FOUNTAIN HILLS NORTH FLOODPLAIN DELINEATION STUDY RATING CURVES

Table R-5

Storage and Discharge vs. Stage Data for C503

Stage (ft)	Surface Area (acres)	Volume (acre-ft)	Discharge			
			Culvert Flow (cfs)	Ditch Flow (cfs)	Weir Flow (cfs)	Total Flow (cfs)
1535.14	0.00	0.00	0	---	---	0
1538.00	0.70	0.67	50	---	---	50
1540.00	1.56	2.87	133	---	---	133
1542.00	2.79	7.16	210	---	---	210
1544.00	3.90	13.82	273	---	---	273
1546.00	5.08	22.77	325	---	---	325
1548.00	6.55	34.37	367	---	---	367
1548.50	---	38.0	377	0	---	377
1549.00	---	41.8	386	21	---	407
1549.20	---	43.2	391	50	---	441
1549.40	---	44.7	394	87	---	481
1549.60	---	46.1	398	147	---	545
1549.80	---	47.8	402	210	---	612
1550.00	8.22	49.11	405	310	---	715
1550.20	---	50.9	408	410	---	818
1550.40	---	52.8	412	559	---	971
1550.60	---	54.6	415	700	---	1115
1550.80	---	56.4	418	850	---	1268
1551.00	---	58.3	422	1020	---	1442
1551.20	---	60.1	426	1210	---	1636
1551.40	---	61.9	428	1385	---	1813
1551.41	---	62.0	429	1400	0	1829
1552.00	10.28	67.57	439		*	*

* Note: Weir flow over the road will start at El > 1551.41

Property of
Flood Control District of MC Library
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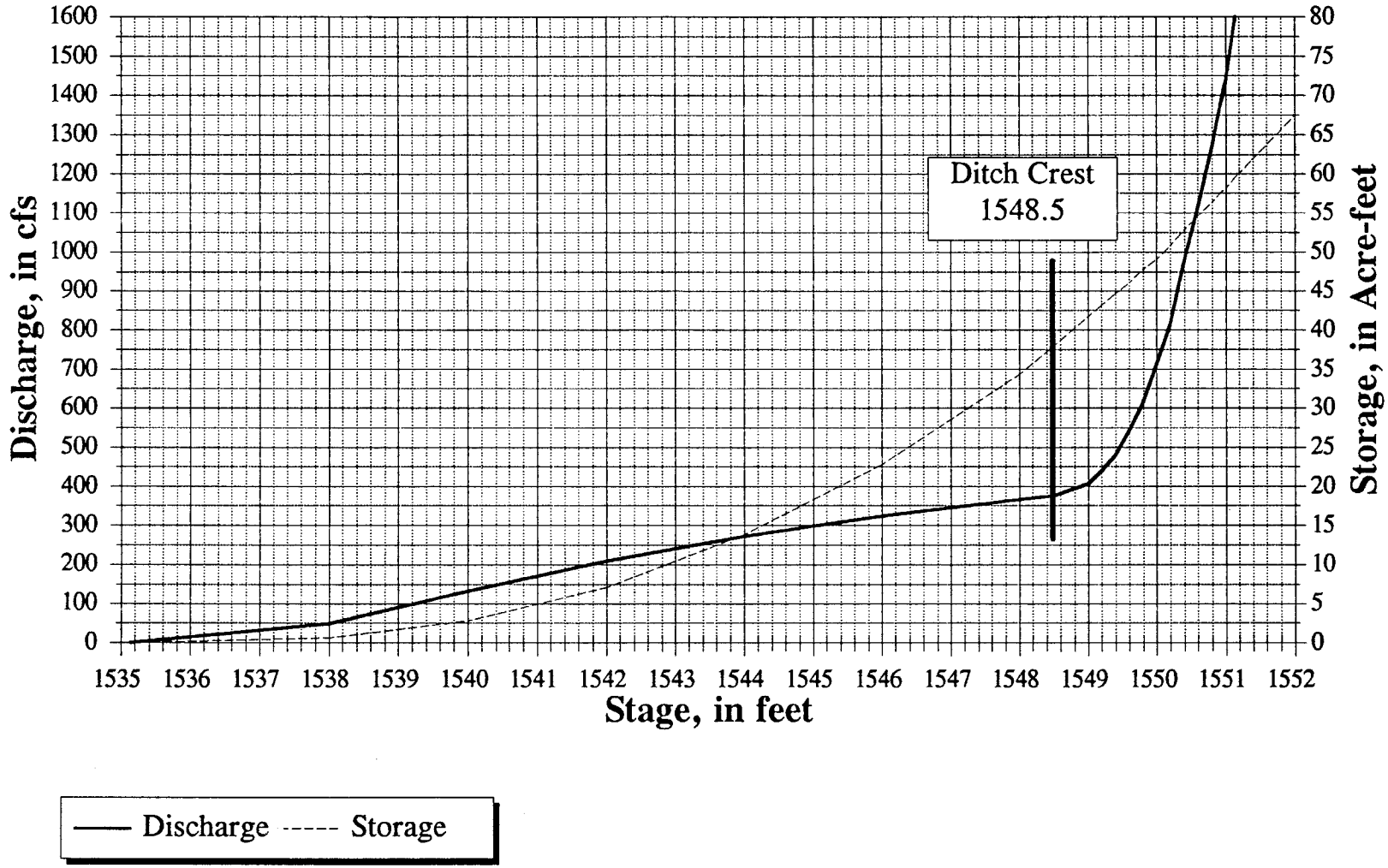
2801 W. Durango
Phoenix, AZ 85009

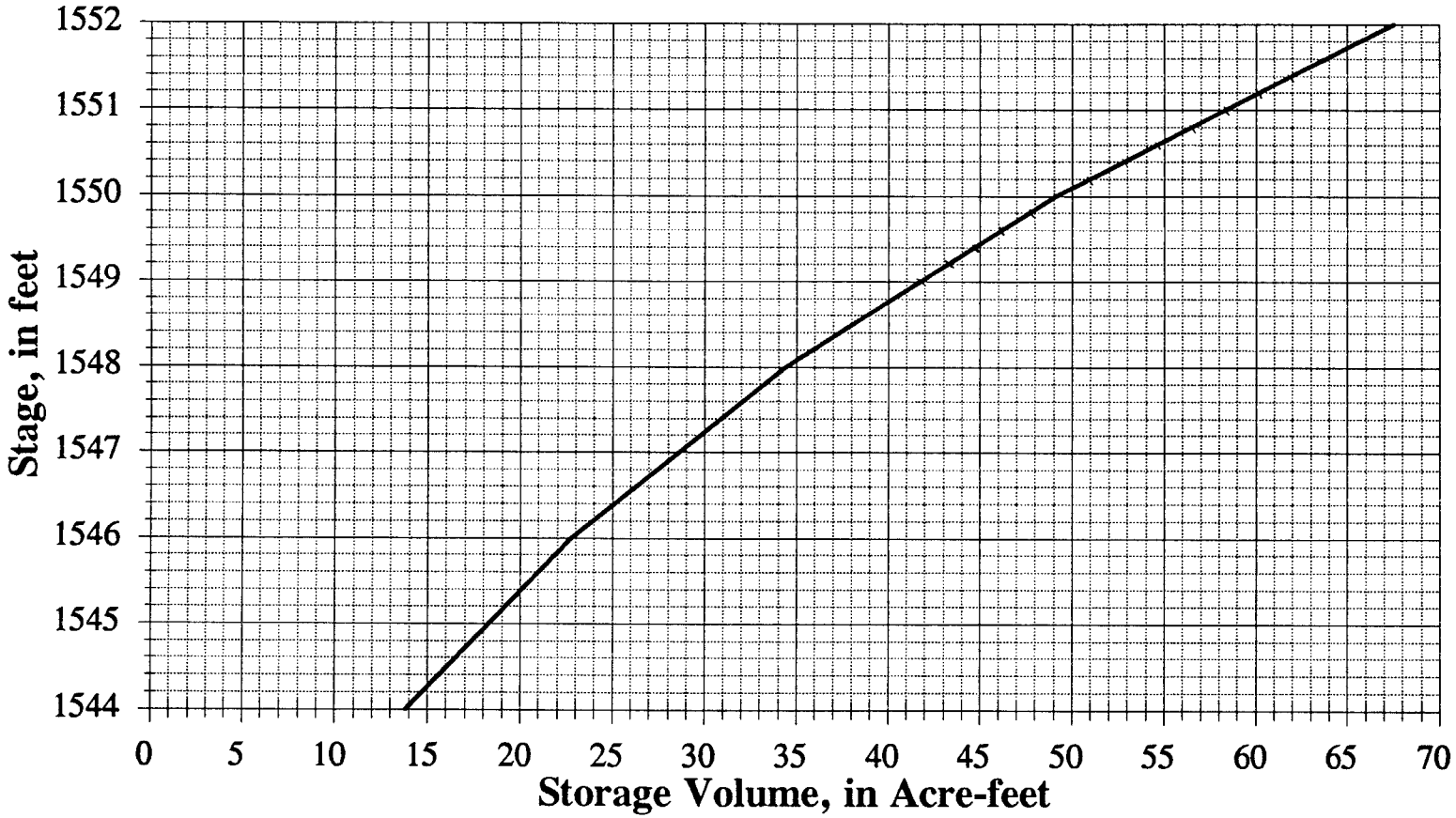
Figure R-1

Storage and Discharge vs Stage for C503



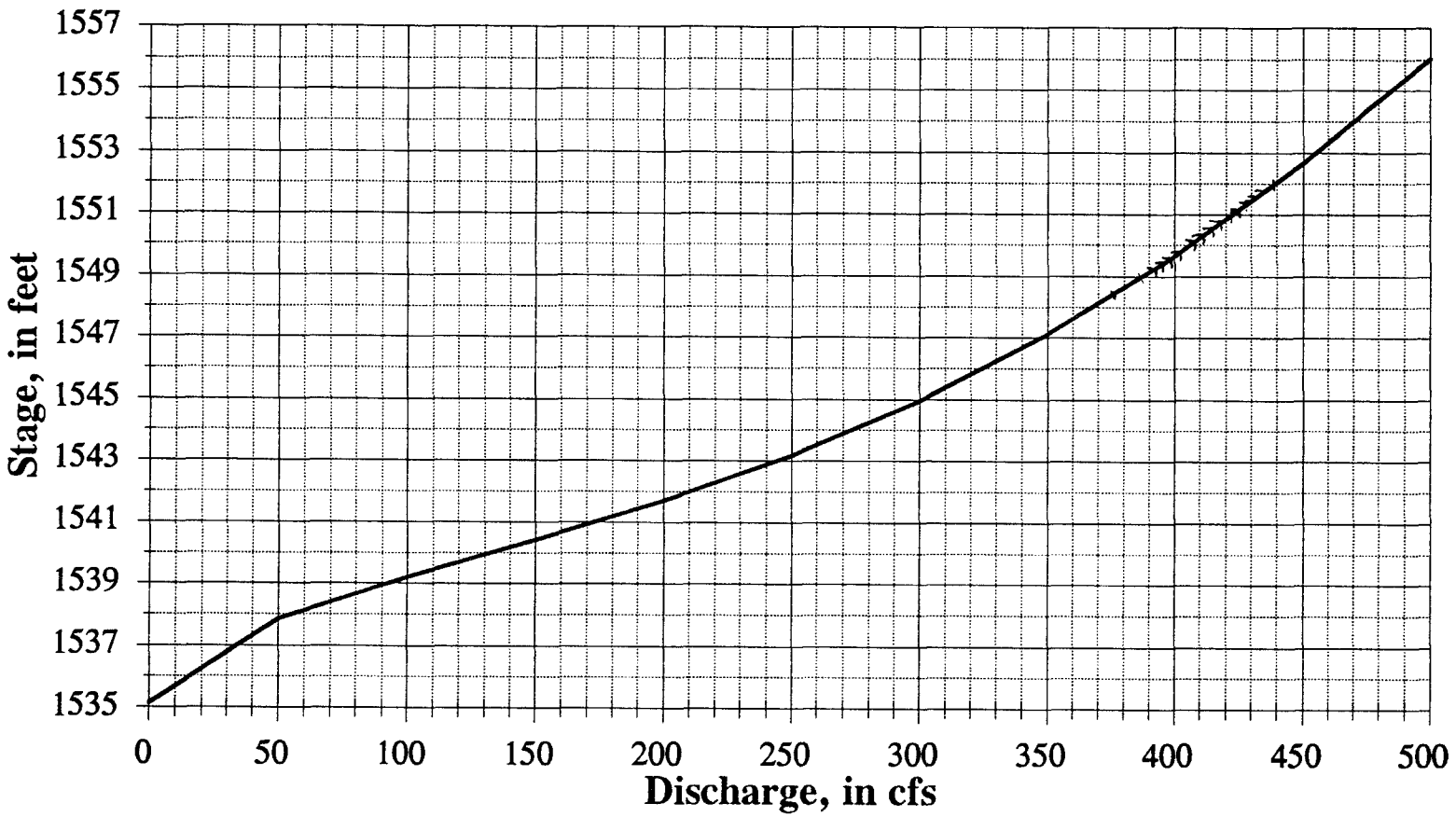
C503 Storage Volume

Calculated From Planimetered Contours



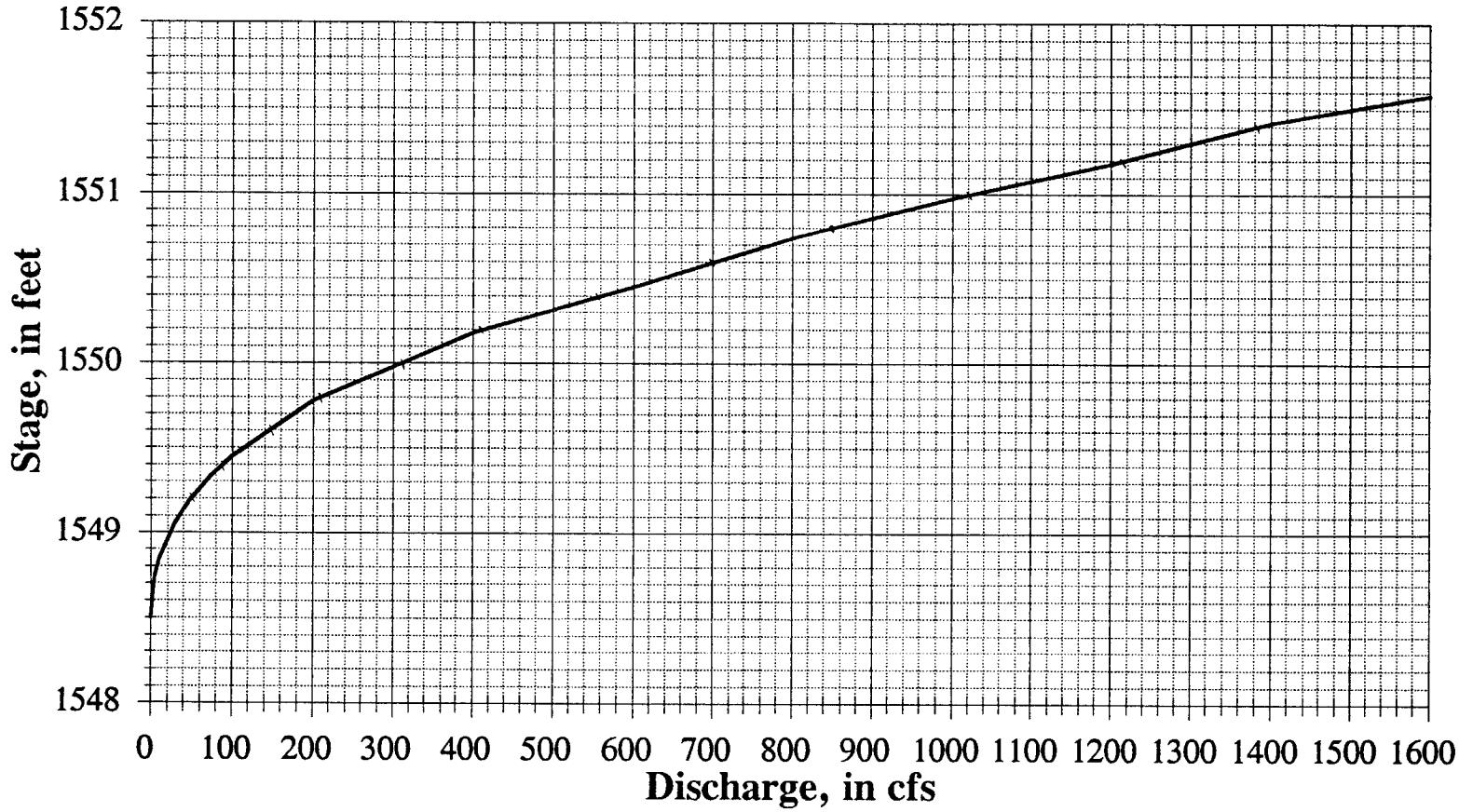
C503 Stage vs. Discharge

Culvert Flow from HY8



C503 Stage vs. Discharge

Ditch Flow from HEC-2



CURRENT DATE: 06-08-1993
CURRENT TIME: 13:00:05

FILE DATE: 06-08-1993
FILE NAME: C503

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1535.14	1530.94	190.05	1 CSP	6.00	6.00	.022	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C503 DATE: 06-08-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1535.14	0	0	0	0	0	0	0	0	1
1537.87	50	50	0	0	0	0	0	0	1
1539.21	100	100	0	0	0	0	0	0	1
1540.43	150	150	0	0	0	0	0	0	1
1541.71	200	200	0	0	0	0	0	0	1
1543.18	250	250	0	0	0	0	0	0	1
1544.96	300	300	0	0	0	0	0	0	1
1547.11	350	350	0	0	0	0	0	0	1
1549.66	400	400	0	0	0	0	0	0	1
1552.65	450	450	0	0	0	0	0	0	1
1556.05	500	500	0	0	0	0	0	0	1
1560.00	552	552	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C503 DATE: 06-08-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1535.14	0.00	0	0	0.00
1537.87	0.00	50	0	0.00
1539.21	0.00	100	0	0.00
1540.43	0.00	150	0	0.00
1541.71	0.00	200	0	0.00
1543.18	0.00	250	0	0.00
1544.96	0.00	300	0	0.00
1547.11	0.00	350	0	0.00
1549.66	0.00	400	0	0.00

1552.65	0.00	450	0	0.00
1556.05	0.00	500	0	0.00

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 06-08-1993 FILE DATE: 06-08-1993
CURRENT TIME: 13:00:05 FILE NAME: C503

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (6 BY 6) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1535.14	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
50	1537.87	2.73	2.73	1-S2n	1.46	1.87	9.33	1.46	2.45	0.42
100	1539.21	4.07	4.07	1-S2n	2.11	2.68	11.25	2.11	2.93	0.57
150	1540.43	5.29	5.29	1-S2n	2.64	3.31	12.41	2.66	3.25	0.68
200	1541.71	6.57	6.57	5-S2n	3.13	3.85	13.43	3.13	3.49	0.77
250	1543.18	8.04	8.04	5-S2n	3.60	4.32	14.14	3.60	3.70	0.85
300	1544.96	9.82	9.82	5-S2n	4.08	4.72	14.66	4.08	3.87	0.91
350	1547.11	11.97	11.97	5-S2n	4.63	5.03	14.96	4.63	4.03	0.98
400	1549.66	14.52	12.19	6-FFn	6.00	5.31	14.15	6.00	4.16	1.03
450	1552.65	17.51	15.18	6-FFn	6.00	5.60	15.92	6.00	4.29	1.08
500	1556.05	20.91	18.51	6-FFn	6.00	5.88	17.68	6.00	4.40	1.13

El. inlet face invert 1535.14 ft El. outlet invert 1530.94 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION (FT)                        0.00
      INLET ELEVATION (FT)                   1535.14
      OUTLET STATION (FT)                     190.00
      OUTLET ELEVATION (FT)                  1530.94
      NUMBER OF BARRELS                         1
      SLOPE (V-FT/H-FT)                         0.0221
      CULVERT LENGTH ALONG SLOPE (FT)         190.05

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          CIRCULAR
      BARREL DIAMETER         6.00 FT
      BARREL MATERIAL       CORRUGATED STEEL
      BARREL MANNING'S N    0.022
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   THIN EDGE PROJECTING
      INLET DEPRESSION      NONE
```

CURRENT DATE: 06-08-1993
CURRENT TIME: 13:00:05

FILE DATE: 06-08-1993
FILE NAME: C503

TAILWATER

***** USER DEFINED CHANNEL CROSS-SECTION

FILE NAME: C503
FILE DATE: 06-08-1993

MAIN CHANNEL AND LT & RT OVER BANKS	
LEFT CHANNEL BOUNDARY	5
RIGHT CHANNEL BOUNDARY	8
MANNING N LEFT OVER BANK	0.055
MANNING N MAIN CHANNEL	0.035
MANNING N RIGHT OVER BAN	0.055
SLOPE OF CHANNEL (FT/FT)	0.0200

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	1000.00	1540.94
2	1008.00	1538.94
3	1017.00	1536.94
4	1037.00	1534.94
5	1057.00	1532.94
6	1232.00	1530.94
7	1252.00	1530.94
8	1362.00	1532.94
9	1392.00	1534.92
10	1422.00	1536.94
11	1447.00	1538.94
12	1467.00	1540.94

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1530.94	0.000	0.00	0.00	0.00
50.00	1531.36	0.846	0.42	2.45	0.33
100.00	1531.51	0.884	0.57	2.93	0.43
150.00	1531.62	0.908	0.68	3.25	0.50
200.00	1531.71	0.924	0.77	3.49	0.55
250.00	1531.79	0.937	0.85	3.70	0.60
300.00	1531.85	0.948	0.91	3.87	0.65
350.00	1531.92	0.957	0.98	4.03	0.68
400.00	1531.97	0.966	1.03	4.16	0.72
450.00	1532.02	0.973	1.08	4.29	0.75
500.00	1532.07	0.979	1.13	4.40	0.78

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE GRAVEL

EMBANKMENT TOP WIDTH (FT)	1.00
CREST LENGTH (FT)	1.00
OVERTOPPING CREST ELEVATION (FT)	1560.00

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *                                        *
 *  RUN DATE    22JUN93    TIME   19:03:43 *
 *****************************************
```

```
*************************************
 *  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
```

```
1
   22JUN93      19:03:43                                                                                PAGE    1


                                                                    THIS RUN EXECUTED 22JUN93    19:03:43
 *************************************
  HEC-2 WATER SURFACE PROFILES

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


 T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY:  FCD#92-04
 T2      FOUNTAIN HILLS NORTH FIS STUDY by GVSCE
 T3                                                   dtp
                                                 FILE:   CH503.IH2
 T4
 T5              This model is used to develop a rating curve for culvert 503
 T6              Ditch flow to south of culvert 503 is diverted to C504
 T7
 T8      Single X-Section Run
                 Ditch slope =   .01333        From 200 scale map

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           .01333

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1                  -1                                       -1

    SECNO       Q   CWSEL   DEPTH     VCH   CRIWS      EG      HL   SLOPE  KRATIO

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38         43          1          8         26          2          3         11          5         58


         Manning's n:          Min  Normal     Max
                   Earth      .015    .022    .030
                Pavement      .013    .016    .020
                  Desert      .040    .060    .080
                Veg Des.      .070    .100    .160

                  Earthy
    Earth  Desert  Desert

 NC     .022       .055       .035         .1         .3
 QT       14          5         10         30         50         75        100        200        400        600
 QT      800       1000       1200       1400       1600


         X-Section 1
            this section needs to be input from 200 scale map
 X1         1          8       1008       1097
 GR      1552     999.99    1551.41       1000    1551.01       1008    1550.01       1012     1548.5       1042
 GR    1548.5       1052       1550       1097       1552       1187

1
   22JUN93      19:03:43                                                                                PAGE    2


 X1        2                                                  .2         .2         .2

 X1        3                                                  .2         .2         .2

 X1        4                                                  .2         .2         .2

 X1        5                                                  .2         .2         .2

 X1        6                                                  .2         .2         .2

1
   22JUN93      19:03:43                                                                                PAGE    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 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .22   1548.72   1548.67       .00   1548.75       .03       .00       .00   1551.01
       5.0        .0       5.0        .0        .0       3.4        .0        .0        .0   1550.00
       .00       .00      1.46       .00      .000      .035      .000      .000   1548.50   1037.62
   .013321        0.        0.        0.         0        24         9       .00     21.01   1058.62


*SECNO 2.000
     2.000       .22   1548.72   1548.67       .00   1548.76       .03       .00       .00   1551.01
       5.0        .0       5.0        .0        .0       3.5        .0        .0        .0   1550.00
       .00       .00      1.44       .00      .000      .035      .000      .000   1548.50   1037.56
   .012719        0.        0.        0.         0        15         0       .00     21.14   1058.70


*SECNO 3.000
     3.000       .23   1548.73   1548.67       .00   1548.76       .03       .00       .00   1551.01
       5.0        .0       5.0        .0        .0       3.6        .0        .0        .0   1550.00
       .00       .00      1.41       .00      .000      .035      .000      .000   1548.50   1037.49
   .011977        0.        0.        0.         0        15         0       .00     21.32   1058.81


*SECNO 4.000
     4.000       .23   1548.73   1548.67       .00   1548.76       .03       .00       .00   1551.01
       5.0        .0       5.0        .0        .0       3.6        .0        .0        .0   1550.00
       .00       .00      1.38       .00      .000      .035      .000      .000   1548.50   1037.42
   .011241        0.        0.        0.         0        15         0       .00     21.51   1058.92


*SECNO 5.000
     5.000       .24   1548.74   1548.67       .00   1548.76       .03       .00       .00   1551.01
       5.0        .0       5.0        .0        .0       3.7        .0        .0        .0   1550.00
       .00       .00      1.35       .00      .000      .035      .000      .000   1548.50   1037.34
   .010582        0.        0.        0.         0        15         0       .00     21.69   1059.03


*SECNO 6.000
     6.000       .24   1548.74   1548.67       .00   1548.77       .03       .00       .00   1551.01
       5.0        .0       5.0        .0        .0       3.8        .0        .0        .0   1550.00
       .00       .00      1.32       .00      .000      .035      .000      .000   1548.50   1037.27
   .009989        0.        0.        0.         0        15         0       .00     21.86   1059.14


1
   22JUN93      19:03:43                                                                          PAGE    4

T3            Q2

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           .01333

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      2                 -1                                      -1


1
   22JUN93      19:03:43                                                                          PAGE    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 2

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .32   1548.82   1548.75       .00   1548.86       .05       .00       .00   1551.01
      10.0        .0      10.0        .0        .0       5.6        .0        .0        .0   1550.00
       .00       .00      1.78       .00      .000      .035      .000      .000   1548.50   1035.74
   .013302        0.        0.        0.         0        17         8       .00     25.71   1061.45


*SECNO 2.000
     2.000       .32   1548.82   1548.75       .00   1548.87       .05       .00       .00   1551.01
      10.0        .0      10.0        .0        .0       5.7        .0        .0        .0   1550.00
       .00       .00      1.76       .00      .000      .035      .000      .000   1548.50   1035.69
   .012860        0.        0.        0.         0        15         0       .00     25.85   1061.53


*SECNO 3.000
     3.000       .32   1548.82   1548.75       .00   1548.87       .05       .00       .00   1551.01
      10.0        .0      10.0        .0        .0       5.8        .0        .0        .0   1550.00
       .00       .00      1.73       .00      .000      .035      .000      .000   1548.50   1035.61
   .012266        0.        0.        0.         0        15         0       .00     26.03   1061.65


*SECNO 4.000
     4.000       .33   1548.83   1548.75       .00   1548.87       .04       .00       .00   1551.01
      10.0        .0      10.0        .0        .0       5.9        .0        .0        .0   1550.00
       .00       .00      1.69       .00      .000      .035      .000      .000   1548.50   1035.53
   .011635        0.        0.        0.         0        15         0       .00     26.25   1061.77


*SECNO 5.000
     5.000       .33   1548.83   1548.75       .00   1548.87       .04       .00       .00   1551.01
      10.0        .0      10.0        .0        .0       6.0        .0        .0        .0   1550.00
```

```
      .00        .00       1.66        .00       .000       .035       .000       .000   1548.50   1035.44
   .011060         0.         0.         0.          0         15          0        .00     26.45   1061.90

*SECNO 6.000
     6.000        .34    1548.84    1548.75        .00    1548.88        .04        .00        .00   1551.01
      10.0         .0       10.0         .0         .0        6.1         .0         .0         .0   1550.00
       .00        .00       1.63        .00       .000       .035       .000       .000   1548.50   1035.37
   .010550         0.         0.         0.          0         15          0        .00     26.65   1062.02
```



```
T3            Q3
J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
                 4                         .01333
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     3                   -1                                      -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 3

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000        .54    1549.04    1548.95        .00    1549.13        .09        .00        .00   1551.01
      30.0         .0       30.0         .0         .0       12.6         .0         .0         .0   1550.00
       .00        .00       2.38        .00       .000       .035       .000       .000   1548.50   1031.30
   .013104         0.         0.         0.          0         14          6        .00     36.86   1068.16

*SECNO 2.000
     2.000        .54    1549.04    1548.95        .00    1549.13        .09        .00        .00   1551.01
      30.0         .0       30.0         .0         .0       12.7         .0         .0         .0   1550.00
       .00        .00       2.36        .00       .000       .035       .000       .000   1548.50   1031.25
   .012841         0.         0.         0.          0         15          0        .00     36.99   1068.23

*SECNO 3.000
     3.000        .55    1549.05    1548.95        .00    1549.13        .08        .00        .00   1551.01
      30.0         .0       30.0         .0         .0       12.9         .0         .0         .0   1550.00
       .00        .00       2.33        .00       .000       .035       .000       .000   1548.50   1031.17
   .012440         0.         0.         0.          0         15          0        .00     37.19   1068.35

*SECNO 4.000
     4.000        .55    1549.05    1548.95        .00    1549.13        .08        .00        .00   1551.01
      30.0         .0       30.0         .0         .0       13.0         .0         .0         .0   1550.00
       .00        .00       2.30        .00       .000       .035       .000       .000   1548.50   1031.08
   .011997         0.         0.         0.          0         15          0        .00     37.42   1068.49

*SECNO 5.000
     5.000        .56    1549.06    1548.95        .00    1549.14        .08        .00        .00   1551.01
      30.0         .0       30.0         .0         .0       13.2         .0         .0         .0   1550.00
       .00        .00       2.27        .00       .000       .035       .000       .000   1548.50   1030.98
   .011562         0.         0.         0.          0         15          0        .00     37.65   1068.64

*SECNO 6.000
     6.000        .56    1549.06    1548.95        .00    1549.14        .08        .00        .00   1551.01
      30.0         .0       30.0         .0         .0       13.4         .0         .0         .0   1550.00
       .00        .00       2.24        .00       .000       .035       .000       .000   1548.50   1030.89
   .011156         0.         0.         0.          0         15          0        .00     37.89   1068.78
```



```
T3            Q4
J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
                 5                         .01333
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     4                   -1                                      -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

*PROF 4
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CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .68   1549.18   1549.09       .00   1549.30       .12       .00       .00   1551.01
      50.0        .0      50.0        .0        .0      18.3        .0        .0        .0   1550.00
       .00       .00      2.73       .00      .000      .035      .000      .000   1548.50   1028.51
   .013313        0.        0.        0.         0        17         6       .00     43.87   1072.38

*SECNO 2.000
     2.000       .68   1549.18   1549.09       .00   1549.30       .11       .00       .00   1551.01
      50.0        .0      50.0        .0        .0      18.4        .0        .0        .0   1550.00
       .00       .00      2.72       .00      .000      .035      .000      .000   1548.50   1028.45
   .013083        0.        0.        0.         0        15         0       .00     44.00   1072.46

*SECNO 3.000
     3.000       .69   1549.19   1549.09       .00   1549.30       .11       .00       .00   1551.01
      50.0        .0      50.0        .0        .0      18.6        .0        .0        .0   1550.00
       .00       .00      2.69       .00      .000      .035      .000      .000   1548.50   1028.37
   .012728        0.        0.        0.         0        15         0       .00     44.22   1072.58

*SECNO 4.000
     4.000       .69   1549.19   1549.09       .00   1549.30       .11       .00       .00   1551.01
      50.0        .0      50.0        .0        .0      18.8        .0        .0        .0   1550.00
       .00       .00      2.66       .00      .000      .035      .000      .000   1548.50   1028.27
   .012327        0.        0.        0.         0        15         0       .00     44.47   1072.73

*SECNO 5.000
     5.000       .70   1549.20   1549.09       .00   1549.31       .11       .00       .00   1551.01
      50.0        .0      50.0        .0        .0      19.1        .0        .0        .0   1550.00
       .00       .00      2.62       .00      .000      .035      .000      .000   1548.50   1028.16
   .011913        0.        0.        0.         0        15         0       .00     44.73   1072.90

*SECNO 6.000
     6.000       .70   1549.20   1549.09       .00   1549.31       .10       .00       .00   1551.01
      50.0        .0      50.0        .0        .0      19.3        .0        .0        .0   1550.00
       .00       .00      2.59       .00      .000      .035      .000      .000   1548.50   1028.05
   .011516        0.        0.        0.         0        15         0       .00     45.00   1073.06

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T3            Q5

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 6                         .01333

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     5                  -1                                      -1

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   22JUN93      19:03:43                                                                          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

*PROF 5

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .82   1549.32   1549.21       .00   1549.46       .14       .00       .00   1551.01
      75.0        .0      75.0        .0        .0      24.7        .0        .0        .0   1550.00
       .00       .00      3.03       .00      .000      .035      .000      .000   1548.50   1025.79
   .013264        0.        0.        0.         0        18         5       .00     50.68   1076.47

*SECNO 2.000
     2.000       .82   1549.32   1549.21       .00   1549.46       .14       .00       .00   1551.01
      75.0        .0      75.0        .0        .0      24.9        .0        .0        .0   1550.00
       .00       .00      3.01       .00      .000      .035      .000      .000   1548.50   1025.74
   .013070        0.        0.        0.         0        15         0       .00     50.81   1076.55

*SECNO 3.000
     3.000       .83   1549.33   1549.21       .00   1549.46       .14       .00       .00   1551.01
      75.0        .0      75.0        .0        .0      25.1        .0        .0        .0   1550.00
       .00       .00      2.99       .00      .000      .035      .000      .000   1548.50   1025.66
   .012767        0.        0.        0.         0        15         0       .00     51.02   1076.68

*SECNO 4.000
     4.000       .83   1549.33   1549.21       .00   1549.47       .14       .00       .00   1551.01
      75.0        .0      75.0        .0        .0      25.4        .0        .0        .0   1550.00
       .00       .00      2.96       .00      .000      .035      .000      .000   1548.50   1025.55
   .012415        0.        0.        0.         0        15         0       .00     51.28   1076.83

*SECNO 5.000
     5.000       .84   1549.34   1549.21       .00   1549.47       .13       .00       .00   1551.01
      75.0        .0      75.0        .0        .0      25.7        .0        .0        .0   1550.00
       .00       .00      2.92       .00      .000      .035      .000      .000   1548.50   1025.44
   .012034        0.        0.        0.         0        15         0       .00     51.56   1077.00
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*SECNO 6.000
     6.000       .84   1549.34   1549.21       .00   1549.47       .13       .00       .00   1551.01
      75.0        .0      75.0        .0        .0      26.0        .0        .0        .0   1550.00
       .00       .00      2.89       .00      .000      .035      .000      .000   1548.50   1025.33
   .011667        0.        0.        0.         0        15         0       .00     51.85   1077.18
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T3            Q6

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                7                         .01333

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     6                  -1                                      -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

*PROF 6

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .93   1549.43   1549.32       .00   1549.59       .16       .00       .00   1551.01
     100.0        .0     100.0        .0        .0      30.7        .0        .0        .0   1550.00
       .00       .00      3.26       .00      .000      .035      .000      .000   1548.50   1023.59
   .013215        0.        0.        0.         0        14         4       .00     56.22   1079.81

*SECNO 2.000
     2.000       .93   1549.43   1549.32       .00   1549.59       .16       .00       .00   1551.01
     100.0        .0     100.0        .0        .0      30.8        .0        .0        .0   1550.00
       .00       .00      3.24       .00      .000      .035      .000      .000   1548.50   1023.53
   .013042        0.        0.        0.         0        11         0       .00     56.36   1079.89

*SECNO 3.000
     3.000       .94   1549.44   1549.32       .00   1549.60       .16       .00       .00   1551.01
     100.0        .0     100.0        .0        .0      31.1        .0        .0        .0   1550.00
       .00       .00      3.22       .00      .000      .035      .000      .000   1548.50   1023.44
   .012756        0.        0.        0.         0        15         0       .00     56.58   1080.02

*SECNO 4.000
     4.000       .94   1549.44   1549.32       .00   1549.60       .16       .00       .00   1551.01
     100.0        .0     100.0        .0        .0      31.4        .0        .0        .0   1550.00
       .00       .00      3.18       .00      .000      .035      .000      .000   1548.50   1023.34
   .012426        0.        0.        0.         0        11         0       .00     56.85   1080.18

*SECNO 5.000
     5.000       .95   1549.45   1549.32       .00   1549.60       .15       .00       .00   1551.01
     100.0        .0     100.0        .0        .0      31.7        .0        .0        .0   1550.00
       .00       .00      3.15       .00      .000      .035      .000      .000   1548.50   1023.22
   .012078        0.        0.        0.         0        15         0       .00     57.14   1080.36

*SECNO 6.000
     6.000       .95   1549.45   1549.32       .00   1549.61       .15       .00       .00   1551.01
     100.0        .0     100.0        .0        .0      32.1        .0        .0        .0   1550.00
       .00       .00      3.12       .00      .000      .035      .000      .000   1548.50   1023.10
   .011735        0.        0.        0.         0        15         0       .00     57.44   1080.54
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T3            Q7

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                8                         .01333

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     7                  -1                                      -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

*PROF 7

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
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CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      1.25   1549.75   1549.63       .00   1549.98       .24       .00       .00   1551.01
     200.0        .0     200.0        .0        .0      51.2        .0        .0        .0   1550.00
       .00       .00      3.90       .00      .000      .035      .000      .000   1548.50   1017.23
   .013361        0.        0.        0.         0        14         5       .00     72.18   1089.41

*SECNO 2.000
     2.000      1.25   1549.75   1549.63       .00   1549.99       .23       .00       .00   1551.01
     200.0        .0     200.0        .0        .0      51.4        .0        .0        .0   1550.00
       .00       .00      3.89       .00      .000      .035      .000      .000   1548.50   1017.17
   .013226        0.        0.        0.         0        11         0       .00     72.32   1089.49

*SECNO 3.000
     3.000      1.26   1549.76   1549.63       .00   1549.99       .23       .00       .00   1551.01
     200.0        .0     200.0        .0        .0      51.8        .0        .0        .0   1550.00
       .00       .00      3.86       .00      .000      .035      .000      .000   1548.50   1017.08
   .012998        0.        0.        0.         0        11         0       .00     72.55   1089.63

*SECNO 4.000
     4.000      1.26   1549.76   1549.63       .00   1549.99       .23       .00       .00   1551.01
     200.0        .0     200.0        .0        .0      52.2        .0        .0        .0   1550.00
       .00       .00      3.83       .00      .000      .035      .000      .000   1548.50   1016.97
   .012721        0.        0.        0.         0        11         0       .00     72.83   1089.80

*SECNO 5.000
     5.000      1.27   1549.77   1549.63       .00   1550.00       .22       .00       .00   1551.01
     200.0        .0     200.0        .0        .0      52.7        .0        .0        .0   1550.00
       .00       .00      3.80       .00      .000      .035      .000      .000   1548.50   1016.83
   .012406        0.        0.        0.         0        11         0       .00     73.17   1090.00

*SECNO 6.000
     6.000      1.28   1549.78   1549.63       .00   1550.00       .22       .00       .00   1551.01
     200.0        .0     200.0        .0        .0      53.2        .0        .0        .0   1550.00
       .00       .00      3.76       .00      .000      .035      .000      .000   1548.50   1016.69
   .012085        0.        0.        0.         0        11         0       .00     73.52   1090.21

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   22JUN93      19:03:43                                                                          PAGE   16

T3            Q8

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 9                         .01333

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     8                  -1                                      -1

1
   22JUN93      19:03:43                                                                          PAGE   17

    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 8

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      1.64   1550.14   1550.04       .00   1550.50       .36       .00       .00   1551.01
     400.0        .0     399.8        .2        .0      83.1        .4        .0        .0   1550.00
       .00       .00      4.81       .53      .000      .035      .055      .000   1548.50   1011.48
   .013357        0.        0.        0.         0        15         5       .00     91.86   1103.33

*SECNO 2.000
     2.000      1.65   1550.15   1550.04       .00   1550.50       .36       .00       .00   1551.01
     400.0        .0     399.8        .2        .0      83.3        .5        .0        .0   1550.00
       .00       .00      4.80       .54      .000      .035      .055      .000   1548.50   1011.47
   .013237        0.        0.        0.         0        11         0       .00     91.99   1103.45

*SECNO 3.000
     3.000      1.65   1550.15   1550.04       .00   1550.51       .35       .00       .00   1551.01
     400.0        .0     399.7        .3        .0      83.7        .5        .0        .0   1550.00
       .00       .00      4.77       .54      .000      .035      .055      .000   1548.50   1011.45
   .013026        0.        0.        0.         0        11         0       .00     92.22   1103.67

*SECNO 4.000
     4.000      1.66   1550.16   1550.04       .00   1550.51       .35       .00       .00   1551.01
     400.0        .0     399.7        .3        .0      84.3        .5        .0        .0   1550.00
       .00       .00      4.74       .55      .000      .035      .055      .000   1548.50   1011.42
   .012746        0.        0.        0.         0        11         0       .00     92.54   1103.96

*SECNO 5.000
     5.000      1.67   1550.17   1550.04       .00   1550.51       .34       .00       .00   1551.01
     400.0        .0     399.7        .3        .0      84.9        .6        .0        .0   1550.00
       .00       .00      4.70       .56      .000      .035      .055      .000   1548.50   1011.39
   .012424        0.        0.        0.         0        11         0       .00     92.92   1104.31
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*SECNO 6.000
     6.000      1.68   1550.18   1550.04       .00   1550.51       .34       .00       .00   1551.01
     400.0       .0     399.6        .4        .0     85.7        .7        .0        .0   1550.00
       .00       .00      4.66       .58      .000      .035      .055      .000   1548.50   1011.36
   .012078       0.        0.        0.         0        11         0       .00     93.33   1104.69
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1
   22JUN93      19:03:43                                                                          PAGE   18

 T3            Q9

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

               10                          .01333

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      9                  -1                                      -1

1
   22JUN93      19:03:43                                                                          PAGE   19

     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 9

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

 CCHV=      .100 CEHV=      .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      1.91   1550.41   1550.33       .00   1550.90       .49       .00       .00   1551.01
     600.0       .0     595.9       4.1        .0     106.3       3.8        .0        .0   1550.00
       .00       .00      5.61      1.08      .000      .035      .055      .000   1548.50   1010.40
   .013303       0.        0.        0.         0         8         5       .00    105.05   1115.45

 *SECNO 2.000
     2.000      1.92   1550.42   1550.34       .00   1550.90       .48       .00       .00   1551.01
     600.0       .0     595.8       4.2        .0     106.5       3.8        .0        .0   1550.00
       .00       .00      5.60      1.08      .000      .035      .055      .000   1548.50   1010.39
   .013206       0.        0.        0.         0         8         0       .00    105.18   1115.57

 *SECNO 3.000
     3.000      1.92   1550.42   1550.33       .00   1550.90       .48       .00       .00   1551.01
     600.0       .0     595.7       4.3        .0     106.9       3.9        .0        .0   1550.00
       .00       .00      5.57      1.09      .000      .035      .055      .000   1548.50   1010.37
   .013024       0.        0.        0.         0        11         0       .00    105.43   1115.80

 *SECNO 4.000
     4.000      1.93   1550.43   1550.33       .00   1550.90       .47       .00       .00   1551.01
     600.0       .0     595.6       4.4        .0     107.6       4.1        .0        .0   1550.00
       .00       .00      5.54      1.09      .000      .035      .055      .000   1548.50   1010.34
   .012773       0.        0.        0.         0        11         0       .00    105.78   1116.12

 *SECNO 5.000
     5.000      1.94   1550.44   1550.33       .00   1550.91       .47       .00       .00   1551.01
     600.0       .0     595.4       4.6        .0     108.4       4.2        .0        .0   1550.00
       .00       .00      5.49      1.09      .000      .035      .055      .000   1548.50   1010.30
   .012462       0.        0.        0.         0        11         0       .00    106.23   1116.53

 *SECNO 6.000
     6.000      1.95   1550.45   1550.33       .00   1550.91       .46       .00       .00   1551.01
     600.0       .0     595.1       4.9        .0     109.3       4.4        .0        .0   1550.00
       .00       .00      5.45      1.09      .000      .035      .055      .000   1548.50   1010.26
   .012114       0.        0.        0.         0        11         0       .00    106.75   1117.01

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   22JUN93      19:03:43                                                                          PAGE   20

 T3            Q10

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

               11                          .01333

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     10                 -1                                      -1

1
   22JUN93      19:03:43                                                                          PAGE   21

     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

 *PROF10

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

 CCHV=      .100 CEHV=      .300
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```
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      2.14   1550.64   1550.58       .00   1551.23       .59       .00       .00   1551.01
     800.0       .0     786.6      13.4        .0     126.2       9.2        .0        .0   1550.00
       .00       .00     6.23      1.45      .000      .035      .055      .000   1548.50   1009.48
   .013244       0.       0.        0.         0        11         5       .00    116.29   1125.77

*SECNO 2.000
     2.000      2.14   1550.64   1550.59       .00   1551.24       .59       .00       .00   1551.01
     800.0       .0     786.5      13.5        .0     126.5       9.3        .0        .0   1550.00
       .00       .00     6.22      1.45      .000      .035      .055      .000   1548.50   1009.47
   .013160       0.       0.        0.         0         8         0       .00    116.42   1125.89

*SECNO 3.000
     3.000      2.15   1550.65   1550.59       .00   1551.24       .59       .00       .00   1551.01
     800.0       .0     786.3      13.7        .0     126.9       9.4        .0        .0   1550.00
       .00       .00     6.19      1.45      .000      .035      .055      .000   1548.50   1009.45
   .012996       0.       0.        0.         0         8         0       .00    116.69   1126.14

*SECNO 4.000
     4.000      2.16   1550.66   1550.59       .00   1551.24       .58       .00       .00   1551.01
     800.0       .0     786.0      14.0        .0     127.6       9.7        .0        .0   1550.00
       .00       .00     6.16      1.45      .000      .035      .055      .000   1548.50   1009.42
   .012761       0.       0.        0.         0         8         0       .00    117.07   1126.49

*SECNO 5.000
     5.000      2.18   1550.68   1550.59       .00   1551.25       .57       .00       .00   1551.01
     800.0       .0     785.6      14.4        .0     128.5      10.0        .0        .0   1550.00
       .00       .00     6.11      1.45      .000      .035      .055      .000   1548.50   1009.38
   .012461       0.       0.        0.         0         8         0       .00    117.57   1126.95

*SECNO 6.000
     6.000      2.24   1550.74   1550.59       .00   1551.25       .52       .00       .01   1551.01
     800.0       .0     782.7      17.3        .0     134.5      12.1        .0        .0   1550.00
       .00       .00     5.82      1.43      .000      .035      .055      .000   1548.50   1009.11
   .010681       0.       0.        0.         3         8         0       .00    120.90   1130.00

1
   22JUN93      19:03:43                                                                          PAGE   22

T3          Q11

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              12                            .01333

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    11                  -1                                      -1

1
   22JUN93      19:03:43                                                                          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

*PROF11

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      2.34   1550.84   1550.82       .00   1551.53       .69       .00       .00   1551.01
    1000.0       .0     972.2      27.8        .0     144.0      15.9        .0        .0   1550.00
       .00       .00     6.75      1.74      .000      .035      .055      .000   1548.50   1008.67
   .013213       0.       0.        0.         0        11         5       .00    126.18   1134.86

*SECNO 2.000
     2.000      2.35   1550.85   1550.81       .00   1551.53       .69       .00       .00   1551.01
    1000.0       .0     972.1      27.9        .0     144.2      16.0        .0        .0   1550.00
       .00       .00     6.74      1.74      .000      .035      .055      .000   1548.50   1008.66
   .013139       0.       0.        0.         0         5         0       .00    126.32   1134.98

*SECNO 3.000
     3.000      2.36   1550.86   1550.81       .00   1551.54       .68       .00       .00   1551.01
    1000.0       .0     971.8      28.2        .0     144.7      16.2        .0        .0   1550.00
       .00       .00     6.71      1.74      .000      .035      .055      .000   1548.50   1008.64
   .012989       0.       0.        0.         0         5         0       .00    126.58   1135.23

*SECNO 4.000
     4.000      2.37   1550.87   1550.80       .00   1551.54       .67       .00       .00   1551.01
    1000.0       .0     971.3      28.7        .0     145.4      16.6        .0        .0   1550.00
       .00       .00     6.68      1.74      .000      .035      .055      .000   1548.50   1008.61
   .012765       0.       0.        0.         0         5         0       .00    126.99   1135.60

*SECNO 5.000
     5.000      2.47   1550.97   1550.82       .00   1551.55       .58       .00       .01   1551.01
    1000.0       .0     964.3      35.7        .0     155.5      21.2        .0        .0   1550.00
       .00       .00     6.20      1.68      .000      .035      .055      .000   1548.50   1008.15
   .010140       0.       0.        0.         4         8         0       .00    132.55   1140.71

*SECNO 6.000
```

```
     6.000      2.48   1550.98   1550.81       .00   1551.55       .57       .00       .00   1551.01
    1000.0        .0     963.9      36.1        .0     156.0      21.5        .0        .0   1550.00
       .00       .00      6.18      1.68      .000      .035      .055      .000   1548.50   1008.13
   .010021        0.        0.        0.         0        11         0       .00    132.85   1140.98

1
   22JUN93      19:03:43                                                                          PAGE   24

 T3           Q12
 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                13                          .01333

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     12                  -1                                      -1

1
   22JUN93      19:03:43                                                                          PAGE   25

     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

 *PROF12

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

 CCHV=      .100 CEHV=      .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      2.52   1551.02   1551.02       .00   1551.80       .78       .00       .00   1551.01
    1200.0        .0     1153.3      46.7        .0     160.1      23.5        .0        .0   1550.00
       .00       .08      7.20      1.98      .022      .035      .055      .000   1548.50   1007.75
   .013200        0.        0.        0.         0        14         5       .00    135.28   1143.02

 *SECNO 2.000
     2.000      2.53   1551.03   1551.02       .00   1551.80       .77       .00       .00   1551.01
    1200.0        .0     1153.1      46.9        .0     160.3      23.7        .0        .0   1550.00
       .00       .08      7.19      1.98      .022      .035      .055      .000   1548.50   1007.69
   .013130        0.        0.        0.         0         5         0       .00    135.45   1143.14

 *SECNO 3.000
     3.000      2.54   1551.04   1551.02       .00   1551.81       .77       .00       .00   1551.01
    1200.0        .0     1152.7      47.3        .0     160.8      23.9        .0        .0   1550.00
       .00       .08      7.17      1.98      .022      .035      .055      .000   1548.50   1007.58
   .012984        0.        0.        0.         0         5         0       .00    135.82   1143.40

 *SECNO 4.000
     4.000      2.55   1551.05   1551.01       .00   1551.81       .76       .00       .00   1551.01
    1200.0        .0     1152.0      48.0        .0     161.6      24.3        .0        .0   1550.00
       .00       .08      7.13      1.97      .022      .035      .055      .000   1548.50   1007.41
   .012764        0.        0.        0.         0         5         0       .00    136.38   1143.79

 *SECNO 5.000
     5.000      2.67   1551.17   1551.01       .00   1551.82       .65       .00       .01   1551.01
    1200.0        .3     1142.2      57.5        .2     172.6      30.4        .0        .0   1550.00
       .00      1.22      6.62      1.89      .022      .035      .055      .000   1548.50   1004.94
   .010076        0.        0.        0.        11         5         0       .00    144.41   1149.34

 *SECNO 6.000
     6.000      2.68   1551.18   1551.02       .00   1551.83       .64       .00       .00   1551.01
    1200.0        .3     1141.2      58.4        .3     173.6      31.1        .0        .0   1550.00
       .00      1.27      6.57      1.88      .022      .035      .055      .000   1548.50   1004.70
   .009861        0.        0.        0.         0        11         0       .00    145.16   1149.87

1
   22JUN93      19:03:43                                                                          PAGE   26

 T3           Q13
 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                14                          .01333

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     13                  -1                                      -1

1
   22JUN93      19:03:43                                                                          PAGE   27

     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

 *PROF13

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

 CCHV=      .100 CEHV=      .300
 *SECNO 1.000
```

```
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      2.71   1551.21   1551.21       .00   1552.05       .83       .00       .00   1551.01
    1400.0        .7    1327.9      71.4        .4     176.8      33.0        .0        .0   1550.00
       .00      1.63      7.51      2.17      .022      .035      .055      .000   1548.50   1004.00
   .012574        0.        0.        0.         0        14         5       .00    147.46   1151.46

*SECNO 2.000
     2.000      2.75   1551.25   1551.22       .00   1552.05       .80       .00       .00   1551.01
    1400.0       1.0    1324.6      74.5        .5     179.7      34.8        .0        .0   1550.00
       .00      1.75      7.37      2.14      .022      .035      .055      .000   1548.50   1003.33
   .011835        0.        0.        0.         0         5         0       .00    149.63   1152.96

*SECNO 3.000
     3.000      2.76   1551.26   1551.20       .00   1552.05       .79       .00       .00   1551.01
    1400.0       1.0    1323.7      75.2        .6     180.5      35.3        .0        .0   1550.00
       .00      1.78      7.34      2.13      .022      .035      .055      .000   1548.50   1003.17
   .011662        0.        0.        0.         0         5         0       .00    150.16   1153.33

*SECNO 4.000
     4.000      2.91   1551.41   1551.20       .00   1552.07       .66       .00       .01   1551.01
    1400.0       3.4    1307.0      89.6       1.6     194.2      44.5        .0        .0   1550.00
       .00      2.16      6.73      2.02      .022      .035      .055      .000   1548.50   1000.08
   .008903        0.        0.        0.         5         5         0       .00    160.19   1160.27

*SECNO 5.000
     5.000      2.91   1551.41   1551.21       .00   1552.07       .66       .00       .00   1551.01
    1400.0       3.5    1306.4      90.1       1.6     194.6      44.8        .0        .0   1550.00
       .00      2.17      6.71      2.01      .022      .035      .055      .000   1548.50   1000.00
   .008833        0.        0.        0.         0        11         0       .00    160.48   1160.48

1
   22JUN93      19:03:43                                                                          PAGE   28

    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 6.000
     6.000      2.92   1551.42   1551.21       .00   1552.07       .65       .00       .00   1551.01
    1400.0       3.6    1305.8      90.6       1.6     195.1      45.1        .0        .0   1550.00
       .00      2.20      6.69      2.01      .022      .035      .055      .000   1548.50   1000.00
   .008751        0.        0.        0.         0        11         0       .00    160.73   1160.73

1
   22JUN93      19:03:43                                                                          PAGE   29

T3           Q14

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

               15                               .01333

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

    14                    -1                                           -1


1
   22JUN93      19:03:43                                                                          PAGE   30

    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

*PROF14

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      2.91   1551.41   1551.41       .00   1552.27       .86       .00       .00   1551.01
    1600.0       3.9    1493.4     102.7       1.6     194.4      44.6        .0        .0   1550.00
       .00      2.48      7.68      2.30      .022      .035      .055      .000   1548.50   1000.04
   .011585        0.        0.        0.         0        14         5       .00    160.33   1160.37

*SECNO 2.000
     2.000      2.91   1551.41   1551.41       .00   1552.27       .86       .00       .00   1551.01
    1600.0       4.0    1493.1     102.9       1.6     194.6      44.8        .0        .0   1550.00
       .00      2.48      7.67      2.30      .022      .035      .055      .000   1548.50   1000.00
   .011540        0.        0.        0.         0         5         0       .00    160.47   1160.47

*SECNO 3.000
     3.000      2.92   1551.42   1551.41       .00   1552.27       .85       .00       .00   1551.01
    1600.0       4.1    1492.4     103.4       1.6     195.0      45.1        .0        .0   1550.00
       .00      2.51      7.65      2.29      .022      .035      .055      .000   1548.50   1000.00
   .011444        0.        0.        0.         0         5         0       .00    160.69   1160.69

*SECNO 4.000
     4.000      2.93   1551.43   1551.40       .00   1552.28       .85       .00       .00   1551.01
```

