10011.14	1606.47	1606.47	.83	.59	3.47
*	3.560	367.00	9960.42	10010.86	1606.47	1606.47	.83	.59	3.47
*	3.590	367.00	9980.38	10026.54	1609.78	1609.78	.95	.66	2.28
*	3.590	367.00	9980.46	10026.42	1609.78	1609.78	.95	.66	2.28
*	3.640	367.00	9970.60	10017.92	1615.28	1615.28	.99	.65	1.48
*	3.640	367.00	9970.57	10017.97	1615.29	1615.29	.97	.64	1.49
*	3.650	367.00	9995.00	10005.00	1617.97	1617.97	1.01	1.75	3.47
*	3.650	367.00	9995.00	10005.00	1617.97	1617.97	1.00	1.75	3.47
*	3.670	303.00	9995.00	10005.00	1622.67	.00	.36	.39	6.07
*	3.670	303.00	9995.00	10005.00	1622.67	.00	.36	.39	6.07
*	3.680	354.00	9941.41	10033.88	1623.16	1618.87	.08	.02	6.16
*	3.680	354.00	9941.41	10033.88	1623.16	1618.87	.08	.02	6.16
*	3.770	354.00	9979.40	10021.41	1624.02	1624.02	.92	.72	2.22
*	3.770	354.00	9979.40	10021.40	1624.02	1624.02	.92	.72	2.22

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	3.830	354.00	9990.46	10038.46	1628.18	1628.18	.86	.64	2.98
*	3.830	354.00	9990.76	10038.45	1628.18	1628.18	.86	.64	2.98
*	3.900	354.00	9986.34	10023.71	1640.64	1640.64	.87	.82	3.64
*	3.900	354.00	9986.30	10023.70	1640.65	1640.65	.86	.81	3.65
*	3.920	313.00	9995.00	10005.00	1649.83	1649.83	1.00	1.57	3.13
*	3.920	313.00	9995.00	10005.00	1649.83	1649.83	1.00	1.57	3.13
*	3.950	289.00	9995.00	10005.00	1656.26	.00	.30	.29	6.66
*	3.950	289.00	9995.00	10005.00	1656.26	.00	.30	.29	6.66
*	3.980	217.00	9955.18	10088.87	1656.66	1654.16	.08	.01	3.66
*	3.980	217.00	9955.20	10088.80	1656.67	1654.16	.08	.01	3.67
*	4.050	217.00	9959.03	10023.04	1659.45	1659.45	.96	.38	1.15
*	4.050	217.00	9959.07	10023.02	1659.45	1659.45	.97	.38	1.15
	4.150	217.00	9972.70	10048.43	1665.42	1665.20	.76	.19	1.22
	4.150	217.00	9973.21	10048.40	1665.42	1665.20	.76	.19	1.22
	4.200	217.00	9990.57	10078.70	1668.26	1668.19	.80	.32	1.36
	4.200	217.00	9990.58	10078.69	1668.26	1668.19	.81	.32	1.36
*	4.240	217.00	9968.86	10104.33	1672.93	1672.93	.95	.21	1.03
*	4.240	217.00	9969.03	10104.22	1672.93	1672.93	.96	.21	1.03
*	4.290	217.00	9998.75	10001.25	1682.24	1682.24	1.01	3.10	6.14
*	4.290	217.00	9998.75	10001.25	1682.24	1682.24	1.01	3.10	6.14
*	4.320	94.00	9998.75	10001.25	1697.25	.00	.08	.06	18.45
*	4.320	94.00	9998.75	10001.25	1697.25	.00	.08	.06	18.45
*	4.370	569.00	9843.50	10076.86	1697.34	1688.37	.03	.00	12.24
*	4.370	569.00	9843.49	10076.87	1697.34	1688.37	.03	.00	12.24
*	4.410	461.00	9967.58	10070.61	1697.33	1690.60	.06	.01	8.73
*	4.410	461.00	9967.60	10070.58	1697.33	1690.60	.06	.01	8.73
*	4.440	461.00	9976.20	10039.93	1697.31	1693.99	.16	.06	6.31
*	4.440	461.00	9976.20	10039.90	1697.31	1693.99	.16	.06	6.31
*	4.450	461.00	9992.00	10008.00	1697.14	1694.74	.41	.45	5.34
*	4.450	461.00	9992.00	10008.00	1697.15	1694.74	.41	.45	5.35
	4.470	396.00	9992.00	10008.00	1701.08	.00	.33	.31	5.58
	4.470	396.00	9992.00	10008.00	1701.08	.00	.33	.31	5.58

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 2.520 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.520 PROFILE= 2 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 2.540 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.540 PROFILE= 1 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.540 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.540 PROFILE= 2 MINIMUM SPECIFIC ENERGY

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CAUTION SECNO= 2.590 PROFILE= 2 MINIMUM SPECIFIC ENERGY

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CAUTION SECNO= 2.870 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.870 PROFILE= 2 MINIMUM SPECIFIC ENERGY

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CAUTION SECNO= 2.880 PROFILE= 1 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.880 PROFILE= 2 CRITICAL DEPTH ASSUMED
ION SECNO= 2.880 PROFILE= 2 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 2.910 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 2.910 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 2.920 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 2.920 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 2.970 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.970 PROFILE= 1 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2.970 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2.970 PROFILE= 2 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 3.020 PROFILE= 1 CRITICAL DEPTH ASSUMED
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CAUTION SECNO= 3.020 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.020 PROFILE= 2 MINIMUM SPECIFIC ENERGY

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CAUTION SECNO= 3.120 PROFILE= 2 MINIMUM SPECIFIC ENERGY

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CAUTION SECNO= 3.220 PROFILE= 1 MINIMUM SPECIFIC ENERGY
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CAUTION SECNO= 3.220 PROFILE= 2 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 3.270 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.270 PROFILE= 1 MINIMUM SPECIFIC ENERGY

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CAUTION SECNO=     3.270  PROFILE=  2  MINIMUM SPECIFIC ENERGY

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CAUTION SECNO=     3.280  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=     3.280  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=     3.320  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     3.320  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     3.330  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     3.330  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     3.410  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     3.410  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     3.470  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     3.470  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=     3.470  PROFILE=  2  MINIMUM SPECIFIC ENERGY

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CAUTION SECNO=     3.520  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=     3.650  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=     3.650  PROFILE=  2  MINIMUM SPECIFIC ENERGY

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WARNING SECNO=     3.670  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     3.680  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     3.680  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     3.770  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=     3.770  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     3.770  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     3.770  PROFILE=  2  MINIMUM SPECIFIC ENERGY

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CAUTION SECNO=     3.830  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=     3.920  PROFILE=  2  MINIMUM SPECIFIC ENERGY

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WARNING SECNO=     3.950  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     3.980  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     3.980  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 ON SECNO=     4.050  PROFILE=  1  CRITICAL DEPTH ASSUMED
 ON SECNO=     4.050  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     4.050  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     4.050  PROFILE=  2  MINIMUM SPECIFIC ENERGY

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CAUTION SECNO=     4.290  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     4.290  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=     4.320  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     4.320  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     4.370  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     4.370  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     4.410  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     4.410  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     4.440  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     4.440  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     4.450  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     4.450  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

FLOODWAY DATA, Fountain Hills (south) -
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
2.520	113.	210.	6.4	1516.1	1516.1	.0
2.540	145.	197.	6.8	1517.7	1517.7	.0
2.590	118.	204.	6.5	1521.7	1521.7	.0
2.680	111.	201.	6.6	1529.8	1529.8	.0
2.780	134.	238.	5.6	1537.1	1537.1	.0
2.840	112.	198.	6.7	1540.7	1540.7	.0
2.870	89.	184.	7.2	1545.9	1545.9	.0
2.880	34.	123.	10.8	1548.2	1548.2	.0
2.910	34.	191.	6.8	1552.0	1552.0	.0
2.920	182.	722.	1.8	1552.9	1552.9	.0
2.970	178.	253.	5.1	1554.9	1554.9	.0
3.020	113.	200.	6.4	1561.4	1561.4	.0
3.120	70.	116.	5.5	1566.9	1566.9	.0
3.220	44.	88.	7.3	1576.0	1576.0	.0
3.270	80.	102.	6.3	1582.0	1582.0	.0
3.280	22.	81.	7.8	1588.0	1588.0	.0
3.320	155.	605.	1.0	1596.8	1596.8	.0
3.330	169.	1128.	.6	1596.8	1596.8	.0
3.410	107.	583.	1.1	1596.8	1596.8	.0
3.470	51.	93.	7.0	1596.4	1596.4	.0
3.520	70.	103.	6.3	1601.4	1601.4	.0
3.560	50.	71.	5.2	1606.5	1606.5	.0
3.590	46.	61.	6.0	1609.8	1609.8	.0
3.640	47.	59.	6.2	1615.3	1615.3	.0
3.650	10.	35.	10.6	1618.0	1618.0	.0
3.670	10.	61.	5.0	1622.7	1622.7	.0
3.680	92.	369.	1.0	1623.2	1623.2	.0
3.770	42.	58.	6.1	1624.0	1624.0	.0
3.830	48.	69.	5.1	1628.2	1628.2	.0
3.900	37.	59.	6.0	1640.6	1640.6	.0
3.920	10.	31.	10.0	1649.8	1649.8	.0
3.950	10.	67.	4.3	1656.3	1656.3	.0
3.980	134.	294.	.7	1656.7	1656.7	.0
4.050	64.	47.	4.7	1659.5	1659.5	.0
4.150	75.	65.	3.3	1665.4	1665.4	.0
4.200	88.	55.	3.9	1668.3	1668.3	.0
4.240	135.	68.	3.2	1672.9	1672.9	.0
4.290	2.	15.	14.1	1682.2	1682.2	.0
4.320	2.	46.	2.0	1697.3	1697.3	.0
4.370	233.	1520.	.4	1697.3	1697.3	.0
4.410	103.	589.	.8	1697.3	1697.3	.0
4.440	64.	244.	1.9	1697.3	1697.3	.0
4.450	16.	86.	5.4	1697.1	1697.1	.0
4.470	16.	89.	4.4	1701.1	1701.1	.0

FOUNTAIN CHANNEL

FOUNTAIN HILLS SOUTH
Fountain Channel

X-Sec	HEC-1 Conc. Point	100-Yr Discharge (cfs)	Left Overbank Lenght (ft)	Rigth Overbank Lenght (ft)	Channel Lenght (ft)	COMMENT
2.99	FC7	885				
0.00		885	290	380	309	COL-FC confluence
0.08		885	420	410	421	
0.11		885	180	180	173	
0.12		885	45	45	46	
0.13	FC6	880	60	200	42	
0.14		880	60	200	40	
0.20		880	325	360	341	
0.21	FC5	857	85	85	71	Culvert outlet
0.23	SFC4	668	80	80	74	Culvert inlet
0.24	FC4	738	70	70	50	Upsream From culvert
0.32	FC3	713	435	440	440	
0.41	DFC2	451	480	520	487	Flow in channel after spill
0.50		451	440	435	434	

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    23OCT95    TIME   09:08:22   *
*********************************************
```


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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*          (916) 756-1104               *
*****************************************
```


```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 23OCT95 09:08:22

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**************************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
**************************************


T1      Fountain Hills (South) - Floodplain Delineation        File: FOUNTAIN.H2
T1      For the Flood Control District of Maricopa County
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - FOUNTAIN CHANNEL

T4 GR data from stereo model received October 93 from KAM
T4 Revised photogrametric x-sec. received May 94
T5 1"=200' 2-feet Contour mapping from KAM flown 8-91
T6 with survey control by Anderson Nelson 12-11-92, field survey Aug 91
T7 Supplemental cross section data surveyed by Valco Surveing
T8 Source of 100-yr flowrate from HEC-1 Analysis by AGK Enginers
T8            File 180-6CE.DAT
T9 Subcritical analysis
T9 This model was developed and configured to determine water surface elevation
T9 for a 100-year floodplain delineation study, Velocity from this model
T9 may not be accurate and should not be used

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                             0.01                                  1573.5

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                                                          -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        43        53        54         1         2        68        10         8        200

  Starting condisions normal depth at Colony wash
  Fountain Channel flow used
  Tributary Area and time of concentration considerably different

  Conc. point FC7 Flow upstream from confluence with Colony

QT       2       885       885
NC    .045      .045      .038        .1        .3

  Starting conditions downstream
ET                         9.1                                                 9860.27     10034.5
```

X1	2.99	31	9989.6	10025.7						
GR	1561.9	9476.4	1563.2	9519.7	1563.4	9564.9	1563.6	9604.6	1563.9	9670.5
GR	1563.2	9682.3	1564.3	9728.1	1564.5	9805.9	1563.1	9839.5	1552.5	9864.8
GR	1552.9	9881.7	1553.6	9912.5	1554.4	9948.3	1554.3	9948.4	1554.6	9965.7
GR	1554.1	9989.6	1551.0	10000.0	1551.7	10016.2	1553.6	10025.7	1555.9	10051.2
GR	1556.6	10070.7	1559.1	10084.8	1559.9	10100.1	1567.6	10132.0	1568.6	10152.4
GR	1568.4	10187.5	1568.2	10208.3	1567.7	10216.3	1568.7	10225.9	1569.5	10254.7
GR	1570.3	10272.9								

Confluence of Fountain Channel and Colony Wash

ET			9.1						9941.4	10016.9
X1	0.00	24	9976.2	10008.9	290	380	309			
GR	1574.5	9857.6	1568.0	9871.5	1562.2	9886.4	1561.0	9914.4	1560.6	9942.6
GR	1558.8	9949.9	1559.0	9976.2	1558.4	10000.0	1558.4	10008.9	1563.6	10027.7
GR	1564.0	10038.4	1563.1	10051.9	1566.1	10071.1	1568.4	10087.1	1569.8	10107.2
GR	1570.3	10126.9	1571.9	10141.7	1572.9	10148.9	1573.1	10158.6	1572.3	10168.9
GR	1572.5	10182.7	1573.3	10190.3	1573.3	10206.5	1572.3	10222.6		

NC	.058	.058	.031	.1	.3					
ET			9.1						9963.03	10030.2
X1	0.08	18	9983	10000	420	410	421			
GR	1582.1	9866.3	1580.1	9924.9	1580.3	9945.3	1571.3	9968.5	1571.0	9983.0
GR	1570.8	10000.0	1571.9	10023.7	1575.7	10039.8	1576.8	10070.3	1577.2	10096.9
GR	1577.8	10130.0	1577.2	10157.9	1577.5	10187.0	1577.8	10218.6	1577.4	10242.4
GR	1577.6	10267.8	1577.4	10298.9	1576.3	10318.3				

ET			9.1						9970.5	10028.5
X1	0.11	32	9976.1	10015.4	180	180	173			
GR	1581.8	9652.8	1582.5	9685.1	1583.7	9723.1	1583.8	9752.8	1582.7	9860.3
GR	1581.2	9882.0	1581.1	9925.5	1580.2	9958.7	1573.1	9976.1	1572.8	10000.0
GR	1573.0	10015.4	1577.0	10037.4	1579.3	10063.9	1579.4	10091.8	1579.6	10125.0
GR	1579.7	10154.5	1579.1	10178.5	1579.2	10220.6	1579.3	10259.1	1581.5	10284.3
GR	1581.6	10312.3	1581.5	10344.1	1581.4	10372.4	1581.2	10401.4	1581.7	10424.7
GR	1582.0	10446.1	1582.7	10473.0	1582.2	10502.7	1582.0	10528.0	1582.1	10544.1
GR	1583.0	10563.8	1582.3	10584.2						

ET			9.1						9966.5	10029.9
X1	0.12	36	9973.3	10000	45	45	46			
GR	1581.3	9648.6	1582.2	9672.8	1581.9	9706.3	1582.7	9742.5	1582.7	9780.2
GR	1582.8	9819.4	1583.3	9848.9	1581.5	9866.6	1579.5	9890.1	1579.8	9919.0
GR	1578.7	9943.7	1577.5	9963.3	1573.4	9973.3	1573.6	9989.8	1573.7	10000.0
GR	1574.4	10018.2	1576.7	10033.3	1579.0	10050.7	1579.4	10076.8	1580.0	10102.1
GR	1579.7	10139.6	1579.5	10169.0	1579.0	10192.2	1579.1	10214.3	1579.6	10239.4
GR	1579.7	10268.5	1580.0	10296.8	1580.1	10332.7	1581.2	10360.6	1581.8	10380.4
GR	1581.8	10415.3	1582.4	10442.8	1583.2	10474.1	1583.6	10510.6	1583.4	10534.7
GR	1583.4	10562.1								

Conc. point FC6 Flow Upstream from Coyote Dr.

```
QT        2        880        880
NC     .025        .025       .025         .3          .5

ET                            9.1                                                    9897.9     10233.4
X1     0.13          32       10000     10037.7          60         100          42
GR   1581.8      9702.7      1581.9      9737.2      1581.4      9763.0      1580.7      9800.0      1579.5      9839.1
GR   1578.8      9869.3      1577.5      9900.1      1576.3      9933.4      1575.4      9961.0      1574.9      9986.0
GR   1575.0     10000.0      1574.8     10014.8      1574.8     10037.7      1575.4     10072.5      1576.0     10109.1
GR   1576.4     10152.0      1576.9     10188.5      1577.5     10229.4      1578.3     10264.5      1578.5     10305.0
GR   1578.9     10348.6      1579.6     10374.9      1580.4     10425.1      1581.6     10465.3      1582.2     10491.5
GR   1583.4     10518.0      1583.9     10550.2      1584.4     10555.1      1584.4     10555.1      1585.1     10590.5
GR   1586.3     10621.5      1586.4     10636.3

ET                            9.1                                                    9947.8     10048.8
X1     0.14          19       9979.9     10018.0          60          70          40
GR   1586.1      9803.3      1586.7      9839.4      1585.5      9862.5      1584.5      9893.7      1582.0      9923.9
GR   1578.8      9939.9      1575.8      9958.5      1574.8      9979.9      1574.2     10000.0      1574.7     10018.0
GR   1576.2     10039.7      1579.4     10061.8      1580.1     10085.5      1580.7     10092.0      1581.8     10122.7
GR   1582.7     10149.5      1583.5     10175.3      1584.1     10196.9      1583.9     10207.7

NC     .058        .058       .031         .1          .3

ET                            9.1                                                    9963.71    10038.1
X1     0.20          29       9987.7     10024.6         325         360         341
GR   1582.0      9548.6      1583.2      9603.0      1583.5      9646.5      1584.3      9682.9      1584.0      9723.5
GR   1584.6      9738.9      1583.9      9772.3      1584.2      9799.9      1584.8      9830.3      1584.0      9857.4
GR   1585.0      9883.7      1585.3      9915.5      1586.2      9936.1      1578.3      9966.3      1577.7      9979.3
GR   1576.3      9987.7      1576.4     10000.0      1577.0     10024.6      1579.3     10040.3      1582.0     10055.1
GR   1585.3     10071.6      1587.8     10087.0      1589.3     10105.4      1589.5     10126.5      1589.6     10148.8
GR   1590.2     10168.6      1590.9     10191.4      1591.1     10214.3      1591.7     10227.2

  Conc. point FC5  Flow at culvert outlet

QT        2        857        857
NC     .029        .029       .028         .3          .5

  Culvert outlet
ET                            9.1                                                    9988.34    10014.1
X1     0.21          21       9990      10010          85          85          71
X3       10                                                                1583.5     1583.7
GR   1582.3      9612.8      1582.6      9638.9      1582.4      9666.5      1582.5      9697.7      1582.4      9729.8
GR   1582.2      9773.7      1582.4      9812.7      1582.8      9875.5      1583.1      9940.3      1583.5      9982.9
GR   1583.5      9986.9     1576.57        9990     1576.57     10000.0      1576.5       10010      1584.1     10018.2
GR   1585.8     10061.4      1587.3     10099.1      1588.7     10146.4      1589.9     10174.5      1590.7     10206.2
GR   1592.1     10237.3

  Culvert - FC2 - 2 Box Culverts 4' X 10' X 74' El Lago Blvd.
  Conc. point SFC4 Flow through culvert
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```
QT        2       668       668
SC    2.013       0.4       3.0                    4        10        74       8.1   1577.35   1576.57

  Culvert FC1 inlet
ET                            9.1                                                              9990     10010
X1     0.23        20      9990     10010        80        80        80
X2                             2
X3       10                                                                  1583.5    1583.7
BT       -5    9974.2    1583.5                9989.5    1583.9                10000    1583.6
BT             10050    1584.7                 10100    1586.1
GR   1582.4    9813.3    1582.9    9836.5    1582.9    9878.4    1583.5    9917.2    1583.4    9957.9
GR   1583.5    9974.2    1577.3      9990    1577.3   10000.0    1577.3     10010    1584.5   10025.3
GR   1585.2   10077.1    1586.5   10111.8    1587.8   10145.1    1588.3   10159.4    1588.0   10162.4
GR   1588.7   10174.0    1588.9   10186.8    1589.6   10189.7    1590.2   10203.9    1591.7   10235.2

  Conc. point FC4 Flow  Upstream from culvert

QT        2       738       738

ET                            9.1                                                              9945.8   10056.3
X1     0.24        19    9974.5   10035.6        70        70        50
GR   1583.8    9809.1    1584.4    9851.1    1584.5    9871.8    1585.5    9891.0    1586.2    9912.0
GR   1586.0    9933.1    1580.1    9961.5    1579.1    9974.5    1573.9   10000.0    1579.4   10035.6
GR   1585.3   10066.4    1586.9   10088.2    1588.8   10123.4    1590.1   10161.6    1589.2   10183.1
GR   1589.8   10193.7    1589.9   10207.8    1590.7   10211.5    1591.6   10229.2

  Conc. point FC3 Flow upstream from basin 182-B confluence

QT        2       713       713

ET                            9.1                                                              9984.5   10068.3
X1     0.32        17    9992.7   10029.5       435       440       440
GR   1586.1    9931.6    1586.0    9942.0    1586.6    9965.5    1585.1    9980.3    1582.5    9992.7
GR   1581.6   10000.0    1583.0   10029.5    1583.4   10063.8    1586.7   10082.0    1590.3   10101.4
GR   1592.8   10137.1    1594.2   10165.0    1594.5   10192.2    1595.6   10211.9    1596.9   10232.8
GR   1597.6   10253.1    1597.7   10265.3

  Conc. point DFC2 Flow for upstream reach

QT        2       451       451

ET                            9.1                                                               9967   10049.8
X1     0.41         9    9987.7   10036.2       480       520       487
X3                                    9967
GR   1584.9    9967.0    1582.6    9987.7    1583.0   10000.0    1583.0   10036.2    1587.6   10058.2
GR   1591.7   10079.8    1595.7   10103.8    1597.7   10114.0    1598.1   10122.7
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ET                          9.1                                                 9969.4    10024.9
X1      0.50          12  9988.7   10018.4      440       435       434
GR    1587.2      9967.2  1584.8    9988.7   1585.6   10000.0    1585.5   10018.4  1592.1  10047.8
GR    1596.1     10068.3  1595.3   10078.5   1595.6   10108.2    1597.5   10118.2  1595.6  10129.3
GR    1595.6     10150.1  1595.8   10153.3
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 2.990

3265 DIVIDED FLOW

2.990	3.40	1554.40	1554.29	1573.50	1554.93	.54	.00	.00	1554.10
885.0	300.3	578.5	6.2	84.8	85.1	3.5	.0	.0	1553.60
.00	3.54	6.80	1.77	.045	.038	.045	.000	1551.00	9860.27
.009855	0.	0.	0.	0	20	10	.00	152.53	10034.52

*SECNO .000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.000	2.22	1560.62	1560.62	.00	1561.45	.84	3.91	.09	1559.00
885.0	309.3	535.3	40.5	51.9	65.4	8.9	1.0	.8	1558.40
.01	5.96	8.19	4.56	.045	.038	.045	.000	1558.40	9941.41
.017433	290.	309.	380.	0	14	0	.00	75.50	10016.92

CCHV= .100 CEHV= .300
*SECNO .080
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.080	2.62	1573.42	1573.42	.00	1574.44	1.02	6.45	.05	1571.00
885.0	188.0	445.7	251.3	38.8	42.9	54.0	2.3	1.5	1570.80
.03	4.85	10.39	4.65	.058	.031	.058	.000	1570.80	9963.03
.013686	420.	421.	410.	0	11	0	.00	67.12	10030.15

*SECNO .110

.110	2.58	1575.38	1575.35	.00	1576.45	1.07	1.99	.01	1573.10
885.0	16.7	824.6	43.7	6.4	96.4	15.6	2.8	1.7	1573.00
.03	2.61	8.55	2.79	.058	.031	.058	.000	1572.80	9970.50
.009617	180.	173.	180.	3	8	0	.00	58.01	10028.51

*SECNO .120
7185 MINIMUM SPECIFIC ENERGY

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3720 CRITICAL DEPTH ASSUMED

.120	2.79	1576.19	1576.19	.00	1577.27	1.08	.46	.00	1573.40
885.0	29.6	659.9	195.5	9.5	70.2	49.4	2.9	1.8	1573.70
.03	3.12	9.40	3.96	.058	.031	.058	.000	1573.40	9966.50
.010593	45.	46.	45.	0	8	0	.00	63.43	10029.93

CCHV= .300 CEHV= .500
*SECNO .130

```
3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  5.90

      .130      2.79   1577.59   1576.23       .00   1577.64       .04       .06       .31   1575.00
     880.0     277.1     210.0     392.9     169.2     103.8     266.2       3.5       2.2   1574.80
       .05      1.64      2.02      1.48      .025      .025      .025      .000   1574.80   9897.92
   .000300       60.       42.      100.         2        11         0       .00    335.50  10233.43


*SECNO  .140

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .48

      .140      3.32   1577.52   1576.57       .00   1577.77       .26       .03       .11   1574.80
     880.0     191.2     522.7     166.2      56.7     116.0      51.0       4.0       2.5   1574.70
       .05      3.37      4.51      3.26      .025      .025      .025      .000   1574.20   9947.83
   .001302       60.       40.       70.         2        15         0       .00    101.00  10048.83


CCHV=     .100 CEHV=     .300
*SECNO  .200

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .200      2.68   1578.98   1578.98       .00   1579.95       .97       .95       .21   1576.30
     880.0      98.3     748.5      33.3      30.2      88.3      13.3       5.4       3.2   1577.00
       .06      3.26      8.48      2.49      .058      .031      .058      .000   1576.30   9963.71
   .009771       325.      341.      360.         0        15         0       .00     74.38  10038.09


1
   23OCT95      09:08:22                                                                          PAGE    8

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


CCHV=     .300 CEHV=     .500
*SECNO  .210

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=     1583.50 ELREA=     1583.70

      .210      3.90   1580.40   1580.40       .00   1582.33      1.93       .61       .48   1576.57
     857.0        .0     857.0        .0        .0      76.9        .0       5.6       3.2   1576.50
       .06       .00     11.14       .00      .000      .028      .000      .000   1576.50   9990.00
   .007319       85.       71.       85.         0        11         0       .00     20.00  10010.00


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
    2          .013      .40       3.00      .00       4.00      10.00     74.00     8         1         1577.35   1576.57

CHART  8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE  1 - WINGWALLS FLARED 30 TO 75 DEGREES

*SECNO  .230

SPECIAL CULVERT INLET CONTROL
```

EGIC = 1583.253 EGOC = 1582.825 PCWSE= 1580.398 ELTRD= 1583.500

3280 CROSS SECTION .23 EXTENDED .25 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.73

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1583.25	1582.82	.93	0.	668.	6.246	80.0	1583.50	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1583.50 ELREA= 1583.70

.230	5.35	1582.65	.00	.00	1583.25	.61	.93	.00	1577.30
668.0	.0	668.0	.0	.0	107.0	.0	5.8	3.3	1577.30
.07	.00	6.25	.00	.000	.028	.000	.000	1577.30	9990.00
.001481	80.	80.	80.	3	0	0	.00	20.00	10010.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .240

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 5.18

.240	9.50	1583.40	1577.89	.00	1583.43	.03	.01	.17	1579.10
738.0	65.7	644.8	27.5	75.6	416.3	41.8	6.2	3.4	1579.40
.08	.87	1.55	.66	.029	.028	.029	.000	1573.90	9945.61
.000067	70.	50.	70.	2	19	0	.00	110.87	10056.48

*SECNO .320

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.320	2.62	1584.22	1584.22	.00	1584.89	.67	.10	.32	1582.50
713.0	27.9	523.5	161.6	7.0	72.3	36.7	9.4	4.3	1583.00
.10	3.97	7.24	4.40	.029	.028	.029	.000	1581.60	9984.51
.007573	435.	440.	440.	0	14	0	.00	83.79	10068.30

*SECNO .410

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.42

3470 ENCROACHMENT STATIONS= 9967.0 10122.7 TYPE= 1 TARGET= -9967.000

.410	3.24	1585.84	1584.21	.00	1585.92	.08	.85	.18	1582.60
451.0	79.7	343.4	28.0	43.2	140.1	19.3	11.2	5.3	1583.00
.16	1.84	2.45	1.45	.029	.028	.029	.000	1582.60	9967.00

.000519	480.	487.	520.	4	14	0	.00	82.77	10049.77

*SECNO .500

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.500	2.15	1586.95	1586.95	.00	1587.62	.67	.60	.29	1584.80
451.0	110.9	321.1	19.1	20.7	45.6	4.7	12.6	6.0	1585.50
.17	5.35	7.05	4.07	.029	.028	.029	.000	1584.80	9969.43
.009985	440.	434.	435.	0	14	0	.00	55.43	10024.86

THIS RUN EXECUTED 23OCT95 09:08:23

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
	2.990	885.00	9860.27	10034.52	1554.40	1554.29	.78	.54	3.40
	2.990	885.00	9860.29	10034.46	1554.39	1554.29	.78	.54	3.39
*	.000	885.00	9941.41	10016.92	1560.62	1560.62	1.02	.84	2.22
*	.000	885.00	9941.40	10016.90	1560.62	1560.62	1.02	.83	2.22
	.080	885.00	9963.03	10030.15	1573.42	1573.42	1.15	1.02	2.62
*	.080	885.00	9963.03	10030.20	1573.44	1573.44	1.14	1.00	2.64
	.110	885.00	9970.50	10028.51	1575.38	1575.35	.96	1.07	2.58
*	.110	885.00	9970.52	10028.46	1575.38	1575.38	.97	1.07	2.58
*	.120	885.00	9966.50	10029.93	1576.19	1576.19	1.02	1.08	2.79
*	.120	885.00	9966.50	10029.90	1576.21	1576.21	1.00	1.05	2.81
*	.130	880.00	9897.92	10233.43	1577.59	1576.23	.21	.04	2.79
*	.130	880.00	9898.14	10233.02	1577.58	1576.24	.22	.04	2.78
*	.140	880.00	9947.83	10048.83	1577.52	1576.57	.45	.26	3.32
*	.140	880.00	9947.89	10048.75	1577.51	1576.57	.46	.26	3.31
*	.200	880.00	9963.71	10038.09	1578.98	1578.98	.97	.97	2.68
*	.200	880.00	9963.71	10038.10	1579.00	1579.00	.95	.95	2.70
*	.210	857.00	9990.00	10010.00	1580.40	1580.40	1.00	1.93	3.90
*	.210	857.00	9990.00	10010.00	1580.40	1580.40	1.00	1.93	3.90
*	.230	668.00	9990.00	10010.00	1582.65	.00	.48	.61	5.35
*	.230	668.00	9990.00	10010.00	1582.65	.00	.48	.61	5.35
*	.240	738.00	9945.61	10056.48	1583.40	1577.89	.10	.03	9.50
*	.240	738.00	9945.80	10056.30	1583.40	1577.89	.10	.03	9.50

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	.320	713.00	9984.51	10068.30	1584.22	1584.22	.91	.67	2.62
*	.320	713.00	9984.50	10068.30	1584.23	1584.23	.90	.66	2.63
*	.410	451.00	9967.00	10049.77	1585.84	1584.21	.25	.08	3.24
*	.410	451.00	9967.00	10049.75	1585.83	1584.20	.25	.08	3.23
*	.500	451.00	9969.43	10024.86	1586.95	1586.95	1.00	.67	2.15
*	.500	451.00	9969.40	10024.90	1586.98	1586.98	.97	.64	2.18

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      .000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .080  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .080  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .080  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .080  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .110  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .110  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .120  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .120  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .120  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .120  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .130  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .130  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .140  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .140  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .200  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .200  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .200  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .200  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .210  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .210  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .210  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .210  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .230  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .230  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .240  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .240  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .320  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .320  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .320  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .320  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .410  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .410  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .500  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .500  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .500  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .500  PROFILE=  2  MINIMUM SPECIFIC ENERGY
```

FLOODWAY DATA, Fountain Hills (south) -
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
2.990	174.	173.	5.1	1554.4	1554.4	.0
.000	75.	126.	7.0	1560.6	1560.6	.0
.080	67.	137.	6.5	1573.4	1573.4	.0
.110	58.	118.	7.5	1575.4	1575.4	.0
.120	63.	131.	6.8	1576.2	1576.2	.0
.130	335.	536.	1.6	1577.6	1577.6	.0
.140	101.	223.	4.0	1577.5	1577.5	.0
.200	74.	133.	6.6	1579.0	1579.0	.0
.210	20.	77.	11.1	1580.4	1580.4	.0
.230	20.	107.	6.2	1582.6	1582.6	.0
.240	110.	534.	1.4	1583.4	1583.4	.0
.320	84.	117.	6.1	1584.2	1584.2	.0
.410	83.	202.	2.2	1585.8	1585.8	.0
.500	55.	72.	6.2	1587.0	1587.0	.0

NORTH COLONY WASH

FOUNTAIN HILLS SOUTH
North Colony Wash

X-Sec	HEC-1 Conc. Point	100-Yr Discharge (cfs)	Left Overbank Lenght (ft)	Rigth Overbank Lenght (ft)	Channel Lenght (ft)	COMMENT
3.47	NCL9	295			312	downstream conditions
0.00			240	255	249	Confluence COL-NCL
0.04			225	235	233	
0.07			150	160	155	
0.08			50	55	50	culvert outlet
0.10	SNCL8	292	80	80	72	culvert inlet
0.11			55	55	50	
0.18			380	390	386	
0.24			340	340	339	
0.25			35	35	30	culvert outlet
0.26	SNCL7	283	80	80	73	culvert inlet
0.27	NCL7	289	50	50	40	
0.35			450	450	445	
0.45			540	500	504	
0.50			280	275	269	
0.53	NCL6	258	170	180	174	culvert outlet
0.58	SNCL5	246	220	220	216	culvert inlet
0.60	NCL5	325	200	210	136	
0.67			300	325	342	
0.74			390	375	384	
0.80			300	290	302	
0.82	NCL4	242	120	140	114	culvert outlet
0.85	SNCL3	178	170	170	166	culvert inlet
0.86	NCL3	185	70	65	66	
0.88			90	85	88	culvert outlet
0.91	SNCL2	174	180	180	176	culvert inlet
0.93	NCL2	188	85	80	82	

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    23OCT95    TIME   09:23:45   *
*********************************************
```


```
*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*          (916) 756-1104               *
*****************************************
```


```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 23OCT95 09:23:45

```
**************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
**************************************


T1      Fountain Hills (South) - Floodplain Delineation        File: N-COLONY.H2
T1      For the Flood Control District of Maricopa County
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - NORTH COLONY WASH

T4 GR data from stereo model received October 93 from KAM
T4 Revised photogrametric x-sec. received May 94
T5 1"=200' 2-feet Contour mapping from KAM flown 8-91
T6 with survey control by Anderson Nelson 12-11-92, field survey Aug 91
T7 Supplemental cross section data surveyed by Valco Surveing
T8 Source of 100-yr flowrate from HEC-1 Analysis by AGK Enginers
T8           File 180-6CE.DAT
T9 Subcritical analysis
T9 This model was developed and configured to determine water surface elevation
T9 for a 100-year floodplain delineation study, Velocity from this model
T9 may not be accurate and should not be used without careful examination

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                             -1                                  1594.91

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

                                                                  -1                          15


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        43        53        54        1         2         68        10        8         200

  Dowstream conditions, critical depth assumed
  North colony flow used
  Tributary area and time of concentration considerably different

  Conc. point NCL9 Flow upstream from confluence with Colony wash

QT       2       295       295
NC    .045      .045      .038       .1        .3

ET                         9.1                                                    9979.64   10018.46
```

```
X1     3.47        16      9984.3    10010.6
GR     1602.4    9936.2    1600.2     9945.7    1599.6    9963.0    1593.6    9984.3    1593.3   10000.0
GR     1593.5   10010.6    1595.8    10023.4    1600.9   10041.1    1601.4   10066.9    1603.0   10100.9
GR     1602.9   10120.6    1603.9    10153.2    1604.1   10168.9    1605.4   10192.3    1608.1   10207.6
GR     1612.7   10224.8
```

Confluence of North Colony Wash and Colony Wash.

```
ET                          9.1                                                      9976.44   10040.8
X1     0.00        20     10006.6    10021.9       240       255       249
GR     1620.3    9901.0    1610.4     9919.4    1604.9    9938.8    1603.8    9959.0    1600.6    9976.8
GR     1598.7    9994.3    1600.9    10000.0    1601.3   10006.6    1596.8   10015.4    1600.4   10021.9
GR     1600.2   10038.5    1605.4    10056.2    1605.1   10084.9    1604.6   10122.6    1604.6   10158.0
GR     1610.4   10179.6    1612.7    10205.1    1613.7   10231.2    1614.8   10253.4    1615.5   10275.7

NC      .040      .040      .038

ET                          9.1                                                      9982.78   10004.2
X1     0.04        13     9989.5    10004.3       225       235       233
GR     1641.2    9912.0    1641.2     9919.7    1628.6    9945.7    1618.3    9962.5    1610.5    9984.7
GR     1612.2    9989.5    1606.0    10000.0    1611.3   10004.3    1614.2   10019.2    1615.0   10037.0
GR     1614.2   10057.2    1613.9    10087.4    1614.1   10129.5

ET                          9.1                                                         9993   10017.06
X1     0.07        32       9995     10005       150       160       155
GR     1646.0    9675.3    1648.0     9684.4    1648.0    9782.3    1648.0    9870.0    1648.0    9941.2
GR     1646.0    9944.9    1644.0     9948.7    1642.0    9952.3    1638.0    9959.7    1636.0    9963.3
GR     1634.0    9967.1    1632.0     9970.8    1630.0    9974.5    1628.0    9978.2    1626.0    9981.8
GR     1624.0    9985.7    1622.0     9989.3    1620.0    9993.6    1618.2      9995    1618.0    9997.0
GR     1616.5   10000.0    1618.0    10003.2    1618.2     10005    1620.0   10016.3    1622.0   10021.8
GR     1624.0   10026.9    1626.0    10031.9    1628.0   10038.7    1630.0   10045.5    1632.0   10052.1
GR     1634.0   10057.7    1634.0    10147.5

NC      .045      .045      .040         .3         .5
```

Culvert NCL1 outlet

```
ET                          9.1                                                      9997.5   10002.5
X1     0.08        21     9997.5    10002.5        50        55        50
X3       10                                                          1637.76   1637.2
GR     1648.0    9682.4    1648.0     9932.1    1646.0    9936.6    1644.0    9941.8    1642.0    9947.0
GR     1638.0    9971.9    1636.0     9975.3    1634.0    9979.3    1632.0    9982.2    1630.0    9986.2
GR     1628.0    9989.7    1626.0     9993.8      1619    9997.5      1619   10000.0      1619   10002.5
GR     1626.0   10006.6    1628.0    10011.0    1630.0   10015.1    1632.0   10019.8    1634.0   10039.9
GR     1636.0   10135.5
```

Culvert - NCL1 - 1 CMP 60" X 72' Chama Dr.
Conc. point SNCL8 Flow thrught Chama Dr. culvert

```
QT        2       292       292
SC    1.024       0.8       3.0                 5                  72       2.3   1629.38   1624.08

  Culvert NCL1 inlet
X1     0.10        25    9997.5   10002.5       80        80       72
X2                            2               1636.76
X3       10                                                          1637.76   1637.2
BT       -3      9950   1639.12                10000   1637.76            10050   1636.76
GR   1652.0    9814.6    1650.0    9824.8    1648.0    9832.8    1648.0    9840.8    1650.0    9848.4
GR   1652.0    9855.0    1650.0    9857.3    1648.0    9859.4    1648.0    9869.1    1650.0    9883.4
GR   1648.0    9894.9    1648.0    9915.8    1650.0    9934.2    1650.0    9957.2    1648.0    9961.6
GR   1646.0    9965.2    1644.0    9968.6    1642.0    9972.2    1638.0    9979.2    1636.0    9985.1
GR   1629.4    9997.5    1629.4   10000.0    1629.4   10002.5    1636.0   10012.6    1638.0   10020.4

ET                            9.1                                                              9975.51  10018.22
X1     0.11        20       9990   10006.4       55        55       50
GR   1654.0    9689.9    1654.0    9830.8    1652.0    9871.7    1652.0    9933.1    1650.0    9958.3
GR   1648.0    9961.2    1646.0    9964.2    1644.0    9967.0    1642.0    9969.7    1638.0    9975.4
GR   1636.0    9978.2    1634.5       9990      1634   10000.0    1634.0   10006.4    1634.0   10009.2
GR   1636.0   10013.8    1638.0   10018.4    1642.0   10044.2    1644.0   10052.7    1644.0   10155.6

NC                                      .1        .3

ET                            9.1                                                              9982.75  10005.25
X1     0.18         9       9985.3   10000       380       390       386
GR   1667.2    9943.9    1667.0    9954.5    1646.7    9985.3    1645.9   10000.0    1654.7   10018.6
GR   1662.2   10032.6    1662.5   10036.6    1672.1   10055.0    1673.4   10070.2

ET                            9.1                                                              9987.86  10014.76
X1     0.25        10       9990.5   10011.9       399       399       399
GR   1667.5    9937.0    1668.2    9970.3    1656.0    9990.5    1655.7   10000.0    1656.0   10011.9
GR   1667.3   10032.2    1682.8   10067.7    1683.6   10099.0    1683.6   10142.7    1684.1   10164.4

  Culvert NCL2 outlet

NC                                      .3        .5

ET                            9.1                                                              9992.38  10007.02
X1     0.26        20       9994   10006        35        35       30
X3       10                                                          1667   1667.89
GR   1662.0    9675.9    1664.0    9681.6    1666.0    9687.1    1668.0    9859.3    1668.0    9977.9
GR   1666.0    9982.8    1664.0    9989.0   1656.15      9994    1656.1   10000.0    1656.1     10006
GR   1666.0   10009.9    1668.0   10013.9    1670.0   10038.2    1672.0   10041.8    1674.0   10046.0
GR   1676.0   10049.8    1678.0   10054.0    1680.0   10057.9    1682.0   10062.1    1684.0   10090.3

  Culvert NCL2  1 cmp 60" X 62' , 1 cmp 66" X 73 La Montana Dr.
  Conc. point SNCL7 Flow throught La Montana Dr. culvert
```

```
QT        2       283       283
SC    2.024       0.8       3.0                5.2                  73       2.3   1656.95   1656.15

  Culvert NCL2 inlet
ET                            9.1                                                          9994     10006
X1     0.27        15      9994     10006        80        80       73
X2                            2                1636.23
X3       10                                                                1667   1667.89
BT       -5      9900    1665.6                9950    1666.8                10000   1667.89
BT               10045    1668.7               10095    1670.1
GR   1666.7    9928.6    1667.6    9968.5    1666.9    9981.4   1656.95      9994   1656.95   10000.0
GR   1656.9     10006    1669.6   10014.7    1670.4   10029.9    1669.3   10049.8    1670.8   10067.0
GR   1671.5   10087.7    1673.0   10097.2    1677.3   10123.5    1679.8   10133.0    1681.9   10150.9

  Conc. point NCL7 Flow upstream from La Montana Dr.

QT        2       289       289

ET                            9.1                                                       9968.47   10019.88
X1     0.28        13    9986.4   10009.4        50        50       40
GR   1667.5    9928.0    1668.2    9960.8    1659.5    9977.3   1658.2    9986.4    1657.8   10000.0
GR   1658.2   10009.4    1671.5   10032.8    1671.3   10045.6    1670.0   10055.2    1670.7   10068.4
GR   1671.2   10083.2    1678.2   10113.2    1680.3   10125.2


NC                                     .1        .3

ET                            9.1                                                       9975.09   10020.24
X1     0.37        21    9978.8   10017.5       450       450      445
GR   1686.2    9768.4    1680.5    9810.5    1675.3    9848.4   1669.6    9892.1    1668.9    9900.6
GR   1669.4    9936.1    1669.5    9964.4    1662.4    9978.8   1662.1   10000.0    1662.4   10017.5
GR   1673.3   10033.8    1672.6   10049.9    1672.2   10055.3    1672.5   10065.4    1672.4   10078.7
GR   1671.9   10087.3    1672.7   10091.8    1673.1   10112.1    1672.6   10121.9    1676.8   10146.3
GR   1679.3   10159.2


ET                            9.1                                                       9988.43   10022.91
X1     0.46        16    9992.5   10020.6       540       500      504
GR   1690.3    9875.5    1683.0    9916.8    1675.6    9962.8   1675.8    9978.7    1671.7    9992.5
GR   1671.2   10000.0    1671.7   10020.6    1679.2   10034.9    1683.4   10041.4    1683.6   10051.8
GR   1682.7   10056.7    1683.3   10083.3    1682.6   10089.1    1683.4   10095.1    1685.1   10120.2
GR   1689.6   10144.9


ET                            9.1                                                          9980.5   10023.6
X1     0.51        34      9995     10005       280       275      269
GR   1712.0    9864.3    1710.0    9868.4    1708.0    9872.5   1706.0    9876.5    1702.0    9884.5
GR   1700.0    9889.2    1698.0    9897.8    1696.0    9905.0   1694.0    9910.1    1692.0    9915.0
GR   1690.0    9920.0    1688.0    9925.0    1686.0    9930.1   1684.0    9935.0    1682.0    9940.0
GR   1682.0    9966.8    1682.0    9976.4    1680.0    9981.7   1678.8      9995    1678.5   10000.0
GR   1678.8     10005    1680.0   10022.3    1682.0   10028.2    1684.0   10033.7    1686.0   10038.8
GR   1688.0   10043.6    1690.0   10048.3    1692.0   10052.2    1694.0   10057.3    1694.0   10067.2
GR   1694.0   10175.1    1696.0   10190.5    1698.0   10203.7    1700.0   10216.5
```