1600.0	4.4	1491.4	104.3	1.7	195.7	45.6	.0	.0	1550.00
.00	2.56	7.62	2.29	.022	.035	.055	.000	1548.50	1000.00
.011293	0.	0.	0.	0	5	0	.00	161.05	1161.04

*SECNO 5.000

5.000	3.07	1551.57	1551.40	.00	1552.29	.72	.00	.01	1551.01
1600.0	8.8	1472.1	119.1	2.8	208.0	54.9	.0	.0	1550.00
.00	3.14	7.08	2.17	.022	.035	.055	.000	1548.50	1000.00
.008980	0.	0.	0.	7	5	0	.00	167.27	1167.26

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 6.000

6.000	3.08	1551.58	1551.41	.00	1552.29	.71	.00	.00	1551.01
1600.0	9.2	1470.5	120.2	2.9	209.0	55.6	.0	.0	1550.00
.00	3.18	7.04	2.16	.022	.035	.055	.000	1548.50	1000.00
.008822	0.	0.	0.	0	11	0	.00	167.76	1167.76

THIS RUN EXECUTED 22JUN93 19:03:46

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

 Version   4.6.2;  May 1991
************************************
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SUMMARY PRINTOUT

	SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
	1.000	5.00	1548.72	.22	1.46	1548.67	1548.75	.00	133.21	.00
	1.000	10.00	1548.82	.32	1.78	1548.75	1548.86	.00	133.02	.00
	1.000	30.00	1549.04	.54	2.38	1548.95	1549.13	.00	131.04	.00
	1.000	50.00	1549.18	.68	2.73	1549.09	1549.30	.00	133.13	.00
	1.000	75.00	1549.32	.82	3.03	1549.21	1549.46	.00	132.64	.00
	1.000	100.00	1549.43	.93	3.26	1549.32	1549.59	.00	132.15	.00
	1.000	200.00	1549.75	1.25	3.90	1549.63	1549.98	.00	133.61	.00
	1.000	400.00	1550.14	1.64	4.81	1550.04	1550.50	.00	133.57	.00
	1.000	600.00	1550.41	1.91	5.61	1550.33	1550.90	.00	133.03	.00
	1.000	800.00	1550.64	2.14	6.23	1550.58	1551.23	.00	132.44	.00
	1.000	1000.00	1550.84	2.34	6.75	1550.82	1551.53	.00	132.13	.00
	1.000	1200.00	1551.02	2.52	7.20	1551.02	1551.80	.00	132.00	.00
*	1.000	1400.00	1551.21	2.71	7.51	1551.21	1552.05	.00	125.74	.00
*	1.000	1600.00	1551.41	2.91	7.68	1551.41	1552.27	.00	115.85	.00
	2.000	5.00	1548.72	.22	1.44	1548.67	1548.76	.00	127.19	1.02
	2.000	10.00	1548.82	.32	1.76	1548.75	1548.87	.00	128.60	1.02
	2.000	30.00	1549.04	.54	2.36	1548.95	1549.13	.00	128.41	1.01
	2.000	50.00	1549.18	.68	2.72	1549.09	1549.30	.00	130.83	1.01
	2.000	75.00	1549.32	.82	3.01	1549.21	1549.46	.00	130.70	1.01
	2.000	100.00	1549.43	.93	3.24	1549.32	1549.59	.00	130.42	1.01
	2.000	200.00	1549.75	1.25	3.89	1549.63	1549.99	.00	132.26	1.01
	2.000	400.00	1550.15	1.65	4.80	1550.04	1550.50	.00	132.37	1.00
	2.000	600.00	1550.42	1.92	5.60	1550.34	1550.90	.00	132.06	1.00
	2.000	800.00	1550.64	2.14	6.22	1550.59	1551.24	.00	131.60	1.00
	2.000	1000.00	1550.85	2.35	6.74	1550.81	1551.53	.00	131.39	1.00
	2.000	1200.00	1551.03	2.53	7.19	1551.02	1551.80	.00	131.30	1.00
	2.000	1400.00	1551.25	2.75	7.37	1551.22	1552.05	.00	118.35	1.03
	2.000	1600.00	1551.41	2.91	7.67	1551.41	1552.27	.00	115.40	1.00

SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
3.000	5.00	1548.73	.23	1.41	1548.67	1548.76	.00	119.77	1.03
3.000	10.00	1548.82	.32	1.73	1548.75	1548.87	.00	122.66	1.02
3.000	30.00	1549.05	.55	2.33	1548.95	1549.13	.00	124.40	1.02
3.000	50.00	1549.19	.69	2.69	1549.09	1549.30	.00	127.28	1.01
3.000	75.00	1549.33	.83	2.99	1549.21	1549.46	.00	127.67	1.01
3.000	100.00	1549.44	.94	3.22	1549.32	1549.60	.00	127.56	1.01
3.000	200.00	1549.76	1.26	3.86	1549.63	1549.99	.00	129.98	1.01
3.000	400.00	1550.15	1.65	4.77	1550.04	1550.51	.00	130.26	1.01
3.000	600.00	1550.42	1.92	5.57	1550.33	1550.90	.00	130.24	1.01
3.000	800.00	1550.65	2.15	6.19	1550.59	1551.24	.00	129.96	1.01
3.000	1000.00	1550.86	2.36	6.71	1550.81	1551.54	.00	129.89	1.01
3.000	1200.00	1551.04	2.54	7.17	1551.02	1551.81	.00	129.84	1.01
3.000	1400.00	1551.26	2.76	7.34	1551.20	1552.05	.00	116.62	1.01
3.000	1600.00	1551.42	2.92	7.65	1551.41	1552.27	.00	114.44	1.00
4.000	5.00	1548.73	.23	1.38	1548.67	1548.76	.00	112.41	1.03
4.000	10.00	1548.83	.33	1.69	1548.75	1548.87	.00	116.35	1.03
4.000	30.00	1549.05	.55	2.30	1548.95	1549.13	.00	119.97	1.02
4.000	50.00	1549.19	.69	2.66	1549.09	1549.30	.00	123.27	1.02
4.000	75.00	1549.33	.83	2.96	1549.21	1549.47	.00	124.15	1.01
4.000	100.00	1549.44	.94	3.18	1549.32	1549.60	.00	124.26	1.01

4.000	200.00	1549.76	1.26	3.83	1549.63	1549.99	.00	127.21	1.01
4.000	400.00	1550.16	1.66	4.74	1550.04	1550.51	.00	127.46	1.01
4.000	600.00	1550.43	1.93	5.54	1550.33	1550.90	.00	127.73	1.01
4.000	800.00	1550.66	2.16	6.16	1550.59	1551.24	.00	127.61	1.01
4.000	1000.00	1550.87	2.37	6.68	1550.80	1551.54	.00	127.65	1.01
4.000	1200.00	1551.05	2.55	7.13	1551.01	1551.81	.00	127.64	1.01
4.000	1400.00	1551.41	2.91	6.73	1551.20	1552.07	.00	89.03	1.14
4.000	1600.00	1551.43	2.93	7.62	1551.40	1552.28	.00	112.93	1.01
5.000	5.00	1548.74	.24	1.35	1548.67	1548.76	.00	105.82	1.03
5.000	10.00	1548.83	.33	1.66	1548.75	1548.87	.00	110.60	1.03
5.000	30.00	1549.06	.56	2.27	1548.95	1549.14	.00	115.62	1.02
5.000	50.00	1549.20	.70	2.62	1549.09	1549.31	.00	119.13	1.02
5.000	75.00	1549.34	.84	2.92	1549.21	1549.47	.00	120.34	1.02
5.000	100.00	1549.45	.95	3.15	1549.32	1549.60	.00	120.78	1.01
5.000	200.00	1549.77	1.27	3.80	1549.63	1550.00	.00	124.06	1.01
5.000	400.00	1550.17	1.67	4.70	1550.04	1550.51	.00	124.24	1.01
5.000	600.00	1550.44	1.94	5.49	1550.33	1550.91	.00	124.62	1.01
5.000	800.00	1550.68	2.18	6.11	1550.59	1551.25	.00	124.61	1.01
5.000	1000.00	1550.97	2.47	6.20	1550.82	1551.55	.00	101.40	1.12
5.000	1200.00	1551.17	2.67	6.62	1551.01	1551.82	.00	100.76	1.13
5.000	1400.00	1551.41	2.91	6.71	1551.21	1552.07	.00	88.33	1.00
5.000	1600.00	1551.57	3.07	7.08	1551.40	1552.29	.00	89.80	1.12

1

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SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
6.000	5.00	1548.74	.24	1.32	1548.67	1548.77	.00	99.89	1.03
6.000	10.00	1548.84	.34	1.63	1548.75	1548.88	.00	105.50	1.02
6.000	30.00	1549.06	.56	2.24	1548.95	1549.14	.00	111.56	1.02
6.000	50.00	1549.20	.70	2.59	1549.09	1549.31	.00	115.16	1.02
6.000	75.00	1549.34	.84	2.89	1549.21	1549.47	.00	116.67	1.02
6.000	100.00	1549.45	.95	3.12	1549.32	1549.61	.00	117.35	1.01
6.000	200.00	1549.78	1.28	3.76	1549.63	1550.00	.00	120.85	1.01
6.000	400.00	1550.18	1.68	4.66	1550.04	1550.51	.00	120.78	1.01
6.000	600.00	1550.45	1.95	5.45	1550.33	1550.91	.00	121.14	1.01
6.000	800.00	1550.74	2.24	5.82	1550.59	1551.25	.00	106.81	1.08
6.000	1000.00	1550.98	2.48	6.18	1550.81	1551.55	.00	100.21	1.01
6.000	1200.00	1551.18	2.68	6.57	1551.02	1551.83	.00	98.61	1.01
6.000	1400.00	1551.42	2.92	6.69	1551.21	1552.07	.00	87.51	1.00
6.000	1600.00	1551.58	3.08	7.04	1551.41	1552.29	.00	88.22	1.01

1

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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 1.000 PROFILE= 13 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.000 PROFILE= 14 CRITICAL DEPTH ASSUMED

Table R-6

Storage and Discharge vs. Stage Data for C504

Stage (ft)	Surface Area (acres)	Volume (acre-ft)	Discharge		
			Culvert Flow (cfs)	Ditch Flow (cfs)	Total Flow (cfs)
1538.14	0.00	0.00	0	---	0
1540.00	0.27	0.17	11	---	11
1541.66	---	0.9	20	0	20
1541.80	---	1.0	20	2	22
1542.00	0.69	1.10	21	4	24
1542.20	---	1.3	22	8	30
1542.40	---	1.6	22	19	41
1542.60	---	1.8	23	37	60
1542.80	---	2.0	23	62	85
1543.00	---	2.3	24	97	121
1543.20	---	2.5	24	147	171
1543.40	---	2.7	25	215	240
1543.60	---	3.0	26	296	322
1543.74	---	3.1	26	370	396
1544.00	1.72	3.42	27	513	*
1546.00	2.80	7.90	30	---	*

* Note: Weir flow over the road will start at EL > 1543.74

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Flood Control District of MC Library
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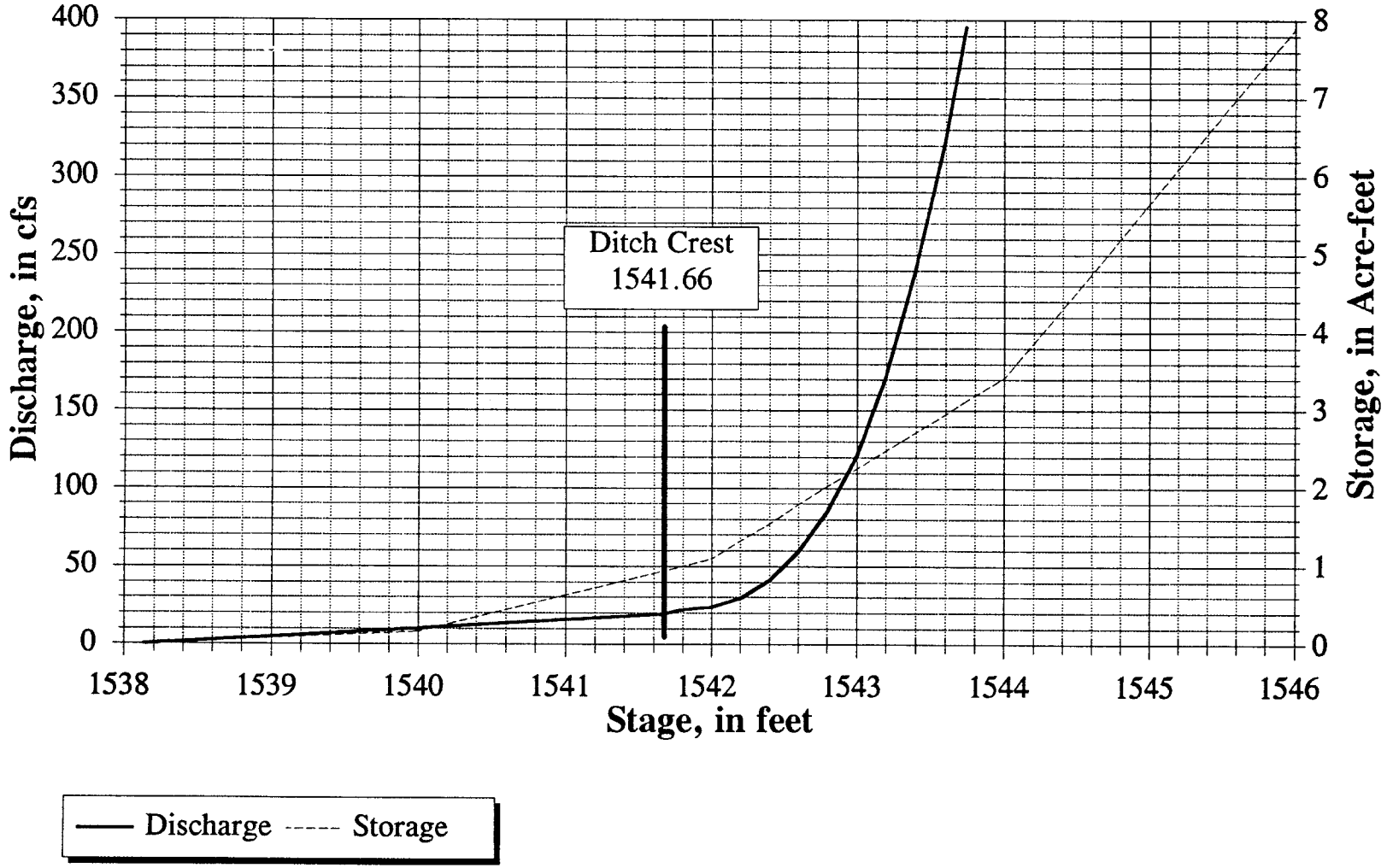
Phoenix, AZ 85009

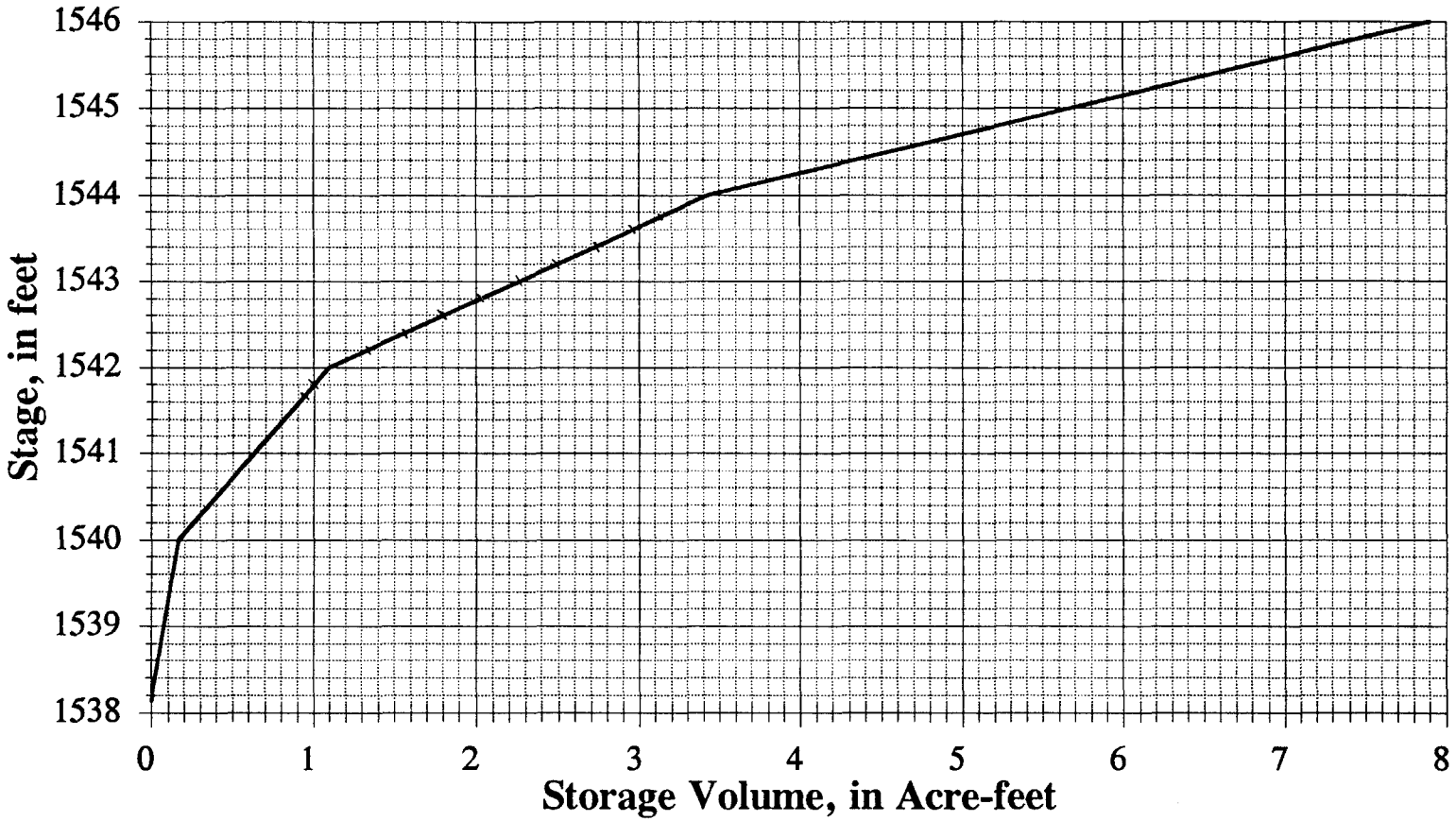
Figure R-2

Storage and Discharge vs Stage for C504



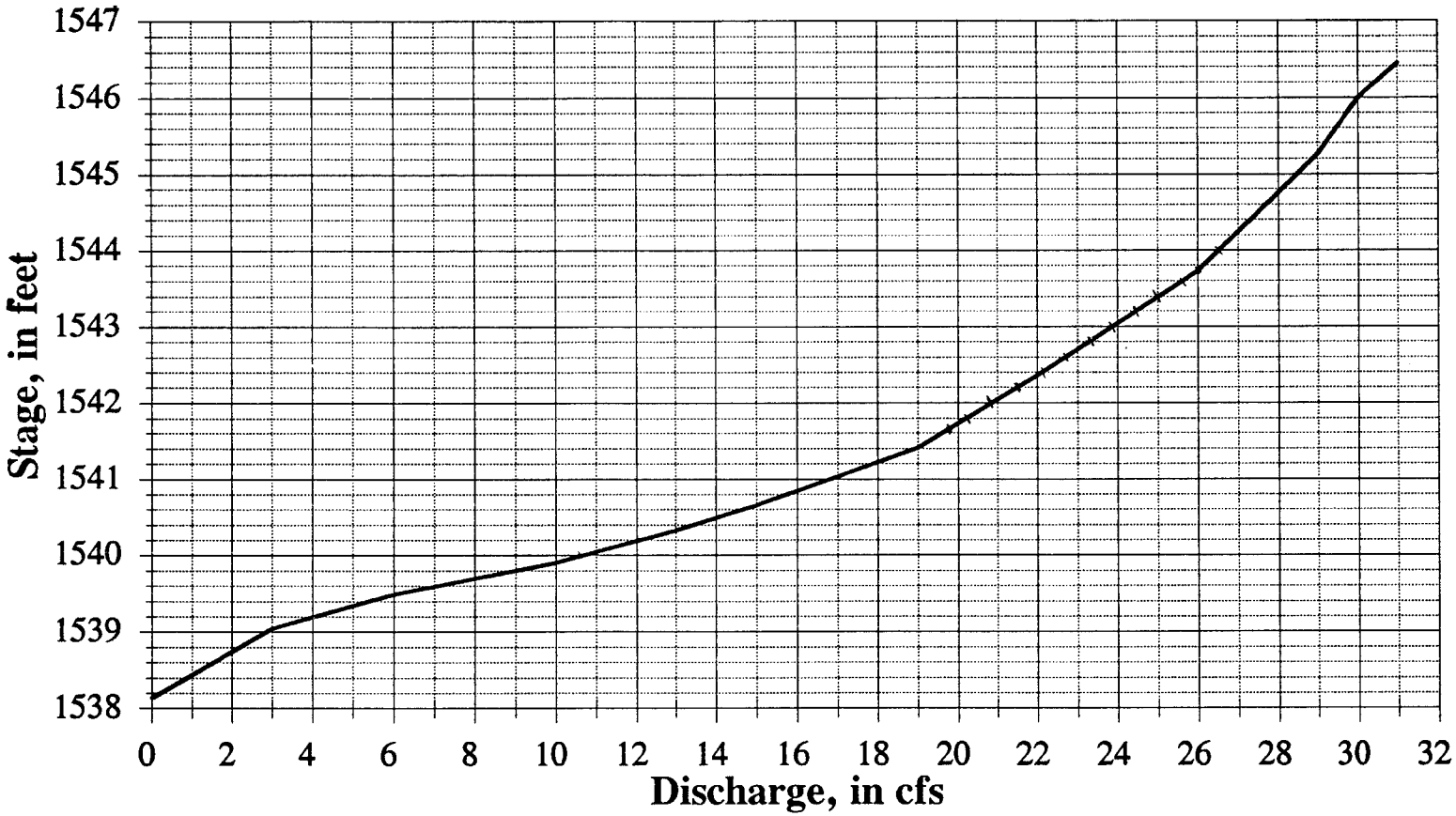
C504 Storage Volume

Calculated From Planimetered Contours



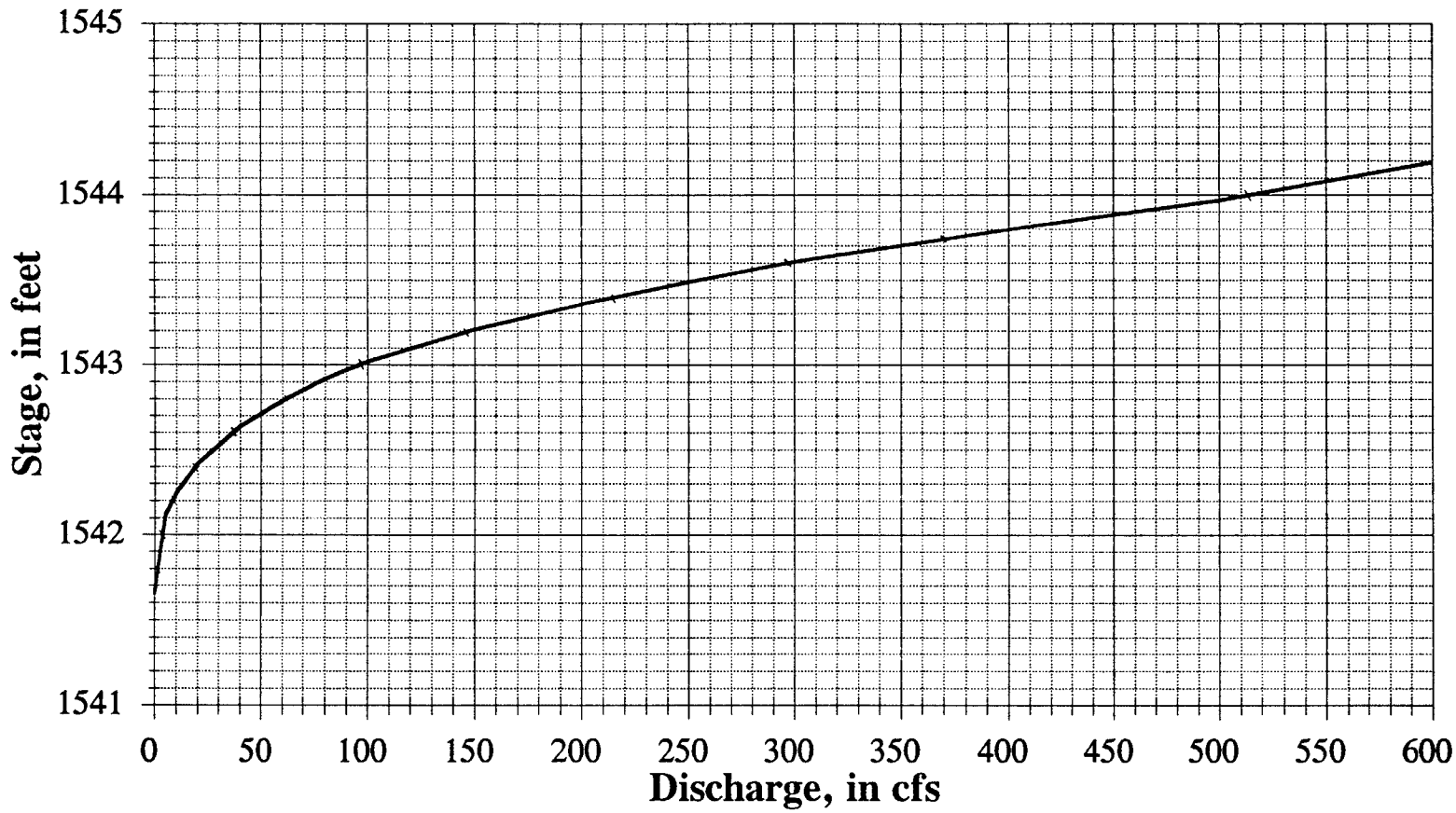
C504 Stage vs Discharge

Culvert Flow from HY8



C504 Stage vs Discharge

Ditch Flow from HEC-2



CURRENT DATE: 06-15-1993
CURRENT TIME: 11:33:44

FILE DATE: 06-15-1993
FILE NAME: C504

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1538.14	1536.24	100.02	1 CSP	2.00	2.00	.022	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C504 DATE: 06-15-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1538.14	0	0	0	0	0	0	0	0	1
1539.05	3	3	0	0	0	0	0	0	1
1539.50	6	6	0	0	0	0	0	0	1
1539.90	10	10	0	0	0	0	0	0	1
1540.33	13	13	0	0	0	0	0	0	1
1540.66	15	15	0	0	0	0	0	0	1
1541.41	19	19	0	0	0	0	0	0	1
1542.37	22	22	0	0	0	0	0	0	1
1543.73	26	26	0	0	0	0	0	0	1
1545.27	29	29	0	0	0	0	0	0	1
1546.45	32	31	0	0	0	0	0	1	4
1546.00	30	30	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C504 DATE: 06-15-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1538.14	0.00	0	0	0.00
1539.05	0.00	3	0	0.00
1539.50	0.00	6	0	0.00
1539.90	0.00	10	0	0.00
1540.33	0.00	13	0	0.00
1540.66	0.00	15	0	0.00
1541.41	0.00	19	0	0.00
1542.37	0.00	22	0	0.00
1543.73	0.00	26	0	0.00

1545.27	0.00	29	0	0.00
1546.45	-0.01	32	0	0.11

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 06-15-1993 FILE DATE: 06-15-1993
CURRENT TIME: 11:33:44 FILE NAME: C504

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (2 BY 2) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1538.14	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
3	1539.05	0.91	0.91	1-S2n	0.56	0.62	4.44	0.56	1.05	0.12
6	1539.50	1.36	1.36	1-S2n	0.81	0.89	5.35	0.81	1.31	0.17
10	1539.90	1.76	1.76	1-S2n	1.02	1.10	5.94	1.02	1.51	0.21
13	1540.33	2.19	2.19	5-S2n	1.23	1.28	6.34	1.23	1.67	0.24
15	1540.66	2.52	2.52	5-S2n	1.37	1.40	6.55	1.37	1.77	0.26
19	1541.41	3.27	3.06	2-M2c	1.74	1.57	7.25	1.57	1.94	0.30
22	1542.37	3.98	4.23	6-FFn	2.00	1.68	7.13	2.00	2.05	0.32
26	1543.73	4.83	5.59	6-FFn	2.00	1.77	8.15	2.00	2.15	0.35
29	1545.27	5.82	7.13	6-FFn	2.00	1.86	9.17	2.00	2.24	0.37
31	1546.45	6.59	8.31	6-FFn	2.00	1.93	9.88	2.00	2.33	0.40

El. inlet face invert 1538.14 ft El. outlet invert 1536.24 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION (FT)                      0.00
      INLET ELEVATION (FT)                 1538.14
      OUTLET STATION (FT)                   100.00
      OUTLET ELEVATION (FT)                1536.24
      NUMBER OF BARRELS                       1
      SLOPE (V-FT/H-FT)                       0.0190
      CULVERT LENGTH ALONG SLOPE (FT)       100.02

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          CIRCULAR
      BARREL DIAMETER         2.00 FT
      BARREL MATERIAL       CORRUGATED STEEL
      BARREL MANNING'S N    0.022
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   THIN EDGE PROJECTING
      INLET DEPRESSION      NONE
```

CURRENT DATE: 06-15-1993
CURRENT TIME: 11:33:44

FILE DATE: 06-15-1993
FILE NAME: C504

TAILWATER

***** USER DEFINED CHANNEL CROSS-SECTION
MAIN CHANNEL AND LT & RT OVER BANKS

FILE NAME: C504
FILE DATE: 06-15-1993

LEFT CHANNEL BOUNDARY	4
RIGHT CHANNEL BOUNDARY	5
MANNING N LEFT OVER BANK	0.055
MANNING N MAIN CHANNEL	0.035
MANNING N RIGHT OVER BAN	0.055
SLOPE OF CHANNEL (FT/FT)	0.0104

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	1000.00	1542.24
2	1012.00	1540.24
3	1022.00	1538.24
4	1089.00	1536.24
5	1121.00	1536.24
6	1153.00	1538.24
7	1187.00	1540.24
8	1223.00	1542.24

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1536.24	0.000	0.00	0.00	0.00
3.20	1536.36	0.536	0.12	1.05	0.08
6.40	1536.41	0.566	0.17	1.31	0.11
9.60	1536.45	0.586	0.21	1.51	0.13
12.80	1536.48	0.602	0.24	1.67	0.16
15.00	1536.50	0.610	0.26	1.77	0.17
19.20	1536.54	0.624	0.30	1.94	0.19
22.40	1536.56	0.633	0.32	2.05	0.21
25.60	1536.59	0.640	0.35	2.15	0.23
28.80	1536.61	0.647	0.37	2.24	0.24
32.00	1536.64	0.654	0.40	2.33	0.26

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	1.00
CREST LENGTH (FT)	1.00
OVERTOPPING CREST ELEVATION (FT)	1546.00

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *                                        *
 *  RUN DATE    22JUN93    TIME   19:05:07 *
 *****************************************
```

```
*************************************
 *  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     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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1
   22JUN93      19:05:07                                                                                    PAGE    1
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                                                                                THIS RUN EXECUTED 22JUN93    19:05:07
 ************************************
  HEC-2 WATER SURFACE PROFILES

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


 T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY:  FCD#92-04
 T2      FOUNTAIN HILLS NORTH FIS STUDY by GVSCE                    dtp
 T3                                                      FILE:     CH504.IH2
 T4
 T5              This model is used to develop a rating curve for culvert 504
 T6              Ditch flow to south of culvert 504 is diverted to C505
 T7
 T8      Single X-Section Run
                 Ditch slope =     .010        From 200 scale map

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           .010

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1                  -1                                       -1

    SECNO       Q   CWSEL   DEPTH     VCH   CRIWS      EG      HL   SLOPE  KRATIO

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38         43          1          8         26          2          3         11          5         58


         Manning's n:          Min  Normal     Max
                   Earth      .015    .022    .030
                Pavement      .013    .016    .020
                  Desert      .040    .060    .080
                Veg Des.      .070    .100    .160

                  Earthy
    Earth  Desert Desert

 NC      .020       .055       .035        .1         .3
 QT        14          5         10        20         40          60          80         100         150         200
 QT       250        300        400       500        600


         X-Section 1
            this section needs to be input from 200 scale map
 X1         1          8       1022      1065
 GR      1546     999.99    1543.74      1000    1543.46       1014     1542.66       1022     1541.66       1026
 GR      1543       1065       1544      1120       1546       1170

1
   22JUN93      19:05:07                                                                                    PAGE    2


 X1         2                                                .2         .2         .2

 X1         3                                                .2         .2         .2

 X1         4                                                .2         .2         .2

 X1         5                                                .2         .2         .2

 X1         6                                                .2         .2         .2

1
   22JUN93      19:05:07                                                                                    PAGE    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 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .44   1542.10   1542.01       .00   1542.14       .04       .00       .00   1542.66
       5.0        .0       5.0        .0        .0       3.2        .0        .0        .0   1543.00
       .00       .00      1.55       .00      .000      .035      .000      .000   1541.66   1024.23
   .010036        0.        0.        0.         0        20         9       .00     14.62   1038.85


*SECNO 2.000
     2.000       .44   1542.10   1542.01       .00   1542.14       .04       .00       .00   1542.66
       5.0        .0       5.0        .0        .0       3.3        .0        .0        .0   1543.00
       .00       .00      1.54       .00      .000      .035      .000      .000   1541.66   1024.23
   .009802        0.        0.        0.         0        15         0       .00     14.68   1038.91


*SECNO 3.000
     3.000       .45   1542.11   1542.01       .00   1542.14       .04       .00       .00   1542.66
       5.0        .0       5.0        .0        .0       3.3        .0        .0        .0   1543.00
       .00       .00      1.52       .00      .000      .035      .000      .000   1541.66   1024.22
   .009492        0.        0.        0.         0        15         0       .00     14.77   1038.99


*SECNO 4.000
     4.000       .45   1542.11   1542.01       .00   1542.14       .03       .00       .00   1542.66
       5.0        .0       5.0        .0        .0       3.3        .0        .0        .0   1543.00
       .00       .00      1.50       .00      .000      .035      .000      .000   1541.66   1024.20
   .009166        0.        0.        0.         0        15         0       .00     14.87   1039.07


*SECNO 5.000
     5.000       .45   1542.11   1542.01       .00   1542.15       .03       .00       .00   1542.66
       5.0        .0       5.0        .0        .0       3.4        .0        .0        .0   1543.00
       .00       .00      1.48       .00      .000      .035      .000      .000   1541.66   1024.19
   .008867        0.        0.        0.         0        15         0       .00     14.96   1039.15


*SECNO 6.000
     6.000       .46   1542.12   1542.01       .00   1542.15       .03       .00       .00   1542.66
       5.0        .0       5.0        .0        .0       3.4        .0        .0        .0   1543.00
       .00       .00      1.46       .00      .000      .035      .000      .000   1541.66   1024.18
   .008591        0.        0.        0.         0        19         0       .00     15.05   1039.23


1
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T3            Q2

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 3                           .010

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                   -1                                      -1


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

*PROF 2

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .57   1542.23   1542.13       .00   1542.29       .05       .00       .00   1542.66
      10.0        .0      10.0        .0        .0       5.4        .0        .0        .0   1543.00
       .00       .00      1.84       .00      .000      .035      .000      .000   1541.66   1023.71
   .009954        0.        0.        0.         0        21        10       .00     18.99   1042.69


*SECNO 2.000
     2.000       .58   1542.24   1542.13       .00   1542.29       .05       .00       .00   1542.66
      10.0        .0      10.0        .0        .0       5.5        .0        .0        .0   1543.00
       .00       .00      1.82       .00      .000      .035      .000      .000   1541.66   1023.70
   .009776        0.        0.        0.         0        15         0       .00     19.05   1042.75


*SECNO 3.000
     3.000       .58   1542.24   1542.13       .00   1542.29       .05       .00       .00   1542.66
      10.0        .0      10.0        .0        .0       5.5        .0        .0        .0   1543.00
       .00       .00      1.81       .00      .000      .035      .000      .000   1541.66   1023.69
   .009525        0.        0.        0.         0        15         0       .00     19.14   1042.83


*SECNO 4.000
     4.000       .58   1542.24   1542.13       .00   1542.29       .05       .00       .00   1542.66
      10.0        .0      10.0        .0        .0       5.6        .0        .0        .0   1543.00
       .00       .00      1.79       .00      .000      .035      .000      .000   1541.66   1023.67
   .009261        0.        0.        0.         0        15         0       .00     19.24   1042.92


*SECNO 5.000
     5.000       .59   1542.25   1542.13       .00   1542.29       .05       .00       .00   1542.66
      10.0        .0      10.0        .0        .0       5.6        .0        .0        .0   1543.00
```

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      .00       .00      1.77       .00      .000      .035      .000      .000   1541.66   1023.66
   .009016       0.        0.        0.         0        15         0       .00     19.34   1043.00

*SECNO 6.000
     6.000       .59   1542.25   1542.13       .00   1542.30       .05       .00       .00   1542.66
      10.0        .0      10.0        .0        .0       5.7        .0        .0        .0   1543.00
       .00       .00      1.75       .00      .000      .035      .000      .000   1541.66   1023.65
   .008779       0.        0.        0.         0        15         0       .00     19.44   1043.09
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T3            Q3
J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
                 4                           .010
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     3                   -1                                      -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

*PROF 3

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .74   1542.40   1542.28       .00   1542.48       .07       .00       .00   1542.66
      20.0        .0      20.0        .0        .0       9.1        .0        .0        .0   1543.00
       .00       .00      2.19       .00      .000      .035      .000      .000   1541.66   1023.03
   .010048       0.        0.        0.         0        14        11       .00     24.58   1047.61

*SECNO 2.000
     2.000       .75   1542.41   1542.28       .00   1542.48       .07       .00       .00   1542.66
      20.0        .0      20.0        .0        .0       9.2        .0        .0        .0   1543.00
       .00       .00      2.18       .00      .000      .035      .000      .000   1541.66   1023.02
   .009908       0.        0.        0.         0        15         0       .00     24.64   1047.67

*SECNO 3.000
     3.000       .75   1542.41   1542.28       .00   1542.48       .07       .00       .00   1542.66
      20.0        .0      20.0        .0        .0       9.2        .0        .0        .0   1543.00
       .00       .00      2.16       .00      .000      .035      .000      .000   1541.66   1023.01
   .009711       0.        0.        0.         0        15         0       .00     24.74   1047.75

*SECNO 4.000
     4.000       .75   1542.41   1542.28       .00   1542.48       .07       .00       .00   1542.66
      20.0        .0      20.0        .0        .0       9.3        .0        .0        .0   1543.00
       .00       .00      2.15       .00      .000      .035      .000      .000   1541.66   1023.00
   .009494       0.        0.        0.         0        15         0       .00     24.84   1047.84

*SECNO 5.000
     5.000       .75   1542.41   1542.28       .00   1542.49       .07       .00       .00   1542.66
      20.0        .0      20.0        .0        .0       9.4        .0        .0        .0   1543.00
       .00       .00      2.13       .00      .000      .035      .000      .000   1541.66   1022.99
   .009274       0.        0.        0.         0        15         0       .00     24.95   1047.94

*SECNO 6.000
     6.000       .76   1542.42   1542.28       .00   1542.49       .07       .00       .00   1542.66
      20.0        .0      20.0        .0        .0       9.5        .0        .0        .0   1543.00
       .00       .00      2.11       .00      .000      .035      .000      .000   1541.66   1022.97
   .009077       0.        0.        0.         0        15         0       .00     25.05   1048.02
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T3            Q4
J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
                 5                           .010
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     4                   -1                                      -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

*PROF 4
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CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .96   1542.62   1542.47       .00   1542.73       .11       .00       .00   1542.66
      40.0        .0      40.0        .0        .0      15.3        .0        .0        .0   1543.00
       .00       .00      2.62       .00      .000      .035      .000      .000   1541.66   1022.16
   .010160        0.        0.        0.         0        22        11       .00     31.81   1053.96

*SECNO 2.000
     2.000       .96   1542.62   1542.47       .00   1542.73       .11       .00       .00   1542.66
      40.0        .0      40.0        .0        .0      15.3        .0        .0        .0   1543.00
       .00       .00      2.61       .00      .000      .035      .000      .000   1541.66   1022.15
   .010044        0.        0.        0.         0        15         0       .00     31.88   1054.03

*SECNO 3.000
     3.000       .97   1542.63   1542.47       .00   1542.73       .10       .00       .00   1542.66
      40.0        .0      40.0        .0        .0      15.4        .0        .0        .0   1543.00
       .00       .00      2.59       .00      .000      .035      .000      .000   1541.66   1022.14
   .009876        0.        0.        0.         0        15         0       .00     31.98   1054.11

*SECNO 4.000
     4.000       .97   1542.63   1542.47       .00   1542.73       .10       .00       .00   1542.66
      40.0        .0      40.0        .0        .0      15.5        .0        .0        .0   1543.00
       .00       .00      2.57       .00      .000      .035      .000      .000   1541.66   1022.12
   .009698        0.        0.        0.         0        15         0       .00     32.09   1054.21

*SECNO 5.000
     5.000       .97   1542.63   1542.47       .00   1542.74       .10       .00       .00   1542.66
      40.0        .0      40.0        .0        .0      15.7        .0        .0        .0   1543.00
       .00       .00      2.55       .00      .000      .035      .000      .000   1541.66   1022.11
   .009518        0.        0.        0.         0        15         0       .00     32.20   1054.31

*SECNO 6.000
     6.000       .98   1542.64   1542.47       .00   1542.74       .10       .00       .00   1542.66
      40.0        .0      40.0        .0        .0      15.8        .0        .0        .0   1543.00
       .00       .00      2.54       .00      .000      .035      .000      .000   1541.66   1022.10
   .009335        0.        0.        0.         0        15         0       .00     32.32   1054.41

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   22JUN93      19:05:07                                                                          PAGE   10

T3            Q5

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 6                           .010

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     5                   -1                                      -1

1
   22JUN93      19:05:07                                                                          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

*PROF 5

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      1.12   1542.78   1542.62       .00   1542.91       .13       .00       .00   1542.66
      60.0        .0      60.0        .0        .1      20.6        .0        .0        .0   1543.00
       .00       .07      2.91       .00      .020      .035      .000      .000   1541.66   1020.83
   .010125        0.        0.        0.         0        15        11       .00     37.66   1058.50

*SECNO 2.000
     2.000      1.12   1542.78   1542.62       .00   1542.91       .13       .00       .00   1542.66
      60.0        .0      60.0        .0        .1      20.7        .0        .0        .0   1543.00
       .00       .07      2.90       .00      .020      .035      .000      .000   1541.66   1020.81
   .010023        0.        0.        0.         0        15         0       .00     37.75   1058.56

*SECNO 3.000
     3.000      1.12   1542.78   1542.61       .00   1542.91       .13       .00       .00   1542.66
      60.0        .0      60.0        .0        .1      20.8        .0        .0        .0   1543.00
       .00       .07      2.88       .00      .020      .035      .000      .000   1541.66   1020.78
   .009877        0.        0.        0.         0        15         0       .00     37.86   1058.65

*SECNO 4.000
     4.000      1.13   1542.79   1542.62       .00   1542.91       .13       .00       .00   1542.66
      60.0        .0      60.0        .0        .1      20.9        .0        .0        .0   1543.00
       .00       .07      2.87       .00      .020      .035      .000      .000   1541.66   1020.75
   .009716        0.        0.        0.         0        15         0       .00     38.00   1058.75

*SECNO 5.000
     5.000      1.13   1542.79   1542.61       .00   1542.92       .13       .00       .00   1542.66
      60.0        .0      60.0        .0        .1      21.1        .0        .0        .0   1543.00
       .00       .07      2.85       .00      .020      .035      .000      .000   1541.66   1020.71
   .009552        0.        0.        0.         0        15         0       .00     38.14   1058.85
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*SECNO 6.000
     6.000      1.13   1542.79   1542.61       .00   1542.92       .12       .00       .00   1542.66
      60.0       .0      60.0        .0        .1      21.2        .0        .0        .0   1543.00
       .00       .07      2.83       .00      .020      .035      .000      .000   1541.66   1020.68
   .009386       0.        0.        0.         0        15         0       .00     38.28   1058.96
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1
   22JUN93      19:05:07                                                                          PAGE   12

T3            Q6

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 7                           .010

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     6                  -1                                      -1

1
   22JUN93      19:05:07                                                                          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

*PROF 6

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      1.24   1542.90   1542.74       .00   1543.05       .15       .00       .00   1542.66
      80.0       .5      79.5        .0        .3      25.4        .0        .0        .0   1543.00
       .00      1.81      3.13       .00      .020      .035      .000      .000   1541.66   1019.58
   .010033       0.        0.        0.         0         9        11       .00     42.56   1062.14

*SECNO 2.000
     2.000      1.24   1542.90   1542.72       .00   1543.06       .15       .00       .00   1542.66
      80.0       .5      79.5        .0        .3      25.5        .0        .0        .0   1543.00
       .00      1.82      3.12       .00      .020      .035      .000      .000   1541.66   1019.56
   .009947       0.        0.        0.         0        15         0       .00     42.64   1062.20

*SECNO 3.000
     3.000      1.25   1542.91   1542.72       .00   1543.06       .15       .00       .00   1542.66
      80.0       .6      79.4        .0        .3      25.6        .0        .0        .0   1543.00
       .00      1.82      3.10       .00      .020      .035      .000      .000   1541.66   1019.53
   .009814       0.        0.        0.         0        15         0       .00     42.76   1062.29

*SECNO 4.000
     4.000      1.25   1542.91   1542.72       .00   1543.06       .15       .00       .00   1542.66
      80.0       .6      79.4        .0        .3      25.8        .0        .0        .0   1543.00
       .00      1.82      3.08       .00      .020      .035      .000      .000   1541.66   1019.49
   .009657       0.        0.        0.         0        15         0       .00     42.90   1062.40

*SECNO 5.000
     5.000      1.26   1542.92   1542.72       .00   1543.06       .15       .00       .00   1542.66
      80.0       .6      79.4        .0        .3      25.9        .0        .0        .0   1543.00
       .00      1.82      3.06       .00      .020      .035      .000      .000   1541.66   1019.46
   .009498       0.        0.        0.         0        15         0       .00     43.05   1062.51

*SECNO 6.000
     6.000      1.26   1542.92   1542.72       .00   1543.06       .14       .00       .00   1542.66
      80.0       .6      79.4        .0        .3      26.1        .0        .0        .0   1543.00
       .00      1.83      3.05       .00      .020      .035      .000      .000   1541.66   1019.42
   .009337       0.        0.        0.         0        15         0       .00     43.20   1062.62

1
   22JUN93      19:05:07                                                                          PAGE   14

T3            Q7

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 8                           .010

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     7                  -1                                      -1

1
   22JUN93      19:05:07                                                                          PAGE   15

    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 7

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
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CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      1.34   1543.00   1542.83       .00   1543.17       .17       .00       .00   1542.66
     100.0       1.4      98.6        .0        .6      29.7        .0        .0        .0   1543.00
       .00      2.30      3.32       .00      .020      .035      .000      .000   1541.66   1018.56
   .010092        0.        0.        0.         0        11        11       .00     46.69   1065.24

*SECNO 2.000
     2.000      1.35   1543.01   1542.83       .00   1543.18       .17       .00       .00   1542.66
     100.0       1.4      98.6        .0        .6      29.8        .0        .0        .0   1543.00
       .00      2.30      3.31       .03      .020      .035      .000      .000   1541.66   1018.54
   .009988        0.        0.        0.         0        15         0       .00     46.82   1065.36

*SECNO 3.000
     3.000      1.35   1543.01   1542.83       .00   1543.18       .17       .00       .00   1542.66
     100.0       1.4      98.6        .0        .6      29.9        .0        .0        .0   1543.00
       .00      2.30      3.30       .03      .020      .035      .000      .000   1541.66   1018.50
   .009838        0.        0.        0.         0        15         0       .00     47.02   1065.52

*SECNO 4.000
     4.000      1.36   1543.02   1542.83       .00   1543.18       .17       .00       .00   1542.66
     100.0       1.4      98.6        .0        .6      30.1        .0        .0        .0   1543.00
       .00      2.29      3.28       .03      .020      .035      .055      .000   1541.66   1018.47
   .009657        0.        0.        0.         0        15         0       .00     47.26   1065.73

*SECNO 5.000
     5.000      1.36   1543.02   1542.84       .00   1543.18       .16       .00       .00   1542.66
     100.0       1.5      98.5        .0        .6      30.2        .0        .0        .0   1543.00
       .00      2.29      3.26       .03      .020      .035      .055      .000   1541.66   1018.43
   .009468        0.        0.        0.         0        15         0       .00     47.53   1065.95

*SECNO 6.000
     6.000      1.36   1543.02   1542.84       .00   1543.19       .16       .00       .00   1542.66
     100.0       1.5      98.5        .0        .7      30.4        .0        .0        .0   1543.00
       .00      2.28      3.24       .03      .020      .035      .055      .000   1541.66   1018.39
   .009278        0.        0.        0.         0        15         0       .00     47.80   1066.18

1
   22JUN93      19:05:07                                                                          PAGE   16

T3            Q8

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                9                           .010

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     8                  -1                                      -1

1
   22JUN93      19:05:07                                                                          PAGE   17

    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 8

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      1.53   1543.19   1543.03       .00   1543.42       .23       .00       .00   1542.66
     150.0       4.2     145.2        .5       1.4      37.6       1.0        .0        .0   1543.00
       .00      3.04      3.87       .56      .020      .035      .055      .000   1541.66   1016.72
   .009985        0.        0.        0.         0        14        10       .00     58.59   1075.31