Conc. point NCL6 Flow at culvert outlet

```
QT        2       258       258
NC     .038       .038      .036        .3         .5

  Culvert NCL3 outlet
ET                            9.1                                                                  9997.5    10002.5
X1     0.55         28    9997.5   10002.5       170        180       174
X3       10                                                            1705.71   1704.16
GR   1712.0     9864.3    1710.0    9868.4    1708.0     9872.5    1706.0    9876.5    1702.0     9884.5
GR   1700.0     9889.2    1698.0    9897.8    1696.0     9905.0    1694.0    9910.1    1692.0     9915.0
GR   1690.0     9920.0    1688.0    9925.0    1686.0     9930.1    1684.0    9935.0      1684     9997.5
GR     1684    10000.0      1684   10002.5    1684.0    10033.7    1686.0   10038.8    1688.0    10043.6
GR   1690.0    10048.3    1692.0   10052.2    1694.0    10057.3    1694.0   10067.2    1694.0    10175.1
GR   1696.0    10190.5    1698.0   10203.7    1700.0    10216.5

  Culvert CLN3 1 CMP 60" X 216' Fountain Hills Blvd.
  Conc. point SNCL5 Flow thruoght Fountain Hills Blvd. culvert

QT        2       246       246
SC    1.024       0.8       3.0                  5                  216       2.3   1691.39   1688.23

  Culvert NCL3 inlet
ET                            9.11                                                                 9997.5    10002.5
X1     0.59         18    9997.5   10002.5       220        220       216
X2                            2                1704.16
X3       10                                                            1705.71   1704.16
BT       -6       9800   1707.45                9950    1705.71                 10000   1704.51
BT                10050   1704.16               10100    1704.65                 10233   1709.53
GR   1710.5     9830.4    1704.6    9867.9    1700.5     9905.9    1699.1    9937.8    1698.0     9966.8
GR   1697.3     9985.7   1691.39    9997.5   1691.39    10000.0   1691.39   10002.5    1696.1    10012.1
GR   1696.3    10031.8    1694.8   10047.1    1694.9    10064.5    1694.5   10079.4    1695.2    10088.2
GR   1698.7    10117.5    1703.1   10139.1    1709.4    10168.4

  Conc. point NCL5 Flow upstream from Fountain Hills

QT        2       325       325

ET                            9.1                                                                  9913.49   10080.54
X1     0.61         11    9981.4   10047.7       100        150       136
GR   1706.0     9893.2    1704.0    9906.4    1702.0     9918.5    1700.0    9959.1    1698.0     9981.4
GR   1696.4    10000.0    1698.0   10047.7    1700.0    10065.1    1702.0   10076.4    1704.0    10086.4
GR   1706.0    10096.0


NC                                      .1         .3
ET                            9.1                                                                  9988.24   10101.07
X1     0.68         25    9986.7   10022.1       300        325       342
GR   1746.2     9736.1    1740.3    9736.1    1737.5     9759.0    1734.4    9782.8    1731.4     9801.1
GR   1729.9     9812.6    1726.4    9837.2    1722.3     9863.1    1719.0    9882.8    1714.9     9911.5
GR   1711.5     9939.1    1708.3    9973.8    1705.7     9986.7    1703.1   10000.0    1704.8    10022.1
GR   1704.8    10039.1    1705.0   10058.9    1705.1    10085.3    1705.4   10101.1    1709.8    10124.3
GR   1714.2    10145.2    1719.6   10168.1    1725.5    10190.2    1729.7   10204.7    1731.3    10209.8
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```
ET                             9.1                                                        9957.85  10011.44
X1        0.75        18    9982.6   10007.4       390       375       384
GR      1742.1    9805.2    1734.6    9842.4    1727.7    9874.7    1723.0    9900.4    1717.6    9925.9
GR      1716.6    9941.5    1714.9    9970.5    1714.8    9982.6    1713.6   10000.0    1713.7   10007.4
GR      1718.6   10017.6    1719.0   10026.9    1720.1   10049.1    1724.2   10079.5    1729.9   10109.6
GR      1733.2   10126.2    1737.0   10141.9    1738.2   10150.3

ET                             9.1                                                        9987.18  10052.95
X1        0.81        24    9990.4   10018.2       300       290       302
GR      1760.0    9851.8    1754.0    9881.1    1750.0    9898.3    1744.0    9924.0    1740.0    9941.3
GR      1738.0    9950.0    1736.0    9958.5    1734.0    9966.0    1730.0    9975.6    1726.0    9985.3
GR      1724.0    9990.4    1723.8   10000.0    1724.0   10018.2    1726.0   10073.3    1728.0   10114.6
GR      1730.0   10126.1    1732.0   10137.9    1734.0   10149.8    1736.0   10161.5    1738.0   10173.5
GR      1740.0   10185.7    1742.0   10197.6    1744.0   10208.5    1746.0   10218.8

  Conc. point NCL4 Flow at culvert outlet

QT           2       242       242
NC                                      .3        .5

  Culvert NCL4 outlet
ET                             9.1                                                         9997.5   10002.5
X1        0.83        17    9997.5   10002.5       120       140       114
X3          10                                                                 1744.6    1744.3
GR      1753.0    9866.0    1745.8    9894.8    1740.8    9915.8    1735.1    9940.2    1729.7    9963.9
GR      1725.5    9988.4   1723.21    9997.5   1723.21   10000.0   1723.21   10002.5    1728.9   10025.0
GR      1730.1   10068.4    1730.9   10083.0    1734.2   10111.3    1738.6   10136.1    1742.6   10158.9
GR      1746.0   10170.8    1746.3   10174.4

  Culvert NCL4 1 CMP 60" X 166' Mountainside Dr.
  Conc. point SNCL3 Flow throught Mantainside Dr. culvert

QT           2       178       178
SC       1.024       0.8       3.0                   5                 166       2.3   1732.65   1723.21

  Culvert NCL4 inlet
ET                            9.11                                                         9997.5   10002.5
X1        0.86        17    9997.5   10002.5       170       170       166
X2                               2              1744.3
X3          10                                                                 1744.6    1744.3
BT          -6      9900      1751                9950    1746.9               10000    1744.6
BT                 10050    1744.3               10100    1745.7               10150    1749.1
GR      1759.5    9804.5    1757.2    9845.7    1754.6    9886.4    1751.6    9920.0    1749.7    9952.6
GR      1736.7    9978.5    1735.9    9994.5   1732.65    9997.5   1732.65   10000.0   1732.65   10002.5
GR      1736.5   10027.4    1746.2   10042.9    1754.7   10057.5    1754.7   10094.4    1755.1   10131.3
GR      1757.9   10148.5    1760.7   10166.6

  Conc. point NCL3 Flow upstream from Mountainside Dr.
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```
QT        2        185        185

ET                           9.1                                                                  9967.46    10018.56
X1      0.87         22     9972.5    10012.9        70        65        66
GR    1762.0     9784.0     1760.0     9791.7    1758.0    9836.2    1752.0    9937.1    1750.0     9942.2
GR    1748.0     9947.1     1746.0     9952.1    1744.0    9957.1    1742.0    9962.1    1740.0     9967.2
GR    1738.0     9972.5     1734.7    10000.0    1736.0   10012.9    1738.0   10015.8    1740.0    10018.7
GR    1750.0    10032.9     1756.0    10041.5    1758.0   10055.9    1760.0   10111.5    1762.0    10123.7
GR    1764.0    10135.5     1766.0    10147.9

  Culvert NCL5 outlet

ET                           9.1                                                                   9997.5    10002.5
X1      0.89         15     9997.5    10002.5        90        85        88
X3        10                                                                  1758.1      1760
GR    1763.2     9806.7     1762.5     9842.6    1759.4    9849.8    1757.7    9880.7    1756.3     9909.8
GR    1753.9     9947.2     1741.2     9974.5    1741.1    9989.3   1734.37    9997.5   1734.37    10000.0
GR    1734.3    10002.5     1740.1    10020.7    1761.4   10049.8    1762.2   10087.7    1762.3    10090.3

  Culvert NCL5 1 CMP 60" X 176' under Minosa Dr.
  Conc. point SNCL2 Flow Thruogh Minosa Dr. culvert

QT        2        174        174
SC    1.024        0.8        3.0                5                  176       2.3    1739.67    1734.37

  Culvert NCL5 inlet
ET                           9.11                                                                  9997.5    10002.5
X1      0.92         26     9997.5    10002.5        180       180       176
X2                            2
X3        10                                                                  1758.1      1760
BT        -7       9850    1761.26                9900    1758.1                9950    1758.24
BT                10000     1759.9                10050    1764.05              10100    1769.27
BT                10120       1775
GR    1762.0     9845.5     1760.0     9868.7    1758.0    9916.4    1756.0    9921.7    1754.0     9927.2
GR    1752.0     9932.4     1750.0     9937.7    1748.0    9943.0    1746.0    9948.2    1744.0     9973.9
GR    1742.0     9996.6     1739.6     9997.5    1739.6   10000.0    1739.6   10002.5    1742.0    10003.5
GR    1744.0    10010.2     1746.0    10024.5    1748.0   10035.7    1750.0   10046.1    1752.0    10055.0
GR    1754.0    10062.6     1756.0    10069.9    1758.0   10077.3    1760.0   10084.9    1762.0    10092.5
GR      1775      10120
  Conc. point NCL2 Flow upstream from Minosa Dr.

QT        2        188        188

ET                           9.1                                                                  9957.44    10024.94
X1      0.94         16      10000    10012.3        85        80        82
GR    1760.8     9834.3     1758.5     9852.4    1756.8    9875.1    1754.8    9898.1    1753.3     9914.1
GR    1751.1     9935.6     1747.9     9951.7    1745.8    9963.0    1744.8    9968.7    1745.7     9978.6
GR    1743.2    10000.0     1744.1    10012.3    1748.9   10034.5    1756.2   10056.6    1763.1    10080.3
GR    1764.6    10086.3
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .100 CEHV= .300
*SECNO 3.470
3720 CRITICAL DEPTH ASSUMED

3.470	1.63	1594.93	1594.93	1594.91	1595.58	.65	.00	.00	1593.60
295.0	10.1	265.3	19.5	3.1	39.5	5.7	.0	.0	1593.50
.00	3.22	6.72	3.42	.045	.038	.045	.000	1593.30	9979.57
.017150	0.	0.	0.	0	4	0	.00	39.00	10018.57

FLOW DISTRIBUTION FOR SECNO= 3.47 CWSEL= 1594.93

STA=	9980.	9984.	10011.	10019.
PER Q=	3.4	89.9	6.6	
AREA=	3.1	39.5	5.7	
VEL=	3.2	6.7	3.4	
DEPTH=	.7	1.5	.7	

*SECNO .000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.000	3.86	1600.66	1600.66	.00	1601.22	.55	3.90	.01	1601.30
295.0	89.8	192.4	12.8	22.8	28.0	6.4	.3	.3	1600.40
.01	3.94	6.87	2.00	.045	.038	.045	.000	1596.80	9976.44
.014507	240.	249.	255.	0	20	0	.00	55.19	10040.08

FLOW DISTRIBUTION FOR SECNO= .00 CWSEL= 1600.66

STA=	9976.	9994.	9999.	10022.	10039.	10040.
PER Q=	24.1	6.4	65.2	4.2	.2	
AREA=	17.8	5.0	28.0	6.0	.4	
VEL=	4.0	3.8	6.9	2.0	1.5	
DEPTH=	1.0	1.0	2.0	.4	.2	

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .040

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.040	5.19	1611.19	1611.19	.00	1612.34	1.15	3.88	.18	1612.20

```
     295.0       3.3     291.7        .0       1.3      33.7        .0        .5        .5   1611.30
       .02      2.45      8.65       .00      .040      .038      .000      .000   1606.00   9982.74
   .019479       225.      233.       235.         0        11         0       .00     16.90  10004.21


FLOW DISTRIBUTION FOR SECNO=       .04          CWSEL=   1611.19

STA=    9983.    9985.    9987.   10004.
  PER Q=       .6       .6     98.9
   AREA=       .7       .7     33.7
    VEL=      2.4      2.4      8.7
  DEPTH=       .3       .3      2.6

*SECNO  .070
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .070      3.80   1620.30   1620.30       .00   1621.19       .88      2.43       .03   1618.20
     295.0       5.8     225.1      64.1       1.8      27.3      13.7        .7        .5   1618.20
       .03      3.24      8.25      4.68      .040      .038      .040      .000   1616.50   9992.95
   .012781       150.      155.       160.         0        19         0       .00     24.18  10017.13


FLOW DISTRIBUTION FOR SECNO=       .07          CWSEL=   1620.30

STA=    9993.    9995.   10005.   10016.   10017.
  PER Q=       2.0     76.3     21.7        .0
   AREA=       1.8     27.3     13.6        .1
    VEL=       3.2      8.2      4.7       1.1
  DEPTH=        .9      2.7      1.2        .2

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


CCHV=     .300 CEHV=     .500
*SECNO  .080

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=     1637.76 ELREA=     1637.20

      .080      4.75   1623.75   1623.75       .00   1626.15      2.40       .68       .76   1619.00
     295.0        .0     295.0        .0        .0      23.7        .0        .7        .5   1619.00
       .03       .00     12.43       .00      .000      .040      .000      .000   1619.00   9997.50
   .014047       50.       50.       55.         0        11         0       .00      5.00  10002.50


FLOW DISTRIBUTION FOR SECNO=       .08          CWSEL=   1623.75

STA=    9998.   10003.
  PER Q=     100.0
   AREA=      23.7
    VEL=      12.4
  DEPTH=       4.7


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
    1          .024       .80      3.00        .00      5.00       .00     72.00     2         3       1629.38   1624.08

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  3 - PIPE PROJECTING FROM FILL
```

130, EGIC= 1644.13..MAY BE TOO LARGE IF INLET CONTROLS.
135, EGOC= 1640.62 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO .100

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 1637.95

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 6.99

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN	
1644.13	1640.62	11.80	86.	205.	2.593	19.6	1636.76	57.	
.100	8.49	1637.89	.00	.00	1637.95	.06	11.80	.00	1629.40
292.0	101.0	110.1	80.9	69.6	42.4	59.4	.9	.6	1629.40
.04	1.45	2.59	1.36	.045	.040	.045	.000	1629.40	9979.53
.000281	80.	72.	80.	2	0	0	.00	40.44	10019.97

FLOW DISTRIBUTION FOR SECNO= .10 CWSEL= 1637.89

STA=	9980.	9985.	9998.	10003.	10013.	10020.
PER Q=	.9	33.7	37.7	26.5	1.2	
AREA=	5.3	64.3	42.4	52.4	7.0	
VEL=	.5	1.5	2.6	1.5	.5	
DEPTH=	.9	5.2	8.5	5.2	.9	

*SECNO .110

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .54

.110	3.90	1637.90	1635.90	.00	1637.99	.10	.02	.02	1634.50
292.0	63.2	171.0	57.8	33.7	61.4	28.4	1.1	.6	1634.00
.04	1.87	2.78	2.04	.045	.040	.045	.000	1634.00	9975.54
.000967	55.	50.	55.	2	17	0	.00	42.62	10018.16

FLOW DISTRIBUTION FOR SECNO= .11 CWSEL= 1637.90

STA=	9976.	9978.	9990.	10006.	10009.	10014.	10018.
PER Q=	.7	20.9	58.5	9.5	9.0	1.3	
AREA=	2.5	31.2	61.4	10.9	13.3	4.1	
VEL=	.9	2.0	2.8	2.5	2.0	.9	
DEPTH=	.9	2.6	3.7	3.9	2.9	.9	

CCHV= .100 CEHV= .300
*SECNO .180
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

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3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .180      2.51   1648.41   1648.41       .00   1649.34       .93       .98       .25   1646.70
     292.0       7.8     252.3      31.9       2.2      31.0       6.7       1.8        .9   1645.90
       .06      3.52      8.14      4.79      .045      .040      .045      .000   1645.90   9982.71
   .017778      380.      386.      390.         0        14         0       .00     22.60  10005.30


FLOW DISTRIBUTION FOR SECNO=       .18         CWSEL=   1648.41

STA=    9983.    9985.   10000.   10005.
  PER Q=      2.7     86.4     10.9
   AREA=      2.2     31.0      6.7
    VEL=      3.5      8.1      4.8
  DEPTH=       .9      2.1      1.3

*SECNO  .250
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .250      1.90   1657.60   1657.60       .00   1658.41       .81      7.29       .01   1656.00
     292.0       7.4     276.4       8.2       2.1      37.4       2.3       2.2       1.2   1656.00
       .07      3.51      7.39      3.56      .045      .040      .045      .000   1655.70   9987.85
   .018766      399.      399.      399.         0        15         0       .00     26.92  10014.77


FLOW DISTRIBUTION FOR SECNO=       .25         CWSEL=   1657.60

STA=    9988.    9991.   10012.   10015.
  PER Q=      2.5     94.7      2.8
   AREA=      2.1     37.4      2.3
    VEL=      3.5      7.4      3.6
  DEPTH=       .8      1.7       .8

CCHV=     .300 CEHV=     .500
*SECNO  .260

3301 HV CHANGED MORE THAN HVINS

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   23OCT95      09:23:45                                                                    PAGE   13

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=     1667.00 ELREA=     1667.89

      .260      2.65   1658.75   1658.75       .00   1660.07      1.33       .54       .26   1656.15
     292.0        .0     292.0        .0        .0      31.6        .0       2.2       1.2   1656.10
       .07       .00      9.24       .00      .000      .040      .000      .000   1656.10   9994.00
   .017007       35.       30.       35.         0        11         0       .00     12.00  10006.00


FLOW DISTRIBUTION FOR SECNO=       .26         CWSEL=   1658.75

STA=    9994.   10006.
  PER Q=    100.0
   AREA=     31.6
    VEL=      9.2
  DEPTH=      2.6


SPECIAL CULVERT
```

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	2	.024	.80	3.00	.00	5.20	.00	73.00	2	3	1656.95	1656.15

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 3 - PIPE PROJECTING FROM FILL

*SECNO .270

SPECIAL CULVERT OUTLET CONTROL
EGIC = 1662.640 EGOC = 1662.792 PCWSE= 1658.746 ELTRD= 1665.600

3235 SLOPE TOO STEEP, EXCEEDS .10

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .34

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1662.64	1662.79	2.72	0.	283.	16.975	42.5	1665.60	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1667.00 ELREA= 1667.89

.270	1.42	1658.32	.00	.00	1662.79	4.47	2.72	.00	1656.95
283.0	.0	283.0	.0	.0	16.7	.0	2.2	1.2	1656.90
.08	.00	16.97	.00	.000	.040	.000	.000	1656.90	9994.00
.134673	80.	73.	80.	8	0	0	.00	12.00	10006.00

FLOW DISTRIBUTION FOR SECNO= .27 CWSEL= 1658.32

STA= 9994. 10006.
PER Q= 100.0
AREA= 16.7
VEL= 17.0
DEPTH= 1.4

*SECNO .280

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 32.74

.280	6.32	1664.12	1659.63	.00	1664.15	.03	.02	1.33	1658.20
289.0	66.9	200.2	21.9	68.2	140.8	30.8	2.4	1.2	1658.20
.08	.98	1.42	.71	.045	.040	.045	.000	1657.80	9968.54
.000131	50.	40.	50.	3	11	0	.00	51.28	10019.82

FLOW DISTRIBUTION FOR SECNO= .28 CWSEL= 1664.12

STA= 9969. 9977. 9986. 10009. 10020.
PER Q= 4.3 18.9 69.3 7.6
AREA= 20.2 48.0 140.8 30.8
VEL= .6 1.1 1.4 .7

```
 DEPTH=      2.3       5.3       6.1       3.0

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


CCHV=     .100 CEHV=     .300
*SECNO  .370

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .17

      .370      2.06   1664.16   1663.44       .00   1664.37       .21       .17       .06   1662.40
     289.0       5.9     279.0       4.1       3.2      74.2       2.3       4.0       1.7   1662.40
       .12      1.86      3.76      1.76      .045      .040      .045      .000   1662.10   9975.22
   .004312       450.      445.      450.         5        21         0       .00     44.92  10020.14


FLOW DISTRIBUTION FOR SECNO=       .37         CWSEL=   1664.16

STA=    9975.     9979.    10018.    10020.
  PER Q=       2.0      96.5       1.4
   AREA=       3.2      74.2       2.3
    VEL=       1.9       3.8       1.8
  DEPTH=        .9       1.9        .9

*SECNO  .460
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .460      1.71   1672.91   1672.91       .00   1673.59       .68      4.05       .14   1671.70
     289.0       8.0     276.7       4.3       2.5      41.1       1.4       4.7       2.2   1671.70
       .14      3.24      6.74      3.07      .045      .040      .045      .000   1671.20   9988.42
   .019851       540.      504.      500.         0        15         0       .00     34.49  10022.91


FLOW DISTRIBUTION FOR SECNO=       .46         CWSEL=   1672.91

STA=    9988.     9993.    10021.    10023.
  PER Q=       2.8      95.7       1.5
   AREA=       2.5      41.1       1.4
    VEL=       3.2       6.7       3.1
  DEPTH=        .6       1.5        .6

*SECNO  .510
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .510      1.98   1680.48   1680.48       .00   1681.05       .57      5.09       .01   1678.80
     289.0      66.8      135.3      86.9      14.7      18.3      19.0       5.0       2.4   1678.80
       .15      4.56      7.40      4.57      .045      .040      .045      .000   1678.50   9980.43
   .017762       280.      269.      275.         0        11         0       .00     43.28  10023.71


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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


FLOW DISTRIBUTION FOR SECNO=       .51         CWSEL=   1680.48

STA=    9980.     9982.     9995.    10005.    10022.    10024.
  PER Q=       .2      22.9      46.8      29.9         .2
   AREA=       .3      14.4      18.3      18.7         .3
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```
   VEL=      1.6      4.6      7.4      4.6      1.6
 DEPTH=       .2      1.1      1.8      1.1       .2

CCHV=     .300 CEHV=     .500
*SECNO  .550

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1705.71 ELREA=      1704.16

      .550     4.34  1688.34  1688.34      .00  1690.53     2.20     2.52      .81  1684.00
    258.0       .0    258.0       .0       .0     21.7       .0      5.2      2.5  1684.00
      .16      .00    11.89      .00     .000     .036     .000     .000  1684.00  9997.50
   .011718     170.     174.     180.        0       17        0      .00     5.00 10002.50


FLOW DISTRIBUTION FOR SECNO=       .55          CWSEL=   1688.34

STA=    9998.   10003.
  PER Q=    100.0
   AREA=     21.7
    VEL=     11.9
  DEPTH=      4.3


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .024       .80     3.00        .00     5.00       .00     216.00     2         3      1691.39   1688.23

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  3 - PIPE PROJECTING FROM FILL

 140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
3130, EGIC= 1702.73..MAY BE TOO LARGE IF INLET CONTROLS.
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

5135, EGOC= 1701.47 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO  .590

SPECIAL CULVERT INLET CONTROL
EGIC =   1702.734  EGOC =   1701.466  PCWSE=   1688.340  ELTRD=   1704.160


3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.74

SPECIAL CULVERT

    EGIC      EGOC       H4      QWEIR     QCULV      VCH      ACULV     ELTRD     WEIRLN
  1702.73   1701.47     12.20        0.      246.     4.458      19.6   1704.16         0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1705.71 ELREA=      1704.16

      .590    11.04  1702.43      .00      .00  1702.73      .31    12.20      .00  1691.39
    246.0       .0    246.0       .0       .0     55.2       .0      5.4      2.5  1691.39
      .17      .00     4.46      .00     .000     .036     .000     .000  1691.39  9997.50
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   .000475      220.      216.      220.         2         0         0       .00      5.00  10002.50

FLOW DISTRIBUTION FOR SECNO=       .59          CWSEL=   1702.43

STA=    9998.   10003.
  PER Q=    100.0
   AREA=     55.2
    VEL=      4.5
  DEPTH=     11.0

*SECNO  .610

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  6.09

      .610      6.43   1702.83   1698.10       .00   1702.83       .00       .01       .09   1698.00
     325.0      59.2      230.0      35.8     161.6     373.1      88.9       6.4       2.8   1698.00
       .24       .37       .62       .40      .038      .036      .038      .000   1696.40   9913.50
   .000022      100.      136.      150.         2        20         0       .00    167.04  10080.53


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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

FLOW DISTRIBUTION FOR SECNO=       .61          CWSEL=   1702.83

STA=    9913.    9919.    9959.    9981.   10048.   10065.   10076.   10081.
  PER Q=       .1       6.3      11.8      70.8       9.2       1.7        .1
   AREA=      2.1      74.2      85.3     373.1      66.6      20.6       1.7
    VEL=       .1        .3        .5        .6        .5        .3        .1
  DEPTH=       .4       1.8       3.8       5.6       3.8       1.8        .4

CCHV=     .100 CEHV=     .300
*SECNO  .680
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .680      2.32   1705.42   1705.42       .00   1705.76       .35       .03       .10   1705.70
     325.0        .0      243.3      81.7        .0      46.2      33.1       9.0       3.8   1704.80
       .26       .00       5.27      2.47      .000      .036      .038      .000   1703.10   9988.15
   .010947      300.      342.      325.         0        16         0       .00    113.04  10101.19


FLOW DISTRIBUTION FOR SECNO=       .68          CWSEL=   1705.42

STA=    9988.   10022.   10039.   10059.   10085.   10101.
  PER Q=     74.8      9.6      8.3      6.3      1.0
   AREA=     46.2     10.5     10.2      9.7      2.6
    VEL=      5.3      3.0      2.6      2.1      1.2
  DEPTH=      1.4       .6       .5       .4       .2

*SECNO  .750
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .750      2.05   1715.65   1715.65       .00   1716.21       .56      4.59       .07   1714.80
     325.0      48.5      260.2      16.3      14.5      40.0       4.0       9.6       4.6   1713.70
       .28      3.35       6.50      4.11      .038      .036      .038      .000   1713.60   9957.71
   .013140      390.      384.      375.         0        15         0       .00     53.74  10011.46


FLOW DISTRIBUTION FOR SECNO=       .75          CWSEL=   1715.65

STA=    9958.    9971.    9983.   10007.   10011.
  PER Q=       3.4      11.5      80.1       5.0
   AREA=       4.8       9.7      40.0       4.0
    VEL=       2.3       3.9       6.5       4.1
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 DEPTH=       .4       .8      1.6      1.0

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


*SECNO  .810
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .810      1.48   1725.28   1725.28       .00   1725.77       .50      4.20       .01   1724.00
    325.0       7.0     238.7      79.3       2.1      38.2      22.4      10.1       5.0   1724.00
      .29      3.38      6.24      3.54      .038      .036      .038      .000   1723.80   9987.15
   .014962      300.      302.      290.         0        19         0       .00     66.18  10053.33


FLOW DISTRIBUTION FOR SECNO=       .81          CWSEL=   1725.28

STA=    9987.    9990.   10018.   10053.
  PER Q=      2.2     73.4     24.4
   AREA=      2.1     38.2     22.4
    VEL=      3.4      6.2      3.5
  DEPTH=       .6      1.4       .6

CCHV=     .300 CEHV=     .500
*SECNO  .830

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1744.60 ELREA=      1744.30

      .830      4.18   1727.39   1727.39       .00   1729.47      2.09      1.58       .80   1723.21
    242.0        .0     242.0        .0         .0      20.9        .0      10.2       5.1   1723.21
      .29       .00     11.59       .00       .000      .036      .000      .000   1723.21   9997.50
   .011730      120.      114.      140.         0        17         0       .00      5.00  10002.50


FLOW DISTRIBUTION FOR SECNO=       .83          CWSEL=   1727.39

STA=    9998.   10003.
  PER Q=    100.0
   AREA=     20.9
    VEL=     11.6
  DEPTH=      4.2

1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .024       .80      3.00        .00      5.00       .00    166.00       2         3    1732.65   1723.21

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  3 - PIPE PROJECTING FROM FILL
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5130, EGIC= 1739.75..MAY BE TOO LARGE IF INLET CONTROLS.
 135, EGOC= 1739.77 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
 SECNO  .860

SPECIAL CULVERT OUTLET CONTROL
EGIC =   1739.752  EGOC =   1739.774  PCWSE=   1727.385  ELTRD=   1744.300


3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.19

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
  1739.75   1739.77     10.30        0.      178.     5.324      19.6   1744.30        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1744.60 ELREA=      1744.30

      .860      6.68   1739.33       .00       .00   1739.77       .44     10.30       .00   1732.65
     178.0        .0     178.0        .0        .0      33.4        .0      10.3       5.1   1732.65
       .30       .00      5.32       .00      .000      .036      .000      .000   1732.65   9997.50
   .001321      170.      166.      170.         2         0         0       .00      5.00  10002.50


FLOW DISTRIBUTION FOR SECNO=       .86          CWSEL=   1739.33

STA=    9998.   10003.
  PER Q=     100.0
   AREA=      33.4
    VEL=       5.3
  DEPTH=       6.7

*SECNO  .870

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.41

      .870      5.20   1739.90   1736.61       .00   1739.92       .02       .02       .13   1738.00
     185.0       1.9     175.6       7.5       4.8     156.3      11.0      10.4       5.1   1736.00
       .32       .40      1.12       .68      .038      .036      .038      .000   1734.70   9967.46
   .000123       70.       66.       65.         2        14         0       .00     51.09  10018.56


FLOW DISTRIBUTION FOR SECNO=       .87          CWSEL=   1739.90

STA=    9967.    9973.   10013.   10016.   10019.
  PER Q=      1.0     94.9      3.5       .5
   AREA=      4.8    156.3      8.4      2.6
    VEL=       .4      1.1       .8       .4
  DEPTH=      1.0      3.9      2.9      1.0

*SECNO  .890

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .19
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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1758.10 ELREA=      1760.00

      .890      5.25   1739.55   1737.83       .00   1740.33       .79       .03       .38   1734.37
     185.0        .0     185.0        .0        .0      26.0        .0      10.6       5.2   1734.30
       .32       .00      7.12       .00      .000      .036      .000      .000   1734.30   9997.50
   .003304       90.       88.       85.         2        14         0       .00      5.00  10002.50


FLOW DISTRIBUTION FOR SECNO=       .89          CWSEL=   1739.55

STA=    9998.   10003.
  PER Q=    100.0
   AREA=     26.0
    VEL=      7.1
  DEPTH=      5.2

1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
    1          .024       .80      3.00        .00      5.00       .00    176.00       2         3    1739.67   1734.37

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  3 - PIPE PROJECTING FROM FILL

*SECNO  .920

SPECIAL CULVERT INLET CONTROL
EGIC =   1746.691  EGOC =   1744.419  PCWSE=   1739.546  ELTRD=   1758.100

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.52

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
  1746.69   1744.42      6.36        0.      174.     5.217      19.6   1758.10        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1758.10 ELREA=      1760.00

      .920      6.67   1746.27       .00       .00   1746.69       .42      6.36       .00   1739.60
     174.0        .0     174.0        .0        .0      33.4        .0      10.7       5.2   1739.60
       .33       .00      5.22       .00      .000      .036      .000      .000   1739.60   9997.50
   .001272       180.      176.      180.         2         0         0       .00      5.00  10002.50


FLOW DISTRIBUTION FOR SECNO=       .92          CWSEL=   1746.27

STA=    9998.   10003.
  PER Q=    100.0
   AREA=     33.4
    VEL=      5.2
  DEPTH=      6.7

*SECNO  .940

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.88

      .940      3.63   1746.83   1745.06       .00   1746.86       .03       .05       .12   1743.20
     188.0      99.9      71.4      16.7      78.1      39.1      17.2      10.9       5.3   1744.10
```

.35	1.28	1.83	.97	.038	.036	.038	.000	1743.20	9957.46
.000420	85.	82.	80.	2	14	0	.00	67.46	10024.92

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= .94 CWSEL= 1746.83

STA=	9957.	9963.	9969.	9979.	10000.	10012.	10025.
PER Q=	.8	4.9	9.0	38.5	38.0	8.9	
AREA=	2.8	8.7	15.6	50.9	39.1	17.2	
VEL=	.5	1.1	1.1	1.4	1.8	1.0	
DEPTH=	.5	1.5	1.6	2.4	3.2	1.4	

THIS RUN EXECUTED 23OCT95 09:23:47

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	3.470	295.00	9979.57	10018.57	1594.93	1594.93	.97	.65	1.63
*	3.470	295.00	9979.64	10018.46	1594.95	1594.95	.95	.63	1.65
*	.000	295.00	9976.44	10040.08	1600.66	1600.66	.89	.55	3.86
*	.000	295.00	9976.44	10040.22	1600.70	1600.70	.85	.51	3.90
*	.040	295.00	9982.74	10004.21	1611.19	1611.19	1.01	1.15	5.19
*	.040	295.00	9982.78	10004.20	1611.20	1611.20	1.00	1.14	5.20
*	.070	295.00	9992.95	10017.13	1620.30	1620.30	.88	.88	3.80
*	.070	295.00	9993.00	10017.06	1620.30	1620.30	.88	.89	3.80
*	.080	295.00	9997.50	10002.50	1623.75	1623.75	1.01	2.40	4.75
*	.080	295.00	9997.50	10002.50	1623.75	1623.75	1.01	2.40	4.75
*	.100	292.00	9979.53	10019.97	1637.89	.00	.16	.06	8.49
*	.100	292.00	9979.53	10019.97	1637.89	.00	.16	.06	8.49
*	.110	292.00	9975.54	10018.16	1637.90	1635.90	.25	.10	3.90
*	.110	292.00	9975.55	10018.16	1637.90	1635.91	.25	.10	3.90
*	.180	292.00	9982.71	10005.30	1648.41	1648.41	.99	.93	2.51
*	.180	292.00	9982.75	10005.25	1648.43	1648.43	.97	.92	2.53
*	.250	292.00	9987.85	10014.77	1657.60	1657.60	.98	.81	1.90
*	.250	292.00	9987.86	10014.76	1657.61	1657.61	.97	.80	1.91
*	.260	292.00	9994.00	10006.00	1658.75	1658.75	1.00	1.33	2.65
*	.260	292.00	9994.00	10006.00	1658.75	1658.75	1.00	1.33	2.65
*	.270	283.00	9994.00	10006.00	1658.32	.00	2.54	4.47	1.42
*	.270	283.00	9994.00	10006.00	1658.32	.00	2.54	4.47	1.42

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	.280	289.00	9968.54	10019.82	1664.12	1659.63	.10	.03	6.32
*	.280	289.00	9968.54	10019.81	1664.12	1659.63	.10	.03	6.32
*	.370	289.00	9975.22	10020.14	1664.16	1663.44	.48	.21	2.06
*	.370	289.00	9975.23	10020.13	1664.16	1663.44	.48	.22	2.06
*	.460	289.00	9988.42	10022.91	1672.91	1672.91	.98	.68	1.71
*	.460	289.00	9988.43	10022.91	1672.92	1672.92	.97	.67	1.72
*	.510	289.00	9980.43	10023.71	1680.48	1680.48	.96	.57	1.98
*	.510	289.00	9980.50	10023.60	1680.48	1680.48	.96	.57	1.98
*	.550	258.00	9997.50	10002.50	1688.34	1688.34	1.01	2.20	4.34
*	.550	258.00	9997.50	10002.50	1688.34	1688.34	1.01	2.19	4.34
*	.590	246.00	9997.50	10002.50	1702.43	.00	.24	.31	11.04
*	.590	246.00	9997.50	10002.50	1702.42	.00	.24	.31	11.03
*	.610	325.00	9913.50	10080.53	1702.83	1698.10	.05	.00	6.43
*	.610	325.00	9913.50	10080.54	1702.83	1698.10	.05	.00	6.43
*	.680	325.00	9988.15	10101.19	1705.42	1705.42	.80	.35	2.32
*	.680	325.00	9988.24	10101.07	1705.41	1705.41	.80	.35	2.31
*	.750	325.00	9957.71	10011.46	1715.65	1715.65	.90	.56	2.05
*	.750	325.00	9957.85	10011.44	1715.66	1715.66	.89	.55	2.06
*	.810	325.00	9987.15	10053.33	1725.28	1725.28	.94	.50	1.48
*	.810	325.00	9987.18	10052.95	1725.30	1725.30	.90	.46	1.50
*	.830	242.00	9997.50	10002.50	1727.39	1727.39	1.00	2.09	4.18
*	.830	242.00	9997.50	10002.50	1727.38	1727.38	1.00	2.09	4.17
*	.860	178.00	9997.50	10002.50	1739.33	.00	.36	.44	6.68
*	.860	178.00	9997.50	10002.50	1739.33	.00	.36	.44	6.68
*	.870	185.00	9967.46	10018.56	1739.90	1736.61	.10	.02	5.20
*	.870	185.00	9967.46	10018.56	1739.90	1736.61	.10	.02	5.20
*	.890	185.00	9997.50	10002.50	1739.55	1737.83	.55	.79	5.25
*	.890	185.00	9997.50	10002.50	1739.56	1737.83	.55	.78	5.26
*	.920	174.00	9997.50	10002.50	1746.27	.00	.36	.42	6.67
	.920	174.00	9997.50	10002.50	1746.27	.00	.36	.42	6.67
*	.940	188.00	9957.46	10024.92	1746.83	1745.06	.18	.03	3.63
*	.940	188.00	9957.44	10024.94	1746.85	1745.06	.18	.03	3.65

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=      3.470  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      3.470  PROFILE=  2  CRITICAL DEPTH ASSUMED

CAUTION SECNO=       .000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .040  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .040  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .040  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .040  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .070  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .070  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .070  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .070  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .080  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .080  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .080  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .080  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=       .100  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=       .100  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=       .110  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=       .110  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=       .180  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .180  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .180  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .180  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .250  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .250  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .250  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .250  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .260  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .260  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=       .260  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .270  PROFILE=  1  SLOPE TOO STEEP
WARNING SECNO=       .270  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=       .270  PROFILE=  2  SLOPE TOO STEEP
WARNING SECNO=       .270  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=       .280  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=       .280  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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WARNING SECNO=      .370  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .370  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .460  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .460  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .460  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .460  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .510  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .510  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .510  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .510  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .550  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .550  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .550  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .550  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .590  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .590  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .610  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .610  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .680  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .680  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .680  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .680  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .750  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      .750  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .750  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .810  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .810  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .810  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .810  PROFILE=  2  MINIMUM SPECIFIC ENERGY

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CAUTION SECNO=      .830  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .830  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .830  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .860  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .860  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .870  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .870  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .890  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .890  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .920  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .940  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .940  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

FLOODWAY DATA, Fountain Hills (south) -
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
3.470	39.	49.	6.0	1594.9	1594.9	.0
.000	64.	59.	5.0	1600.7	1600.7	.0
.040	21.	35.	8.4	1611.2	1611.2	.0
.070	24.	43.	6.9	1620.3	1620.3	.0
.080	5.	24.	12.4	1623.7	1623.7	.0
.100	40.	171.	1.7	1637.9	1637.9	.0
.110	43.	124.	2.4	1637.9	1637.9	.0
.180	22.	40.	7.3	1648.4	1648.4	.0
.250	27.	42.	6.9	1657.6	1657.6	.0
.260	12.	32.	9.2	1658.7	1658.7	.0
.270	12.	17.	17.0	1658.3	1658.3	.0
.280	51.	240.	1.2	1664.1	1664.1	.0
.370	45.	79.	3.6	1664.2	1664.2	.0
.460	34.	45.	6.4	1672.9	1672.9	.0
.510	43.	52.	5.6	1680.5	1680.5	.0
.550	5.	22.	11.9	1688.3	1688.3	.0
.590	5.	55.	4.5	1702.4	1702.4	.0
.610	167.	624.	.5	1702.8	1702.8	.0
.680	113.	79.	4.1	1705.4	1705.4	.0
.750	54.	59.	5.5	1715.6	1715.6	.0
.810	66.	65.	5.0	1725.3	1725.3	.0
.830	5.	21.	11.6	1727.4	1727.4	.0
.860	5.	33.	5.3	1739.3	1739.3	.0
.870	51.	172.	1.1	1739.9	1739.9	.0
.890	5.	26.	7.1	1739.5	1739.5	.0
.920	5.	33.	5.2	1746.3	1746.3	.0
.940	67.	136.	1.4	1746.8	1746.8	.0

SUNBURST WASH

FOUNTAIN HILLS SOUTH
Sunburst Wash

X-Sec	HEC-1 Conc. Point	100-Yr Discharge (cfs)	Left Overbank Lenght (ft)	Rigth Overbank Lenght (ft)	Channel Lenght (ft)	COMMENT
0.00	*SNB5	122				Downstream flow
0.04			300	160	212	
0.10			300	360	330	
0.19			470	430	459	
0.21			100	150	127	Culvert outlet
0.24	SSNB3	92	160	160	146	Culvert inlet flow
0.26	SNB3	606	150	110	110	Upstream flow
0.30			220	210	205	
0.36			312	290	301	

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    23OCT95    TIME   09:34:25   *
*********************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*          (916) 756-1104               *
*****************************************
```


```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 23OCT95 09:34:25

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**************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
**************************************


T1      Fountain Hills (South) - Floodplain Delineation        File: SUNBURST.H2
T1      For the Flood Control District of Maricopa County
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - SUNBURST WASH

T4 GR data from stereo model received October 93 from KAM
T4 Revised photogrametric x-sec. received May 94
T5 1"=200' 2-feet Contour mapping from KAM flown 8-91
T6 with survey control by Anderson Nelson 12-11-92, field survey Aug 91
T7 Supplemental cross section data surveyed by Valco Surveing
T8 Source of 100-yr flowrate from HEC-1 Analysis by AGK Enginers
T8           File 180-6CE.DAT
T9 Subcritical analysis
T9 This model was developed and configured to determine water surface elevation
T9 for a 100-year floodplain delineation study, Velocity from this model
T9 may not be accurate and should not be used

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                                                                   1697.3

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                                                          -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        43        53        54        1         2         68        10        8         200

   This model was depeloped and configured to determine water surface elevation
   for a 100-year floodplain delineation study

  Starting conditions -  Structure  # 19 maximum stage (1697.3)
  Confluence of Sunburn and Colony washes

NC     .047      .057      .040        .2        .4
QT       2       122       122

ET                         9.1                                                  9843.91   10076.73
```

```
X1     0.00       25     9982.8    10010.9       291       291       291
GR   1709.8   9615.5   1700.3     9662.7    1698.4    9681.2    1697.6    9708.7    1698.1    9735.8
GR   1699.0   9772.6   1698.9     9809.3    1697.4    9842.8    1695.0    9869.5    1692.8    9886.7
GR   1691.6   9904.7   1692.4     9924.3    1688.0    9950.9    1686.6    9982.8    1685.1   10000.0
GR   1688.8  10010.9   1689.8    10049.2    1698.9   10082.6    1700.6   10118.8    1699.8   10151.7
GR   1700.9  10187.6   1702.0    10215.5    1703.2   10243.2    1703.6   10250.8    1708.0   10280.5

ET                       9.1                                                          9889   10020.3
X1     0.04       21     9985.9    10007.3       300       160       212
GR   1711.8   9826.0   1706.8     9849.0    1702.5    9870.9    1694.8    9898.6    1694.5    9914.7
GR   1692.8   9942.0   1692.2     9973.1    1691.4    9985.9    1691.4   10000.0    1691.9   10007.3
GR   1700.8  10028.7   1702.0    10044.7    1702.7   10057.7    1702.3   10072.9    1701.7   10088.6
GR   1702.0  10115.3   1702.4    10141.1    1702.8   10152.3    1704.1   10172.2    1705.7   10184.3
GR   1707.0  10191.7

ET                       9.1                                                       9982.09   10054.72
X1     0.10       15     9993.1    10010.7       300       360       330
GR   1723.7   9891.4   1715.2     9924.6    1709.2    9954.8    1702.1    9971.1    1700.9    9987.8
GR   1700.3   9993.1   1699.9    10000.0    1701.1   10010.7    1701.0   10038.5    1701.0   10049.7
GR   1702.2  10069.1   1710.1    10086.2    1714.5   10096.4    1718.4   10115.0    1722.1   10137.2

ET                       9.1                                                          9989.7   10007.2
X1     0.19       13     9997.1    10004.1       470       430       459
GR   1729.7   9930.4   1715.2     9956.7    1711.6    9988.0    1709.1    9997.1    1709.1   10000.0
GR   1709.1  10004.1   1718.8    10018.9    1723.6   10030.2    1725.3   10060.2    1727.4   10082.6
GR   1731.8  10109.3   1738.4    10140.0    1740.9   10150.3

  Culvert SUN1 outlet

NC                                  .3        .5
ET                      10.6
X1     0.21       22     9998     10002       100       150       127
X3       10                                                    1738.9    1739.8
GR   1738.0   9926.3   1736.0     9930.6    1734.0    9934.9    1732.0    9938.9    1730.0    9943.3
GR   1728.0   9947.6   1726.0     9952.3    1724.0    9957.2    1722.0    9962.3    1720.0    9968.8
GR   1718.7     9998   1718.7    10000.0    1718.7     10002    1720.0   10010.6    1722.0   10026.2
GR   1724.0  10031.7   1726.0    10036.8    1728.0   10042.7    1730.0   10049.7    1732.0   10056.3
GR   1734.0  10064.4   1736.0    10075.6

  Culvert - SUN1 - 1 CMP 48" X 150' Sycamore Dr.

QT       2        92       92
SC   1.023       0.8      3.0                 4                 146       2.3   1724.96   1718.68

  Culvert SUN1 inlet
ET                      10.61
```

```
X1    0.24      28      9998    10002     160     160     146
X2                      2
X3      10                                                    1738.9  1739.8
BT      -5    9921.3    1740.0            9950    1738.9            10000  1739.7
BT            10050     1741.9           10078.6  1744
GR  1750.0    9885.8    1748.0   9892.9   1746.0   9900.2  1744.0   9907.3  1742.0  9914.3
GR  1740.0    9921.3    1738.0   9928.3   1736.0   9935.2  1734.0   9942.1  1732.0  9948.8
GR  1730.0    9956.5    1728.0   9966.9   1728.0   9995.7  1724.96     9998  1724.9  10000.0
GR  1724.9      10002   1730.0  10008.7   1732.0  10020.0  1734.0  10030.6  1736.0  10041.8
GR  1738.0   10051.5    1740.0  10060.8   1742.0  10069.8  1744.0  10078.6  1745.00 10083.15
GR  1746.0   10087.7    1748.0  10101.3   1750.0  10122.8

QT      2       606       606
NC                                .2        .4
ET                        9.1                                           9939.92 10039.58
X1    0.26       12    9989.5  10010.9     150     110     110
GR  1747.7    9881.4    1737.2   9921.6   1727.1   9949.0  1725.9   9973.5  1720.4  9989.5
GR  1720.3   10000.0    1720.5  10010.9   1726.5  10030.2  1736.3  10053.5  1745.5  10075.0
GR  1750.1   10085.2    1750.8  10091.4

ET                        9.1                                           9944.02 10025.02
X1    0.30       13    9991.7  10007.7     220     210     205
GR  1748.5    9889.9    1736.0   9928.1   1727.2   9953.4  1726.5   9968.5  1724.7  9975.6
GR  1724.3    9982.8    1724.0   9991.7   1722.8  10000.0  1724.5  10007.7  1733.0  10032.4
GR  1741.4   10055.7    1744.8  10069.5   1750.4  10100.3

ET                        9.1                                           9988.98 10011.46
X1    0.36       13    9995.7  10003.9     312     290     301
GR  1756.8    9912.8    1749.9   9932.3   1743.0   9951.0  1741.6   9974.0  1728.8  9995.7
GR  1728.4   10000.0    1728.4  10003.9   1741.2  10026.1  1743.9  10034.0  1749.0  10059.5
GR  1754.5   10087.7    1758.3  10114.8   1759.9  10123.6
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .200 CEHV= .400
*SECNO .000

.000	12.20	1697.30	1686.87	1697.30	1697.30	.00	.00	.00	1686.60
122.0	60.3	36.6	25.0	791.4	309.8	409.6	.0	.0	1688.80
.00	.08	.12	.06	.047	.040	.057	.000	1685.10	9843.91
.000000	291.	291.	291.	0	19	0	.00	232.82	10076.73

*SECNO .040

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .25

.040	5.90	1697.30	1692.39	.00	1697.30	.00	.00	.00	1691.40
122.0	79.2	38.4	4.3	373.3	124.4	35.1	5.9	1.1	1691.90
.30	.21	.31	.12	.047	.040	.057	.000	1691.40	9889.61
.000007	300.	212.	160.	0	23	0	.00	130.68	10020.28

*SECNO .100
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.100	1.47	1701.37	1701.37	.00	1701.63	.26	.01	.11	1700.30
122.0	15.7	85.0	21.3	5.6	18.0	13.9	7.9	1.8	1701.10
.32	2.82	4.73	1.53	.047	.040	.057	.000	1699.90	9981.33
.015822	300.	330.	360.	0	11	0	.00	74.28	10055.60

*SECNO .190
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.190	1.80	1710.90	1710.90	.00	1711.58	.68	7.70	.17	1709.10
122.0	22.6	92.4	7.1	5.9	12.6	2.5	8.2	2.3	1709.10
.34	3.85	7.35	2.88	.047	.040	.057	.000	1709.10	9990.57
.017942	470.	459.	430.	0	11	0	.00	16.27	10006.84

CCHV= .300 CEHV= .500

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .210

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1738.90 ELREA= 1739.80

.210	3.06	1721.76	1721.76	.00	1723.30	1.55	2.14	.43	1718.70

122.0	.0	122.0	.0	.0	12.2	.0	8.3	2.3	1718.70
.34	.00	9.98	.00	.000	.040	.000	.000	1718.70	9998.00
.016261	100.	127.	150.	0	14	0	.00	4.00	10002.00

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.023	.80	3.00	.00	4.00	.00	146.00	2	3	1724.96	1718.68

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 3 - PIPE PROJECTING FROM FILL

*SECNO .240

SPECIAL CULVERT OUTLET CONTROL
EGIC = 1730.214 EGOC = 1730.279 PCWSE= 1721.757 ELTRD= 1738.900

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.30

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1730.21	1730.28	6.98	0.	92.	4.561	12.6	1738.90	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1738.90 ELREA= 1739.80

.240	5.06	1729.96	.00	.00	1730.28	.32	6.98	.00	1724.96
92.0	.0	92.0	.0	.0	20.2	.0	8.3	2.3	1724.90
.35	.00	4.56	.00	.000	.040	.000	.000	1724.90	9998.00
.001743	160.	146.	160.	2	0	0	.00	4.00	10002.00

1
23OCT95 09:34:25 PAGE 6

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .200 CEHV= .400
*SECNO .260

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 31.82

.260	10.03	1730.33	1723.06	.00	1730.35	.02	.01	.06	1720.40
606.0	180.3	316.4	109.4	222.8	213.0	149.2	9.2	2.5	1720.50
.38	.81	1.49	.73	.047	.040	.057	.000	1720.30	9940.24
.000075	150.	110.	110.	2	11	0	.00	99.06	10039.30

*SECNO .300

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .49

.300	7.54	1730.34	1726.21	.00	1730.39	.06	.03	.01	1724.00
606.0	308.0	253.3	44.7	197.5	109.1	49.5	11.5	2.9	1724.50
.41	1.56	2.32	.90	.047	.040	.057	.000	1722.80	9944.38
.000309	220.	205.	210.	2	22	0	.00	80.28	10024.66

*SECNO .360

3301 HV CHANGED MORE THAN HVINS

185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.360	4.64	1733.04	1733.04	.00	1734.67	1.63	.28	.63	1728.80
606.0	82.7	434.3	89.1	15.2	37.2	18.7	13.0	3.3	1728.40
.42	5.43	11.68	4.77	.047	.040	.057	.000	1728.40	9988.51
.013202	312.	301.	290.	0	14	0	.00	23.43	10011.95

THIS RUN EXECUTED 23OCT95 09:34:26

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
	.000	122.00	9843.91	10076.73	1697.30	1686.87	.01	.00	12.20
	.000	122.00	9843.91	10076.73	1697.30	1686.87	.01	.00	12.20
*	.040	122.00	9889.61	10020.28	1697.30	1692.39	.02	.00	5.90
*	.040	122.00	9889.61	10020.28	1697.30	1692.39	.02	.00	5.90
*	.100	122.00	9981.33	10055.60	1701.37	1701.37	.82	.26	1.47
*	.100	122.00	9982.09	10054.72	1701.36	1701.36	.82	.26	1.46
*	.190	122.00	9990.57	10006.84	1710.90	1710.90	.97	.68	1.80
*	.190	122.00	9990.57	10006.84	1710.89	1710.89	.97	.69	1.79
	.210	122.00	9998.00	10002.00	1721.76	1721.76	1.01	1.55	3.06
*	.210	122.00	9998.00	10002.00	1721.76	1721.76	1.01	1.55	3.06
*	.240	92.00	9998.00	10002.00	1729.96	.00	.36	.32	5.06
*	.240	92.00	9998.00	10002.00	1729.96	.00	.36	.32	5.06
*	.260	606.00	9940.24	10039.30	1730.33	1723.06	.08	.02	10.03
*	.260	606.00	9940.24	10039.30	1730.33	1723.06	.08	.02	10.03
*	.300	606.00	9944.38	10024.66	1730.34	1726.21	.16	.06	7.54
*	.300	606.00	9944.38	10024.66	1730.34	1726.21	.16	.06	7.54
*	.360	606.00	9988.51	10011.95	1733.04	1733.04	.97	1.63	4.64
*	.360	606.00	9988.98	10011.46	1733.04	1733.04	.96	1.61	4.64