*SECNO 2.000
     2.000      1.53   1543.19   1543.04       .00   1543.42       .23       .00       .00   1542.66
     150.0       4.3     145.2        .6       1.4      37.6       1.0        .0        .0   1543.00
       .00      3.04      3.86       .56      .020      .035      .055      .000   1541.66   1016.71
   .009906        0.        0.        0.         0        15         0       .00     58.71   1075.42

*SECNO 3.000
     3.000      1.53   1543.19   1543.03       .00   1543.42       .23       .00       .00   1542.66
     150.0       4.3     145.1        .6       1.4      37.8       1.0        .0        .0   1543.00
       .00      3.03      3.84       .56      .020      .035      .055      .000   1541.66   1016.67
   .009779        0.        0.        0.         0        15         0       .00     58.92   1075.59

*SECNO 4.000
     4.000      1.54   1543.20   1543.04       .00   1543.42       .22       .00       .00   1542.66
     150.0       4.4     145.0        .6       1.4      38.0       1.1        .0        .0   1543.00
       .00      3.02      3.82       .56      .020      .035      .055      .000   1541.66   1016.63
   .009615        0.        0.        0.         0        15         0       .00     59.19   1075.82

*SECNO 5.000
     5.000      1.54   1543.20   1543.03       .00   1543.43       .22       .00       .00   1542.66
     150.0       4.4     145.0        .6       1.5      38.1       1.1        .0        .0   1543.00
       .00      3.01      3.80       .57      .020      .035      .055      .000   1541.66   1016.59
   .009442        0.        0.        0.         0        15         0       .00     59.48   1076.07
```

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*SECNO 6.000
     6.000      1.55   1543.21   1543.03       .00   1543.43       .22       .00       .00   1542.66
     150.0       4.5     144.9        .7       1.6      38.4       1.2        .0        .0   1543.00
       .00      3.00      3.78       .57      .020      .035      .055      .000   1541.66   1016.54
   .009258        0.        0.        0.         0        15         0       .00     59.80   1076.34
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T3          Q9
J1  ICHECK  INQ     NINV    IDIR    STRT    METRIC  HVINS   Q       WSEL    FQ
            10                      .010
J2  NPROF   IPLOT   PRFVS   XSECV   XSECH   FN      ALLDC   IBW     CHNIM   ITRACE
     9              -1                              -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

*PROF 9
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      1.68   1543.34   1543.20       .00   1543.62       .28       .00       .00   1542.66
     200.0       8.2     189.2       2.6       2.3      44.0       3.1        .0        .0   1543.00
       .00      3.60      4.30       .82      .020      .035      .055      .000   1541.66   1015.24
   .010026        0.        0.        0.         0        19         9       .00     68.27   1083.50

*SECNO 2.000
     2.000      1.68   1543.34   1543.21       .00   1543.62       .28       .00       .00   1542.66
     200.0       8.3     189.1       2.6       2.3      44.0       3.1        .0        .0   1543.00
       .00      3.59      4.29       .82      .020      .035      .055      .000   1541.66   1015.22
   .009956        0.        0.        0.         0        12         0       .00     68.39   1083.61

*SECNO 3.000
     3.000      1.68   1543.34   1543.20       .00   1543.62       .28       .00       .00   1542.66
     200.0       8.3     189.0       2.6       2.3      44.2       3.2        .0        .0   1543.00
       .00      3.58      4.28       .82      .020      .035      .055      .000   1541.66   1015.18
   .009838        0.        0.        0.         0        15         0       .00     68.61   1083.79

*SECNO 4.000
     4.000      1.69   1543.35   1543.20       .00   1543.62       .27       .00       .00   1542.66
     200.0       8.4     188.9       2.7       2.4      44.4       3.3        .0        .0   1543.00
       .00      3.57      4.26       .83      .020      .035      .055      .000   1541.66   1015.14
   .009684        0.        0.        0.         0        15         0       .00     68.89   1084.03

*SECNO 5.000
     5.000      1.69   1543.35   1543.21       .00   1543.63       .27       .00       .00   1542.66
     200.0       8.5     188.7       2.8       2.4      44.6       3.4        .0        .0   1543.00
       .00      3.56      4.23       .83      .020      .035      .055      .000   1541.66   1015.09
   .009508        0.        0.        0.         0        12         0       .00     69.23   1084.32

*SECNO 6.000
     6.000      1.70   1543.36   1543.21       .00   1543.63       .27       .00       .00   1542.66
     200.0       8.6     188.5       2.9       2.4      44.8       3.5        .0        .0   1543.00
       .00      3.54      4.21       .83      .020      .035      .055      .000   1541.66   1015.03
   .009324        0.        0.        0.         0        12         0       .00     69.59   1084.62
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T3          Q10
J1  ICHECK  INQ     NINV    IDIR    STRT    METRIC  HVINS   Q       WSEL    FQ
            11                      .010
J2  NPROF   IPLOT   PRFVS   XSECV   XSECH   FN      ALLDC   IBW     CHNIM   ITRACE
    10              -1                              -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

*PROF10
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
CCHV=     .100 CEHV=     .300
```

```
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      1.80   1543.46   1543.34       .00   1543.79       .33       .00       .00   1542.66
     250.0      13.1     230.8       6.1       3.2      49.4       5.9        .0        .0   1543.00
       .00      4.06      4.67      1.02      .020      .035      .055      .000   1541.66   1013.81
   .010090        0.        0.        0.         0        15         8       .00     76.70   1090.51

*SECNO 2.000
     2.000      1.81   1543.47   1543.34       .00   1543.79       .32       .00       .00   1542.66
     250.0      13.2     230.7       6.1       3.2      49.5       6.0        .0        .0   1543.00
       .00      4.06      4.66      1.02      .020      .035      .055      .000   1541.66   1013.71
   .010020        0.        0.        0.         0        11         0       .00     76.91   1090.62

*SECNO 3.000
     3.000      1.81   1543.47   1543.34       .00   1543.79       .32       .00       .00   1542.66
     250.0      13.3     230.5       6.2       3.3      49.7       6.1        .0        .0   1543.00
       .00      4.06      4.64      1.02      .020      .035      .055      .000   1541.66   1013.53
   .009901        0.        0.        0.         0        11         0       .00     77.28   1090.81

*SECNO 4.000
     4.000      1.82   1543.48   1543.34       .00   1543.80       .32       .00       .00   1542.66
     250.0      13.5     230.2       6.3       3.3      49.9       6.2        .0        .0   1543.00
       .00      4.05      4.62      1.02      .020      .035      .055      .000   1541.66   1013.29
   .009739        0.        0.        0.         0        11         0       .00     77.80   1091.08

*SECNO 5.000
     5.000      1.82   1543.48   1543.34       .00   1543.80       .31       .00       .00   1542.66
     250.0      13.6     229.9       6.5       3.4      50.1       6.3        .0        .0   1543.00
       .00      4.05      4.59      1.02      .020      .035      .055      .000   1541.66   1012.99
   .009549        0.        0.        0.         0        11         0       .00     78.41   1091.41

*SECNO 6.000
     6.000      1.83   1543.49   1543.34       .00   1543.80       .31       .00       .00   1542.66
     250.0      13.8     229.5       6.6       3.4      50.4       6.5        .0        .0   1543.00
       .00      4.04      4.55      1.02      .020      .035      .055      .000   1541.66   1012.67
   .009345        0.        0.        0.         0        11         0       .00     79.09   1091.76

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   22JUN93      19:05:07                                                                          PAGE   22

T3          Q11

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              12                          .010

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    11                  -1                                      -1

1
   22JUN93      19:05:07                                                                          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

*PROF11

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      1.92   1543.58   1543.48       .00   1543.94       .36       .00       .00   1542.66
     300.0      20.2     269.0      10.8       4.5      54.3       9.2        .0        .0   1543.00
       .00      4.49      4.95      1.18      .020      .035      .055      .000   1541.66   1008.12
   .010007        0.        0.        0.         0        15         8       .00     88.64   1096.76

*SECNO 2.000
     2.000      1.92   1543.58   1543.49       .00   1543.94       .36       .00       .00   1542.66
     300.0      20.2     268.9      10.9       4.5      54.4       9.2        .0        .0   1543.00
       .00      4.48      4.94      1.18      .020      .035      .055      .000   1541.66   1008.03
   .009945        0.        0.        0.         0         8         0       .00     88.85   1096.87

*SECNO 3.000
     3.000      1.93   1543.59   1543.49       .00   1543.95       .36       .00       .00   1542.66
     300.0      20.4     268.6      11.0       4.6      54.6       9.4        .0        .0   1543.00
       .00      4.47      4.92      1.18      .020      .035      .055      .000   1541.66   1007.84
   .009826        0.        0.        0.         0         8         0       .00     89.24   1097.08

*SECNO 4.000
     4.000      1.93   1543.59   1543.49       .00   1543.95       .35       .00       .00   1542.66
     300.0      20.6     268.2      11.2       4.6      54.8       9.5        .0        .0   1543.00
       .00      4.44      4.89      1.17      .020      .035      .055      .000   1541.66   1007.57
   .009660        0.        0.        0.         0         8         0       .00     89.81   1097.37

*SECNO 5.000
     5.000      1.94   1543.60   1543.49       .00   1543.95       .35       .00       .00   1542.66
     300.0      20.9     267.7      11.4       4.7      55.1       9.7        .0        .0   1543.00
       .00      4.41      4.86      1.17      .020      .035      .055      .000   1541.66   1007.23
   .009457        0.        0.        0.         0         8         0       .00     90.51   1097.74

*SECNO 6.000
```

```
     6.000      1.95   1543.61   1543.48       .00   1543.95       .34       .00       .00   1542.66
     300.0      21.2     267.1      11.7       4.9      55.4      10.0        .0        .0   1543.00
       .00      4.37      4.82      1.17      .020      .035      .055      .000   1541.66   1006.84
   .009227        0.        0.        0.         0        11         0       .00     91.33   1098.17

1
   22JUN93      19:05:07                                                                                PAGE   24

 T3           Q12

 J1  ICHECK   INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              13                          .010

 J2  NPROF    IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     12                 -1                                      -1

1
   22JUN93      19:05:07                                                                                PAGE   25

    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

 *PROF12

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      2.10   1543.76   1543.73       .00   1544.19       .43       .00       .00   1542.66
     400.0      38.2     339.0      22.9       7.9      62.3      16.0        .0        .0   1543.00
       .00      4.82      5.44      1.43      .020      .035      .055      .000   1541.66   1000.00
   .010049        0.        0.        0.         0        11         6       .00    107.00   1107.00

 *SECNO 2.000
     2.000      2.11   1543.77   1543.72       .00   1544.19       .42       .00       .00   1542.66
     400.0      38.3     338.7      22.9       8.0      62.4      16.1        .0        .0   1543.00
       .00      4.81      5.43      1.42      .020      .035      .055      .000   1541.66   1000.00
   .009990        0.        0.        0.         0         5         0       .00    107.11   1107.11

 *SECNO 3.000
     3.000      2.11   1543.77   1543.74       .00   1544.19       .42       .00       .00   1542.66
     400.0      38.6     338.3      23.1       8.1      62.6      16.3        .0        .0   1543.00
       .00      4.79      5.41      1.42      .020      .035      .055      .000   1541.66   1000.00
   .009870        0.        0.        0.         0         8         0       .00    107.33   1107.33

 *SECNO 4.000
     4.000      2.12   1543.78   1543.74       .00   1544.20       .41       .00       .00   1542.66
     400.0      39.0     337.6      23.4       8.2      62.8      16.5        .0        .0   1543.00
       .00      4.77      5.37      1.41      .020      .035      .055      .000   1541.66   1000.00
   .009695        0.        0.        0.         0         8         0       .00    107.66   1107.66

 *SECNO 5.000
     5.000      2.13   1543.79   1543.74       .00   1544.20       .41       .00       .00   1542.66
     400.0      39.6     336.6      23.8       8.4      63.2      16.9        .0        .0   1543.00
       .00      4.74      5.33      1.41      .020      .035      .055      .000   1541.66   1000.00
   .009466        0.        0.        0.         0         8         0       .00    108.10   1108.10

 *SECNO 6.000
     6.000      2.14   1543.80   1543.74       .00   1544.20       .40       .00       .00   1542.66
     400.0      40.3     335.4      24.2       8.6      63.6      17.3        .0        .0   1543.00
       .00      4.70      5.27      1.40      .020      .035      .055      .000   1541.66   1000.00
   .009192        0.        0.        0.         0         8         0       .00    108.65   1108.65

1
   22JUN93      19:05:07                                                                                PAGE   26

 T3           Q13

 J1  ICHECK   INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              14                          .010

 J2  NPROF    IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     13                 -1                                      -1

1
   22JUN93      19:05:07                                                                                PAGE   27

    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

 *PROF13

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
```

```
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      2.26   1543.92   1543.88       .00   1544.40       .48       .00       .00   1542.66
     500.0      61.5     401.0      37.5      11.4      69.1      23.3        .0        .0   1543.00
       .00      5.41      5.81      1.61      .020      .035      .055      .000   1541.66   1000.00
   .009992        0.        0.        0.         0         8         5       .00    115.61   1115.61

*SECNO 2.000
     2.000      2.26   1543.92   1543.88       .00   1544.40       .48       .00       .00   1542.66
     500.0      61.7     400.7      37.6      11.4      69.1      23.4        .0        .0   1543.00
       .00      5.41      5.80      1.61      .020      .035      .055      .000   1541.66   1000.00
   .009938        0.        0.        0.         0         5         0       .00    115.72   1115.72

*SECNO 3.000
     3.000      2.27   1543.93   1543.88       .00   1544.40       .47       .00       .00   1542.66
     500.0      62.0     400.2      37.8      11.5      69.3      23.6        .0        .0   1543.00
       .00      5.39      5.77      1.60      .020      .035      .055      .000   1541.66   1000.00
   .009824        0.        0.        0.         0         5         0       .00    115.95   1115.94

*SECNO 4.000
     4.000      2.28   1543.94   1543.88       .00   1544.41       .47       .00       .00   1542.66
     500.0      62.5     399.3      38.2      11.6      69.6      23.9        .0        .0   1543.00
       .00      5.38      5.74      1.60      .020      .035      .055      .000   1541.66   1000.00
   .009657        0.        0.        0.         0         5         0       .00    116.29   1116.29

*SECNO 5.000
     5.000      2.29   1543.95   1543.89       .00   1544.41       .46       .00       .00   1542.66
     500.0      63.2     398.1      38.6      11.8      69.9      24.3        .0        .0   1543.00
       .00      5.35      5.69      1.59      .020      .035      .055      .000   1541.66   1000.00
   .009439        0.        0.        0.         0         8         0       .00    116.74   1116.74

*SECNO 6.000
     6.000      2.31   1543.97   1543.89       .00   1544.41       .45       .00       .00   1542.66
     500.0      64.5     396.0      39.5      12.2      70.6      25.1        .0        .0   1543.00
       .00      5.30      5.61      1.57      .020      .035      .055      .000   1541.66   1000.00
   .009053        0.        0.        0.         1         8         0       .00    117.58   1117.58

1
   22JUN93      19:05:07                                                                          PAGE   28

T3          Q14

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              15                            .010

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    14                  -1                                      -1


1
   22JUN93      19:05:07                                                                          PAGE   29

    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

*PROF14

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      2.40   1544.06   1544.06       .00   1544.58       .53       .00       .00   1542.66
     600.0      86.3     458.0      55.7      14.4      74.9      30.6        .0        .0   1543.00
       .00      6.01      6.11      1.82      .020      .035      .055      .000   1541.66   1000.00
   .009936        0.        0.        0.         0         8         5       .00    121.41   1121.41

*SECNO 2.000
     2.000      2.40   1544.06   1544.05       .00   1544.59       .53       .00       .00   1542.66
     600.0      86.5     457.6      55.9      14.4      75.0      30.7        .0        .0   1543.00
       .00      6.00      6.10      1.82      .020      .035      .055      .000   1541.66   1000.00
   .009884        0.        0.        0.         0         5         0       .00    121.46   1121.46

*SECNO 3.000
     3.000      2.41   1544.07   1544.05       .00   1544.59       .52       .00       .00   1542.66
     600.0      86.8     456.9      56.3      14.5      75.2      31.0        .0        .0   1543.00
       .00      5.99      6.08      1.82      .020      .035      .055      .000   1541.66   1000.00
   .009775        0.        0.        0.         0         5         0       .00    121.56   1121.56

*SECNO 4.000
     4.000      2.42   1544.08   1544.05       .00   1544.59       .52       .00       .00   1542.66
     600.0      87.4     455.7      56.9      14.6      75.5      31.4        .0        .0   1543.00
       .00      5.97      6.04      1.81      .020      .035      .055      .000   1541.66   1000.00
   .009602        0.        0.        0.         0         5         0       .00    121.73   1121.73

*SECNO 5.000
     5.000      2.43   1544.09   1544.04       .00   1544.59       .51       .00       .00   1542.66
     600.0      88.1     454.1      57.7      14.8      75.9      31.9        .0        .0   1543.00
       .00      5.94      5.99      1.81      .020      .035      .055      .000   1541.66   1000.00
   .009369        0.        0.        0.         0         5         0       .00    121.96   1121.96
```

SECNO Q TIME SLOPE	DEPTH QLOB VLOB XLOBL	CWSEL QCH VCH XLCH	CRIWS QROB VROB XLOBR	WSELK ALOB XNL ITRIAL	EG ACH XNCH IDC	HV AROB XNR ICONT	HL VOL WTN CORAR	OLOSS TWA ELMIN TOPWID	L-BANK ELEV R-BANK ELEV SSTA ENDST
*SECNO 6.000									
6.000	2.53	1544.19	1544.04	.00	1544.61	.41	.00	.01	1542.66
600.0	96.5	436.1	67.5	17.3	80.7	38.4	.0	.0	1543.00
.00	5.57	5.40	1.75	.020	.035	.055	.000	1541.66	1000.00
.007030	0.	0.	0.	3	5	0	.00	124.77	1124.77

THIS RUN EXECUTED 22JUN93 19:05:10

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

 Version   4.6.2;  May 1991
************************************
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SUMMARY PRINTOUT

	SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
	1.000	5.00	1542.10	.44	1.55	1542.01	1542.14	.00	100.36	.00
	1.000	10.00	1542.23	.57	1.84	1542.13	1542.29	.00	99.54	.00
	1.000	20.00	1542.40	.74	2.19	1542.28	1542.48	.00	100.48	.00
	1.000	40.00	1542.62	.96	2.62	1542.47	1542.73	.00	101.60	.00
	1.000	60.00	1542.78	1.12	2.91	1542.62	1542.91	.00	101.25	.00
	1.000	80.00	1542.90	1.24	3.13	1542.74	1543.05	.00	100.33	.00
	1.000	100.00	1543.00	1.34	3.32	1542.83	1543.17	.00	100.92	.00
	1.000	150.00	1543.19	1.53	3.87	1543.03	1543.42	.00	99.85	.00
	1.000	200.00	1543.34	1.68	4.30	1543.20	1543.62	.00	100.26	.00
	1.000	250.00	1543.46	1.80	4.67	1543.34	1543.79	.00	100.90	.00
	1.000	300.00	1543.58	1.92	4.95	1543.48	1543.94	.00	100.07	.00
	1.000	400.00	1543.76	2.10	5.44	1543.73	1544.19	.00	100.49	.00
	1.000	500.00	1543.92	2.26	5.81	1543.88	1544.40	.00	99.92	.00
*	1.000	600.00	1544.06	2.40	6.11	1544.06	1544.58	.00	99.36	.00
	2.000	5.00	1542.10	.44	1.54	1542.01	1542.14	.00	98.02	1.01
	2.000	10.00	1542.24	.58	1.82	1542.13	1542.29	.00	97.76	1.01
	2.000	20.00	1542.41	.75	2.18	1542.28	1542.48	.00	99.08	1.01
	2.000	40.00	1542.62	.96	2.61	1542.47	1542.73	.00	100.44	1.01
	2.000	60.00	1542.78	1.12	2.90	1542.62	1542.91	.00	100.23	1.01
	2.000	80.00	1542.90	1.24	3.12	1542.72	1543.06	.00	99.47	1.00
	2.000	100.00	1543.01	1.35	3.31	1542.83	1543.18	.00	99.88	1.01
	2.000	150.00	1543.19	1.53	3.86	1543.04	1543.42	.00	99.06	1.00
	2.000	200.00	1543.34	1.68	4.29	1543.21	1543.62	.00	99.56	1.00
	2.000	250.00	1543.47	1.81	4.66	1543.34	1543.79	.00	100.20	1.00
	2.000	300.00	1543.58	1.92	4.94	1543.49	1543.94	.00	99.45	1.00
	2.000	400.00	1543.77	2.11	5.43	1543.72	1544.19	.00	99.90	1.00
	2.000	500.00	1543.92	2.26	5.80	1543.88	1544.40	.00	99.38	1.00
	2.000	600.00	1544.06	2.40	6.10	1544.05	1544.59	.00	98.84	1.00

SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
3.000	5.00	1542.11	.45	1.52	1542.01	1542.14	.00	94.92	1.02
3.000	10.00	1542.24	.58	1.81	1542.13	1542.29	.00	95.25	1.01
3.000	20.00	1542.41	.75	2.16	1542.28	1542.48	.00	97.11	1.01
3.000	40.00	1542.63	.97	2.59	1542.47	1542.73	.00	98.76	1.01
3.000	60.00	1542.78	1.12	2.88	1542.61	1542.91	.00	98.77	1.01
3.000	80.00	1542.91	1.25	3.10	1542.72	1543.06	.00	98.14	1.01
3.000	100.00	1543.01	1.35	3.30	1542.83	1543.18	.00	98.38	1.01
3.000	150.00	1543.19	1.53	3.84	1543.03	1543.42	.00	97.79	1.01
3.000	200.00	1543.34	1.68	4.28	1543.20	1543.62	.00	98.38	1.01
3.000	250.00	1543.47	1.81	4.64	1543.34	1543.79	.00	99.01	1.01
3.000	300.00	1543.59	1.93	4.92	1543.49	1543.95	.00	98.26	1.01
3.000	400.00	1543.77	2.11	5.41	1543.74	1544.19	.00	98.70	1.01
3.000	500.00	1543.93	2.27	5.77	1543.88	1544.40	.00	98.24	1.01
3.000	600.00	1544.07	2.41	6.08	1544.05	1544.59	.00	97.75	1.01
4.000	5.00	1542.11	.45	1.50	1542.01	1542.14	.00	91.66	1.02
4.000	10.00	1542.24	.58	1.79	1542.13	1542.29	.00	92.61	1.01
4.000	20.00	1542.41	.75	2.15	1542.28	1542.48	.00	94.94	1.01
4.000	40.00	1542.63	.97	2.57	1542.47	1542.73	.00	96.98	1.01
4.000	60.00	1542.79	1.13	2.87	1542.62	1542.91	.00	97.16	1.01
4.000	80.00	1542.91	1.25	3.08	1542.72	1543.06	.00	96.57	1.01
4.000	100.00	1543.02	1.36	3.28	1542.83	1543.18	.00	96.57	1.01
4.000	150.00	1543.20	1.54	3.82	1543.04	1543.42	.00	96.15	1.01
4.000	200.00	1543.35	1.69	4.26	1543.20	1543.62	.00	96.84	1.01
4.000	250.00	1543.48	1.82	4.62	1543.34	1543.80	.00	97.39	1.01
4.000	300.00	1543.59	1.93	4.89	1543.49	1543.95	.00	96.60	1.01
4.000	400.00	1543.78	2.12	5.37	1543.74	1544.20	.00	96.95	1.01
4.000	500.00	1543.94	2.28	5.74	1543.88	1544.41	.00	96.57	1.01
4.000	600.00	1544.08	2.42	6.04	1544.05	1544.59	.00	96.02	1.01
5.000	5.00	1542.11	.45	1.48	1542.01	1542.15	.00	88.67	1.02
5.000	10.00	1542.25	.59	1.77	1542.13	1542.29	.00	90.16	1.01
5.000	20.00	1542.41	.75	2.13	1542.28	1542.49	.00	92.74	1.01

5.000	40.00	1542.63	.97	2.55	1542.47	1542.74	.00	95.18	1.01
5.000	60.00	1542.79	1.13	2.85	1542.61	1542.92	.00	95.52	1.01
5.000	80.00	1542.92	1.26	3.06	1542.72	1543.06	.00	94.98	1.01
5.000	100.00	1543.02	1.36	3.26	1542.84	1543.18	.00	94.68	1.01
5.000	150.00	1543.20	1.54	3.80	1543.03	1543.43	.00	94.42	1.01
5.000	200.00	1543.35	1.69	4.23	1543.21	1543.63	.00	95.08	1.01
5.000	250.00	1543.48	1.82	4.59	1543.34	1543.80	.00	95.49	1.01
5.000	300.00	1543.60	1.94	4.86	1543.49	1543.95	.00	94.57	1.01
5.000	400.00	1543.79	2.13	5.33	1543.74	1544.20	.00	94.66	1.01
5.000	500.00	1543.95	2.29	5.69	1543.89	1544.41	.00	94.39	1.01
5.000	600.00	1544.09	2.43	5.99	1544.04	1544.59	.00	93.69	1.01

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SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
6.000	5.00	1542.12	.46	1.46	1542.01	1542.15	.00	85.91	1.02
6.000	10.00	1542.25	.59	1.75	1542.13	1542.30	.00	87.79	1.01
6.000	20.00	1542.42	.76	2.11	1542.28	1542.49	.00	90.77	1.01
6.000	40.00	1542.64	.98	2.54	1542.47	1542.74	.00	93.35	1.01
6.000	60.00	1542.79	1.13	2.83	1542.61	1542.92	.00	93.86	1.01
6.000	80.00	1542.92	1.26	3.05	1542.72	1543.06	.00	93.37	1.01
6.000	100.00	1543.02	1.36	3.24	1542.84	1543.19	.00	92.78	1.01
6.000	150.00	1543.21	1.55	3.78	1543.03	1543.43	.00	92.58	1.01
6.000	200.00	1543.36	1.70	4.21	1543.21	1543.63	.00	93.24	1.01
6.000	250.00	1543.49	1.83	4.55	1543.34	1543.80	.00	93.45	1.01
6.000	300.00	1543.61	1.95	4.82	1543.48	1543.95	.00	92.27	1.01
6.000	400.00	1543.80	2.14	5.27	1543.74	1544.20	.00	91.92	1.01
6.000	500.00	1543.97	2.31	5.61	1543.89	1544.41	.00	90.53	1.02
6.000	600.00	1544.19	2.53	5.40	1544.04	1544.61	.00	70.30	1.15

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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 1.000 PROFILE= 14 CRITICAL DEPTH ASSUMED

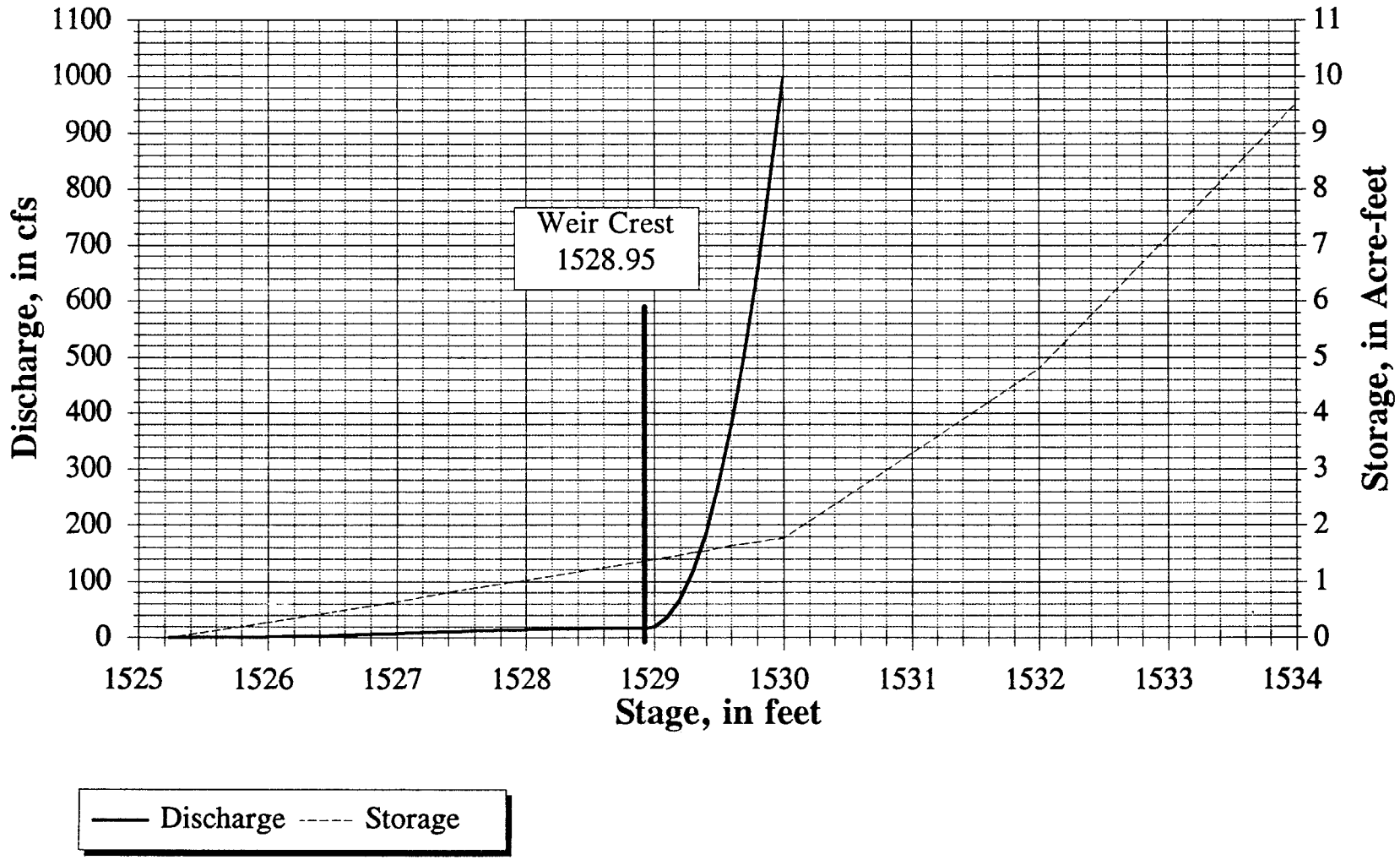
Table R-7

Storage and Discharge vs. Stage Data for C507

Stage (ft)	Surface Area (acres)	Storage Volume (acre-ft)	Discharge		
			Culvert Flow (cfs)	Weir Flow (cfs)	Total Flow (cfs)
1525.24	0.000	0.00	0	---	0
1526.00	---	0.28	2	---	2
1526.50	---	0.46	5	---	5
1527.00	---	0.65	9	---	9
1527.50	---	0.85	13	---	13
1528.00	---	1.03	15	---	15
1528.95	---	1.38	18	0	18
1529.00	---	1.40	19	2	20
1529.10	---	1.44	19	17	36
1529.20	---	1.48	19	49	69
1529.30	---	1.52	20	98	118
1529.40	---	1.55	20	165	185
1529.50	---	1.59	20	252	272
1529.60	---	1.64	21	358	378
1529.70	---	1.67	21	485	506
1529.80	---	1.70	22	631	652
1529.90	---	1.75	22	794	816
1530.00	1.117	1.772	22	975	997
1532.00	1.957	4.807	---	---	---
1534.00	2.753	9.495	---	---	---

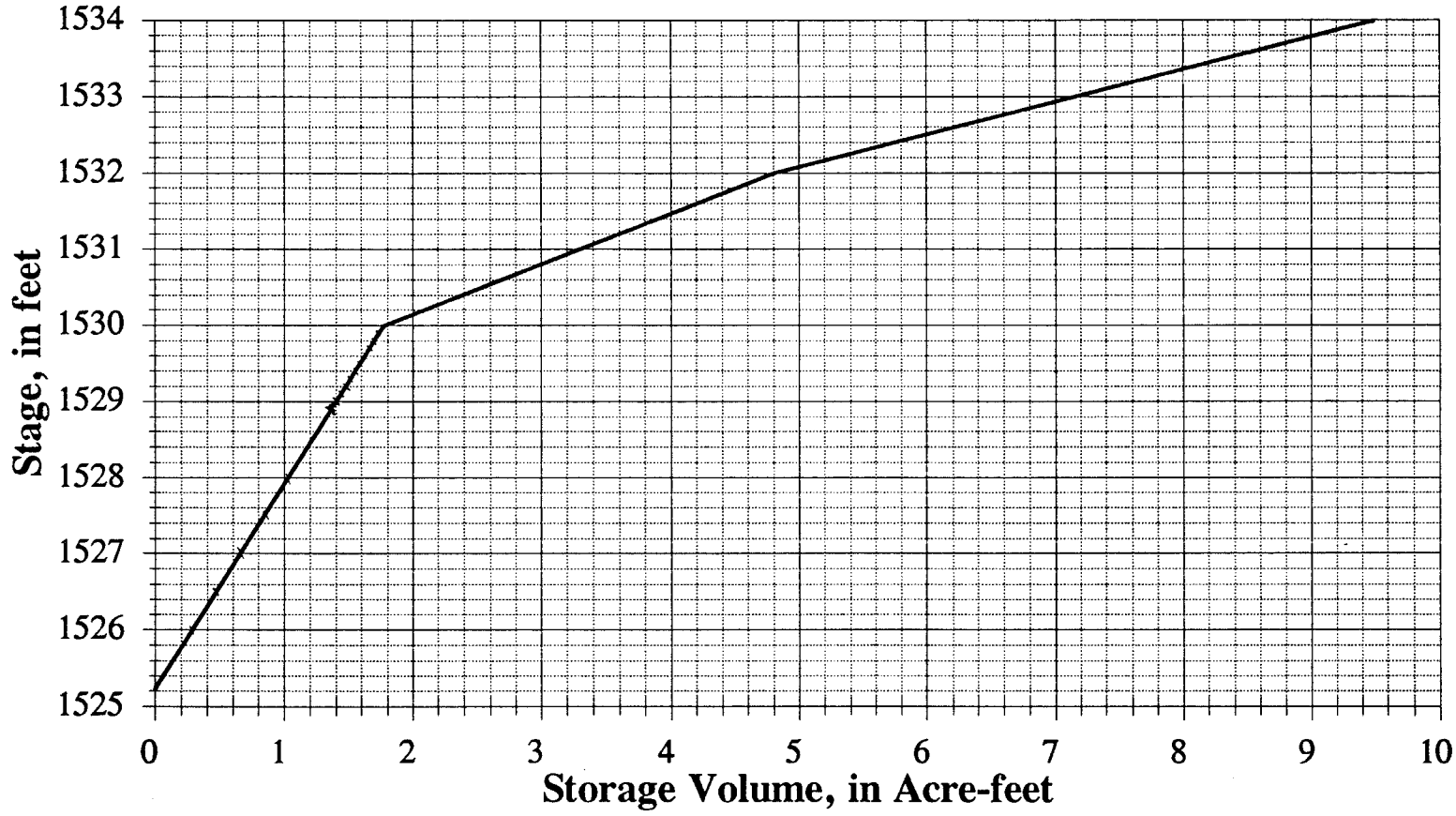
Figure R-3

Storage and Discharge vs Stage for C507



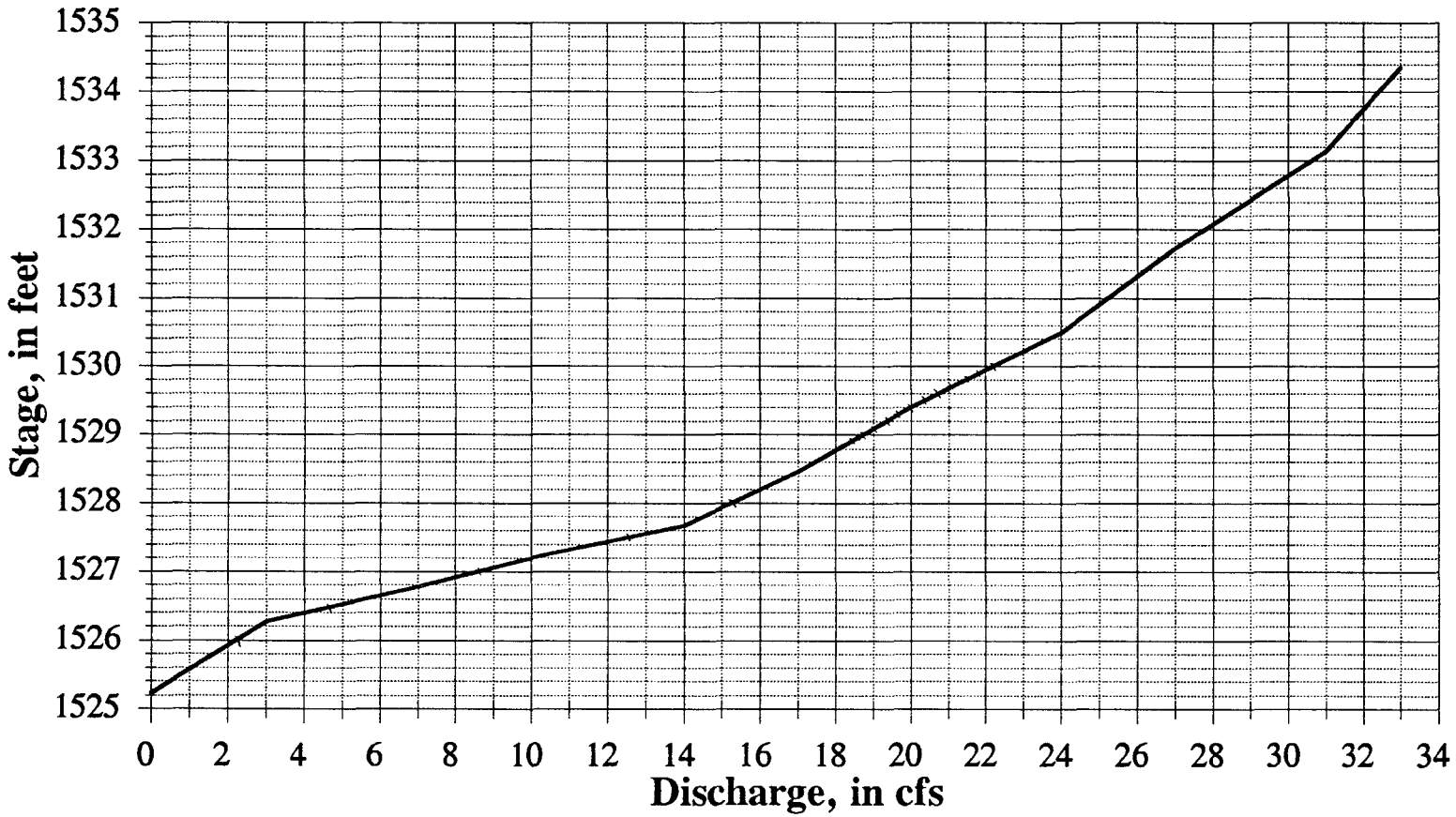
C507 Storage Volume

Calculated From Planimetered Contours



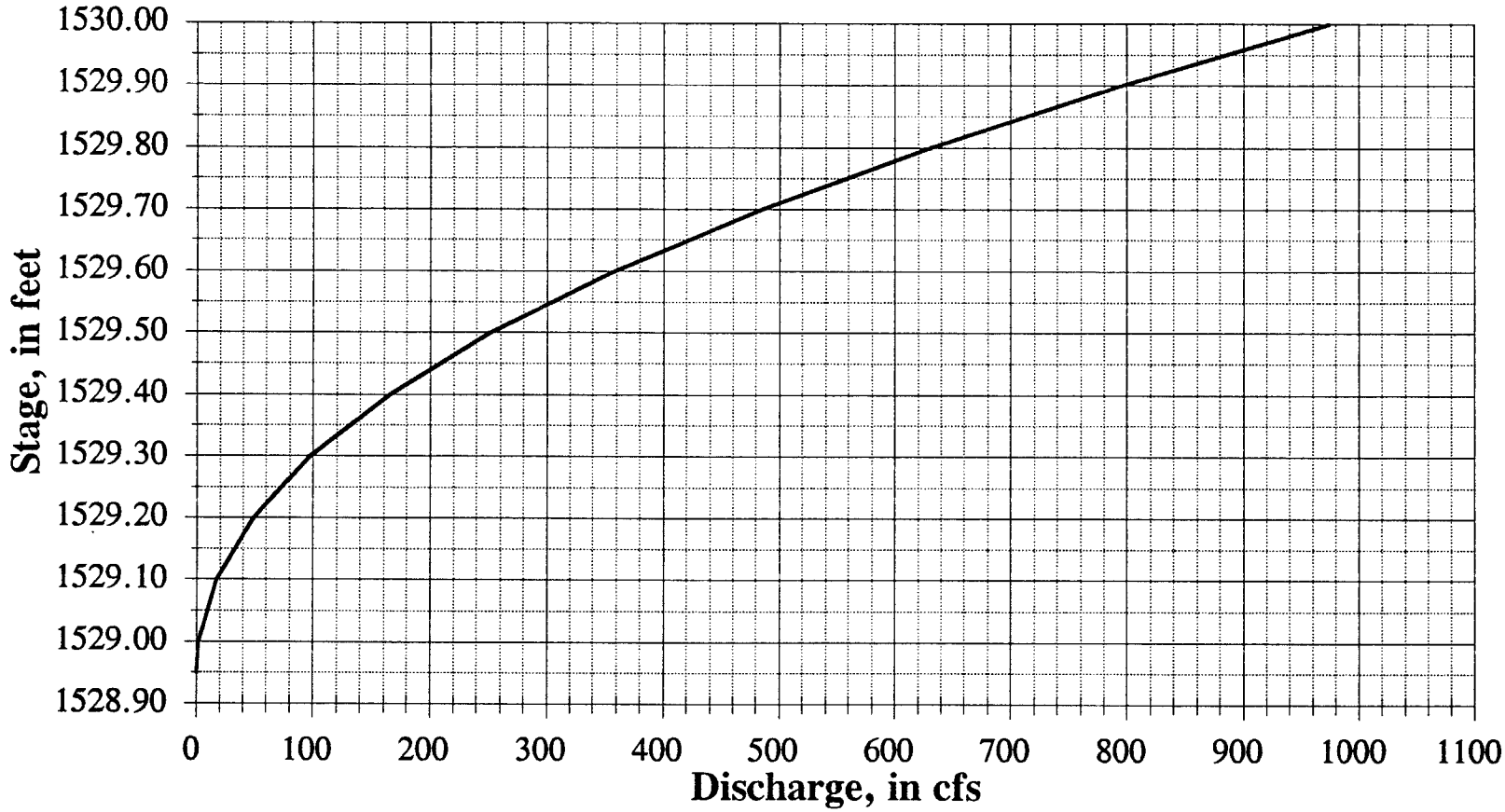
C507 Stage vs. Discharge

Culvert Flow from HY8



C507 Stage vs Discharge

Weir Flow from Uneven Weir



CURRENT DATE: 11-09-1993
CURRENT TIME: 16:09:28

FILE DATE: 06-16-1993
FILE NAME: C507

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1525.24	1524.74	70.00	1 CSP	2.00	2.00	.022	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C507 DATE: 06-16-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1525.24	0	0	0	0	0	0	0	0	1
1526.28	3	3	0	0	0	0	0	0	1
1526.78	7	7	0	0	0	0	0	0	1
1527.20	10	10	0	0	0	0	0	0	1
1527.68	14	14	0	0	0	0	0	0	1
1528.47	17	17	0	0	0	0	0	0	1
1529.41	20	20	0	0	0	0	0	0	1
1530.50	24	24	0	0	0	0	0	0	1
1531.74	27	27	0	0	0	0	0	0	1
1533.15	31	31	0	0	0	0	0	0	1
1534.36	34	33	0	0	0	0	0	1	4
1534.00	33	33	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C507 DATE: 06-16-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1525.24	0.00	0	0	0.00
1526.28	0.00	3	0	0.00
1526.78	0.00	7	0	0.00
1527.20	0.00	10	0	0.00
1527.68	0.00	14	0	0.00
1528.47	0.00	17	0	0.00
1529.41	0.00	20	0	0.00
1530.50	0.00	24	0	0.00
1531.74	0.00	27	0	0.00

1533.15	0.00	31	0	0.00
1534.36	-0.01	34	0	0.14

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 11-09-1993 FILE DATE: 06-16-1993
CURRENT TIME: 16:09:28 FILE NAME: C507

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (2 BY 2) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1525.24	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
3	1526.28	0.96	1.04	2-M2c	0.75	0.64	3.94	0.64	1.06	0.20
7	1526.78	1.42	1.54	2-M2c	1.12	0.92	4.82	0.92	1.32	0.28
10	1527.20	1.85	1.96	2-M2c	1.49	1.14	5.52	1.14	1.50	0.34
14	1527.68	2.31	2.44	6-FFn	2.00	1.32	4.33	2.00	1.66	0.39
17	1528.47	2.86	3.23	6-FFn	2.00	1.48	5.41	2.00	1.79	0.44
20	1529.41	3.53	4.17	6-FFn	2.00	1.62	6.49	2.00	1.91	0.48
24	1530.50	4.34	5.26	6-FFn	2.00	1.72	7.58	2.00	2.01	0.52
27	1531.74	5.32	6.50	6-FFn	2.00	1.82	8.66	2.00	2.10	0.56
31	1533.15	6.45	7.91	6-FFn	2.00	1.92	9.74	2.00	2.19	0.59
33	1534.36	7.44	9.12	6-FFn	2.00	2.00	10.59	2.00	2.27	0.62

El. inlet face invert 1525.24 ft El. outlet invert 1524.74 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION (FT)                      0.00
      INLET ELEVATION (FT)                 1525.24
      OUTLET STATION (FT)                    70.00
      OUTLET ELEVATION (FT)                1524.74
      NUMBER OF BARRELS                       1
      SLOPE (V-FT/H-FT)                       0.0071
      CULVERT LENGTH ALONG SLOPE (FT)        70.00

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          CIRCULAR
      BARREL DIAMETER         2.00 FT
      BARREL MATERIAL       CORRUGATED STEEL
      BARREL MANNING'S N    0.022
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   THIN EDGE PROJECTING
      INLET DEPRESSION      NONE
```

CURRENT DATE: 11-09-1993
CURRENT TIME: 16:09:28

FILE DATE: 06-16-1993
FILE NAME: C507

TAILWATER

***** USER DEFINED CHANNEL CROSS-SECTION

FILE NAME: C507
FILE DATE: 06-16-1993

MAIN CHANNEL AND LT & RT OVER BANKS	
LEFT CHANNEL BOUNDARY	4
RIGHT CHANNEL BOUNDARY	5
MANNING N LEFT OVER BANK	0.045
MANNING N MAIN CHANNEL	0.040
MANNING N RIGHT OVER BAN	0.045
SLOPE OF CHANNEL (FT/FT)	0.0070

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	1000.00	1530.74
2	1030.00	1528.74
3	1118.00	1526.74
4	1156.00	1524.74
5	1175.00	1524.74
6	1203.00	1526.74
7	1237.00	1528.74
8	1259.00	1530.74

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1524.74	0.000	0.00	0.00	0.00
3.40	1524.94	0.419	0.20	1.06	0.09
6.80	1525.02	0.442	0.28	1.32	0.12
10.20	1525.08	0.457	0.34	1.50	0.15
13.60	1525.13	0.468	0.39	1.66	0.17
17.00	1525.18	0.477	0.44	1.79	0.19
20.40	1525.22	0.485	0.48	1.91	0.21
23.80	1525.26	0.491	0.52	2.01	0.23
27.20	1525.30	0.497	0.56	2.10	0.24
30.60	1525.33	0.502	0.59	2.19	0.26
34.00	1525.36	0.506	0.62	2.27	0.27

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	1.00
CREST LENGTH (FT)	1.00
OVERTOPPING CREST ELEVATION (FT)	1534.00

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*********************************************


    PROJECT:  Fountain Hills North FIS                C507
    ENGINEER:  dtp
    DATE:   6/22/1993
    TIME:  12: 9.38




---------------------------------------------
    INPUT PARAMETERS
---------------------------------------------


    STARTING WSEL:       1528.80
    MAXIMUM WSEL:        1530.01
    STEP SIZE:              0.10
    BREADTH OF WEIR:       28.00



*********************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills North FIS                C507
    DATE:   6/22/1993
    TIME:  12: 9.38
*********************************************
```

POINT	ELEVATION	STATION	POINT	ELEVATION	STATION
1	1530.01	1000.00	16	1528.96	1300.00
2	1529.87	1020.00	17	1528.97	1320.00
3	1529.73	1040.00	18	1529.00	1340.00
4	1529.61	1060.00	19	1529.04	1360.00
5	1529.49	1080.00	20	1529.09	1380.00
6	1529.39	1100.00	21	1529.11	1390.00
7	1529.30	1120.00	22	1529.26	1440.00
8	1529.22	1140.00	23	1529.55	1540.00
9	1529.15	1160.00	24	1529.64	1570.00
10	1529.09	1180.00	25	1534.00	1570.01
11	1529.04	1200.00			
12	1529.00	1220.00			
13	1528.98	1240.00			
14	1528.96	1260.00			
15	1528.95	1280.00			

```
*********************************************
    WEIR COEFFICIENT TABLE
    PROJECT:  Fountain Hills North FIS                C507
    DATE:   6/22/1993
    TIME:  12: 9.38
*********************************************
```

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.10	2.5119
3	0.20	2.5238
4	0.30	2.5357
5	0.40	2.5476
6	0.50	2.5595
7	0.60	2.5714
8	0.70	2.5833
9	0.80	2.5952
10	0.90	2.6071
11	1.00	2.6190
12	1.10	2.6310
13	1.20	2.6429