SUMMARY OF ERRORS AND SPECIAL NOTES

```
WARNING SECNO=       .040  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=       .040  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=       .100  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .100  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .100  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .100  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .190  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .190  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .190  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .190  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .210  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .210  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .210  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .210  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .210  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=       .240  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=       .240  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=       .260  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=       .260  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=       .300  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=       .300  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=       .360  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .360  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .360  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .360  PROFILE=  2  MINIMUM SPECIFIC ENERGY
```

FLOODWAY DATA, Fountain Hills (south) -
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
.000	233.	1511.	.1	1697.3	1697.3	.0
.040	131.	533.	.2	1697.3	1697.3	.0
.100	73.	37.	3.3	1701.4	1701.4	.0
.190	16.	21.	5.8	1710.9	1710.9	.0
.210	4.	12.	10.0	1721.8	1721.8	.0
.240	4.	20.	4.6	1730.0	1730.0	.0
.260	99.	585.	1.0	1730.3	1730.3	.0
.300	80.	356.	1.7	1730.3	1730.3	.0
.360	22.	71.	8.5	1733.0	1733.0	.0

SYCAMORE WASH

FOUNTAIN HILLS SOUTH
Sycamore Wash

X-Sec	HEC-1 Conc. Point	100-Yr Discharge (cfs)	Left Overbank Lenght (ft)	Rigth Overbank Lenght (ft)	Channel Lenght (ft)	COMMENT
4.45	SGRS2	396				Culvert outlet
0.00			90	90	80	Culvert inlet confluence
0.05	SYR4	252	250	290	251	culvert outlet
0.06	SSYC3	251	90	90	80	culvert inlet
0.09	SYC3	558	200	160	166	
0.15			230	290	289	
0.22			390	390	392	
0.31			460	450	457	
0.36			240	230	243	
0.40			200	230	224	

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    23OCT95    TIME   09:39:16   *
*********************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*          (916) 756-1104               *
*****************************************
```


```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 23OCT95 09:39:16

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**************************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
**************************************


T1      Fountain Hills (South) - Floodplain Delineation        File SYCAMORE.H2
T1      For the Flood Control District of Maricopa County
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - SYCAMORE WASH

T4 GR data from stereo model received October 93 from KAM
T4 Revised photogrametric x-sec. received May 94
T5 1"=200' 2-feet Contour mapping from KAM flown 8-91
T6 with survey control by Anderson Nelson 12-11-92, field survey Aug 91
T7 Supplemental cross section data surveyed by Valco Surveing
T8 Source of 100-yr flowrate from HEC-1 Analysis by AGK Enginers
T8           File 180-6CE.DAT
T9 Subcritical analysis
T9 This model was developed and configured to determine water surface elevation
T9 for a 100-year floodplain delineation study, Velocity from this model
T9 may not be accurate and should not be used

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                             -1                                  1693.45

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

                                                                  -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        43        53        54        1         2         68        10        8         200

  Starting conditions upstream, critical depth assumed
  Culvert COL6 Outlet
  Conc. point SGRS2 combined flows from Sycamore and Greystone

QT       2       396       396
NC    .045      .045      .039        .3        .5

  Culvert COL6 outlet
ET                          9.1                                                                 9992      10008
X1     4.45        20      9992     10008
X3       10                                                                 1704.0    1705.7
GR   1711.0    9822.9    1706.9    9853.0    1706.6    9880.2    1705.5    9915.2    1704.0    9987.7
GR   1702.0    9991.9    1691.8      9992    1691.8   10000.0    1691.8     10008    1702.0   10009.2
GR   1704.0   10013.6    1706.0   10017.3    1706.7   10061.7    1707.9   10080.9    1709.9   10110.6
```

```
GR   1711.8    10131.2    1714.9    10155.4    1718.2    10175.6    1720.4    10192.5    1721.5    10200.1

  Culvert COL6 1 CMP 48" X 80', 2 CMP 60" X 80' Sycamore Dr.
  Modeled as three 56" CMP (equivalent pipes)

SC   3.024        0.8        3.0                  4.7                  80         2.3      1695.54    1691.8

  Confluence of Sycamore and Greystone washes

  Culvert COL6 inlet
ET                            9.1                                                                  9992      10008
X1     0.00         28        9992      10008      90         90         80
X2                            2
X3       10                                                                  1704.0     1705.7
BT       -5      9935.8       1704                 9950       1704.3                  10000      1705.4
BT               10050        1707.6               10077.75   1709.55
GR   1711.9      9754.4     1710.3    9771.4     1709.4     9796.4     1708.5     9838.3     1708.1    9869.2
GR   1706.9      9894.8     1705.7    9922.3     1706.0     9930.5     1704.0     9935.8     1702.0    9940.9
GR   1700.0      9988.3     1695.54      9992    1695.5     10000.0    1695.5       10008    1700.0    10016.0
GR   1702.0     10019.4     1702.0    10023.4    1700.0     10052.5    1702.0     10058.1    1704.0    10063.2
GR   1706.0     10068.2     1708.0    10073.1    1709.1     10075.0    1709.55    10077.75   1710.0    10080.5
GR   1710.9     10099.2     1712.0    10114.9    1713.6     10131.7


QT         2          252        252
MC      .045       .045       .039

  Culvert SYC1 outlet
ET                            9.1                                                                  9997.5    10002.5
X1     0.05         18        9997.5    10002.5    250        290        251
X3       10                                                                  1716.63    1721.98
GR   1712.0      9882.2     1711.4    9889.4     1712.7     9912.9     1713.3     9939.9     1711.4    9962.1
GR   1708.8      9970.0     1708.7    9985.5     1699.4     9997.5     1699.4     10000.0    1699.4    10002.5
GR   1709.0     10018.1     1710.6    10035.3    1713.6     10050.9    1717.7     10067.5    1721.7    10085.7
GR   1724.0     10104.6     1725.8    10114.6    1730.3     10129.5

  Culvert SYC1 1 CMP 60" X80' Greystone wash

QT         2          251        251
SC     1.024        0.8        3.0                  5                    80         2.3      1705.45    1701.90

  Culvert SYC1 inlet
ET                            9.1                                                                  9997.5    10002.5
X1     0.06         23        9997.5    10002.5    90         90         80
X2                            2
X3       10                                                                  1717.14    1721.98
BT       -7      9875.7       1717.7               9900       1717.14                 9950       1719.3
BT               10000        1721.98              10002.5    1721.98                 10050      1726.8
BT              10107.5       1726.6
GR   1717.3      9861.3     1717.7    9875.7     1716.63    9879.45    1715.55    9883.20    1713.4    9890.7
GR   1712.9      9898.1     1713.4    9912.0     1714.6     9924.6     1714.4     9935.6     1713.0    9953.8
GR   1708.6      9966.9     1707.4    9987.6     1705.4     9997.5     1705.45    10000.0    1705.45   10002.5
GR   1707.8     10008.4     1708.2    10028.7    1710.2     10044.3    1714.1     10063.2    1721.4    10085.5
GR   1724.1     10095.3     1726.6    10107.5    1729.1     10120.9
```

QT	2	558	558							
ET			9.1						9843.73	10023.75
X1	0.09	20	9957.7	10000	200	160	166			
X3				9842.5						
GR	1730.4	9690.9	1720.5	9711.2	1716.9	9726.4	1718.3	9753.2	1719.1	9772.0
GR	1718.6	9788.8	1716.8	9805.6	1715.7	9815.8	1713.4	9826.5	1717.2	9842.5
GR	1716.4	9871.6	1715.7	9891.5	1709.6	9913.0	1709.4	9931.8	1709.0	9957.7
GR	1709.0	9989.2	1709.4	10000.0	1709.5	10015.4	1721.8	10028.8	1724.4	10030.0
NC				.1	.3					
ET			9.1						9986.96	10058.97
X1	0.15	15	10000	10044.1	230	290	289			
X3				9956.5						
GR	1728.9	9816.3	1727.3	9839.1	1726.0	9857.6	1724.1	9877.3	1722.2	9895.8
GR	1721.7	9925.8	1722.6	9956.5	1719.0	9978.1	1714.2	10000.0	1713.9	10014.4
GR	1714.3	10044.1	1716.8	10057.9	1720.4	10072.8	1724.4	10093.6	1729.2	10113.5
ET			9.1						9929.32	10012.16
X1	0.22	17	9990.4	10009.1	390	390	392			
GR	1750.1	9837.4	1744.7	9860.3	1739.5	9883.3	1736.4	9899.5	1724.4	9930.6
GR	1723.9	9953.6	1723.7	9974.6	1723.8	9990.4	1722.4	10000.0	1722.8	10009.1
GR	1729.9	10019.5	1732.9	10038.5	1734.2	10063.4	1734.6	10086.8	1739.0	10105.8
GR	1743.5	10123.1	1747.5	10136.1						
ET			9.1						9991.81	10053.61
X1	0.31	13	9997.5	10015.1	460	450	457			
GR	1764.2	9916.5	1754.0	9943.6	1738.1	9976.5	1731.5	9997.5	1730.7	10000.0
GR	1731.5	10015.1	1732.7	10051.5	1738.7	10073.0	1744.3	10087.6	1746.5	10102.5
GR	1747.3	10118.3	1749.9	10133.6	1752.5	10143.9				
ET			9.1						9988.85	10038.9
X1	0.36	17	9994.3	10009.8	240	230	243			
GR	1758.1	9838.9	1750.7	9873.6	1750.1	9896.9	1750.8	9914.8	1748.3	9936.5
GR	1745.7	9956.5	1743.7	9970.8	1735.9	9994.3	1735	10000	1736.2	10009.8
GR	1736.0	10030	1737.6	10038.6	1745.2	10059.4	1761.8	10076.7	1766.0	10086.9
GR	1771.7	10104.6	1774.0	10112						
ET			9.1						9993.17	10033.79
X1	0.40	16	9996.3	10009.9	200	230	224			
GR	1771.4	9853.7	1765.1	9880.6	1761.3	9899.1	1757.3	9921.8	1757.0	9952.5
GR	1752.2	9979.2	1742.8	9996.3	1740.7	10000.0	1742.8	10009.9	1743.0	10028.3
GR	1748.7	10048.9	1752.1	10064.8	1753.6	10078.9	1759.7	10096.0	1767.5	10117.9
GR	1769.9	10124.4								

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .300 CEHV= .500
*SECNO 4.450
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1704.00 ELREA= 1705.70

4.450	2.66	1694.46	1694.46	1693.45	1695.80	1.34	.00	.00	1691.80
396.0	.0	396.0	.0	.0	42.6	.0	.0	.0	1691.80
.00	.00	9.31	.00	.000	.039	.000	.000	1691.80	9992.00
.016185	0.	0.	0.	0	13	0	.00	16.00	10008.00

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	3	.024	.80	3.00	.00	4.70	.00	80.00	2	3	1695.54	1691.80

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 3 - PIPE PROJECTING FROM FILL

*SECNO .000

SPECIAL CULVERT OUTLET CONTROL
EGIC = 1701.387 EGOC = 1701.677 PCWSE= 1694.460 ELTRD= 1704.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 3.77

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1701.39	1701.68	5.87	0.	396.	4.199	52.0	1704.00	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1704.00 ELREA= 1705.70

.000	5.90	1701.40	.00	.00	1701.68	.27	5.87	.00	1695.54
396.0	.0	396.0	.0	.0	94.3	.0	.1	.0	1695.50
.01	.00	4.20	.00	.000	.039	.000	.000	1695.50	9992.00
.001141	90.	80.	90.	2	0	0	.00	16.00	10008.00

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .050

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1716.63 ELREA= 1721.98

.050	4.28	1703.68	1703.68	.00	1705.83	2.15	.55	.94	1699.40
252.0	.0	252.0	.0	.0	21.4	.0	.5	.1	1699.40
.01	.00	11.77	.00	.000	.039	.000	.000	1699.40	9997.50
.013718	250.	251.	290.	0	15	0	.00	5.00	10002.50

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.024	.80	3.00	.00	5.00	.00	80.00	2	3	1705.45	1701.90

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 3 - PIPE PROJECTING FROM FILL

5130, EGIC= 1717.08..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1715.08 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO .060

SPECIAL CULVERT INLET CONTROL
EGIC = 1717.076 EGOC = 1715.084 PCWSE= 1703.682 ELTRD= 1717.140

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 5.06

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1717.08	1715.08	11.24	0.	251.	4.429	19.6	1717.14	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1717.14 ELREA= 1721.98

.060	11.37	1716.77	.00	.00	1717.08	.30	11.24	.00	1705.40
251.0	.0	251.0	.0	.0	56.7	.0	.5	.1	1705.45
.02	.00	4.43	.00	.000	.039	.000	.000	1705.40	9997.50
.000531	90.	80.	90.	2	0	0	.00	5.00	10002.50

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .090

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 11.51

3470 ENCROACHMENT STATIONS= 9842.5 10030.0 TYPE= 1 TARGET= -9842.500

.090	8.17	1717.17	1710.24	.00	1717.17	.01	.01	.09	1709.00
558.0	245.5	234.9	77.6	480.4	343.3	150.8	2.7	.5	1709.40
.10	.51	.68	.51	.045	.039	.045	.000	1709.00	9843.73
.000020	200.	166.	160.	2	20	0	.00	180.03	10023.75

```
CCHV=     .100 CEHV=     .300
*SECNO  .150

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .10


3470 ENCROACHMENT STATIONS=     9956.5   10113.5  TYPE=      1  TARGET=    -9956.500
      .150      3.16   1717.06   1715.74       .00   1717.24       .19       .02       .05   1714.20
     558.0      35.7     480.7      41.6      18.6     131.1      20.9       6.1       1.2   1714.30
       .12      1.92      3.67      1.99      .045      .039      .045      .000   1713.90   9986.96
   .002164      230.      289.      290.         2        17         0       .00     72.00  10058.97


*SECNO  .220
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .220      2.58   1724.98   1724.98       .00   1725.53       .54      1.72       .11   1723.80
     558.0     257.0     288.6      12.4      63.9      39.7       3.5       7.4       1.9   1722.80
       .14      4.02      7.26      3.56      .045      .039      .045      .000   1722.40   9929.09
   .013385      390.      392.      390.         0        14         0       .00     83.21  10012.30


*SECNO  .310
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .310      2.66   1733.36   1733.36       .00   1734.07       .71      6.47       .05   1731.50
     558.0      20.6     318.8     218.6       5.5      39.8      46.7       8.4       2.7   1731.50
       .16      3.74      8.01      4.68      .045      .039      .045      .000   1730.70   9991.58
   .015054      460.      457.      450.         0         8         0       .00     62.29  10053.87


1
   23OCT95       09:39:16                                                                                PAGE     7

    SECNO      DEPTH      CWSEL      CRIWS      WSELK         EG         HV         HL       OLOSS   L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB          ACH        AROB       VOL      TWA     R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL           XNCH       XNR        WTN      ELMIN   SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL        IDC        ICONT      CORAR    TOPWID  ENDST


*SECNO  .360
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .360      2.78   1737.78   1737.78       .00   1738.60       .81      3.80       .03   1735.90
     558.0      21.4     293.5     243.1       5.3      34.7      42.5       8.9       3.0   1736.20
       .17      4.00      8.46      5.72      .045      .039      .045      .000   1735.00   9988.62
   .017021      240.      243.      230.         0         8         0       .00     50.48  10039.10


*SECNO  .400
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .400      3.92   1744.62   1744.62       .00   1745.57       .95      3.57       .04   1742.80
     558.0      10.3     350.4     197.3       3.0      39.0      36.3       9.3       3.2   1742.80
       .18      3.44      8.99      5.44      .045      .039      .045      .000   1740.70   9993.00
   .014733      200.      224.      230.         0        14         0       .00     41.14  10034.14
```

THIS RUN EXECUTED 23OCT95 09:39:17

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	4.450	396.00	9992.00	10008.00	1694.46	1694.46	1.01	1.34	2.66
*	4.450	396.00	9992.00	10008.00	1694.46	1694.46	1.01	1.35	2.66
*	.000	396.00	9992.00	10008.00	1701.40	.00	.30	.27	5.90
*	.000	396.00	9992.00	10008.00	1701.40	.00	.30	.27	5.90
*	.050	252.00	9997.50	10002.50	1703.68	1703.68	1.00	2.15	4.28
*	.050	252.00	9997.50	10002.50	1703.68	1703.68	1.00	2.15	4.28
*	.060	251.00	9997.50	10002.50	1716.77	.00	.23	.30	11.37
*	.060	251.00	9997.50	10002.50	1716.77	.00	.23	.30	11.37
	.090	558.00	9843.73	10023.75	1717.17	1710.24	.04	.01	8.17
	.090	558.00	9843.71	10023.75	1717.17	1710.24	.04	.01	8.17
*	.150	558.00	9986.96	10058.97	1717.06	1715.74	.37	.19	3.16
*	.150	558.00	9986.94	10058.99	1717.06	1715.74	.37	.19	3.16
*	.220	558.00	9929.09	10012.30	1724.98	1724.98	.88	.54	2.58
*	.220	558.00	9929.32	10012.16	1724.98	1724.98	.88	.54	2.58
*	.310	558.00	9991.58	10053.87	1733.36	1733.36	.94	.71	2.66
*	.310	558.00	9991.81	10053.61	1733.36	1733.36	.94	.71	2.66
*	.360	558.00	9988.62	10039.10	1737.78	1737.78	1.00	.81	2.78
*	.360	558.00	9988.85	10038.90	1737.78	1737.78	.99	.81	2.78
*	.400	558.00	9993.00	10034.14	1744.62	1744.62	.94	.95	3.92
*	.400	558.00	9993.17	10033.79	1744.61	1744.61	.94	.95	3.92

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=     4.450  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     4.450  PROFILE=  2  CRITICAL DEPTH ASSUMED

WARNING SECNO=      .000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .050  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .050  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .050  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .050  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .060  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .060  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .090  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .090  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .150  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .150  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .220  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .220  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .220  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .220  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .310  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .310  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .310  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .310  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .360  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .360  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .360  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .360  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .400  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .400  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .400  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .400  PROFILE=  2  MINIMUM SPECIFIC ENERGY
```

FLOODWAY DATA, Fountain Hills (south) -
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
4.450	16.	43.	9.3	1694.5	1694.5	.0
.000	16.	94.	4.2	1701.4	1701.4	.0
.050	5.	21.	11.8	1703.7	1703.7	.0
.060	5.	57.	4.4	1716.8	1716.8	.0
.090	180.	975.	.6	1717.2	1717.2	.0
.150	72.	171.	3.3	1717.1	1717.1	.0
.220	83.	107.	5.2	1725.0	1725.0	.0
.310	62.	92.	6.1	1733.4	1733.4	.0
.360	50.	83.	6.8	1737.8	1737.8	.0
.400	41.	78.	7.1	1744.6	1744.6	.0

GREYSTONE WASH

FOUNTAIN HILLS SOUTH
Greystone Wash

X-Sec	HEC-1 Conc. Point	100-Yr Discharge (cfs)	Left Overbank Lenght (ft)	Rigth Overbank Lenght (ft)	Channel Lenght (ft)	COMMENT
4.45	SGRS2	396				Culvert outlet
0.00		396	90	90	80	Culvert inlet
0.05	*GRS2	194	290	190	247	Upstream flow
0.11		194	270	375	314	
0.18		194	360	375	375	
0.26		194	375	420	416	
0.31		194	310	300	301	

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    23OCT95    TIME   09:42:14   *
*********************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*          (916) 756-1104               *
*****************************************
```


```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 23OCT95 09:42:14

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****************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
****************************************


T1      Fountain Hills (South) - Floodplain Delineation        File: GREYSTON.H2
T1      For the Flood Control District of Maricopa County
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - GREYSTONE WASH

T4 GR data from stereo model received October 93 from KAM
T4 Revised photogrametric x-sec. received May 94
T5 1"=200' 2-feet Contour mapping from KAM flown 8-91
T6 with survey control by Anderson Nelson 12-11-92, field survey Aug 91
T7 Supplemental cross section data surveyed by Valco Surveing
T8 Source of 100-yr flowrate from HEC-1 Analysis by AGK Enginers
T8           File 180-6CE.DAT
T9 Subcritical analysis
T9 This model was developed and configured to determine water surface elevation
T9 for a 100-year floodplain delineation study, Velocity from this model
T9 may not be accurate and should not be used

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                             -1                                  1693.45

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

                                                                -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        43        53        54        1         2         68        10        8         200

   This model was depeloped and configured to determine water surface elevation
   for a 100-year floodplain delineation study

  Starting conditions upstream, critical depth assumed                    Culvert COL6 Outlet

  Conc. point SGRS2 combined flows from Sycamore and Greystone

QT       2       396       396
NC    .045       .045      .039        .3        .5

  Culvert COL6 outlet
ET                         9.1                                                  9992      10008
```

```
X1     4.45       20       9992      10008        35        35        35
X3       10                                                  1704.3    1705.7
GR   1711.0   9822.9   1706.9   9853.0   1706.6   9880.2   1705.5   9915.2   1704.0   9987.7
GR   1702.0   9991.9   1691.8     9992   1691.8  10000.0   1691.8    10008   1702.0  10009.2
GR   1704.0  10013.6   1706.0  10017.3   1706.7  10061.7   1707.9  10080.9   1709.9  10110.6
GR   1711.8  10131.2   1714.9  10155.4   1718.2  10175.6   1720.4  10192.5   1721.5  10200.1

  Culvert COL6 1 CMP 48" X 80', 2 CMP 60" X 80' Sycamore Dr.
  Modeled as 3- 56" CMP (equivalent pipes)

SC   3.024      0.8        3.0                 4.7                 80       2.3   1695.54   1691.8

  Confluence of Sycamore and Greystone washes

  Culvert COL6 inlet
ET                          9.1                                                   9992.0    10008
X1     0.00       27       9992      10008        90        90        80
X2                          2
X3       10                                                  1704.3    1705.7
BT       -5     9800   1706.1                 9950   1704.3              10000   1705.4
BT              10050   1707.6                10100   1710.8
GR   1711.9   9754.4   1710.3   9771.4   1709.4   9796.4   1708.5   9838.3   1708.1   9869.2
GR   1706.9   9894.8   1705.7   9922.3   1706.0   9930.5   1704.0   9935.8   1702.0   9940.9
GR   1700.0   9988.3  1695.54     9992   1695.5  10000.0   1695.5    10008   1700.0  10016.0
GR   1702.0  10019.4   1702.0  10023.4   1700.0  10052.5   1702.0  10058.1   1704.0  10063.2
GR   1706.0  10068.2   1708.0  10073.1   1709.1  10075.0   1710.0  10080.5   1710.9  10099.2
GR   1712.0  10114.9   1713.6  10131.7

  Conc. point *GRS2 Flow upstream from confluence

QT         2       194       194
NC      .050      .050      .040

ET                          9.1                                                   9951.02   10010.94
X1     0.05       17       9952.9    9959.4       290       190       247
GR   1730.3   9811.0   1723.6   9852.8   1718.0   9894.7   1714.2   9930.7   1711.1   9939.8
GR   1704.8   9952.9   1704.7   9959.4   1705.0   9967.3   1705.1   9988.9   1705.0  10000.0
GR   1705.3  10010.6   1717.7  10021.0   1719.3  10028.0   1722.4  10047.6   1723.8  10069.6
GR   1726.7  10089.0   1731.0  10099.3


NC                                  .2        .4

ET                          9.1                                                   9957.5    10003.87
X1     0.11       14       9993.7   10000        270       375       314
GR   1739.2   9901.0   1726.8   9925.0   1722.2   9934.8   1721.2   9946.4   1719.8   9958.4
GR   1719.7   9974.7   1718.5   9983.9   1718.4   9993.7   1718.1  10000.0   1722.2  10008.8
GR   1727.3  10028.7   1735.4  10054.7   1736.1  10065.6   1739.2  10072.8
```

```
NC                                        .1        .3

ET                          9.1                                                 9989.58   10007.78
X1      0.18          13    9994.9    10001.9       360       375       375
GR    1763.1      9907.0    1758.9     9920.8    1754.3    9940.0    1750.8    9951.3    1738.1    9978.8
GR    1731.2      9994.9    1731.3    10000.0    1731.2   10001.9    1738.8   10021.5    1740.4   10048.4
GR    1747.7     10077.2    1756.1    10104.9    1760.2   10119.0

ET                          9.1                                                 9987.19   10012.14
X1      0.26          13    9995      10005         375       420       416
GR    1769.2      9922.4    1768.1     9930.0    1761.5    9952.2    1758.0    9962.2    1753.4    9976.5
GR    1749.8      9990.9    1749.2       9995    1748.7   10000.0    1749.2     10005    1749.7   10008.9
GR    1756.5     10030.3    1762.0    10050.1    1768.2   10072.1

ET                          9.1                                                    9990   10015.46
X1      0.31          13    9995.5    10006.5       310       300       301
GR    1790.9      9906.3    1779.7     9939.3    1776.9    9954.2    1770.4    9977.5    1763.0    9993.4
GR    1762.8      9995.5    1762.4    10000.0    1762.5   10006.5    1764.6   10017.4    1765.2   10026.8
GR    1773.0     10057.8    1780.3    10084.3    1787.6   10107.9
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .300 CEHV= .500
*SECNO 4.450
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1704.30 ELREA= 1705.70

4.450	2.66	1694.46	1694.46	1693.45	1695.80	1.34	.00	.00	1691.80
396.0	.0	396.0	.0	.0	42.6	.0	.0	.0	1691.80
.00	.00	9.31	.00	.000	.039	.000	.000	1691.80	9992.00
.016185	35.	35.	35.	0	13	0	.00	16.00	10008.00

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	3	.024	.80	3.00	.00	4.70	.00	80.00	2	3	1695.54	1691.80

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 3 - PIPE PROJECTING FROM FILL

*SECNO .000

SPECIAL CULVERT OUTLET CONTROL
EGIC = 1701.387 EGOC = 1701.677 PCWSE= 1694.460 ELTRD= 1704.300

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 3.77

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1701.39	1701.68	5.87	0.	396.	4.199	52.0	1704.30	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1704.30 ELREA= 1705.70

.000	5.90	1701.40	.00	.00	1701.68	.27	5.87	.00	1695.54
396.0	.0	396.0	.0	.0	94.3	.0	.1	.0	1695.50
.01	.00	4.20	.00	.000	.039	.000	.000	1695.50	9992.00
.001141	90.	80.	90.	2	0	0	.00	16.00	10008.00

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

```
*SECNO  .050
7185 MINIMUM SPECIFIC ENERGY
 720 CRITICAL DEPTH ASSUMED
      .050      1.04   1705.74   1705.74      .00   1706.09      .35      .48      .04   1704.80
     194.0       2.7      41.8     149.4       .9       6.4     36.0       .5       .2   1704.70
       .02      2.95      6.49      4.15      .050      .040      .050      .000   1704.70   9950.94
   .030913       290.      247.      190.         0        25         0      .00    60.03  10010.97


CCHV=     .200 CEHV=     .400
*SECNO  .110
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .110      1.84   1719.94   1719.94      .00   1720.40      .46      7.55     .04   1718.40
     194.0     106.5      74.8      12.7     25.4      10.6      3.6       .8       .6   1718.10
       .04      4.19      7.03      3.52      .050      .040      .050      .000   1718.10   9957.22
   .017867       270.      314.      375.         0        18         0      .00    46.72  10003.94


CCHV=     .100 CEHV=     .300
*SECNO  .180
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .180      2.37   1733.57   1733.57      .00   1734.43      .86      6.40     .12   1731.20
     194.0      26.8      137.2     29.9      6.6       16.3      7.3       1.1      .9   1731.20
       .05      4.08      8.43      4.12      .050      .040      .050      .000   1731.20   9989.36
   .016753       360.      375.      375.         0        11         0      .00    18.67  10008.02


*SECNO  .260
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .260      2.09   1750.79   1750.79      .00   1751.45      .67      7.05     .02   1749.20
     194.0      29.1      135.3     29.5      7.2       18.4      7.1       1.4      1.1   1749.20
       .07      4.03      7.37      4.18      .050      .040      .050      .000   1748.70   9986.95
   .017605       375.      416.      420.         0        15         0      .00    25.37  10012.32


*SECNO  .310
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .310      1.89   1764.29   1764.29      .00   1764.97      .68      5.38     .00   1762.80
     194.0      19.6      143.8     30.7      4.7       19.6      8.4       1.6      1.3   1762.50
       .08      4.14      7.33      3.67      .050      .040      .050      .000   1762.40   9990.62
   .018029       310.      301.      300.         0        12         0      .00    25.20  10015.82
```

THIS RUN EXECUTED 23OCT95 09:42:14

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	4.450	396.00	9992.00	10008.00	1694.46	1694.46	1.01	1.34	2.66
*	4.450	396.00	9992.00	10008.00	1694.46	1694.46	1.00	1.34	2.66
*	.000	396.00	9992.00	10008.00	1701.40	.00	.30	.27	5.90
*	.000	396.00	9992.00	10008.00	1701.40	.00	.30	.27	5.90
*	.050	194.00	9950.94	10010.97	1705.74	1705.74	1.15	.35	1.04
*	.050	194.00	9951.02	10010.94	1705.74	1705.74	1.15	.35	1.04
*	.110	194.00	9957.22	10003.94	1719.94	1719.94	.95	.46	1.84
*	.110	194.00	9957.50	10003.87	1719.94	1719.94	.95	.46	1.84
*	.180	194.00	9989.36	10008.02	1733.57	1733.57	.97	.86	2.37
*	.180	194.00	9989.58	10007.78	1733.59	1733.59	.96	.83	2.39
*	.260	194.00	9986.95	10012.32	1750.79	1750.79	.96	.67	2.09
*	.260	194.00	9987.19	10012.14	1750.79	1750.79	.95	.66	2.09
*	.310	194.00	9990.62	10015.82	1764.29	1764.29	.97	.68	1.89
*	.310	194.00	9990.59	10015.46	1764.31	1764.31	.95	.66	1.91

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      4.450  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      4.450  PROFILE=  2  CRITICAL DEPTH ASSUMED

WARNING SECNO=       .000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=       .000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=       .050  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .050  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .050  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .050  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .110  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .110  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .110  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .110  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .180  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .180  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .180  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .180  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .260  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .260  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .260  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .260  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=       .310  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .310  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=       .310  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=       .310  PROFILE=  2  MINIMUM SPECIFIC ENERGY
```

FLOODWAY DATA, Fountain Hills (south) -
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
4.450	16.	43.	9.3	1694.5	1694.5	.0
.000	16.	94.	4.2	1701.4	1701.4	.0
.050	60.	43.	4.5	1705.7	1705.7	.0
.110	46.	40.	4.9	1719.9	1719.9	.0
.180	18.	30.	6.4	1733.6	1733.6	.0
.260	25.	33.	5.9	1750.8	1750.8	.0
.310	25.	33.	5.9	1764.3	1764.3	.0

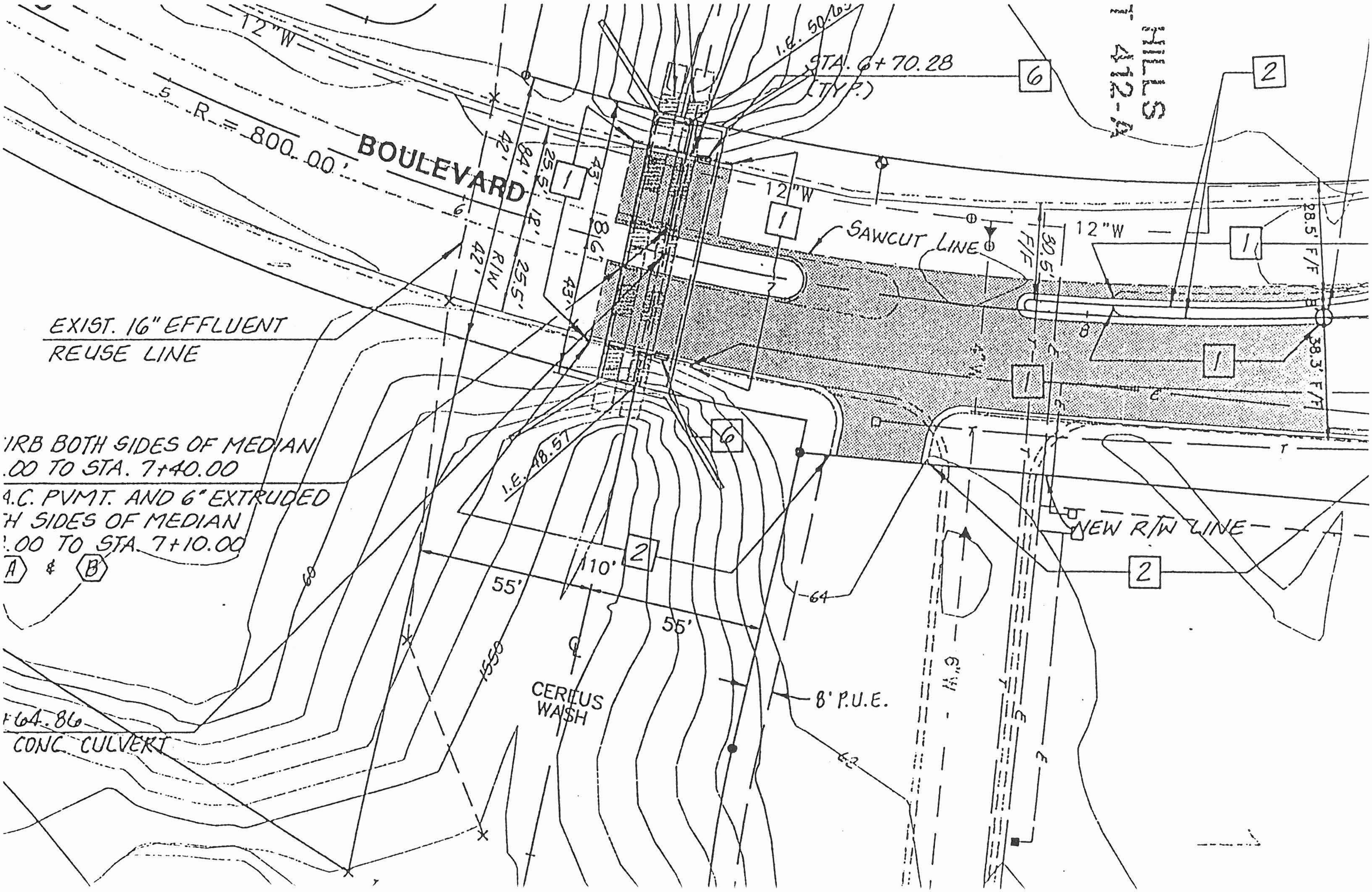
APPENDIX E

SPECIAL PROBLEMS CALCULATIONS

CEREUS WASH

AT

SAGUARO BOULEVARD


HILLS
T 412-A
BOULEVARD
R = 800.00'
12"W
STA. 6+70.28 (TYP.)
I.E. 50.6
SAWCUT LINE
28.5' F/F
38.3' F/F
30.5' F/F
84'
42'
25.5'
12'
R/W
43'
86'
EXIST. 16" EFFLUENT
REUSE LINE
RB BOTH SIDES OF MEDIAN
.00 TO STA. 7+40.00
A.C. PVMT. AND 6" EXTRUDED
H SIDES OF MEDIAN
.00 TO STA. 7+10.00
A & B
I.E. 48.57
110'
55'
NEW R/W LINE
6"W
8' P.U.E.
CEREUS WASH
64.86
CONC. CULVERT
1
2
6

Entellus™

SHEET 1 OF 1

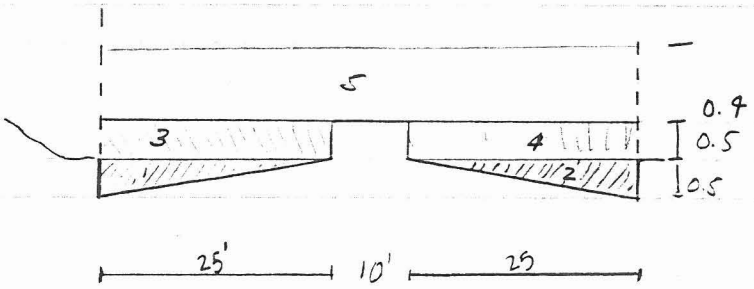
BY HAA DATE

CHECK DATE

CLIENT FCDMC

JOB NAME Fountain Hills (South) FIS JOB NO. 310.43

Assuming 2% cross slope and the follow geometry



$A_1 = 0.5(25)/2 \quad 6.25$
$A_2 = 0.5(25)/2 = 6.25$
$A_3 = 0.5(25) = 12.5$
$A_4 = 0.5(25 = 12.5$
$A_5 = (60)0.4 = 24$

$A_{1-4} = 6.25 + 6.25 + 12.5 + 12.5 = 37.5 \text{ ft}^2$

$P_1 = 0.5 + 25 = 25.5$
$P_2 = 0.5 + 25 = 25.5$
$P_3 = (0.5)2 = 1$
$P_4 = (0.5)2 = 1$
$P_5 = (0.4)2 + 10 = 10.8$

$P_{1-4} = 53 \text{ ft}$

$A_T = 37.5 + 24 = 61.5$

$P_T = 53 + 10.8 = 63.8$

$R = 61.5/63.8 = 0.964$

$$Q = \frac{1.486}{n} R^{0.667} A S^{0.5}$$

$$= \frac{1.486}{0.02} 0.964^{0.667} (61.5) \sqrt{0.0067} = \underline{365 \text{ cfs}}$$

CYPRUS POINT WASH

AT

SAGUARO BUOLEVARD

ACK ENGINEERS, INC.
2255 N. 44th Street, Ste. 330, Phoenix, AZ 85008 Tel. (602) 244-2566

SHEET 1 OF 8
BY HAA DATE
CHECK DATE

CLIENT FCDMC
JOB NAME Fountain Hills (South) FIS JOB NO. 310.43

Saguara Boulevard @ Cyprus Point Wash

1 the spill flow is about 167 cfs
2 Most of the flow travels North along saguaro
3 Some flow spill over the divider to the frontage road
4 flow spill out of Saguaro Boulevar and back to wash

— to determine the flow depth at saguaro at the upstream end (Culverl Location) a Combination of Weir flow and normal depth was used dyerent W.S.E were assumed and the Normal flow alonge Saguaro and Weir flow to frontage road. were calculated and added until a flow equal to 167 cfs was obtained (See spreadsheet print out) this give us a flow depth along saguaro of 0.64-feet use 0.70 ft.

— at downstream end Weir flow controls the flow depth calculation show a W.S.E of about 1513.15 because unsertanty of exact elevation (2' Contour intervole) 1514 Elevation was used

— the houses directly in front of the culver were excluded from the floodway because of existing wall along the Eat eadg of the frontage road

SPLIT FLOW - CYPRUS POINT WASH @ SAGUARO BLVD.

Bottom width	87.50	C coefficient	2.70
Slope	0.0170	FL of road	1524.38
n value	0.025	Heigh of weir	0.50
side slope Z	0.00		

Normal Flow					Weir Flow		Total	
Depth y (ft)	Area A (sft)	Wetted Perimeter P (ft)	Hydraulic Radius R	Normal Flow Q2 (cfs)	Average Length L (ft)	Flow Q3 (cfs)	Flow Q1 (cfs)	W.S.E.
0.00	0.00	0.00	0.00	0	150	0	0	1524.38
0.02	0.44	2.20	0.20	1	150	0	1	1524.4
0.04	0.87	4.39	0.20	2	150	0	2	1524.42
0.06	1.31	6.59	0.20	3	150	0	3	1524.44
0.08	1.74	8.78	0.20	5	150	0	5	1524.46
0.10	2.18	10.98	0.20	6	150	0	6	1524.48
0.12	2.61	13.17	0.20	7	150	0	7	1524.5
0.14	3.05	15.37	0.20	8	150	0	8	1524.52
0.16	3.70	19.31	0.19	10	150	0	10	1524.54
0.18	4.57	25.01	0.18	11	150	0	11	1524.56
0.20	5.44	30.70	0.18	13	150	0	13	1524.58
0.22	6.31	36.40	0.17	15	150	0	15	1524.6
0.24	7.18	42.09	0.17	17	150	0	17	1524.62
0.26	8.05	47.79	0.17	19	150	0	19	1524.64
0.28	8.92	53.48	0.17	21	150	0	21	1524.66
0.30	9.79	59.18	0.17	23	150	0	23	1524.68
0.32	10.66	64.87	0.16	25	150	0	25	1524.7
0.34	11.53	70.57	0.16	27	150	0	27	1524.72
0.36	12.40	76.26	0.16	29	150	0	29	1524.74
0.38	13.27	81.96	0.16	31	150	0	31	1524.76
0.40	14.14	87.65	0.16	32	150	0	32	1524.78
0.42	15.88	87.69	0.18	39	150	0	39	1524.8
0.44	17.62	87.73	0.20	47	150	0	47	1524.82
0.46	19.36	87.77	0.22	55	150	0	55	1524.84
0.48	21.10	87.81	0.24	63	150	0	63	1524.86
0.50	22.84	87.85	0.26	72	150	0	72	1524.88
0.52	24.58	87.89	0.28	81	150	1	83	1524.9
0.54	26.32	87.93	0.30	91	150	3	94	1524.92
0.56	28.06	87.97	0.32	102	150	6	107	1524.94
0.58	29.80	88.01	0.34	112	150	9	121	1524.96
0.60	31.54	88.05	0.36	123	150	13	136	1524.98
0.62	33.28	88.09	0.38	135	150	17	152	1525
0.64	35.02	88.13	0.40	147	150	21	168	1525.02
0.66	36.76	88.17	0.42	159	150	26	185	1525.04
0.68	38.50	88.21	0.44	172	150	31	203	1525.06
0.70	40.24	88.25	0.46	185	150	36	221	1525.08
0.72	41.98	88.29	0.48	198	150	42	240	1525.1
0.74	43.72	88.33	0.49	212	150	48	260	1525.12
0.76	45.46	88.37	0.51	226	150	54	280	1525.14
0.78	47.20	88.41	0.53	241	150	60	301	1525.16

ACK ENGINEERS, INC.
2255 N. 44th St. • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET 3 OF 8
BY HAA DATE
CHECK DATE
CLIENT FCDMC
JOB Fountain Hills South JOB NO.

CYPRUS POINT WASH @ Saguaro Blvd. Upstream Normal/Weir Calcs.

The overtopping flow may split at this location with most of the flow flowing to the North in Saguaro Blvd and part crossing the road and reentering the wash on the East side of Saguaro
To determine the amount of flow on each area the following analysis was performed.

Assume: flow along Saguaro Blvd. is govern by normal depth
flow back into the wash govern by weir flow
W.S.E @ split point equal for the weir and normal depth cases
$Q_{normal\ depth} + Q_{weir} = Q_{overtopping}$

$$Q_2 = \frac{1.486}{n} A R^{0.667} S^{0.5}$$

$$Q_3 = C L H^{3/2} \qquad \text{assum } C = 2.7$$

Q_1 = from Hec-2 $= Q_2 + Q_3$

A table for Q vrs. Y was generated using this 3 equations.
The slope of Saguaro was estimated as $S = \frac{4}{240} = 0.017$ ft/ft
The x-sec of Saguaro was aproximated as follow

$n = 0.025$

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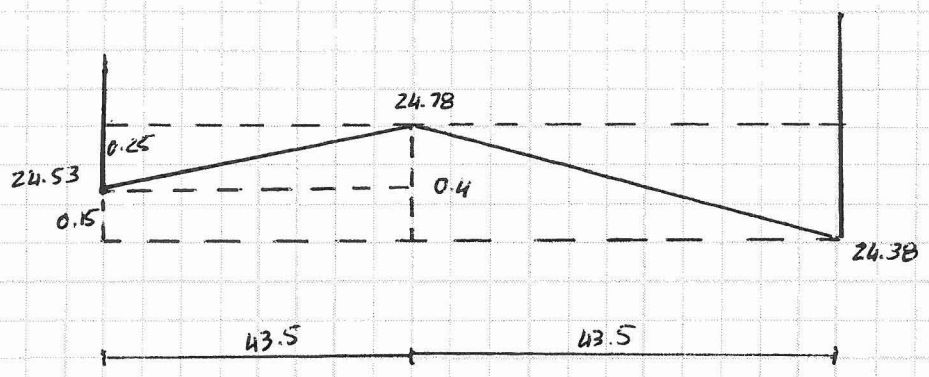
SHEET 4 OF 8
BY HAA DATE
CHECK DATE
CLIENT FCDMC
JOB Fountain Hills (South) FIS JOB NO. B10.43

Sagvaro Blvd. @ Cyprus point Wash Geometry



Area if $Y < 24.53$

$$\frac{\frac{(43.5)(0.4)}{2}}{A} = \frac{0.4}{Y}$$

$$A = \frac{(43.5)(0.4)/2\ Y}{0.4}$$

$$A = 21.75\,Y$$

$$\frac{\sqrt{0.4^2 + 43.5^2}}{P} = \frac{0.4}{Y}$$

Perimeter

$$P = \frac{\sqrt{0.4^2 + 43.5^2}}{0.4}\,Y + Y$$

$$P = 108.75\,Y + Y$$

If $24.53 < Y < 24.78$

$$\text{Area} = 21.75\,Y + \frac{(43.5)(0.25)/2}{0.25}(y-0.15)$$

$$= 21.75\,Y + 21.75(y-0.15) = 43.5\,Y - 3.2625$$

$$\text{Perimeter} = 108.75\,Y + \frac{\sqrt{0.25^2+43.5^2}}{0.25}(y-0.15)$$

$$= 108.75\,Y + 174.00(y-0.15) + y + (y-0.15)$$

If $y > 24.78$

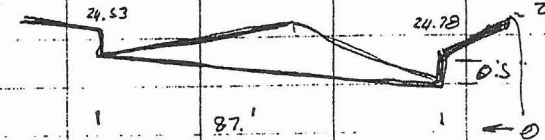
$$A = 8.7 + 5.44 + 87(y-0.4)$$

$$= 14.1375 + 87(y-0.4)$$

$$P = 43.5 + 43.5 + Y + (y-0.15)$$

STA

Diversion channel



2100 ℄ 48" C.M.P. ℄ Elev. 15

1150

0184 ℄ 48" C.M.P. ℄ 18.43 LT.

0150

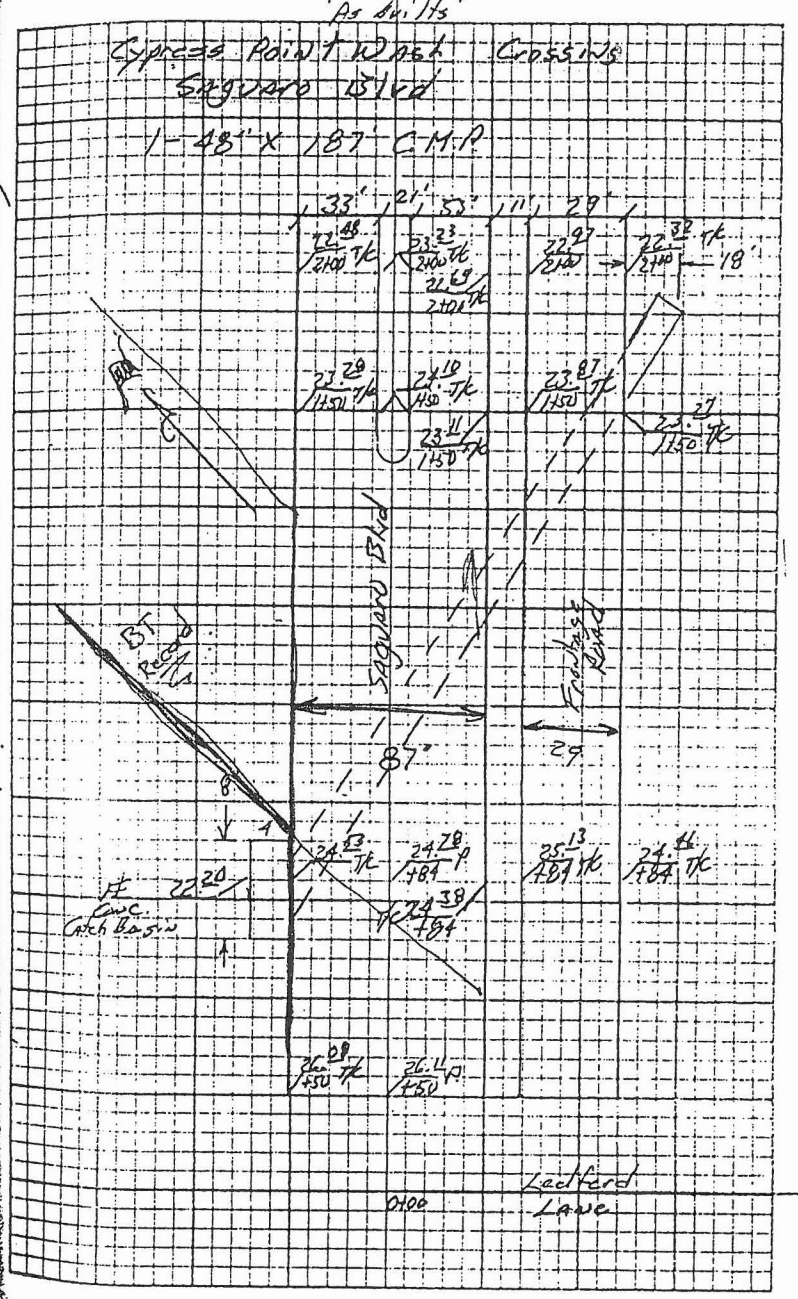
0100 ℄ Int. Saguaro Dr. & Ledford Lane

25.13 0
24.73 100
24.53 187

25.3 300
24.10 150
23.6 —
24.78
26.11

As Built's

Cypress Point West Crossing
Saguaro Blvd
1-48" x 187' C.M.P.



ENGINEERS, INC.
2255 N. 44th St., Ste. 330, Phoenix, AZ 85008 Tel: (602) 244-2566

SHEET 7 OF 8
BY HMA DATE 5/25/95
CHECK _____ DATE _____

CLIENT Flood Control District of Maricopa County
JOB NAME Fountain Hills South (FIS) JOB NO. 310.43

Saguaro Blvd. @ Cyprus point Wash Downstream Weir flow Calcs.

Elevation	Lenght
1513	10'
1514	330'
1516	520'
158	710

} Curve @ East side of Saguaro blvd

$Q = C L H^{1.5}$

assuming $C = 2.65$ Q from HFC-2 = 170 cfs

$170 = 2.65\ L\ H^{1.5}$

$L H^{1.5} = 64$

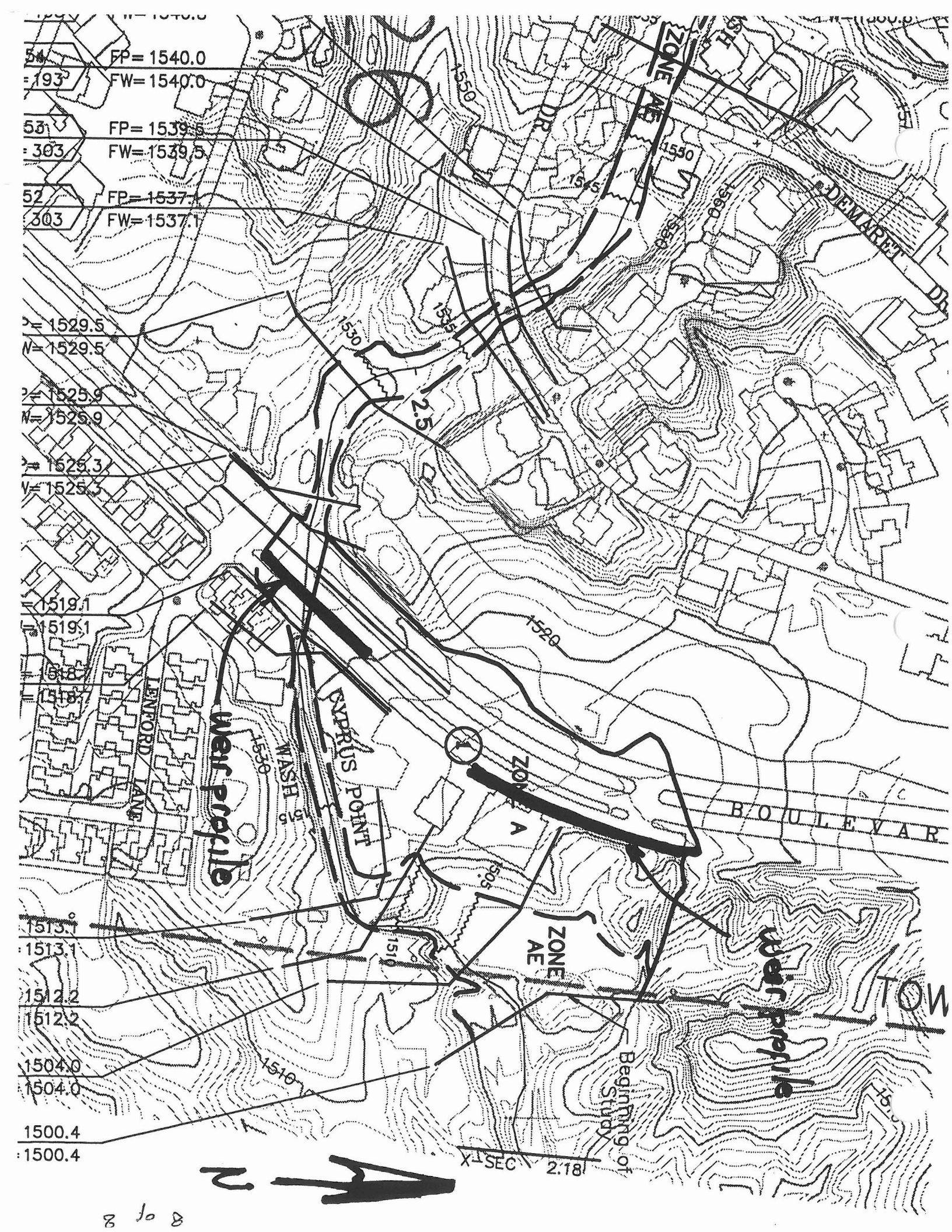
assuming $L = 170$ $(10 + 330)/2 = 170$ (W.S.E = 1514)

$H = (64/170)^{2/3}$

$H = 0.52$

Elevation of water surface $1513 + 0.52 = 1513.52$

Use 1514 as the elevation @ downstream end of Zone A.


FP= 1540.0
FW= 1540.0
FP= 1539.5
FW= 1539.5
FP= 1537.1
FW= 1537.1
1529.5
1529.5
1529.9
1529.9
1525.3
1525.3
1519.1
1519.1
1518.7
1518.7
1513.1
1513.1
1512.2
1512.2
1504.0
1504.0
1500.4
1500.4
ZONE AE
DR
DEMARET
1550
1540
1530
1520
1510
2.5
WASH
CYPRUS POINT
LENFORD LANE
ZONE A
ZONE AE
BOULEVAR
Weir profile
Weir profile
Beginning of Study
X-SEC 2.18
TOW
N

8 of 8

KINGSTREE DRAIN

ENGINEERS, INC.
2255 N. 44th Street, Ste. 330, Phoenix, AZ 85008 Tel. (602) 244-2566

SHEET 1 OF 11
BY HAA DATE
CHECK DATE

CLIENT FCDMC
JOB NAME Fountain Hills (South) FIS JOB NO. 310.43

Kingstree Drain

- Inlet blocked at time of site visit
- Geometry of Inlet unsertain
- Assumed total spill from Kingstree Blvd is conveyed by Kingstree Drain
- From HEC-2 of Kingstree Blvd Spill flow = 300 c.f.s
- the hazarous Zone A limits were determined using HEC-2 using x-section for Mangrum Wash dowstream a digitized x-section (see next page) and a x-section in kingstreak upstream.

  see HEC-2 output.

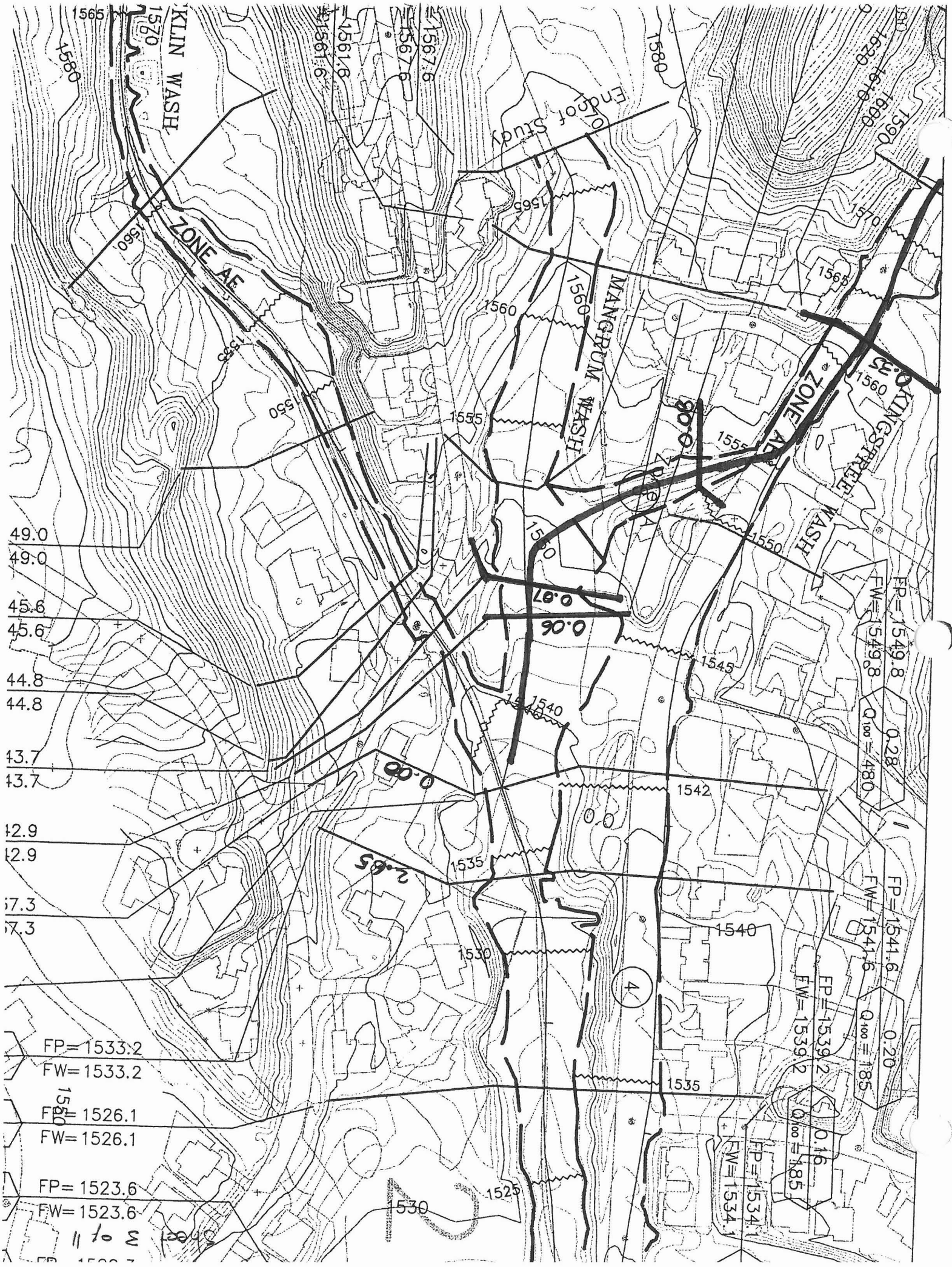
ACK ENGINEERS, INC.
2255 N. 44th St., Ste. 330, Phoenix, AZ 85008 Tel: (602) 244-2566

SHEET 2 OF 11
BY HAA DATE
CHECK DATE

CLIENT FCDMC
JOB NAME Fountain Hills JOB NO. 310 43

X-sec @ channel between Mangrum and kingstree

Elev	Dist.	sta		
1554	-44	9956	X-SEC	0.08
1555.5	-23	9977		
1554	15	9985		
1553.77	0	10000		
1554	15	10015		
1556	18	10018		
1558	41	10041		
1560	92	10091		


KLIN WASH
ZONE AE
MANGRUM WASH
ZONE AE
KINGSTREET WASH
Endof Study
1565
1580
1570
1560
1555
1550
1545
1540
1542
1535
1530
1525
1590
1600
1620
1561.8
1567.6
80.0
0.07
0.06
2.65
0.35
0.28
0.20
0.16
FR=1549.8
FW=1549.8
Q100 = 480
FP=1541.6
FW=1541.6
Q100 = 185
FP=1539.2
FW=1539.2
Q100 = 185
FP=1534.1
FW=1534.1
FP=1533.2
FW=1533.2
FP=1526.1
FW=1526.1
FP=1523.6
FW=1523.6
49.0
49.0
45.6
45.6
44.8
44.8
43.7
43.7
42.9
42.9
4

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    19JUL95    TIME   12:55:55   *
*********************************************
```


```
*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*          (916) 756-1104               *
*****************************************
```


```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 19JUL95 12:55:55