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
    PROJECT:  Fountain Hills North FIS                C507
    DATE:   6/22/1993
    TIME:  12: 9.38
*********************************************
```

ELEVATION	DISCHARGE (CFS)
1528.80	0.00
1528.90	0.00
1529.00	1.71
1529.10	17.21
1529.20	49.14
1529.30	98.17
1529.40	165.29
1529.50	251.54
1529.60	357.86
1529.70	484.81
1529.80	630.73
1529.90	794.23
1530.00	974.70

Table R-8

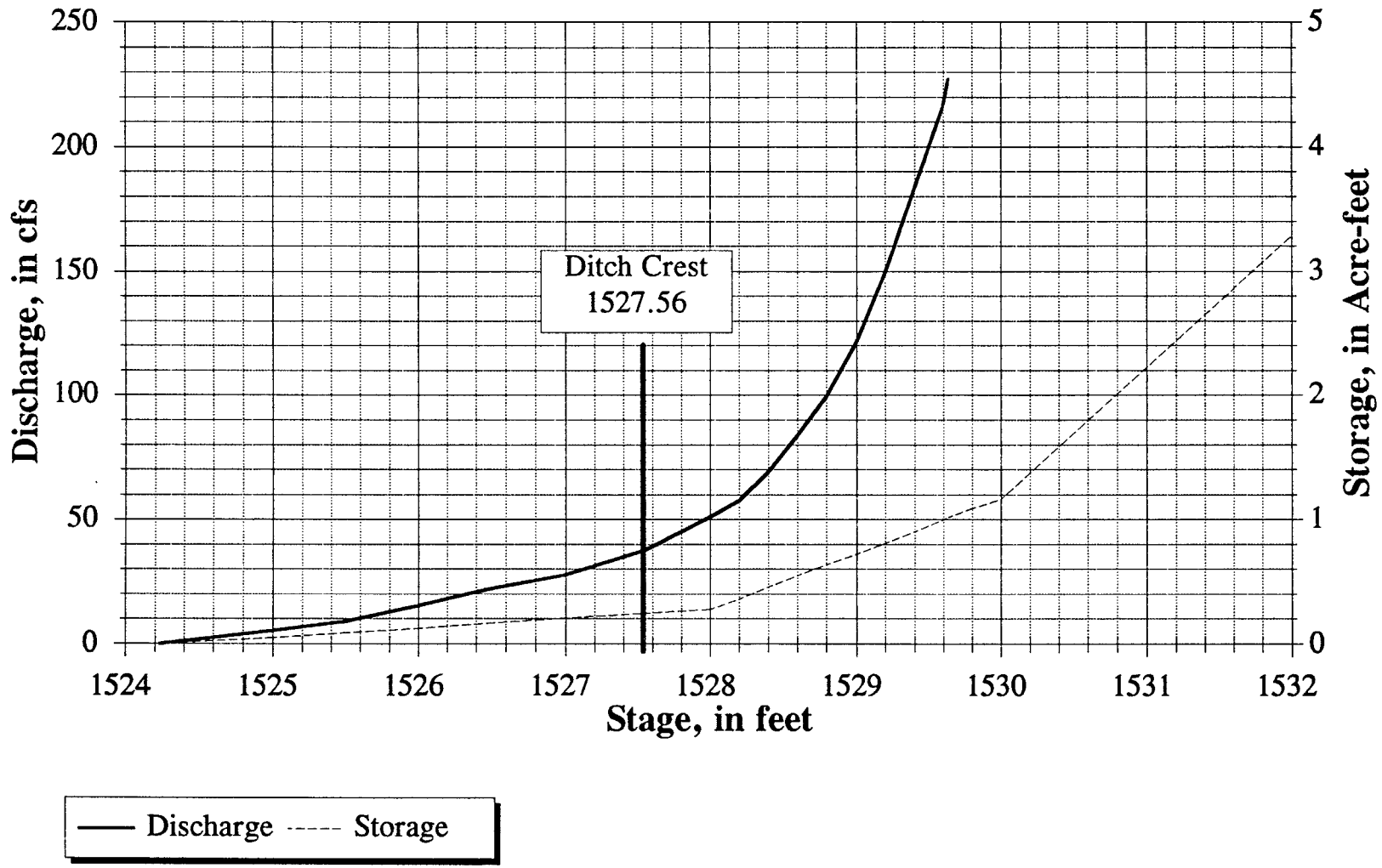
Storage and Discharge vs. Stage Data for C508

Stage (ft)	Surface Area (acres)	Storage Volume (acre-ft)	Discharge		
			Culvert Flow (cfs)	Ditch Flow (cfs)	Total Flow (cfs)
1524.24	0.00	0.00	0	---	0
1525.00	---	0.05	6	---	6
1525.50	---	0.09	9	---	9
1526.00	---	0.13	16	---	16
1526.50	---	0.17	22	---	22
1527.00	---	0.21	28	---	28
1527.56	---	0.25	38	0	38
1528.00	0.224	0.281	47	4	51
1528.20	---	0.36	52	6	58
1528.40	---	0.46	56	14	70
1528.60	---	0.55	60	24	84
1528.80	---	0.64	63	37	100
1529.00	---	0.72	66	56	122
1529.20	---	0.81	68	81	149
1529.40	---	0.90	71	112	183
1529.60	---	1.00	73	143	216
1529.64	---	1.02	73	154	227
1529.80	---	1.09	75	196	*
1530.00	0.707	1.167	77	250	*
1532.00	1.461	3.290	94	---	*

* Note: Weir flow over the road will start at EL > 1529.64

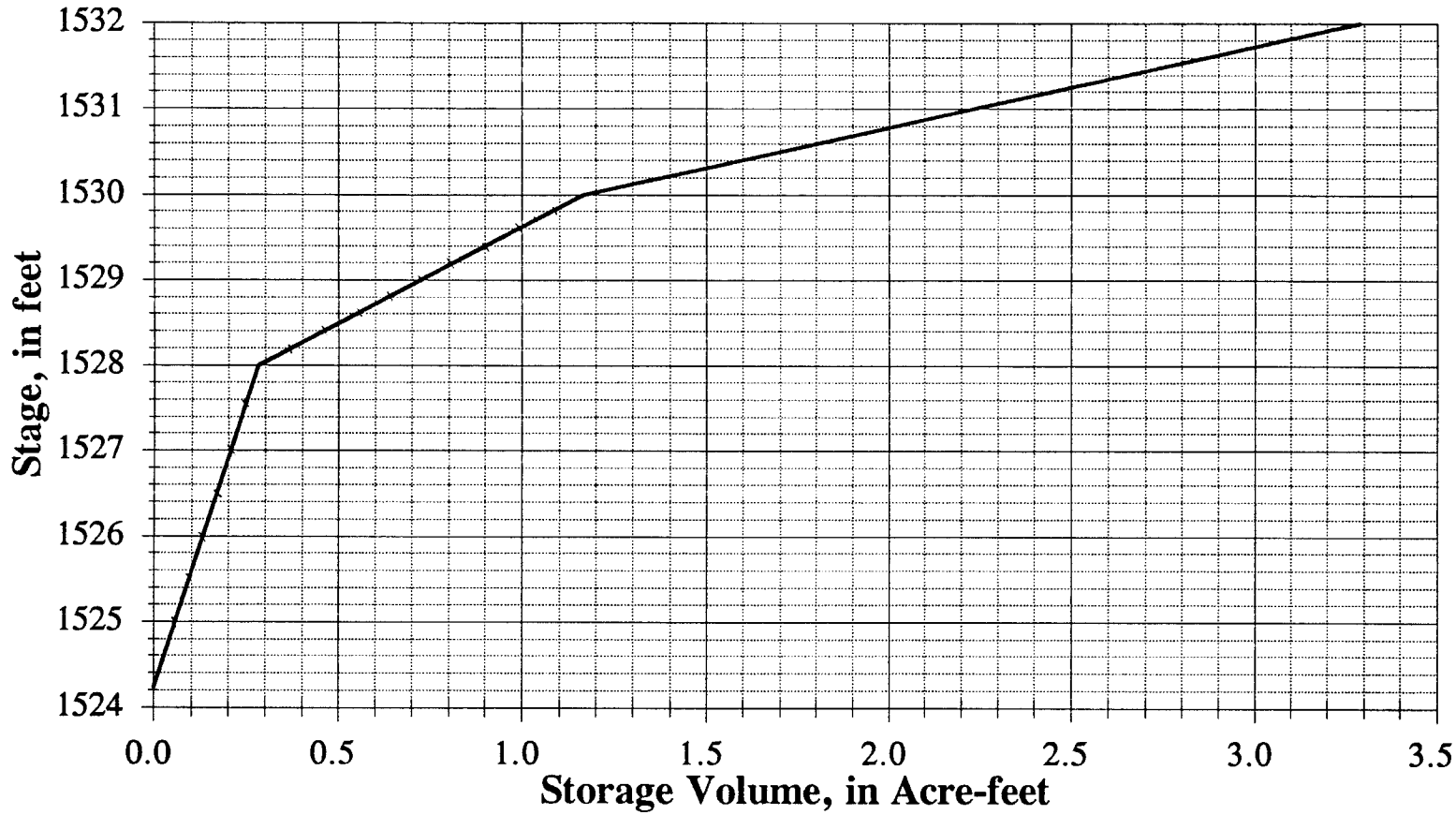
Figure R-4

Storage and Discharge vs Stage for C508



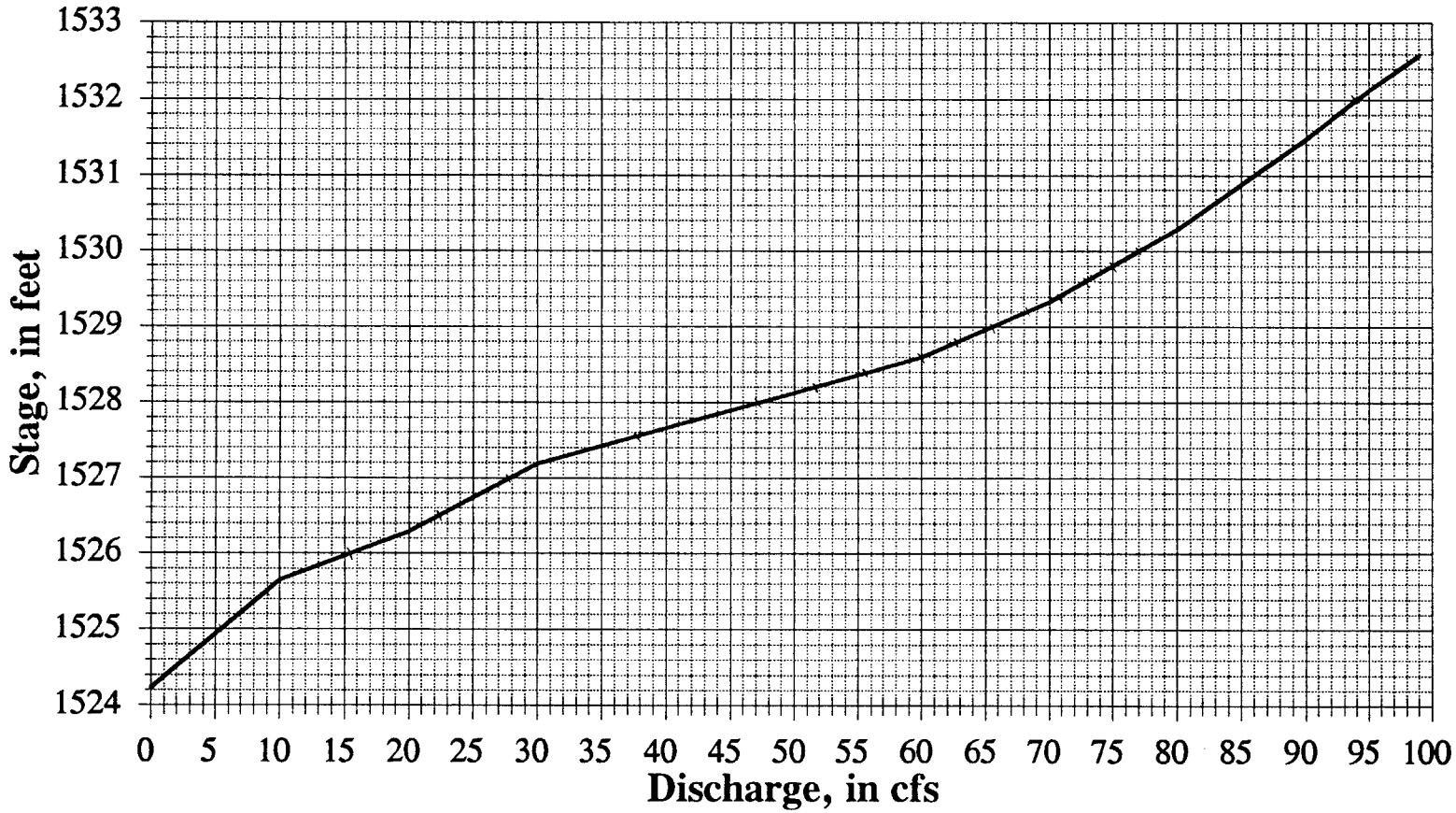
C508 Storage Volume

Calculated From Planimetered Contours



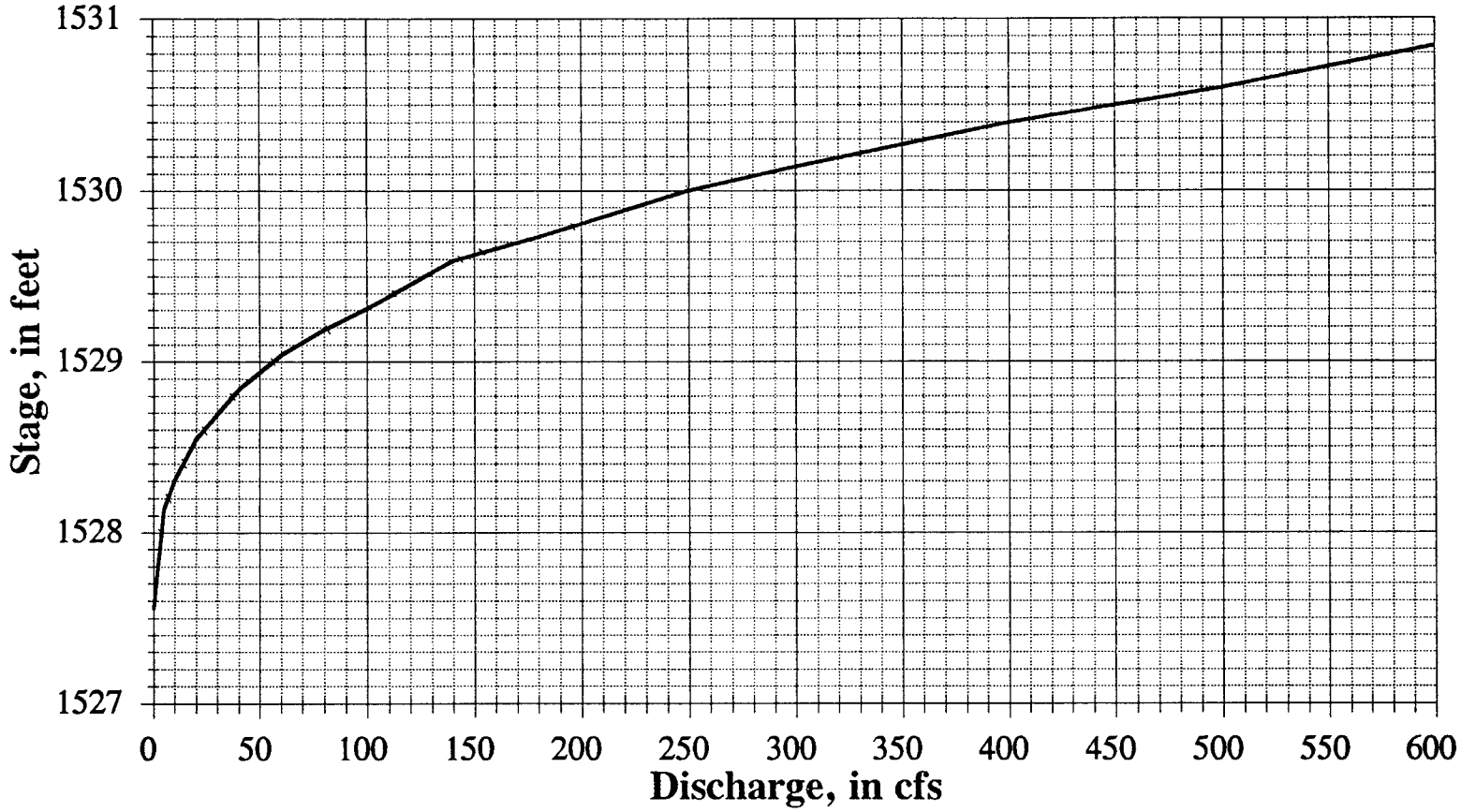
C508 Stage vs. Discharge

Culvert Flow from HY8



C508 Stage vs Discharge

Ditch Flow from HEC-2



CURRENT DATE: 11-09-1993
CURRENT TIME: 16:18:33

FILE DATE: 06-16-1993
FILE NAME: C508

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1524.24	1522.94	120.01	1 CSP	3.50	3.50	.022	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C508 DATE: 06-16-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1524.24	0	0	0	0	0	0	0	0	1
1525.65	10	10	0	0	0	0	0	0	1
1526.29	20	20	0	0	0	0	0	0	1
1527.19	30	30	0	0	0	0	0	0	1
1527.66	40	40	0	0	0	0	0	0	1
1528.13	50	50	0	0	0	0	0	0	1
1528.60	60	60	0	0	0	0	0	0	1
1529.33	70	70	0	0	0	0	0	0	1
1530.29	80	80	0	0	0	0	0	0	1
1531.47	90	90	0	0	0	0	0	0	1
1532.59	100	99	0	0	0	0	0	1	4
1532.00	94	94	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C508 DATE: 06-16-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1524.24	0.00	0	0	0.00
1525.65	0.00	10	0	0.00
1526.29	0.00	20	0	0.00
1527.19	0.00	30	0	0.00
1527.66	0.00	40	0	0.00
1528.13	0.00	50	0	0.00
1528.60	0.00	60	0	0.00
1529.33	0.00	70	0	0.00
1530.29	0.00	80	0	0.00

1531.47	0.00	90	0	0.00
1532.59	-0.00	100	0	0.01

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 11-09-1993 FILE DATE: 06-16-1993
CURRENT TIME: 16:18:33 FILE NAME: C508

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (3.5 BY 3.5) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1524.24	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
10	1525.65	1.41	1.41	1-S2n	0.94	0.94	4.78	0.94	0.94	0.15
20	1526.29	2.05	2.05	1-S2n	1.36	1.37	5.76	1.36	1.20	0.22
30	1527.19	2.62	2.95	2-M2c	1.72	1.69	6.53	1.69	1.40	0.28
40	1527.66	3.16	3.42	2-M2c	2.05	1.96	7.22	1.96	1.56	0.33
50	1528.13	3.73	3.89	2-M2c	2.38	2.20	7.85	2.20	1.70	0.37
60	1528.60	4.36	4.36	2-M2c	2.78	2.42	8.44	2.42	1.81	0.41
70	1529.33	5.09	4.97	6-FFn	3.50	2.61	7.28	3.50	1.92	0.45
80	1530.29	5.93	6.05	6-FFn	3.50	2.79	8.32	3.50	2.02	0.48
90	1531.47	6.90	7.23	6-FFn	3.50	2.92	9.35	3.50	2.11	0.51
99	1532.58	7.84	8.34	6-FFn	3.50	3.03	10.25	3.50	2.19	0.54

El. inlet face invert 1524.24 ft El. outlet invert 1522.94 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1524.24
OUTLET STATION (FT)	120.00
OUTLET ELEVATION (FT)	1522.94
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0108
CULVERT LENGTH ALONG SLOPE (FT)	120.01

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	3.50 FT
BARREL MATERIAL	CORRUGATED STEEL
BARREL MANNING'S N	0.022
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	THIN EDGE PROJECTING
INLET DEPRESSION	NONE

CURRENT DATE: 11-09-1993
CURRENT TIME: 16:18:33

FILE DATE: 06-16-1993
FILE NAME: C508

TAILWATER

***** USER DEFINED CHANNEL CROSS-SECTION

FILE NAME: C508
FILE DATE: 06-16-1993

MAIN CHANNEL AND LT & RT OVER BANKS	
LEFT CHANNEL BOUNDARY	5
RIGHT CHANNEL BOUNDARY	6
MANNING N LEFT OVER BANK	0.040
MANNING N MAIN CHANNEL	0.035
MANNING N RIGHT OVER BAN	0.040
SLOPE OF CHANNEL (FT/FT)	0.0060

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	1000.00	1530.94
2	1010.00	1528.94
3	1020.00	1526.94
4	1050.00	1524.94
5	1150.00	1522.94
6	1225.00	1522.94
7	1254.00	1524.94
8	1283.00	1526.94
9	1299.00	1528.94
10	1311.00	1530.94

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1522.94	0.000	0.00	0.00	0.00
10.00	1523.09	0.423	0.15	0.94	0.06
20.00	1523.16	0.451	0.22	1.20	0.08
30.00	1523.22	0.468	0.28	1.40	0.10
40.00	1523.27	0.481	0.33	1.56	0.12
50.00	1523.31	0.491	0.37	1.70	0.14
60.00	1523.35	0.499	0.41	1.81	0.15
70.00	1523.39	0.507	0.45	1.92	0.17
80.00	1523.42	0.513	0.48	2.02	0.18
90.00	1523.45	0.519	0.51	2.11	0.19
100.00	1523.48	0.524	0.54	2.19	0.20

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	1.00
CREST LENGTH (FT)	1.00

OVERTOPPING CREST ELEVATION (FT) 1532.00

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *                                        *
 *  RUN DATE    22JUN93    TIME   19:07:43 *
 *****************************************
```

```
*************************************
 *  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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1
   22JUN93      19:07:43                                                                                PAGE    1


                                                                                THIS RUN EXECUTED 22JUN93    19:07:43
 ************************************
  HEC-2 WATER SURFACE PROFILES

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


 T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY:  FCD#92-04
 T2      FOUNTAIN HILLS NORTH FIS STUDY by GVSCE
 T3                                                   FILE:     dtp
                                                                CH508.IH2
 T4
 T5              This model is used to develop a rating curve for culvert 508
 T6              Ditch flow to North of C508 is diverted to C507
 T7
 T8      Single X-Section Run
                 Ditch slope =     .030 ft/ft  From 200 scale map

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           .030

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      1                  -1                                        -1

    SECNO       Q   CWSEL   DEPTH     VCH   CRIWS      EG      HL   SLOPE  KRATIO

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38         43          1          8         26          2          3         11          5         58


         Manning's n:          Min  Normal     Max
                   Earth      .015    .022     .030
                Pavement      .013    .016     .020
                  Desert      .040    .060     .080
                Veg Des.      .070    .100     .160

                   Earthy
    earth  desert  desert

 NC     .020       .055       .035        .1         .3
 QT       14          5         10        20         40          60          80         100         140         180
 QT      250        300        400       500        600


         X-Section 1
            this section needs to be input from 200 scale map
 X1        1          7       1022      1040
 GR     1532     999.99    1529.64      1000    1529.36       1014    1528.56       1022    1527.56       1026
 GR     1529       1040       1532      1066

1
   22JUN93      19:07:43                                                                                PAGE    2


 X1        2                                                  .2         .2         .2

 X1        3                                                  .2         .2         .2

 X1        4                                                  .2         .2         .2

 X1        5                                                  .2         .2         .2

 X1        6                                                  .2         .2         .2

1
   22JUN93      19:07:43                                                                                PAGE    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 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000       .51   1528.07   1528.07       .00   1528.19       .13       .00       .00   1528.56
       5.0        .0       5.0        .0        .0       1.8        .0        .0        .0   1529.00
       .00       .00      2.86       .00      .000      .035      .000      .000   1527.56   1023.98
   .028809        0.        0.        0.         0        18         8       .00      6.93   1030.91


*SECNO 2.000
     2.000       .52   1528.08   1528.06       .00   1528.20       .12       .01       .00   1528.56
       5.0        .0       5.0        .0        .0       1.8        .0        .0        .0   1529.00
       .00       .00      2.79       .00      .000      .035      .000      .000   1527.56   1023.96
   .027125        0.        0.        0.         0         5         0       .00      7.01   1030.97


*SECNO 3.000
     3.000       .56   1528.12   1528.06       .00   1528.21       .09       .00       .00   1528.56
       5.0        .0       5.0        .0        .0       2.1        .0        .0        .0   1529.00
       .00       .00      2.41       .00      .000      .035      .000      .000   1527.56   1023.80
   .018291        0.        0.        0.         3         8         0       .00      7.55   1031.35


*SECNO 4.000
     4.000       .57   1528.13   1528.06       .00   1528.21       .08       .00       .00   1528.56
       5.0        .0       5.0        .0        .0       2.2        .0        .0        .0   1529.00
       .00       .00      2.32       .00      .000      .035      .000      .000   1527.56   1023.76
   .016653        0.        0.        0.         0        11         0       .00      7.68   1031.44


*SECNO 5.000
     5.000       .57   1528.13   1528.06       .00   1528.21       .08       .00       .00   1528.56
       5.0        .0       5.0        .0        .0       2.2        .0        .0        .0   1529.00
       .00       .00      2.25       .00      .000      .035      .000      .000   1527.56   1023.72
   .015255        0.        0.        0.         0        15         0       .00      7.81   1031.53


1
   22JUN93      19:07:43                                                                          PAGE    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


*SECNO 6.000
     6.000       .58   1528.14   1528.06       .00   1528.22       .07       .00       .00   1528.56
       5.0        .0       5.0        .0        .0       2.3        .0        .0        .0   1529.00
       .00       .00      2.18       .00      .000      .035      .000      .000   1527.56   1023.69
   .014090        0.        0.        0.         0        15         0       .00      7.93   1031.62


1
   22JUN93      19:07:43                                                                          PAGE    5

T3            Q2

J1  ICHECK    INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                3                                .030

J2  NPROF     IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

      2                   -1                                           -1


1
   22JUN93      19:07:43                                                                          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

*PROF 2

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000       .66   1528.22   1528.22       .00   1528.39       .17       .00       .00   1528.56
      10.0        .0      10.0        .0        .0       3.0        .0        .0        .0   1529.00
       .00       .00      3.31       .00      .000      .035      .000      .000   1527.56   1023.35
   .026902        0.        0.        0.         0        17         9       .00      9.11   1032.45


*SECNO 2.000
     2.000       .67   1528.23   1528.22       .00   1528.40       .16       .01       .00   1528.56
      10.0        .0      10.0        .0        .0       3.1        .0        .0        .0   1529.00
       .00       .00      3.26       .00      .000      .035      .000      .000   1527.56   1023.32
   .025770        0.        0.        0.         0         5         0       .00      9.18   1032.50


*SECNO 3.000
     3.000       .71   1528.27   1528.22       .00   1528.41       .13       .00       .00   1528.56
      10.0        .0      10.0        .0        .0       3.4        .0        .0        .0   1529.00
       .00       .00      2.93       .00      .000      .035      .000      .000   1527.56   1023.18
   .019377        0.        0.        0.         3         5         0       .00      9.68   1032.86
```

```
*SECNO 4.000
     4.000       .73   1528.29   1528.22       .00   1528.41       .12       .00       .00   1528.56
      10.0        .0      10.0        .0        .0       3.5        .0        .0        .0   1529.00
       .00       .00      2.82       .00      .000      .035      .000      .000   1527.56   1023.13
   .017587        0.        0.        0.         0        11         0       .00      9.86   1032.99

*SECNO 5.000
     5.000       .74   1528.30   1528.22       .00   1528.42       .12       .00       .00   1528.56
      10.0        .0      10.0        .0        .0       3.7        .0        .0        .0   1529.00
       .00       .00      2.72       .00      .000      .035      .000      .000   1527.56   1023.07
   .015977        0.        0.        0.         0        11         0       .00     10.04   1033.11
```



```
    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

*SECNO 6.000
     6.000       .75   1528.31   1528.22       .00   1528.42       .11       .00       .00   1528.56
      10.0        .0      10.0        .0        .0       3.8        .0        .0        .0   1529.00
       .00       .00      2.63       .00      .000      .035      .000      .000   1527.56   1023.02
   .014602        0.        0.        0.         0        15         0       .00     10.21   1033.23
```



```
T3            Q3
J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
                 4                           .030
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     3                   -1                                       -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

*PROF 3
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000       .88   1528.44   1528.44       .00   1528.66       .22       .00       .00   1528.56
      20.0        .0      20.0        .0        .0       5.3        .0        .0        .0   1529.00
       .00       .00      3.80       .00      .000      .035      .000      .000   1527.56   1022.50
   .024564        0.        0.        0.         0        18        11       .00     12.01   1034.51

*SECNO 2.000
     2.000       .89   1528.45   1528.44       .00   1528.67       .22       .00       .00   1528.56
      20.0        .0      20.0        .0        .0       5.3        .0        .0        .0   1529.00
       .00       .00      3.76       .00      .000      .035      .000      .000   1527.56   1022.48
   .023846        0.        0.        0.         0         5         0       .00     12.08   1034.56

*SECNO 3.000
     3.000       .92   1528.48   1528.43       .00   1528.67       .19       .00       .00   1528.56
      20.0        .0      20.0        .0        .0       5.7        .0        .0        .0   1529.00
       .00       .00      3.49       .00      .000      .035      .000      .000   1527.56   1022.35
   .019560        0.        0.        0.         3         5         0       .00     12.54   1034.88

*SECNO 4.000
     4.000       .99   1528.55   1528.43       .00   1528.68       .13       .00       .01   1528.56
      20.0        .0      20.0        .0        .0       6.8        .0        .0        .0   1529.00
       .00       .00      2.93       .00      .000      .035      .000      .000   1527.56   1022.01
   .012205        0.        0.        0.         2        11         0       .00     13.70   1035.70

*SECNO 5.000
     5.000       .99   1528.55   1528.43       .00   1528.68       .14       .00       .00   1528.56
      20.0        .0      20.0        .0        .0       6.7        .0        .0        .0   1529.00
       .00       .00      2.96       .00      .000      .035      .000      .000   1527.56   1022.03
   .012636        0.        0.        0.         0        15         0       .00     13.61   1035.64
```



```
    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 6.000
```

```
     6.000       .99   1528.55   1528.43       .00   1528.69       .14       .00       .00   1528.56
      20.0        .0      20.0        .0        .0       6.7        .0        .0        .0   1529.00
       .00       .00      2.97       .00      .000      .035      .000      .000   1527.56   1022.04
   .012686        0.        0.        0.         0        15         0       .00     13.60   1035.63

1
   22JUN93      19:07:43                                                                                PAGE   11

 T3            Q4
 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                5                           .030

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      4                  -1                                      -1

1
   22JUN93      19:07:43                                                                                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

 *PROF 4

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 3720 CRITICAL DEPTH ASSUMED
     1.000      1.16   1528.72   1528.72       .00   1529.01       .29       .00       .00   1528.56
      40.0        .3      39.7        .0        .1       9.2        .0        .0        .0   1529.00
       .00      1.99      4.32       .00      .020      .035      .000      .000   1527.56   1020.39
   .020724        0.        0.        0.         0        11        11       .00     16.90   1037.29

 *SECNO 2.000
 3720 CRITICAL DEPTH ASSUMED
     2.000      1.17   1528.73   1528.73       .00   1529.01       .28       .00       .00   1528.56
      40.0        .3      39.7        .0        .1       9.3        .0        .0        .0   1529.00
       .00      2.00      4.29       .00      .020      .035      .000      .000   1527.56   1020.35
   .020309        0.        0.        0.         0         5         0       .00     16.98   1037.33

 *SECNO 3.000
     3.000      1.18   1528.74   1528.72       .00   1529.02       .28       .00       .00   1528.56
      40.0        .3      39.7        .0        .2       9.4        .0        .0        .0   1529.00
       .00      2.03      4.22       .00      .020      .035      .000      .000   1527.56   1020.26
   .019462        0.        0.        0.         0         5         0       .00     17.15   1037.41

 *SECNO 4.000
     4.000      1.26   1528.82   1528.72       .00   1529.03       .21       .00       .01   1528.56
      40.0        .7      39.3        .0        .3      10.6        .0        .0        .0   1529.00
       .00      2.16      3.72       .00      .020      .035      .000      .000   1527.56   1019.51
   .013698        0.        0.        0.         5         5         0       .00     18.63   1038.14

 *SECNO 5.000
     5.000      1.27   1528.83   1528.72       .00   1529.03       .20       .00       .00   1528.56
      40.0        .7      39.3        .0        .3      10.7        .0        .0        .0   1529.00
       .00      2.17      3.65       .00      .020      .035      .000      .000   1527.56   1019.41
   .013051        0.        0.        0.         0        11         0       .00     18.84   1038.24

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   22JUN93      19:07:43                                                                                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 6.000
     6.000      1.28   1528.84   1528.72       .00   1529.04       .20       .00       .00   1528.56
      40.0        .8      39.2        .0        .4      10.9        .0        .0        .0   1529.00
       .00      2.17      3.59       .00      .020      .035      .000      .000   1527.56   1019.30
   .012459        0.        0.        0.         0        11         0       .00     19.04   1038.34

1
   22JUN93      19:07:43                                                                                PAGE   14

 T3            Q5
 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                6                           .030

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      5                  -1                                      -1

1
   22JUN93      19:07:43                                                                                PAGE   15
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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

*PROF 5

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      1.37    1528.93    1528.93       .00    1529.25       .32       .00       .00    1528.56
      60.0       2.2       57.8        .0        .7       12.6        .0        .0        .0    1529.00
       .00      3.23       4.58       .00       .020       .035      .000      .000   1527.56    1018.29
   .018043        0.         0.        0.         0         14        11       .00     21.03    1039.32

*SECNO 2.000
     2.000      1.38    1528.94    1528.93       .00    1529.25       .32       .00       .00    1528.56
      60.0       2.3       57.7        .0        .7       12.7        .0        .0        .0    1529.00
       .00      3.23       4.55       .00       .020       .035      .000      .000   1527.56    1018.26
   .017766        0.         0.        0.         0          5         0       .00     21.10    1039.36

*SECNO 3.000
     3.000      1.39    1528.95    1528.93       .00    1529.26       .31       .00       .00    1528.56
      60.0       2.3       57.7        .0        .7       12.8        .0        .0        .0    1529.00
       .00      3.22       4.50       .00       .020       .035      .000      .000   1527.56    1018.18
   .017218        0.         0.        0.         0          5         0       .00     21.25    1039.43

*SECNO 4.000
     4.000      1.45    1529.01    1528.93       .00    1529.27       .25       .00       .01    1528.56
      60.0       3.1       56.9        .0       1.0       13.9        .0        .0        .0    1529.00
       .00      3.13       4.09       .00       .020       .035      .000      .000   1527.56    1017.56
   .013298        0.         0.        0.         5          5         0       .00     22.47    1040.03

*SECNO 5.000
     5.000      1.46    1529.02    1528.93       .00    1529.27       .25       .00       .00    1528.56
      60.0       3.2       56.8        .0       1.0       14.1        .0        .0        .0    1529.00
       .00      3.10       4.02       .03       .020       .035      .000      .000   1527.56    1017.45
   .012588        0.         0.        0.         0         11         0       .00     22.69    1040.13

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   22JUN93      19:07:43                                                                                    PAGE   16

    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 6.000
     6.000      1.48    1529.04    1528.93       .00    1529.27       .24       .00       .00    1528.56
      60.0       3.3       56.7        .0       1.1       14.3        .0        .0        .0    1529.00
       .00      3.07       3.95       .03       .020       .035      .000      .000   1527.56    1017.33
   .011925        0.         0.        0.         0         11         0       .00     22.91    1040.24

1
   22JUN93      19:07:43                                                                                    PAGE   17

T3            Q6

J1  ICHECK    INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                7                              .030

J2  NPROF     IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     6                    -1                                           -1

1
   22JUN93      19:07:43                                                                                    PAGE   18

    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 6

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      1.52    1529.08    1529.08       .00    1529.44       .37       .00       .00    1528.56
      80.0       5.2       74.8        .0       1.3       15.2        .0        .0        .0    1529.00
       .00      3.91       4.91       .04       .020       .035      .055      .000   1527.56    1016.83
   .016957        0.         0.        0.         0         19        11       .00     23.84    1040.67

*SECNO 2.000
     2.000      1.52    1529.08    1529.08       .00    1529.45       .36       .00       .00    1528.56
      80.0       5.3       74.7        .0       1.4       15.3        .0        .0        .0    1529.00
       .00      3.90       4.89       .03       .020       .035      .055      .000   1527.56    1016.79
   .016707        0.         0.        0.         0          5         0       .00     23.90    1040.70
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*SECNO 3.000
     3.000      1.54   1529.10   1529.08       .00   1529.45       .35       .00       .00   1528.56
      80.0       5.4      74.6        .0       1.4      15.4        .0        .0        .0   1529.00
       .00      3.88      4.84       .03      .020      .035      .055      .000   1527.56   1016.72
   .016203        0.        0.        0.         0         5         0       .00     24.04   1040.76

*SECNO 4.000
     4.000      1.60   1529.16   1529.07       .00   1529.46       .29       .00       .01   1528.56
      80.0       6.5      73.5        .1       1.8      16.6        .1        .0        .0   1529.00
       .00      3.64      4.41       .54      .020      .035      .055      .000   1527.56   1016.04
   .012179        0.        0.        0.         7         5         0       .00     25.31   1041.35

*SECNO 5.000
     5.000      1.62   1529.18   1529.08       .00   1529.46       .29       .00       .00   1528.56
      80.0       6.6      73.3        .1       1.8      16.8        .1        .0        .0   1529.00
       .00      3.61      4.35       .55      .020      .035      .055      .000   1527.56   1015.93
   .011633        0.        0.        0.         0        11         0       .00     25.52   1041.45

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  22JUN93      19:07:43                                                                          PAGE   19

    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 6.000
     6.000      1.63   1529.19   1529.08       .00   1529.47       .28       .00       .00   1528.56
      80.0       6.8      73.1        .1       1.9      17.1        .1        .0        .0   1529.00
       .00      3.57      4.28       .57      .020      .035      .055      .000   1527.56   1015.81
   .011100        0.        0.        0.         0        11         0       .00     25.74   1041.55

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  22JUN93      19:07:43                                                                          PAGE   20

T3           Q7

J1  ICHECK   INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

             8                                .030

J2  NPROF    IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     7                  -1                                           -1

1
  22JUN93      19:07:43                                                                          PAGE   21

    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 7

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      1.67   1529.23   1529.23       .00   1529.61       .38       .00       .00   1528.56
      100.0       9.5      90.4        .2       2.2      17.9        .2        .0        .0   1529.00
       .00      4.27      5.05       .76      .020      .035      .055      .000   1527.56   1015.34
   .014425        0.        0.        0.         0        18        11       .00     26.62   1041.96

*SECNO 2.000
     2.000      1.67   1529.23   1529.20       .00   1529.61       .38       .00       .00   1528.56
      100.0       9.5      90.3        .2       2.2      18.0        .2        .0        .0   1529.00
       .00      4.26      5.03       .76      .020      .035      .055      .000   1527.56   1015.31
   .014264        0.        0.        0.         0         5         0       .00     26.67   1041.98

*SECNO 3.000
     3.000      1.68   1529.24   1529.19       .00   1529.62       .38       .00       .00   1528.56
      100.0       9.7      90.2        .2       2.3      18.1        .2        .0        .0   1529.00
       .00      4.24      4.99       .76      .020      .035      .055      .000   1527.56   1015.25
   .013950        0.        0.        0.         0         5         0       .00     26.78   1042.04

*SECNO 4.000
     4.000      1.69   1529.25   1529.22       .00   1529.62       .37       .00       .00   1528.56
      100.0       9.8      90.0        .2       2.3      18.2        .3        .0        .0   1529.00
       .00      4.20      4.94       .77      .020      .035      .055      .000   1527.56   1015.16
   .013481        0.        0.        0.         0         6         0       .00     26.95   1042.11

*SECNO 5.000
     5.000      1.74   1529.30   1529.23       .00   1529.63       .32       .00       .00   1528.56
      100.0      10.9      88.8        .3       2.7      19.2        .4        .0        .0   1529.00
       .00      4.01      4.63       .79      .020      .035      .055      .000   1527.56   1014.63
   .011079        0.        0.        0.         3         6         0       .00     27.94   1042.57

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  22JUN93      19:07:43                                                                          PAGE   22

    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 6.000
      6.000      1.75    1529.31    1529.22       .00    1529.63       .32       .00       .00    1528.56
      100.0      11.1       88.6         .3       2.8       19.4        .4        .0        .0    1529.00
        .00      3.97       4.58        .80      .020       .035      .055      .000   1527.56    1014.53
    .010691        0.         0.         0.         0         10         0       .00     28.13    1042.66

1
   22JUN93      19:07:43                                                                                          PAGE   23

 T3            Q8
 J1  ICHECK    INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                 9                             .030

 J2  NPROF     IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

       8                  -1                                           -1

1
   22JUN93      19:07:43                                                                                          PAGE   24

     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 8

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

 CCHV=      .100 CEHV=      .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 3720 CRITICAL DEPTH ASSUMED
      1.000      1.92    1529.48    1529.48       .00    1529.89       .41       .00       .00    1528.56
      140.0      21.6      117.3        1.1       4.5       22.5       1.0        .0        .0    1529.00
        .00      4.81       5.22       1.11      .020       .035      .055      .000   1527.56    1008.07
    .011431        0.         0.         0.         0         12        10       .00     36.08    1044.15

 *SECNO 2.000
      2.000      1.92    1529.48    1529.48       .00    1529.89       .41       .00       .00    1528.56
      140.0      21.7      117.2        1.1       4.5       22.5       1.0        .0        .0    1529.00
        .00      4.79       5.21       1.11      .020       .035      .055      .000   1527.56    1007.95
    .011341        0.         0.         0.         0          5         0       .00     36.22    1044.17

 *SECNO 3.000
      3.000      1.93    1529.49    1529.48       .00    1529.89       .40       .00       .00    1528.56
      140.0      21.9      116.9        1.1       4.6       22.6       1.0        .0        .0    1529.00
        .00      4.76       5.18       1.11      .020       .035      .055      .000   1527.56    1007.71
    .011152        0.         0.         0.         0          5         0       .00     36.50    1044.21

 *SECNO 4.000
      4.000      1.94    1529.50    1529.48       .00    1529.90       .40       .00       .00    1528.56
      140.0      22.2      116.6        1.2       4.7       22.7       1.1        .0        .0    1529.00
        .00      4.72       5.13       1.10      .020       .035      .055      .000   1527.56    1007.34
    .010872        0.         0.         0.         0          5         0       .00     36.94    1044.28

 *SECNO 5.000
      5.000      2.01    1529.57    1529.48       .00    1529.91       .33       .00       .01    1528.56
      140.0      25.1      113.4        1.5       5.8       24.0       1.4        .0        .0    1529.00
        .00      4.31       4.73       1.07      .020       .035      .055      .000   1527.56    1003.91
    .008620        0.         0.         0.         7          5         0       .00     40.96    1044.87

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   22JUN93      19:07:43                                                                                          PAGE   25

     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 6.000
      6.000      2.03    1529.59    1529.48       .00    1529.91       .32       .00       .00    1528.56
      140.0      25.8      112.6        1.5       6.1       24.3       1.4        .0        .0    1529.00
        .00      4.21       4.64       1.06      .020       .035      .055      .000   1527.56    1003.08
    .008158        0.         0.         0.         1          8         0       .00     41.93    1045.01

1
   22JUN93      19:07:43                                                                                          PAGE   26

 T3            Q9
 J1  ICHECK    INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                10                             .030

 J2  NPROF     IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

       9                  -1                                           -1
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1
  22JUN93      19:07:43                                                                                                PAGE   27

    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 9

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      2.14    1529.70    1529.70       .00    1530.09       .40       .00       .00    1528.56
     180.0      40.5      136.9        2.7       8.6       26.4       2.1        .0        .0    1529.00
       .00      4.69       5.19       1.27      .020       .035      .055      .000   1527.56    1000.00
   .009120        0.         0.         0.         0         10         9       .00     46.03    1046.03

*SECNO 2.000
     2.000      2.14    1529.70    1529.66       .00    1530.09       .39       .00       .00    1528.56
     180.0      40.6      136.7        2.7       8.7       26.4       2.1        .0        .0    1529.00
       .00      4.68       5.18       1.27      .020       .035      .055      .000   1527.56    1000.00
   .009065        0.         0.         0.         0          5         0       .00     46.05    1046.05

*SECNO 3.000
     3.000      2.15    1529.71    1529.66       .00    1530.10       .39       .00       .00    1528.56
     180.0      40.8      136.5        2.7       8.7       26.5       2.1        .0        .0    1529.00
       .00      4.67       5.16       1.27      .020       .035      .055      .000   1527.56    1000.00
   .008956        0.         0.         0.         0          5         0       .00     46.08    1046.08

*SECNO 4.000
     4.000      2.15    1529.71    1529.69       .00    1530.10       .39       .00       .00    1528.56
     180.0      41.2      136.1        2.7       8.9       26.6       2.2        .0        .0    1529.00
       .00      4.64       5.12       1.26      .020       .035      .055      .000   1527.56    1000.00
   .008791        0.         0.         0.         0          6         0       .00     46.13    1046.13

*SECNO 5.000
     5.000      2.16    1529.72    1529.69       .00    1530.10       .38       .00       .00    1528.56
     180.0      41.7      135.5        2.8       9.0       26.7       2.2        .0        .0    1529.00
       .00      4.61       5.08       1.25      .020       .035      .055      .000   1527.56    1000.00
   .008575        0.         0.         0.         0          6         0       .00     46.19    1046.19

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  22JUN93      19:07:43                                                                                                PAGE   28

    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 6.000
     6.000      2.17    1529.73    1529.70       .00    1530.10       .37       .00       .00    1528.56
     180.0      42.3      134.9        2.8       9.2       26.9       2.3        .0        .0    1529.00
       .00      4.57       5.02       1.25      .020       .035      .055      .000   1527.56    1000.00
   .008322        0.         0.         0.         0          6         0       .00     46.27    1046.27

1
  22JUN93      19:07:43                                                                                                PAGE   29

T3          Q10

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

               11                               .030

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

    10                    -1                                           -1

1
  22JUN93      19:07:43                                                                                                PAGE   30

    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

*PROF10

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      2.30    1529.86    1529.86       .00    1530.39       .53       .00       .00    1528.56
     250.0      70.3      174.6        5.1      12.3       29.4       3.2        .0        .0    1529.00
       .00      5.70       5.94       1.56      .020       .035      .055      .000   1527.56    1000.00
   .010337        0.         0.         0.         0          8         8       .00     47.49    1047.49

*SECNO 2.000
```

```
     2.000      2.35   1529.91   1529.88       .00   1530.40       .49       .00       .00   1528.56
     250.0      73.1     171.6       5.4      13.1      30.1       3.5        .0        .0   1529.00
       .00      5.56      5.71      1.52      .020      .035      .055      .000   1527.56   1000.00
   .009259        0.        0.        0.         0         5         0       .00     47.81   1047.81

 *SECNO 3.000
     3.000      2.36   1529.92   1529.86       .00   1530.40       .48       .00       .00   1528.56
     250.0      73.7     170.9       5.4      13.3      30.2       3.6        .0        .0   1529.00
       .00      5.53      5.66      1.51      .020      .035      .055      .000   1527.56   1000.00
   .009039        0.        0.        0.         0         5         0       .00     47.88   1047.88

 *SECNO 4.000
     4.000      2.38   1529.94   1529.90       .00   1530.40       .46       .00       .00   1528.56
     250.0      75.1     169.3       5.6      13.8      30.6       3.7        .0        .0   1529.00
       .00      5.45      5.54      1.49      .020      .035      .055      .000   1527.56   1000.00
   .008523        0.        0.        0.         2         6         0       .00     48.06   1048.06

 *SECNO 5.000
     5.000      2.43   1529.99   1529.91       .00   1530.41       .41       .00       .00   1528.56
     250.0      79.1     164.9       6.1      15.1      31.6       4.2        .0        .0   1529.00
       .00      5.24      5.21      1.43      .020      .035      .055      .000   1527.56   1000.00
   .007202        0.        0.        0.         3         6         0       .00     48.57   1048.57

1
   22JUN93      19:07:43                                                                          PAGE   31

    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 6.000
     6.000      2.44   1530.00   1529.90       .00   1530.41       .41       .00       .00   1528.56
     250.0      79.5     164.4       6.1      15.2      31.8       4.3        .0        .0   1529.00
       .00      5.22      5.18      1.42      .020      .035      .055      .000   1527.56   1000.00
   .007072        0.        0.        0.         0        10         0       .00     48.63   1048.63

1
   22JUN93      19:07:43                                                                          PAGE   32

 T3           Q11
 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
               12                            .030
 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     11                  -1                                      -1

1
   22JUN93      19:07:43                                                                          PAGE   33

    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

 *PROF11

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 3720 CRITICAL DEPTH ASSUMED
     1.000      2.45   1530.01   1530.01       .00   1530.58       .58       .00       .00   1528.56
     300.0      96.2     196.4       7.4      15.4      31.9       4.4        .0        .0   1529.00
       .00      6.23      6.15      1.69      .020      .035      .055      .000   1527.56   1000.00
   .009910        0.        0.        0.         0         8         7       .00     48.72   1048.71

 *SECNO 2.000
     2.000      2.45   1530.01   1530.00       .00   1530.59       .58       .00       .00   1528.56
     300.0      96.3     196.3       7.4      15.5      32.0       4.4        .0        .0   1529.00
       .00      6.22      6.14      1.69      .020      .035      .055      .000   1527.56   1000.00
   .009857        0.        0.        0.         0         5         0       .00     48.73   1048.73

 *SECNO 3.000
     3.000      2.46   1530.02   1530.00       .00   1530.59       .57       .00       .00   1528.56
     300.0      96.6     195.9       7.5      15.6      32.0       4.4        .0        .0   1529.00
       .00      6.20      6.11      1.69      .020      .035      .055      .000   1527.56   1000.00
   .009746        0.        0.        0.         0         5         0       .00     48.77   1048.77

 *SECNO 4.000
     4.000      2.47   1530.03   1530.00       .00   1530.59       .57       .00       .00   1528.56
     300.0      97.1     195.3       7.5      15.7      32.2       4.5        .0        .0   1529.00
       .00      6.18      6.07      1.68      .020      .035      .055      .000   1527.56   1000.00
   .009569        0.        0.        0.         0         5         0       .00     48.83   1048.83

 *SECNO 5.000
     5.000      2.48   1530.04   1529.99       .00   1530.59       .56       .00       .00   1528.56
     300.0      97.8     194.6       7.6      15.9      32.3       4.6        .0        .0   1529.00
       .00      6.14      6.02      1.67      .020      .035      .055      .000   1527.56   1000.00
   .009331        0.        0.        0.         0         5         0       .00     48.91   1048.91
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1
   22JUN93      19:07:43                                                                                                                PAGE   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

 *SECNO 6.000
     6.000      2.58    1530.14    1529.99        .00    1530.61        .46        .00        .01    1528.56
     300.0     105.5      185.8        8.7       18.4       34.4        5.6         .0         .0    1529.00
       .00      5.72       5.40       1.54       .020       .035       .055       .000    1527.56    1000.00
   .006935        0.         0.         0.          3          5          0        .00      49.89    1049.89

1
   22JUN93      19:07:43                                                                                                                PAGE   35

 T3           Q12

 J1  ICHECK   INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

              13                               .030

 J2  NPROF    IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     12                  -1                                           -1

1
   22JUN93      19:07:43                                                                                                                PAGE   36

    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

 *PROF12

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 3720 CRITICAL DEPTH ASSUMED
     1.000      2.67    1530.23    1530.23        .00    1530.95        .71        .00        .00    1528.56
     400.0     147.9      239.3       12.8       20.5       36.1        6.6         .0         .0    1529.00
       .00      7.22       6.63       1.93       .020       .035       .055       .000    1527.56    1000.00
   .009807        0.         0.         0.          0         11          5        .00      50.71    1050.70

 *SECNO 2.000
     2.000      2.72    1530.28    1530.25        .00    1530.95        .67        .00        .00    1528.56
     400.0     150.6      236.2       13.2       21.3       36.7        7.0         .0         .0    1529.00
       .00      7.06       6.43       1.89       .020       .035       .055       .000    1527.56    1000.00
   .008976        0.         0.         0.          0          5          0        .00      51.03    1051.03

 *SECNO 3.000
     3.000      2.73    1530.29    1530.23        .00    1530.95        .66        .00        .00    1528.56
     400.0     151.1      235.6       13.3       21.5       36.9        7.1         .0         .0    1529.00
       .00      7.03       6.39       1.88       .020       .035       .055       .000    1527.56    1000.00
   .008818        0.         0.         0.          0          5          0        .00      51.10    1051.10

 *SECNO 4.000
     4.000      2.77    1530.33    1530.27        .00    1530.96        .63        .00        .00    1528.56
     400.0     153.9      232.3       13.8       22.4       37.6        7.6         .0         .0    1529.00
       .00      6.87       6.17       1.83       .020       .035       .055       .000    1527.56    1000.00
   .008017        0.         0.         0.          3          6          0        .00      51.46    1051.46

 *SECNO 5.000
     5.000      2.83    1530.39    1530.26        .00    1530.97        .57        .00        .01    1528.56
     400.0     158.0      227.3       14.7       23.9       38.9        8.4         .0         .0    1529.00
       .00      6.61       5.85       1.75       .020       .035       .055       .000    1527.56    1000.00
   .006906        0.         0.         0.          3          8          0        .00      52.05    1052.04

1
   22JUN93      19:07:43                                                                                                                PAGE   37

    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 6.000
     6.000      2.84    1530.40    1530.23        .00    1530.97        .57        .00        .00    1528.56
     400.0     158.3      226.9       14.7       24.0       39.0        8.4         .0         .0    1529.00
       .00      6.59       5.83       1.75       .020       .035       .055       .000    1527.56    1000.00
   .006824        0.         0.         0.          0         11          0        .00      52.09    1052.09

1
   22JUN93      19:07:43                                                                                                                PAGE   38

 T3           Q13

 J1  ICHECK   INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

              14                               .030
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J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     13                  -1                                      -1

1
   22JUN93      19:07:43                                                                                    PAGE   39

    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

*PROF13

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      2.92   1530.48   1530.48       .00   1531.28       .80       .00       .00   1528.56
     500.0     203.4     276.9      19.7      25.8      40.4       9.4        .0        .0   1529.00
       .00      7.89      6.86      2.08      .020      .035      .055      .000   1527.56   1000.00
   .009001        0.        0.        0.         0        11         5       .00     52.79   1052.79

*SECNO 2.000
     2.000      2.92   1530.48   1530.46       .00   1531.28       .80       .00       .00   1528.56
     500.0     203.6     276.8      19.7      25.8      40.4       9.5        .0        .0   1529.00
       .00      7.88      6.85      2.08      .020      .035      .055      .000   1527.56   1000.00
   .008967        0.        0.        0.         0         5         0       .00     52.81   1052.80

*SECNO 3.000
     3.000      2.93   1530.49   1530.46       .00   1531.28       .79       .00       .00   1528.56
     500.0     203.8     276.5      19.7      25.9      40.5       9.5        .0        .0   1529.00
       .00      7.87      6.83      2.08      .020      .035      .055      .000   1527.56   1000.00
   .008898        0.        0.        0.         0         5         0       .00     52.84   1052.83

*SECNO 4.000
     4.000      2.93   1530.49   1530.46       .00   1531.28       .79       .00       .00   1528.56
     500.0     204.2     276.0      19.8      26.0      40.6       9.6        .0        .0   1529.00
       .00      7.84      6.80      2.07      .020      .035      .055      .000   1527.56   1000.00
   .008789        0.        0.        0.         0         5         0       .00     52.89   1052.89

*SECNO 5.000
     5.000      2.94   1530.50   1530.45       .00   1531.28       .78       .00       .00   1528.56
     500.0     204.7     275.4      20.0      26.2      40.7       9.7        .0        .0   1529.00
       .00      7.81      6.76      2.06      .020      .035      .055      .000   1527.56   1000.00
   .008645        0.        0.        0.         0         5         0       .00     52.96   1052.96

1
   22JUN93      19:07:43                                                                                    PAGE   40

    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 6.000
     6.000      3.04   1530.60   1530.45       .00   1531.29       .69       .00       .01   1528.56
     500.0     210.6     268.0      21.5      28.4      42.5      11.0        .0        .0   1529.00
       .00      7.42      6.30      1.95      .020      .035      .055      .000   1527.56   1000.00
   .007100        0.        0.        0.         3         5         0       .00     53.82   1053.81

1
   22JUN93      19:07:43                                                                                    PAGE   41

T3          Q14

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              15                            .030

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     14                  -1                                      -1


1
   22JUN93      19:07:43                                                                                    PAGE   42

    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

*PROF14

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
```