```
**************************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
**************************************


T1      Fountain Hills (South) - Floodplain Delineation
T1      For the  Maricopa County Flood Control District
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - KINGSTREE/MANGRUM DRAIN

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                             -1                                    1532.3

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      1                                                           -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        43        53        54         1         2        68        10         8

  Mangrum Flow (MNG3) used

  Conc. point MNG3 Flow upstream from Jacklin Wash confluence
  Flow MNG3=262 Spill from Kinstree Blvd. =300 total 562

QT        2       562       562
NC     .027      .025      .027        .1        .3

  Jacklin wash Downstream from confluence of Mangrum
X1     2.65        27    9995.9   10014.1
GR   1539.2    9844.8    1539.3    9844.8    1539.9    9870.6    1538.7    9899.2    1538.6    9903.9
GR   1539.6    9916.2    1538.0    9926.7    1535.8    9939.6    1532.0    9953.5    1531.5    9973.8
GR   1531.8    9995.9    1531.3   10000.0    1531.7   10014.1    1532.0   10049.6    1532.3   10073.7
GR   1533.9   10104.1    1535.6   10141.2    1538.8   10160.6    1540.0   10183.3    1539.3   10195.0
GR   1540.7   10240.8    1539.7   10251.7    1540.5   10284.6    1541.3   10318.6    1542.4   10358.0
GR   1543.1   10367.9    1546.5   10383.6

   Confluence of Mangrum and Jacklin washes

X1     0.00        28    9993.8   10006.3       170       150       157
GR   1542.7    9818.8    1542.8    9826.3    1538.0    9861.0    1537.2    9892.8    1536.6    9923.7
GR   1535.8    9959.6    1535.3    9993.8    1535.1   10000.0    1535.6   10006.3    1536.0   10028.6
GR   1538.9   10048.5    1539.2   10060.6    1540.9   10075.3    1540.9   10075.3    1542.6   10096.8
GR   1542.9   10106.7    1541.5   10124.0    1542.4   10132.0    1542.9   10159.6    1543.2   10220.0
GR   1544.8   10235.0    1545.1   10235.0    1545.9   10242.2    1547.3   10268.9    1548.2   10284.4
GR   1549.5   10311.4    1551.3   10340.6    1553.7   10364.9
```

```
X1     0.06        12        9975      10004.6       300         312         293
X3       10                                                                          1546.2      1545.9
GR   1546.0      9826.6    1545.4       9844.8    1545.4      9875.6      1545.2      9892.3      1546.0      9946.2
GR   1546.1      9975.0    1545.2      10000.0    1545.8     10004.6      1545.7     10039.4      1546.8     10056.2
GR   1546.3     10058.0    1546.7      10069.1

X1     0.07        13        9983.7    10033         60          60          60
GR   1546.9      9838.5    1546.6       9864.8    1547.4      9883.9      1548.0      9911.3      1548.1      9964.0
GR   1547.6      9983.7    1547.6      10000.0    1547.5     10033.0      1546.9     10063.6      1546.8     10072.0
GR   1550.0     10115.7    1552.0      10127.2    1554.0     10135.8

  Flow spill from Kingstre Blvd. towards Mangrum Wash

QT       2         300         300

  X-sec. @ Kingstree Drain between Kingstree Blvd and Mangrum Drain
  from 1"=200' 2'CI topo map (KAM 8-91)
X1     0.08         8        9985      10015         400         400         400
GR     1556      9900      1555.5       9977      1554       9985     1553.77      10000        1554       10015
GR     1556     10018        1558      10041      1560      10091

  Conc. point KGT5 Flow upstream from basin 151-L

QT       2         357         357

  X-sec @ kingstree Blvd.  upstream from Kingstree Drain
X1     0.35        23       10000      10061.9       360         360         360
X3                                                   10300
GR   1569.1      9788.3    1569.1       9815.9    1568.4      9841.1      1566.1      9865.3      1565.3      9900.7
GR   1564.1      9942.6    1563.9       9973.5    1563.2      9989.4      1561.5     10000.0      1561.8     10014.6
GR   1562.2     10030.2    1561.8      10053.1    1561.6     10061.9      1566.9     10075.4      1569.9     10086.3
GR   1570.7     10109.2    1570.1      10148.7    1569.3     10181.1      1568.1     10188.1      1567.6     10201.3
GR   1568.6     10236.3    1569.0      10267.0    1570.72    10300
```

```
    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*PROF 1

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

 CCHV=     .100 CEHV=     .300
 *SECNO 2.650
 3720 CRITICAL DEPTH ASSUMED
      2.650      1.39    1532.69    1532.69    1532.30    1533.12       .42        .00        .00    1531.80
      562.0     226.9      128.0      207.0       43.1       21.5       44.5         .0         .0    1531.70
        .00      5.26       5.95       4.65       .027       .027       .025       .000    1531.30    9950.96
    .009366        0.         0.         0.          0         13          0        .00     130.22   10081.18


 *SECNO  .000
 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
       .000      1.68    1536.78    1536.78        .00    1537.23       .45       1.42        .01    1535.30
      562.0     315.6      123.7      122.8       63.7       18.8       23.9         .4         .5    1535.60
        .01      4.95       6.57       5.13       .027       .027       .025       .000    1535.10    9914.42
    .008298      170.       157.       150.          0         11          0        .00     119.53   10033.95


 *SECNO  .060
 3280 CROSS SECTION       .06 EXTENDED       .24 FEET

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
       .060      1.04    1546.24    1546.24        .00    1546.54       .30       2.84        .02    1546.10
      562.0     414.6       75.5       71.9       91.7       18.2       19.4        1.2        1.6    1545.80
        .03      4.52       4.14       3.71       .027       .027       .025       .000    1545.20    9826.60
    .010834      300.       293.       312.          0         23          0        .00     221.08   10047.68


 *SECNO  .070

 3265 DIVIDED FLOW

 3280 CROSS SECTION       .07 EXTENDED      1.11 FEET

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
       .070      1.41    1548.01    1548.01        .00    1548.32       .31        .54        .00    1547.60
      562.0     297.4       60.6      204.0       64.0       21.7       44.4        1.4        1.9    1547.50
        .03      4.65       2.79       4.60       .027       .027       .025       .000    1546.60    9838.50
    .007666       60.        60.        60.          0         11          0        .00     197.29   10088.48
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .080
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.080	1.52	1555.29	1555.29	.00	1555.93	.64	3.24	.10	1554.00
300.0	17.3	278.0	4.7	4.5	42.3	1.3	2.2	3.0	1554.00
.05	3.87	6.57	3.74	.027	.027	.025	.000	1553.77	9978.09
.009022	400.	400.	400.	0	8	0	.00	38.85	10016.94

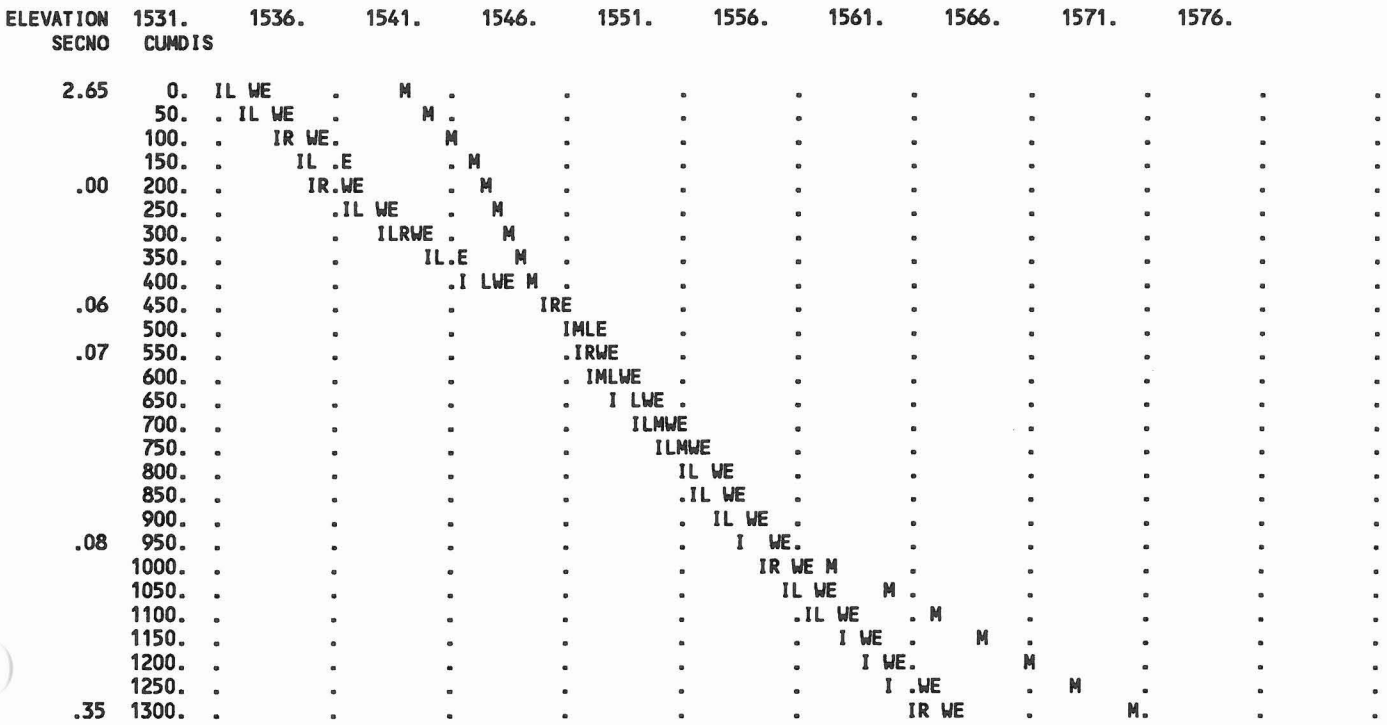
*SECNO .350
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= .0 10300.0 TYPE= 1 TARGET= 10300.000

.350	1.32	1562.82	1562.82	.00	1563.28	.46	3.61	.02	1561.50
357.0	23.6	325.3	8.1	5.4	58.5	1.9	2.7	3.5	1561.60
.07	4.34	5.56	4.28	.027	.027	.025	.000	1561.50	9991.77
.011028	360.	360.	360.	0	15	0	.00	73.23	10065.01

PROFILE FOR STREAM Fountain Hills (south) -

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA



THIS RUN EXECUTED 19JUL95 12:55:56

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT

	SECNO	Q	SSTA	ENDST	CWSEL	CRIWS	FRCH	HV	DEPTH
*	2.650	562.00	9950.96	10081.18	1532.69	1532.69	.96	.42	1.39
*	.000	562.00	9914.42	10033.95	1536.78	1536.78	.94	.45	1.68
*	.060	562.00	9826.60	10047.68	1546.24	1546.24	.93	.30	1.04
*	.070	562.00	9838.50	10088.48	1548.01	1548.01	.74	.31	1.41
*	.080	300.00	9978.09	10016.94	1555.29	1555.29	.98	.64	1.52
*	.350	357.00	9991.77	10065.01	1562.82	1562.82	1.01	.46	1.32

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=     2.650  PROFILE=  1  CRITICAL DEPTH ASSUMED

CAUTION SECNO=      .000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .060  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .060  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .070  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .070  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .080  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .080  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .350  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .350  PROFILE=  1  MINIMUM SPECIFIC ENERGY
```

NORTH COLONY WASH

AT

CHAMA DRIVE

ENGINEERS, INC.
2255 N. 44th Street, Ste. 330, Phoenix, AZ 85008 Tel. (602) 244-2566

SHEET 1 OF 3
BY JHA DATE
CHECK DATE

CLIENT FCDMC
JOB NAME Fountain Hills (South) FIS
JOB NO. 310.43

Split Flow @ North Colony Wash crossing Chama Dr

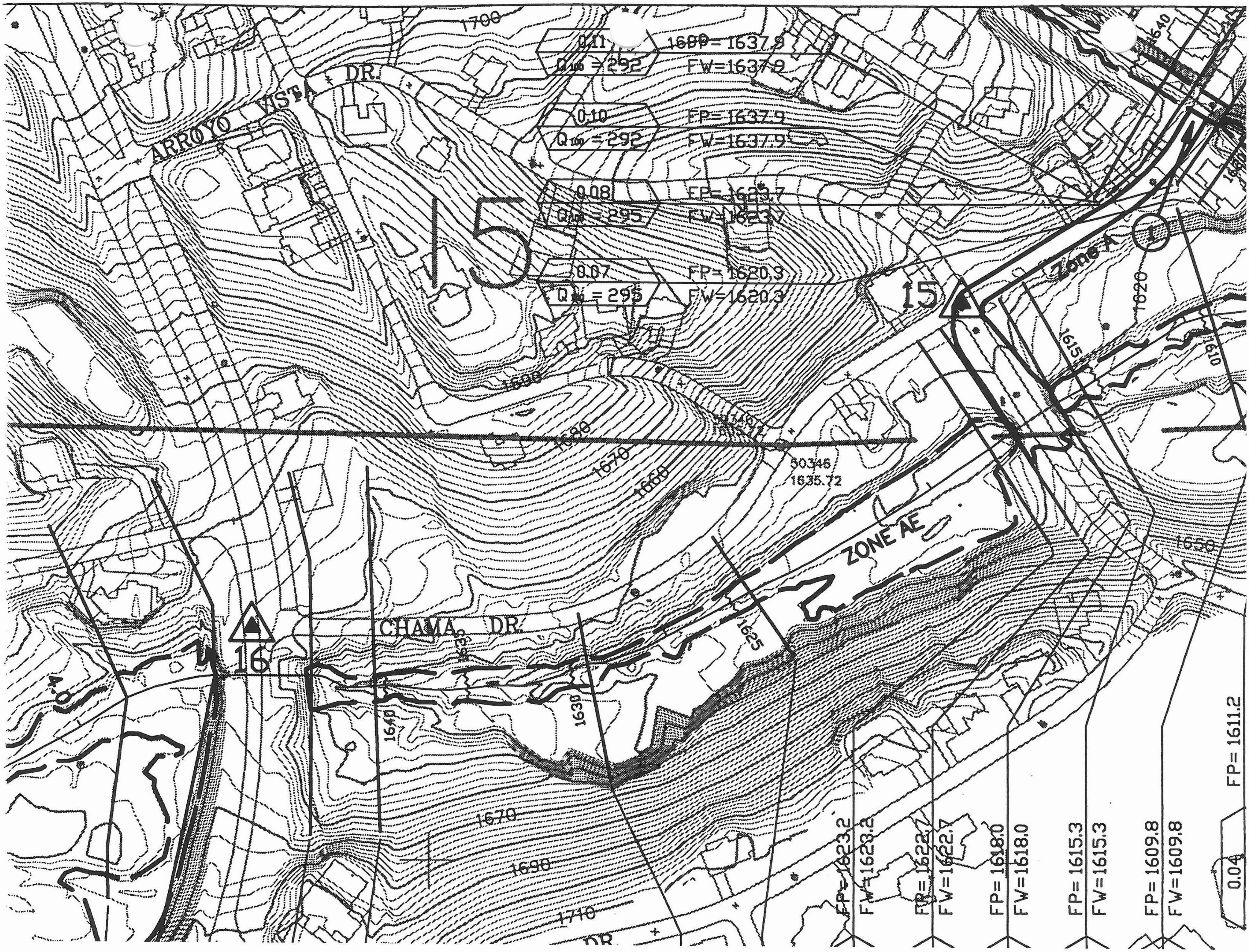
From HEC-2 Qweir = 86 cfs

slope @ chama Dr = $\frac{(37.76 - 36.23)}{100} = 0.0153$ ft/ft

assuming a rectangular channel B = (17)(2) = 34'
n = 0.025

$$86 = \frac{0.46}{0.025}(3.7)(y)\left(\frac{34y}{34+2y}\right)^{0.667}\sqrt{0.0153'}$$

$y = 0.53$



ARROYO VISTA DR.
CHAMA DR.
1700
0.11
Q100 = 292
FP=1637.9
FW=1637.9
0.10
Q100 = 292
FP=1637.9
FW=1637.9
0.08
Q100 = 295
FP=1623.7
FW=1623.7
0.07
Q100 = 295
FP=1620.3
FW=1620.3
15
Zone A
1
ZONE AE
16
50346
1635.72
1690
1680
1670
1660
1650
1640
1630
1625
1620
1615
1610
1710
FP=1623.2
FW=1623.2
FP=1622.7
FW=1622.7
FP=1618.0
FW=1618.0
FP=1615.3
FW=1615.3
FP=1609.8
FW=1609.8
FP=1611.2
0.04

STA

North Colony wash

NCL1

40.82
39.12
37.76
36.23

"As built"

Colony Wash Crossing - Channel South of Gunsight Drive
1-60" x 72" C.M.P.

Intr. Gunsight Drive

N 17° E

400'

17'

40 82/2400 TW

50 39.12/1450 TW

50 37.26/1800 TW

32'

36.23/4100 TW

Colony Wash

E Pipe 29.38

Skew 83°

36.76/+50

40

E Pipe 29.88

E Wash 19.20

TBM 1636.47

E Channel Drive

20

2 of 3

SPILL FROM FOUNTAIN CHANNEL

INTO

FOUNTAIN LAKE

ENGINEERS, INC.
2255 N. 44th Street, Ste. 330, Phoenix, AZ 85008 Tel. (602) 244-2566

SHEET 1 OF 5
BY HAA DATE
CHECK DATE

CLIENT FCDMC
JOB NAME Fountain Hills (South) FIS JOB NO. 310.43

Volume of spill into Fountain Lake

a HEC-2 model was put together and the split flow option used to determine the amount of flow into the lake. spill flows from several HEC-2 runs were input in the diversion option of HEC-1 and the diverted flow was routed using level pool routing with minimum outflow to determine the volume of spill

From HEC-1 output Peack storage is between 2 and 3 acre-feet therefore 3 acre-feet were assumed

Volume of spill from Fountain channel = 3 acre-feet
Total area of lake ≈ 30 acres
Δ of water Surface = 3 acre-feet / 30 acres
= 0.10 feet ← from Fontan Channel

100-yr 6-Hr precipitation depth = 3.2 in
= 3.2 in / 12 in/ft
= 0.27 ft ← from direct rain

There is no spill flom Panorama Dr. = 0 ← from Panorama Dr

Total increase of W.S.E in Fountain Lake = 0.10 + 0.27
= 0.37 ft ← Total

maximun operational level is 1 foot below spillway

ACK ENGINEERS, INC.
2255 N. 44th Street, Ste. 330, Phoenix, AZ 85008 Tel. (602) 244-2566

SHEET 2 OF 5
BY HAN DATE
CHECK DATE

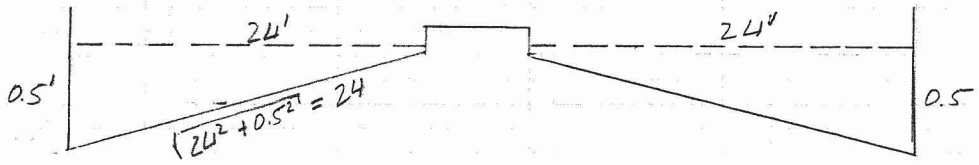
CLIENT
JOB NAME JOB NO. 310.43

Panorama Drive Flow

The flows @ Pororam are

		HEC-1 Flow (see output)	Storm drain capacity (see as build)	Street flow
at	PNR1	114	110	4
	PNR2	151	161	0
	PNR3	350	395	0
	PNR4	494	536	0

The typical x-sec for panorama Drive was obtained from as build and the folbwing Assumptions were made about the flow carrie capacity.



$A = (24)(0.5) = 12\ ft^2$

$P = (24+0.5)(2) = 49\ ft$

$R = 12/49 = 0.245\ ft$

assuming $n = 0.020$
$S = 0.010$ (from contour Map)

$$Q = \frac{1.486}{n} A R^{2/3} S^{0.5}$$

$$= \frac{1.486}{0.02} (12)\ 0.245^{2/3} \sqrt{0.01}$$

$$= 34.9$$

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SHEET 3 OF 5

BY HAA DATE 19-Sep-95

PROJECT: Anderson-Nelson, Inc. CHECK DATE 3/0.43

LOCATION: Fountain Hills (Panorama Dr. Storm Dra JOB NO. 470.95

Manning's Equation for Circular Conduit Flowing Full

Description Capacity of storm drain along Panorama Dr.
Manning's n value = 0.012

Drain Diameter D (in)	Drain Diameter D (ft)	Energy Slope S (ft/ft)	Flow Area A (ft^2)	Hydraulic Radius R (ft)	Normal Flow Q (cfs)	Design Flow Qd (cfs)
66	5.5	0.0231	23.76	1.38	553.33	596
66	5.5	0.0154	23.76	1.38	452.20	536
66	5.5	0.0460	23.76	1.38	780.58	
60	5	0.0376	19.63	1.25	547.26	> 395
60	5	0.0075	19.63	1.25	244.17	
48	4	0.0133	12.57	1.00	179.25	
48	4	0.0148	12.57	1.00	189.37	202
48	4	0.0137	12.57	1.00	182.07	183
48	4	0.0107	12.57	1.00	161.43	161
48	4	0.0053	12.57	1.00	113.13	113
48	4	0.0067	12.57	1.00	127.11	113

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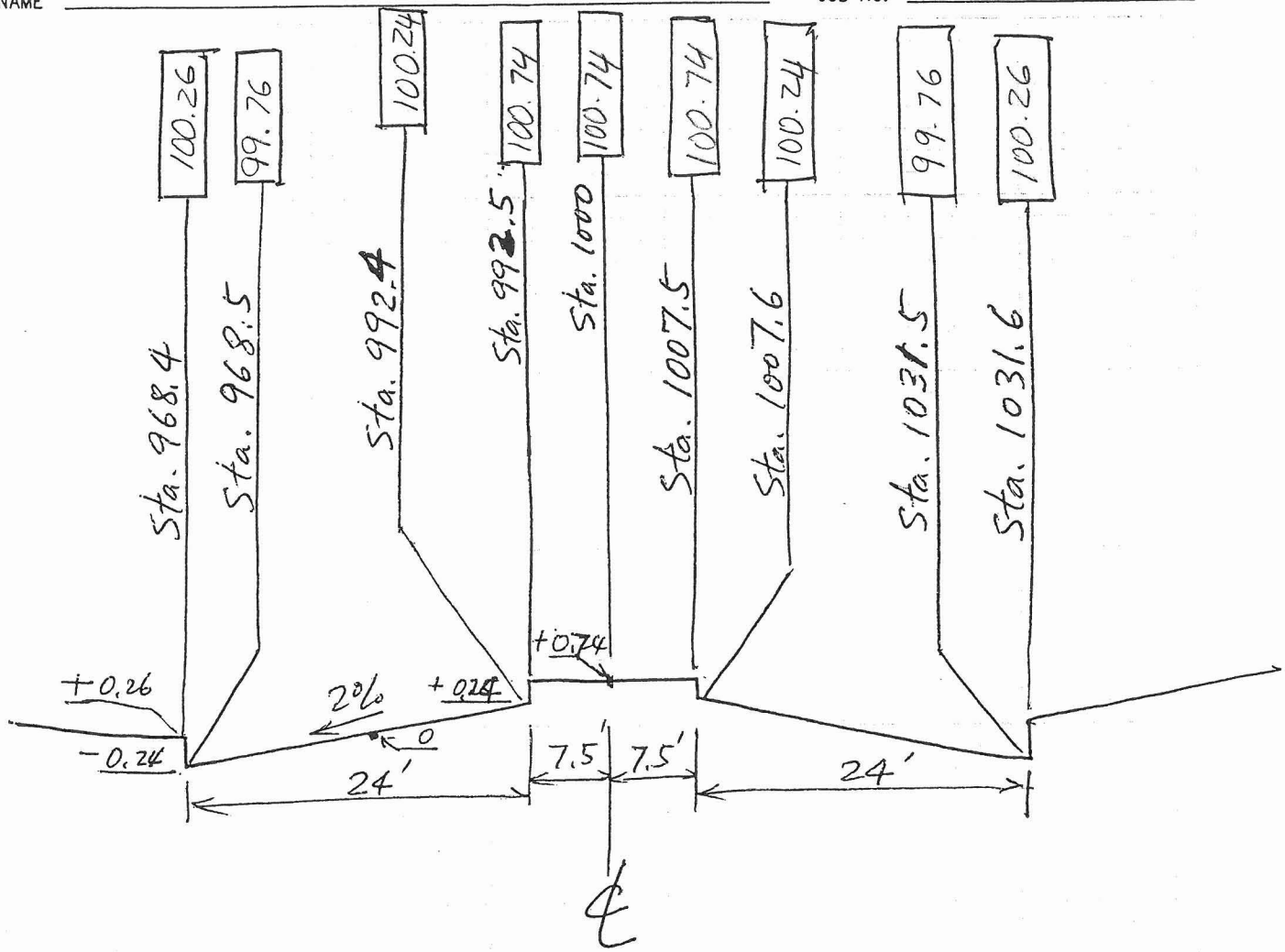
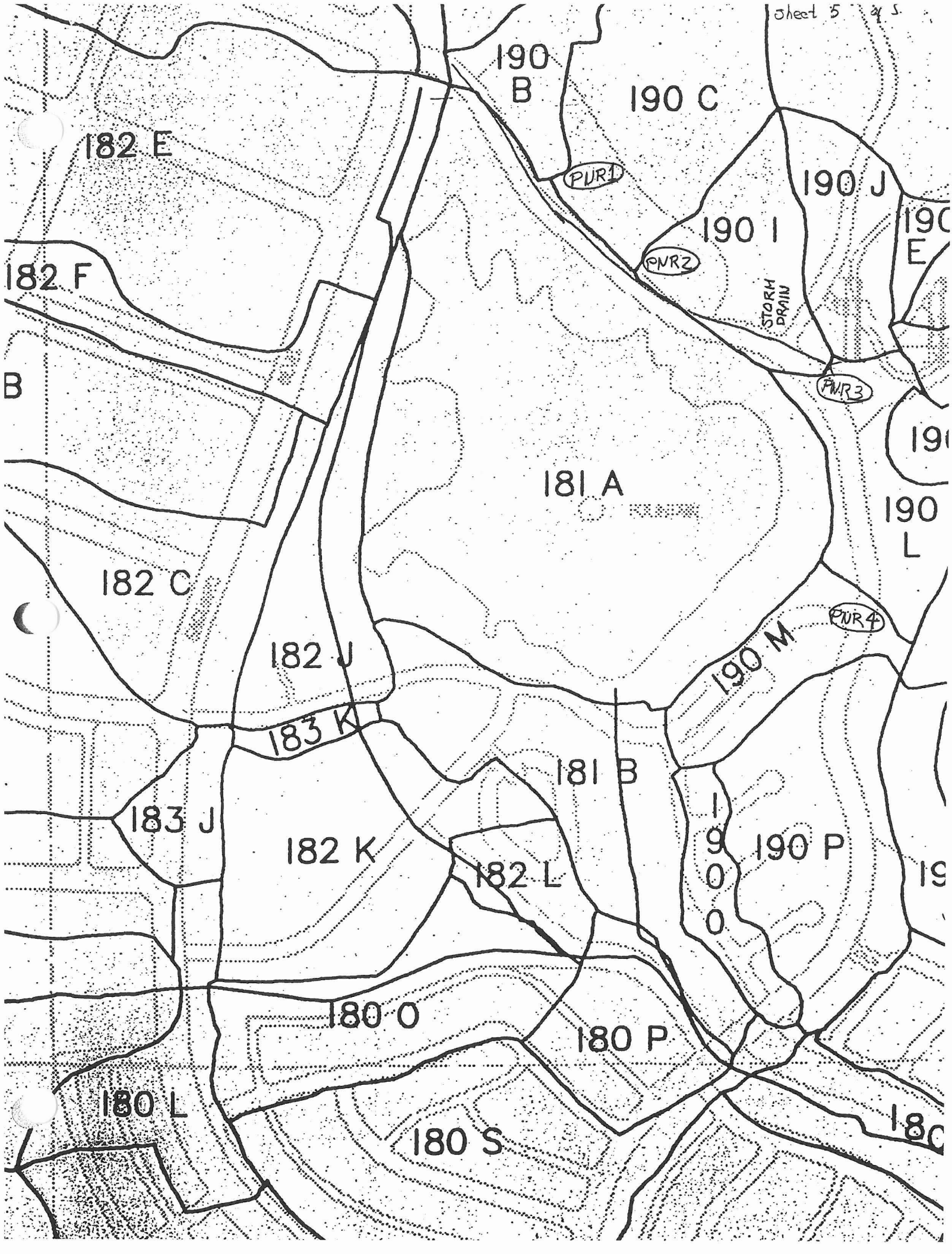
SHEET 4 OF 5
BY HAA DATE
CHECK DATE

CLIENT
JOB NAME
JOB NO. 310.43



PANORAMA DR.

X-SEC NO. Typical


190 B
190 C
182 E
PVR1
190 J
190 I
PVR2
182 F
STORM DRAIN
PVR3
B
181 A
182 C
182 J
PVR4
190 M
183 K
181 B
183 J
182 K
182 L
190 P
180 O
180 P
180 L
180 S

Colony Wash including Fountain channel


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

1052      UC    .233    .448
1053      UA       0       5      16      30      65      77      84      90      94      97
1054      UA     100

1055      KK     FC2
1056      KM   FOUNTAIN CHANNEL CONC. POINT 2 - COMBINE RFC1, R182D, 182E, 182F
1057      HC       4

1058      KK    SFC2
1059      KM   CATCH BASIN (2X3 AND TRIANGULAR) AND CULVERT UNDER SAGUARO BLVD
1060      RS       1    ELEV    1596
1061      SQ       0    10.4      41     181     482     913
1062      SE    1596  1596.2  1596.5    1597  1597.5    1598
1063      SA   0.001    0.48    0.80
1064      SE    1596  1596.5    1597

1065      KK    RFC2
1066      KM   ROUTE FC2 TO THROUGH SUB-BASIN 182J TO FC3 IN MIDDLE OF 182J
1067      RS       2    FLOW       0
1068      RC     .04     .04     .04    1050    .011
1069      RX    9960    9970    9975    9980   10040   10090   10150   10220
1070      RY  1584.5    1584    1583    1582    1582    1590    1592    1594

1071      KK    DFC2
1072      KM   DIVERSION INTO FOUNTAIN LAKE
1073      DT   DOFC2
1074      DI       0     250     350     400     500     650     750     800
1075      DQ       0       0       4      19      63     184     274     320

1076      KK    182A
1077      KM   SUB-BASIN 182A
1078      KM   6-HOUR RAINFALL, PATTERN NO. 1.00 WAS USED TO FIND TC & R FOR THIS BASIN
1079      KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .999
1080      BA    .050
1081      LG    .150    .250   5.700    .189   4.500
1082      UC    .183    .143
1083      UA       0       5      16      30      65      77      84      90      94      97
1084      UA     100

1085      KK   R182A
1086      KM   ROUTE SUB-BASIN 182A THROUGH SUB-BASIN 182B
1087      RS       4    FLOW       0
1088      RC     .02     .02     .02    1950    .025
1089      RX    9975    9980    9985    9986   10014   10015   10020   10025
1090      RY  1620.6  1620.5  1620.5    1620    1620  1620.5  1620.5  1620.6

1091      KK    182B
1092      KM   SUB-BASIN 182B
1093      KM   6-HOUR RAINFALL, PATTERN NO. 1.00 WAS USED TO FIND TC & R FOR THIS BASIN
1094      KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .999
1095      BA    .039
1096      LG    .095    .250   5.700    .170  15.330
1097      UC    .217    .227
1098      UA       0       5      16      30      65      77      84      90      94      97
1099      UA     100
```

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

1462      KK  *CLN10
1463      KM   COLONY WASH CONCENTRATION POINT *10 - COMBINE (RCLN9, 180U), RCLN10A
1464      HC       2

1465      KK    180T
1466      KM   SUB-BASIN 180T
1467      KM   6-HOUR RAINFALL, PATTERN NO. 1.00 WAS USED TO FIND TC & R FOR THIS BASIN
1468      KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF1.000
1469      BA    .023
1470      LG    .100    .250   5.000    .230  67.500
1471      UC    .158    .181
1472      UA       0       5      16      30      65      77      84      90      94      97
1473      UA     100

1474      KK   CLN10
1475      KM   COLONY WASH CONCENTRATION POINT 10 - COMBINE ((RCLN9,180U), RCLN10A), 180T
1476      HC       2

1477      KK    DFC2
1478      KM   FLOW INTO FOUNTAIN LAKE
1479      DR   DOFC2

1480      KK  VDOFC2
1481      KM   VOLUME DIVERTED INTO FOUNTAIN LAKE
1482      KO       3
1483      RS       1    STOR      0
1484      SQ       0       1       2       3       4       5       6       7       8       9
1485      SV       0       3       6       9      12      15      18      21      24      27
1486      ZZ
```

RCS 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9

Total area of lake = 30 acres

-therefore 3 acre-ft = 0.1 ft rise of lake W.S.E.

```
          **************
          *            *
KK        *   VDOFC2   *
          *            *
          **************

1482 KO         OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

               HYDROGRAPH ROUTING DATA

1483 RS         STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       STOR  TYPE OF INITIAL CONDITION
                     RSVRIC       .00  INITIAL CONDITION
                         X        .00 WORKING R AND D COEFFICIENT

1485 SV           STORAGE        .0      3.0     6.0     9.0     12.0    15.0    18.0    21.0    24.0    27.0

1484 SQ           DISCHARGE      0.      1.      2.      3.      4.      5.      6.      7.      8.      9.

                                                                  ***

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

                    HYDROGRAPH AT STATION   VDOFC2
                   TRANSPOSITION AREA       .0 SQ MI

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR        24-HR       72-HR       6.63-HR
+   (CFS)       (HR)
                          (CFS)
      1.        4.43            0.          0.          0.          0.
                          (INCHES)      .010        .010        .010        .010
                          (AC-FT)         0.          0.          0.          0.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                      6-HR        24-HR       72-HR       6.63-HR
+  (AC-FT)      (HR)
       2.       4.47                    1.          1.          1.          1.

                    CUMULATIVE AREA =     .26 SQ MI

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

                    HYDROGRAPH AT STATION   VDOFC2
                   TRANSPOSITION AREA       .5 SQ MI

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR        24-HR       72-HR       6.63-HR
+   (CFS)       (HR)
                          (CFS)
+     1.        4.43            0.          0.          0.          0.
                          (INCHES)      .010        .010        .010        .010
                          (AC-FT)         0.          0.          0.          0.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                      6-HR        24-HR       72-HR       6.63-HR
+  (AC-FT)      (HR)
       2.       4.47                    1.          1.          1.          1.

                    CUMULATIVE AREA =     .26 SQ MI

      ***             ***             ***             ***             ***
```

Peak storage about 3 acre-ft
therefore WSE on lake rises 0.1 ft

HYDROGRAPH AT STATION VDOFC2
TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	6.63-HR
+ (CFS)	(HR)					
		(CFS)				
+ 0.	4.50		0.	0.	0.	0.
		(INCHES)	.001	.001	.001	.001
		(AC-FT)	0.	0.	0.	0.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	6.63-HR
+ (AC-FT)	(HR)				
0.	4.50	0.	0.	0.	0.

CUMULATIVE AREA = .26 SQ MI

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

HYDROGRAPH AT STATION VDOFC2
TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	6.63-HR
+ (CFS)	(HR)					
		(CFS)				
+ 0.	4.33		0.	0.	0.	0.
		(INCHES)	.000	.000	.000	.000
		(AC-FT)	0.	0.	0.	0.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	6.63-HR
+ (AC-FT)	(HR)				
0.	4.30	0.	0.	0.	0.

CUMULATIVE AREA = .26 SQ MI

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

INTERPOLATED HYDROGRAPH AT VDOFC2

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	6.63-HR
+ (CFS)	(HR)					
		(CFS)				
+ 1.	4.43		0.	0.	0.	0.
		(INCHES)	.010	.010	.010	.010
		(AC-FT)	0.	0.	0.	0.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	6.63-HR
+ (AC-FT)	(HR)				
0.	4.30	0.	0.	0.	0.

CUMULATIVE AREA = .26 SQ MI

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	185A	105.	4.03	9.	9.	9.	.04		
ROUTED TO	R185A	97.	4.20	9.	9.	9.	.04	1692.23	4.20
HYDROGRAPH AT	185B	145.	4.13	16.	15.	15.	.08		
2 COMBINED AT	IRW1	237.	4.13	26.	23.	23.	.12		
ROUTED TO	CIRW1	140.	4.40	26.	23.	23.	.12	1668.29	4.43
HYDROGRAPH AT	180A	64.	4.03	5.	5.	5.	.03		
ROUTED TO	R180A	64.	4.03	5.	5.	5.	.03	1680.18	4.07
HYDROGRAPH AT	180B	31.	4.17	7.	6.	6.	.03		
3 COMBINED AT	IRW2	191.	4.27	38.	34.	34.	.18		
ROUTED TO	RIRW2	191.	4.27	38.	34.	34.	.18	1658.89	4.30
HYDROGRAPH AT	186A	218.	4.07	19.	17.	17.	.10		
HYDROGRAPH AT	186B	13.	4.03	1.	1.	1.	.00		
ROUTED TO	R186B	13.	4.07	1.	1.	1.	.00	1900.06	4.10
2 COMBINED AT	SNB1A	231.	4.07	20.	18.	18.	.10		
ROUTED TO	RSNB1A	230.	4.17	20.	18.	18.	.10	1892.71	4.20
HYDROGRAPH AT	186C	42.	4.03	4.	4.	4.	.02		
ROUTED TO	R186C	41.	4.07	4.	4.	4.	.02	2040.06	4.07
HYDROGRAPH AT	186D	147.	4.10	17.	15.	15.	.08		
3 COMBINED AT	SNB1	403.	4.13	41.	37.	37.	.20		

	ROUTED TO								
+		RSNB1	400.	4.20	41.	37.	37.	.20	
+									1815.56 4.23
	HYDROGRAPH AT								
+		186E	90.	4.07	7.	6.	6.	.04	
	HYDROGRAPH AT								
+		186F	64.	4.07	6.	5.	5.	.03	
	3 COMBINED AT								
+		SNB2	508.	4.17	54.	48.	48.	.27	
	ROUTED TO								
+		RSNB2	502.	4.23	54.	48.	48.	.27	
+									1763.46 4.30
	HYDROGRAPH AT								
+		186G	136.	4.10	13.	11.	11.	.07	
	2 COMBINED AT								
+		SNB3	606.	4.20	66.	60.	60.	.33	
	ROUTED TO								
+		RSNB3	92.	4.90	33.	30.	30.	.33	
+									1750.59 5.07
	HYDROGRAPH AT								
+		186H	35.	4.10	6.	5.	5.	.03	
	HYDROGRAPH AT								
+		160E	9.	4.03	1.	1.	1.	.00	
	ROUTED TO								
+		R160E	9.	4.07	1.	1.	1.	.00	
+									1733.04 4.07
	3 COMBINED AT								
+		SNB4	107.	4.63	40.	36.	36.	.36	
	ROUTED TO								
+		RSNB4	107.	4.70	40.	36.	36.	.36	
+									1702.35 4.87
	HYDROGRAPH AT								
+		186I	70.	4.07	6.	5.	5.	.03	
	2 COMBINED AT								
+		*SNB5	122.	4.37	45.	41.	41.	.39	
	HYDROGRAPH AT								
+		187A	28.	4.00	2.	2.	2.	.01	
	ROUTED TO								
+		R187A	28.	4.03	2.	2.	2.	.01	
+									1852.07 4.03
	HYDROGRAPH AT								
+		187B	20.	4.03	2.	2.	2.	.01	
	2 COMBINED AT								
+		GRS1	48.	4.03	4.	3.	3.	.02	
	ROUTED TO								
+		RGRS1	44.	4.13	4.	3.	3.	.02	
+									1754.15 4.13
	HYDROGRAPH AT								
+		187C	35.	4.03	3.	2.	2.	.01	
	ROUTED TO								
		R187C	33.	4.07	3.	2.	2.	.01	

+								1754.10	4.07
	HYDROGRAPH AT								
+		187D	120.	4.13	14.	13.	13.	.07	
	3 COMBINED AT								
+		*GRS2	194.	4.13	21.	19.	19.	.10	
	HYDROGRAPH AT								
+		188A	24.	4.03	2.	2.	2.	.01	
	ROUTED TO								
+		R188A	24.	4.07	2.	2.	2.	.01	
+								1708.01	4.03
	HYDROGRAPH AT								
+		188B	169.	4.07	14.	13.	13.	.07	
	HYDROGRAPH AT								
+		188C	51.	4.07	5.	4.	4.	.02	
	3 COMBINED AT								
+		SYR1	243.	4.07	21.	19.	19.	.10	
	ROUTED TO								
+		RSYC1	236.	4.10	21.	19.	19.	.10	
+								1827.27	4.13
	HYDROGRAPH AT								
+		188D	119.	4.07	11.	10.	10.	.05	
	HYDROGRAPH AT								
+		188E	96.	4.10	10.	9.	9.	.05	
	3 COMBINED AT								
+		SYR2	450.	4.10	42.	38.	38.	.20	
	ROUTED TO								
+		RSYC2	436.	4.20	42.	38.	38.	.20	
+								1761.05	4.30
	HYDROGRAPH AT								
+		188F	146.	4.10	14.	13.	13.	.07	
	2 COMBINED AT								
+		SYR3	558.	4.17	57.	51.	51.	.28	
	ROUTED TO								
+		RSYC3	251.	4.50	57.	51.	51.	.28	
+								1716.51	4.57
	ROUTED TO								
+		RSYC3	251.	4.50	57.	51.	51.	.28	
+								1702.44	4.57
	HYDROGRAPH AT								
+		188G	3.	4.03	0.	0.	0.	.00	
	2 COMBINED AT								
+		SYR4	252.	4.50	57.	51.	51.	.28	
	2 COMBINED AT								
+		GRS2	396.	4.20	77.	70.	70.	.38	
	ROUTED TO								
+		RGRS2	396.	4.20	77.	70.	70.	.38	
+								1599.79	4.40
	HYDROGRAPH AT								
+		187E	11.	4.03	1.	1.	1.	.00	
	ROUTED TO								

+		R187E	11.	4.07	1.	1.	1.	.00	
+									1780.51 4.07
	HYDROGRAPH AT								
+		187F	5.	4.07	1.	1.	1.	.00	
	2 COMBINED AT								
+		GRS3A	16.	4.07	2.	2.	2.	.01	
	ROUTED TO								
+		RGRS3A	16.	4.07	2.	2.	2.	.01	
+									1710.10 4.10
	HYDROGRAPH AT								
+		187G	53.	4.17	9.	9.	9.	.04	
	3 COMBINED AT								
+		GRS3	461.	4.20	89.	80.	80.	.43	
	ROUTED TO								
+		RGRS3	461.	4.20	89.	80.	80.	.43	
+									1690.84 4.40
	HYDROGRAPH AT								
+		187H	10.	4.03	1.	1.	1.	.00	
	2 COMBINED AT								
+		*SNB5	467.	4.20	89.	81.	81.	.43	
	2 COMBINED AT								
+		SNB5	541.	4.20	130.	118.	118.	.82	
	ROUTED TO								
+		RSNB5	541.	4.23	130.	118.	118.	.82	
+									1682.92 4.43
	HYDROGRAPH AT								
+		187I	66.	4.03	5.	4.	4.	.02	
	2 COMBINED AT								
+		SNB6	569.	4.20	135.	122.	122.	.85	
	ROUTED TO								
+		RSNB6	94.	5.87	45.	40.	40.	.85	
+									1696.23 5.70
	ROUTED TO								
+		RSNB6	94.	5.97	43.	39.	39.	.85	
+									1659.06 5.73
	HYDROGRAPH AT								
+		180F	191.	4.07	15.	14.	14.	.07	
	2 COMBINED AT								
+		*CLN1	217.	4.07	57.	52.	52.	.92	
	2 COMBINED AT								
+		CLN1	373.	4.10	93.	84.	84.	1.10	
	ROUTED TO								
+		CCLN1	289.	4.47	92.	84.	84.	1.10	
+									1654.90 4.50
	HYDROGRAPH AT								
+		180C	30.	4.03	2.	2.	2.	.01	
	ROUTED TO								
+		R180C	29.	4.07	2.	2.	2.	.01	
+									1670.11 4.07
	HYDROGRAPH AT								
		180D	6.	4.07	1.	1.	1.	.00	

HYDROGRAPH AT								
+	180E	52.	4.03	4.	4.	4.	.02	
4 COMBINED AT								
+	CLN2	313.	4.30	99.	90.	90.	1.13	
ROUTED TO								
+	RCLN2	313.	4.33	98.	89.	89.	1.13	
+							1625.48	4.37
HYDROGRAPH AT								
+	180G	72.	4.07	6.	6.	6.	.03	
2 COMBINED AT								
+	CLN3	354.	4.13	104.	94.	94.	1.16	
ROUTED TO								
+	CCLN3	303.	4.63	103.	93.	93.	1.16	
+							1622.21	4.60
HYDROGRAPH AT								
+	180H	39.	4.10	5.	4.	4.	.02	
ROUTED TO								
+	R180H	39.	4.10	5.	4.	4.	.02	
+							1670.24	4.13
HYDROGRAPH AT								
+	180I	11.	4.03	1.	1.	1.	.00	
ROUTED TO								
+	R180I	11.	4.07	1.	1.	1.	.00	
+							1670.06	4.10
HYDROGRAPH AT								
+	180J	78.	4.07	8.	7.	7.	.03	
3 COMBINED AT								
+	CLN4B	126.	4.07	14.	13.	13.	.06	
ROUTED TO								
+	RCLN4B	126.	4.10	14.	13.	13.	.06	
+							1630.47	4.10
HYDROGRAPH AT								
+	180M	10.	4.07	1.	1.	1.	.00	
3 COMBINED AT								
+	CLN4	367.	4.17	117.	106.	106.	1.22	
ROUTED TO								
+	RCLN4	367.	4.27	115.	104.	104.	1.22	
+							1591.67	4.37
HYDROGRAPH AT								
+	180N	108.	4.03	8.	7.	7.	.04	
HYDROGRAPH AT								
+	184C	39.	4.03	3.	3.	3.	.01	
HYDROGRAPH AT								
+	184D	12.	4.07	2.	2.	2.	.01	
2 COMBINED AT								
+	NCL1	51.	4.03	5.	5.	5.	.02	
ROUTED TO								
+	RNCL1	51.	4.03	5.	5.	5.	.02	
+							1544.04	4.03
HYDROGRAPH AT								
	184E	151.	4.17	22.	20.	20.	.11	

2 COMBINED AT									
+	NCL2	188.	4.13	27.	24.	24.	.13		
ROUTED TO									
+	RNCL2	174.	4.23	27.	25.	25.	.13		
+								1744.08	4.23
HYDROGRAPH AT									
+	184F	13.	4.07	2.	2.	2.	.01		
ROUTED TO									
+	R184F	13.	4.07	2.	2.	2.	.01		
+								1725.09	4.10
2 COMBINED AT									
+	NCL3	185.	4.23	29.	26.	26.	.14		
ROUTED TO									
+	RNCL3	185.	4.23	29.	26.	26.	.14		
+								1736.94	4.23
ROUTED TO									
+	RNCL3	178.	4.33	29.	26.	26.	.14		
+								1737.28	4.27
HYDROGRAPH AT									
+	184A	48.	4.03	5.	4.	4.	.02		
ROUTED TO									
+	R184A	37.	4.17	5.	4.	4.	.02		
+								1870.16	4.23
HYDROGRAPH AT									
+	184B	42.	4.07	5.	5.	5.	.02		
2 COMBINED AT									
	NCL4A	78.	4.10	10.	9.	9.	.04		
ROUTED TO									
+	RNCL4A	78.	4.13	10.	9.	9.	.04		
+								1810.18	4.17
2 COMBINED AT									
+	NCL4	242.	4.27	39.	35.	35.	.18		
ROUTED TO									
+	RNCL4	242.	4.30	39.	35.	35.	.18		
+								1709.28	4.30
HYDROGRAPH AT									
+	184G	131.	4.07	10.	9.	9.	.05		
2 COMBINED AT									
+	NCL5	325.	4.13	49.	44.	44.	.23		
ROUTED TO									
+	RNCL5	246.	4.47	49.	44.	44.	.23		
+								1698.79	4.43
HYDROGRAPH AT									
+	184H	26.	4.07	3.	3.	3.	.01		
HYDROGRAPH AT									
+	183A	130.	4.03	10.	9.	9.	.04		
ROUTED TO									
+	R183A	124.	4.10	10.	9.	9.	.04		
+								1732.10	4.07
HYDROGRAPH AT									
+	183B	101.	4.07	8.	7.	7.	.04		

2 COMBINED AT								
+	NCL6A	225.	4.07	18.	16.	16.	.08	
ROUTED TO								
+	SNCL6A	1.	6.10	0.	0.	0.	.08	
+								1725.25 6.23
ROUTED TO								
+	RNCL6A	1.	6.17	0.	0.	0.	.08	
+								1716.02 5.73
3 COMBINED AT								
+	NCL6	258.	4.40	52.	47.	47.	.33	
ROUTED TO								
+	RNCL6	257.	4.47	52.	47.	47.	.33	
+								1666.68 4.47
HYDROGRAPH AT								
+	184I	80.	4.03	7.	7.	7.	.03	
2 COMBINED AT								
+	NCL7	289.	4.23	59.	54.	54.	.36	
ROUTED TO								
+	RNCL7	283.	4.33	59.	54.	54.	.36	
+								1661.24 4.40
ROUTED TO								
+	RNCL7	283.	4.37	59.	54.	54.	.36	
+								1661.85 4.43
HYDROGRAPH AT								
+	184J	20.	4.03	2.	2.	2.	.01	
2 COMBINED AT								
	NCL8	291.	4.27	61.	55.	55.	.37	
ROUTED TO								
+	RNCL8	292.	4.23	61.	56.	56.	.37	
+								1637.81 4.40
ROUTED TO								
+	RNCL8	291.	4.27	61.	56.	56.	.37	
+								1619.03 4.43
HYDROGRAPH AT								
+	184K	12.	4.03	1.	1.	1.	.00	
2 COMBINED AT								
+	NCL9	295.	4.27	62.	57.	57.	.37	
ROUTED TO								
+	RNCL9	294.	4.33	62.	56.	56.	.37	
+								1591.44 4.47
3 COMBINED AT								
+	CLN5	655.	4.30	180.	163.	163.	1.63	
ROUTED TO								
+	CCLN5	613.	4.60	179.	162.	162.	1.63	
+								1596.66 4.67
HYDROGRAPH AT								
+	180K	74.	4.03	8.	7.	7.	.03	
ROUTED TO								
+	R180K	72.	4.07	8.	7.	7.	.03	
+								1600.30 4.10
HYDROGRAPH AT								
	180L	42.	4.00	4.	3.	3.	.01	

	3 COMBINED AT								
+		CLN6	635.	4.53	189.	172.	172.	1.67	
	ROUTED TO								
+		RCLN6	635.	4.60	188.	170.	170.	1.67	
+									1574.90 4.67
	HYDROGRAPH AT								
+		1800	51.	4.03	5.	5.	5.	.02	
	2 COMBINED AT								
+		*CLN7	643.	4.57	193.	175.	175.	1.69	
	HYDROGRAPH AT								
+		182G	89.	4.10	13.	12.	12.	.05	
	HYDROGRAPH AT								
+		182I	79.	4.10	11.	10.	10.	.04	
	2 COMBINED AT								
+		FC1	167.	4.10	24.	22.	22.	.09	
	ROUTED TO								
+		RFC1	166.	4.13	24.	22.	22.	.09	
+									1610.34 4.17
	HYDROGRAPH AT								
+		182D	243.	4.07	21.	19.	19.	.09	
	ROUTED TO								
+		R182D	236.	4.10	21.	19.	19.	.09	
+									1610.32 4.13
	HYDROGRAPH AT								
+		182E	167.	4.07	17.	15.	15.	.06	
	HYDROGRAPH AT								
		182F	26.	4.10	4.	4.	4.	.01	
	4 COMBINED AT								
+		FC2	586.	4.10	65.	59.	59.	.26	
	ROUTED TO								
+		SFC2	579.	4.13	65.	59.	59.	.26	
+									1597.16 4.13
	ROUTED TO								
+		RFC2	573.	4.17	65.	59.	59.	.26	
+									1583.03 4.20
	DIVERSION TO								
+		DOFC2	122.	4.17	4.	4.	4.	.26	
	HYDROGRAPH AT								
+		DFC2	451.	4.17	61.	55.	55.	.26	
	HYDROGRAPH AT								
+		182A	138.	4.03	10.	9.	9.	.05	
	ROUTED TO								
+		R182A	134.	4.10	10.	9.	9.	.05	
+									1620.34 4.10
	HYDROGRAPH AT								
+		182B	92.	4.07	9.	8.	8.	.04	
	2 COMBINED AT								
+		FC3A	223.	4.07	19.	17.	17.	.09	
	ROUTED TO								
		CFC3A	222.	4.10	19.	17.	17.	.09	
									1597.04 4.10

HYDROGRAPH AT								
+	182C	49.	4.07	6.	5.	5.	.02	
2 COMBINED AT								
+	FC3B	269.	4.10	24.	22.	22.	.11	
ROUTED TO								
+	RFC3B	269.	4.10	24.	22.	22.	.11	
+							1580.82	4.10
2 COMBINED AT								
+	FC3	713.	4.10	85.	77.	77.	.37	
ROUTED TO								
+	RFC4	712.	4.13	85.	77.	77.	.37	
+							1583.36	4.17
HYDROGRAPH AT								
+	182J	28.	4.10	3.	3.	3.	.01	
2 COMBINED AT								
+	FC4	738.	4.13	88.	80.	80.	.39	
ROUTED TO								
+	CFC4	668.	4.23	88.	80.	80.	.39	
+							1580.93	4.23
HYDROGRAPH AT								
+	DFHN	0.	.03	0.	0.	0.	1.00	
HYDROGRAPH AT								
+	183F	109.	4.07	10.	9.	9.	.05	
HYDROGRAPH AT								
+	183G	204.	4.07	20.	18.	18.	.09	
HYDROGRAPH AT								
+	183H	54.	4.03	4.	4.	4.	.02	
4 COMBINED AT								
+	LC1	290.	4.07	32.	29.	29.	1.16	
ROUTED TO								
+	RLC1	285.	4.10	32.	29.	29.	1.16	
+							1620.40	4.13
HYDROGRAPH AT								
+	183I	142.	4.07	13.	12.	12.	.06	
HYDROGRAPH AT								
+	183J	16.	4.00	2.	1.	1.	.00	
3 COMBINED AT								
+	LC2	399.	4.10	46.	42.	42.	1.22	
ROUTED TO								
+	SLC2	397.	4.10	46.	42.	42.	1.22	
+							1598.80	4.10
ROUTED TO								
+	RLC2	397.	4.10	46.	42.	42.	1.22	
+							1592.00	.00
HYDROGRAPH AT								
+	183K	7.	4.00	1.	1.	1.	.00	
2 COMBINED AT								
+	LC3	401.	4.10	47.	42.	42.	1.22	
DIVERSION TO								
	DO183K	37.	4.10	3.	3.	3.	1.22	

HYDROGRAPH AT								
+ D183K	364.	4.10	43.	39.	39.	1.22		
2 COMBINED AT								
+ FC5	857.	4.17	129.	117.	117.	1.61		
ROUTED TO								
+ RFC5	854.	4.20	129.	117.	117.	1.61		
+							1578.56	4.20
HYDROGRAPH AT								
+ 182K	76.	4.03	6.	5.	5.	.02		
2 COMBINED AT								
+ FC6	880.	4.17	134.	122.	122.	1.63		
ROUTED TO								
+ RFC6	880.	4.20	134.	122.	122.	1.63		
+							1575.58	4.23
HYDROGRAPH AT								
+ 182L	16.	4.03	1.	1.	1.	.00		
2 COMBINED AT								
+ FC7	885.	4.20	136.	123.	123.	1.64		
2 COMBINED AT								
+ CLN7	1270.	4.37	317.	288.	288.	3.33		
ROUTED TO								
+ RCLN7	1269.	4.40	316.	287.	287.	3.33		
+							1552.74	4.30
HYDROGRAPH AT								
+ 180P	33.	4.03	3.	2.	2.	.01		
2 COMBINED AT								
*CLN8	1276.	4.40	319.	289.	289.	3.35		
HYDROGRAPH AT								
+ 181A	0.	.03	0.	0.	0.	.08		
ROUTED TO								
+ R181A	0.	.03	0.	0.	0.	.08		
+							1566.00	.00
HYDROGRAPH AT								
+ 181B	45.	4.07	5.	5.	5.	.02		
HYDROGRAPH AT								
+ D183K	37.	4.10	3.	3.	3.	1.22		
ROUTED TO								
+ R183K	35.	4.17	3.	3.	3.	1.22		
+							1580.14	4.20
ROUTED TO								
+ R183K	35.	4.20	3.	3.	3.	1.22		
+							1566.02	4.20
4 COMBINED AT								
+ CLN8	1312.	4.37	326.	295.	295.	3.45		
ROUTED TO								
+ CCLN8	1295.	4.43	326.	295.	295.	3.45		
+							1551.79	4.33
HYDROGRAPH AT								
+ 180S	111.	4.03	10.	9.	9.	.04		
HYDROGRAPH AT								
170I1	51.	4.07	6.	5.	5.	.02		

	DIVERSION TO								
+		D170I1	25.	4.07	3.	3.	3.	.02	
	HYDROGRAPH AT								
+		D170I1	25.	4.07	3.	2.	2.	.02	
	ROUTED TO								
+		R170I1	25.	4.10	3.	2.	2.	.02	
+									1575.12 4.13
	3 COMBINED AT								
+		CLN9	1327.	4.43	338.	306.	306.	3.50	
	ROUTED TO								
+		RCLN9	1324.	4.47	334.	302.	302.	3.50	
+									1529.92 4.37
	HYDROGRAPH AT								
+		180U	34.	4.07	3.	3.	3.	.02	
	2 COMBINED AT								
+		*CLN10	1333.	4.47	336.	305.	305.	3.52	
	HYDROGRAPH AT								
+		180Q	77.	4.07	8.	7.	7.	.03	
	HYDROGRAPH AT								
+		180R	67.	4.03	5.	4.	4.	.03	
	HYDROGRAPH AT								
+		170I2	34.	4.03	3.	3.	3.	.01	
	HYDROGRAPH AT								
+		D170I1	25.	4.07	3.	3.	3.	.02	
	ROUTED TO								
		R170I1	24.	4.17	3.	3.	3.	.02	
									1570.07 4.23
	2 COMBINED AT								
+		MLT6A	51.	4.07	6.	6.	6.	.01	
	DIVERSION TO								
+		D170I2	26.	4.07	3.	3.	3.	.01	
	HYDROGRAPH AT								
+		DMLT6A	26.	4.07	3.	3.	3.	.01	
	ROUTED TO								
+		RMLT6A	25.	4.13	3.	3.	3.	.01	
+									1540.15 4.13
	3 COMBINED AT								
+		CL10A	166.	4.07	16.	15.	15.	.07	
	ROUTED TO								
+		RCL10A	160.	4.10	16.	15.	15.	.07	
+									1528.25 4.10
	2 COMBINED AT								
+		*CLN10	1385.	4.47	350.	317.	317.	3.59	
	HYDROGRAPH AT								
+		180T	64.	4.03	7.	6.	6.	.02	
	2 COMBINED AT								
+		CLN10	1401.	4.47	356.	323.	323.	3.62	
	HYDROGRAPH AT								
+		DFC2	122.	4.17	4.	4.	4.	.26	
	ROUTED TO								

+	VDOFC2	1.	4.43	0.	0.	0.	.26

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

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*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    10NOV93    TIME   17:45:44   *
*********************************************
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*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  HYDROLOGIC ENGINEERING CENTER        *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*         (916) 756-1104                *
*****************************************
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X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
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THIS RUN EXECUTED 10NOV93 17:45:44

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**************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
**************************************


SPLIT FLOW BEING PERFORMED

SF     Split Flow into Fountain Lake


TW      Left bank between sections 346 and 355
WS     2     346     355      -1     2.7
WC        1584.9     440  1587.2

T1      Fountain Hills (South) - Floodplain Delineation
T1      For the  Maricopa County Flood Control District
T1      by AGK Engineers, Inc.

T2      Existing  conditions
T3      Fountain Hills (south) - FOUNTAIN CHANEL

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
                2                             .004                0.05              1584.81
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      1                                                           -1

QT        8       830       800       750       650       500       400       350       250
NC     .029      .028      .029        .1        .3

X1      337        22    9992.7   10029.5       460       460       460
X3                                 9965.5
GR   1571.8    9834.5    1571.8    9845.5    1574.8    9851.3    1577.9    9874.1    1582.7    9903.0
GR   1586.1    9931.6    1586.0    9942.0    1586.6    9965.5    1585.1    9980.3    1582.5    9992.7
GR   1581.6   10000.0    1583.0   10029.5    1583.4   10063.8    1586.7   10082.0    1590.3   10101.4
GR   1592.8   10137.1    1594.2   10165.0    1594.5   10192.2    1595.6   10211.9    1596.9   10232.8
GR   1597.6   10253.1    1597.7   10265.3

X1      346        27    9987.7   10036.2       500       500       500
X3                                 9967
GR   1572.3    9525.9    1573.9    9533.9    1576.5    9570.8    1578.8    9592.8    1578.1    9623.2
GR   1579.3    9641.5    1580.3    9669.7    1581.0    9695.9    1582.3    9712.4    1582.6    9735.3
GR   1581.3    9766.7    1580.4    9794.9    1580.4    9820.8    1580.8    9848.2    1580.4    9881.0
GR   1581.1    9911.8    1582.3    9941.2    1584.1    9958.6    1584.9    9967.0    1582.6    9987.7
GR   1583.0   10000.0    1583.0   10036.2    1587.6   10058.2    1591.7   10079.8    1595.7   10103.8
GR   1597.7   10114.0    1598.1   10122.7

X1      355        18    9988.7   10018.4       440       440       440
X3                                 9967.2
GR   1580.6    9827.6    1584.3    9855.3    1582.1    9890.5    1583.1    9923.8    1584.3    9944.0
GR   1586.7    9959.1    1587.2    9967.2    1584.8    9988.7    1585.6   10000.0    1585.5   10018.4
GR   1592.1   10047.8    1596.1   10068.3    1595.3   10078.5    1595.6   10108.2    1597.5   10118.2
     1595.6   10129.3    1595.6   10150.1    1595.8   10153.3
```

TW Left bank between sections 346 and 355

SQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
330.03	329.96	.02	330.03	329.96	.02	5	1585.410	1587.539	346.000	355.000

```
T1      by AGK Engineers, Inc.
T2      Existing  conditions
T3      Fountain Hills (south) - FOUNTAIN CHANEL

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                             .004                0.05                1584.1

      PROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
       2                                                          -1

TW      Left bank between sections 346 and 355

    ASQ       QCOMP     ERRAC     TASQ      TCQ       TABER     NITER     DSWS      USWS      DSSNO     USSNO
   320.44    274.25     15.53     320.44    274.25     15.53         5  1585.363  1587.486   346.000   355.000
```

T1 by AGK Engineers, Inc.
T2 Existing conditions
T3 Fountain Hills (south) - FOUNTAIN CHANEL

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		4			.004		0.05		1584.1	

PROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
3						-1			

TW Left bank between sections 346 and 355

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
274.81	275.04	.09	274.81	275.04	.09	5	1585.353	1587.499	346.000	355.000

T1 by AGK Engineers, Inc.
T2 Existing conditions
T3 Fountain Hills (south) - FOUNTAIN CHANEL

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		5			.004		0.05		1584.1	
	PROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	4						-1			

TW Left bank between sections 346 and 355

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
184.25	184.25	.00	184.25	184.25	.00	5	1585.330	1587.335	346.000	355.000

T1 by AGK Engineers, Inc.
T2 Existing conditions
T3 Fountain Hills (south) - FOUNTAIN CHANEL

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		6			.004		0.05		1584.1	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	5						-1			

TW Left bank between sections 346 and 355

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
62.29	62.32	.05	62.29	62.32	.05	5	1585.260	1586.966	346.000	355.000

T1 by AGK Engineers, Inc.
T2 Existing conditions
T3 Fountain Hills (south) - FOUNTAIN CHANEL

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		7			.004		0.05		1584.1	

PROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
6						-1			

TW Left bank between sections 346 and 355

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
18.52	18.54	.11	18.52	18.54	.11	5	1585.116	1586.861	346.000	355.000

T1 by AGK Engineers, Inc.
T2 Existing conditions
T3 Fountain Hills (south) - FOUNTAIN CHANEL

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		8			.004		0.05		1584.1	

PROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
7						-1			

TW Left bank between sections 346 and 355

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
3.80	3.81	.37	3.80	3.81	.37	5	1585.020	1586.695	346.000	355.000

T1 by AGK Engineers, Inc.
T2 Existing conditions
T3 Fountain Hills (south) - FOUNTAIN CHANEL

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		9			.004		0.05		1584.1	

NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
15						-1			

TW Left bank between sections 346 and 355

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
.00	.00	.00	.00	.00	.00	2	1584.722	1586.454	346.000	355.000

THIS RUN EXECUTED 10NOV93 17:46:05

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Fountain Hills (south) -

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	337.000	.00	.00	.00	1571.80	499.97	1584.20	1583.87	1584.53	40.11	5.05	114.53	78.94
	337.000	.00	.00	.00	1571.80	479.56	1584.15	1583.95	1584.48	40.66	5.01	110.86	75.20
	337.000	.00	.00	.00	1571.80	475.19	1584.15	1583.95	1584.47	40.59	4.99	110.25	74.59
	337.000	.00	.00	.00	1571.80	465.75	1584.13	1583.94	1584.45	40.41	4.95	108.93	73.27
	337.000	.00	.00	.00	1571.80	437.71	1584.08	1583.90	1584.39	40.02	4.84	104.80	69.19
	337.000	.00	.00	.00	1571.80	381.48	1583.97	1583.89	1584.25	40.09	4.64	95.40	60.25
	337.000	.00	.00	.00	1571.80	346.20	1583.89	1583.64	1584.16	40.40	4.52	89.02	54.46
	337.000	.00	.00	.00	1571.80	250.00	1583.66	1583.38	1583.89	39.66	4.06	71.30	39.70
*	346.000	500.00	.00	.00	1572.30	499.97	1585.41	1584.25	1585.56	12.09	3.25	167.55	143.82
*	346.000	500.00	.00	.00	1572.30	479.56	1585.36	1584.21	1585.50	11.94	3.19	163.77	138.79
*	346.000	500.00	.00	.00	1572.30	475.19	1585.35	1584.21	1585.49	11.92	3.17	162.92	137.66
*	346.000	500.00	.00	.00	1572.30	465.75	1585.33	1584.20	1585.47	11.86	3.15	161.07	135.23
*	346.000	500.00	.00	.00	1572.30	437.71	1585.26	1584.15	1585.39	11.69	3.06	155.49	127.99
*	346.000	500.00	.00	.00	1572.30	381.48	1585.12	1584.06	1585.23	11.31	2.88	143.92	113.44
*	346.000	500.00	.00	.00	1572.30	346.20	1585.02	1584.00	1585.13	11.04	2.76	136.28	104.17
*	346.000	500.00	.00	.00	1572.30	250.00	1584.72	1583.90	1584.80	10.23	2.39	112.88	78.17
*	355.000	440.00	.00	.00	1580.60	830.00	1587.54	1587.54	1588.56	106.43	8.72	105.36	80.45
*	355.000	440.00	.00	.00	1580.60	800.00	1587.49	1587.49	1588.49	108.76	8.67	102.19	76.71
*	355.000	440.00	.00	.00	1580.60	750.00	1587.50	1587.50	1588.37	93.36	8.07	102.96	77.62
*	355.000	440.00	.00	.00	1580.60	650.00	1587.33	1587.33	1588.14	95.80	7.74	93.16	66.41
*	355.000	440.00	.00	.00	1580.60	500.00	1586.97	1586.97	1587.76	124.00	7.64	71.83	44.90
*	355.000	440.00	.00	.00	1580.60	400.00	1586.86	1586.86	1587.46	101.83	6.60	66.05	39.64
*	355.000	440.00	.00	.00	1580.60	350.00	1586.69	1586.69	1587.30	119.71	6.60	57.22	31.99
*	355.000	440.00	.00	.00	1580.60	250.00	1586.45	1586.45	1586.95	125.54	5.88	45.08	22.31

Fountain Hills (south) -

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	337.000	499.97	1584.20	.00	.00	-.61	83.60	.00
	337.000	479.56	1584.15	-.04	.00	.05	83.15	.00
	337.000	475.19	1584.15	-.01	.00	.05	83.07	.00
	337.000	465.75	1584.13	-.02	.00	.03	82.91	.00
	337.000	437.71	1584.08	-.05	.00	-.02	82.39	.00
	337.000	381.48	1583.97	-.11	.00	-.13	81.21	.00
	337.000	346.20	1583.89	-.08	.00	-.21	80.40	.00
	337.000	250.00	1583.66	-.22	.00	-.44	78.10	.00
	346.000	499.97	1585.41	.00	1.21	.00	80.72	500.00
*	346.000	479.56	1585.36	-.05	1.21	.00	80.50	500.00
*	346.000	475.19	1585.35	-.01	1.21	.00	80.45	500.00
*	346.000	465.75	1585.33	-.02	1.20	.00	80.34	500.00
*	346.000	437.71	1585.26	-.07	1.18	.00	80.01	500.00
*	346.000	381.48	1585.12	-.14	1.15	.00	79.31	500.00
*	346.000	346.20	1585.02	-.10	1.13	.00	78.85	500.00
*	346.000	250.00	1584.72	-.30	1.06	.00	75.75	500.00
*	355.000	830.00	1587.54	.00	2.13	.00	60.28	440.00
*	355.000	800.00	1587.49	-.05	2.12	.00	60.05	440.00
*	355.000	750.00	1587.50	.01	2.15	.00	60.10	440.00
*	355.000	650.00	1587.33	-.16	2.01	.00	59.37	440.00
*	355.000	500.00	1586.97	-.37	1.71	.00	55.64	440.00
*	355.000	400.00	1586.86	-.11	1.75	.00	54.23	440.00
*	355.000	350.00	1586.69	-.17	1.67	.00	52.00	440.00
*	355.000	250.00	1586.45	-.24	1.73	.00	48.77	440.00

Hec-1 output table
Panorama Watershed
100-Yr 6-hr Current develop

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	182H	67.	4.07	5.	5.	5.	.03		
+	ROUTED TO	S182H	64.	4.10	5.	4.	4.	.03	1606.33	4.10
+	ROUTED TO	R182H	64.	4.10	5.	4.	4.	.03	1598.16	4.10
+	HYDROGRAPH AT	190A	48.	4.03	4.	3.	3.	.02		
+	2 COMBINED AT	PNR1A	109.	4.07	9.	8.	8.	.05		
+	ROUTED TO	SPNR1A	106.	4.13	7.	6.	6.	.05	1601.46	4.20
+	ROUTED TO	RPNR1A	102.	4.17	7.	6.	6.	.05	1590.19	4.23
	HYDROGRAPH AT	190B	17.	4.03	2.	2.	2.	.01		
+	2 COMBINED AT	PNR1	114.	4.17	9.	8.	8.	.05		
+	ROUTED TO	RPNR1	112.	4.17	9.	8.	8.	.05	1588.25	4.27
+	HYDROGRAPH AT	190C	60.	4.03	5.	5.	5.	.02		
+	2 COMBINED AT	PNR2	151.	4.17	14.	12.	12.	.08		
+	ROUTED TO	RPNR2	150.	4.17	14.	12.	12.	.08	1578.29	4.30
+	HYDROGRAPH AT	190D	17.	4.00	1.	1.	1.	.00		
+	ROUTED TO	R190D	17.	4.03	1.	1.	1.	.00	1588.05	4.03
+	HYDROGRAPH AT	190E	8.	4.03	1.	1.	1.	.00		
+	HYDROGRAPH AT	190F	15.	4.03	1.	1.	1.	.01		
+	HYDROGRAPH AT	190G	13.	4.07	1.	1.	1.	.01		
+	4 COMBINED AT	PNR3A	52.	4.03	4.	4.	4.	.02		

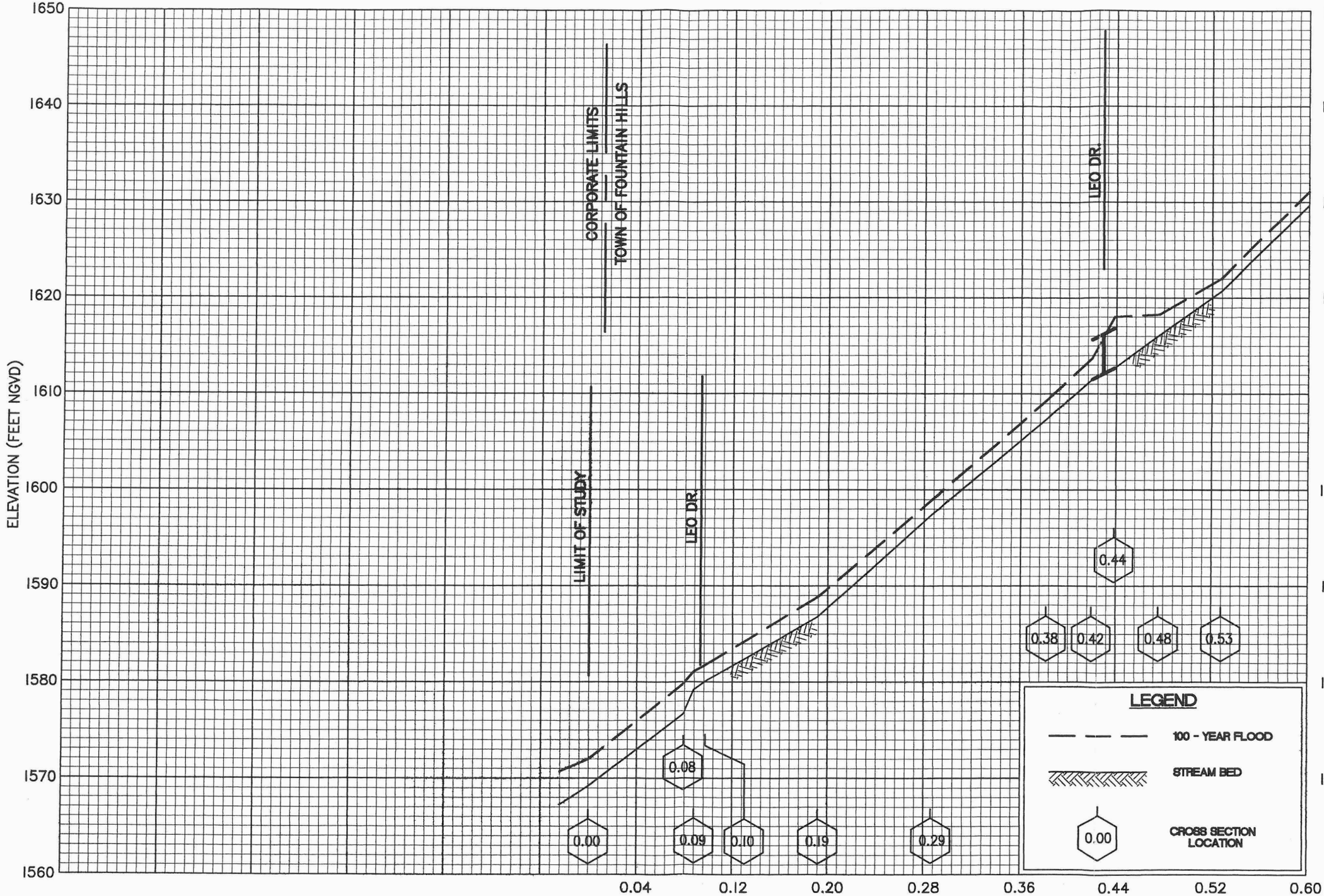
ROUTED TO	RPNR3A	51.	4.07	4.	4.	4.	.02	1576.37	4.07
+ HYDROGRAPH AT	190H	194.	4.07	15.	13.	13.	.08		
+ ROUTED TO	R190H	192.	4.07	15.	13.	13.	.08	1576.55	4.07
+ HYDROGRAPH AT	190I	36.	4.03	3.	3.	3.	.01		
+ HYDROGRAPH AT	190J	22.	4.03	2.	2.	2.	.01		
+ 5 COMBINED AT	PNR3	395.	4.10	38.	34.	34.	.19		
+ ROUTED TO	RPNR3	394.	4.13	38.	34.	34.	.19	1570.42	4.27
+ HYDROGRAPH AT	190K	19.	4.10	2.	1.	1.	.01		
+ ROUTED TO	R190K	18.	4.13	2.	1.	1.	.01	1570.06	4.13
+ HYDROGRAPH AT	190L	30.	4.03	3.	2.	2.	.01		
HYDROGRAPH AT	190M	20.	4.03	2.	2.	2.	.01		
+ HYDROGRAPH AT	190N	47.	4.10	3.	3.	3.	.02		
+ 5 COMBINED AT	PNR4	494.	4.13	47.	43.	43.	.24		
+ ROUTED TO	RPNR4	490.	4.17	47.	43.	43.	.24	1537.00	4.33
+ HYDROGRAPH AT	190O	17.	4.03	2.	2.	2.	.01		
+ ROUTED TO	R190O	16.	4.07	2.	2.	2.	.01	1570.21	4.07
+ HYDROGRAPH AT	190P	71.	4.00	6.	5.	5.	.02		
+ 2 COMBINED AT	PNR5A	86.	4.00	7.	7.	7.	.03		
+ ROUTED TO	RPNR5A	85.	4.03	7.	7.	7.	.03	1536.07	4.03
+ HYDROGRAPH AT	190Q	23.	4.10	2.	2.	2.	.01		
+ 3 COMBINED AT	*PNR5	558.	4.13	56.	51.	51.	.28		
HYDROGRAPH AT	190R	36.	4.10	3.	3.	3.	.01		

	2 COMBINED AT	PNR5	592.	4.13	59.	53.	53.	.29	
+	ROUTED TO	RPNR5	589.	4.17	59.	53.	53.	.29	
+									1526.32 4.20
+	HYDROGRAPH AT	190S	17.	4.10	1.	1.	1.	.01	
+	2 COMBINED AT	*PNR6	602.	4.17	60.	54.	54.	.30	
+	HYDROGRAPH AT	190T	259.	4.17	23.	21.	21.	.13	
+	2 COMBINED AT	PNR6	860.	4.17	83.	75.	75.	.43	
+	ROUTED TO	RPNR6	847.	4.20	83.	75.	75.	.43	
+									1519.04 4.27
+	HYDROGRAPH AT	190V	37.	4.07	3.	3.	3.	.02	
+	2 COMBINED AT	*PNR7	872.	4.20	86.	78.	78.	.45	
+	HYDROGRAPH AT	190U	54.	4.03	5.	5.	5.	.02	
+	ROUTED TO	R190U	54.	4.07	5.	5.	5.	.02	
+									1518.03 4.07
	2 COMBINED AT	PNR7	906.	4.20	91.	83.	83.	.47	

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

APPENDIX F

FLOOD PROFILES



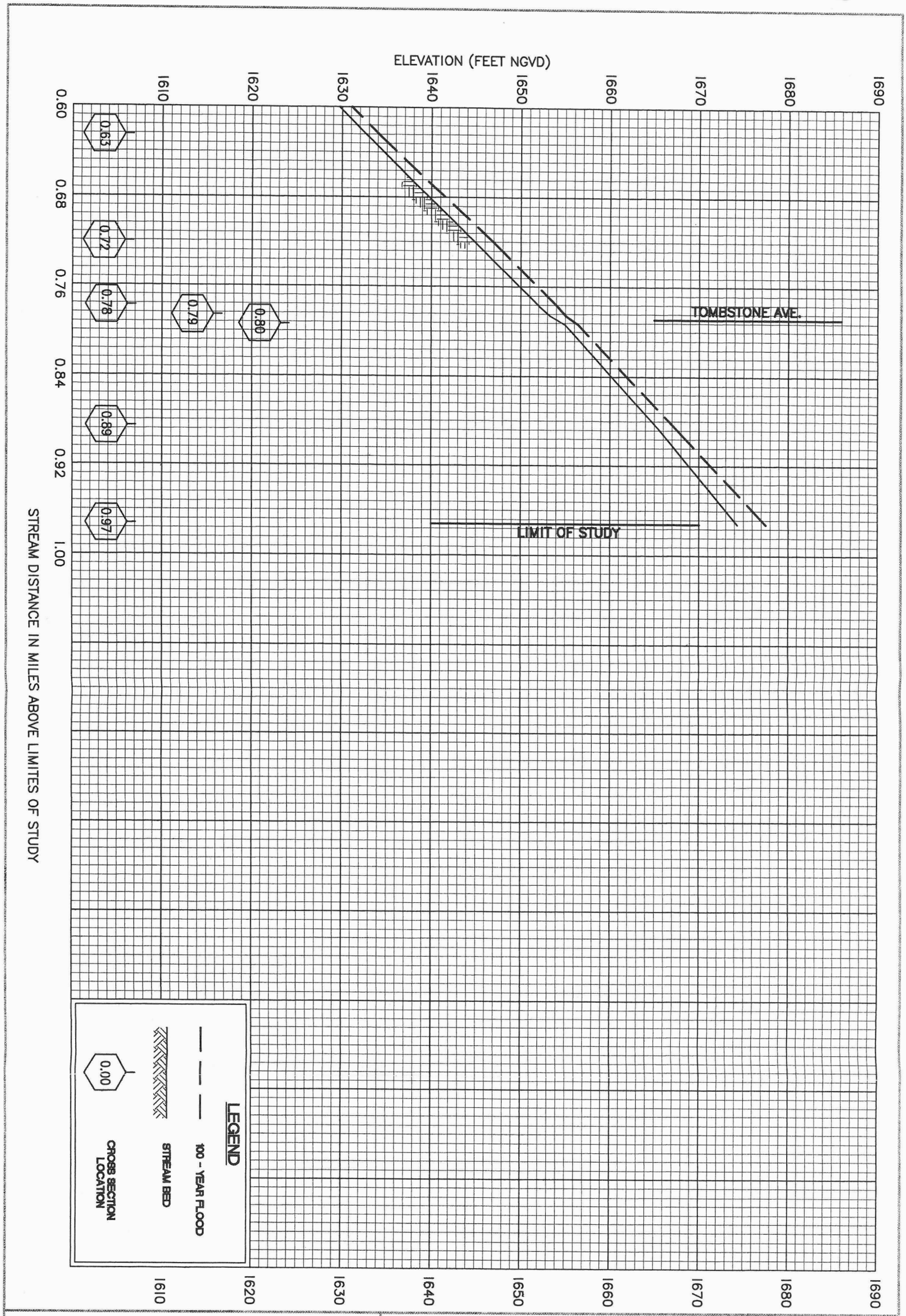
FLOOD PROFILES

POWDER WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

Files: POW-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 1 of 2)
Date: 02-28-1996



FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

FLOOD PROFILES

POWDER WASH

Files: POW-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 2 of 2)
Date: 02-28-1996

FLOOD PROFILES

CEREUS WASH

ELEVATION (FEET NGVD)

1660
1650
1640
1630
1620
1610
1600
1590
1580

CONFLUENCE OF TREVINO WASH

CONFLUENCE OF LOGAN WASH

CONFLUENCE OF CHUKAR WASH

3.42 3.50 3.59 3.69 3.74 3.82 3.93 4.00 4.06 4.10 4.19 4.23 4.32 4.39

LEGEND

100 - YEAR FLOOD

STREAM BED

0.00 CROSS SECTION LOCATION

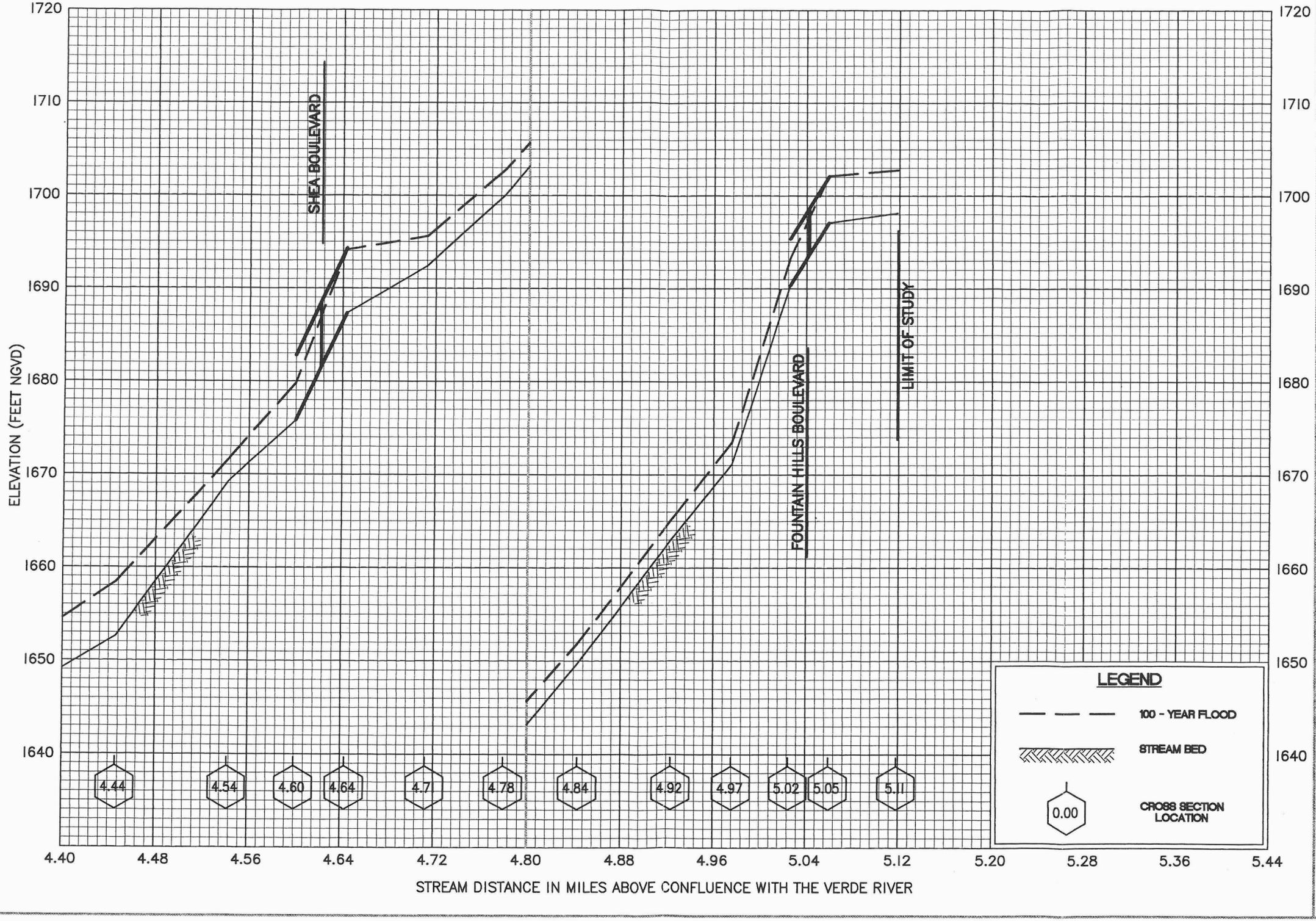
3.36 3.44 3.52 3.60 3.68 3.76 3.84 3.92 4.00 4.08 4.16 4.24 4.32 4.40