1.000	3.11	1530.67	1530.67	.00	1531.58	.91	.00	.00	1528.56
600.0	257.5	315.4	27.1	30.1	43.9	12.1	.0	.0	1529.00
.00	8.57	7.19	2.24	.020	.035	.055	.000	1527.56	1000.00
.008854	0.	0.	0.	0	14	5	.00	54.47	1054.47

*SECNO 2.000

2.000	3.16	1530.72	1530.68	.00	1531.59	.87	.00	.00	1528.56
600.0	259.8	312.3	27.8	30.9	44.6	12.7	.0	.0	1529.00
.00	8.40	7.00	2.20	.020	.035	.055	.000	1527.56	1000.00
.008224	0.	0.	0.	0	5	0	.00	54.82	1054.82

*SECNO 3.000

3.000	3.16	1530.72	1530.66	.00	1531.59	.87	.00	.00	1528.56
600.0	260.3	311.8	28.0	31.1	44.7	12.8	.0	.0	1529.00
.00	8.37	6.97	2.19	.020	.035	.055	.000	1527.56	1000.00
.008113	0.	0.	0.	0	5	0	.00	54.89	1054.88

*SECNO 4.000

4.000	3.18	1530.74	1530.66	.00	1531.59	.86	.00	.00	1528.56
600.0	260.8	311.1	28.1	31.3	44.9	12.9	.0	.0	1529.00
.00	8.33	6.93	2.18	.020	.035	.055	.000	1527.56	1000.00
.007976	0.	0.	0.	0	5	0	.00	54.97	1054.96

*SECNO 5.000

5.000	3.27	1530.83	1530.68	.00	1531.60	.77	.00	.01	1528.56
600.0	265.9	304.2	29.9	33.4	46.7	14.4	.0	.0	1529.00
.00	7.95	6.52	2.07	.020	.035	.055	.000	1527.56	999.99
.006715	0.	0.	0.	7	8	0	.00	55.81	1055.81

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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 6.000

6.000	3.28	1530.84	1530.67	.00	1531.61	.77	.00	.00	1528.56
600.0	266.3	303.6	30.0	33.6	46.8	14.6	.0	.0	1529.00
.00	7.92	6.48	2.06	.020	.035	.055	.000	1527.56	999.99
.006611	0.	0.	0.	0	11	0	.00	55.89	1055.89

1
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THIS RUN EXECUTED 22JUN93 19:07:46

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

 Version   4.6.2;  May 1991
************************************
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SUMMARY PRINTOUT

	SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
*	1.000	5.00	1528.07	.51	2.86	1528.07	1528.19	.00	288.09	.00
*	1.000	10.00	1528.22	.66	3.31	1528.22	1528.39	.00	269.02	.00
*	1.000	20.00	1528.44	.88	3.80	1528.44	1528.66	.00	245.64	.00
*	1.000	40.00	1528.72	1.16	4.32	1528.72	1529.01	.00	207.24	.00
*	1.000	60.00	1528.93	1.37	4.58	1528.93	1529.25	.00	180.43	.00
*	1.000	80.00	1529.08	1.52	4.91	1529.08	1529.44	.00	169.57	.00
*	1.000	100.00	1529.23	1.67	5.05	1529.23	1529.61	.00	144.25	.00
*	1.000	140.00	1529.48	1.92	5.22	1529.48	1529.89	.00	114.31	.00
*	1.000	180.00	1529.70	2.14	5.19	1529.70	1530.09	.00	91.20	.00
*	1.000	250.00	1529.86	2.30	5.94	1529.86	1530.39	.00	103.37	.00
*	1.000	300.00	1530.01	2.45	6.15	1530.01	1530.58	.00	99.10	.00
*	1.000	400.00	1530.23	2.67	6.63	1530.23	1530.95	.00	98.07	.00
*	1.000	500.00	1530.48	2.92	6.86	1530.48	1531.28	.00	90.01	.00
*	1.000	600.00	1530.67	3.11	7.19	1530.67	1531.58	.00	88.54	.00
	2.000	5.00	1528.08	.52	2.79	1528.06	1528.20	.01	271.25	1.03
	2.000	10.00	1528.23	.67	3.26	1528.22	1528.40	.01	257.70	1.02
	2.000	20.00	1528.45	.89	3.76	1528.44	1528.67	.00	238.46	1.01
*	2.000	40.00	1528.73	1.17	4.29	1528.73	1529.01	.00	203.09	1.01
	2.000	60.00	1528.94	1.38	4.55	1528.93	1529.25	.00	177.66	1.01
	2.000	80.00	1529.08	1.52	4.89	1529.08	1529.45	.00	167.07	1.01
	2.000	100.00	1529.23	1.67	5.03	1529.20	1529.61	.00	142.64	1.01
	2.000	140.00	1529.48	1.92	5.21	1529.48	1529.89	.00	113.41	1.00
	2.000	180.00	1529.70	2.14	5.18	1529.66	1530.09	.00	90.65	1.00
	2.000	250.00	1529.91	2.35	5.71	1529.88	1530.40	.00	92.59	1.06
	2.000	300.00	1530.01	2.45	6.14	1530.00	1530.59	.00	98.57	1.00
	2.000	400.00	1530.28	2.72	6.43	1530.25	1530.95	.00	89.76	1.05
	2.000	500.00	1530.48	2.92	6.85	1530.46	1531.28	.00	89.67	1.00
	2.000	600.00	1530.72	3.16	7.00	1530.68	1531.59	.00	82.24	1.04

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SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO

3.000	5.00	1528.12	.56	2.41	1528.06	1528.21	.00	182.91	1.22
3.000	10.00	1528.27	.71	2.93	1528.22	1528.41	.00	193.77	1.15
3.000	20.00	1528.48	.92	3.49	1528.43	1528.67	.00	195.60	1.10
3.000	40.00	1528.74	1.18	4.22	1528.72	1529.02	.00	194.62	1.02
3.000	60.00	1528.95	1.39	4.50	1528.93	1529.26	.00	172.18	1.02
3.000	80.00	1529.10	1.54	4.84	1529.08	1529.45	.00	162.03	1.02
3.000	100.00	1529.24	1.68	4.99	1529.19	1529.62	.00	139.50	1.01
3.000	140.00	1529.49	1.93	5.18	1529.48	1529.89	.00	111.52	1.01
3.000	180.00	1529.71	2.15	5.16	1529.66	1530.10	.00	89.56	1.01
3.000	250.00	1529.92	2.36	5.66	1529.86	1530.40	.00	90.39	1.01
3.000	300.00	1530.02	2.46	6.11	1530.00	1530.59	.00	97.46	1.01
3.000	400.00	1530.29	2.73	6.39	1530.23	1530.95	.00	88.18	1.01
3.000	500.00	1530.49	2.93	6.83	1530.46	1531.28	.00	88.98	1.00
3.000	600.00	1530.72	3.16	6.97	1530.66	1531.59	.00	81.13	1.01
4.000	5.00	1528.13	.57	2.32	1528.06	1528.21	.00	166.53	1.05
4.000	10.00	1528.29	.73	2.82	1528.22	1528.41	.00	175.87	1.05
4.000	20.00	1528.55	.99	2.93	1528.43	1528.68	.00	122.05	1.27
4.000	40.00	1528.82	1.26	3.72	1528.72	1529.03	.00	136.98	1.19
4.000	60.00	1529.01	1.45	4.09	1528.93	1529.27	.00	132.98	1.14
4.000	80.00	1529.16	1.60	4.41	1529.07	1529.46	.00	121.79	1.15
4.000	100.00	1529.25	1.69	4.94	1529.22	1529.62	.00	134.81	1.02
4.000	140.00	1529.50	1.94	5.13	1529.48	1529.90	.00	108.72	1.01
4.000	180.00	1529.71	2.15	5.12	1529.69	1530.10	.00	87.91	1.01
4.000	250.00	1529.94	2.38	5.54	1529.90	1530.40	.00	85.23	1.03
4.000	300.00	1530.03	2.47	6.07	1530.00	1530.59	.00	95.69	1.01
4.000	400.00	1530.33	2.77	6.17	1530.27	1530.96	.00	80.17	1.05
4.000	500.00	1530.49	2.93	6.80	1530.46	1531.28	.00	87.89	1.01
4.000	600.00	1530.74	3.18	6.93	1530.66	1531.59	.00	79.76	1.01
5.000	5.00	1528.13	.57	2.25	1528.06	1528.21	.00	152.55	1.04
5.000	10.00	1528.30	.74	2.72	1528.22	1528.42	.00	159.77	1.05
5.000	20.00	1528.55	.99	2.96	1528.43	1528.68	.00	126.36	.98
5.000	40.00	1528.83	1.27	3.65	1528.72	1529.03	.00	130.51	1.02
5.000	60.00	1529.02	1.46	4.02	1528.93	1529.27	.00	125.88	1.03
5.000	80.00	1529.18	1.62	4.35	1529.08	1529.46	.00	116.33	1.02
5.000	100.00	1529.30	1.74	4.63	1529.23	1529.63	.00	110.79	1.10
5.000	140.00	1529.57	2.01	4.73	1529.48	1529.91	.00	86.20	1.12
5.000	180.00	1529.72	2.16	5.08	1529.69	1530.10	.00	85.75	1.01
5.000	250.00	1529.99	2.43	5.21	1529.91	1530.41	.00	72.02	1.09
5.000	300.00	1530.04	2.48	6.02	1529.99	1530.59	.00	93.31	1.01
5.000	400.00	1530.39	2.83	5.85	1530.26	1530.97	.00	69.06	1.08
5.000	500.00	1530.50	2.94	6.76	1530.45	1531.28	.00	86.45	1.01
5.000	600.00	1530.83	3.27	6.52	1530.68	1531.60	.00	67.15	1.09

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SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
6.000	5.00	1528.14	.58	2.18	1528.06	1528.22	.00	140.90	1.04
6.000	10.00	1528.31	.75	2.63	1528.22	1528.42	.00	146.02	1.05
6.000	20.00	1528.55	.99	2.97	1528.43	1528.69	.00	126.86	1.00
6.000	40.00	1528.84	1.28	3.59	1528.72	1529.04	.00	124.59	1.02
6.000	60.00	1529.04	1.48	3.95	1528.93	1529.27	.00	119.25	1.03
6.000	80.00	1529.19	1.63	4.28	1529.08	1529.47	.00	111.00	1.02
6.000	100.00	1529.31	1.75	4.58	1529.22	1529.63	.00	106.91	1.02
6.000	140.00	1529.59	2.03	4.64	1529.48	1529.91	.00	81.58	1.03
6.000	180.00	1529.73	2.17	5.02	1529.70	1530.10	.00	83.22	1.02
6.000	250.00	1530.00	2.44	5.18	1529.90	1530.41	.00	70.72	1.01
6.000	300.00	1530.14	2.58	5.40	1529.99	1530.61	.00	69.35	1.16
6.000	400.00	1530.40	2.84	5.83	1530.23	1530.97	.00	68.24	1.01
6.000	500.00	1530.60	3.04	6.30	1530.45	1531.29	.00	71.00	1.10
6.000	600.00	1530.84	3.28	6.48	1530.67	1531.61	.00	66.11	1.01

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SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      1.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  6  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  7  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  8  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  9  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 10  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 11  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 12  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 13  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 14  CRITICAL DEPTH ASSUMED

CAUTION SECNO=      2.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
```

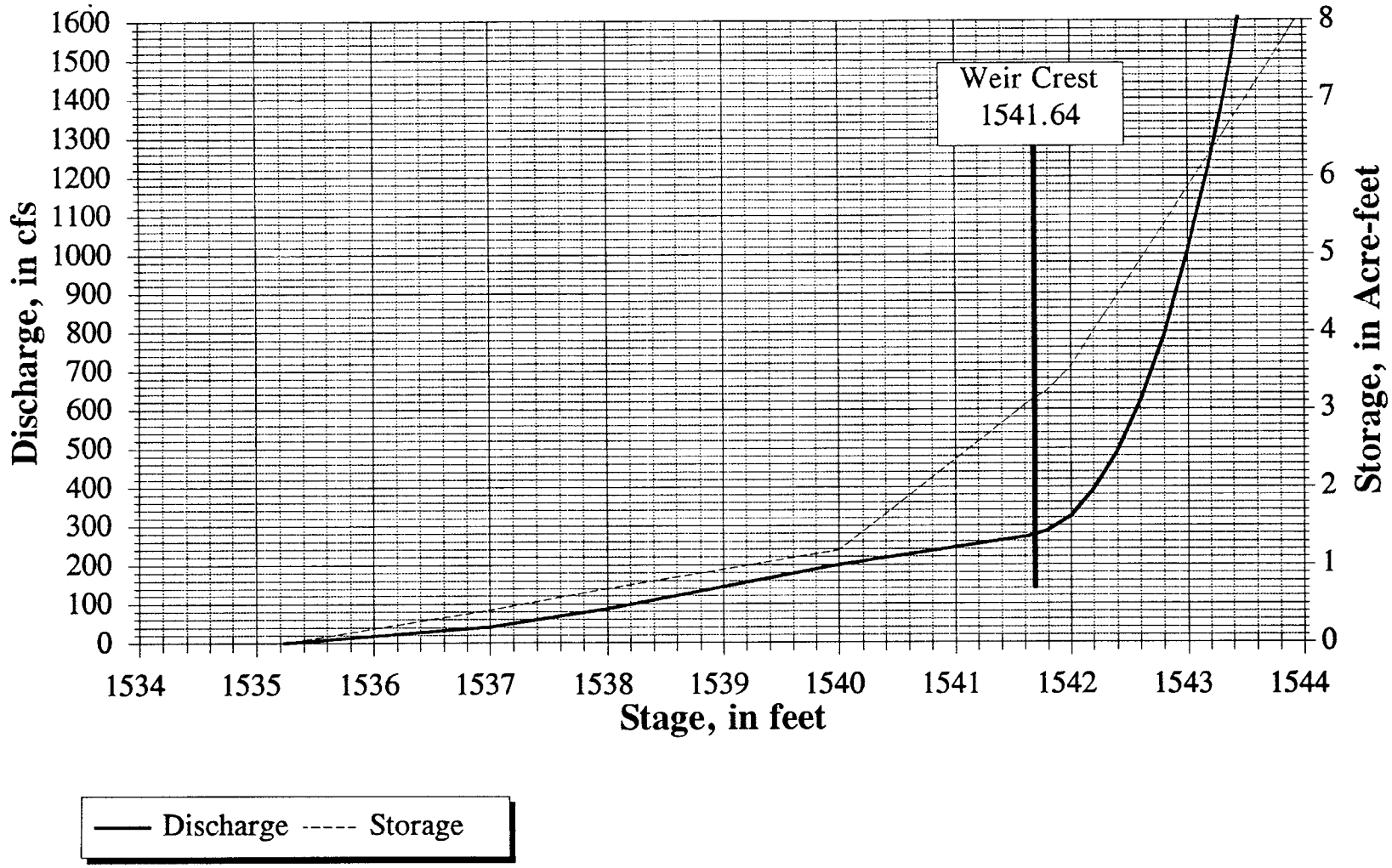
Table R-9

Storage and Discharge vs. Stage Data for C511 and M13

Stage (ft)	Surface Area (acres)	Storage Volume (acre-ft)	Discharge		
			Culvert Flow (cfs)	Weir Flow (cfs)	Total Flow (cfs)
1535.24	0.00	0.00	0	---	0
1537.00	---	0.4	42	---	42
1538.00	---	0.7	88	---	88
1540.00	0.75	1.19	200	---	200
1541.64	---	3.1	274	0	274
1541.80	---	3.2	280	6	286
1542.00	1.68	3.55	288	37	325
1542.20	---	4.0	297	96	393
1542.40	---	4.5	304	187	491
1542.60	---	4.9	310	312	622
1542.80	---	5.4	316	474	790
1543.00	---	5.8	324	676	1000
1543.20	---	6.3	330	911	1241
1543.40	---	6.8	335	1183	1518
1543.60	---	7.2	343	1492	1835
1543.80	---	7.7	350	1839	2189
1544.00	2.97	8.13	355	2225	2580
1546.00	4.06	15.13	---	---	---
1548.00	4.92	24.09	---	---	---
1550.00	5.91	34.91	---	---	---

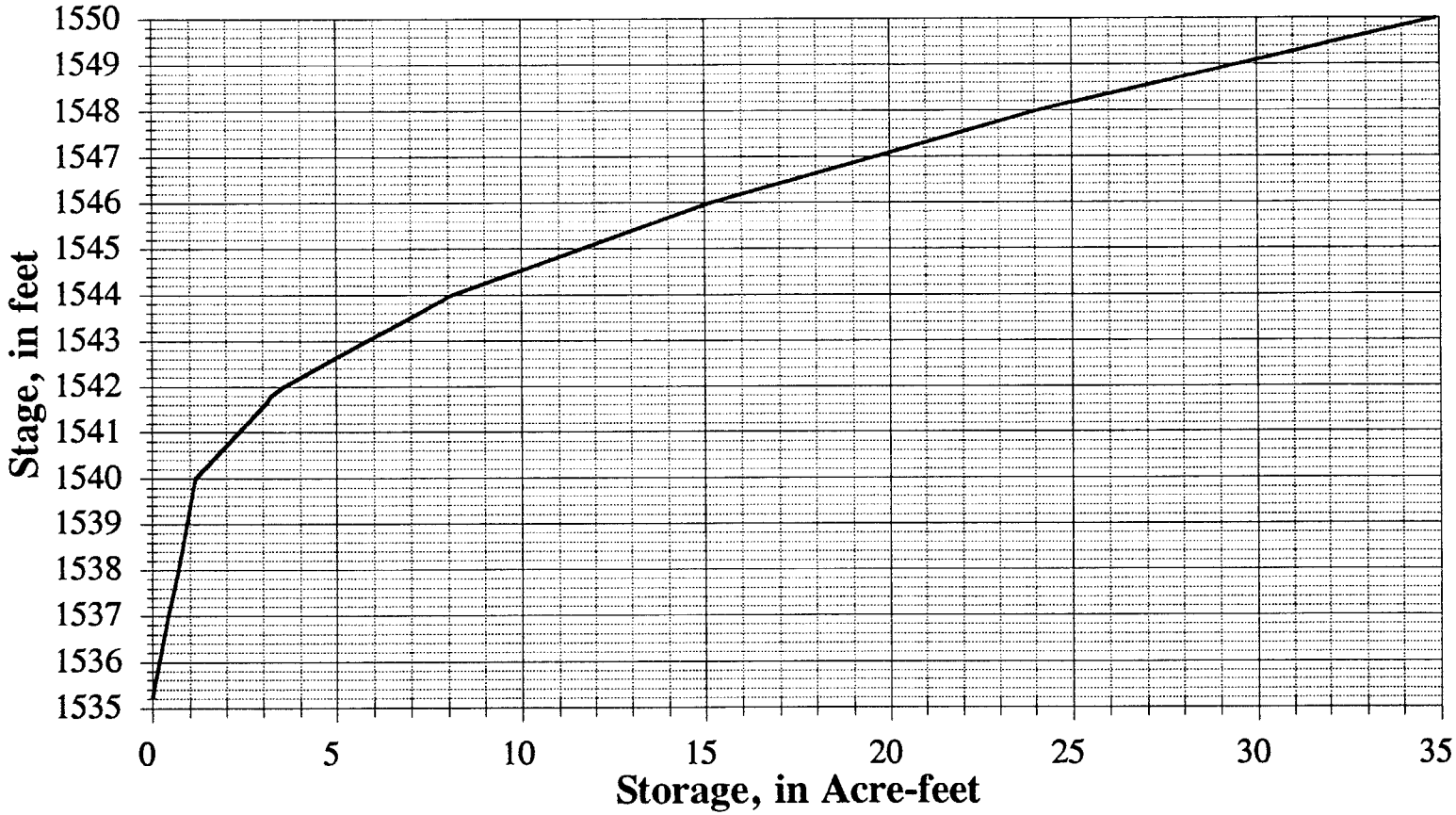
Figure R-5

Storage and Discharge vs Stage for C511



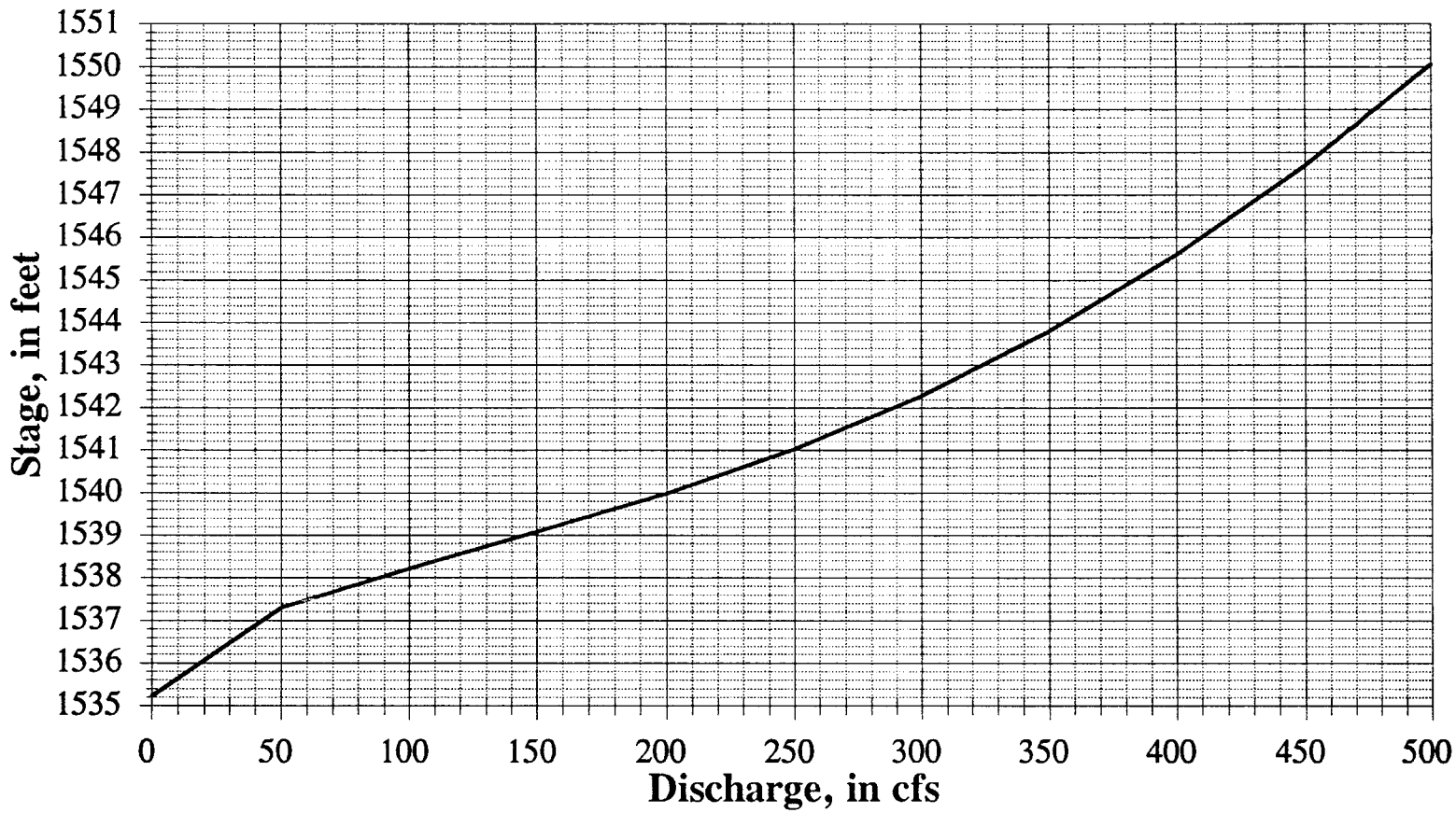
C511 Storage Volume

Calculated From Planimetered Contours



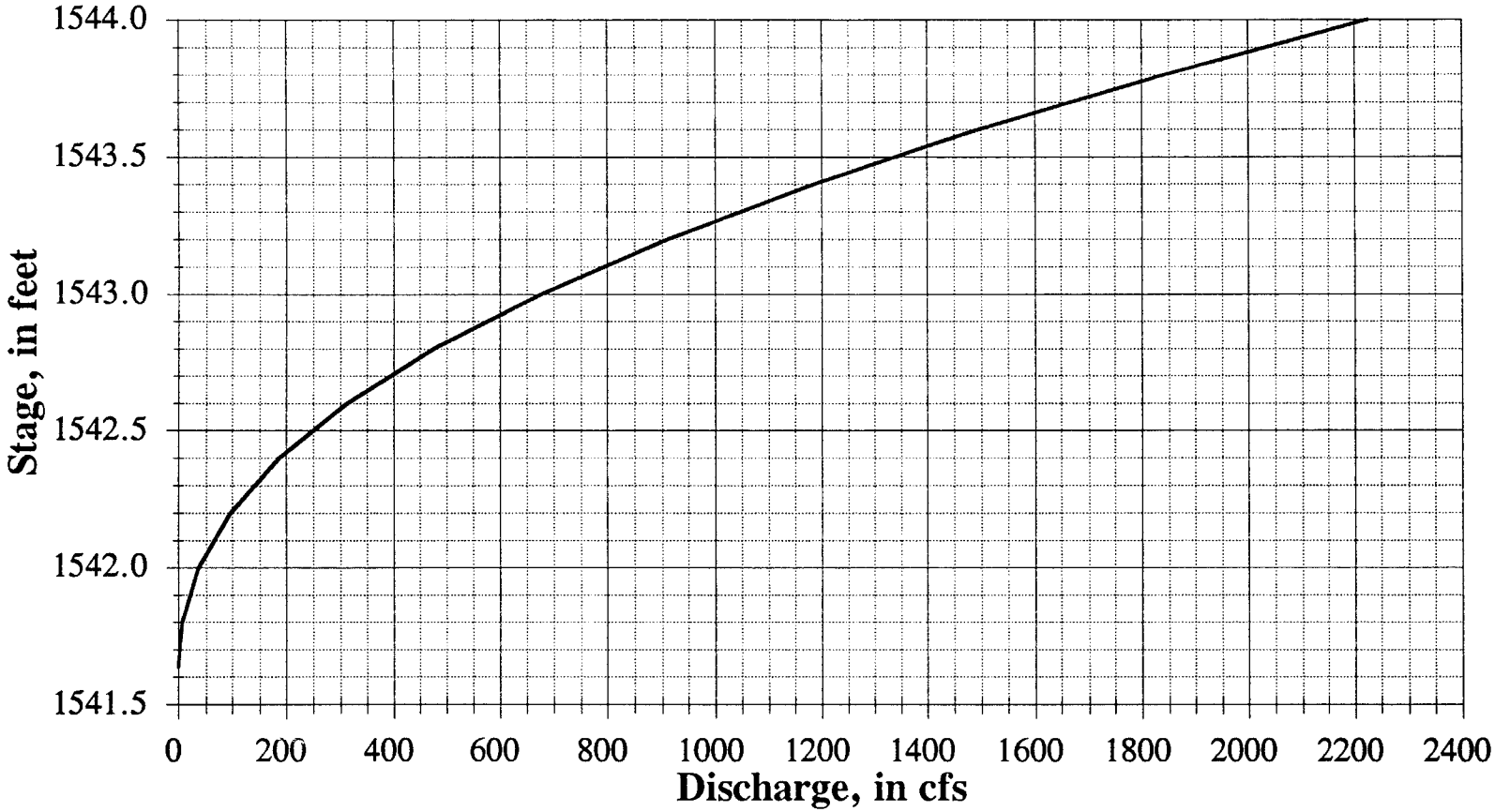
C511 Stage vs Discharge

Culvert Flow for 511 and M13 from HY8



C511 Stage vs Discharge

Weir Flow from Uneven Weir



CURRENT DATE: 06-16-1993
CURRENT TIME: 16:32:45

FILE DATE: 06-16-1993
FILE NAME: C511_M13

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1535.24	1533.74	90.01	2 CSP	4.50	4.50	.022	CONVENTIONAL
2	1536.84	1534.84	98.02	1 CSP	1.75	1.75	.022	CONVENTIONAL
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C511_M13 DATE: 06-16-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1535.24	0	0	0	0	0	0	0	0	0
1536.78	27	27	0	0	0	0	0	0	4
1537.39	54	53	1	0	0	0	0	0	3
1537.90	81	77	4	0	0	0	0	0	3
1538.37	108	101	7	0	0	0	0	0	2
1538.83	135	125	10	0	0	0	0	0	2
1539.31	162	151	12	0	0	0	0	0	2
1539.78	189	175	14	0	0	0	0	0	3
1540.31	216	201	15	0	0	0	0	0	3
1540.88	243	227	17	0	0	0	0	0	3
1541.52	270	252	18	0	0	0	0	0	3
1550.00	299	270	29	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C511_M13 DATE: 06-16-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1535.24	0.00	0	0	0.00
1536.78	-0.00	27	0	0.63
1537.39	-0.00	54	0	0.36
1537.90	-0.00	81	0	0.10
1538.37	-0.01	108	0	0.41
1538.83	-0.00	135	0	0.01
1539.31	0.01	162	-1	-0.33
1539.78	0.00	189	-0	-0.04
1540.31	0.00	216	-0	-0.02

1540.88	0.00	243	-0	-0.01
1541.52	0.00	270	-0	-0.01

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 06-16-1993 FILE DATE: 06-16-1993
CURRENT TIME: 16:32:45 FILE NAME: C511_M13

PERFORMANCE CURVE FOR CULVERT # 1 - 2 (4.5 BY 4.5) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1535.24	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
27	1536.78	1.54	1.54	1-S2n	0.91	1.02	5.87	0.91	2.71	0.48
53	1537.39	2.15	2.15	1-S2n	1.26	1.46	7.16	1.26	3.49	0.70
77	1537.91	2.67	2.67	1-S2n	1.54	1.78	7.96	1.54	4.05	0.88
101	1538.37	3.13	3.13	1-S2n	1.79	2.04	8.52	1.79	4.51	1.03
125	1538.83	3.59	3.59	1-S2n	2.02	2.30	8.99	2.03	4.88	1.16
151	1539.30	4.06	4.06	1-S2n	2.25	2.53	9.46	2.25	5.22	1.28
175	1539.78	4.54	4.54	5-S2n	2.47	2.74	9.46	2.25	5.51	1.39
201	1540.30	5.06	5.06	5-S2n	2.69	2.93	10.12	2.69	5.78	1.49
227	1540.88	5.64	5.64	5-S2n	2.92	3.13	10.38	2.92	6.02	1.58
252	1541.51	6.27	6.27	5-S2n	3.16	3.30	10.58	3.16	6.25	1.68

El. inlet face invert 1535.24 ft El. outlet invert 1533.74 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1535.24
OUTLET STATION (FT)	90.00
OUTLET ELEVATION (FT)	1533.74
NUMBER OF BARRELS	2
SLOPE (V-FT/H-FT)	0.0167
CULVERT LENGTH ALONG SLOPE (FT)	90.01

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	4.50 FT
BARREL MATERIAL	CORRUGATED STEEL
BARREL MANNING'S N	0.022
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	THIN EDGE PROJECTING
INLET DEPRESSION	NONE

CURRENT DATE: 06-16-1993 FILE DATE: 06-16-1993
CURRENT TIME: 16:32:45 FILE NAME: C511_M13

PERFORMANCE CURVE FOR CULVERT # 2 - 1 (1.75 BY 1.75) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1536.84	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	-1.10
0	1536.84	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	2.71	-0.62
1	1537.40	0.56	0.56	1-S2n	0.33	0.37	3.38	0.33	3.49	-0.40
4	1537.90	1.06	1.06	1-S2n	0.63	0.71	4.81	0.63	4.05	-0.22
7	1538.36	1.52	1.52	1-S2n	0.88	0.96	5.58	0.88	4.51	-0.07
10	1538.82	1.98	1.98	5-S2n	1.09	1.15	6.04	1.09	4.88	0.06
12	1539.30	2.43	2.46	2-M2c	1.29	1.28	6.32	1.28	5.22	0.18
14	1539.77	2.93	2.70	2-M2c	1.54	1.39	6.85	1.39	5.51	0.29
15	1540.30	3.30	3.46	6-FFn	1.75	1.44	6.42	1.75	5.78	0.39
17	1540.87	3.62	4.03	6-FFn	1.75	1.48	6.86	1.75	6.02	0.48
18	1541.51	3.98	4.67	6-FFn	1.75	1.52	7.33	1.75	6.25	0.58

El. inlet face invert 1536.84 ft El. outlet invert 1534.84 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1536.84
OUTLET STATION (FT)	98.00
OUTLET ELEVATION (FT)	1534.84
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0204
CULVERT LENGTH ALONG SLOPE (FT)	98.02

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	1.75 FT
BARREL MATERIAL	CORRUGATED STEEL
BARREL MANNING'S N	0.022
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	THIN EDGE PROJECTING
INLET DEPRESSION	NONE

CURRENT DATE: 06-16-1993 FILE DATE: 06-16-1993
CURRENT TIME: 16:32:45 FILE NAME: C511_M13

TAILWATER

***** USER DEFINED CHANNEL CROSS-SECTION
MAIN CHANNEL AND LT & RT OVER BANKS

FILE NAME: C511_M13
FILE DATE: 06-16-1993

LEFT CHANNEL BOUNDARY	4
RIGHT CHANNEL BOUNDARY	5
MANNING N LEFT OVER BANK	0.040
MANNING N MAIN CHANNEL	0.030
MANNING N RIGHT OVER BAN	0.040
SLOPE OF CHANNEL (FT/FT)	0.0080

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	1000.00	1537.74
2	1060.00	1535.94
3	1070.00	1535.74
4	1090.00	1533.74
5	1110.00	1533.74
6	1120.00	1535.74
7	1190.00	1536.74
8	1230.00	1537.74

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1533.74	0.000	0.00	0.00	0.00
27.00	1534.22	0.690	0.48	2.71	0.24
54.00	1534.44	0.736	0.70	3.49	0.35
81.00	1534.62	0.764	0.88	4.05	0.44
108.00	1534.77	0.784	1.03	4.51	0.51
135.00	1534.90	0.800	1.16	4.88	0.58
162.00	1535.02	0.813	1.28	5.22	0.64
189.00	1535.13	0.825	1.39	5.51	0.69
216.00	1535.23	0.834	1.49	5.78	0.74
243.00	1535.32	0.843	1.58	6.02	0.79
270.00	1535.42	0.851	1.68	6.25	0.84

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	1.00
CREST LENGTH (FT)	1.00
OVERTOPPING CREST ELEVATION (FT)	1550.00

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*********************************************


    PROJECT:  Fountain Hills North FIS              C511
    ENGINEER:  dtp
    DATE:   7/ 9/1993
    TIME:  14:29.46




---------------------------------------------
    INPUT PARAMETERS
---------------------------------------------


    STARTING WSEL:      1541.60
    MAXIMUM WSEL:       1544.03
    STEP SIZE:             0.20
    BREADTH OF WEIR:       9.00




*********************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills North FIS              C511
    DATE:   7/ 9/1993
    TIME:  14:29.46
*********************************************
```

POINT	ELEVATION	STATION
1	1544.90	1000.00
2	1544.69	1010.00
3	1544.48	1020.00
4	1544.27	1030.00
5	1544.07	1040.00
6	1543.88	1050.00
7	1543.70	1060.00
8	1543.53	1070.00
9	1543.37	1080.00
10	1543.23	1090.00

11	1543.17	1100.00
12	1543.05	1110.00
13	1542.88	1120.00
14	1542.72	1130.00
15	1542.57	1140.00
16	1542.43	1150.00
17	1542.30	1160.00
18	1542.24	1165.00
19	1542.19	1170.00
20	1542.08	1180.00
21	1541.98	1190.00
22	1541.91	1200.00
23	1541.84	1210.00
24	1541.78	1220.00
25	1541.72	1230.00
26	1541.69	1240.00
27	1541.66	1250.00
28	1541.64	1260.00
29	1541.65	1270.00
30	1541.72	1280.00
31	1541.79	1290.00
32	1541.88	1300.00
33	1541.98	1310.00
34	1542.03	1315.00
35	1542.09	1320.00
36	1542.21	1330.00
37	1542.34	1340.00
38	1542.49	1350.00
39	1542.64	1360.00
40	1542.80	1370.00
41	1542.98	1380.00
42	1543.17	1390.00
43	1543.37	1400.00
44	1543.58	1410.00
45	1543.80	1420.00
46	1544.03	1430.00

```
*********************************************
    WEIR COEFFICIENT TABLE
    PROJECT:  Fountain Hills North FIS                C511
    DATE:   7/ 9/1993
    TIME:  14:29.46
*********************************************
```

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.5741
3	0.40	2.6481
4	0.60	2.7222
5	0.80	2.7963
6	1.00	2.8704
7	1.20	2.9444
8	1.40	3.0012
9	1.60	3.0062
10	1.80	3.0111
11	2.00	3.0160
12	2.20	3.0210
13	2.40	3.0259

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
    PROJECT:  Fountain Hills North FIS                C511
    DATE:   7/ 9/1993
    TIME:  14:29.46
*********************************************
```

ELEVATION	DISCHARGE (CFS)
1541.60	0.00
1541.80	6.48
1542.00	36.91
1542.20	96.21
1542.40	187.20
1542.60	312.41
1542.80	474.36
1543.00	675.50
1543.20	911.15
1543.40	1182.77
1543.60	1492.01
1543.80	1839.30
1544.00	2225.27

CURRENT DATE: 06-16-1993
CURRENT TIME: 16:32:45

FILE DATE: 06-16-1993
FILE NAME: C511_M13

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1535.24	1533.74	90.01	2 CSP	4.50	4.50	.022	CONVENTIONAL
2	1536.84	1534.84	98.02	1 CSP	1.75	1.75	.022	CONVENTIONAL
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C511_M13 DATE: 06-16-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1535.24	0	0	0	0	0	0	0	0	0
1536.78	27	27	0	0	0	0	0	0	4
1537.39	54	53	1	0	0	0	0	0	3
1537.90	81	77	4	0	0	0	0	0	3
1538.37	108	101	7	0	0	0	0	0	2
1538.83	135	125	10	0	0	0	0	0	2
1539.31	162	151	12	0	0	0	0	0	2
1539.78	189	175	14	0	0	0	0	0	3
1540.31	216	201	15	0	0	0	0	0	3
1540.88	243	227	17	0	0	0	0	0	3
1541.52	270	252	18	0	0	0	0	0	3
1550.00	299	270	29	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C511_M13 DATE: 06-16-1993

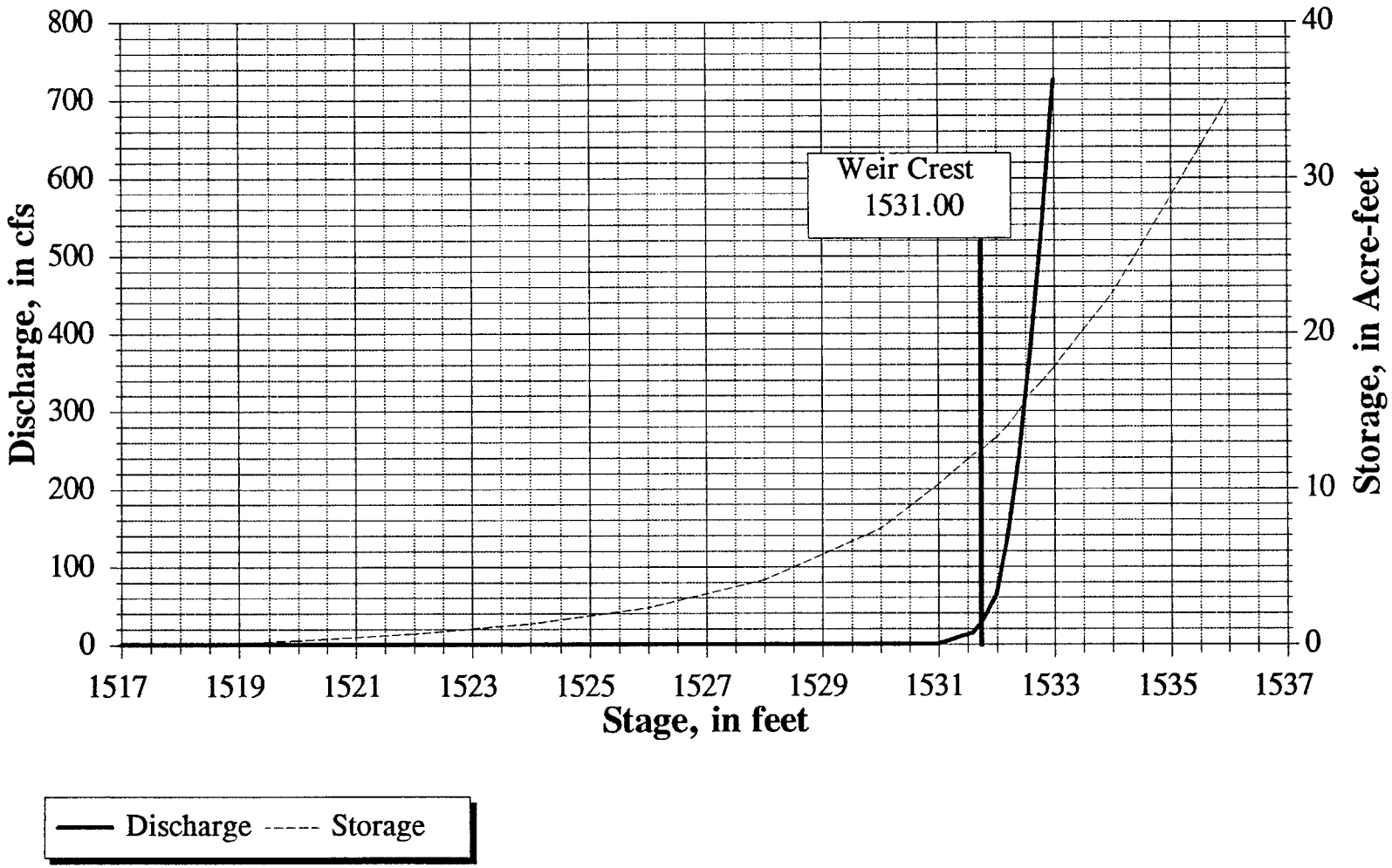
HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1535.24	0.00	0	0	0.00
1536.78	-0.00	27	0	0.63
1537.39	-0.00	54	0	0.36
1537.90	-0.00	81	0	0.10
1538.37	-0.01	108	0	0.41
1538.83	-0.00	135	0	0.01
1539.31	0.01	162	-1	-0.33
1539.78	0.00	189	-0	-0.04
1540.31	0.00	216	-0	-0.02

Table R-10
Storage and Discharge vs. Stage Data for C512 (Stock Tank)

Stage (ft)	Surface Area (acres)	Storage Volume (acre-ft)	Discharge		
			Channel Flow (cfs)	Weir Flow (cfs)	Total Flow (cfs)
1517.00	0.00	0.00	---	---	0
1518.00	0.08	0.03	---	---	0
1520.00	0.19	0.29	---	---	0
1522.00	0.27	0.75	---	---	0
1524.00	0.37	1.38	---	---	0
1526.00	0.65	2.39	---	---	0
1528.00	1.15	4.17	---	---	0
1530.00	2.17	7.43	---	---	0
1531.00	---	10.3	---	0	0
1531.60	---	12.2	0	15	15
1531.80	---	12.7	4	31	35
1532.00	3.84	13.36	10	55	65
1532.20	---	14.1	49	88	137
1532.40	---	15.1	112	132	244
1532.60	---	16.2	190	186	376
1532.80	---	17.0	289	252	541
1533.00	---	17.9	395	330	725
1534.00	5.45	22.61	---	---	---
1536.00	7.04	35.06	---	---	---

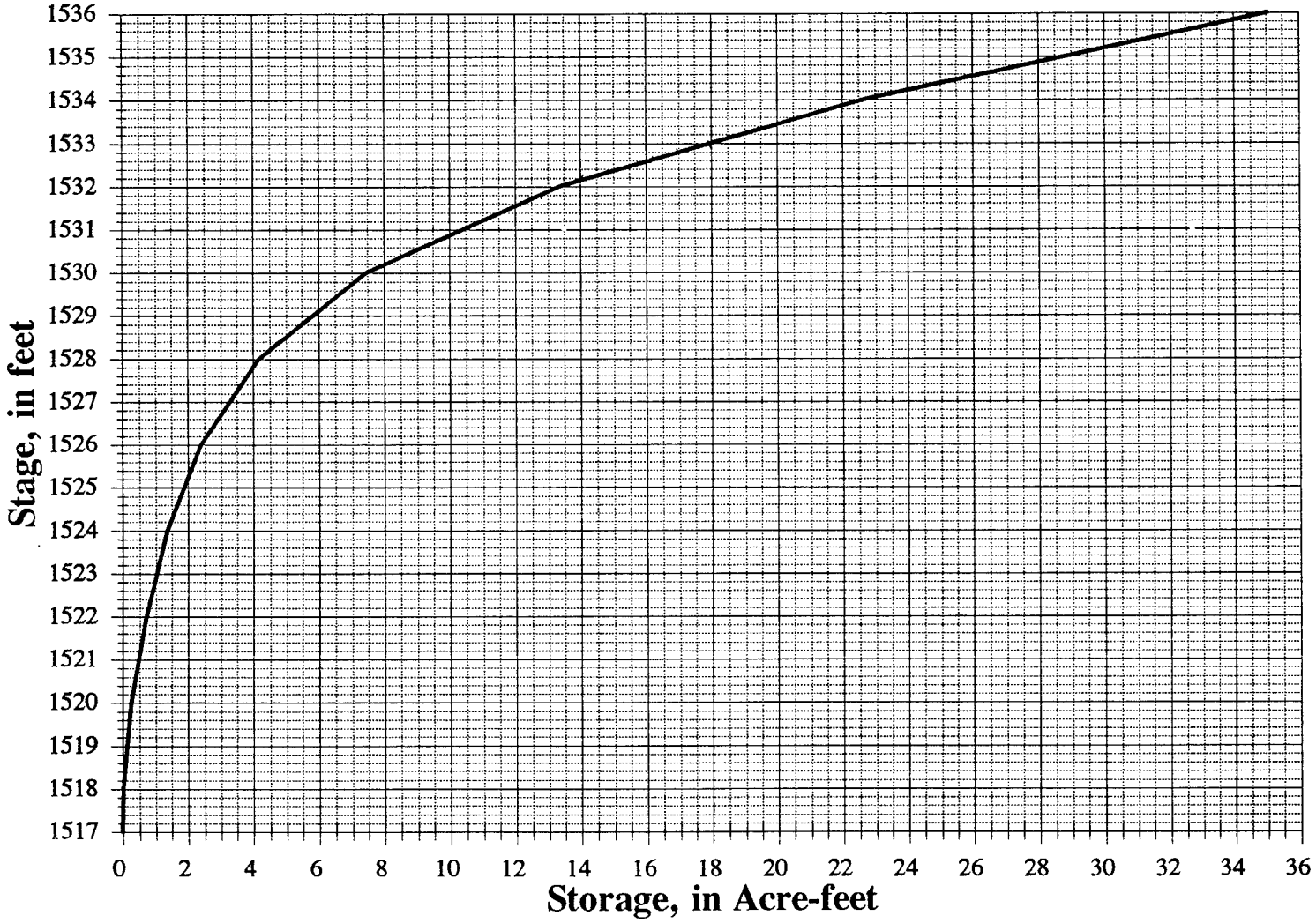
Figure R-6

Storage & Discharge vs Stage for C512



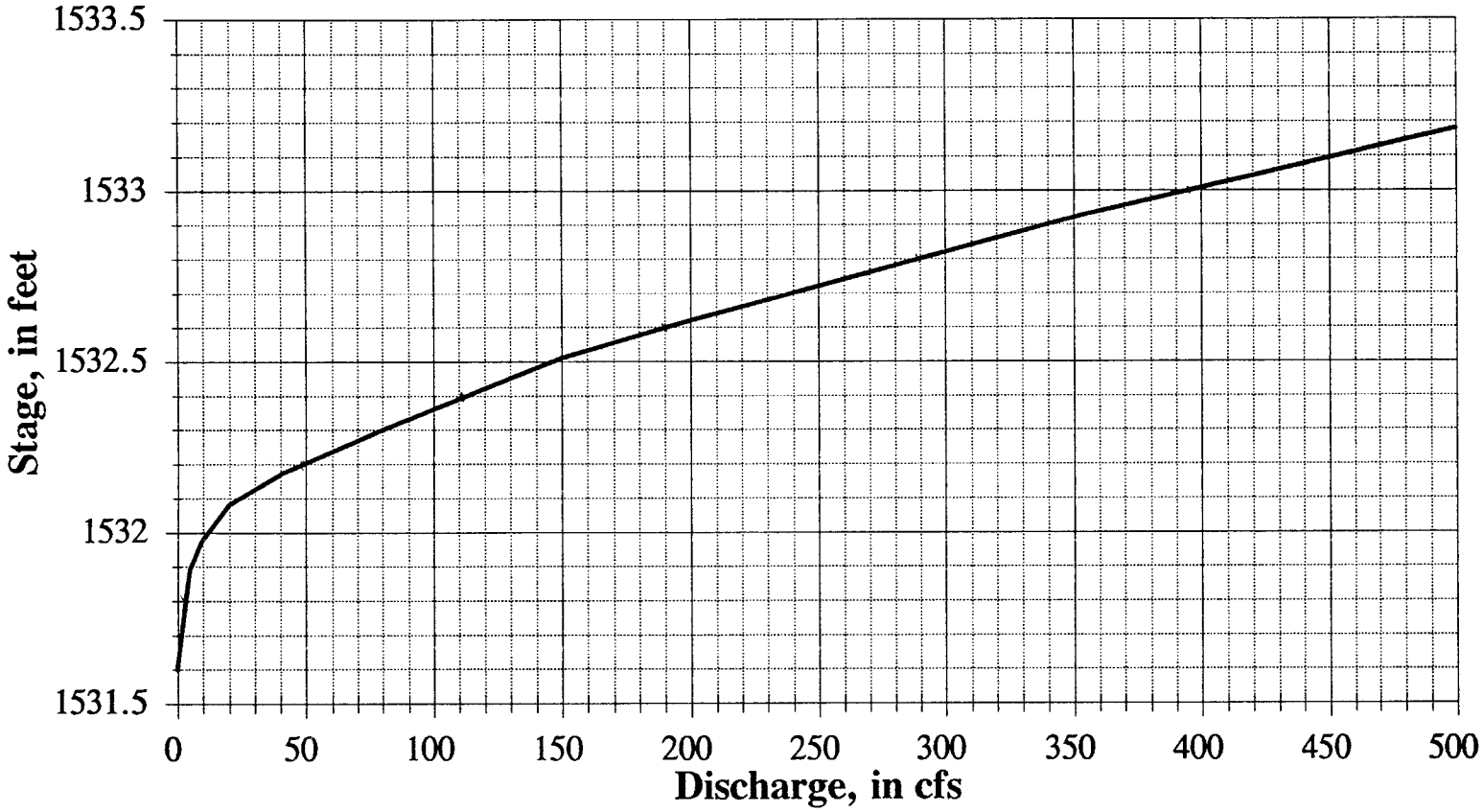
C512 Storage Volume

Calculated From Planimetered Contours



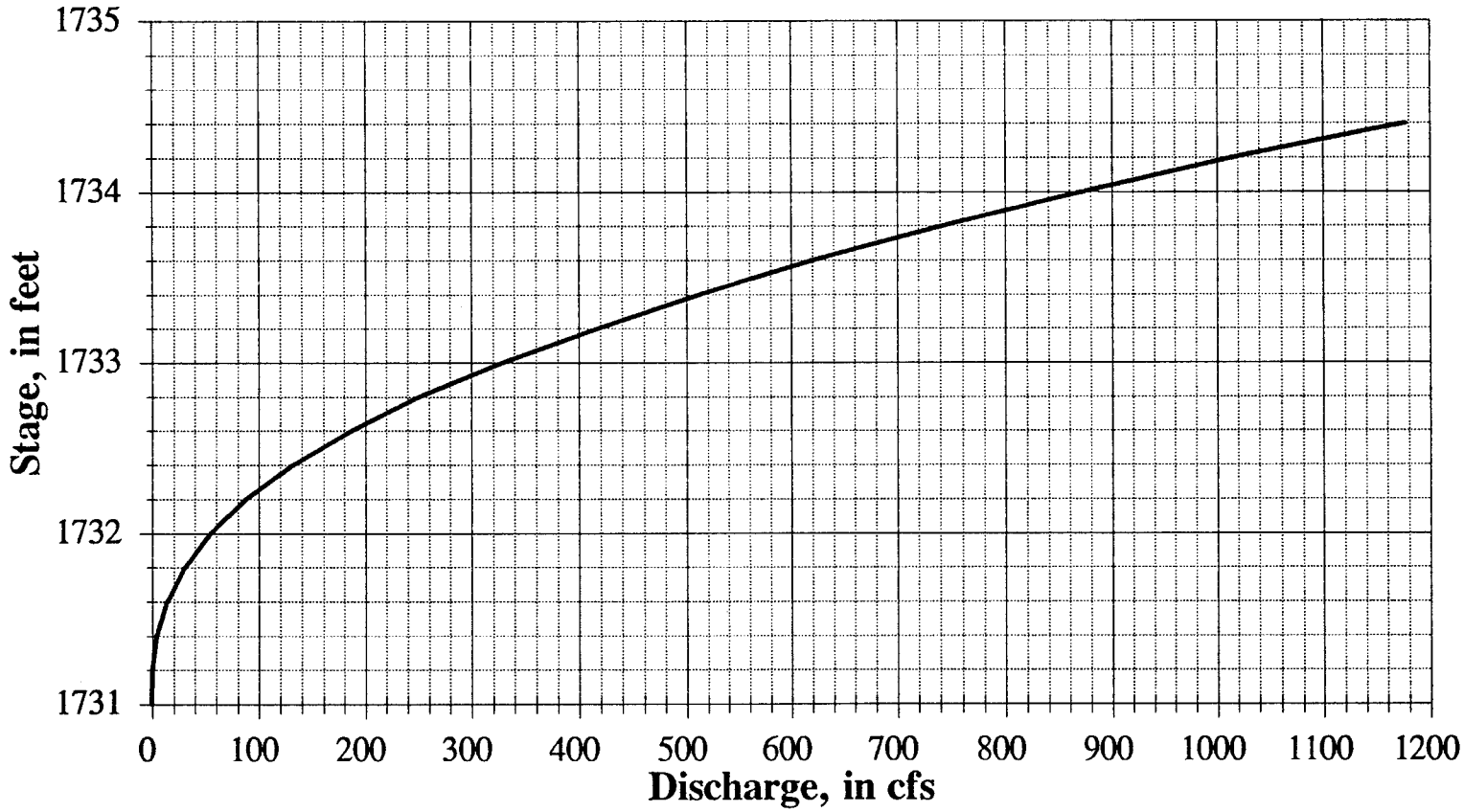
C512 Stage vs Discharge

Flow Down Bahia Dr. from HEC-2



C512 Stage vs Discharge

Weir Flow from Uneven Weir



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 1 OF 2

CLIENT FCDMC

DATE 11/2/93

PROJECT Fountain Hills North FIS

BY TRL

SUBJECT CS12 (Stock Tank)

PROJECT NO. 35

Reference: Town of Fountain Hills Survey Field Notes dated 1/92 and transmittal letter dated 10/6/92.

Transposed Data Supplemented by Contour Map

Sta.	Elev.	Description	Sta.	Elev.	Desc.
9+50	1546.6	Shoulder McDowell Mtn. Rd.	18+50	35.9	
10+00	1536.0		18+80	36.6	
10+50	31.0		19+10	38.7	
11+00	32.2		20+30	38.7	
11+50	34.2		20+35	36.7	
12+00	38.5		20+43	34.6	
12+50	42.4	End wall	20+53	32.6	
13+00	38.0		20+73	30.6	
13+50	39.9		20+83	30.6	Edge Kirby Res. (≈)
14+00	39.7		20+83	33.0	FF Kirby Res.
14+50	36.0		21+53	33.0	FF Kirby Res
15+00	34.8		21+53	30.6	Grnd. @ Res. (≈)
			21+83	32.8	
15+50	35.9		21+98	32.0	Back of East Curb @ Bahia
16+00	36.1		21+99.2	31.6	Gutter
16+50	35.8		22+29.0	32.1	℄
17+00	35.9		22+58.8	31.9	Gutter
17+50	35.6		22+60.0	32.2	Back of West Curb
18+00	35.8		22+90	34.3	
			23+75	34.7	
			24+30	40.7	

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 2 OF 2

CLIENT FCDMC

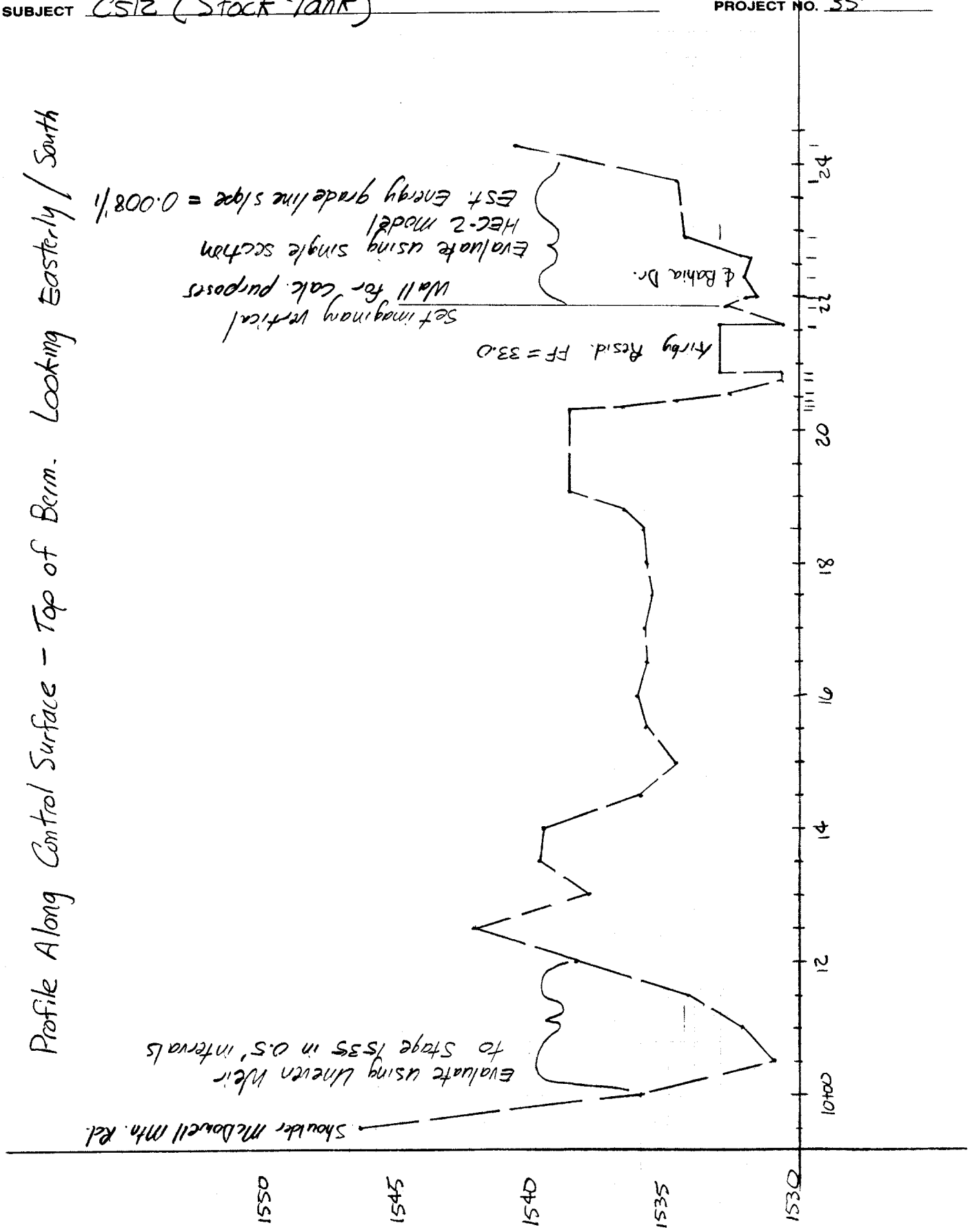
DATE 11/2/93

PROJECT Fountain Hills North FIS

BY TRL

SUBJECT CS12 (Stock Tank)

PROJECT NO. 35