STREAM DISTANCE IN MILES ABOVE CONFLUENCE WITH THE VERDE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

File: CER-PRF.DWG FHPROF.HPC, FHPROF.PCP (Sheet 2 of 3)
Date: 02-28-1996



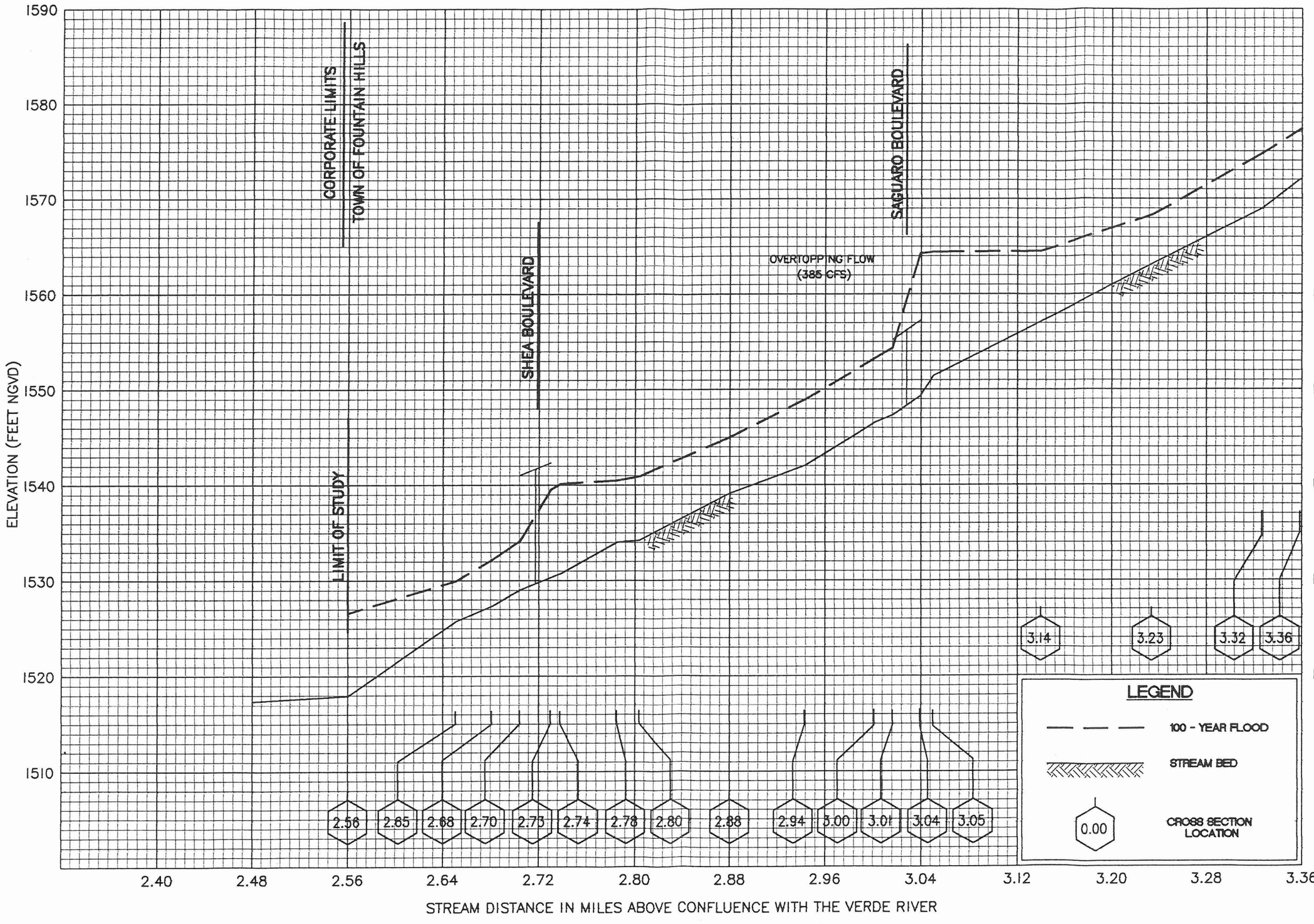
FLOOD PROFILES

CEREUS WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

Files: CER-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 3 of 3)
Date: 02-28-1996



FLOOD PROFILES

CEREUS WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

Files: CER-PRF.DWG FHPROF.HPC, FHPROF.PCP (Sheet 1 of 3)
Date: 02-28-1996

FLOOD PROFILES

LOGAN WASH

ELEVATION (FEET NGVD)

1700
1690
1680
1670
1660
1650
1640
1630
1620
1610

CONFLUENCE WITH CEREUS WASH

LIMIT OF STUDY

0.00 0.07 0.11 0.21 0.25 0.28 0.34 0.41 0.47 0.51 0.61 0.63

0.00 0.08 0.16 0.24 0.32 0.40 0.48 0.56 0.64 0.72 0.80 0.88

STREAM DISTANCE IN MILES ABOVE CONFLUENCE WITH CEREUS WASH

LEGEND

100 - YEAR FLOOD

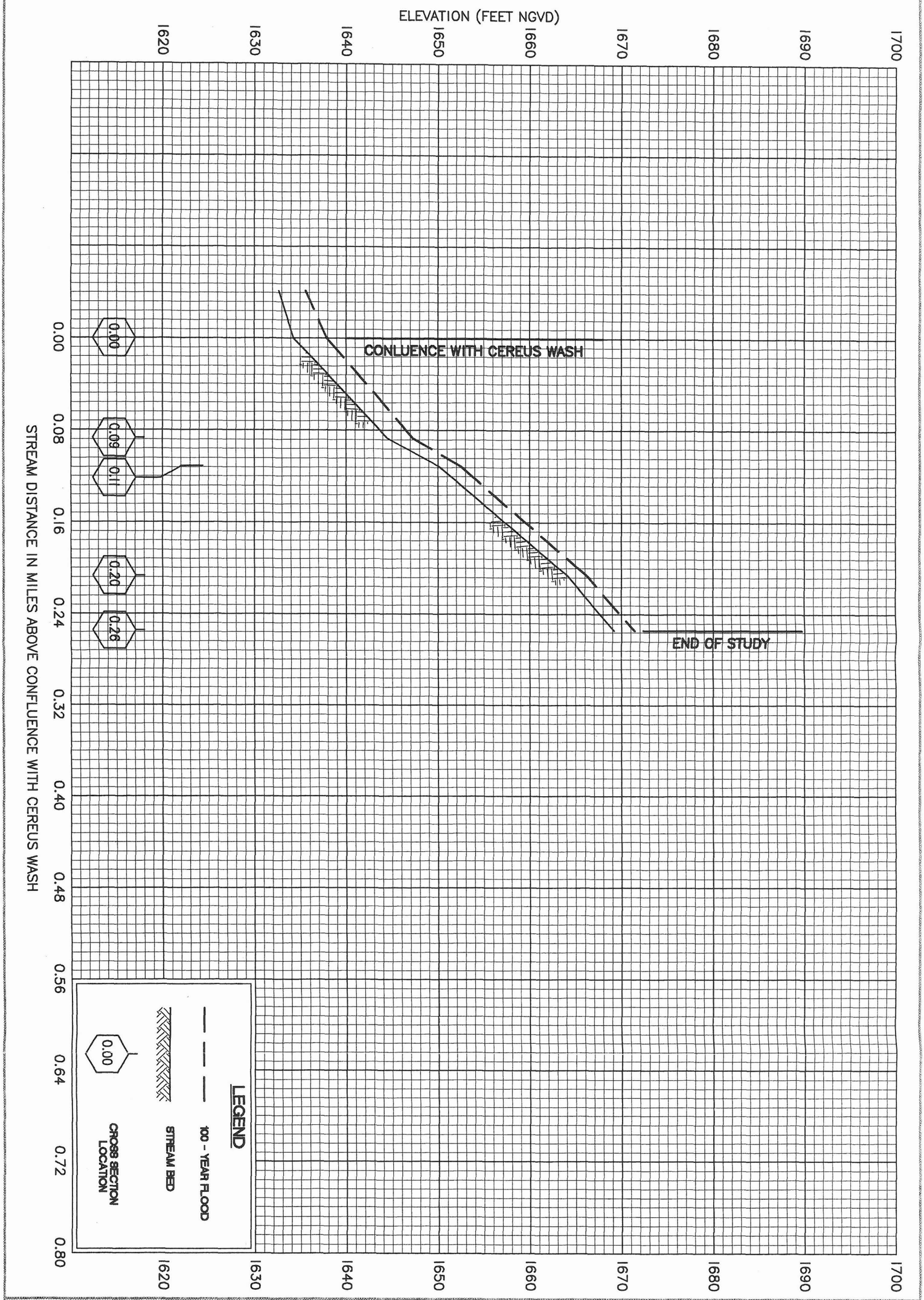
STREAM BED

0.00 CROSS SECTION LOCATION

FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

Files: LOG-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 1 of 1)
Date: 02-28-1996



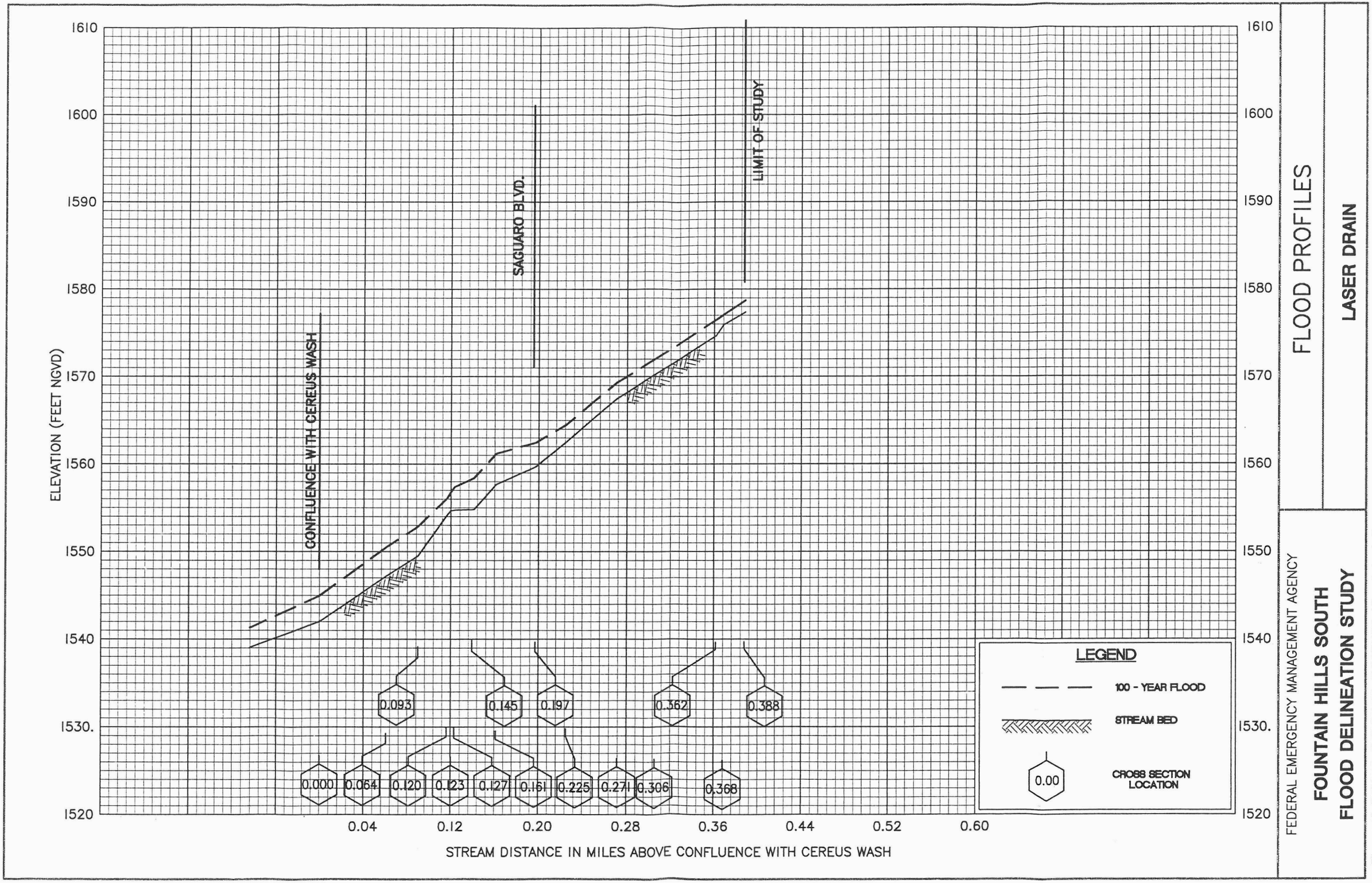
FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

FLOOD PROFILES

CHUCKAR WASH

Files: CHK-PRF.DWG, FHPLROF.HPC, FHPROF.PCP (Sheet 1 of 1)
Date: 02-28-1996



FLOOD PROFILES

LASER DRAIN

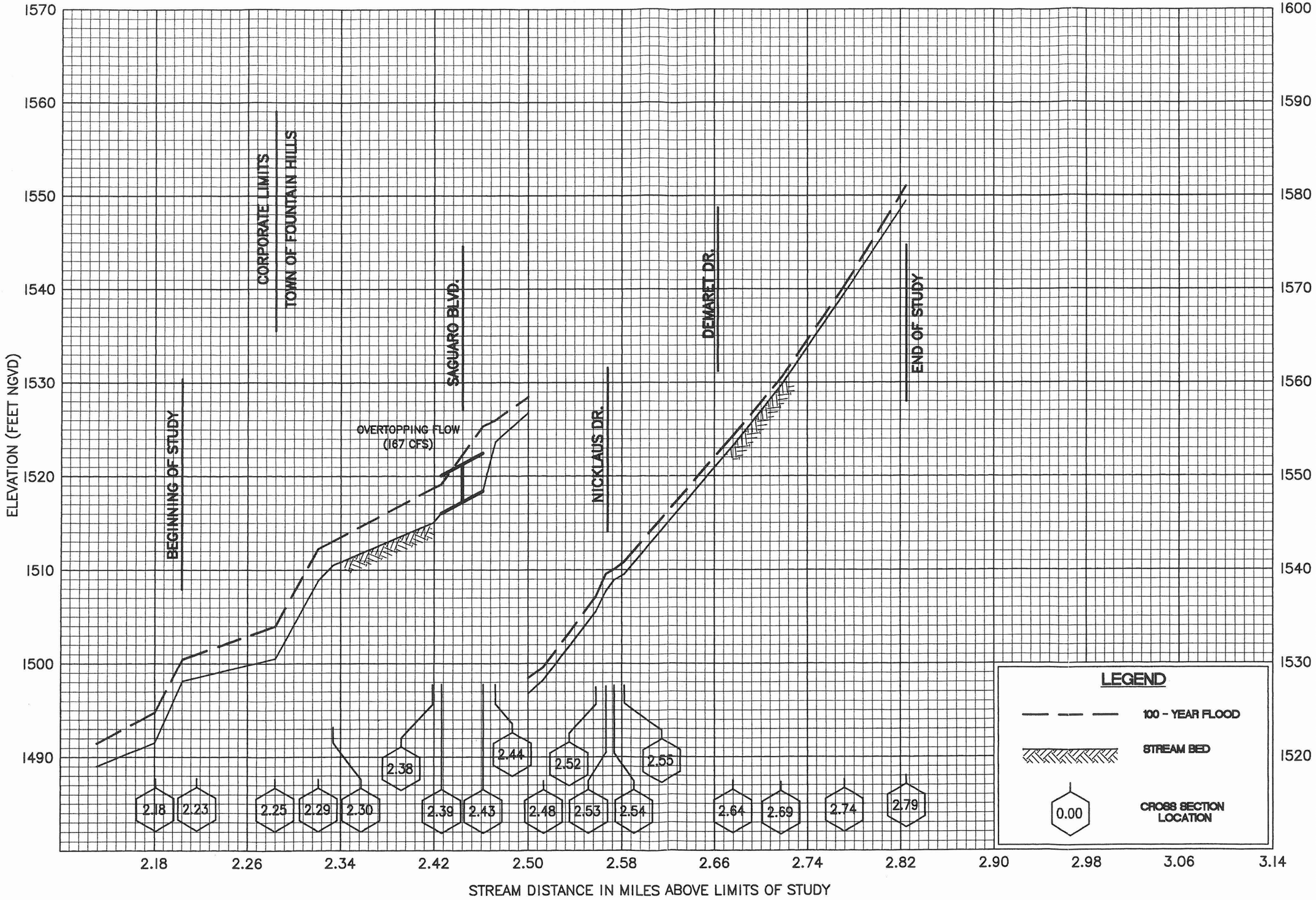
FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

Files: LAD-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 1 of 1)
Date: 08-15-1996

FLOOD PROFILES

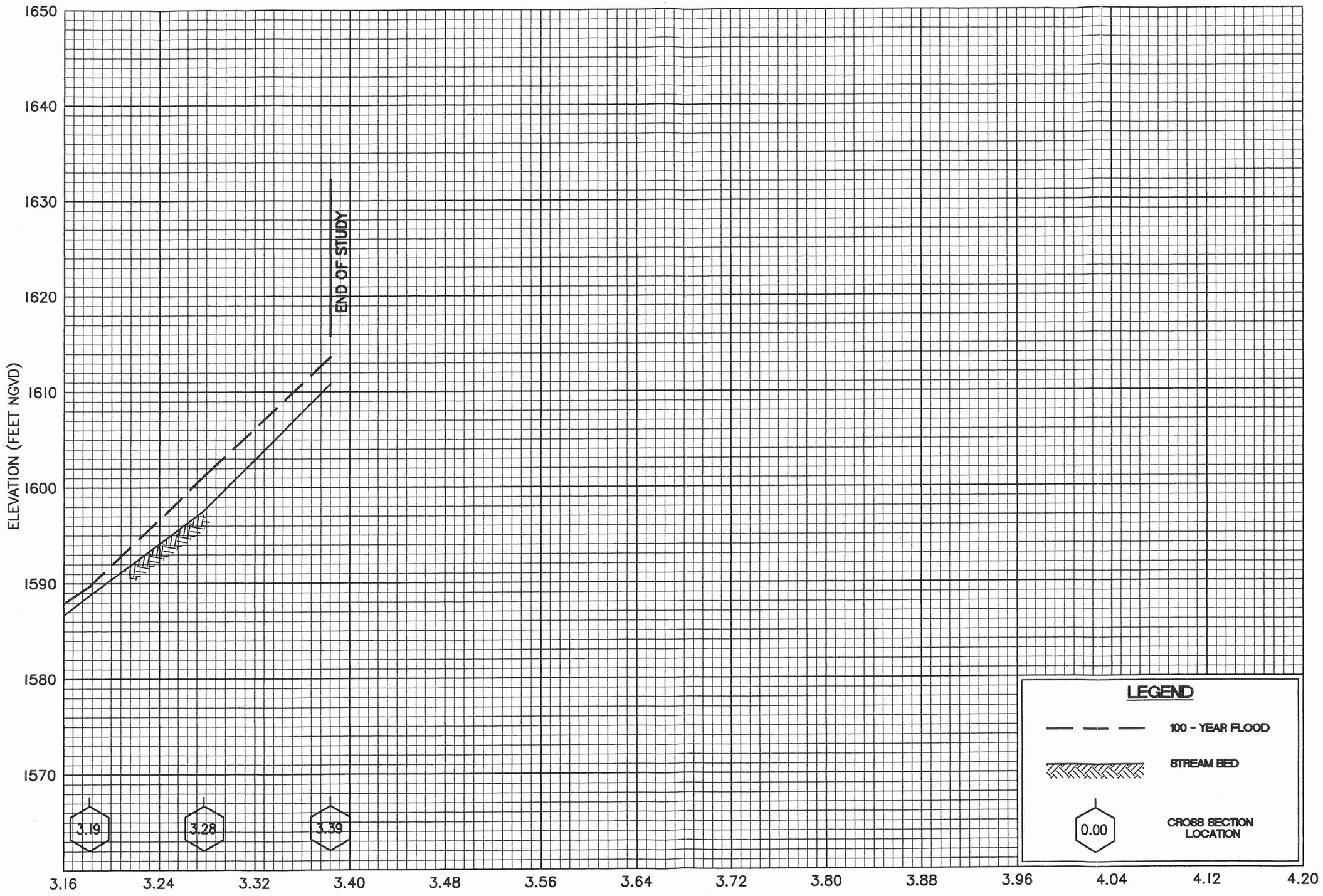
CYPRUS POINT WASH



FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

Files: CPW-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 1 of 1)
Date: 03-06-1996



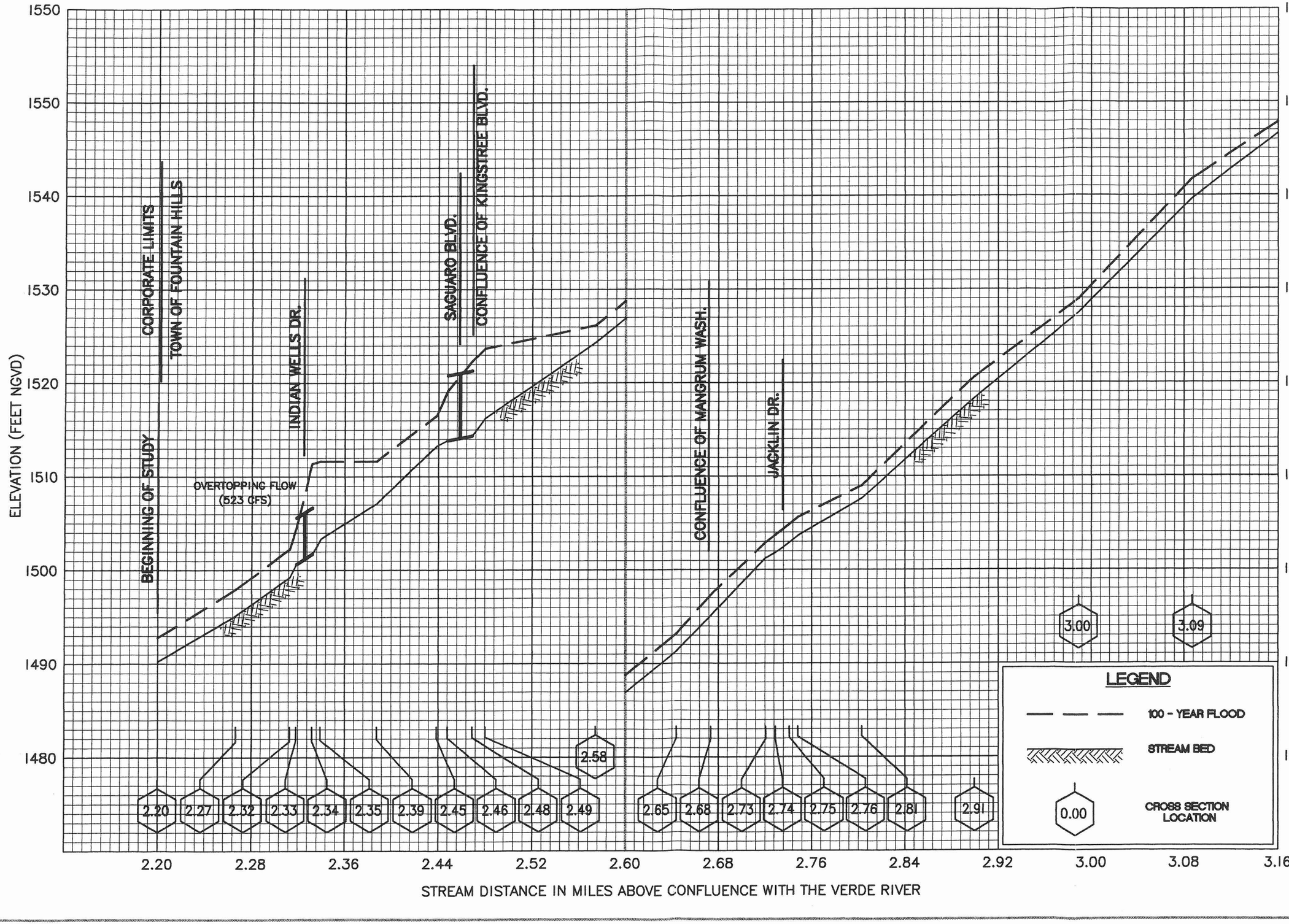
FLOOD PROFILES

JACKLIN WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

File: JKL-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 2 of 2)
Date: 02-28-1996



FLOOD PROFILES

JACKLIN WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

Files: JKL-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 1 of 2)
Date: 02-28-1996

FLOOD PROFILES

KINGSTREE WASH

ELEVATION (FEET NGVD)

1600
1590
1580
1570
1560
1550
1540
1530
1520

1640
1630
1620
1610
1600
1590
1580
1570
1560

CONFLUENCE WITH JACKLIN WASH

END OF STUDY

0.00 0.09 0.16 0.20 0.28 0.35 0.4 0.47 0.53 0.62 0.7 0.81

0.00 0.08 0.16 0.24 0.32 0.40 0.48 0.56 0.64 0.72 0.80 0.88 0.96

STREAM DISTANCE IN MILES ABOVE CONFLUENCE WITH JACKLIN WASH

LEGEND

100 - YEAR FLOOD

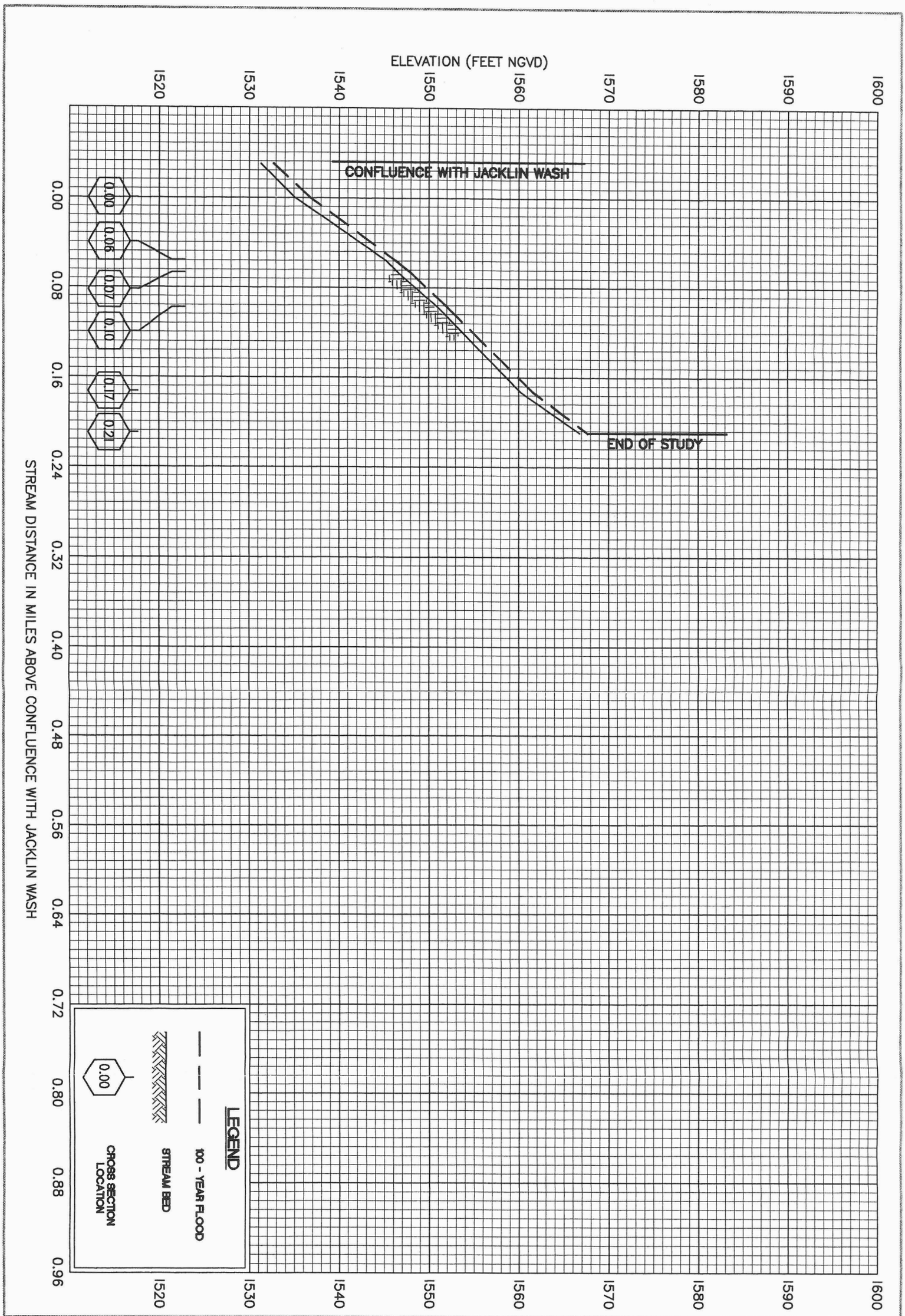
STREAM BED

0.00 CROSS SECTION LOCATION

FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

Files: KGS-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 1 of 1)
Date: 03-01-1996



FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

FLOOD PROFILES

MANGRUM WASH

Files: MAN-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 1 of 1)
Date: 03-01-1996

FLOOD PROFILES

EMERALD WASH

ELEVATION (FEET NGVD)

1580
1570
1560
1550
1540
1530
1520
1510
1500

1620
1610
1600
1590
1580
1570
1560
1550
1540

CORPORATE LIMITS
TOWN OF FOUNTAIN HILLS
SAGUARO BLVD.
INCA AVE.
BEGINNING OF STUDY
CONFLUENCE WITH MALTA DRAIN
OVERTOPPING FLOW (39 CFS)

2.28 2.30 2.35 2.39 2.45 2.54 2.64 2.73 2.82 2.92 2.99 3.00 3.03 3.04 3.11 3.19

LEGEND
100 - YEAR FLOOD
STREAM BED
0.00 CROSS SECTION LOCATION

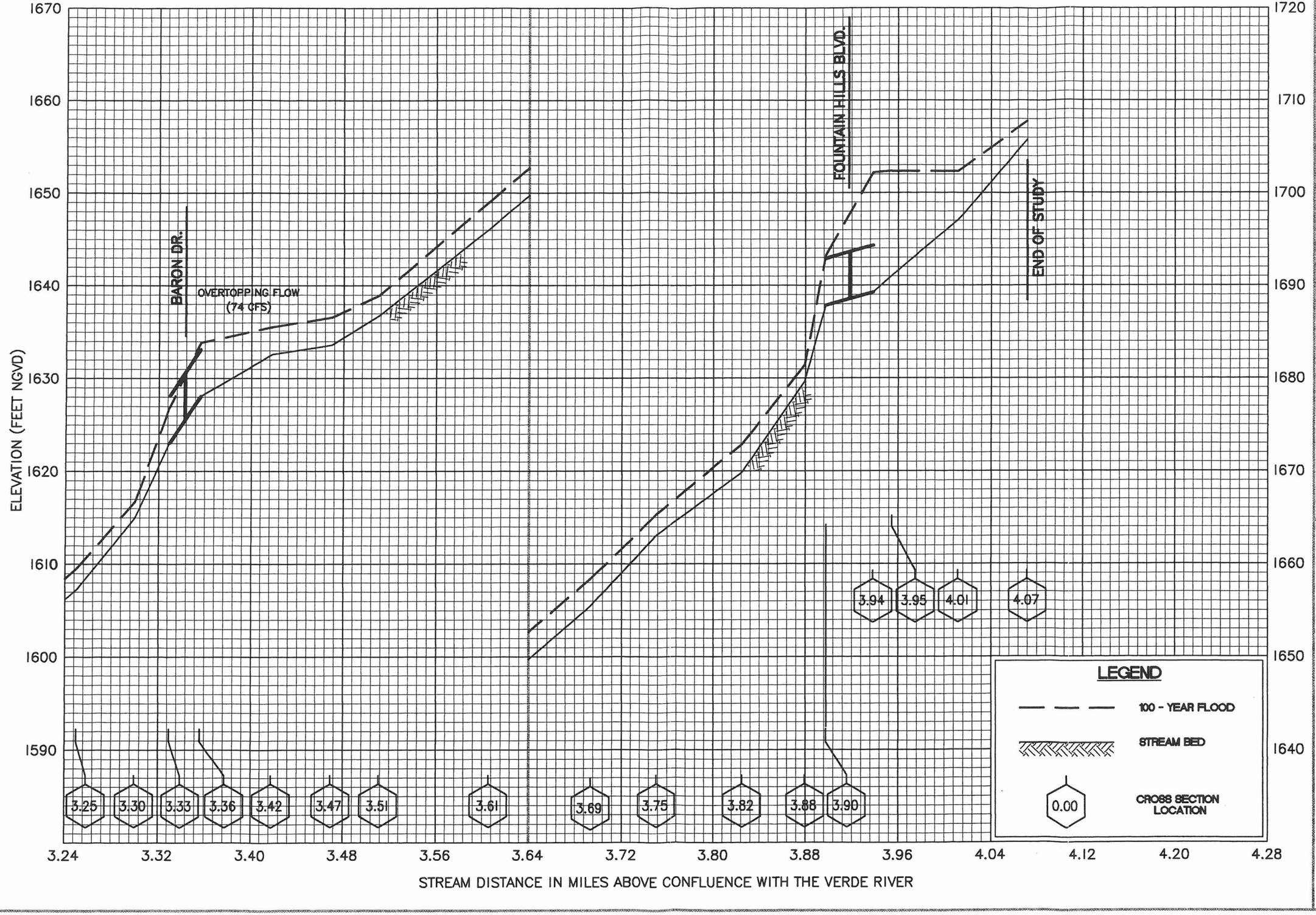
2.28 2.36 2.44 2.52 2.60 2.68 2.76 2.84 2.92 3.00 3.08 3.16 3.24

STREAM DISTANCE IN MILES ABOVE CONFLUENCE WITH THE VERDE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

Files: EMR-PRF.DWG,FHPROF.HPC, FHPROF.PCP (Sheet 1 of 2)
Date: 03-01-1996



FLOOD PROFILES

EMERALD WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

Files: EMR-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 2 of 2)
Date: 03-01-1996

FLOOD PROFILES

MALTA DRAIN

ELEVATION (FEET NGVD)

1580 1570 1560 1550 1540 1530 1520 1510 1500

1620 1610 1600 1590 1580 1570 1560 1550 1540

SAGUARO BLVD.
RAND DR.
QUINTO DR.
MISSINO BELL CRT.
DAWN RIDGE CRT.
OASIS DR.
NIGHTINGALE CR.
END OF STUDY

OVERTOPPING FLOW
(143 CFS)

0.00 0.03 0.06 0.07 0.16 0.17 0.18 0.19 0.27

0.36 0.40 0.41 0.42 0.46 0.47 0.48

0.55 0.56 0.57 0.64 0.65 0.66 0.71 0.72 0.73 0.78

LEGEND

100 - YEAR FLOOD

STREAM BED

0.00 CROSS SECTION LOCATION

0.00 0.08 0.16 0.24 0.32 0.40 0.48 0.56 0.64 0.72 0.80 0.88 0.96

STREAM DISTANCE IN MILES ABOVE CONFLUENCE WITH EMERALD WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

Files: MAL-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 1 of 1)
Date: 03-06-1996

FLOOD PROFILES

COLONY WASH

ELEVATION (FEET NGVD)

1590
1580
1570
1560
1550
1540
1530
1520
1510

1610
1600
1590
1580
1570
1560
1550
1540
1530

CORPORATE LIMITS
TOWN OF FOUNTAIN HILLS

BEGINNING OF STUDY

PANORAMA DR.

SAGUARO BLVD.

OVERTOPPING FLOW
(255 CFS)

2.52 2.54 2.59 2.68 2.78 2.84 2.87 2.88 2.91 2.92 2.97 3.02

3.12 3.22 3.27 3.28 3.32 3.33 3.41 3.47

LEGEND

100 - YEAR FLOOD

STREAM BED

0.00 CROSS SECTION LOCATION

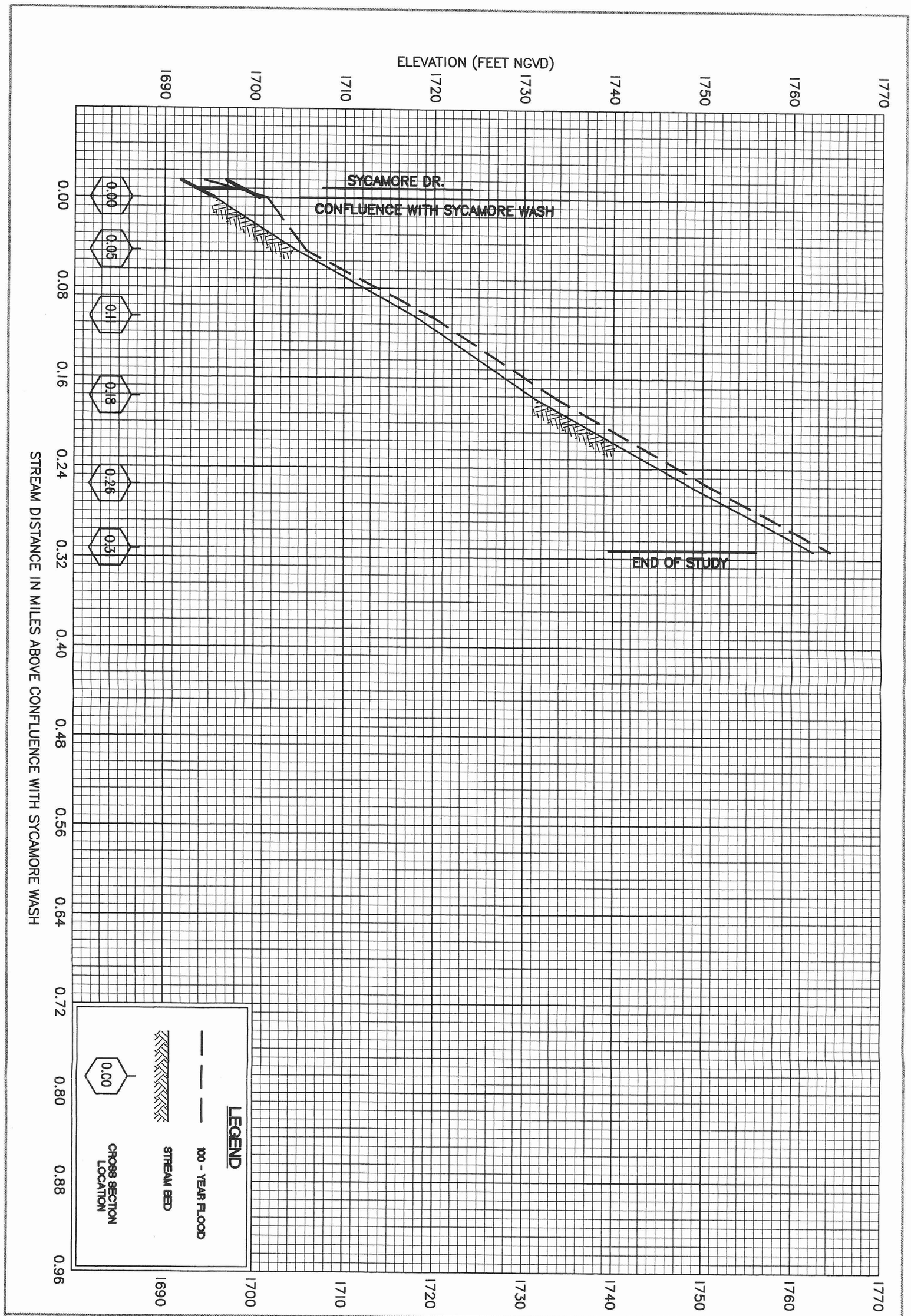
2.52 2.60 2.68 2.76 2.84 2.92 3.00 3.08 3.16 3.24 3.32 3.40 3.48

STREAM DISTANCE IN MILES ABOVE CONFLUENCE WITH THE VERDE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

Files: COL-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 1 of 2)
Date: 03-06-1996



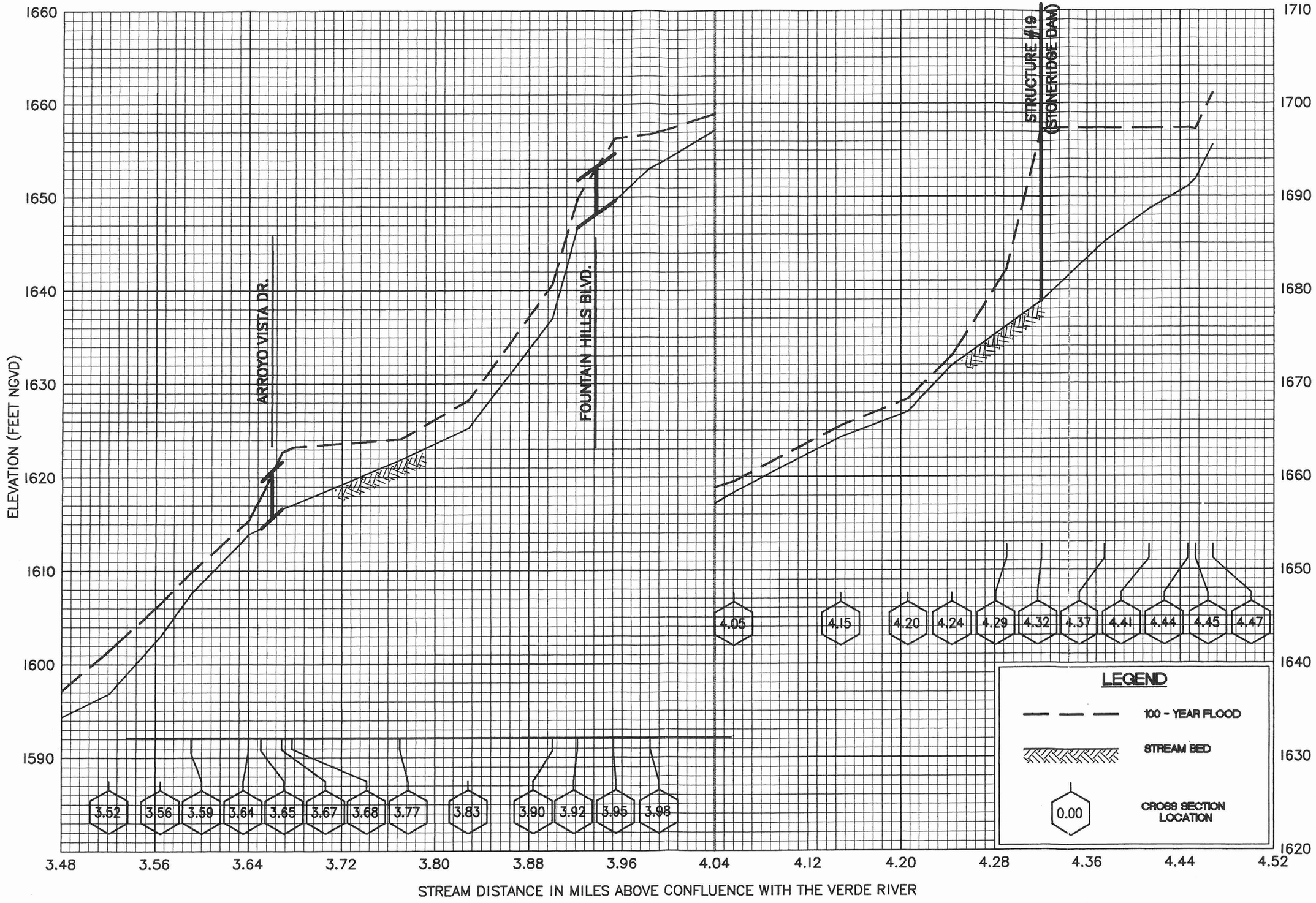
FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

FLOOD PROFILES

GREYSTONE WASH

Files: GRY-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 1 of 1)
Date: 03-06-19956



FLOOD PROFILES

COLONY WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

Files: COL-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 2 of 2)
Date: 03-06-1996

FLOOD PROFILES

FOUNTAIN CHANNEL

ELEVATION (FEET NGVD)

1630
1620
1610
1600
1590
1580
1570
1560
1550

CONFLUENCE WITH COLONY WASH
COYOTE DR.
EL LAGO BLVD.
END OF STUDY

0.00 0.08 0.11 0.12 0.13 0.14 0.20 0.21 0.23 0.24 0.32 0.41 0.50

0.00 0.08 0.16 0.24 0.32 0.40 0.48 0.56 0.64 0.72 0.80 0.88 0.96

STREAM DISTANCE IN MILES ABOVE CONFLUENCE WITH COLONY WASH

LEGEND

100 - YEAR FLOOD

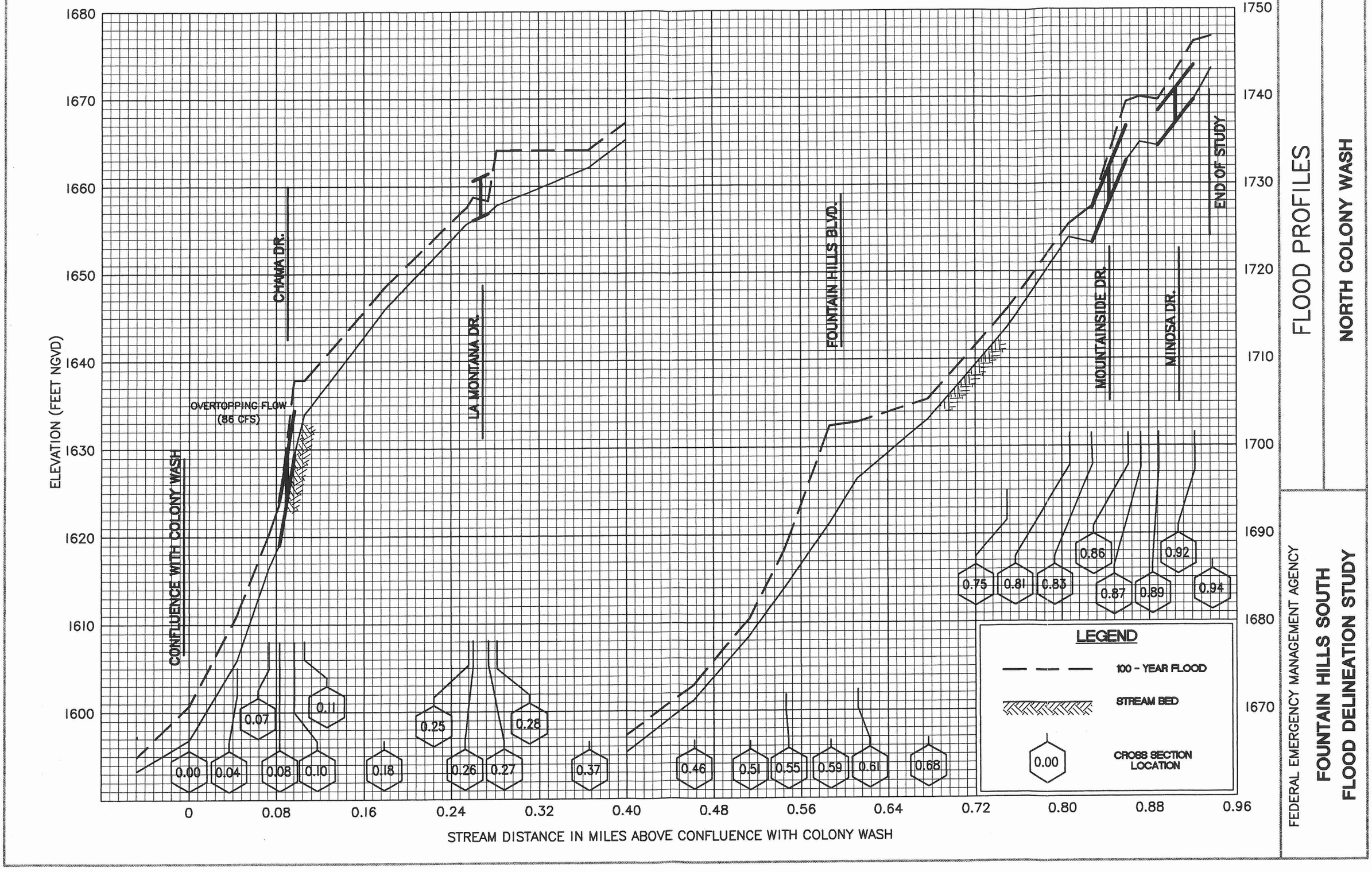
STREAM BED

0.00 CROSS SECTION LOCATION

FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

Files: FCH-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 1 of 1)
Date: 03-06-1996



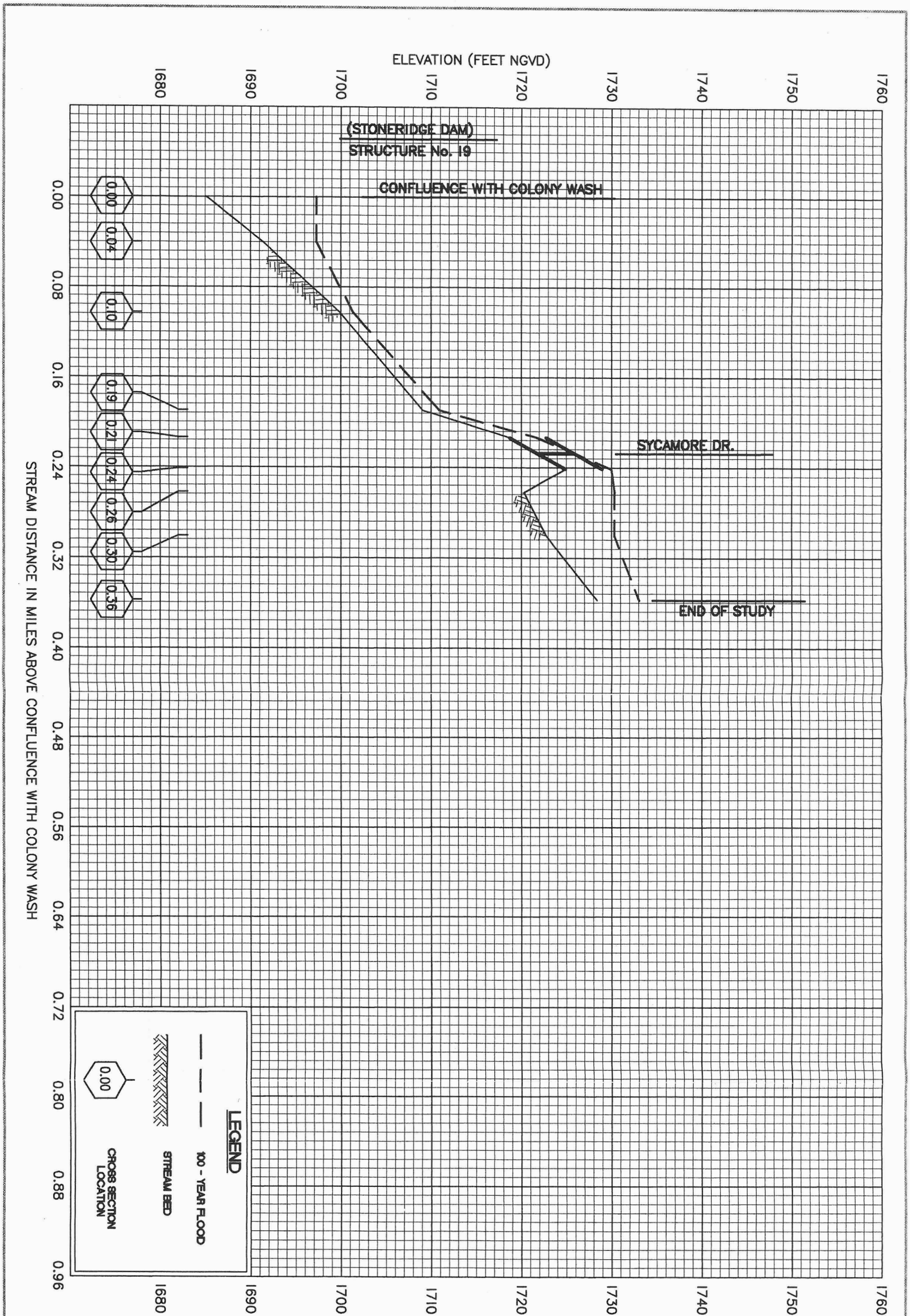
FLOOD PROFILES

NORTH COLONY WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

Files: NCW-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 1 of 1)
Date: 03-06-1996



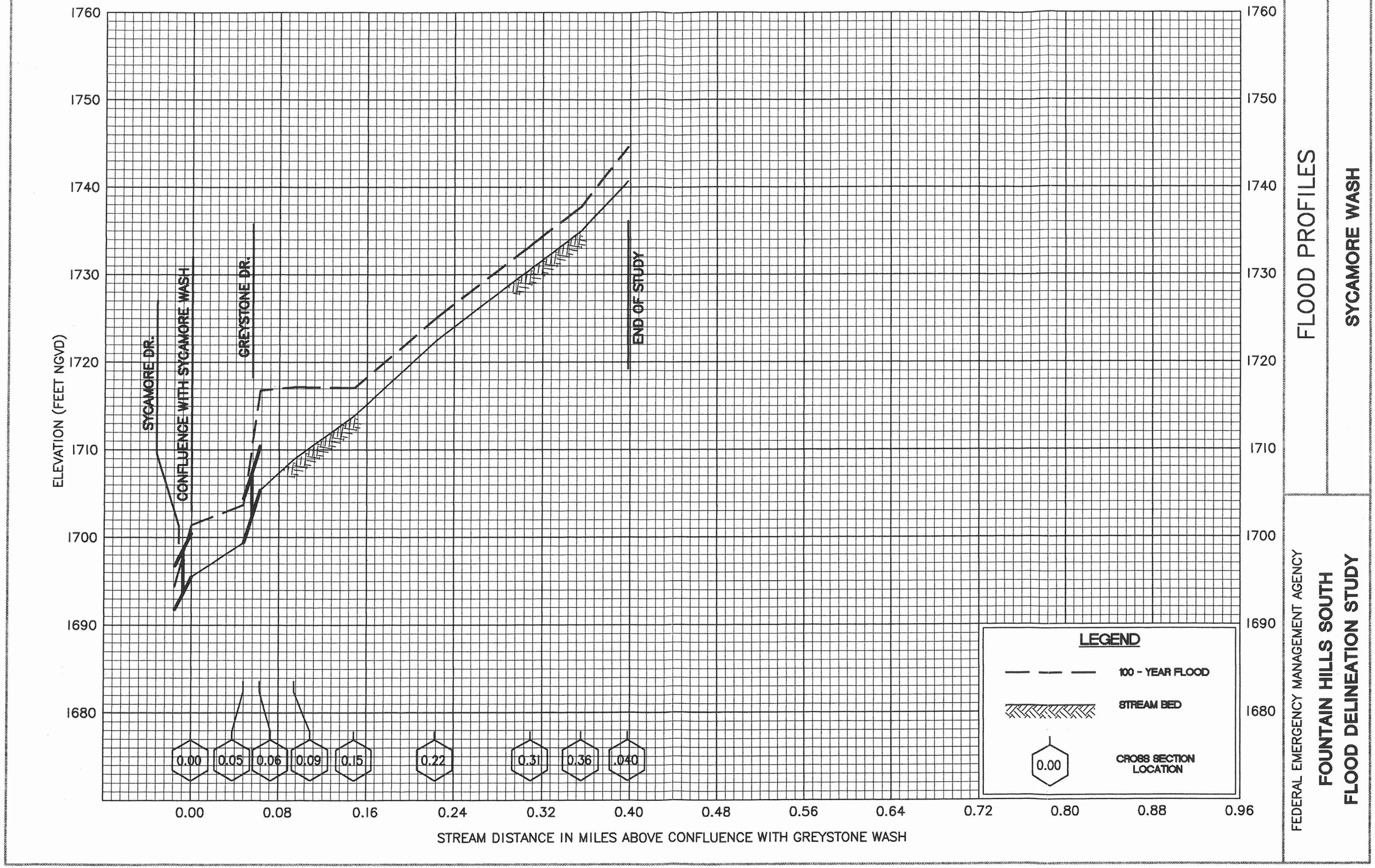
FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

FLOOD PROFILES

SUNBURST WASH

Files: SUN-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 1 of 1)
Date: 03-06-1996



FLOOD PROFILES

SYCAMORE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

FOUNTAIN HILLS SOUTH
FLOOD DELINEATION STUDY

Files: SYC-PRF.DWG, FHPROF.HPC, FHPROF.PCP (Sheet 1 of 1)
Date: 03-06-1996

APPENDIX G

FLOODPLAIN AND FLOODWAY MAPS (REDUCED SIZE)

FLOOD INSURANCE STUDY FOR

THE TOWN OF FOUNTAIN HILLS (SOUTH)

MARICOPA COUNTY, ARIZONA

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FLOOD INSURANCE STUDY FOR

THE TOWN OF FOUNTAIN HILLS (SOUTH)

MARICOPA COUNTY, ARIZONA

This is to certify that all work accomplished in the conduct of this study was done in accordance with the Statement of Work and General Provision of Contract FCD 92-05, and all amendments thereto, together with all such modifications, either written or oral, as the Project Officers and/or the Contracting Officer or their representatives have directed, as such modifications affect this contract, and that all such work has been accomplished in accordance with sound and accepted engineering practice within the contract provision for respective phases of the work.

Signed: _____

Samuel E. Kao, Ph.D., P.E.
Vice President
AGK Engineers, Inc.

_____

Hernan A. Aristizabal, P.E.
Project Engineer
AGK Engineers, Inc.

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards for various washes and tributaries (as listed in Section 2.1), within the south portion of the incorporated area of the Town of Fountain Hills, Maricopa County, Arizona; and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for the study area that will be used to establish actuarial flood insurance rates and assist the County Flood Control District and local officials in their efforts to promote sound floodplain management. Minimum flood management requirements for participation in the National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria takes precedence, and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority for Study

The sources of authority for this Flood Control Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were performed by AGK Engineers, Inc. (AGK) for the Flood Control District of Maricopa County, under Contract FCD 92-05. The hydrologic analyses were completed in November 1994, and the hydraulic analyses were completed in July 1995. Both analyses were revised in November 1996 to include the study of Laser Drain.

1.3 Coordination and Acknowledgments

Due to the significant size of the study area, the north half and the south half of the Town were studied separately by two different engineering consultants. The north half Study Contractor is George V. Sabol Consulting Engineers, Inc. (GVSCE). Close coordination was maintained between GVSCE and AGK to ensure the consistency on study methodology, assumptions and report format.

Coordination of information also occurred between the engineering consultants, the Town of Fountain Hills, the Flood Control District of Maricopa County and other appropriate governmental agencies. The following agencies were contacted for information and comments during the study:

- Arizona Department of Water Resources (ADWR)
- Arizona Department of Transportation (ADOT)
- Flood Control District of Maricopa County (FCDMC)
- Maricopa County Department of Transportation (MCDOT)
- Town of Fountain Hills

Vertical control data, used to establish the network of elevation reference marks, were obtained from the U.S. Geological Survey and the U.S. National Geodetic Survey.

1.4 Public Notification and Contact

An initial public meeting was held to inform the residents of Fountain Hills of this study and contact names for the north and south study portions. The study was publicized in local newspapers, and subsequent responses from the public were noted or discussed. Letters concerning Right-of-Entry for surveying purposes were sent to the appropriate property owners along the study washes. A final public meeting is intended to present the study results prior to FEMA submittal.

2.0 AREA STUDIED

2.1 Scope of Study

Riverine flooding of the following washes and tributaries was studied by detailed methods:

WASHES	TRIBUTARIES
Powder Wash	None
Cereus Wash	Chukar Wash Logan Wash
Cyprus Point Wash	None
Jacklin Wash	Kingstree Wash Mangrum Drain
Emerald Wash	None
Malta Drain	None
Colony Wash	Sycamore Wash Greystone Wash Sunburst Wash North Colony Wash Fountain Channel
Laser Drain	None

The area studied was selected with priority given to all known flood hazard areas. The limits of study for each wash and tributary are shown on the Floodplain and Floodway Maps.

2.2 Study Area Description

The study area and its associated watershed is located at the Town of Fountain Hills, within Sections 14, 15, 16, 17, 20, 21, 22, 23, 26, 27, and 28, Township 3 North, Range 6 East, Gila and Salt River Base and Meridian, Maricopa County, Arizona. (See Figure 1)

The Town of Fountain Hills is an incorporated community with a population of approximately 20,000 people. The Town is surrounded by the McDowell Mountains on the west, Fort McDowell Indian Community on the north and east, and the Salt River Pima Maricopa Indian Community on the south. Topography of the study area is generally desert hill slopes in various phases of urbanization.

The study watershed is approximately 7.6 square miles, with a general drainage direction from west to east toward the Verde River. Washes in the study area are characterized as well defined channels with steep banks and grades. However, the natural drainage pattern of the study area has been somewhat altered since the development of this community in the early 1970's. In addition, roadway and culvert construction in conjunction with urbanization have greatly affected runoff peak discharges throughout the study area.

Climate of the study area is characterized by hot summer, mild winter and infrequent rainfall. The mean annual rainfall is about 8.5 inches, falling normally in two seasons. One season, primarily resulting from local convective storms, lasts from July to mid-September; the other season, mainly formed by cyclonic (frontal) storms, extends from December through March. Of the two types of storms, the

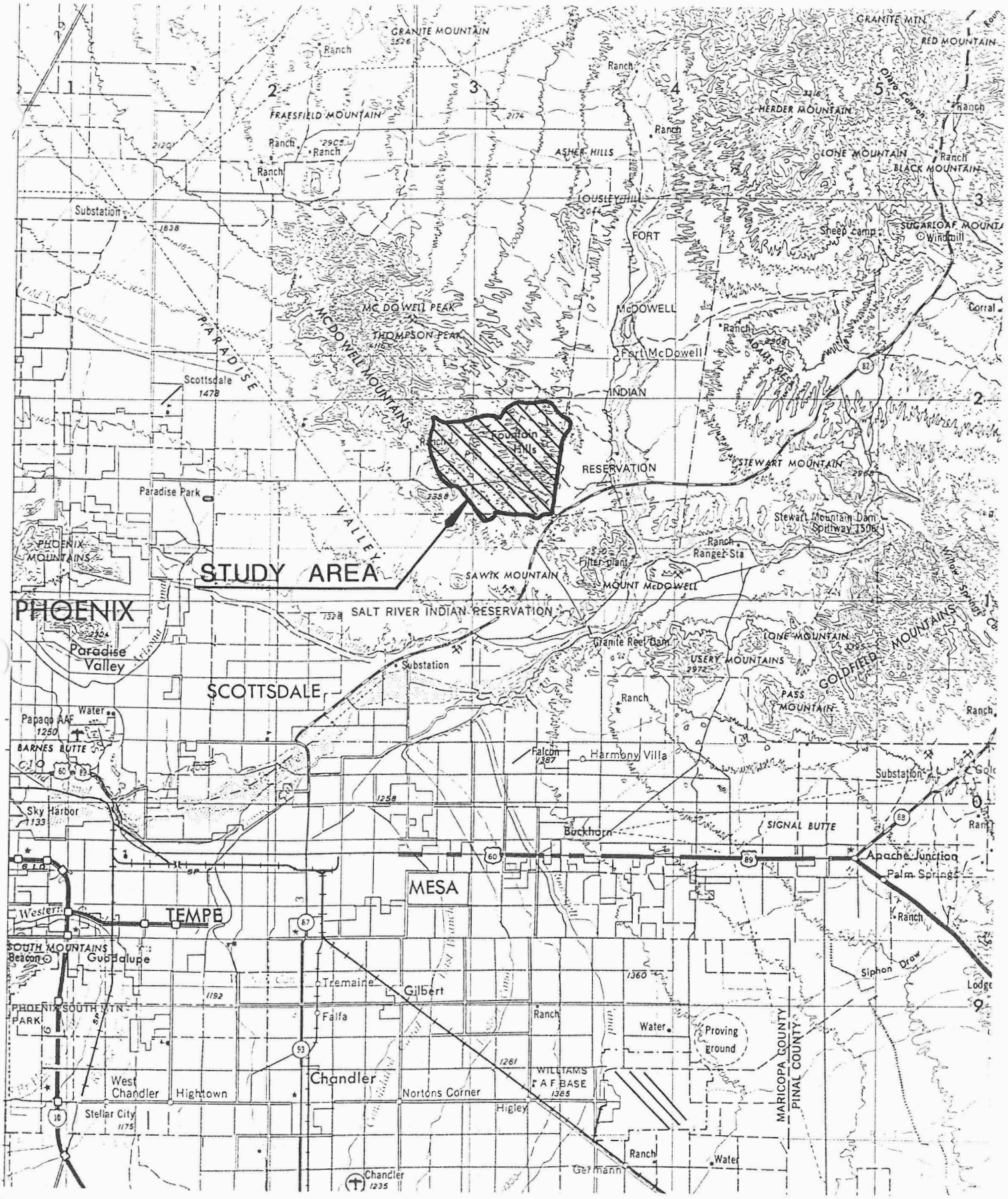

FIGURE 1

VICINITY MAP

summer convective storm is considered to be the more critical flood producing event in this area.

In the early 1970's when urban development commenced in Fountain Hills, a master drainage study was performed by Trico International, Inc. to quantify flows in the study area. However, the assumptions, methodology and procedures used in that study are incompatible with the current criteria set forth by the District and the Federal Emergency Management Agency (FEMA).

2.3 Principal Flood Problems

One of the principal flood problems within the study area is the existence of culverts which comprise constrictions in the floodplain. There are 33 culverts ranging from 18" x 28" CMP-Arch to multiple barrel concrete boxes. Many of them would be overtopped and causing roadways to be unsafe for access during a 100-year storm. The most critical locations of these roadway crossings are as follows:

- Colony Wash at Saguaro Boulevard
- Cyprus Point Wash at Saguaro Boulevard
- Jacklin Wash at Saguaro Boulevard
- Emerald Wash at Saguaro Boulevard
- North Colony Wash at Chama Drive
- Ironwood Wash at Cholla Drive
- Malta Drain at Saguaro Boulevard
- Fountain Channel at El Lago Boulevard and Kiwanis Drive

In addition, the Kingstree Wash channel daylights at the intersection of Inca Avenue and Kingstree Boulevard. From that point eastward, the watercourse of Kingstree Wash coincides with the roadway alignment of Kingstree Boulevard. Thus, that segment of Kingstree Boulevard would be unsafe for traffic during flood events.

2.4 Flood Protection Measures

There is a major flood protection structure, namely Stoneridge Dam (Structure No. 19) within the study area. This dam was constructed in the 1970's and is regulated by the Arizona Department of Water Resources (ADWR). The structure was designed to pass the 100-year flow through the principal spillway (culvert) only. The emergency spillway was designed to pass the ½ PMF.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the study area, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood event of a magnitude which is expected to be equaled or exceeded once on the average during a 100-year period (recurrence interval) has been selected as having special significance for floodplain management and for flood insurance rates. This event, commonly termed the 100-year flood, has a 1 percent chance of being equaled or exceeded during any one year. Although the recurrence interval represents the long term **average** period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods of greater than one year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the study area at the time of this study's completion. The analyses reported herein reflect current conditions in the watersheds of the flooding sources. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for the study washes and their tributaries. In the absence of historical gaging data in this area, the peak flows in this study were obtained through

hydrologic modeling. The hydrologic modeling was performed by means of the HEC-1 computer program as developed by the U.S. Army Corps of Engineers. The estimation procedures for model parameters and components were generally based on the *Hydrologic Design Manual* published by the Flood Control District of Maricopa County (Reference 8). A comprehensive discussion of the derivation of input data, assumptions and procedures utilized for the hydrologic analyses are contained in a separate report entitled, *Fountain Hills South Floodplain Delineation Study, Technical Data Notebook, Hydrology,* prepared by AGK Engineers, Inc.

The estimated 100-year, 6-hour peak flow rates are tabulated in **Table 1**. At several locations, the peak discharges shown in **Table 1** do not match the discharges obtained from the hydrologic analysis. This is due to the addition or subtraction of split flows at these locations based on more detailed hydraulic analyses. These locations are identified in **Table 1** by appropriate foot notes. The hydrologic analyses are not revised to include these flow splits because only short reaches of watercourse are affected and the splits are therefore not hydrologically significant.

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations for a flood of the 100-year recurrence interval.

Cross-section data for the backwater analyses were determined by obtaining digitized cross sections from topographic maps, at a scale of 1 inch = 200 feet and 2-foot contour intervals, prepared specifically for this project by Kenney Aerial

Mapping Inc. in 1991 under a subcontract with Anderson-Nelson, Inc., who was under contract with the Town of Fountain Hills. Horizontal and vertical controls were set by Anderson-Nelson, Inc. All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Locations of selected cross-sections used in the hydraulic analyses and the elevation reference marks (ERMs) are shown on the Floodplain and Floodway Maps.

Detailed methods were used to determine the water-surface elevations for the 100-year flood, using the U.S. Army Corps of Engineers HEC-2 step backwater computer program (Reference 10).

TABLE 1

SUMMARY OF DISCHARGES

Flood Source and Location	Hydrologic Concentration Point	Drainage Area (sq. miles)	100-year Peak Discharge (cfs)
Powder Wash			
At downstream end of study	PW6	0.32	583
At Leo Drive wet crossing	*PW6	0.30	560
Immediately downstream from Leo Drive	PW5	0.27	529
At Leo Drive culvert	SPW4	0.22	474
Upstream from culvert	*PW4	0.20	502
At Powderhorn Drive	*PW3	0.16	423
Cereus Wash			
At downstream end of study	CER14	2.62	2936
Downstream from Shea Boulevard	*CER14	2.62	2935
At Shea Boulevard crossing	SCER13	2.60	2933
Upstream from Shea Boulevard	CER13	2.60	2994
Above confluence with Last Trail Drain	*CER12	2.52	2958
Above confluence with Laser Drain	*CER11	2.30	2824
At Saguaro Boulevard crossing	SCER9	2.28	2813
Upstream from Saguaro Boulevard	CER9	2.28	2868
Above small drain crossing Shea Boulevard	CER8	2.22	2842
Above confluence with Trevino Wash	*CER8	2.12	2770
Above confluence with unnamed wash	*CER7	1.97	2682
Above confluence with Logan Wash	*CER6	1.74	2451
Above confluence with Chuckar Wash	*CER5	1.42	2078
Above confluence with Walnut Wash	*CER4	0.18	321
At Shea Boulevard crossing	SCER3	0.16	291
Upstream from Shea Boulevard	CER3	0.16	299
Downstream from Fountain Hills Boulevard	CER2	0.08	140

TABLE 1

SUMMARY OF DISCHARGES

Flood Source and Location	Hydrologic Concentration Point	Drainage Area (sq. miles)	100-year Peak Discharge (cfs)
At Fountain Hills Boulevard	SCER1	0.08	132
Upstream from Fountain Hill Boulevard	CER1	0.08	172
Logan Wash			
Above confluence with Cereus Wash	LOG3	0.19	435
Upstream from Saguaro Boulevard	*LOG2	0.12	296
Above confluence with unnamed wash	124A	0.07	165
Chuckar Wash			
Above confluence with Cereus wash	CHU3	0.28	573
Cyprus point Wash			
At Indian Reservation Boundary	CP4	0.15	331
At Saguaro Boulevard crossing	SCP3	0.14	303
Upstream from Nicklaus Drive	*CP2	0.09	193
Jacklin Wash			
At Indian Reservation Boundary	JKL11	0.66	977
At Indian Wells Drive crossing	SJKL9	0.66	969
Upstream from Indian Wells Drive	JKL9	0.66	972
At Saguaro Boulevard crossing	SJKL8	0.63	960
Above confluence with Kingstree Wash	*JKL8	0.41	917[a]
Above confluence with Mangrum Wash	*JKL7	0.41	352
At upstream end of study	JKL6	0.27	329

[a] After adding split flow from Kingstree Boulevard

TABLE 1

SUMMARY OF DISCHARGES

Flood Source and Location	Hydrologic Concentration Point	Drainage Area (sq. miles)	100-year Peak Discharge (cfs)
Kingstree Wash			
Above confluence with Jacklin Wash	KGT6	0.22	160 [b]
	KGT6		166 [b]
	KGT6		186 [b]
Upstream from Kingstree Drain	KGT6		480
At Upstream of Kingstree Boulevard	KGT5	0.17	357
Above Inca Avenue	*KGT4	0.13	279
Upstream end of study	*KGT3	0.12	263
[b] 480 After subtracting split flow to Jacklin Wash			
Mangrum Wash			
Above confluence with Jacklin Wash	MNG3	0.12	562 [c]
Upstream end of study	*MNG2	0.09	202
[c] After adding split flow from Kingstree Boulevard			
Emerald Wash			
At Indian Reservation Boundary	EMRMLT		907
Above confluence with Malta Drain	EMR13	0.61	536
At Saguaro Boulevard crossing	SEMR12	0.61	529
Upstream from Saguaro Boulevard	*EMR12	0.51	357
At Inca Avenue crossing	SEMR10	0.42	239
Upstream from Inca Avenue	EMR10	0.42	325
Above confluence with unnamed wash	EMR9	0.41	302

TABLE 1

SUMMARY OF DISCHARGES

Flood Source and Location	Hydrologic Concentration Point	Drainage Area (sq. miles)	100-year Peak Discharge (cfs)
Downstream from Baron Drive	EMR8	0.36	214
At Baron Drive crossing	SEMR7	0.35	213
Upstream from Baron Drive	EMR7	0.35	495
Between Baron Drive and Fountain Hills Boulevard	*EMR6	0.32	463
Downstream from Fountain Hills Boulevard	EMR5	0.25	335
At Fountain Hills Boulevard crossing	SEMR4	0.17	207
Upstream from Fountain Hills Boulevard	*EMR4	0.17	326
Malta Drain			
Above confluence with Emerald Wash	MLT6	0.24	466
At Saguaro Boulevard crossing	SMLT5	0.20	440
Upstream from Saguaro Boulevard	MLT5	0.20	431
Above Rand Drive crossing	MLT4	0.17	366
Colony Wash			
At Indian Reservation Boundary	*COL10	3.52	1333
Downstream from Panorama Drive	CLN9	3.50	1327
At Panorama Drive crossing	SCLN8	3.45	1295
Upstream from Panorama Drive	CLN8	3.45	1312
	*CLN8	3.35	1276
Above confluence with Fountain Channel	*CLN7	1.69	643
Downstream from Saguaro Boulevard	CLN6	1.67	635
At Saguaro Boulevard crossing	SCLN5	1.63	613
Above Saguaro Boulevard	CLN5	1.63	655
Above confluence with North Colony Wash	CLN4	1.22	367
At Arroyo Vista Drive crossing	SCLN3	1.16	303

TABLE 1

SUMMARY OF DISCHARGES

Flood Source and Location	Hydrologic Concentration Point	Drainage Area (sq. miles)	100-year Peak Discharge (cfs)
Above Arroyo Vista Drive	CLN3	1.16	354
Downstream from Fountain Hills Boulevard	CLN2	1.13	313
At Fountain Hills Boulevard crossing	SCLN1	1.10	289
Above Fountain Hills Boulevard	*CLN1	0.92	217
At Stoneridge Dam	SSNB6	0.85	94
Upstream from Stoneridge Dam	SNB6	0.85	569
Above confluence with Sunburst Wash	GRS3	0.43	461
At Sycamore Drive crossing	SGRS2	0.38	396
Fountain Channel			
Above confluence with Colony Wash	FC7	1.64	885
At Coyote Drive crossing	FC6	1.63	880
Downstream from El Lago Boulevard	FC5	1.61	857
At El Lago Boulevard crossing	SFC4	0.39	668
Above El Lago Boulevard	FC4	0.39	738
Upstream from El Lago Boulevard	FC3	0.37	713
Upstream end of study	DFC2	0.26	451
North Colony Wash			
Above confluence with Colony Wash	NCL9	0.37	295
At Chama Drive crossing	SNCL8	0.37	292
At La Montana Drive crossing	SNCL7	0.36	283
Upstream from La Montana Drive	NCL7	0.36	289
Downstream from Fountain Hills Boulevard	NCL6	0.33	258
At Fountain Hills Boulevard crossing	SNCL5	0.23	246
Upstream from Fountain Hills Boulevard	NCL5	0.23	325

TABLE 1

SUMMARY OF DISCHARGES

Flood Source and Location	Hydrologic Concentration Point	Drainage Area (sq. miles)	100-year Peak Discharge (cfs)
Downstream from Mountainside Drive	NCL4	0.18	242
At Mountainside Drive crossing	SNCL3	0.14	178
Upstream from Mountainside Drive	NCL3	0.14	185
At Minosa Drive crossing	SNCL2	0.13	174
Upstream from Minosa Drive	NCL2	0.13	188
Sunburst Wash			
Above Stoneridge Dam	*SNB5	0.39	122
At Sycamore Drive crossing	SSNB3	0.33	92
Above sycamore Drive	SUB3	0.33	606
Sycamore Wash			
At Sycamore Drive crossing	SGRS2	0.38	396
between Sycamore Drive and Greystone Drive	SYC4	0.28	252
At Greystone Drive crossing	SSYC3	0.28	251
Upstream from Greystone Drive	SYC3	0.28	558
Greystone Wash			
At Sycamore Drive crossing	SGRS2	0.38	396
Upstream from Sycamore Drive	*GRS2	0.10	194
Laser Drain			
Above Saguaro Boulevard	LSR3	0.18	410
Above Confluence with Cereus Wash	LSR5	0.21	470

Manning's roughness coefficients were determined in accordance with the methodology described in *Estimated Manning's Roughness Coefficient for Stream Channels and Floodplain in Maricopa County, Arizona* (Reference 12). The method described in this publication selects a base value for the roughness coefficient based exclusively on bed material. This value is then adjusted to account for vegetation, irregularities, obstructions and cross-section variations. In addition, a multiplier can be applied to the adjusted n value if meandering of the reach is significant.

The base roughness coefficient in this study was selected based on the average particle size observed in the field. The typical average size of the bed material in the study area ranges from 0.08" to 2.5". For this range of bed material, the typical values of the roughness coefficient ranges from 0.028 to 0.035. For some of the reaches where the conveying channel is a golf course pathway or street, n values as low as 0.018 were used.

The expansion and contraction coefficients used in the HEC-2 model were determined from the *HEC-2 User's Manual* (Reference10). For gradual transitions which include most reaches in this study, the contraction and expansion coefficients were set to be 0.1 and 0.3, respectively. At culvert locations where the change on cross sectional geometry is abrupt, the coefficients were set to be 0.3 for contraction and 0.5 for expansion. At locations where the cross sectional area changes significantly, a value of 0.2 and 0.4 were used for these coefficients.

Starting water surface elevations for the flooding sources at the downstream limit of the study were obtained by the slope-area or critical depth options of the HEC-2 computer program. The same methods were used for the tributaries since the times of concentration for the contributing drainage areas are significantly different from the main channel.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages state and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance Study produces maps designed to assist communities in developing floodplain management measures.

4.1 Flood Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. For each stream studied in detail, the 100-year floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps.

The 100-year floodplain boundaries are shown on the Flood Boundary and Floodway Map. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment of floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is

divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The washes within the study area generally have steep banks, with the 100-year floodplain contained within the banks, as depicted on the individual cross-section plots. In addition, each wash is within a platted drainage easement. For these reason, and for floodplain management purposes, the floodplain will be regulated as floodway. Therefore, all washes shown on the Floodway and Floodplain Maps have a floodplain coincident with floodway. The floodway data for all study washes are shown in **Table 2** of this report.

5.0 INSURANCE APPLICATION

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A: corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE: corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses, are shown at selected intervals within this zone.

Zone AH: corresponds to the areas of 100-year shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO: corresponds to the areas of 100-year shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the detailed hydraulic analyses are shown within this zone.

Zone X: corresponds to areas outside the 500-year floodplain, areas within the 500-year floodplain, areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance rate zones as described in Section 5.0 and in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by appropriate symbols, the 100-year floodplains, the floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

7.0 OTHER STUDIES

There are no other significant published flood studies of record for the study washes and their tributaries.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Flood Control District of Maricopa County, 2801 West Durango Street, Phoenix, Arizona, 85009.

9.0 BIBLIOGRAPHY AND REFERENCES

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FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Powder wash								
0.00	0.00	78	129	4.5	1571.9	1571.9	1571.9	0.0
0.08	0.08	46	85	6.9	1579.7	1579.7	1579.7	0.0
0.09	0.09	86	96	6.1	1581.0	1581.0	1581.0	0.0
0.10	0.10	80	108	5.2	1581.7	1581.7	1581.7	0.0
0.19	0.19	55	82	6.8	1588.7	1588.7	1588.7	0.0
0.29	0.29	68	89	6.3	1598.8	1598.8	1598.8	0.0
0.38	0.38	118	120	4.7	1609.2	1609.2	1609.2	0.0
0.42	0.42	28	62	8.5	1613.6	1613.6	1613.6	0.0
0.44	0.44	28	149	3.2	1617.9	1617.9	1617.9	0.0
0.48	0.48	71	81	6.2	1618.2	1618.2	1618.2	0.0
0.53	0.53	72	85	5.9	1621.9	1621.9	1621.9	0.0
0.63	0.63	80	85	5.9	1634.1	1634.1	1634.1	0.0
0.72	0.72	55	79	6.4	1646.9	1646.9	1646.9	0.0
0.78	0.78	48	74	6.8	1654.0	1654.0	1654.0	0.0
0.79	0.79	63	82	6.1	1655.0	1655.0	1655.0	0.0
0.80	0.80	96	89	4.7	1656.4	1656.4	1656.4	0.0
0.89	0.89	37	60	7.0	1667.2	1667.2	1667.2	0.0
0.97	0.97	37	68	6.2	1677.4	1677.4	1677.4	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

POWDER WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Cereus wash								
2.56	2.56	223	1143	2.6	1526.6	1526.6	1526.6	0.0
2.65	2.65	182	506	5.8	1529.9	1529.9	1529.9	0.0
2.68	2.68	131	392	7.5	1532.2	1532.2	1532.2	0.0
2.70	2.70	44	227	12.9	1534.2	1534.2	1534.2	0.0
2.73	2.73	44	407	7.2	1539.5	1539.5	1539.5	0.0
2.74	2.74	142	895	3.3	1540.1	1540.1	1540.1	0.0
2.78	2.78	175	801	3.7	1540.5	1540.5	1540.5	0.0
2.80	2.80	122	465	6.4	1540.9	1540.9	1540.9	0.0
2.88	2.88	81	347	8.5	1545.0	1545.0	1545.0	0.0
2.94	2.94	73	342	8.6	1548.9	1548.9	1548.9	0.0
3.00	3.00	107	386	7.3	1553.2	1553.2	1553.2	0.0
3.01	3.01	80	346	8.2	1554.4	1554.4	1554.4	0.0
3.04	3.04	230	933	3.0	1564.2	1564.2	1564.2	0.0
3.05	3.05	251	1056	2.7	1564.4	1564.4	1564.4	0.0
3.14	3.14	126	616	4.7	1564.5	1564.5	1564.5	0.0
3.23	3.23	83	311	9.2	1568.3	1568.3	1568.3	0.0
3.32	3.32	110	369	7.8	1574.7	1574.7	1574.7	0.0
3.36	3.36	115	381	7.5	1577.2	1577.2	1577.2	0.0
3.42	3.42	281	534	5.3	1582.3	1582.3	1582.3	0.0
3.50	3.50	196	463	6.1	1586.3	1586.3	1586.3	0.0
3.59	3.59	94	377	7.3	1592.3	1592.3	1592.3	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

CEREUS WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Cereus wash								
3.69	3.69	136	414	6.7	1599.8	1599.8	1599.8	0.0
3.74	3.74	79	310	8.9	1603.9	1603.9	1603.9	0.0
3.82	3.82	115	420	6.4	1609.4	1609.4	1609.4	0.0
3.93	3.93	125	330	8.1	1616.0	1616.0	1616.0	0.0
4.00	4.00	214	539	5.0	1620.1	1620.1	1620.1	0.0
4.06	4.06	118	327	7.5	1632.9	1632.9	1632.9	0.0
4.10	4.10	263	988	2.5	1635.3	1635.3	1635.3	0.0
4.19	4.19	99	298	8.2	1637.6	1637.6	1637.6	0.0
4.23	4.23	168	390	6.3	1640.5	1640.5	1640.5	0.0
4.32	4.32	99	273	7.6	1647.7	1647.7	1647.7	0.0
4.39	4.39	91	256	8.1	1653.6	1653.6	1653.6	0.0
4.44	4.44	174	287	7.2	1658.4	1658.4	1658.4	0.0
4.54	4.54	30	47	6.8	1671.6	1671.6	1671.6	0.0
4.60	4.60	7	28	11.4	1679.8	1679.8	1679.8	0.0
4.64	4.64	7	48	6.1	1694.1	1694.1	1694.1	0.0
4.71	4.71	57	92	3.3	1695.6	1695.6	1695.6	0.0
4.78	4.78	27	47	6.4	1702.8	1702.8	1702.8	0.0
4.84	4.84	30	46	6.5	1711.8	1711.8	1711.8	0.0
4.92	4.92	78	64	4.7	1725.1	1725.1	1725.1	0.0
4.97	4.97	48	55	5.5	1733.4	1733.4	1733.4	0.0
5.02	5.02	5	14	9.7	1753.2	1753.2	1753.2	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

CEREUS WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Cereus wash								
5.05	5.05	5	25	5.3	1762.1	1762.1	1762.1	0.0
5.11	5.11	77	191	0.9	1762.7	1762.7	1762.7	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

CEREUS WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Logan wash								
0.00	0.00	201	136	3.2	1618.0	1618.0	1618.0	0.0
0.07	0.07	107	103	4.2	1634.5	1634.5	1634.5	0.0
0.11	0.11	55	67	6.5	1638.5	1638.5	1638.5	0.0
0.21	0.21	71	105	4.1	1643.2	1643.2	1643.2	0.0
0.25	0.25	53	67	6.5	1645.5	1645.5	1645.5	0.0
0.28	0.28	61	98	4.4	1647.8	1647.8	1647.8	0.0
0.34	0.34	30	48	6.2	1653.1	1653.1	1653.1	0.0
0.41	0.41	34	49	6.0	1658.6	1658.6	1658.6	0.0
0.47	0.47	20	28	6.0	1665.2	1665.2	1665.2	0.0
0.51	0.51	40	38	4.3	1672.5	1672.5	1672.5	0.0
0.61	0.61	30	31	5.3	1681.9	1681.9	1681.9	0.0
0.63	0.63	58	43	3.8	1686.8	1686.8	1686.8	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

LOGAN WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Chukar wash								
0.00	0.00	56	91	6.3	1637.9	1637.9	1637.9	0.0
0.09	0.09	56	88	6.5	1647.3	1647.3	1647.3	0.0
0.11	0.11	51	82	7.0	1652.5	1652.5	1652.5	0.0
0.20	0.20	106	105	5.5	1666.3	1666.3	1666.3	0.0
0.26	0.26	50	81	7.1	1671.4	1671.4	1671.4	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

CHUKAR WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
LASER DRAIN								
0.000	0.000	55	84	5.6	1545.0	1545.0	1545.0	0.0
0.064	0.064	43	79	6.0	1550.5	1550.5	1550.5	0.0
0.093	0.093	67	101	4.7	1552.9	1552.9	1552.9	0.0
0.120	0.120	63	81	5.8	1556.1	1556.1	1556.1	0.0
0.123	0.123	77	79	5.9	1556.7	1556.7	1556.7	0.0
0.127	0.127	98	161	2.9	1557.5	1557.5	1557.5	0.0
0.145	0.145	88	126	3.7	1558.4	1558.4	1558.4	0.0
0.161	0.161	29	58	8.1	1561.2	1561.2	1561.2	0.0
0.197	0.197	116	223	2.1	1562.6	1562.6	1562.6	0.0
0.225	0.225	43	64	6.4	1564.5	1564.5	1564.5	0.0
0.271	0.271	53	66	6.2	1569.3	1569.3	1569.3	0.0
0.306	0.306	62	73	5.6	1572.0	1572.0	1572.0	0.0
0.362	0.362	46	63	6.5	1576.5	1576.5	1576.5	0.0
0.368	0.368	114	86	4.8	1577.1	1577.1	1577.1	0.0
0.388	0.388	77	82	5.0	1578.7	1578.7	1578.7	0.0

TABLE 2	FEDERAL EMERGENCY MANAGEMENT AGENCY Federal Insurance Administration TOWN OF FOUNTAIN HILLS, AZ (MARICOPA CO.)	FLOODWAY DATA LASER DRAIN

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Cyprus Point wash								
2.23	2.23	231	90	3.7	1500.4	1500.4	1500.4	0.0
2.25	2.25	132	105	3.2	1504.0	1504.0	1504.0	0.0
2.29	2.29	166	64	5.2	1512.2	1512.2	1512.2	0.0
2.30	2.30	27	46	7.2	1513.1	1513.1	1513.1	0.0
2.38	2.38	28	58	5.7	1518.7	1518.7	1518.7	0.0
2.39	2.39	24	43	7.7	1519.1	1519.1	1519.1	0.0
2.43	2.43	82	144	2.1	1525.3	1525.3	1525.3	0.0
2.44	2.44	40	51	5.9	1525.9	1525.9	1525.9	0.0
2.48	2.48	88	65	4.7	1529.5	1529.5	1529.5	0.0
2.52	2.52	45	52	5.9	1537.1	1537.1	1537.1	0.0
2.53	2.53	68	62	4.9	1539.5	1539.5	1539.5	0.0
2.54	2.54	62	42	4.6	1540.0	1540.0	1540.0	0.0
2.55	2.55	54	47	4.1	1540.8	1540.8	1540.8	0.0
2.64	2.64	62	44	4.4	1554.4	1554.4	1554.4	0.0
2.69	2.69	74	45	4.3	1560.6	1560.6	1560.6	0.0
2.74	2.74	87	52	3.7	1570.2	1570.2	1570.2	0.0
2.79	2.79	70	53	3.6	1581.0	1581.0	1581.0	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

CYPRUS POINT WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Jacklin wash								
2.20	2.20	184	231	4.2	1492.8	1492.8	1492.8	0.0
2.27	2.27	76	144	6.8	1497.9	1497.9	1497.9	0.0
2.32	2.32	54	134	7.3	1502.2	1502.2	1502.2	0.0
2.33	2.33	52	152	6.4	1504.5	1504.5	1504.5	0.0
2.34	2.34	194	321	3.0	1511.3	1511.3	1511.3	0.0
2.35	2.35	97	622	1.6	1511.6	1511.6	1511.6	0.0
2.39	2.39	173	426	2.3	1511.6	1511.6	1511.6	0.0
2.45	2.45	109	175	5.6	1516.5	1516.5	1516.5	0.0
2.46	2.46	14	74	13.1	1519.1	1519.1	1519.1	0.0
2.48	2.48	14	111	8.6	1522.3	1522.3	1522.3	0.0
2.49	2.49	90	410	2.2	1523.6	1523.6	1523.6	0.0
2.58	2.58	141	168	5.4	1526.1	1526.1	1526.1	0.0
2.65	2.65	138	171	5.4	1533.2	1533.2	1533.2	0.0
2.68	2.68	149	177	5.2	1537.3	1537.3	1537.3	0.0
2.73	2.73	61	69	5.1	1542.9	1542.9	1542.9	0.0
2.74	2.74	97	86	4.1	1543.7	1543.7	1543.7	0.0
2.75	2.75	52	65	5.1	1544.8	1544.8	1544.8	0.0
2.76	2.76	45	59	5.6	1545.6	1545.6	1545.6	0.0
2.81	2.81	60	62	5.3	1549.0	1549.0	1549.0	0.0
2.91	2.91	46	61	5.4	1560.6	1560.6	1560.6	0.0
3.00	3.00	51	58	5.7	1568.8	1568.8	1568.8	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

JACKLIN WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Jacklin wash								
3.09	3.09	39	55	6.0	1581.7	1581.7	1581.7	0.0
3.19	3.19	102	72	4.5	1589.7	1589.7	1589.7	0.0
3.28	3.28	63	71	4.6	1601.2	1601.2	1601.2	0.0
3.39	3.39	69	74	4.4	1613.6	1613.6	1613.6	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

JACKLIN WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Kingstree wash								
0.00	0.00				1527.3	1527.3	1527.3	0.0
0.09	0.09				1534.1	1534.1	1534.1	0.0
0.16	0.16				1539.2	1539.2	1539.2	0.0
0.20	0.20				1541.6	1541.6	1541.6	0.0
0.28	0.28	Split flow - no Floodway Allowed			1549.8	1549.8	1549.8	0.0
0.35	0.35				1562.9	1562.9	1562.9	0.0
0.41	0.41				1571.2	1571.2	1571.2	0.0
0.47	0.47				1580.1	1580.1	1580.1	0.0
0.53	0.53				1592.6	1592.6	1592.6	0.0
0.62	0.62				1606.6	1606.6	1606.6	0.0
0.71	0.71				1611.6	1611.6	1611.6	0.0
0.81	0.81				1624.8	1624.8	1624.8	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

KINGSTREE WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Mangrum wash								
0.00	0.00	120	108	5.2	1536.8	1536.8	1536.8	0.0
0.06	0.06	221	130	4.3	1546.2	1546.2	1546.2	0.0
0.07	0.07	250	130	4.3	1548.0	1548.0	1548.0	0.0
0.10	0.10	97	61	4.3	1552.0	1552.0	1552.0	0.0
0.17	0.17	82	53	3.8	1561.6	1561.6	1561.6	0.0
0.21	0.21	99	54	3.7	1567.6	1567.6	1567.6	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

MANGRUM WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Emerald wash								
2.10	2.10	224	215	4.2	1501.8	1501.8	1501.8	0.0
2.28	2.28	206	206	4.4	1508.1	1508.1	1508.1	0.0
2.30	2.30	172	215	4.2	1510.6	1510.6	1510.6	0.0
2.35	2.35	296	237	3.8	1514.2	1514.2	1514.2	0.0
2.39	2.39	61	365	1.4	1524.2	1524.2	1524.2	0.0
2.45	2.45	57	161	2.2	1524.3	1524.3	1524.3	0.0
2.54	2.54	47	59	6.0	1531.6	1531.6	1531.6	0.0
2.64	2.64	32	62	5.7	1541.3	1541.3	1541.3	0.0
2.73	2.73	44	57	6.3	1551.8	1551.8	1551.8	0.0
2.82	2.82	41	59	6.1	1564.3	1564.3	1564.3	0.0
2.92	2.92	40	55	6.5	1575.3	1575.3	1575.3	0.0
2.99	2.99	45	59	6.1	1581.8	1581.8	1581.8	0.0
3.00	3.00	5	27	13.2	1585.4	1585.4	1585.4	0.0
3.03	3.03	5	48	5.0	1592.7	1592.7	1592.7	0.0
3.04	3.04	120	483	0.7	1593.1	1593.1	1593.1	0.0
3.11	3.11	95	66	4.6	1593.9	1593.9	1593.9	0.0
3.19	3.19	39	49	6.1	1603.3	1603.3	1603.3	0.0
3.25	3.25	63	62	4.8	1609.5	1609.5	1609.5	0.0
3.30	3.30	34	47	6.4	1616.6	1616.6	1616.6	0.0
3.33	3.33	5	19	11.2	1626.8	1626.8	1626.8	0.0
3.36	3.36	29	82	2.6	1633.8	1633.8	1633.8	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

EMERALD WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Emerald wash								
3.42	3.42	123	111	4.4	1635.4	1635.4	1635.4	0.0
3.47	3.47	152	286	1.7	1636.5	1636.5	1636.5	0.0
3.51	3.51	91	92	5.0	1638.9	1638.9	1638.9	0.0
3.61	3.61	90	87	5.3	1649.0	1649.0	1649.0	0.0
3.69	3.69	97	94	4.9	1658.3	1658.3	1658.3	0.0
3.75	3.75	54	78	6.0	1665.2	1665.2	1665.2	0.0
3.82	3.82	37	67	7.0	1672.8	1672.8	1672.8	0.0
3.88	3.88	54	75	6.2	1681.4	1681.4	1681.4	0.0
3.90	3.90	5	26	13.0	1693.2	1693.2	1693.2	0.0
3.94	3.94	5	64	3.3	1702.1	1702.1	1702.1	0.0
3.95	3.95	167	1131	0.3	1702.3	1702.3	1702.3	0.0
4.01	4.01	87	269	1.2	1702.3	1702.3	1702.3	0.0
4.07	4.07	45	59	5.5	1707.7	1707.7	1707.7	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

EMERALD WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Malta Drain								
0.00	0.00	169	125	3.7	1510.1	1510.1	1510.1	0.0
0.03	0.03	39	65	7.2	1514.7	1514.7	1514.7	0.0
0.06	0.06	28	138	3.2	1524.1	1524.1	1524.1	0.0
0.07	0.07	41	156	2.8	1524.3	1524.3	1524.3	0.0
0.16	0.16	32	59	7.3	1534.5	1534.5	1534.5	0.0
0.17	0.17	22	56	7.7	1536.6	1536.6	1536.6	0.0
0.18	0.18	38	56	6.6	1539.5	1539.5	1539.5	0.0
0.19	0.19	33	53	6.9	1540.7	1540.7	1540.7	0.0
0.27	0.27	31	61	6.0	1549.4	1549.4	1549.4	0.0
0.36	0.36	83	55	6.7	1560.2	1560.2	1560.2	0.0
0.40	0.40	85	72	5.1	1564.2	1564.2	1564.2	0.0
0.41	0.41	101	82	4.4	1567.5	1567.5	1567.5	0.0
0.42	0.42	95	214	1.7	1568.1	1568.1	1568.1	0.0
0.46	0.46	27	53	6.9	1571.4	1571.4	1571.4	0.0
0.47	0.47	84	71	5.2	1577.0	1577.0	1577.0	0.0
0.48	0.48	101	271	1.4	1577.5	1577.5	1577.5	0.0
0.55	0.55	29	49	7.4	1585.4	1585.4	1585.4	0.0
0.56	0.56	137	87	4.2	1590.8	1590.8	1590.8	0.0
0.57	0.57	220	348	1.1	1591.3	1591.3	1591.3	0.0
0.64	0.64	30	50	7.3	1596.8	1596.8	1596.8	0.0
0.65	0.65	112	77	4.7	1602.2	1602.2	1602.2	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

MALTA DRAIN

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Malta Drain								
0.66	0.66	111	317	1.2	1602.7	1602.7	1602.7	0.0
0.71	0.71	27	48	7.7	1608.2	1608.2	1608.2	0.0
0.72	0.72	105	75	4.9	1612.3	1612.3	1612.3	0.0
0.73	0.73	125	305	1.2	1612.8	1612.8	1612.8	0.0
0.78	0.78	22	44	8.3	1616.2	1616.2	1616.2	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