```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*********************************************


    PROJECT:  Fountain Hills North FIS          C512  (stock tank)
    ENGINEER:  dtp
    DATE:  11/ 5/1993
    TIME:   9:41.32




---------------------------------------------
    INPUT PARAMETERS
---------------------------------------------


    STARTING WSEL:      1531.00
    MAXIMUM WSEL:       1534.40
    STEP SIZE:             0.20
    BREADTH OF WEIR:      10.00




*********************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills North FIS          C512  (stock tank)
    DATE:  11/ 5/1993
    TIME:   9:41.32
*********************************************


    POINT    ELEVATION    STATION
    -----    ---------    -------
        1      1546.60     950.00
        2      1536.00    1000.00
        3      1531.00    1050.00
        4      1532.20    1100.00
        5      1534.20    1150.00
        6      1538.50    1200.00
        7      1542.40    1250.00
```

```
*******************************************
    WEIR COEFFICIENT TABLE
    PROJECT:  Fountain Hills North FIS          C512  (stock tank)
    DATE:  11/ 5/1993
    TIME:   9:41.32
*******************************************
```

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.5667
3	0.40	2.6333
4	0.60	2.7000
5	0.80	2.7667
6	1.00	2.8333
7	1.20	2.9000
8	1.40	2.9667
9	1.60	3.0022
10	1.80	3.0067
11	2.00	3.0111
12	2.20	3.0156
13	2.40	3.0200
14	2.60	3.0244
15	2.80	3.0289
16	3.00	3.0333
17	3.20	3.0378
18	3.40	3.0422

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
    PROJECT:  Fountain Hills North FIS          C512  (stock tank)
    DATE:  11/ 5/1993
    TIME:   9:41.32
*********************************************
```

ELEVATION	DISCHARGE (CFS)
1531.00	0.00
1531.20	0.94
1531.40	5.36
1531.60	14.98
1531.80	31.13
1532.00	55.08
1532.20	87.97
1532.40	131.84
1532.60	186.46
1532.80	252.41
1533.00	330.38
1533.20	417.92
1533.40	513.93
1533.60	621.58
1533.80	741.44
1534.00	874.11
1534.20	1017.90
1534.40	1177.02

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *                                        *
 *  RUN DATE    09NOV93    TIME   17:50:21  *
 *****************************************
```

```
*************************************
 *  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
```

```
1
   09NOV93      17:50:21                                                                    PAGE    1


                                                                THIS RUN EXECUTED 09NOV93    17:50:21
 ************************************
  HEC-2 WATER SURFACE PROFILES

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


 T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY:  FCD#92-04   Project:  35
 T2      FOUNTAIN HILLS NORTH FIS STUDY by GVSCE                 dtp
 T3                                                    FILE:     CH512.IH2
 T4
 T5              This model is used to develop a rating curve for C512.
 T6              Storage routing and flow split at the stock tank.
 T7
 T8      Single X-Section Run
                      slope =    0.008 ft/ft  From 200 scale map

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           0.008

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1                  -1                                      -1

    SECNO       Q   CWSEL   DEPTH     VCH   CRIWS      EG      HL   SLOPE  KRATIO

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38         43          1          8         26          2          3         11          5         58

         Manning's n:          Min  Normal     Max
                   Earth     .015    .022    .030
                Pavement     .013    .016    .020
                  Desert     .040    .060    .080
                Veg Des.     .070    .100    .160
   desert  desert   pavement

 NC     0.04       0.06      0.016         .1          .3
 QT        9          5         10         20          40          80         150         200         350         500

         X-Section 1
 X1        1         10       2198       2260
 GR     1541       2182     1532.8       2183       1532       2198     1531.6     2199.2     1532.1       2229
 GR   1531.9     2258.8     1532.2       2260     1534.3       2290     1534.7       2375     1540.7       2430

1
   09NOV93      17:50:21                                                                    PAGE    2


 X1        2                                          .2         .2         .2

 X1        3                                          .2         .2         .2

 X1        4                                          .2         .2         .2

 X1        5                                          .2         .2         .2

1
   09NOV93      17:50:21                                                                    PAGE    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
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```
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000       .27   1531.87   1531.87       .00   1531.94       .07       .00       .00   1532.00
      5.0        .0       5.0        .0        .0       2.3        .0        .0        .0   1532.20
       .00       .00      2.14       .00      .000      .016      .000      .000   1531.60   2198.38
   .007612       0.        0.        0.         0        23        12       .00     17.09   2215.47

*SECNO 2.000
     2.000       .28   1531.88   1531.87       .00   1531.95       .07       .00       .00   1532.00
      5.0        .0       5.0        .0        .0       2.4        .0        .0        .0   1532.20
       .00       .00      2.07       .00      .000      .016      .000      .000   1531.60   2198.37
   .006957       0.        0.        0.         0         5         0       .00     17.38   2215.74

*SECNO 3.000
     3.000       .28   1531.88   1531.88       .00   1531.95       .06       .00       .00   1532.00
      5.0        .0       5.0        .0        .0       2.5        .0        .0        .0   1532.20
       .00       .00      2.02       .00      .000      .016      .000      .000   1531.60   2198.36
   .006503       0.        0.        0.         0         8         0       .00     17.60   2215.96

*SECNO 4.000
     4.000       .29   1531.89   1531.88       .00   1531.95       .06       .00       .00   1532.00
      5.0        .0       5.0        .0        .0       2.6        .0        .0        .0   1532.20
       .00       .00      1.95       .00      .000      .016      .000      .000   1531.60   2198.34
   .005932       0.        0.        0.         0         6         0       .00     17.90   2216.25

*SECNO 5.000
     5.000       .30   1531.90   1531.87       .00   1531.95       .05       .00       .00   1532.00
      5.0        .0       5.0        .0        .0       2.7        .0        .0        .0   1532.20
       .00       .00      1.88       .00      .000      .016      .000      .000   1531.60   2198.32
   .005336       0.        0.        0.         0         9         0       .00     18.26   2216.59

1
   09NOV93      17:50:21                                                                          PAGE    4

T3            Q2

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           0.008

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                  -1                                      -1

1
   09NOV93      17:50:21                                                                          PAGE    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 2

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED
     1.000       .37   1531.97   1531.97       .00   1532.04       .07       .00       .00   1532.00
     10.0        .0      10.0        .0        .0       4.7        .0        .0        .0   1532.20
       .00       .00      2.14       .00      .000      .016      .000      .000   1531.60   2198.09
   .007497       0.        0.        0.         0        23        11       .00     33.95   2259.08

*SECNO 2.000

3265 DIVIDED FLOW

     2.000       .37   1531.97   1531.97       .00   1532.04       .07       .00       .00   1532.00
     10.0        .0      10.0        .0        .0       4.7        .0        .0        .0   1532.20
       .00       .00      2.12       .00      .000      .016      .000      .000   1531.60   2198.08
   .007326       0.        0.        0.         0         5         0       .00     34.26   2259.09

*SECNO 3.000

3265 DIVIDED FLOW

     3.000       .38   1531.98   1531.97       .00   1532.04       .07       .00       .00   1532.00
     10.0        .0      10.0        .0        .0       4.8        .0        .0        .0   1532.20
       .00       .00      2.07       .00      .000      .016      .000      .000   1531.60   2198.07
   .006966       0.        0.        0.         0         5         0       .00     34.95   2259.10

*SECNO 4.000

3265 DIVIDED FLOW

     4.000       .38   1531.98   1531.97       .00   1532.05       .06       .00       .00   1532.00
     10.0        .0      10.0        .0        .0       5.0        .0        .0        .0   1532.20
       .00       .00      2.00       .00      .000      .016      .000      .000   1531.60   2198.06
   .006457       0.        0.        0.         0         8         0       .00     35.97   2259.12

1
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   09NOV93      17:50:21                                                                                                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

*SECNO 5.000

3265 DIVIDED FLOW

     5.000       .39   1531.99    1531.97       .00    1532.05        .06        .00        .00    1532.00
      10.0        .0      10.0        .0        .0        5.2        .0        .0        .0    1532.20
       .00       .00      1.91       .00       .000       .016       .000       .000    1531.60    2198.04
   .005855        0.        0.        0.         0          8          0        .00      37.29    2259.14

1
   09NOV93      17:50:21                                                                                                PAGE    7

T3            Q3

J1  ICHECK    INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                4                              0.008

J2  NPROF     IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

      3                  -1                                           -1

1
   09NOV93      17:50:21                                                                                                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

*PROF 3

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED
     1.000       .46   1532.06    1532.06       .00    1532.14        .08        .00        .00    1532.00
      20.0        .0      20.0        .0        .0        8.7        .0        .0        .0    1532.20
       .00       .03      2.29       .00       .040       .016       .000       .000    1531.60    2196.82
   .006862        0.        0.        0.         0         21         10        .00      54.92    2259.45

*SECNO 2.000

3265 DIVIDED FLOW

     2.000       .47   1532.07    1532.06       .00    1532.15        .08        .00        .00    1532.00
      20.0        .0      20.0        .0        .0        8.8        .0        .0        .0    1532.20
       .00       .03      2.27       .00       .040       .016       .000       .000    1531.60    2196.79
   .006723        0.        0.        0.         0          5          0        .00      55.23    2259.46

*SECNO 3.000

3265 DIVIDED FLOW

     3.000       .47   1532.07    1532.06       .00    1532.15        .08        .00        .00    1532.00
      20.0        .0      20.0        .0        .0        9.0        .0        .0        .0    1532.20
       .00       .03      2.23       .00       .040       .016       .000       .000    1531.60    2196.74
   .006455        0.        0.        0.         0          5          0        .00      55.85    2259.47

*SECNO 4.000

3265 DIVIDED FLOW

     4.000       .48   1532.08    1532.07       .00    1532.15        .07        .00        .00    1532.00
      20.0        .0      20.0        .0        .0        9.2        .0        .0        .0    1532.20
       .00       .03      2.18       .00       .040       .016       .000       .000    1531.60    2196.66
   .006052        0.        0.        0.         0          6          0        .00      56.84    2259.49

1
   09NOV93      17:50:21                                                                                                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 5.000

3265 DIVIDED FLOW

     5.000       .48   1532.08    1532.06       .00    1532.15        .07        .00        .00    1532.00
      20.0        .0      20.0        .0        .1        9.5        .0        .0        .0    1532.20
       .00       .03      2.11       .00       .040       .016       .000       .000    1531.60    2196.56
   .005585        0.        0.        0.         0          8          0        .00      58.08    2259.51
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1
   09NOV93      17:50:21                                                                                                PAGE   10

T3            Q4
J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
                 5                         0.008
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     4                  -1                                        -1

1
   09NOV93      17:50:21                                                                                                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

*PROF 4

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000       .56   1532.16   1532.16       .00   1532.28       .11       .00       .00   1532.00
      40.0        .1      39.9        .0        .2      14.7        .0        .0        .0   1532.20
       .00       .53      2.71       .00      .040      .016      .000      .000   1531.60   2194.95
   .005760        0.        0.        0.         0        15         9       .00     64.90   2259.85

*SECNO 2.000
     2.000       .56   1532.16   1532.15       .00   1532.28       .11       .00       .00   1532.00
      40.0        .1      39.9        .0        .3      14.8        .0        .0        .0   1532.20
       .00       .53      2.69       .00      .040      .016      .000      .000   1531.60   2194.93
   .005673        0.        0.        0.         0         5         0       .00     64.92   2259.85

*SECNO 3.000
     3.000       .57   1532.17   1532.15       .00   1532.28       .11       .00       .00   1532.00
      40.0        .1      39.9        .0        .3      14.9        .0        .0        .0   1532.20
       .00       .52      2.67       .00      .040      .016      .000      .000   1531.60   2194.89
   .005503        0.        0.        0.         0         5         0       .00     64.97   2259.86

*SECNO 4.000
     4.000       .57   1532.17   1532.16       .00   1532.28       .11       .00       .00   1532.00
      40.0        .1      39.9        .0        .3      15.1        .0        .0        .0   1532.20
       .00       .52      2.63       .00      .040      .016      .000      .000   1531.60   2194.83
   .005252        0.        0.        0.         0         8         0       .00     65.05   2259.88

*SECNO 5.000
     5.000       .58   1532.18   1532.16       .00   1532.28       .10       .00       .00   1532.00
      40.0        .1      39.9        .0        .3      15.4        .0        .0        .0   1532.20
       .00       .51      2.58       .00      .040      .016      .000      .000   1531.60   2194.74
   .004950        0.        0.        0.         0         6         0       .00     65.15   2259.90

1
   09NOV93      17:50:21                                                                                                PAGE   12

T3            Q5
J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
                 6                         0.008
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     5                  -1                                        -1

1
   09NOV93      17:50:21                                                                                                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

*PROF 5

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000       .69   1532.29   1532.29       .00   1532.48       .19       .00       .00   1532.00
      80.0        .6      79.4        .0        .8      22.9        .1        .0        .0   1532.20
       .00       .75      3.47       .02      .040      .016      .060      .000   1531.60   2192.49
   .005295        0.        0.        0.         0        20         8       .00     68.85   2261.34

*SECNO 2.000
     2.000       .70   1532.30   1532.29       .00   1532.48       .18       .00       .00   1532.00
      80.0        .6      79.4        .0        .8      22.9        .1        .0        .0   1532.20
       .00       .75      3.46       .02      .040      .016      .060      .000   1531.60   2192.47
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   .005242        0.        0.        0.        0        5        0      .00    68.89   2261.36

*SECNO 3.000
     3.000       .70   1532.30   1532.29      .00  1532.48      .18      .00      .00   1532.00
      80.0        .6      79.4        .0       .8     23.1       .1       .0       .0   1532.20
       .00       .75      3.44       .02     .040     .016     .060     .000  1531.60   2192.43
   .005133        0.        0.        0.        0        5        0      .00    68.96   2261.39

*SECNO 4.000
     4.000       .70   1532.30   1532.29      .00  1532.48      .18      .00      .00   1532.00
      80.0        .6      79.4        .0       .8     23.3       .1       .0       .0   1532.20
       .00       .74      3.41       .02     .040     .016     .060     .000  1531.60   2192.36
   .004978        0.        0.        0.        0        5        0      .00    69.08   2261.44

*SECNO 5.000
     5.000       .71   1532.31   1532.29      .00  1532.48      .17      .00      .00   1532.00
      80.0        .6      79.4        .0       .9     23.6       .1       .0       .0   1532.20
       .00       .73      3.36       .02     .040     .016     .060     .000  1531.60   2192.27
   .004772        0.        0.        0.        0        5        0      .00    69.23   2261.51

1
   09NOV93      17:50:21                                                                    PAGE   14

T3            Q6

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 7                         0.008

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      6                  -1                                      -1

1
   09NOV93      17:50:21                                                                    PAGE   15

    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 6

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000       .88   1532.48   1532.48      .00  1532.76      .28      .00      .00   1532.00
     150.0       2.1     147.6        .3       2.2     34.7       .6       .0       .0   1532.20
       .00       .97      4.25       .46     .040     .016     .060     .000  1531.60   2188.91
   .004556        0.        0.        0.        0       21        7      .00    75.16   2264.07

*SECNO 2.000
     2.000       .90   1532.50   1532.49      .00  1532.76      .27      .00      .00   1532.00
     150.0       2.2     147.5        .3       2.3     35.3       .6       .0       .0   1532.20
       .00       .96      4.17       .45     .040     .016     .060     .000  1531.60   2188.72
   .004284        0.        0.        0.        0        5        0      .00    75.50   2264.21

*SECNO 3.000
     3.000       .90   1532.50   1532.48      .00  1532.76      .26      .00      .00   1532.00
     150.0       2.2     147.5        .3       2.3     35.5       .6       .0       .0   1532.20
       .00       .95      4.15       .45     .040     .016     .060     .000  1531.60   2188.67
   .004216        0.        0.        0.        0        5        0      .00    75.58   2264.25

*SECNO 4.000
     4.000       .91   1532.51   1532.48      .00  1532.77      .26      .00      .00   1532.00
     150.0       2.2     147.5        .3       2.4     35.7       .6       .0       .0   1532.20
       .00       .95      4.13       .45     .040     .016     .060     .000  1531.60   2188.60
   .004123        0.        0.        0.        0        5        0      .00    75.71   2264.31

*SECNO 5.000
     5.000       .91   1532.51   1532.49      .00  1532.77      .26      .00      .00   1532.00
     150.0       2.3     147.4        .3       2.4     36.0       .7       .0       .0   1532.20
       .00       .94      4.09       .45     .040     .016     .060     .000  1531.60   2188.51
   .004010        0.        0.        0.        0        8        0      .00    75.87   2264.38

1
   09NOV93      17:50:21                                                                    PAGE   16

T3            Q7

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 8                         0.008

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      7                  -1                                      -1

1
   09NOV93      17:50:21                                                                    PAGE   17
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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

*PROF 7

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=      .100 CEHV=      .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      1.00   1532.60   1532.60       .00   1532.93       .33       .00       .00   1532.00
     200.0       3.7     195.7        .6       3.4      42.0       1.2        .0        .0   1532.20
       .00      1.09      4.66       .55      .040      .016      .060      .000   1531.60   2186.71
   .004247        0.        0.        0.         0        21         7       .00     79.03   2265.74

*SECNO 2.000
     2.000      1.02   1532.62   1532.60       .00   1532.93       .32       .00       .00   1532.00
     200.0       3.8     195.6        .7       3.5      42.7       1.2        .0        .0   1532.20
       .00      1.07      4.58       .55      .040      .016      .060      .000   1531.60   2186.49
   .004006        0.        0.        0.         0         5         0       .00     79.42   2265.91

*SECNO 3.000
     3.000      1.02   1532.62   1532.60       .00   1532.94       .32       .00       .00   1532.00
     200.0       3.8     195.5        .7       3.6      42.9       1.2        .0        .0   1532.20
       .00      1.06      4.56       .55      .040      .016      .060      .000   1531.60   2186.44
   .003951        0.        0.        0.         0         5         0       .00     79.51   2265.95

*SECNO 4.000
     4.000      1.02   1532.62   1532.60       .00   1532.94       .31       .00       .00   1532.00
     200.0       3.8     195.5        .7       3.6      43.1       1.3        .0        .0   1532.20
       .00      1.06      4.53       .54      .040      .016      .060      .000   1531.60   2186.37
   .003878        0.        0.        0.         0         5         0       .00     79.64   2266.01

*SECNO 5.000
     5.000      1.03   1532.63   1532.61       .00   1532.94       .31       .00       .00   1532.00
     200.0       3.9     195.4        .7       3.7      43.4       1.3        .0        .0   1532.20
       .00      1.05      4.50       .54      .040      .016      .060      .000   1531.60   2186.28
   .003791        0.        0.        0.         0         8         0       .00     79.79   2266.07

1
   09NOV93      17:50:21                                                                                PAGE   18

T3            Q8

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 9                           0.008

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      8                  -1                                      -1

1
   09NOV93      17:50:21                                                                                PAGE   19

    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 8

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=      .100 CEHV=      .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      1.31   1532.91   1532.91       .00   1533.36       .45       .00       .00   1532.00
     350.0      10.9     336.5       2.7       7.6      61.1       3.6        .0        .0   1532.20
       .00      1.42      5.51       .74      .040      .016      .060      .000   1531.60   2182.99
   .003603        0.        0.        0.         0        14         6       .00     87.15   2270.14

*SECNO 2.000
     2.000      1.31   1532.91   1532.91       .00   1533.36       .45       .00       .00   1532.00
     350.0      10.9     336.4       2.7       7.7      61.1       3.6        .0        .0   1532.20
       .00      1.42      5.51       .74      .040      .016      .060      .000   1531.60   2182.99
   .003593        0.        0.        0.         0         5         0       .00     87.16   2270.15

*SECNO 3.000
     3.000      1.31   1532.91   1532.91       .00   1533.37       .45       .00       .00   1532.00
     350.0      10.9     336.4       2.7       7.7      61.2       3.6        .0        .0   1532.20
       .00      1.42      5.50       .74      .040      .016      .060      .000   1531.60   2182.99
   .003575        0.        0.        0.         0         5         0       .00     87.18   2270.17

*SECNO 4.000
     4.000      1.32   1532.92   1532.91       .00   1533.37       .45       .00       .00   1532.00
     350.0      10.9     336.4       2.7       7.7      61.3       3.6        .0        .0   1532.20
       .00      1.42      5.48       .74      .040      .016      .060      .000   1531.60   2182.99
   .003546        0.        0.        0.         0         5         0       .00     87.22   2270.20

*SECNO 5.000
     5.000      1.32   1532.92   1532.91       .00   1533.37       .45       .00       .00   1532.00
```

350.0	11.0	336.3	2.7	7.8	61.5	3.7	.0	.0	1532.20
.00	1.42	5.47	.74	.040	.016	.060	.000	1531.60	2182.99
.003505	0.	0.	0.	0	5	0	.00	87.26	2270.25

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T3		Q9							
J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		10			0.008					
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	9		-1				-1			

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

*PROF 9

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED

1.000	1.55	1533.15	1533.15	.00	1533.73	.57	.00	.00	1532.00
500.0	20.3	474.0	5.7	11.3	76.0	6.5	.0	.0	1532.20
.00	1.80	6.23	.88	.040	.016	.060	.000	1531.60	2182.96
.003440	0.	0.	0.	0	22	6	.00	90.63	2273.59

*SECNO 2.000

2.000	1.57	1533.17	1533.15	.00	1533.73	.56	.00	.00	1532.00
500.0	20.6	473.6	5.9	11.6	77.2	6.7	.0	.0	1532.20
.00	1.78	6.14	.87	.040	.016	.060	.000	1531.60	2182.95
.003269	0.	0.	0.	0	5	0	.00	90.90	2273.85

*SECNO 3.000

3.000	1.58	1533.18	1533.15	.00	1533.73	.55	.00	.00	1532.00
500.0	20.6	473.5	5.9	11.6	77.3	6.8	.0	.0	1532.20
.00	1.78	6.12	.87	.040	.016	.060	.000	1531.60	2182.95
.003243	0.	0.	0.	0	5	0	.00	90.94	2273.89

*SECNO 4.000

4.000	1.58	1533.18	1533.15	.00	1533.73	.55	.00	.00	1532.00
500.0	20.7	473.4	5.9	11.7	77.6	6.8	.0	.0	1532.20
.00	1.77	6.10	.87	.040	.016	.060	.000	1531.60	2182.95
.003208	0.	0.	0.	0	5	0	.00	90.99	2273.95

*SECNO 5.000

5.000	1.59	1533.19	1533.15	.00	1533.73	.55	.00	.00	1532.00
500.0	20.8	473.3	6.0	11.7	77.9	6.9	.0	.0	1532.20
.00	1.77	6.08	.87	.040	.016	.060	.000	1531.60	2182.95
.003167	0.	0.	0.	0	5	0	.00	91.06	2274.01

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THIS RUN EXECUTED 09NOV93 17:50:22

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

 Version   4.6.2;  May 1991
************************************
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SUMMARY PRINTOUT

	SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
*	1.000	5.00	1531.87	.27	2.14	1531.87	1531.94	.00	76.12	.00
*	1.000	10.00	1531.97	.37	2.14	1531.97	1532.04	.00	74.97	.00
*	1.000	20.00	1532.06	.46	2.29	1532.06	1532.14	.00	68.62	.00
*	1.000	40.00	1532.16	.56	2.71	1532.16	1532.28	.00	57.60	.00
*	1.000	80.00	1532.29	.69	3.47	1532.29	1532.48	.00	52.95	.00
*	1.000	150.00	1532.48	.88	4.25	1532.48	1532.76	.00	45.56	.00
*	1.000	200.00	1532.60	1.00	4.66	1532.60	1532.93	.00	42.47	.00
*	1.000	350.00	1532.91	1.31	5.51	1532.91	1533.36	.00	36.03	.00
*	1.000	500.00	1533.15	1.55	6.23	1533.15	1533.73	.00	34.40	.00
	2.000	5.00	1531.88	.28	2.07	1531.87	1531.95	.00	69.57	1.05
	2.000	10.00	1531.97	.37	2.12	1531.97	1532.04	.00	73.26	1.01

2.000	20.00	1532.07	.47	2.27	1532.06	1532.15	.00	67.23	1.01
2.000	40.00	1532.16	.56	2.69	1532.15	1532.28	.00	56.73	1.01
2.000	80.00	1532.30	.70	3.46	1532.29	1532.48	.00	52.42	1.01
2.000	150.00	1532.50	.90	4.17	1532.49	1532.76	.00	42.84	1.03
2.000	200.00	1532.62	1.02	4.58	1532.60	1532.93	.00	40.06	1.03
2.000	350.00	1532.91	1.31	5.51	1532.91	1533.36	.00	35.93	1.00
2.000	500.00	1533.17	1.57	6.14	1533.15	1533.73	.00	32.69	1.03
3.000	5.00	1531.88	.28	2.02	1531.88	1531.95	.00	65.03	1.03
3.000	10.00	1531.98	.38	2.07	1531.97	1532.04	.00	69.66	1.03
3.000	20.00	1532.07	.47	2.23	1532.06	1532.15	.00	64.55	1.02
3.000	40.00	1532.17	.57	2.67	1532.15	1532.28	.00	55.03	1.02
3.000	80.00	1532.30	.70	3.44	1532.29	1532.48	.00	51.33	1.01
3.000	150.00	1532.50	.90	4.15	1532.48	1532.76	.00	42.16	1.01
3.000	200.00	1532.62	1.02	4.56	1532.60	1532.94	.00	39.51	1.01
3.000	350.00	1532.91	1.31	5.50	1532.91	1533.37	.00	35.75	1.00
3.000	500.00	1533.18	1.58	6.12	1533.15	1533.73	.00	32.43	1.00

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SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
4.000	5.00	1531.89	.29	1.95	1531.88	1531.95	.00	59.32	1.05
4.000	10.00	1531.98	.38	2.00	1531.97	1532.05	.00	64.57	1.04
4.000	20.00	1532.08	.48	2.18	1532.07	1532.15	.00	60.52	1.03
4.000	40.00	1532.17	.57	2.63	1532.16	1532.28	.00	52.52	1.02
4.000	80.00	1532.30	.70	3.41	1532.29	1532.48	.00	49.78	1.02
4.000	150.00	1532.51	.91	4.13	1532.48	1532.77	.00	41.23	1.01
4.000	200.00	1532.62	1.02	4.53	1532.60	1532.94	.00	38.78	1.01
4.000	350.00	1532.92	1.32	5.48	1532.91	1533.37	.00	35.46	1.00
4.000	500.00	1533.18	1.58	6.10	1533.15	1533.73	.00	32.08	1.01
5.000	5.00	1531.90	.30	1.88	1531.87	1531.95	.00	53.36	1.05
5.000	10.00	1531.99	.39	1.91	1531.97	1532.05	.00	58.55	1.05
5.000	20.00	1532.08	.48	2.11	1532.06	1532.15	.00	55.85	1.04
5.000	40.00	1532.18	.58	2.58	1532.16	1532.28	.00	49.50	1.03
5.000	80.00	1532.31	.71	3.36	1532.29	1532.48	.00	47.72	1.02
5.000	150.00	1532.51	.91	4.09	1532.49	1532.77	.00	40.10	1.01
5.000	200.00	1532.63	1.03	4.50	1532.61	1532.94	.00	37.91	1.01
5.000	350.00	1532.92	1.32	5.47	1532.91	1533.37	.00	35.05	1.01
5.000	500.00	1533.19	1.59	6.08	1533.15	1533.73	.00	31.67	1.01

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SUMMARY OF ERRORS AND SPECIAL NOTES

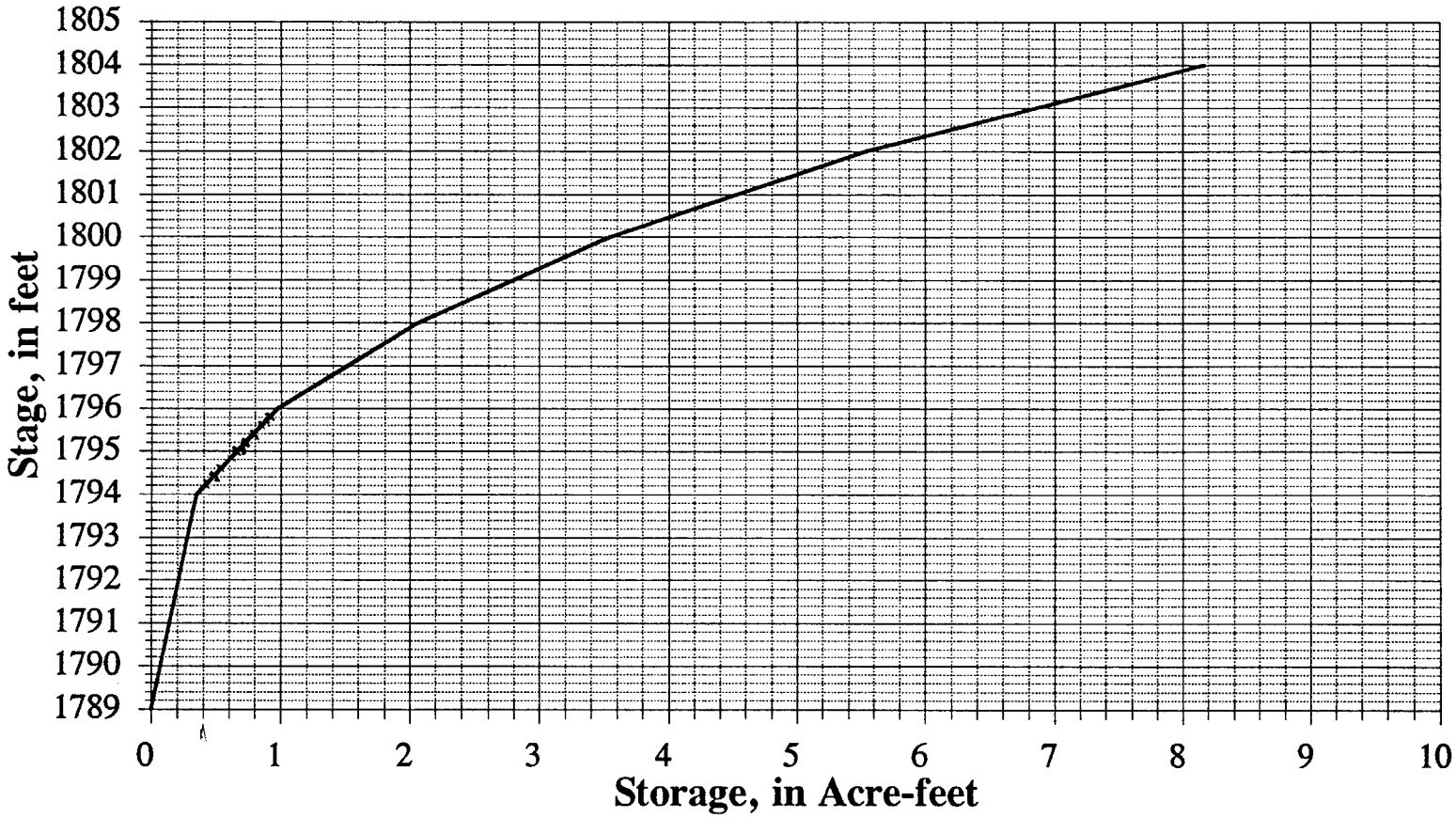
```
CAUTION SECNO=      1.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  6  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  7  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  8  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  9  CRITICAL DEPTH ASSUMED
```

Table R-11
Storage and Discharge vs. Stage Data for C513

Stage (ft)	Surface Area (acres)	Storage Volume (acre-ft)	Discharge		
			Culvert Flow (cfs)	Weir Flow (cfs)	Total Flow (cfs)
1789.00	0.00	0.00			0.00
1794.00	0.21	0.35	0.00	0.00	0.00
1796.00	0.43	0.97	20.00	0.00	20.00
1798.00	0.65	2.05	70.00	0.00	70.00
1800.00	0.83	3.54	135.00	0.00	135.00
1802.00	1.18	5.54	195.00	120.00	315.00
1804.00	1.46	8.17	235.00	1760.00	1995.00

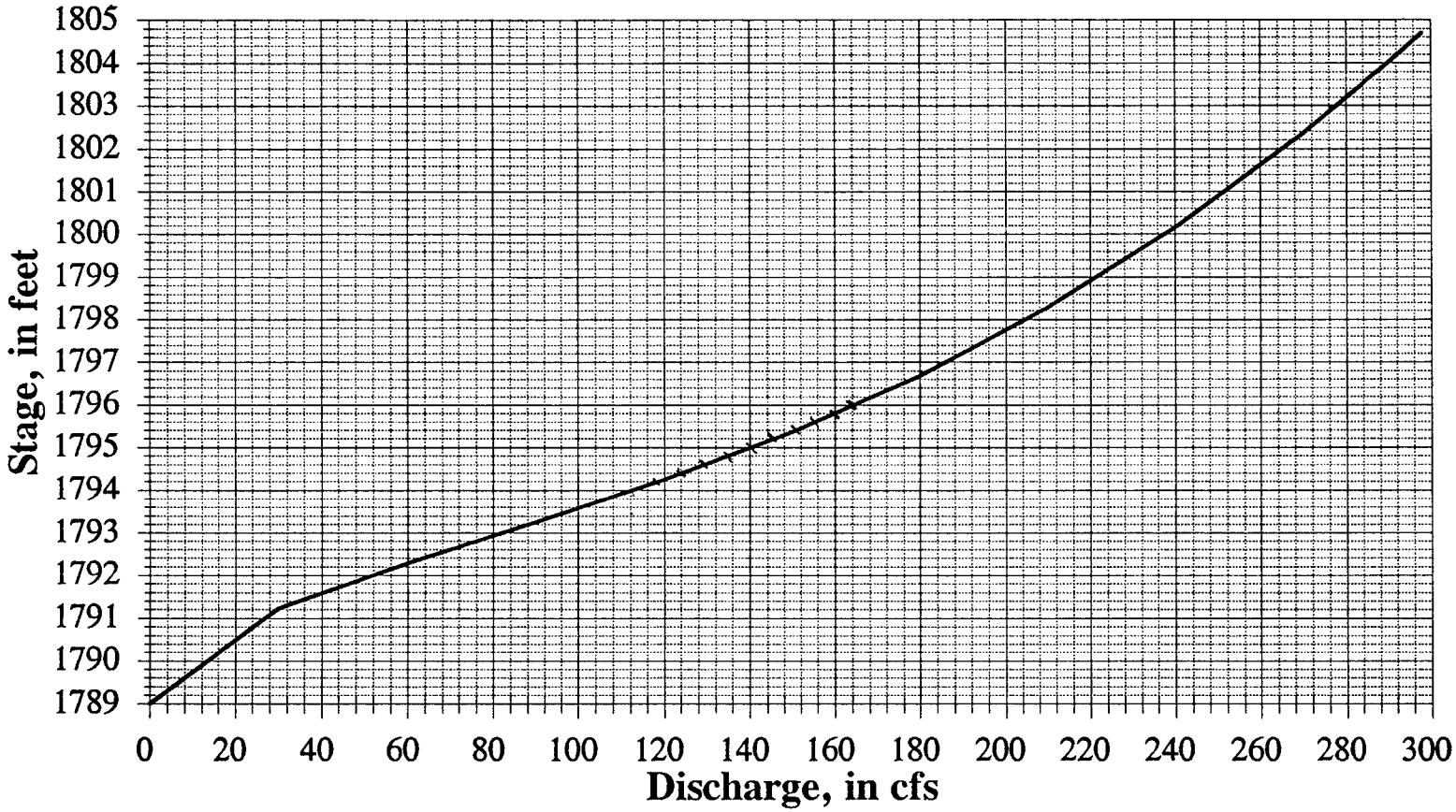
C513 Storage Volume

Calculated From Planimetered Contours



C513 Stage vs Discharge

Culvert Flow from HY8



CURRENT DATE: 11-09-1993
CURRENT TIME: 16:53:34

FILE DATE: 06-16-1993
FILE NAME: C513

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1789.00	1787.80	72.01	1 CSP	5.00	5.00	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C513 DATE: 06-16-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1789.00	0	0	0	0	0	0	0	0	1
1791.23	30	30	0	0	0	0	0	0	1
1792.29	60	60	0	0	0	0	0	0	1
1793.26	90	90	0	0	0	0	0	0	1
1794.25	120	120	0	0	0	0	0	0	1
1795.37	150	150	0	0	0	0	0	0	1
1796.69	180	180	0	0	0	0	0	0	1
1798.28	210	210	0	0	0	0	0	0	1
1800.16	240	240	0	0	0	0	0	0	1
1802.36	270	270	0	0	0	0	0	0	1
1804.71	300	298	0	0	0	0	0	2	5
1804.00	290	290	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C513 DATE: 06-16-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1789.00	0.00	0	0	0.00
1791.23	0.00	30	0	0.00
1792.29	0.00	60	0	0.00
1793.26	0.00	90	0	0.00
1794.25	0.00	120	0	0.00
1795.37	0.00	150	0	0.00
1796.69	0.00	180	0	0.00
1798.28	0.00	210	0	0.00
1800.16	0.00	240	0	0.00

1802.36	0.00	270	0	0.00
1804.71	-0.01	300	0	0.04

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 11-09-1993 FILE DATE: 06-16-1993
CURRENT TIME: 16:53:34 FILE NAME: C513

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (5 BY 5) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1789.00	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
30	1791.23	2.23	2.23	1-S2n	1.35	1.52	6.93	1.35	3.02	0.58
60	1792.29	3.29	3.29	1-S2n	1.97	2.17	8.34	1.97	3.59	0.79
90	1793.26	4.26	4.26	1-S2n	2.48	2.68	9.27	2.48	3.97	0.95
120	1794.25	5.25	5.25	5-S2n	2.96	3.12	9.92	2.96	4.26	1.07
150	1795.37	6.37	6.37	5-S2n	3.45	3.51	10.37	3.45	4.50	1.18
180	1796.69	7.69	7.35	2-M2c	4.05	3.83	11.18	3.83	4.71	1.28
210	1798.28	9.28	8.31	6-FFn	5.00	4.10	10.70	5.00	4.89	1.36
240	1800.16	11.16	9.94	6-FFn	5.00	4.33	12.22	5.00	5.06	1.44
270	1802.36	13.36	11.78	6-FFn	5.00	4.55	13.75	5.00	5.20	1.52
298	1804.70	15.70	13.67	6-FFn	5.00	4.76	15.18	5.00	5.34	1.59

El. inlet face invert 1789.00 ft El. outlet invert 1787.80 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION (FT)                        0.00
      INLET ELEVATION (FT)                   1789.00
      OUTLET STATION (FT)                      72.00
      OUTLET ELEVATION (FT)                  1787.80
      NUMBER OF BARRELS                        1
      SLOPE (V-FT/H-FT)                        0.0167
      CULVERT LENGTH ALONG SLOPE (FT)         72.01

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          CIRCULAR
      BARREL DIAMETER         5.00 FT
      BARREL MATERIAL       CORRUGATED STEEL
      BARREL MANNING'S N    0.024
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   THIN EDGE PROJECTING
      INLET DEPRESSION      NONE
```

CURRENT DATE: 11-09-1993
CURRENT TIME: 16:53:34

FILE DATE: 06-16-1993
FILE NAME: C513

TAILWATER

***** USER DEFINED CHANNEL CROSS-SECTION
MAIN CHANNEL AND LT & RT OVER BANKS

FILE NAME: C513
FILE DATE: 06-16-1993

LEFT CHANNEL BOUNDARY	5
RIGHT CHANNEL BOUNDARY	7
MANNING N LEFT OVER BANK	0.050
MANNING N MAIN CHANNEL	0.045
MANNING N RIGHT OVER BAN	0.050
SLOPE OF CHANNEL (FT/FT)	0.0290

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	1000.00	1795.80
2	1002.00	1793.80
3	1021.00	1791.80
4	1051.00	1789.80
5	1075.00	1787.80
6	1083.00	1787.80
7	1133.00	1789.80
8	1140.00	1791.80
9	1148.00	1793.80
10	1157.00	1795.80

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1787.80	0.000	0.00	0.00	0.00
30.00	1788.38	0.848	0.58	3.02	0.71
60.00	1788.59	0.885	0.79	3.59	0.92
90.00	1788.75	0.908	0.95	3.97	1.07
120.00	1788.88	0.924	1.07	4.26	1.20
150.00	1788.98	0.937	1.18	4.50	1.30
180.00	1789.08	0.948	1.28	4.71	1.39
210.00	1789.17	0.957	1.36	4.89	1.47
240.00	1789.24	0.965	1.44	5.06	1.54
270.00	1789.32	0.972	1.52	5.20	1.61
300.00	1789.39	0.978	1.59	5.34	1.67

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	1.00
CREST LENGTH (FT)	1.00

OVERTOPPING CREST ELEVATION (FT) 1804.00

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*********************************************

    PROJECT:  Fountain Hills FIS North                    C513
    ENGINEER:  MG
    DATE:   8/26/1993
    TIME:  13:34.46

---------------------------------------------
    INPUT PARAMETERS
---------------------------------------------

    STARTING WSEL:       1794.20
    MAXIMUM WSEL:        1796.00
    STEP SIZE:              0.20
    BREADTH OF WEIR:       30.00

*********************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills FIS North                    C513
    DATE:   8/26/1993
    TIME:  13:34.46
*********************************************

    POINT    ELEVATION    STATION
    -----    ---------    -------
        1      1798.04    1000.00
        2      1796.21    1025.00
        3      1794.83    1050.00
        4      1794.24    1075.00
        5      1794.20    1100.00
        6      1794.65    1125.00
        7      1795.31    1150.00
        8      1796.17    1175.00
```

```
*********************************************
    WEIR COEFFICIENT TABLE
    PROJECT:  Fountain Hills FIS North                    C513
    DATE:   8/26/1993
    TIME:  13:34.46
*********************************************
```

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.5222
3	0.40	2.5444
4	0.60	2.5667
5	0.80	2.5889
6	1.00	2.6111
7	1.20	2.6333
8	1.40	2.6556
9	1.60	2.6778
10	1.80	2.7000

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
    PROJECT:  Fountain Hills FIS North                    C513
    DATE:   8/26/1993
    TIME:  13:34.46
*********************************************
```

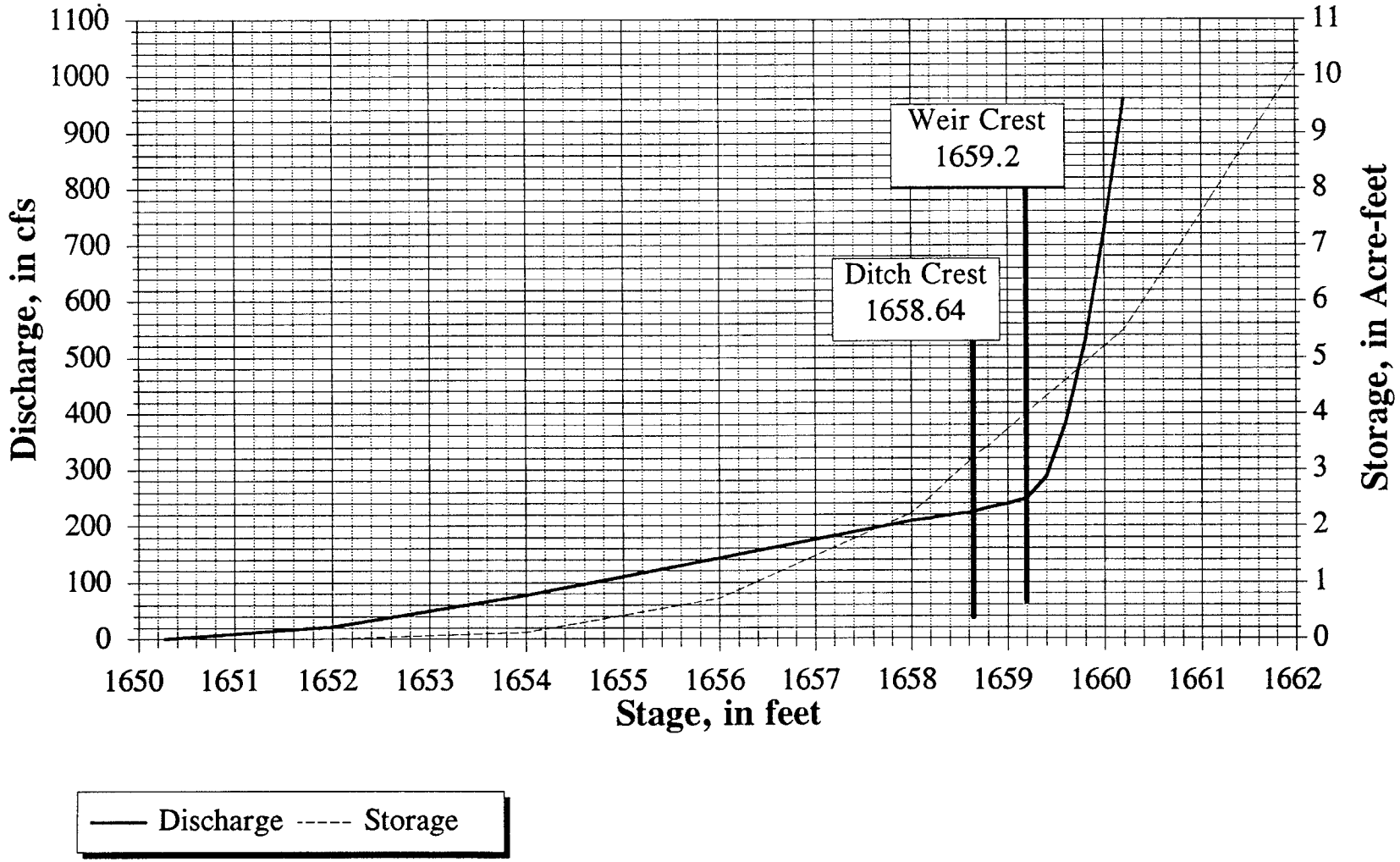
ELEVATION	DISCHARGE (CFS)
1794.20	0.00
1794.40	6.25
1794.60	23.87
1794.80	53.95
1795.00	97.23
1795.20	153.65
1795.40	223.64
1795.60	307.53
1795.80	405.64
1796.00	518.43

Table R-12
Storage and Discharge vs. Stage Data for C523

Stage (ft)	Surface Area (acres)	Storage Volume (acre-ft)	Discharge			
			Culvert Flow (cfs)	Ditch Flow (cfs)	Weir Flow (cfs)	Total Flow (cfs)
1650.28	0.00	0.00	0	---	---	0
1652.00	0.01	0.01	22	---	---	22
1654.00	0.13	0.12	78	---	---	78
1656.00	0.50	0.71	144	---	---	144
1658.00	1.05	2.23	209	---	---	209
1658.20	---	2.5	214	---	---	214
1658.40	---	2.8	220	---	---	220
1658.60	---	3.1	224	---	---	224
1658.64	---	3.2	226	0	---	226
1658.80	---	3.4	229	3	---	232
1659.00	---	3.7	234	5	---	239
1659.20	---	4.0	239	10	0	249
1659.40	---	4.3	243	20	25	288
1659.60	---	4.6	247	37	100	384
1659.80	---	4.9	252	61	216	529
1660.00	1.97	5.20	256	96	374	726
1660.20	---	5.5	262	139	559	960
1662.00	3.04	10.17	---	---	---	---

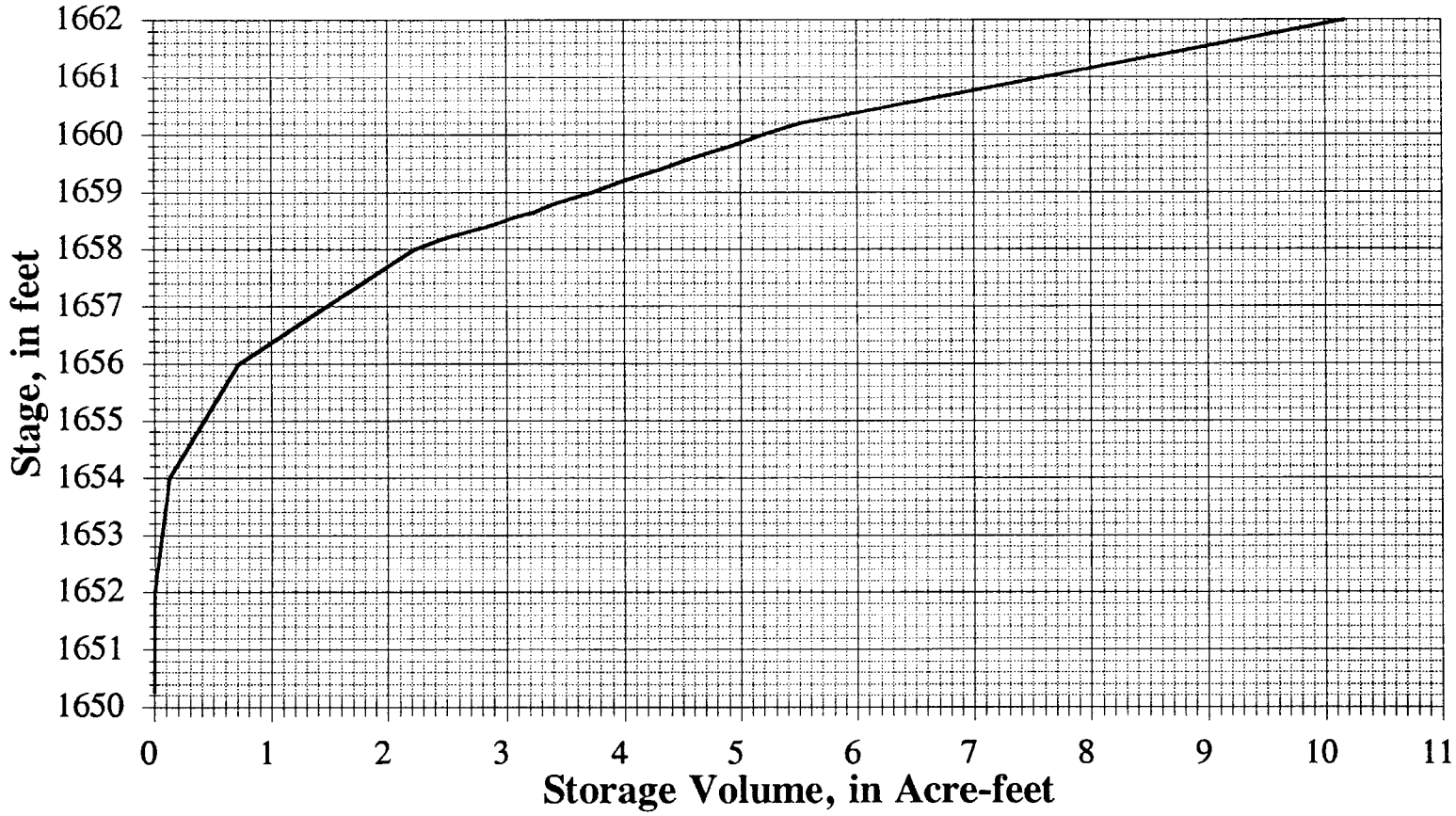
Figure R-8

Storage and Discharge vs Stage for C523



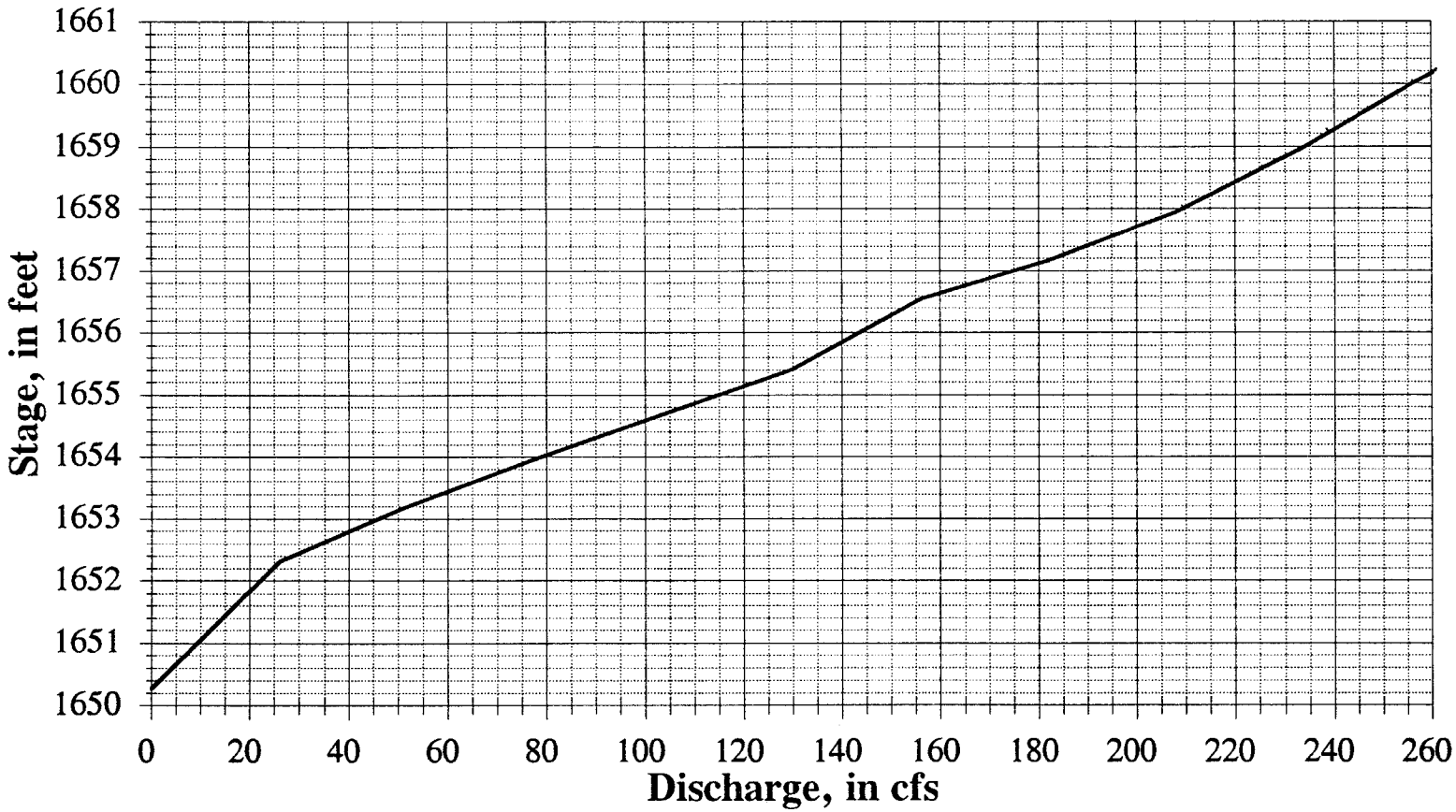
C523 Storage Volume

Calculated From Planimetered Contours



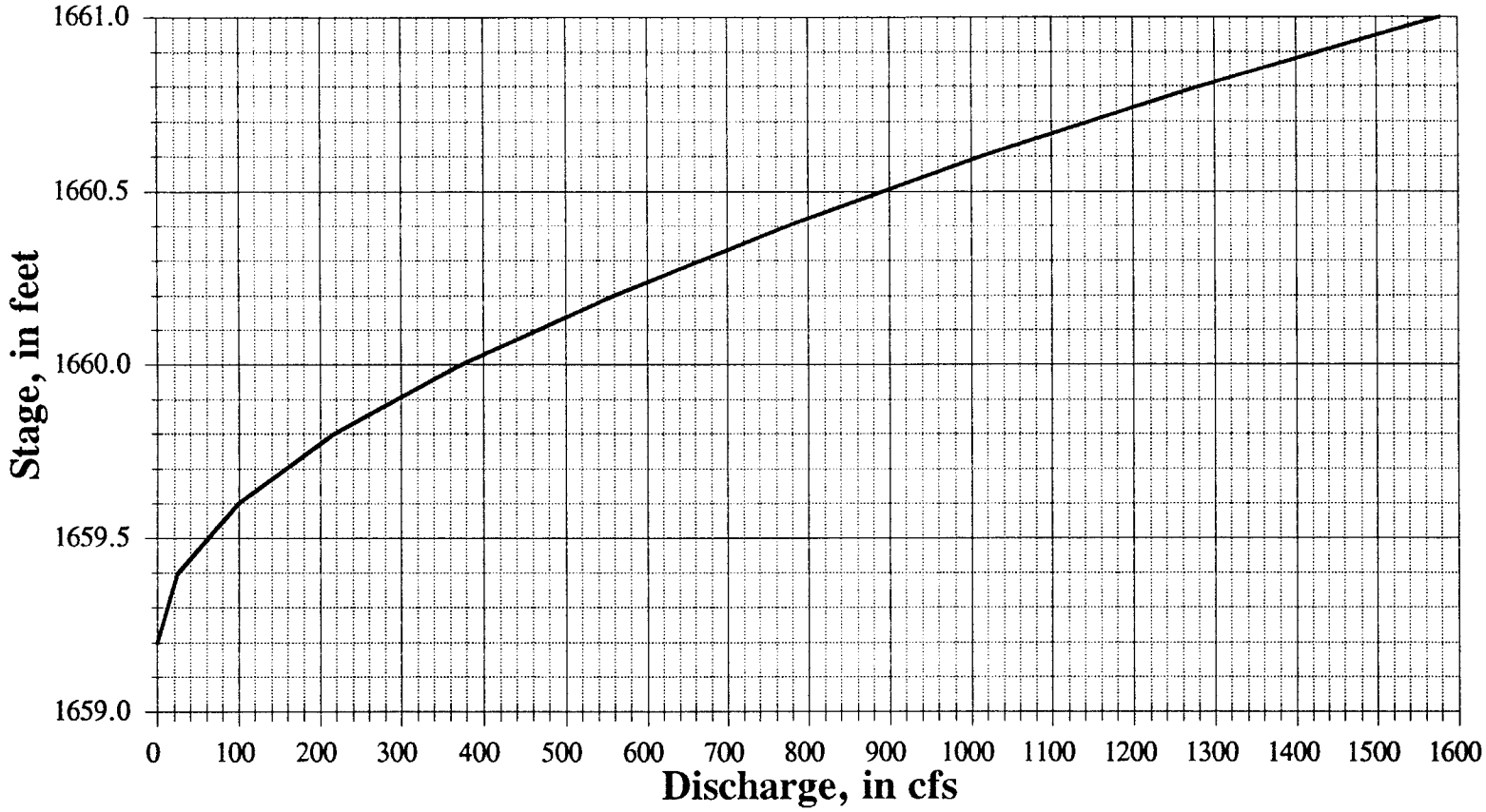
C523 Stage vs Discharge

Culvert Flow from HY8



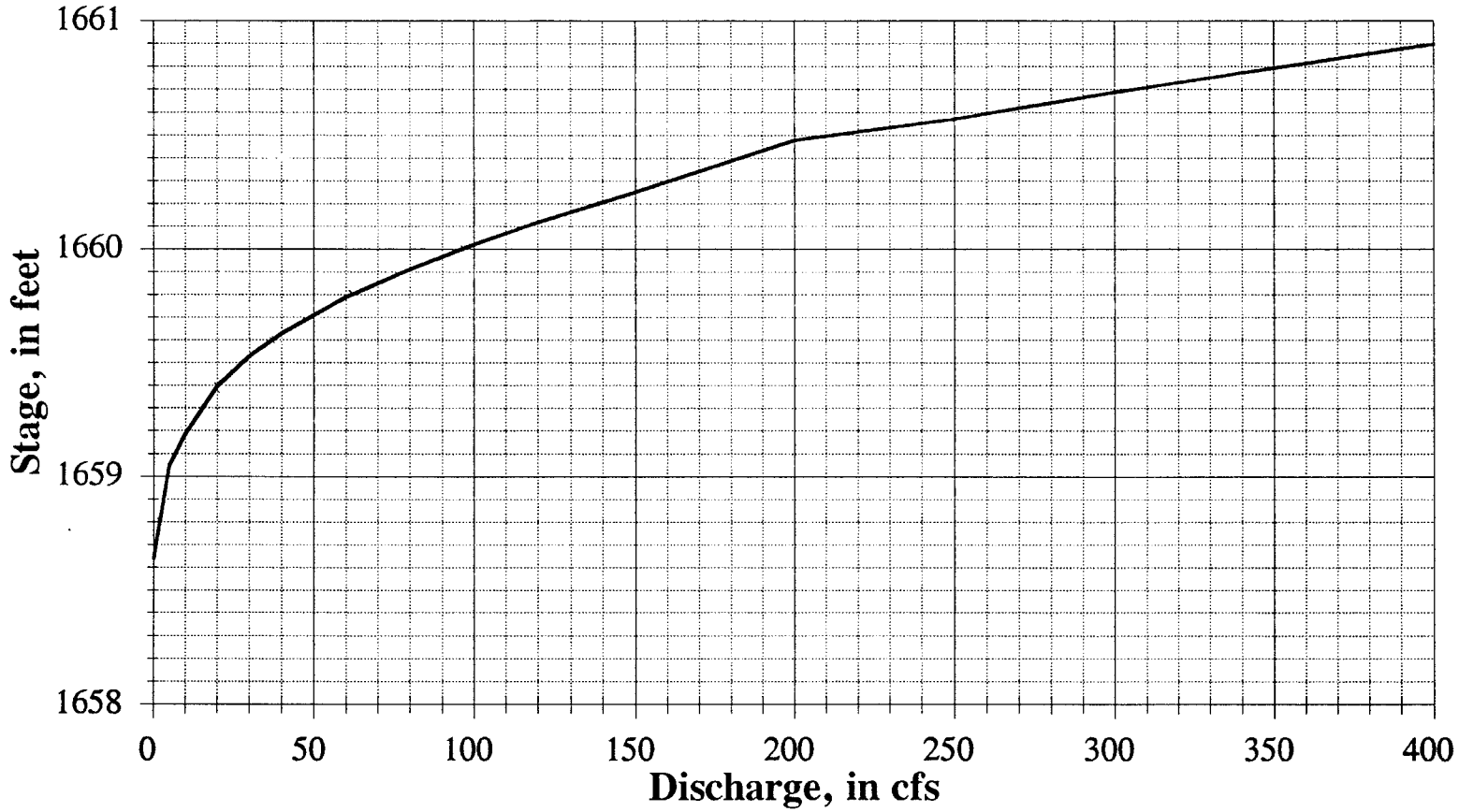
C523 Stage vs Discharge

Weir Flow from Uneven Weir



C523 Stage vs Discharge

Ditch Flow from HEC-2



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 1 OF 3

CLIENT MC FCD

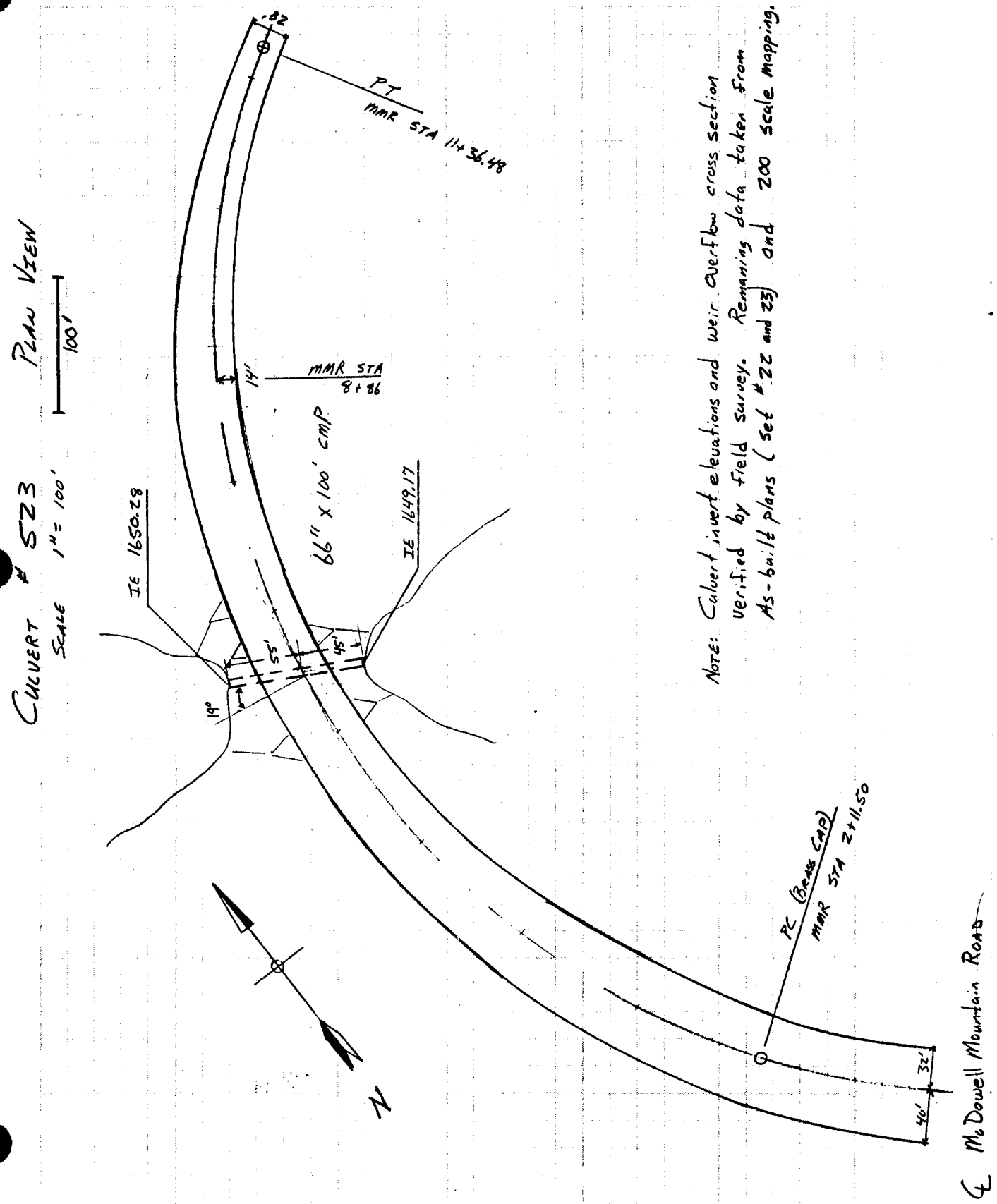
DATE 19 JULY 93

PROJECT FOUNTAIN HILLS NORTH FIS

BY DTP

SUBJECT CULVERT # 523 FIELD SURVEY

PROJECT NO. 35



NOTE: Culvert invert elevations and weir overflow cross section verified by field survey. Remaining data taken from As-built plans (set #22 and 23) and 200 scale mapping.

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 2 OF 3

CLIENT F.C.D. M.C.

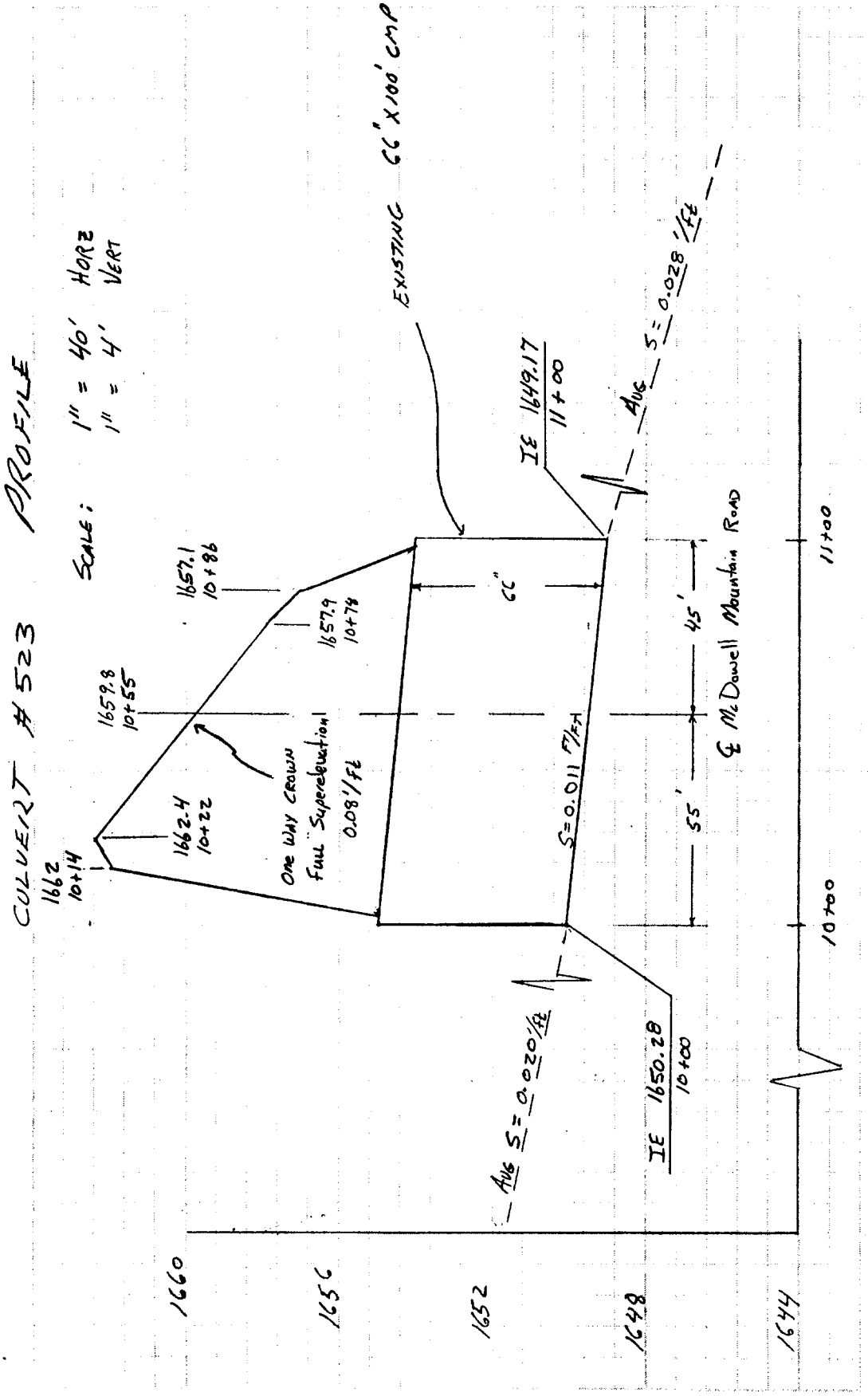
DATE 12-JUL-93

PROJECT F. HILLS F.I.S.

BY R.C.

SUBJECT CULVERT #523 FIELD SURVEY.

PROJECT NO. 35



Note: Culvert invert elevations and Weir Overflow cross section verified by Field Survey. Remaining data taken from As-built plans (set #22 & 23) and 200 scale mapping.

Use weir breadth of 5 ft.

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 3 OF 3

CLIENT MC.FCD.

DATE 12-JUL-93

PROJECT F. HILLS FIS

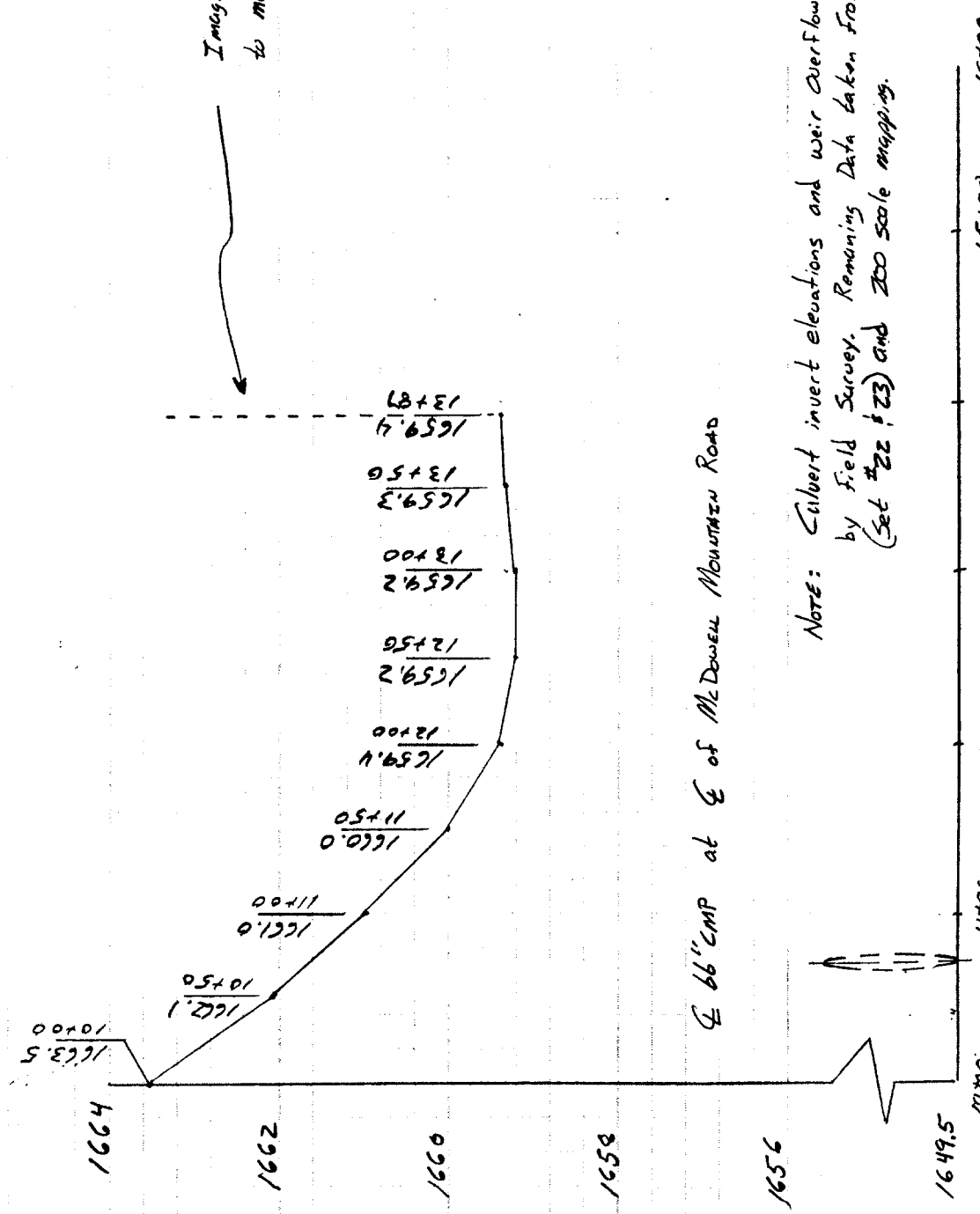
BY RC.

SUBJECT CULVERT #523 FIELD SURVEY.

PROJECT NO. 35

CULVERT #523 WIER CROSS SECTION (WEST EDGE OF PAVEMENT)

SCALE = 1" = 100' HORZ
1" = 2' VERT



Note: Culvert invert elevations and weir overflow cross section verified by field survey. Remaining data taken from As-built plans (Set #22 & 23) and 200 scale mappings.

CURRENT DATE: 07-09-1993
CURRENT TIME: 15:23:47

FILE DATE: 06-16-1993
FILE NAME: C523

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1650.28	1649.17	100.01	1 CSP	5.50	5.50	.022	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C523 DATE: 06-16-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1650.28	0	0	0	0	0	0	0	0	1
1652.32	26	26	0	0	0	0	0	0	1
1653.20	52	52	0	0	0	0	0	0	1
1653.97	78	78	0	0	0	0	0	0	1
1654.70	104	104	0	0	0	0	0	0	1
1655.42	130	130	0	0	0	0	0	0	1
1656.55	156	156	0	0	0	0	0	0	1
1657.16	182	182	0	0	0	0	0	0	1
1657.94	208	208	0	0	0	0	0	0	1
1658.99	234	234	0	0	0	0	0	0	1
1660.17	260	260	0	0	0	0	0	0	3
1660.00	256	256	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C523 DATE: 06-16-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1650.28	0.00	0	0	0.00
1652.32	0.00	26	0	0.00
1653.20	0.00	52	0	0.00
1653.97	0.00	78	0	0.00
1654.70	0.00	104	0	0.00
1655.42	0.00	130	0	0.00
1656.55	0.00	156	0	0.00
1657.16	0.00	182	0	0.00
1657.94	0.00	208	0	0.00

1658.99	0.00	234	0	0.00
1660.17	-0.00	260	0	0.01

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 07-09-1993 FILE DATE: 06-16-1993
CURRENT TIME: 15:23:47 FILE NAME: C523

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (5.5 BY 5.5) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1650.28	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
26	1652.32	2.04	2.04	1-S2n	1.29	1.35	6.10	1.29	1.68	0.44
52	1653.20	2.92	2.92	1-S2n	1.85	1.95	7.36	1.85	2.07	0.63
78	1653.97	3.69	3.69	1-S2n	2.32	2.41	8.19	2.32	2.33	0.78
104	1654.70	4.42	4.42	1-S2n	2.74	2.82	8.80	2.74	2.52	0.90
130	1655.42	5.14	5.14	1-S2n	3.14	3.16	9.29	3.14	2.69	1.01
156	1656.55	5.90	6.27	2-M2c	3.54	3.48	9.87	3.48	2.83	1.11
182	1657.16	6.73	6.88	2-M2c	3.97	3.77	10.50	3.77	2.95	1.20
208	1657.94	7.66	7.46	2-M2c	4.50	4.02	11.19	4.02	3.06	1.28
234	1658.99	8.71	8.02	6-FFn	5.50	4.26	9.85	5.50	3.15	1.35
260	1660.17	9.89	9.11	6-FFn	5.50	4.47	10.93	5.50	3.25	1.42

El. inlet face invert 1650.28 ft El. outlet invert 1649.17 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION (FT)                      0.00
      INLET ELEVATION (FT)                 1650.28
      OUTLET STATION (FT)                   100.00
      OUTLET ELEVATION (FT)                1649.17
      NUMBER OF BARRELS                       1
      SLOPE (V-FT/H-FT)                       0.0111
      CULVERT LENGTH ALONG SLOPE (FT)       100.01

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          CIRCULAR
      BARREL DIAMETER         5.50 FT
      BARREL MATERIAL       CORRUGATED STEEL
      BARREL MANNING'S N    0.022
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   THIN EDGE PROJECTING
      INLET DEPRESSION      NONE
```

CURRENT DATE: 07-09-1993
CURRENT TIME: 15:23:47

FILE DATE: 06-16-1993
FILE NAME: C523

TAILWATER

***** USER DEFINED CHANNEL CROSS-SECTION
MAIN CHANNEL AND LT & RT OVER BANKS

FILE NAME: C523
FILE DATE: 06-16-1993

LEFT CHANNEL BOUNDARY	5
RIGHT CHANNEL BOUNDARY	13
MANNING N LEFT OVER BANK	0.055
MANNING N MAIN CHANNEL	0.045
MANNING N RIGHT OVER BAN	0.055
SLOPE OF CHANNEL (FT/FT)	0.0104

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	1000.00	1661.17
2	1024.00	1659.17
3	1065.00	1657.17
4	1102.00	1655.17
5	1141.00	1653.17
6	1187.00	1651.17
7	1242.00	1649.17
8	1270.00	1649.17
9	1295.00	1651.17
10	1340.00	1653.17
11	1369.00	1653.17
12	1388.00	1651.17
13	1448.00	1653.17
14	1470.00	1655.17
15	1504.00	1661.17

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1649.17	0.000	0.00	0.00	0.00
26.00	1649.61	0.499	0.44	1.68	0.23
52.00	1649.80	0.525	0.63	2.07	0.31
78.00	1649.95	0.541	0.78	2.33	0.37
104.00	1650.07	0.552	0.90	2.52	0.42
130.00	1650.18	0.561	1.01	2.69	0.46
156.00	1650.28	0.568	1.11	2.83	0.50
182.00	1650.37	0.574	1.20	2.95	0.53
208.00	1650.45	0.579	1.28	3.06	0.56
234.00	1650.52	0.584	1.35	3.15	0.59
260.00	1650.59	0.588	1.42	3.25	0.61

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	1.00
CREST LENGTH (FT)	1.00
OVERTOPPING CREST ELEVATION (FT)	1660.00

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*********************************************


    PROJECT:  Fountain Hills North FIS                    C523
    ENGINEER:  MG
    DATE:   9/14/1993
    TIME:  10:34.28




---------------------------------------------
    INPUT PARAMETERS
---------------------------------------------


    STARTING WSEL:      1659.20
    MAXIMUM WSEL:       1660.60
    STEP SIZE:             0.20
    BREADTH OF WEIR:       5.00
```

```
*********************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills North FIS                    C523
    DATE:   9/14/1993
    TIME:  10:34.28
*********************************************
```

POINT	ELEVATION	STATION
1	1663.50	9933.00
2	1662.10	9983.00
3	1661.73	10000.00
4	1661.55	10008.00
5	1661.00	10033.00
6	1660.00	10083.00
7	1659.40	10133.00
8	1659.20	10183.00
9	1659.20	10233.00
10	1659.30	10283.00
11	1659.40	10320.00
12	1664.00	10320.10

```
*********************************************
    WEIR COEFFICIENT TABLE
    PROJECT:  Fountain Hills North FIS                    C523
    DATE:   9/14/1993
    TIME:  10:34.28
*********************************************
```

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.6333
3	0.40	2.7667
4	0.60	2.9000
5	0.80	3.0022
6	1.00	3.0111
7	1.20	3.0200
8	1.40	3.0289

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
    PROJECT:  Fountain Hills North FIS                    C523
    DATE:   9/14/1993
    TIME:  10:34.28
*********************************************
```

ELEVATION	DISCHARGE (CFS)
1659.20	0.00
1659.40	25.19
1659.60	99.72
1659.80	216.33
1660.00	373.80
1660.20	558.64
1660.40	772.59
1660.60	1013.66

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *                                        *
 *  RUN DATE    09JUL93    TIME   13:17:57 *
 *****************************************
```

```
*************************************
 *  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
```

```
1
   09JUL93      13:17:57                                                                                    PAGE    1
```

```
                                                                                THIS RUN EXECUTED 09JUL93    13:17:57
 ************************************
  HEC-2 WATER SURFACE PROFILES

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


 T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY:  FCD#92-04
 T2      FOUNTAIN HILLS NORTH FIS STUDY by GVSCE                dtp
 T3                                                   FILE:     CH523.IH2
 T4
 T5              This model is used to develop a rating curve for culvert 523
 T6              Ditch flow to south of C523 is diverted to C548
 T7
 T8      Single X-Section Run
                 Ditch slope =     .006 ft/ft  From 200 scale map

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           .006

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1                  -1                                      -1

    SECNO       Q   CWSEL   DEPTH     VCH   CRIWS      EG      HL   SLOPE  KRATIO

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38         43          1          8         26          2          3         11          5         58


         Manning's n:          Min  Normal     Max
                  Earth      .015    .022     .030
               Pavement      .013    .016     .020
                 Desert      .040    .060     .080
               Veg Des.      .070    .100     .160

                  Earthy
    earth  desert  desert

 NC     .020       .055       .035        .1         .3
 QT       14          5         10        20         30          40          60          80         100         120
 QT      150        200        250       300        400


         X-Section 1
            this section needs to be input from 200 scale map
 X1        1          8       1009       1067
 GR     1663      999.9    1659.34       1000    1658.64       1009    1658.73       1014    1659.23       1017
 GR   1660.4       1067       1662       1177       1664       1257
```

```
1
   09JUL93      13:17:57                                                                                    PAGE    2


 X1        2                                          .2         .2         .2

 X1        3                                          .2         .2         .2

 X1        4                                          .2         .2         .2

 X1        5                                          .2         .2         .2

 X1        6                                          .2         .2         .2
```

```
1
   09JUL93      13:17:57                                                                                    PAGE    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 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .40   1659.04   1658.94       .00   1659.08       .04       .00       .00   1658.64
       5.0       2.0       3.0        .0       1.0       2.1        .0        .0        .0   1660.40
       .00      1.95      1.46       .00      .020      .035      .000      .000   1658.64   1003.87
   .005947        0.        0.        0.         0        17         7       .00     11.98   1015.85


*SECNO 2.000
     2.000       .40   1659.04   1658.94       .00   1659.08       .04       .00       .00   1658.64
       5.0       2.0       3.0        .0       1.0       2.1        .0        .0        .0   1660.40
       .00      1.94      1.46       .00      .020      .035      .000      .000   1658.64   1003.86
   .005866        0.        0.        0.         0        15         0       .00     12.00   1015.86


*SECNO 3.000
     3.000       .40   1659.04   1658.94       .00   1659.08       .04       .00       .00   1658.64
       5.0       2.0       3.0        .0       1.0       2.1        .0        .0        .0   1660.40
       .00      1.93      1.45       .00      .020      .035      .000      .000   1658.64   1003.84
   .005754        0.        0.        0.         0        15         0       .00     12.03   1015.87


*SECNO 4.000
     4.000       .40   1659.04   1658.94       .00   1659.09       .04       .00       .00   1658.64
       5.0       2.0       3.0        .0       1.0       2.1        .0        .0        .0   1660.40
       .00      1.92      1.44       .00      .020      .035      .000      .000   1658.64   1003.81
   .005645        0.        0.        0.         0        15         0       .00     12.07   1015.88


*SECNO 5.000
     5.000       .41   1659.05   1658.94       .00   1659.09       .04       .00       .00   1658.64
       5.0       2.0       3.0        .0       1.1       2.1        .0        .0        .0   1660.40
       .00      1.90      1.43       .00      .020      .035      .000      .000   1658.64   1003.79
   .005538        0.        0.        0.         0        15         0       .00     12.10   1015.89


*SECNO 6.000
     6.000       .41   1659.05   1658.94       .00   1659.09       .04       .00       .00   1658.64
       5.0       2.0       3.0        .0       1.1       2.1        .0        .0        .0   1660.40
       .00      1.89      1.42       .00      .020      .035      .000      .000   1658.64   1003.77
   .005434        0.        0.        0.         0        19         0       .00     12.13   1015.90

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T3            Q2

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           .006

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      2                 -1                                      -1

1
   09JUL93      13:17:57                                                                          PAGE    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 2

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .54   1659.18   1659.07       .00   1659.25       .07       .00       .00   1658.64
      10.0       4.5       5.5        .0       1.9       3.1        .0        .0        .0   1660.40
       .00      2.40      1.78       .00      .020      .035      .000      .000   1658.64   1002.06
   .006026        0.        0.        0.         0        21         8       .00     14.64   1016.70


*SECNO 2.000
     2.000       .54   1659.18   1659.07       .00   1659.25       .07       .00       .00   1658.64
      10.0       4.5       5.5        .0       1.9       3.1        .0        .0        .0   1660.40
       .00      2.40      1.78       .00      .020      .035      .000      .000   1658.64   1002.04
   .005964        0.        0.        0.         0        15         0       .00     14.66   1016.71


*SECNO 3.000
     3.000       .54   1659.18   1659.07       .00   1659.25       .07       .00       .00   1658.64
      10.0       4.5       5.5        .0       1.9       3.1        .0        .0        .0   1660.40
       .00      2.38      1.77       .00      .020      .035      .000      .000   1658.64   1002.02
   .005885        0.        0.        0.         0        15         0       .00     14.69   1016.72


*SECNO 4.000
     4.000       .55   1659.19   1659.07       .00   1659.25       .07       .00       .00   1658.64
      10.0       4.5       5.5        .0       1.9       3.1        .0        .0        .0   1660.40
       .00      2.37      1.76       .00      .020      .035      .000      .000   1658.64   1002.00
   .005789        0.        0.        0.         0        15         0       .00     14.73   1016.73


*SECNO 5.000
     5.000       .55   1659.19   1659.07       .00   1659.25       .06       .00       .00   1658.64
      10.0       4.5       5.5        .0       1.9       3.1        .0        .0        .0   1660.40
```

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      .00      2.36      1.75       .00      .020      .035      .000      .000   1658.64   1001.97
  .005695        0.        0.        0.         0        15         0       .00     14.77   1016.74

*SECNO 6.000
     6.000       .55   1659.19   1659.07       .00   1659.25       .06       .00       .00   1658.64
      10.0       4.5       5.5        .0       1.9       3.1        .0        .0        .0   1660.40
      .00      2.34      1.74       .00      .020      .035      .000      .000   1658.64   1001.95
  .005609        0.        0.        0.         0        19         0       .00     14.80   1016.75
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T3          Q3
J1  ICHECK  INQ     NINV    IDIR    STRT    METRIC  HVINS   Q       WSEL    FQ
            4                           .006
J2  NPROF   IPLOT   PRFVS   XSECV   XSECH   FN      ALLDC   IBW     CHNIM   ITRACE
    3               -1                              -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

*PROF 3
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .75   1659.39   1659.22       .00   1659.49       .10       .00       .00   1658.64
      20.0      11.2       8.8        .0       3.6       5.3        .0        .0        .0   1660.40
      .00      3.12      1.66       .00      .020      .035      .000      .000   1658.64   1000.00
  .006036        0.        0.        0.         0        16         9       .00     23.83   1023.83

*SECNO 2.000
     2.000       .75   1659.39   1659.23       .00   1659.49       .10       .00       .00   1658.64
      20.0      11.2       8.8        .0       3.6       5.3        .0        .0        .0   1660.40
      .00      3.11      1.65       .00      .020      .035      .000      .000   1658.64   1000.00
  .005984        0.        0.        0.         0        15         0       .00     23.89   1023.89

*SECNO 3.000
     3.000       .75   1659.39   1659.23       .00   1659.50       .10       .00       .00   1658.64
      20.0      11.2       8.8        .0       3.6       5.3        .0        .0        .0   1660.40
      .00      3.10      1.64       .00      .020      .035      .000      .000   1658.64   1000.00
  .005913        0.        0.        0.         0        15         0       .00     23.96   1023.96

*SECNO 4.000
     4.000       .76   1659.40   1659.22       .00   1659.50       .10       .00       .00   1658.64
      20.0      11.2       8.8        .0       3.6       5.4        .0        .0        .0   1660.40
      .00      3.09      1.63       .00      .020      .035      .000      .000   1658.64   1000.00
  .005833        0.        0.        0.         0        22         0       .00     24.04   1024.04

*SECNO 5.000
     5.000       .76   1659.40   1659.22       .00   1659.50       .10       .00       .00   1658.64
      20.0      11.3       8.7        .0       3.7       5.4        .0        .0        .0   1660.40
      .00      3.07      1.62       .00      .020      .035      .000      .000   1658.64   1000.00
  .005749        0.        0.        0.         0        17         0       .00     24.13   1024.13

*SECNO 6.000
     6.000       .76   1659.40   1659.23       .00   1659.50       .10       .00       .00   1658.64
      20.0      11.3       8.7        .0       3.7       5.4        .0        .0        .0   1660.40
      .00      3.06      1.61       .00      .020      .035      .000      .000   1658.64   1000.00
  .005672        0.        0.        0.         0        17         0       .00     24.22   1024.21
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T3          Q4
J1  ICHECK  INQ     NINV    IDIR    STRT    METRIC  HVINS   Q       WSEL    FQ
            5                           .006
J2  NPROF   IPLOT   PRFVS   XSECV   XSECH   FN      ALLDC   IBW     CHNIM   ITRACE
    4               -1                              -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

*PROF 4
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CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .87   1659.51   1659.38       .00   1659.65       .14       .00       .00   1658.64
      30.0      17.4      12.6        .0       4.7       7.5        .0        .0        .0   1660.40
       .00      3.68      1.69       .00      .020      .035      .000      .000   1658.64   1000.00
   .005983        0.        0.        0.         0        20        10       .00     29.14   1029.13

*SECNO 2.000
     2.000       .88   1659.52   1659.38       .00   1659.66       .14       .00       .00   1658.64
      30.0      17.4      12.6        .0       4.7       7.5        .0        .0        .0   1660.40
       .00      3.67      1.69       .00      .020      .035      .000      .000   1658.64   1000.00
   .005938        0.        0.        0.         0        11         0       .00     29.19   1029.19

*SECNO 3.000
     3.000       .88   1659.52   1659.37       .00   1659.66       .14       .00       .00   1658.64
      30.0      17.4      12.6        .0       4.7       7.5        .0        .0        .0   1660.40
       .00      3.66      1.68       .00      .020      .035      .000      .000   1658.64   1000.00
   .005872        0.        0.        0.         0        11         0       .00     29.27   1029.26

*SECNO 4.000
     4.000       .88   1659.52   1659.37       .00   1659.66       .14       .00       .00   1658.64
      30.0      17.4      12.6        .0       4.8       7.6        .0        .0        .0   1660.40
       .00      3.64      1.67       .00      .020      .035      .000      .000   1658.64   1000.00
   .005784        0.        0.        0.         0        11         0       .00     29.37   1029.37

*SECNO 5.000
     5.000       .88   1659.52   1659.37       .00   1659.66       .14       .00       .00   1658.64
      30.0      17.4      12.6        .0       4.8       7.6        .0        .0        .0   1660.40
       .00      3.62      1.66       .00      .020      .035      .000      .000   1658.64    999.99
   .005689        0.        0.        0.         0        11         0       .00     29.49   1029.48

*SECNO 6.000
     6.000       .89   1659.53   1659.37       .00   1659.66       .13       .00       .00   1658.64
      30.0      17.4      12.6        .0       4.8       7.7        .0        .0        .0   1660.40
       .00      3.61      1.64       .00      .020      .035      .000      .000   1658.64    999.99
   .005596        0.        0.        0.         0        11         0       .00     29.60   1029.60

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T3            Q5

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                6                           .006

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     5                  -1                                      -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

*PROF 5

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .97   1659.61   1659.51       .00   1659.78       .17       .00       .00   1658.64
      40.0      22.9      17.1        .0       5.6       9.7        .0        .0        .0   1660.40
       .00      4.09      1.77       .00      .020      .035      .000      .000   1658.64    999.99
   .005954        0.        0.        0.         0        18        10       .00     33.36   1033.35

*SECNO 2.000
     2.000       .97   1659.61   1659.51       .00   1659.78       .17       .00       .00   1658.64
      40.0      22.9      17.1        .0       5.6       9.7        .0        .0        .0   1660.40
       .00      4.08      1.76       .00      .020      .035      .000      .000   1658.64    999.99
   .005913        0.        0.        0.         0        11         0       .00     33.41   1033.41

*SECNO 3.000
     3.000       .98   1659.62   1659.51       .00   1659.78       .17       .00       .00   1658.64
      40.0      22.9      17.1        .0       5.6       9.7        .0        .0        .0   1660.40
       .00      4.07      1.75       .00      .020      .035      .000      .000   1658.64    999.99
   .005849        0.        0.        0.         0        11         0       .00     33.50   1033.49

*SECNO 4.000
     4.000       .98   1659.62   1659.51       .00   1659.79       .17       .00       .00   1658.64
      40.0      22.9      17.1        .0       5.7       9.8        .0        .0        .0   1660.40
       .00      4.05      1.74       .00      .020      .035      .000      .000   1658.64    999.99
   .005767        0.        0.        0.         0        11         0       .00     33.61   1033.60

*SECNO 5.000
     5.000       .98   1659.62   1659.51       .00   1659.79       .16       .00       .00   1658.64
      40.0      22.9      17.1        .0       5.7       9.9        .0        .0        .0   1660.40
       .00      4.03      1.73       .00      .020      .035      .000      .000   1658.64    999.99
   .005670        0.        0.        0.         0        11         0       .00     33.74   1033.73
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*SECNO 6.000
     6.000       .99   1659.63   1659.51       .00   1659.79       .16       .00       .00   1658.64
      40.0      22.9      17.1        .0       5.7      10.0        .0        .0        .0   1660.40
       .00      4.00      1.72       .00      .020      .035      .000      .000   1658.64    999.99
   .005576        0.        0.        0.         0        11         0       .00     33.87   1033.86
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T3          Q6

J1  ICHECK  INQ     NINV    IDIR    STRT    METRIC  HVINS   Q       WSEL    FQ

            7                       .006

J2  NPROF   IPLOT   PRFVS   XSECV   XSECH   FN      ALLDC   IBW     CHNIM   ITRACE

    6               -1                              -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

*PROF 6

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      1.13   1659.77   1659.70       .00   1659.98       .22       .00       .00   1658.64
      60.0      33.0      27.0        .0       7.0      14.0        .0        .0        .0   1660.40
       .00      4.71      1.93       .00      .020      .035      .000      .000   1658.64    999.99
   .005991        0.        0.        0.         0        11        10       .00     40.03   1040.02

*SECNO 2.000
     2.000      1.13   1659.77   1659.70       .00   1659.99       .21       .00       .00   1658.64
      60.0      33.0      27.0        .0       7.0      14.0        .0        .0        .0   1660.40
       .00      4.70      1.93       .00      .020      .035      .000      .000   1658.64    999.99
   .005956        0.        0.        0.         0        11         0       .00     40.08   1040.07

*SECNO 3.000
     3.000      1.13   1659.77   1659.70       .00   1659.99       .21       .00       .00   1658.64
      60.0      33.0      27.0        .0       7.0      14.1        .0        .0        .0   1660.40
       .00      4.68      1.92       .00      .020      .035      .000      .000   1658.64    999.99
   .005894        0.        0.        0.         0        11         0       .00     40.18   1040.17

*SECNO 4.000
     4.000      1.14   1659.78   1659.70       .00   1659.99       .21       .00       .00   1658.64
      60.0      32.9      27.1        .0       7.1      14.2        .0        .0        .0   1660.40
       .00      4.66      1.91       .00      .020      .035      .000      .000   1658.64    999.99
   .005809        0.        0.        0.         0        11         0       .00     40.31   1040.30

*SECNO 5.000
     5.000      1.14   1659.78   1659.70       .00   1659.99       .21       .00       .00   1658.64
      60.0      32.9      27.1        .0       7.1      14.3        .0        .0        .0   1660.40
       .00      4.63      1.90       .00      .020      .035      .000      .000   1658.64    999.99
   .005712        0.        0.        0.         0        11         0       .00     40.46   1040.45

*SECNO 6.000
     6.000      1.15   1659.79   1659.70       .00   1659.99       .21       .00       .00   1658.64
      60.0      32.9      27.1        .0       7.1      14.4        .0        .0        .0   1660.40
       .00      4.60      1.88       .00      .020      .035      .000      .000   1658.64    999.99
   .005608        0.        0.        0.         0        11         0       .00     40.63   1040.61
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T3          Q7

J1  ICHECK  INQ     NINV    IDIR    STRT    METRIC  HVINS   Q       WSEL    FQ

            8                       .006

J2  NPROF   IPLOT   PRFVS   XSECV   XSECH   FN      ALLDC   IBW     CHNIM   ITRACE

    7               -1                              -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

*PROF 7

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
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CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      1.25   1659.89   1659.84       .00   1660.14       .25       .00       .00   1658.64
      80.0      42.2      37.8        .0       8.1      18.1        .0        .0        .0   1660.40
       .00      5.19      2.09       .00      .020      .035      .000      .000   1658.64    999.98
   .006097        0.        0.        0.         0        11         9       .00     45.30   1045.29

*SECNO 2.000
     2.000      1.25   1659.89   1659.84       .00   1660.15       .25       .00       .00   1658.64
      80.0      42.2      37.8        .0       8.1      18.2        .0        .0        .0   1660.40
       .00      5.18      2.08       .00      .020      .035      .000      .000   1658.64    999.98
   .006065        0.        0.        0.         0         8         0       .00     45.36   1045.34

*SECNO 3.000
     3.000      1.26   1659.90   1659.84       .00   1660.15       .25       .00       .00   1658.64
      80.0      42.1      37.9        .0       8.2      18.3        .0        .0        .0   1660.40
       .00      5.17      2.07       .00      .020      .035      .000      .000   1658.64    999.98
   .006005        0.        0.        0.         0        11         0       .00     45.46   1045.44