MALTA DRAIN

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Colony wash								
2.52	2.52	113	210	6.4	1516.1	1516.1	1516.1	0.0
2.54	2.54	145	197	6.8	1517.7	1517.7	1517.7	0.0
2.59	2.59	118	204	6.5	1521.7	1521.7	1521.7	0.0
2.68	2.68	111	201	6.6	1529.8	1529.8	1529.8	0.0
2.78	2.78	134	238	5.6	1537.1	1537.1	1537.1	0.0
2.84	2.84	112	198	6.7	1540.7	1540.7	1540.7	0.0
2.87	2.87	89	184	7.2	1545.9	1545.9	1545.9	0.0
2.88	2.88	34	123	10.8	1548.2	1548.2	1548.2	0.0
2.91	2.91	34	191	6.8	1552.0	1552.0	1552.0	0.0
2.92	2.92	182	722	1.8	1552.9	1552.9	1552.9	0.0
2.97	2.97	178	253	5.1	1554.9	1554.9	1554.9	0.0
3.02	3.02	113	200	6.4	1561.4	1561.4	1561.4	0.0
3.12	3.12	70	116	5.5	1566.9	1566.9	1566.9	0.0
3.22	3.22	44	88	7.3	1576.0	1576.0	1576.0	0.0
3.27	3.27	80	102	6.3	1582.0	1582.0	1582.0	0.0
3.28	3.28	22	81	7.8	1588.0	1588.0	1588.0	0.0
3.32	3.32	155	605	1.0	1596.8	1596.8	1596.8	0.0
3.33	3.33	169	1128	0.6	1596.8	1596.8	1596.8	0.0
3.41	3.41	107	583	1.1	1596.8	1596.8	1596.8	0.0
3.47	3.47	51	93	7.0	1596.4	1596.4	1596.4	0.0
3.52	3.52	70	103	6.3	1601.4	1601.4	1601.4	0.0

TABLE 2	FEDERAL EMERGENCY MANAGEMENT AGENCY Federal Insurance Administration TOWN OF FOUNTAIN HILLS, AZ (MARICOPA CO.)	**FLOODWAY DATA** COLONY WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Colony wash								
3.56	3.56	50	71	5.2	1606.5	1606.5	1606.5	0.0
3.59	3.59	46	61	6.0	1609.8	1609.8	1609.8	0.0
3.64	3.64	47	59	6.2	1615.3	1615.3	1615.3	0.0
3.65	3.65	10	35	10.6	1618.0	1618.0	1618.0	0.0
3.67	3.67	10	61	5.0	1622.7	1622.7	1622.7	0.0
3.68	3.68	92	369	1.0	1623.2	1623.2	1623.2	0.0
3.77	3.77	42	58	6.1	1624.0	1624.0	1624.0	0.0
3.83	3.83	48	69	5.1	1628.2	1628.2	1628.2	0.0
3.90	3.90	37	59	6.0	1640.6	1640.6	1640.6	0.0
3.92	3.92	10	31	10.0	1649.8	1649.8	1649.8	0.0
3.95	3.95	10	67	4.3	1656.3	1656.3	1656.3	0.0
3.98	3.98	134	294	0.7	1656.7	1656.7	1656.7	0.0
4.05	4.05	64	47	4.7	1659.5	1659.5	1659.5	0.0
4.15	4.15	75	65	3.3	1665.4	1665.4	1665.4	0.0
4.20	4.20	88	55	3.9	1668.3	1668.3	1668.3	0.0
4.24	4.24	135	68	3.2	1672.9	1672.9	1672.9	0.0
4.29	4.29	2	15	14.1	1682.2	1682.2	1682.2	0.0
4.32	4.32	2	46	2.0	1697.3	1697.3	1697.3	0.0
4.37	4.37	233	1520	0.4	1697.3	1697.3	1697.3	0.0
4.41	4.41	103	589	0.8	1697.3	1697.3	1697.3	0.0
4.44	4.44	64	244	1.9	1697.3	1697.3	1697.3	0.0

TABLE 2	FEDERAL EMERGENCY MANAGEMENT AGENCY Federal Insurance Administration TOWN OF FOUNTAIN HILLS, AZ (MARICOPA CO.)	**FLOODWAY DATA** COLONY WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Colony wash								
4.45	4.45	16	86	5.4	1697.1	1697.1	1697.1	0.0
4.47	4.47	16	89	4.4	1701.1	1701.1	1701.1	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

COLONY WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Fountain Channel								
0.00	0.00	75	126	7.0	1560.6	1560.6	1560.6	0.0
0.08	0.08	67	137	6.5	1573.4	1573.4	1573.4	0.0
0.11	0.11	58	118	7.5	1575.4	1575.4	1575.4	0.0
0.12	0.12	63	131	6.8	1576.2	1576.2	1576.2	0.0
0.13	0.13	335	536	1.6	1577.6	1577.6	1577.6	0.0
0.14	0.14	101	223	4.0	1577.5	1577.5	1577.5	0.0
0.20	0.20	74	133	6.6	1579.0	1579.0	1579.0	0.0
0.21	0.21	20	77	11.1	1580.4	1580.4	1580.4	0.0
0.23	0.23	20	107	6.2	1582.6	1582.6	1582.6	0.0
0.24	0.24	110	534	1.4	1583.4	1583.4	1583.4	0.0
0.32	0.32	84	117	6.1	1584.2	1584.2	1584.2	0.0
0.41	0.41	83	202	2.2	1585.8	1585.8	1585.8	0.0
0.50	0.50	55	72	6.2	1587.0	1587.0	1587.0	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

FOUNTAIN CHANNEL

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
North Colony Wash								
0.00	0.00	64	59	5.0	1600.7	1600.7	1600.7	0.0
0.04	0.04	21	35	8.4	1611.2	1611.2	1611.2	0.0
0.07	0.07	24	43	6.9	1620.3	1620.3	1620.3	0.0
0.08	0.08	5	24	12.4	1623.7	1623.7	1623.7	0.0
0.10	0.10	40	171	1.7	1637.9	1637.9	1637.9	0.0
0.11	0.11	43	124	2.4	1637.9	1637.9	1637.9	0.0
0.18	0.18	22	40	7.3	1648.4	1648.4	1648.4	0.0
0.25	0.25	27	42	6.9	1657.6	1657.6	1657.6	0.0
0.26	0.26	12	32	9.2	1658.7	1658.7	1658.7	0.0
0.27	0.27	12	17	17.0	1658.3	1658.3	1658.3	0.0
0.28	0.28	51	240	1.2	1664.1	1664.1	1664.1	0.0
0.37	0.37	45	79	3.6	1664.2	1664.2	1664.2	0.0
0.46	0.46	34	45	6.4	1672.9	1672.9	1672.9	0.0
0.51	0.51	43	52	5.6	1680.5	1680.5	1680.5	0.0
0.55	0.55	5	22	11.9	1688.3	1688.3	1688.3	0.0
0.59	0.59	5	55	4.5	1702.4	1702.4	1702.4	0.0
0.61	0.61	167	624	0.5	1702.8	1702.8	1702.8	0.0
0.68	0.68	113	79	4.1	1705.4	1705.4	1705.4	0.0
0.75	0.75	54	59	5.5	1715.6	1715.6	1715.6	0.0
0.81	0.81	66	65	5.0	1725.3	1725.3	1725.3	0.0
0.83	0.83	5	21	11.6	1727.4	1727.4	1727.4	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

NORTH COLONY WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
North Colony Wash								
0.86	0.86	5	33	5.3	1739.3	1739.3	1739.3	0.0
0.87	0.87	51	172	1.1	1739.9	1739.9	1739.9	0.0
0.89	0.89	5	26	7.1	1739.5	1739.5	1739.5	0.0
0.92	0.92	5	33	5.2	1746.3	1746.3	1746.3	0.0
0.94	0.94	67	136	1.4	1746.8	1746.8	1746.8	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

NORTH COLONY WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Sunburst Wash								
0.00	0.00	233	1511	0.1	1697.3	1697.3	1697.3	0.0
0.04	0.04	131	533	0.2	1697.3	1697.3	1697.3	0.0
0.10	0.10	73	37	3.3	1701.4	1701.4	1701.4	0.0
0.19	0.19	16	21	5.8	1710.9	1710.9	1710.9	0.0
0.21	0.21	4	12	10.0	1721.8	1721.8	1721.8	0.0
0.24	0.24	4	20	4.6	1730.0	1730.0	1730.0	0.0
0.26	0.26	99	585	1.0	1730.3	1730.3	1730.3	0.0
0.30	0.30	80	356	1.7	1730.3	1730.3	1730.3	0.0
0.36	0.36	22	71	8.5	1733.0	1733.0	1733.0	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

SUNBURST WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Sycamore wash								
0.00	0.00	16	94	4.2	1701.4	1701.4	1701.4	0.0
0.05	0.05	5	21	11.8	1703.7	1703.7	1703.7	0.0
0.06	0.06	5	57	4.4	1716.8	1716.8	1716.8	0.0
0.09	0.09	180	975	0.6	1717.2	1717.2	1717.2	0.0
0.15	0.15	72	171	3.3	1717.1	1717.1	1717.1	0.0
0.22	0.22	83	107	5.2	1725.0	1725.0	1725.0	0.0
0.31	0.31	62	92	6.1	1733.4	1733.4	1733.4	0.0
0.36	0.36	50	83	6.8	1737.8	1737.8	1737.8	0.0
0.40	0.40	41	78	7.1	1744.6	1744.6	1744.6	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

SYCAMORE WASH

FLOODING SOURCE		FLOODWAY			BASE FLOW WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQF)	MEAN VELOCITY (FPS)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	DIFFERENCE
					(FT NGVD)			
Greystone wash								
0.00	0.00	16	94	4.2	1701.4	1701.4	1701.4	0.0
0.05	0.05	60	43	4.5	1705.7	1705.7	1705.7	0.0
0.11	0.11	46	40	4.9	1719.9	1719.9	1719.9	0.0
0.18	0.18	18	30	6.4	1733.6	1733.6	1733.6	0.0
0.26	0.26	25	33	5.9	1750.8	1750.8	1750.8	0.0
0.31	0.31	25	33	5.9	1764.3	1764.3	1764.3	0.0

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Insurance Administration

TOWN OF FOUNTAIN HILLS, AZ

(MARICOPA CO.)

FLOODWAY DATA

GREYSTONE WASH

APPENDIX H

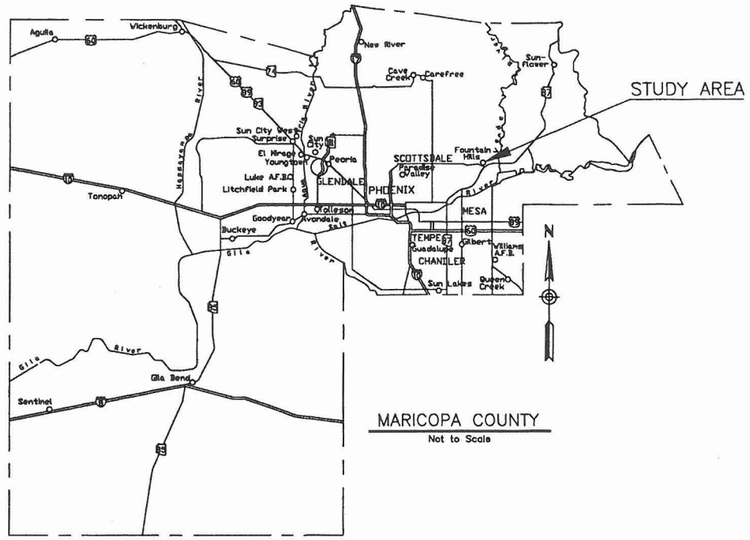
DRAFT FLOOD INSURANCE STUDY REPORT

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FOUNTAIN HILLS SOUTH

Flood Delineation Study

FCD 92-05



LOCATION MAP

DATUM

HORIZONTAL: North American Datum of 1983
VERTICAL: National Geodetic Vertical Datum of 1929

Datum Notes: There is Another Set of Topographic Maps in Use by the Town of Fountain Hills, on Local Datum. This Other Set of Mapping was also Prepared by Kenny Aerial Mapping, at Same Scale and Flight Date as this Mapping.

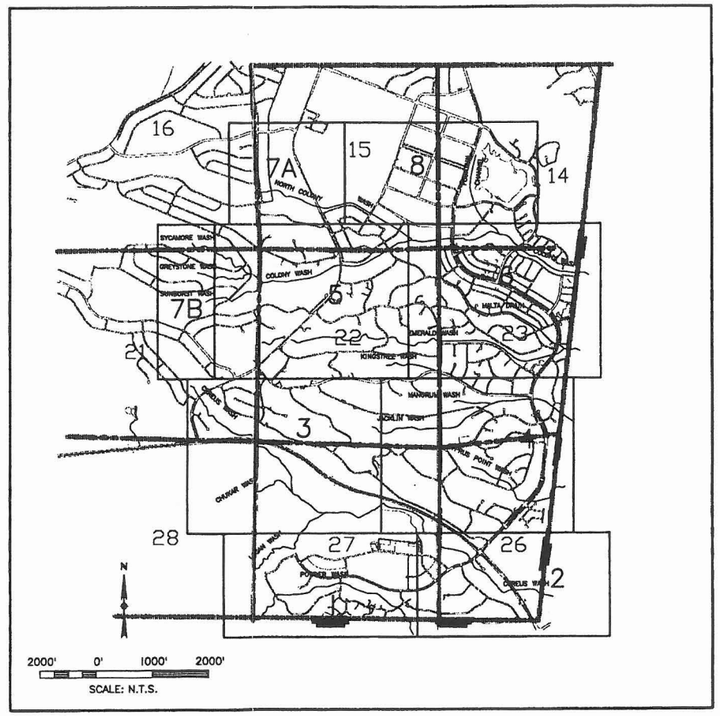
ELEVATION EQUATION

NGVD 1929 = Local Datum −1.26 feet

[Source Anderson−Nelson Inc. Letter Dated 8/24/92]

NOTES

1. Floodplain Limits in this Study are Plotted at each HEC−2 Cross Section on the Basis of Starting (SSTA) and Ending (ENDST) Stations Unless there is Ineffective Flow Area or a Conflict with Topographic Contours, in which Case, the Contours take Precedence.
2. Detailed Contour Mapping is Shown Only Along Major Washes.
3. The Topography and Configuration of Roadway Crossings Provide Cosiderable Storage Upstream of Several Culverts in the Study Area. The Storage Combined with Limited Culvert Capacity Tend to Cause Significant Flow Reduction Downstream of these Culverts.



STUDY AREA MAP
AND SHEET INDEX

SHEET INDEX

Sheets 1−8 Flood Delineation Study

AERIAL MAPPING

Kenney Aerial Mapping
1130 W. Fillmore
Phoenix, Arizona 85007 (602) 258−6471

KAM JOB # 910804−1
FLIGHT DATE: August 29, 1991
CONTOUR INTERVAL: 2 Feet

GROUND CONTROL

Anderson−Nelson, Inc.
4441 E. McDowell Road
Phoenix, Arizona 85008 (602) 273−1850

ADDITIONAL SURVEY

Valco Surveying Corp.
6426 East Virginia Avenue
Scottsdale, Arizona 85257 (602) 278−0078

HYDROLOGY

AGK Engineers, Inc.
2255 N 44th Street Suite 330
Phoenix, Arizona 85008 (602) 244−2566

HYDRAULICS

AGK Engineers, Inc.
2255 N 44th Street Suite 330
Phoenix, Arizona 85008 (602) 244−2566

LEGEND

Section Label	9
Sheet Limits	———
Sheet Number	9
Study Wash	———
Section Line	———

AGK ENGINEERS, INC.
2255 NORTH 44TH STREET, SUITE 330
PHOENIX, ARIZONA 85008
TELEPHONE (602) 244−2566

	BY	DATE
DESIGN	HAA	11/95
DESIGN CHK.	SEK	11/95
PLANS	JDS	11/95
PLANS CHK.	HAA	11/95

SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

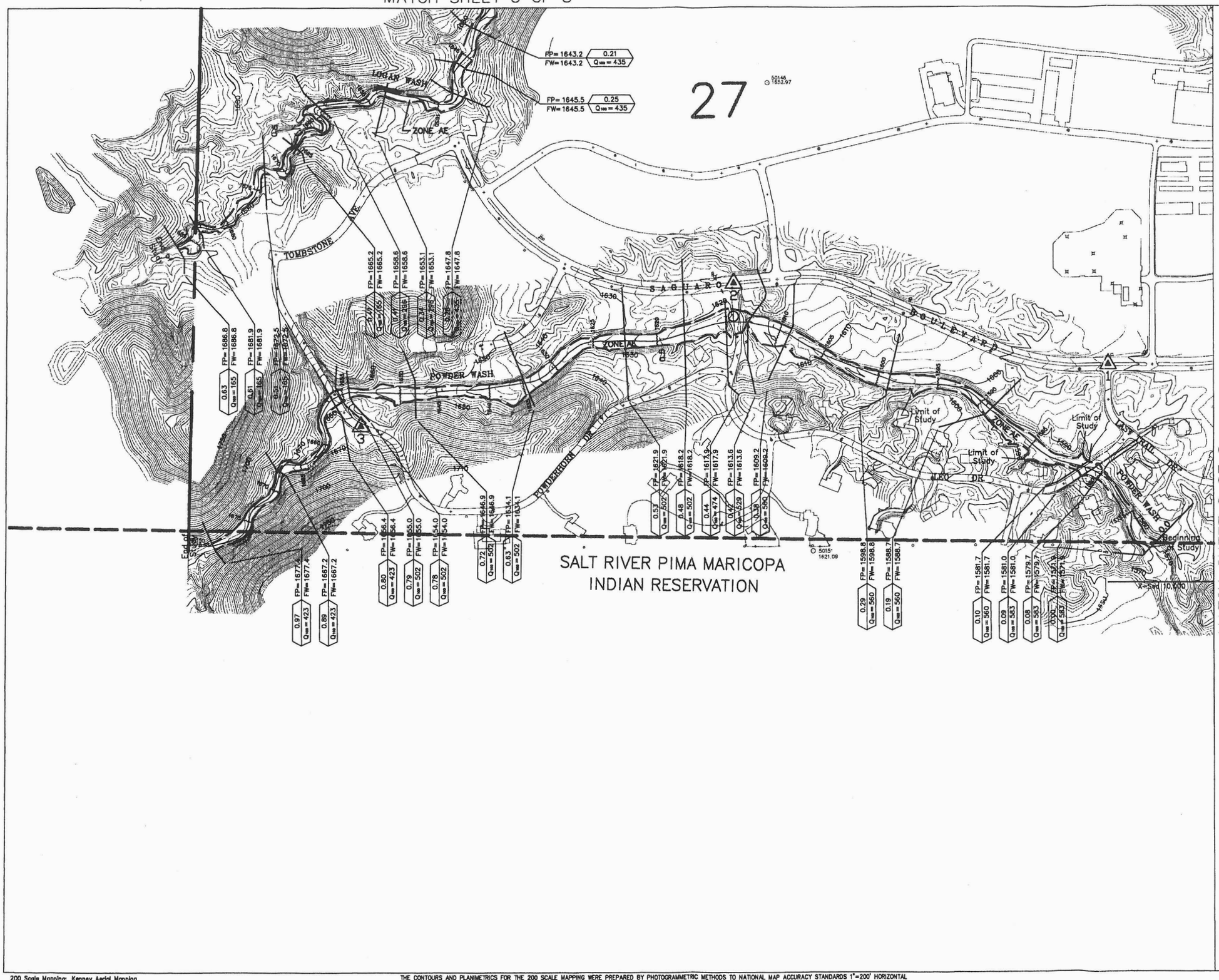
RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

COVER SHEET

MATCH SHEET 3 OF 8



MATCH SHEET 2 OF 8

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF FOUNTAIN HILLS SOUTH

F.C.D. CONTRACT NO. FCD 92-05

LEGEND

100-YR FLOODPLAIN BOUNDARY

FLOODWAY BOUNDARY

HYDRAULIC BASE LINE & RIVER MILE — 2.0

CROSS SECTION — FP= 1733.4 / FW=1733.4 — 4.97 / Q100 = 283

ELEVATION REFERENCE MARK — 2

BASE FLOOD ELEVATIONS — 1500

ZONE DESIGNATIONS — ZONE AE

CORPORATE LIMITS — Corporate Limits

SECTION LINE — Section Boundary

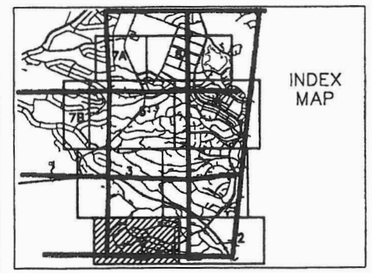
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929

I.D. NUM.	ELEV. (FT)	DESCRIPTION/LOCATION
1	1591.21	TOP OF BRASS CAP, AT INTERSECTION OF LAST TRAIL DRIVE AND SAGUARO BOULEVARD, BEING IN THE SOUTHEAST 1/4 OF SECTION 27, TOWNSHIP 3 NORTH, RANGE 6 EAST.
2	1619.95	TOP OF BRASS CAP, AT INTERSECTION OF LEO DRIVE AND SAGUARO BOULEVARD, BEING IN THE SOUTHWEST 1/4 OF SECTION 27, TOWNSHIP 3 NORTH, RANGE 6 EAST.
3	1659.58	TOP OF BRASS CAP, AT A POINT OF CURVATURE OF CENTER LINE OF POWDERHORN DRIVE, 180 FEET EAST OF CENTER LINE OF POWDER WASH AND 600 FEET SOUTHEAST OF TOMBSTONE DRIVE, BEING IN THE SOUTHWEST 1/4 OF SECTION 27, TOWNSHIP 3 NORTH, RANGE 6 EAST

NOTES

1. LOCAL FLOWS MAY CAUSE FLOODING IN THIS AREA SEE SPECIAL PROBLEMS SECTION.



200 0' 200 400

SCALE: 1"= 200'

CONTOUR INTERVAL = 2' FEET

ENGINEERS, INC.
2235 NORTH 44TH STREET, SUITE 330
PHOENIX, ARIZONA 85008
TELEPHONE (602) 244-2566

	BY	DATE
DESIGN	HAA	6/95
DESIGN CHK.	SEK	6/95
PLANS	JDS	6/95
PLANS CHK.	HAA	6/95

SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

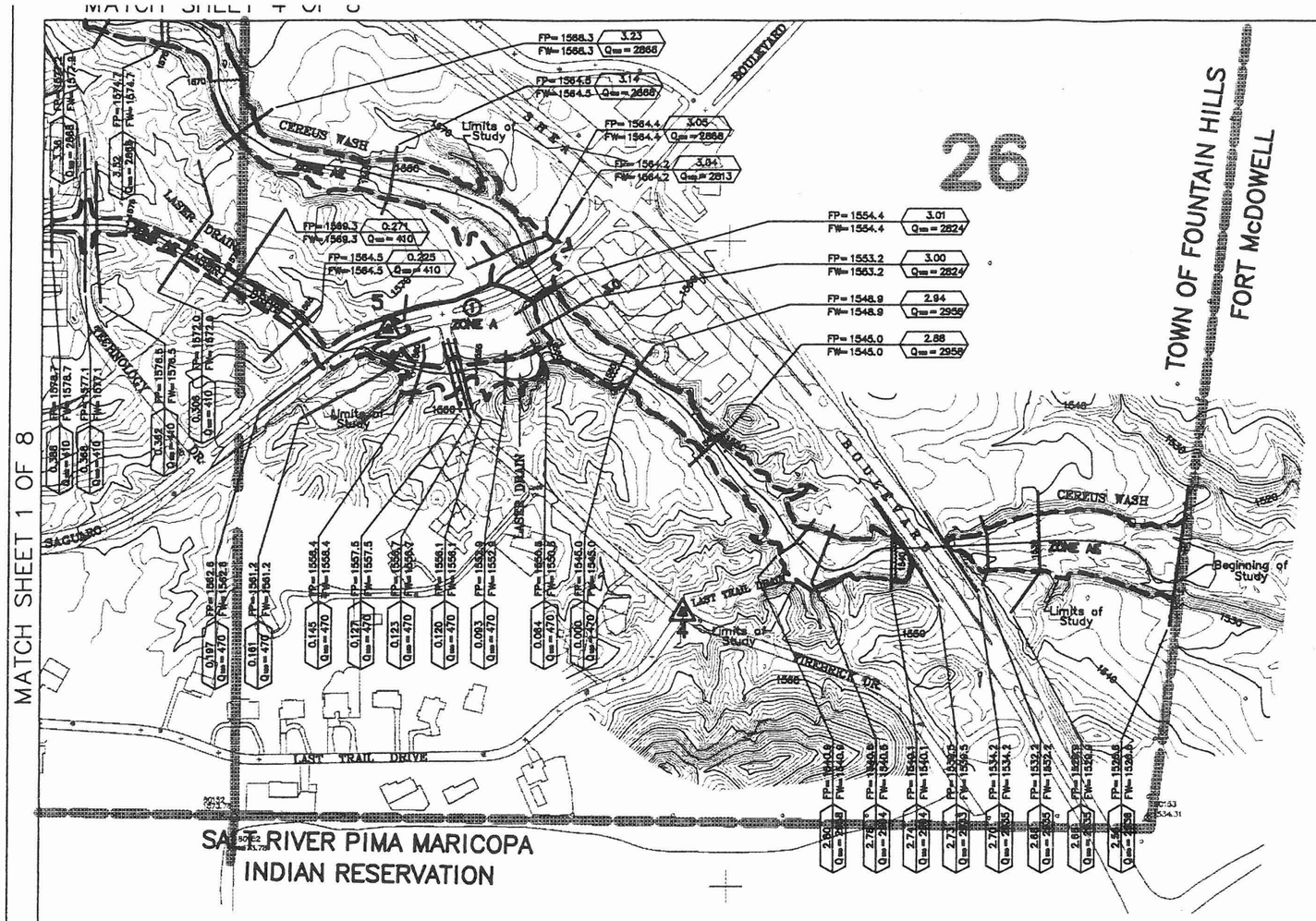
SHEET 1 OF 8

200 Scale Mapping: Kenney Aerial Mapping
Flight Date = 8/91

THE CONTOURS AND PLANIMETRICS FOR THE 200 SCALE MAPPING WERE PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"=200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY ANDERSON-NELSON, INC.

MATCH SHEET 4 OF 8

MATCH SHEET 1 OF 8



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF FOUNTAIN HILLS SOUTH

F.C.D. CONTRACT NO. FCD 92-05

LEGEND

100-YR FLOODPLAIN BOUNDARY

FLOODWAY BOUNDARY

HYDRAULIC BASE LINE & RIVER MILE — 2.0

CROSS SECTION — FP= 1733.4 / FW=1733.4 — 4.97 / Q= 283

ELEVATION REFERENCE MARK — 2

BASE FLOOD ELEVATIONS — 1500

ZONE DESIGNATIONS — ZONE AE

CORPORATE LIMITS — Corporate Limits

SECTION LINE — Section Boundary

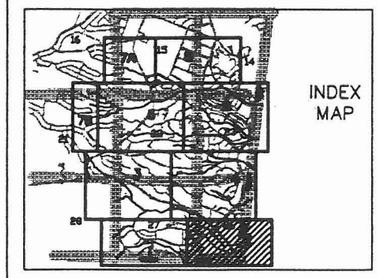
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929

I.D. NUM.	ELEV. (FT)	DESCRIPTION/LOCATION
4	1550.10	TOP OF BRASS CAP, AT INTERSECTION OF FIREBRICK DRIVE AND LAST TRAIL DRIVE, BEING IN THE SOUTHWEST 1/4 OF SECTION 26, TOWNSHIP 3 NORTH, RANGE 6 EAST.
5	1658.11	TOP OF BRASS CAP, AT INTERSECTION OF LASER DRAIN AND SAGUARO BOULEVARD, BEING IN THE SOUTHWEST 1/4 OF SECTION 26, TOWNSHIP 3 NORTH, RANGE 6 EAST.

NOTES

① Flooding from Cereus Wash culvert overtopping Flow returns to Laser Drain at X-sec 0.123 (see Special Problems Section)



INDEX MAP

200 0' 200 400

SCALE: 1"= 200'

CONTOUR INTERVAL = 2' FEET

ENGINEERS, INC.

	BY	DATE
DESIGN	HAA	10/96
DESIGN CHK.	SEK	10/96
PLANS	JDS	10/96
PLANS CHK.	HAA	10/96

SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE:

APPROVED BY: DATE:

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 2 OF 8

Dwg. Name: C:\FTNHILLS\FH-02.DWG
Date: REV. JAN 22, 1997 2:00pm

200 Scale Mapping: Kenney Aerial Mapping
Flight Date = 8/91

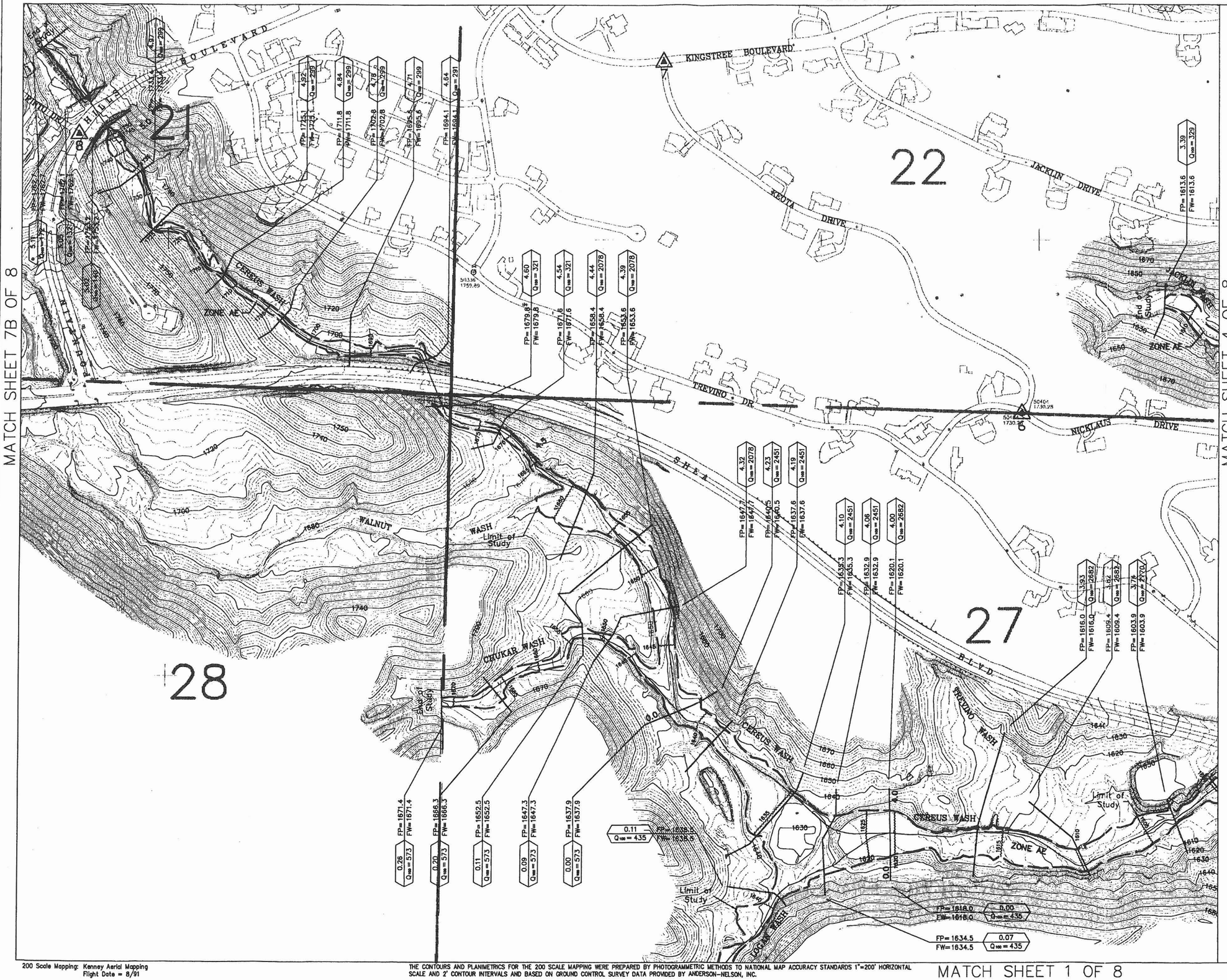
THE CONTOURS AND PLANIMETRICS FOR THE 200 SCALE MAPPING WERE PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"=200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY ANDERSON-NELSON, INC.

MATCH SHEET 7A OF 8

MATCH SHEET 5 OF 8

MATCH SHEET 7B OF 8

MATCH SHEET 4 OF 8



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF FOUNTAIN HILLS SOUTH

F.C.D. CONTRACT NO. FCD 92-05

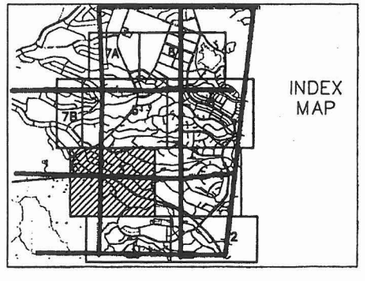
LEGEND

- 100-YR FLOODPLAIN BOUNDARY
- FLOODWAY BOUNDARY
- HYDRAULIC BASE LINE & RIVER MILE — 2.0
- CROSS SECTION — FP= 1733.4 FW=1733.4 — 4.97 Q100 = 283
- ELEVATION REFERENCE MARK — 2
- BASE FLOOD ELEVATIONS — 1500
- ZONE DESIGNATIONS — ZONE AE
- CORPORATE LIMITS — Corporate Limits
- SECTION LINE — Section Boundary

ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929

I.D. NUM.	ELEV. (FT)	DESCRIPTION/LOCATION
6	1730.16	TOP OF BOAT SPIKE, AT INTERSECTION OF NICKLAUS DRIVE AND KEOTA DRIVE, AT NORTH 1/4 SECTION CORNER OF SECTION 27, TOWNSHIP 3 NORTH, RANGE 6 EAST.
7	1782.62	TOP OF BRASS CAP, AT INTERSECTION OF KINGSTREE BOULEVARD AND KEOTA DRIVE, BEING IN THE SOUTHWEST 1/4 OF SECTION 22, TOWNSHIP 3 NORTH, RANGE 6 EAST.
8	1772.76	TOP OF BOAT SPIKE, AT INTERSECTION OF PINTO DRIVE AND FOUNTAIN HILLS BOULEVARD, BEING IN THE SOUTHEAST 1/4 OF SECTION 21, TOWNSHIP 3 NORTH, RANGE 6 EAST.



200 0' 200 400

SCALE: 1"= 200'

CONTOUR INTERVAL = 2' FEET

ENGINEERS, INC.
2250 NORTH 44TH STREET, SUITE 330
PHOENIX, ARIZONA 85008
TELEPHONE (602) 244-2588

	BY	DATE
DESIGN	HAA	6/95
DESIGN CHK.	SEK	6/95
PLANS	JDS	6/95
PLANS CHK.	HAA	6/95

SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 3 OF 8

200 Scale Mapping: Kenney Aerial Mapping
Flight Date = 8/91

THE CONTOURS AND PLANIMETRICS FOR THE 200 SCALE MAPPING WERE PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"=200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY ANDERSON-NELSON, INC.

MATCH SHEET 1 OF 8

MATCH SHEET 6 OF 8

MATCH SHEET 3 OF 8

MATCH SHEET 2 OF 8

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF FOUNTAIN HILLS SOUTH

F.C.D. CONTRACT NO. FCD 92-05

LEGEND

100-YR FLOODPLAIN BOUNDARY

FLOODWAY BOUNDARY

HYDRAULIC BASE LINE & RIVER MILE — 2.0

CROSS SECTION — FP= 1733.4 / FW=1733.4 — 4.97 / Q100 = 283

ELEVATION REFERENCE MARK — 2

BASE FLOOD ELEVATIONS — 1500

ZONE DESIGNATIONS — ZONE AE

CORPORATE LIMITS — Corporate Limits

SECTION LINE — Section Boundary

ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929

I.D. NUM.	ELEV. (FT)	DESCRIPTION/LOCATION
9	1551.77	TOP OF BOAT SPIKE, AT INTERSECTION OF MONTEREY DRIVE AND ROUGH CIRCLE, BEING IN THE NORTHWEST 1/4 OF SECTION 26, TOWNSHIP 3 NORTH, RANGE 6 EAST.
10	1564.01	TOP OF BRASS CAP, AT INTERSECTION OF INDIAN WELLS DRIVE AND ARMOUR COURT, BEING IN THE SOUTHWEST 1/4 OF SECTION 23, TOWNSHIP 3 NORTH, RANGE 6 EAST.
11	1643.42	TOP OF BOAT SPIKE AT POINT OF CURVATURE OF CENTER LINE OF NICKLAUS DRIVE, 200 FEET WEST OF INDIAN WELLS, BEING AT THE NORTHEAST CORNER OF SECTION 27, TOWNSHIP 3 NORTH, RANGE 6 EAST.
12	1704.96	TOP OF BOAT SPIKE AT INTERSECTION OF NICKLAUS DRIVE AND NELSON DRIVE, BEING IN THE NORTHEAST 1/4 OF SECTION 27, TOWNSHIP 3 NORTH, RANGE 6 EAST.

NOTES

1. Cyprus Point Wash overtops Saguaro Blvd. The flow is diverted along Saguaro Blvd. (see Special Problems Section)
2. Flooding at Saguaro Blvd. flows from Kingstree Wash. (see Special Problems Section)
3. Kingstree Wash flow spill at this location. (see Special Problems Section)
4. No right floodplain boundary defined in this area. (see Special Problems Section)
5. This area may be inundated during a 100-Year flood, not enough information available.

INDEX MAP

N

200 0' 200 400

SCALE: 1"= 200'

CONTOUR INTERVAL = 2' FEET

ENGINEERS, INC.
2258 NORTH 44TH STREET, SUITE 330
PHOENIX, ARIZONA 85008
TELEPHONE (602) 244-2500

	BY	DATE
DESIGN	HAA	6/95
DESIGN CHK.	SEK	6/95
PLANS	JDS	6/95
PLANS CHK.	HAA	6/95

SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 4 OF 8

200 Scale Mapping: Kenney Aerial Mapping
Flight Date = 8/91

THE CONTOURS AND PLANIMETRICS FOR THE 200 SCALE MAPPING WERE PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"=200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY ANDERSON-NELSON, INC.

MATCH SHEET 8 OF 8

MATCH SHEET 7 OF 8

MATCH SHEET 6 OF 8

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF FOUNTAIN HILLS SOUTH

F.C.D. CONTRACT NO. FCD 92-05

LEGEND

100-YR FLOODPLAIN BOUNDARY

FLOODWAY BOUNDARY

HYDRAULIC BASE LINE & RIVER MILE — 2.0

CROSS SECTION — FP= 1733.4 / FW=1733.4 — 4.97 / Q= 283

ELEVATION REFERENCE MARK — 2

BASE FLOOD ELEVATIONS — 1500

ZONE DESIGNATIONS — ZONE AE

CORPORATE LIMITS — Corporate Limits

SECTION LINE — Section Boundary

ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929

I.D. NUM.	ELEV. (FT)	DESCRIPTION/LOCATION
13	1710.57	TOP OF BRASS CAP, AT INTERSECTION OF EMERALD DRIVE AND BARON DRIVE, BEING IN THE SOUTHEAST 1/4 OF SECTION 22, TOWNSHIP 3 NORTH, RANGE 6 EAST.
14	1727.68	TOP OF BOAT SPIKE AT INTERSECTION OF EMERALD DR. AND FOUNTAIN FILLS BLVD. BEING IN THE SOUTHWEST 1/4 OF SECTION 22, TOWNSHIP 3 NORTH, RANGE 6 EAST.
15	1631.57	TOP OF BOAT SPIKE AT INTERSECTION OF CHAMA DRIVE AND ARROYO VISTA DRIVE, BEING IN THE SOUTHEAST 1/4 OF SECTION 15, TOWNSHIP 3 NORTH, RANGE 6 EAST.
16	1663.65	TOP OF BOAT SPIKE AT INTERSECTION OF CHAMA DR. AND FOUNTAIN HILLS BLVD. BEING IN THE NORTHWEST 1/4 OF SECTION 22, TOWNSHIP 3 NORTH, RANGE 6 EAST.
17	1714.61	TOP OF BRASS CAP AT INTERSECTION OF SYCAMORE DRIVE AND GREYSTONE DRIVE, BEING IN THE NORTHEAST 1/4 OF SECTION 21, TOWNSHIP 3 NORTH, RANGE 6 EAST.
18	1742.56	TOP OF BRASS CAP SOUTH OF POINT OF CURVATURE OF SYCAMORE DRIVE, 440 FEET SOUTH OF SUNBURST DRIVE, BEING IN THE NORTHEAST 1/4 OF SECTION 21, TOWNSHIP 3 NORTH, RANGE 6 EAST.

NOTES

(1) North Colony Wash overtops Chama Drive. The flow is diverted along Chama and Arroyo drives. (see Special Problems Section)

INDEX MAP

200 0' 200 400

SCALE: 1"= 200'

CONTOUR INTERVAL = 2' FEET

ENGINEERS, INC.
2206 NORTH 44TH STREET, SUITE 320
PHOENIX, ARIZONA 85008
TELEPHONE (602) 344-2588

	BY	DATE
DESIGN	HAA	6/95
DESIGN CHK.	SEK	6/95
PLANS	JDS	6/95
PLANS CHK.	HAA	6/95

SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 5 OF 8

200 Scale Mapping: Kenney Aerial Mapping
Flight Date = 8/91

THE CONTOURS AND PLANIMETRICS FOR THE 200 SCALE MAPPING WERE PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"=200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY ANDERSON-NELSON, INC.

MATCH SHEET 8 OF 8

MATCH SHEET 5 OF 8

MATCH SHEET 4 OF 8

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF FOUNTAIN HILLS SOUTH

F.C.D. CONTRACT NO. FCD 92-05

LEGEND

100-YR FLOODPLAIN BOUNDARY

FLOODWAY BOUNDARY

HYDRAULIC BASE LINE & RIVER MILE — 2.0

CROSS SECTION — FP= 1733.4 / FW=1733.4 — 4.97 / Q100 = 283

ELEVATION REFERENCE MARK — 2

BASE FLOOD ELEVATIONS — 1500

ZONE DESIGNATIONS — ZONE AE

CORPORATE LIMITS — Corporate Limits

SECTION LINE — Section Boundary

ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929

I.D. NUM.	ELEV. (FT)	DESCRIPTION/LOCATION
19	1537.91	TOP OF BOAT SPIKE AT INTERSECTION OF MALTA DRIVE AND PARLIN DRIVE, BEING IN THE NORTHEAST 1/4 OF SECTION 23, TOWNSHIP 3 NORTH, RANGE 6 EAST.
20	1564.81	TOP OF BRASS CAP, AT CENTER LINE OF MALTA DRIVE, 50 FEET EAST OF QUINTO DRIVE, BEING IN THE NORTHWEST 1/4 OF SECTOIN 23, TOWNSHIP 3 NORTH, RANGE 6 EAST.
21	1542.14	TOP OF BRASS CAP, AT INTERSECTION OF TIOGA DRIVE AND TOWER DRIVE, BEING IN THE NORTHEAST 1/4 OF SECTOIN 23, TOWNSHIP 3 NORTH, RANGE 6 EAST.
22	1560.08	TOP OF BRASS CAP, AT INTERSECTION OF PANORAMA DRIVE AND TIOGA DRIVE, BEING IN THE NORTHWEST 1/4 OF SECTOIN 23, TOWNSHIP 3 NORTH, RANGE 6 EAST.

NOTES

(1) Community Designated Special Hazard. (See Special Problems Section)

INDEX MAP

200 0' 200 400

SCALE: 1"= 200'

CONTOUR INTERVAL = 2' FEET .

ENGINEERS, INC.
2205 NORTH 44TH STREET, SUITE 330
PHOENIX, ARIZONA 85008
TELEPHONE (602) 244-2066

	BY	DATE
DESIGN	HAA	6/95
DESIGN CHK.	SEK	6/95
PLANS	JDS	6/95
PLANS CHK.	HAA	6/95
SUBMITTED BY:		DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 6 OF 8

200 Scale Mapping: Kenney Aerial Mapping
Flight Date = 8/91

THE CONTOURS AND PLANIMETRICS FOR THE 200 SCALE MAPPING WERE PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"=200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY ANDERSON-NELSON, INC.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF FOUNTAIN HILLS SOUTH

F.C.D. CONTRACT NO. FCD 92-05

LEGEND

- 100-YR FLOODPLAIN BOUNDARY
- FLOODWAY BOUNDARY
- HYDRAULIC BASE LINE & RIVER MILE — 2.0
- CROSS SECTION — FP=1733.4 / FW=1733.4 — 4.97 / Q100 = 283
- ELEVATION REFERENCE MARK — 2
- BASE FLOOD ELEVATIONS — 1500
- ZONE DESIGNATIONS — ZONE AE
- CORPORATE LIMITS — Corporate Limits
- SECTION LINE — Section Boundary

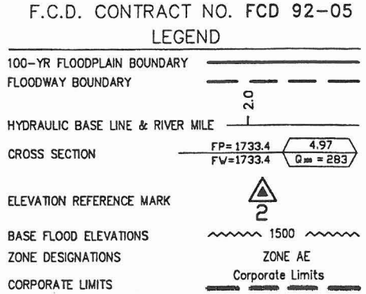
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929

I.D. NUM.	ELEV. (FT)	DESCRIPTION/LOCATION

MATCH SHEET 5 OF 8

MATCH SHEET 8 OF 8



SCALE: 1" = 200'
CONTOUR INTERVAL = 2' FEET

200 Scale Mapping: Kenney Aerial Mapping
Flight Date = 8/91

THE CONTOURS AND PLANIMETRICS FOR THE 200 SCALE MAPPING WERE PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"=200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY ANDERSON-NELSON, INC.

ENGINEERS, INC.
2255 NORTH 44TH STREET, SUITE 330
PHOENIX, ARIZONA 85008
TELEPHONE (602) 244-2266

	BY	DATE
DESIGN	HAA	6/95
DESIGN CHK.	SEK	6/95
PLANS	JDS	6/95
PLANS CHK.	HAA	6/95

SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

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CHIEF ENGINEER AND GENERAL MANAGER

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF FOUNTAIN HILLS SOUTH

F.C.D. CONTRACT NO. FCD 92-05

LISADES

BOULEVARD

15

PALISADES

BOULEVARD

14

BOULEVARD

1600

0.50 Q100 = 451 FP= 1587.0 FW=1587.0

End of Study

0.41 Q100 = 451 FP= 1585.8 FW=1585.8

ZONE AE

1

1600

1590

1580

SAGUARO

FOUNTAIN

CHANNEL

FOUNTAIN LAKE

ZONE A

0.32 Q100 = 713 FP= 1584.2 FW=1584.2

0.24 Q100 = 738 FP= 1583.4 FW=1583.4

0.23 Q100 = 668 FP=1582.6 FW=1582.6

0.21 Q100 = 857 FP= 1580.4 FW=1580.4

0.20 Q100 = 880 FP= 1579.0 FW=1579.0

0.14 Q100 = 980 FW=1577.5

ZONE AE

1580

1570

1580

1575

FP= 1577.6 FW=1577.6 0.13 Q100 = 880

FP=1576.2 FW=1576.2 0.12 Q100 = 885

2A

33

FP= 1575.4 FW=1575.4 0.11 Q100 = 885

FP=1573.4 FW=1573.4 0.06 Q100 = 885

TEAL DR

LA MONTANA DR

0.37 Q100 = 289 FP= 1664.2 FW=1664.2

0.28 Q100 = 289 FP= 1664.1 FW=1664.1

0.27 Q100 = 283 FP= 1658.3 FW=1658.3

0.26 Q100 = 292 FP= 1658.7 FW=1658.7

0.25 Q100 = 292 FP= 1657.6 FW=1657.6

0.18 Q100 = 292 FP= 1648.4 FW=1648.4

EL LAGO BLVD

1670

ZONE AE

NORTH COLONY

1660

SEGUNDO DR.

1650

GUNSIGHT DR

1660

BASE

ZONE AE

2A

MATCH SHEET 7 OF 8

MATCH SHEET 5 OF 8

MATCH SHEET 6 OF 8

200 Scale Mapping: Kenney Aerial Mapping
Flight Date = 8/91

THE CONTOURS AND PLANIMETRICS FOR THE 200 SCALE MAPPING WERE PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"=200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY ANDERSON-NELSON, INC.

LEGEND

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- FLOODWAY BOUNDARY
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- CROSS SECTION — FP= 1733.4 / FW=1733.4 — 4.97 / Q100 = 283
- ELEVATION REFERENCE MARK — 2
- BASE FLOOD ELEVATIONS — 1500
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- SECTION LINE — Section Boundary

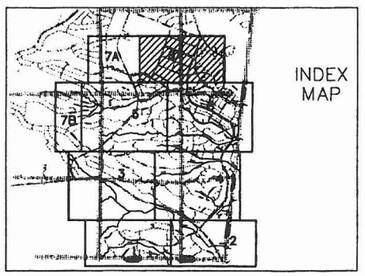
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929

I.D. NUM.	ELEV. (FT)	DESCRIPTION/LOCATION
23	1570.29	TOP OF BRASS CAP, AT INTERSECTION OF EL LAGO BOULEVARD AND TEAL DRIVE, BEING IN THE SOUTHWEST 1/4 OF SECTION 14, TOWNSHIP 3 NORTH, RANGE 6 EAST.
24	1648.97	TOP OF BOAT SPIKE AT INTERSECTION OF CHAMA DRIVE AND GUNSIGHT DRIVE, BEING IN THE SOUTHEAST 1/4 OF SECTION 15, TOWNSHIP 3 NORTH, RANGE 6 EAST.

NOTES

(1) Fountain Channel East Bank overflows between x-sec 0.32 and 0.50. Excess flow runs into the Fountain Lake.
(see Special Problems Section)



N

200 0' 200 400
SCALE: 1"= 200'
CONTOUR INTERVAL = 2' FEET

ENGINEERS, INC.
2255 NORTH 44TH STREET, SUITE 330
PHOENIX, ARIZONA 85008
TELEPHONE (602) 244-2586

	BY	DATE
DESIGN	HAA	6/95
DESIGN CHK.	SEK	6/95
PLANS	JDS	6/95
PLANS CHK.	HAA	6/95

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SUBMITTED BY: DATE:

SHEET 8 OF 8