*SECNO 4.000
     4.000      1.26   1659.90   1659.83       .00   1660.15       .25       .00       .00   1658.64
      80.0      42.1      37.9        .0       8.2      18.4        .0        .0        .0   1660.40
       .00      5.14      2.06       .00      .020      .035      .000      .000   1658.64    999.98
   .005922        0.        0.        0.         0        11         0       .00     45.60   1045.58

*SECNO 5.000
     5.000      1.27   1659.91   1659.83       .00   1660.15       .24       .00       .00   1658.64
      80.0      42.0      38.0        .0       8.2      18.5        .0        .0        .0   1660.40
       .00      5.11      2.05       .00      .020      .035      .000      .000   1658.64    999.98
   .005821        0.        0.        0.         0        11         0       .00     45.77   1045.75

*SECNO 6.000
     6.000      1.27   1659.91   1659.84       .00   1660.15       .24       .00       .00   1658.64
      80.0      41.9      38.1        .0       8.3      18.7        .0        .0        .0   1660.40
       .00      5.08      2.03       .00      .020      .035      .000      .000   1658.64    999.98
   .005705        0.        0.        0.         0        11         0       .00     45.97   1045.96

1
   09JUL93      13:17:57                                                                          PAGE   16

T3            Q8

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                9                           .006

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     8                  -1                                      -1

1
   09JUL93      13:17:57                                                                          PAGE   17

    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 8

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      1.36   1660.00   1659.95       .00   1660.28       .28       .00       .00   1658.64
      100.0     50.6      49.4        .0       9.1      22.4        .0        .0        .0   1660.40
       .00      5.55      2.21       .00      .020      .035      .000      .000   1658.64    999.98
   .006056        0.        0.        0.         0        14         9       .00     50.03   1050.01

*SECNO 2.000
     2.000      1.36   1660.00   1659.96       .00   1660.28       .28       .00       .00   1658.64
      100.0     50.5      49.5        .0       9.1      22.5        .0        .0        .0   1660.40
       .00      5.54      2.20       .00      .020      .035      .000      .000   1658.64    999.98
   .006027        0.        0.        0.         0         8         0       .00     50.08   1050.06

*SECNO 3.000
     3.000      1.37   1660.01   1659.96       .00   1660.28       .28       .00       .00   1658.64
      100.0     50.5      49.5        .0       9.2      22.6        .0        .0        .0   1660.40
       .00      5.52      2.19       .00      .020      .035      .000      .000   1658.64    999.98
   .005970        0.        0.        0.         0         8         0       .00     50.18   1050.17

*SECNO 4.000
     4.000      1.37   1660.01   1659.96       .00   1660.29       .27       .00       .00   1658.64
      100.0     50.4      49.6        .0       9.2      22.7        .0        .0        .0   1660.40
       .00      5.49      2.18       .00      .020      .035      .000      .000   1658.64    999.98
   .005891        0.        0.        0.         0         8         0       .00     50.33   1050.31

*SECNO 5.000
     5.000      1.38   1660.02   1659.95       .00   1660.29       .27       .00       .00   1658.64
      100.0     50.3      49.7        .0       9.2      22.9        .0        .0        .0   1660.40
       .00      5.46      2.17       .00      .020      .035      .000      .000   1658.64    999.98
   .005791        0.        0.        0.         0        11         0       .00     50.52   1050.50
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*SECNO 6.000
     6.000      1.38   1660.02   1659.95       .00   1660.29       .27       .00       .00   1658.64
     100.0      50.2      49.8        .0       9.3      23.1        .0        .0        .0   1660.40
       .00      5.42      2.15       .00      .020      .035      .000      .000   1658.64    999.98
   .005676        0.        0.        0.         0        11         0       .00     50.74   1050.72

1
   09JUL93      13:17:57                                                                          PAGE   18

T3            Q9

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              10                          .006

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     9                  -1                                      -1

1
   09JUL93      13:17:57                                                                          PAGE   19

    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 9

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      1.46   1660.10   1660.05       .00   1660.40       .30       .00       .00   1658.64
     120.0      58.4      61.6        .0      10.0      26.6        .0        .0        .0   1660.40
       .00      5.84      2.31       .00      .020      .035      .000      .000   1658.64    999.98
   .006017        0.        0.        0.         0        14         9       .00     54.22   1054.20

*SECNO 2.000
     2.000      1.46   1660.10   1660.06       .00   1660.40       .30       .00       .00   1658.64
     120.0      58.4      61.6        .0      10.0      26.7        .0        .0        .0   1660.40
       .00      5.83      2.31       .00      .020      .035      .000      .000   1658.64    999.98
   .005991        0.        0.        0.         0         8         0       .00     54.27   1054.25

*SECNO 3.000
     3.000      1.47   1660.11   1660.06       .00   1660.40       .30       .00       .00   1658.64
     120.0      58.3      61.7        .0      10.0      26.8        .0        .0        .0   1660.40
       .00      5.81      2.30       .00      .020      .035      .000      .000   1658.64    999.98
   .005938        0.        0.        0.         0         8         0       .00     54.38   1054.36

*SECNO 4.000
     4.000      1.47   1660.11   1660.06       .00   1660.41       .29       .00       .00   1658.64
     120.0      58.2      61.8        .0      10.1      27.0        .0        .0        .0   1660.40
       .00      5.79      2.29       .00      .020      .035      .000      .000   1658.64    999.98
   .005864        0.        0.        0.         0         8         0       .00     54.52   1054.50

*SECNO 5.000
     5.000      1.48   1660.12   1660.06       .00   1660.41       .29       .00       .00   1658.64
     120.0      58.1      61.9        .0      10.1      27.2        .0        .0        .0   1660.40
       .00      5.75      2.28       .00      .020      .035      .000      .000   1658.64    999.98
   .005771        0.        0.        0.         0         8         0       .00     54.71   1054.69

*SECNO 6.000
     6.000      1.48   1660.12   1660.05       .00   1660.41       .29       .00       .00   1658.64
     120.0      58.0      62.0        .0      10.2      27.4        .0        .0        .0   1660.40
       .00      5.72      2.26       .00      .020      .035      .000      .000   1658.64    999.98
   .005663        0.        0.        0.         0        11         0       .00     54.93   1054.91

1
   09JUL93      13:17:57                                                                          PAGE   20

T3           Q10

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              11                          .006

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     10                 -1                                      -1

1
   09JUL93      13:17:57                                                                          PAGE   21

    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

*PROF10

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
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*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      1.58   1660.22   1660.19       .00   1660.56       .33       .00       .00   1658.64
     150.0      69.6      80.4        .0      11.1      32.5        .0        .0        .0   1660.40
       .00      6.26      2.47       .00      .020      .035      .000      .000   1658.64    999.98
   .006113        0.        0.        0.         0        20         8       .00     59.48   1059.45

*SECNO 2.000
     2.000      1.59   1660.23   1660.19       .00   1660.56       .33       .00       .00   1658.64
     150.0      69.5      80.5        .0      11.1      32.6        .0        .0        .0   1660.40
       .00      6.25      2.47       .00      .020      .035      .000      .000   1658.64    999.98
   .006088        0.        0.        0.         0         8         0       .00     59.53   1059.50

*SECNO 3.000
     3.000      1.59   1660.23   1660.19       .00   1660.56       .33       .00       .00   1658.64
     150.0      69.5      80.5        .0      11.1      32.7        .0        .0        .0   1660.40
       .00      6.23      2.46       .00      .020      .035      .000      .000   1658.64    999.98
   .006039        0.        0.        0.         0         8         0       .00     59.63   1059.61

*SECNO 4.000
     4.000      1.59   1660.23   1660.19       .00   1660.56       .33       .00       .00   1658.64
     150.0      69.4      80.6        .0      11.2      32.9        .0        .0        .0   1660.40
       .00      6.20      2.45       .00      .020      .035      .000      .000   1658.64    999.98
   .005965        0.        0.        0.         0         8         0       .00     59.79   1059.76

*SECNO 5.000
     5.000      1.60   1660.24   1660.19       .00   1660.56       .32       .00       .00   1658.64
     150.0      69.2      80.8        .0      11.2      33.1        .0        .0        .0   1660.40
       .00      6.17      2.44       .00      .020      .035      .000      .000   1658.64    999.98
   .005873        0.        0.        0.         0         8         0       .00     59.99   1059.96

*SECNO 6.000
     6.000      1.61   1660.25   1660.19       .00   1660.56       .32       .00       .00   1658.64
     150.0      69.1      80.9        .0      11.3      33.4        .0        .0        .0   1660.40
       .00      6.13      2.42       .00      .020      .035      .000      .000   1658.64    999.98
   .005762        0.        0.        0.         0         8         0       .00     60.23   1060.21

1
   09JUL93      13:17:57                                                                          PAGE   22

T3          Q11

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              12                            .006

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    11                  -1                                      -1

1
   09JUL93      13:17:57                                                                          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

*PROF11

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      1.78   1660.42   1660.42       .00   1660.77       .36       .00       .00   1658.64
     200.0      85.6     114.4        .0      12.8      43.0        .0        .0        .0   1660.40
       .00      6.67      2.66       .02      .020      .035      .055      .000   1658.64    999.97
   .005867        0.        0.        0.         0        12         8       .00     68.09   1068.06

*SECNO 2.000
     2.000      1.81   1660.45   1660.43       .00   1660.78       .33       .00       .00   1658.64
     200.0      84.0     115.9        .0      13.1      44.6        .1        .0        .0   1660.40
       .00      6.41      2.60       .02      .020      .035      .055      .000   1658.64    999.97
   .005309        0.        0.        0.         0         5         0       .00     70.07   1070.04

*SECNO 3.000
     3.000      1.82   1660.46   1660.41       .00   1660.78       .32       .00       .00   1658.64
     200.0      83.8     116.2        .0      13.2      45.0        .1        .0        .0   1660.40
       .00      6.37      2.58       .02      .020      .035      .055      .000   1658.64    999.97
   .005211        0.        0.        0.         0         5         0       .00     70.45   1070.42

*SECNO 4.000
     4.000      1.82   1660.46   1660.44       .00   1660.78       .32       .00       .00   1658.64
     200.0      83.4     116.6        .0      13.2      45.4        .1        .0        .0   1660.40
       .00      6.31      2.57       .18      .020      .035      .055      .000   1658.64    999.97
   .005093        0.        0.        0.         0         6         0       .00     70.91   1070.88

*SECNO 5.000
     5.000      1.83   1660.47   1660.44       .00   1660.78       .31       .00       .00   1658.64
     200.0      83.0     117.0        .0      13.3      45.8        .1        .0        .0   1660.40
       .00      6.25      2.55       .19      .020      .035      .055      .000   1658.64    999.97
   .004960        0.        0.        0.         0         6         0       .00     71.45   1071.41
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1
   09JUL93      13:17:57                                                                                                                PAGE   24

    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 6.000
      6.000      1.84    1660.48    1660.43        .00    1660.78        .30        .00        .00    1658.64
      200.0      82.6      117.4         .0       13.4       46.3         .2         .0         .0    1660.40
        .00      6.18       2.53        .21       .020       .035       .055       .000    1658.64     999.97
   .004818        0.         0.         0.          0          8          0        .00      72.04    1072.01

1
   09JUL93      13:17:57                                                                                                                PAGE   25

 T3           Q12
 J1  ICHECK   INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                13                               .006

 J2  NPROF    IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

      12                  -1                                           -1

1
   09JUL93      13:17:57                                                                                                                PAGE   26

    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

 *PROF12

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

 CCHV=      .100 CEHV=      .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
      1.000      1.90    1660.54    1660.54        .00    1660.93        .39        .00        .00    1658.64
      250.0      98.9      150.8         .3       14.0       50.5         .7         .0         .0    1660.40
        .00      7.06       2.99        .36       .020       .035       .055       .000    1658.64     999.97
   .005969        0.         0.         0.          0         15          7        .00      76.97    1076.94

 *SECNO 2.000
      2.000      1.91    1660.55    1660.54        .00    1660.94        .39        .00        .00    1658.64
      250.0      98.9      150.9         .3       14.0       50.5         .7         .0         .0    1660.40
        .00      7.05       2.98        .36       .020       .035       .055       .000    1658.64     999.97
   .005946        0.         0.         0.          0          5          0        .00      77.05    1077.02

 *SECNO 3.000
      3.000      1.91    1660.55    1660.54        .00    1660.94        .39        .00        .00    1658.64
      250.0      98.7      151.0         .3       14.0       50.7         .8         .0         .0    1660.40
        .00      7.03       2.98        .37       .020       .035       .055       .000    1658.64     999.97
   .005898        0.         0.         0.          0          5          0        .00      77.23    1077.20

 *SECNO 4.000
      4.000      1.92    1660.56    1660.54        .00    1660.94        .38        .00        .00    1658.64
      250.0      98.5      151.2         .3       14.1       50.9         .8         .0         .0    1660.40
        .00      6.99       2.97        .37       .020       .035       .055       .000    1658.64     999.97
   .005822        0.         0.         0.          0          5          0        .00      77.52    1077.48

 *SECNO 5.000
      5.000      1.92    1660.56    1660.53        .00    1660.94        .38        .00        .00    1658.64
      250.0      98.2      151.5         .3       14.1       51.3         .9         .0         .0    1660.40
        .00      6.95       2.96        .38       .020       .035       .055       .000    1658.64     999.97
   .005719        0.         0.         0.          0          5          0        .00      77.91    1077.88

 *SECNO 6.000
      6.000      1.93    1660.57    1660.53        .00    1660.94        .37        .00        .00    1658.64
      250.0      97.8      151.8         .4       14.2       51.7         .9         .0         .0    1660.40
        .00      6.89       2.94        .38       .020       .035       .055       .000    1658.64     999.97
   .005593        0.         0.         0.          0          5          0        .00      78.41    1078.37

1
   09JUL93      13:17:57                                                                                                                PAGE   27

 T3           Q13
 J1  ICHECK   INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                14                               .006

 J2  NPROF    IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

      13                  -1                                           -1

1
   09JUL93      13:17:57                                                                                                                PAGE   28

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
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    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

*PROF13

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      2.02   1660.66   1660.65        .00   1661.08        .42        .00        .00   1658.64
     300.0     111.7     187.1        1.2       15.0       57.0        2.3         .0         .0   1660.40
       .00      7.43      3.28        .54       .020       .035       .055       .000    1658.64     999.96
   .006108        0.        0.         0.          0         15          6        .00      84.76    1084.72

*SECNO 2.000
     2.000      2.02   1660.66   1660.65        .00   1661.08        .42        .00        .00   1658.64
     300.0     111.6     187.1        1.2       15.0       57.1        2.3         .0         .0   1660.40
       .00      7.42      3.28        .54       .020       .035       .055       .000    1658.64     999.96
   .006086        0.        0.         0.          0          5          0        .00      84.84    1084.81

*SECNO 3.000
     3.000      2.02   1660.66   1660.65        .00   1661.08        .42        .00        .00   1658.64
     300.0     111.5     187.2        1.3       15.1       57.3        2.4         .0         .0   1660.40
       .00      7.40      3.27        .54       .020       .035       .055       .000    1658.64     999.96
   .006041        0.        0.         0.          0          5          0        .00      85.02    1084.98

*SECNO 4.000
     4.000      2.03   1660.67   1660.64        .00   1661.09        .42        .00        .00   1658.64
     300.0     111.3     187.4        1.3       15.1       57.5        2.4         .0         .0   1660.40
       .00      7.37      3.26        .54       .020       .035       .055       .000    1658.64     999.96
   .005972        0.        0.         0.          0          5          0        .00      85.30    1085.26

*SECNO 5.000
     5.000      2.04   1660.68   1660.64        .00   1661.09        .41        .00        .00   1658.64
     300.0     111.0     187.7        1.4       15.2       57.8        2.5         .0         .0   1660.40
       .00      7.32      3.25        .55       .020       .035       .055       .000    1658.64     999.96
   .005876        0.        0.         0.          0          5          0        .00      85.68    1085.65

*SECNO 6.000
     6.000      2.05   1660.69   1660.64        .00   1661.09        .40        .00        .00   1658.64
     300.0     110.6     188.0        1.5       15.2       58.2        2.7         .0         .0   1660.40
       .00      7.26      3.23        .55       .020       .035       .055       .000    1658.64     999.96
   .005756        0.        0.         0.          0          5          0        .00      86.18    1086.14

1
   09JUL93      13:17:57                                                                                PAGE   29

T3           Q14

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                15                                .006

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     14                    -1                                          -1


1
   09JUL93      13:17:57                                                                                PAGE   30

    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

*PROF14

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      2.24   1660.88   1660.86        .00   1661.34        .46        .00        .00   1658.64
     400.0     134.2     259.5        6.3       17.0       69.8        7.8         .0         .0   1660.40
       .00      7.88      3.72        .81       .020       .035       .055       .000    1658.64     999.96
   .005997        0.        0.         0.          0          5          5        .00      99.89    1099.85

*SECNO 2.000
     2.000      2.24   1660.88   1660.84        .00   1661.34        .46        .00        .00   1658.64
     400.0     134.1     259.5        6.4       17.0       69.9        7.9         .0         .0   1660.40
       .00      7.87      3.71        .81       .020       .035       .055       .000    1658.64     999.96
   .005979        0.        0.         0.          0          5          0        .00      99.97    1099.93

*SECNO 3.000
     3.000      2.24   1660.88   1660.84        .00   1661.34        .46        .00        .00   1658.64
     400.0     134.0     259.6        6.4       17.1       70.0        8.0         .0         .0   1660.40
       .00      7.85      3.71        .81       .020       .035       .055       .000    1658.64     999.96
   .005940        0.        0.         0.          0          5          0        .00     100.15    1100.11

*SECNO 4.000
     4.000      2.25   1660.89   1660.83        .00   1661.35        .46        .00        .00   1658.64
     400.0     133.7     259.7        6.5       17.1       70.2        8.1         .0         .0   1660.40
```

.00	7.83	3.70	.81	.020	.035	.055	.000	1658.64	999.96
.005884	0.	0.	0.	0	5	0	.00	100.41	1100.37

*SECNO 5.000

5.000	2.26	1660.90	1660.85	.00	1661.35	.45	.00	.00	1658.64
400.0	133.4	259.9	6.7	17.1	70.5	8.3	.0	.0	1660.40
.00	7.79	3.68	.81	.020	.035	.055	.000	1658.64	999.96
.005809	0.	0.	0.	0	8	0	.00	100.76	1100.72

*SECNO 6.000

6.000	2.26	1660.90	1660.86	.00	1661.35	.45	.00	.00	1658.64
400.0	133.1	260.1	6.8	17.2	70.9	8.5	.0	.0	1660.40
.00	7.74	3.67	.81	.020	.035	.055	.000	1658.64	999.96
.005718	0.	0.	0.	0	8	0	.00	101.20	1101.16

THIS RUN EXECUTED 09JUL93 13:18:29

****
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

SUMMARY PRINTOUT

	SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
	1.000	5.00	1659.04	.40	1.46	1658.94	1659.08	.00	59.47	.00
	1.000	10.00	1659.18	.54	1.78	1659.07	1659.25	.00	60.26	.00
	1.000	20.00	1659.39	.75	1.66	1659.22	1659.49	.00	60.36	.00
	1.000	30.00	1659.51	.87	1.69	1659.38	1659.65	.00	59.83	.00
	1.000	40.00	1659.61	.97	1.77	1659.51	1659.78	.00	59.54	.00
	1.000	60.00	1659.77	1.13	1.93	1659.70	1659.98	.00	59.91	.00
	1.000	80.00	1659.89	1.25	2.09	1659.84	1660.14	.00	60.97	.00
	1.000	100.00	1660.00	1.36	2.21	1659.95	1660.28	.00	60.56	.00
	1.000	120.00	1660.10	1.46	2.31	1660.05	1660.40	.00	60.17	.00
	1.000	150.00	1660.22	1.58	2.47	1660.19	1660.56	.00	61.13	.00
*	1.000	200.00	1660.42	1.78	2.66	1660.42	1660.77	.00	58.67	.00
	1.000	250.00	1660.54	1.90	2.99	1660.54	1660.93	.00	59.69	.00
	1.000	300.00	1660.66	2.02	3.28	1660.65	1661.08	.00	61.08	.00
	1.000	400.00	1660.88	2.24	3.72	1660.86	1661.34	.00	59.97	.00
	2.000	5.00	1659.04	.40	1.46	1658.94	1659.08	.00	58.66	1.01
	2.000	10.00	1659.18	.54	1.78	1659.07	1659.25	.00	59.64	1.01
	2.000	20.00	1659.39	.75	1.65	1659.23	1659.49	.00	59.84	1.00
	2.000	30.00	1659.52	.88	1.69	1659.38	1659.66	.00	59.38	1.00
	2.000	40.00	1659.61	.97	1.76	1659.51	1659.78	.00	59.13	1.00
	2.000	60.00	1659.77	1.13	1.93	1659.70	1659.99	.00	59.56	1.00
	2.000	80.00	1659.89	1.25	2.08	1659.84	1660.15	.00	60.65	1.00
	2.000	100.00	1660.00	1.36	2.20	1659.96	1660.28	.00	60.27	1.00
	2.000	120.00	1660.10	1.46	2.31	1660.06	1660.40	.00	59.91	1.00
	2.000	150.00	1660.23	1.59	2.47	1660.19	1660.56	.00	60.88	1.00
	2.000	200.00	1660.45	1.81	2.60	1660.43	1660.78	.00	53.09	1.05
	2.000	250.00	1660.55	1.91	2.98	1660.54	1660.94	.00	59.46	1.00
	2.000	300.00	1660.66	2.02	3.28	1660.65	1661.08	.00	60.86	1.00
	2.000	400.00	1660.88	2.24	3.71	1660.84	1661.34	.00	59.79	1.00

SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
3.000	5.00	1659.04	.40	1.45	1658.94	1659.08	.00	57.54	1.01
3.000	10.00	1659.18	.54	1.77	1659.07	1659.25	.00	58.85	1.01
3.000	20.00	1659.39	.75	1.64	1659.23	1659.50	.00	59.13	1.01
3.000	30.00	1659.52	.88	1.68	1659.37	1659.66	.00	58.72	1.01
3.000	40.00	1659.62	.98	1.75	1659.51	1659.78	.00	58.49	1.01
3.000	60.00	1659.77	1.13	1.92	1659.70	1659.99	.00	58.94	1.01
3.000	80.00	1659.90	1.26	2.07	1659.84	1660.15	.00	60.05	1.00
3.000	100.00	1660.01	1.37	2.19	1659.96	1660.28	.00	59.70	1.00
3.000	120.00	1660.11	1.47	2.30	1660.06	1660.40	.00	59.38	1.00
3.000	150.00	1660.23	1.59	2.46	1660.19	1660.56	.00	60.39	1.00
3.000	200.00	1660.46	1.82	2.58	1660.41	1660.78	.00	52.11	1.01
3.000	250.00	1660.55	1.91	2.98	1660.54	1660.94	.00	58.98	1.00
3.000	300.00	1660.66	2.02	3.27	1660.65	1661.08	.00	60.41	1.00
3.000	400.00	1660.88	2.24	3.71	1660.84	1661.34	.00	59.40	1.00
4.000	5.00	1659.04	.40	1.44	1658.94	1659.09	.00	56.45	1.01
4.000	10.00	1659.19	.55	1.76	1659.07	1659.25	.00	57.89	1.01
4.000	20.00	1659.40	.76	1.63	1659.22	1659.50	.00	58.33	1.01
4.000	30.00	1659.52	.88	1.67	1659.37	1659.66	.00	57.84	1.01
4.000	40.00	1659.62	.98	1.74	1659.51	1659.79	.00	57.67	1.01
4.000	60.00	1659.78	1.14	1.91	1659.70	1659.99	.00	58.09	1.01
4.000	80.00	1659.90	1.26	2.06	1659.83	1660.15	.00	59.22	1.01
4.000	100.00	1660.01	1.37	2.18	1659.96	1660.29	.00	58.91	1.01
4.000	120.00	1660.11	1.47	2.29	1660.06	1660.41	.00	58.64	1.01
4.000	150.00	1660.23	1.59	2.45	1660.19	1660.56	.00	59.65	1.01
4.000	200.00	1660.46	1.82	2.57	1660.44	1660.78	.00	50.93	1.01
4.000	250.00	1660.56	1.92	2.97	1660.54	1660.94	.00	58.22	1.01
4.000	300.00	1660.67	2.03	3.26	1660.64	1661.09	.00	59.72	1.01
4.000	400.00	1660.89	2.25	3.70	1660.83	1661.35	.00	58.84	1.00
5.000	5.00	1659.05	.41	1.43	1658.94	1659.09	.00	55.38	1.01
5.000	10.00	1659.19	.55	1.75	1659.07	1659.25	.00	56.95	1.01

5.000	20.00	1659.40	.76	1.62	1659.22	1659.50	.00	57.49	1.01
5.000	30.00	1659.52	.88	1.66	1659.37	1659.66	.00	56.89	1.01
5.000	40.00	1659.62	.98	1.73	1659.51	1659.79	.00	56.70	1.01
5.000	60.00	1659.78	1.14	1.90	1659.70	1659.99	.00	57.12	1.01
5.000	80.00	1659.91	1.27	2.05	1659.83	1660.15	.00	58.21	1.01
5.000	100.00	1660.02	1.38	2.17	1659.95	1660.29	.00	57.91	1.01
5.000	120.00	1660.12	1.48	2.28	1660.06	1660.41	.00	57.71	1.01
5.000	150.00	1660.24	1.60	2.44	1660.19	1660.56	.00	58.73	1.01
5.000	200.00	1660.47	1.83	2.55	1660.44	1660.78	.00	49.60	1.01
5.000	250.00	1660.56	1.92	2.96	1660.53	1660.94	.00	57.19	1.01
5.000	300.00	1660.68	2.04	3.25	1660.64	1661.09	.00	58.76	1.01
5.000	400.00	1660.90	2.26	3.68	1660.85	1661.35	.00	58.09	1.01

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SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
6.000	5.00	1659.05	.41	1.42	1658.94	1659.09	.00	54.34	1.01
6.000	10.00	1659.19	.55	1.74	1659.07	1659.25	.00	56.09	1.01
6.000	20.00	1659.40	.76	1.61	1659.23	1659.50	.00	56.72	1.01
6.000	30.00	1659.53	.89	1.64	1659.37	1659.66	.00	55.96	1.01
6.000	40.00	1659.63	.99	1.72	1659.51	1659.79	.00	55.76	1.01
6.000	60.00	1659.79	1.15	1.88	1659.70	1659.99	.00	56.08	1.01
6.000	80.00	1659.91	1.27	2.03	1659.84	1660.15	.00	57.05	1.01
6.000	100.00	1660.02	1.38	2.15	1659.95	1660.29	.00	56.76	1.01
6.000	120.00	1660.12	1.48	2.26	1660.05	1660.41	.00	56.63	1.01
6.000	150.00	1660.25	1.61	2.42	1660.19	1660.56	.00	57.62	1.01
6.000	200.00	1660.48	1.84	2.53	1660.43	1660.78	.00	48.18	1.01
6.000	250.00	1660.57	1.93	2.94	1660.53	1660.94	.00	55.93	1.01
6.000	300.00	1660.69	2.05	3.23	1660.64	1661.09	.00	57.56	1.01
6.000	400.00	1660.90	2.26	3.67	1660.86	1661.35	.00	57.18	1.01

1 09JUL93 13:17:57 PAGE 34

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 1.000 PROFILE= 11 CRITICAL DEPTH ASSUMED

Table R-13
Storage and Discharge vs Stage Data for C536 (Dam 36)

Stage (ft)	Surface Area (Acres)	Storage Volume (acre-feet)		Discharge		Total Discharge (cfs)	
		GVSCE	Tri-Co.	Principal Spillway (cfs)	Emergency Spillway (cfs)	GVSCE	Tri-Co.
1852.06	0.00	0.00	0.00	0	---	0	0
1856.00	0.07	0.09	---	63	---	63	---
1858.00	0.35	0.48	---	108	---	108	---
1860.00	0.91	1.69	0.24	142	---	142	142
1862.00	1.37	3.96	---	168	---	168	---
1864.00	2.58	7.84	---	193	---	193	188
1866.00	4.04	14.41	5.60	211	---	211	---
1868.00	5.44	23.85	---	228	---	228	225
1870.00	6.67	35.94	20.70	245	---	245	---
1872.00	7.93	50.53	---	262	---	262	256
1874.00	9.20	67.64	---	276	---	276	---
1876.00	10.26	87.09	28.49	289	---	289	284
1878.00	11.27	108.61	---	301	---	301	---
1880.00	12.35	132.22	97.50	311	---	311	310
1882.00	13.50	158.07	---	320	---	320	---
1884.00	14.88	186.43	---	329	---	329	333
1886.00	16.85	218.14	179.00	338	---	338	---
1888.00	19.87	254.82	---	345	---	345	355
1888.98	---	276	---	347	0	347	---
1889.00	---	276	---	348	0	348	---
1889.20	---	280	---	348	8	356	---
1889.40	---	285	---	349	42	391	---
1889.60	---	289	---	350	110	459	---
1889.80	---	294	---	350	206	556	---
1890.00	23.38	298.02	303.00	351	328	679	---
1890.20	---	303	---	352	473	825	---
1890.40	---	308	---	352	643	995	---
1890.60	---	313	---	353	837	1190	---
1890.80	---	317	---	354	1054	1408	---
1891.00	---	322	---	355	1293	1647	1036
1891.20	---	327	---	355	1550	1905	---
1891.40	---	332	---	356	1826	2182	---
1891.60	---	337	---	356	2121	2477	---
1891.80	---	342	---	357	2432	2789	---
1892.00	25.56	346.95	---	358	2761	3119	2280
1892.20	---	352	---	358	3106	3463	---
1892.40	---	358	---	359	3467	3826	---
1892.60	---	363	---	359	3845	4204	---
1892.80	---	368	---	359	4239	4598	---
1893.00	---	374	---	360	4649	5009	3920
1894.00	28.78	401.26	---	---	---	---	5898
1896.00	31.34	461.36	463.00	---	---	---	10755

Figure R-9a

Storage and Discharge vs Stage for C536 (Dam 36) Below Emergency Spillway Crest

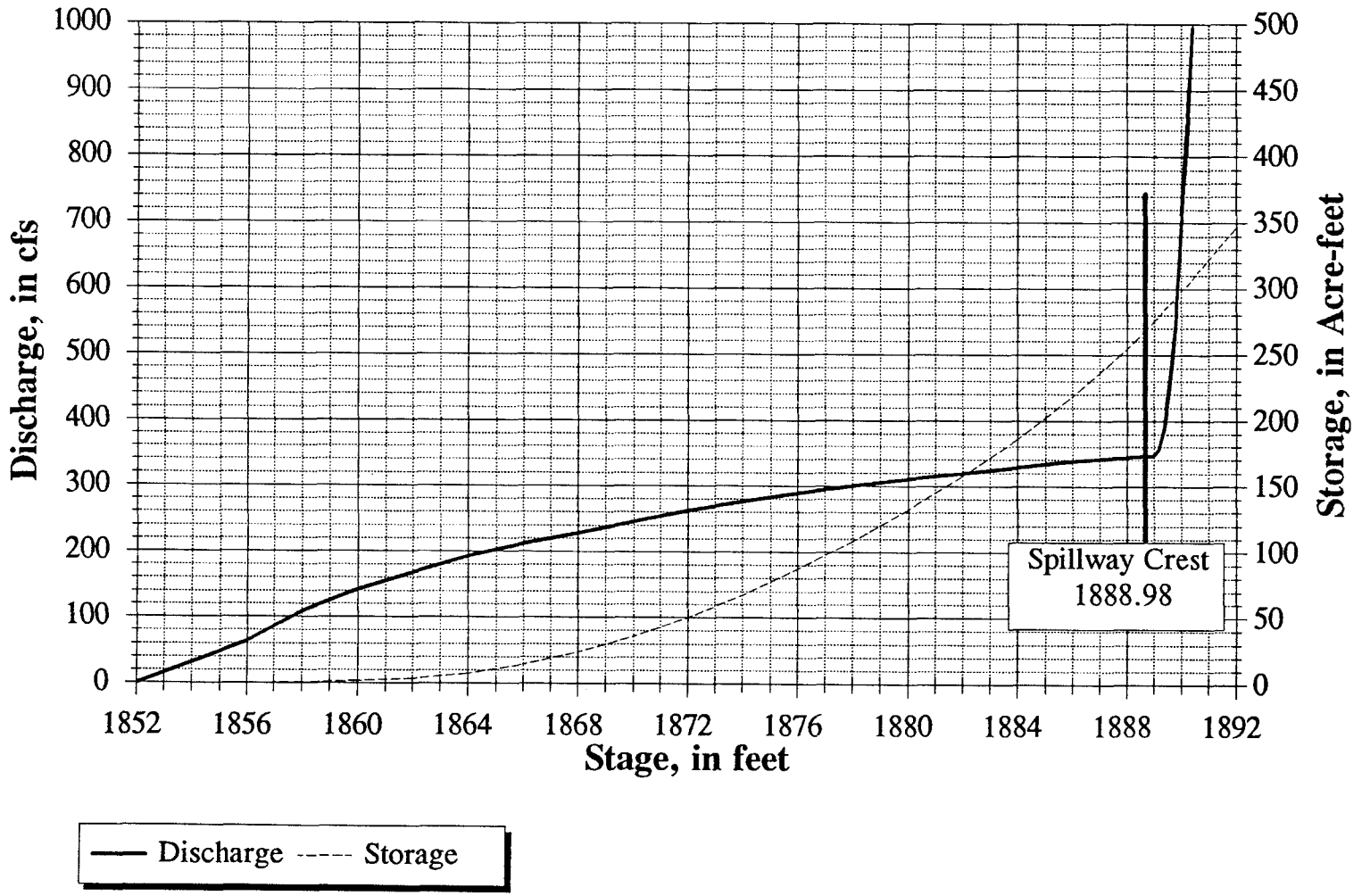
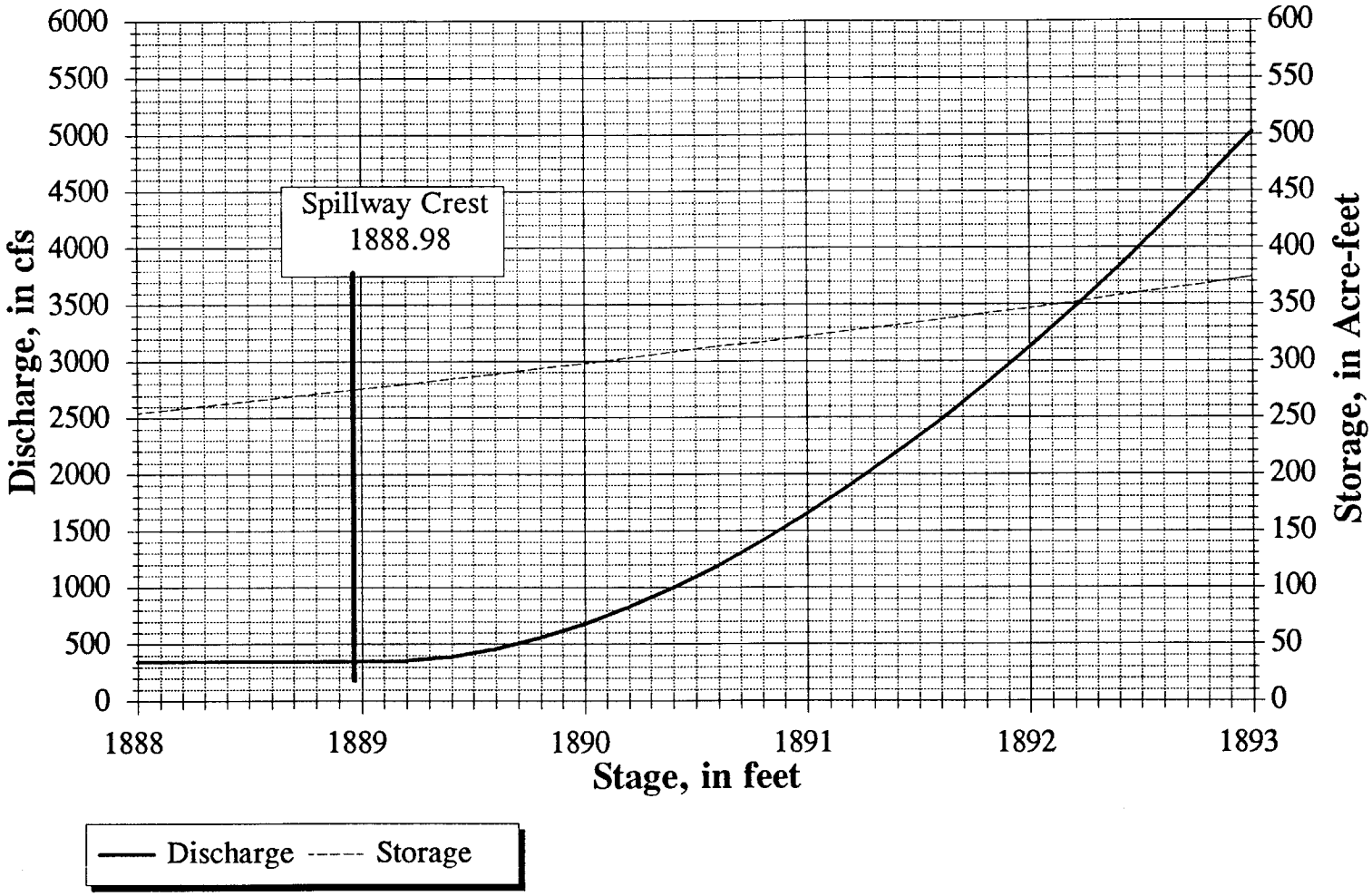


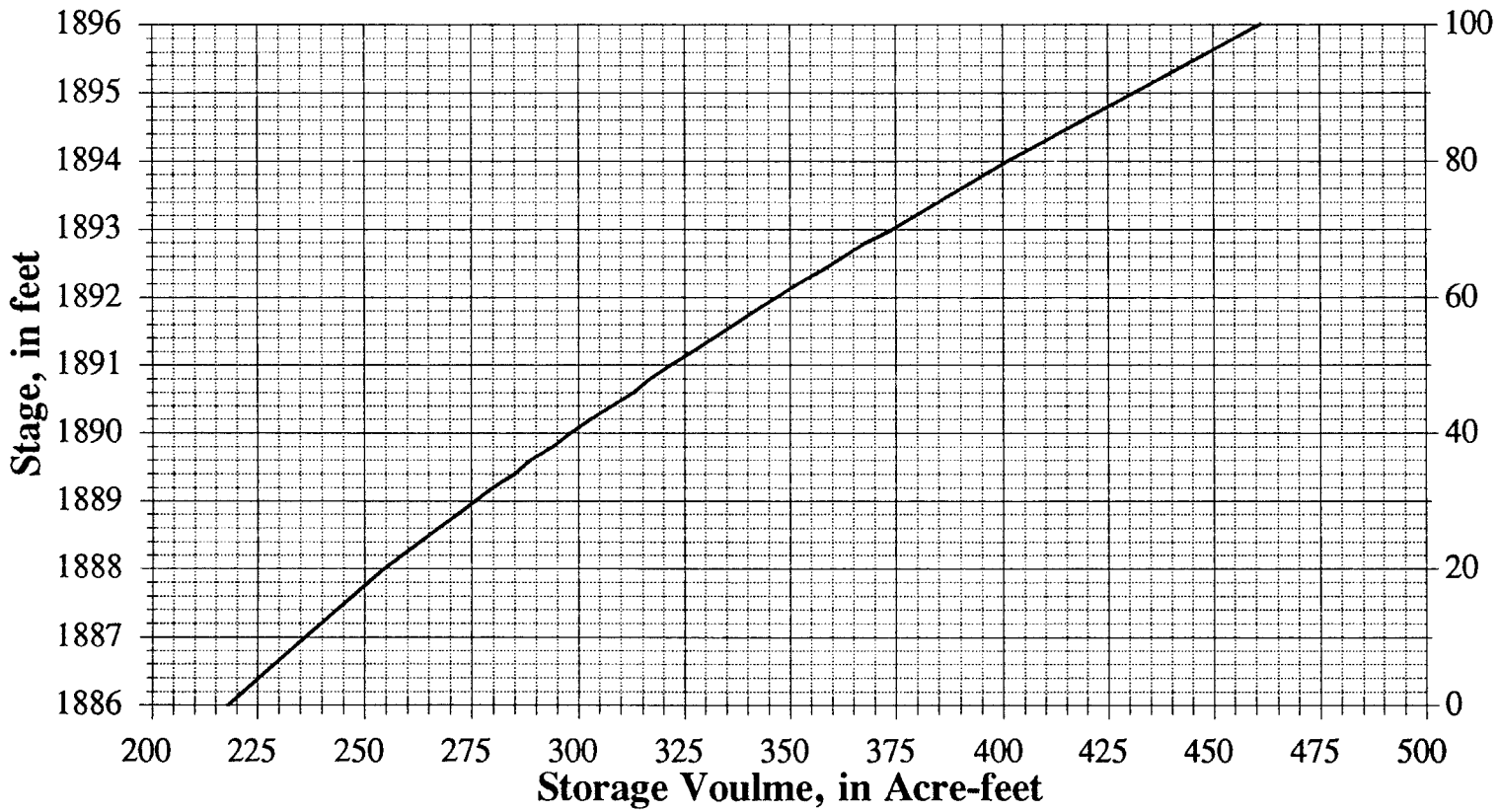
Figure R-9b

Storage and Discharge vs Stage for C536 (Dam 36) Above Emergency Spillway Crest



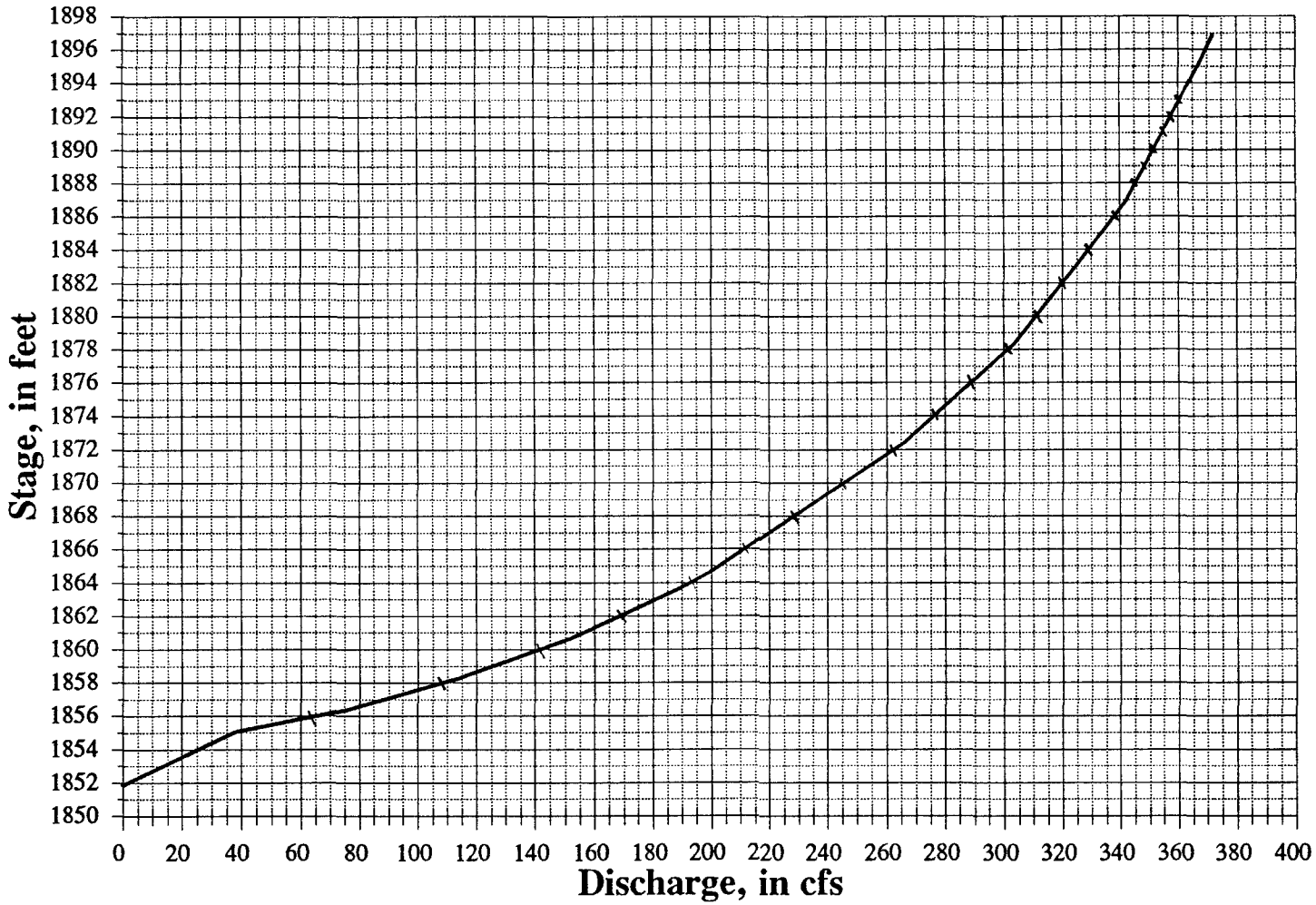
Dam 36 Storage Volume

Calculated from planimetered contours



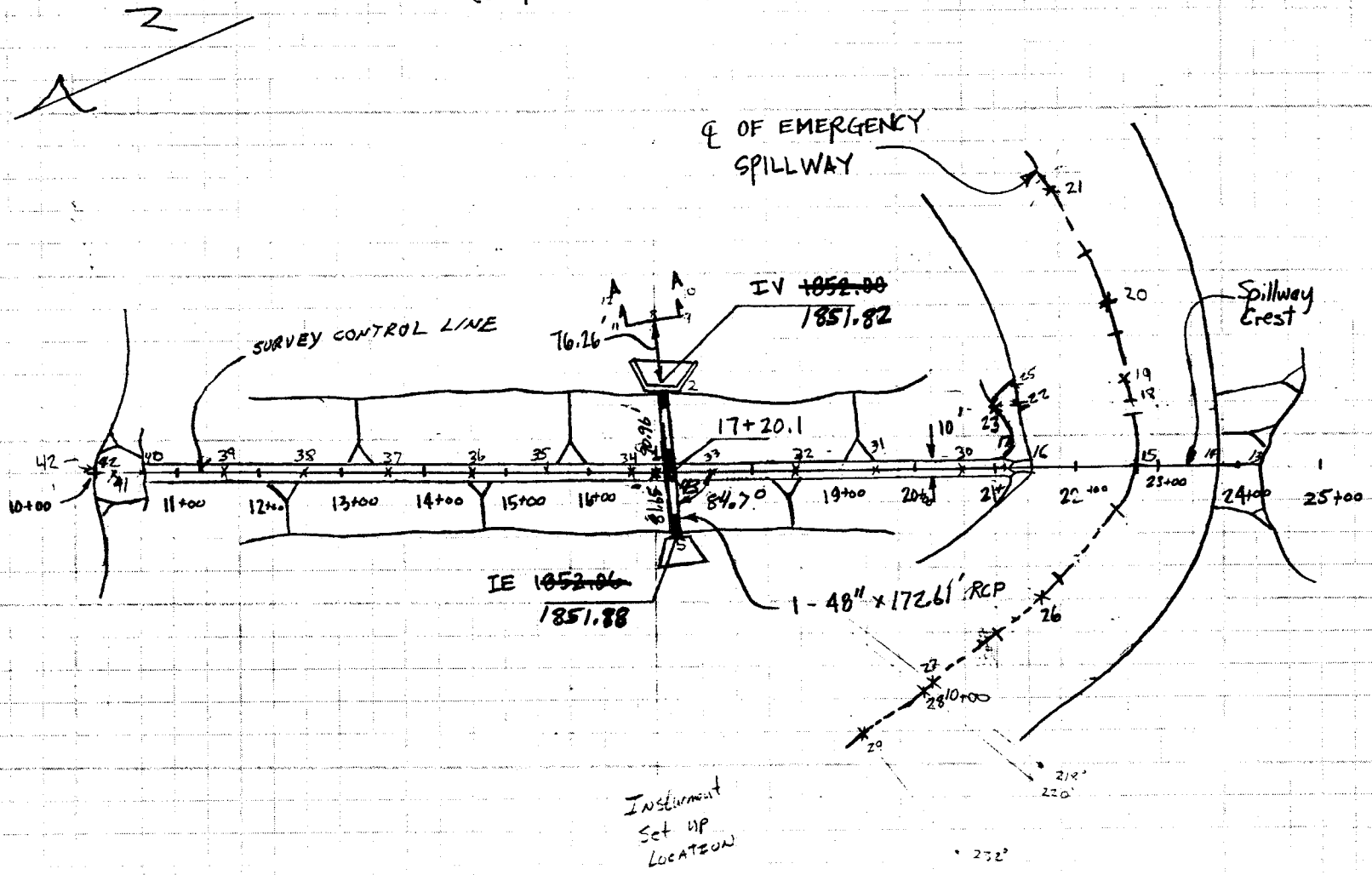
Dam 36 Stage vs. Discharge

Principal Spillway from HY8



DAM 36 PLAN VIEW SCALE 1:200

(LOOKING DOWN STREAM)



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT FLD MC

PROJECT FOUNTAIN HILLS

SUBJECT DAM 36 FIELD SURVEY

SHEET ____ OF ____

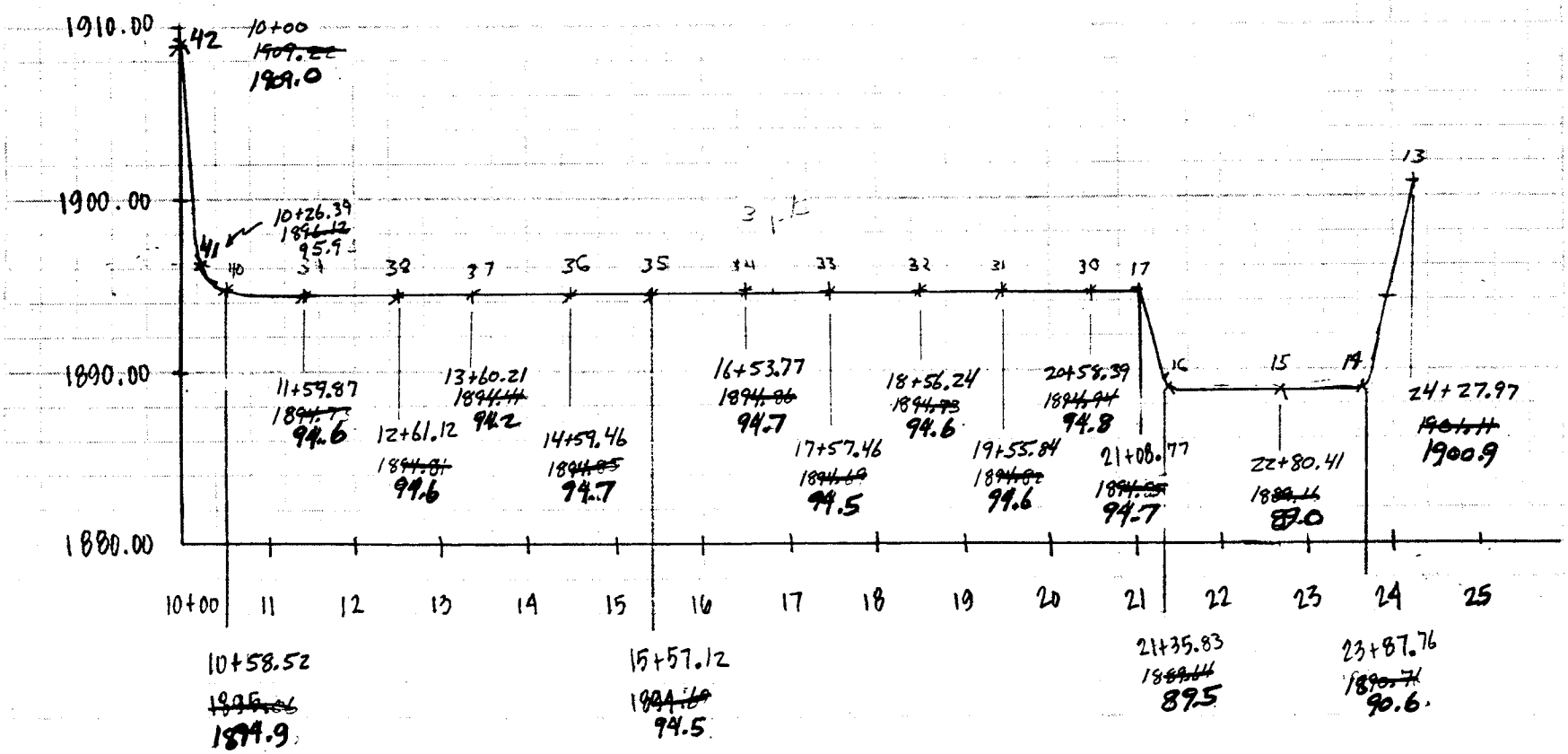
DATE 4/6/03

BY MG

PROJECT NO. 35

DAM 36 PROFILE SCALE 1:200 HORIZONTAL
1:10 VERTICLE

Weir breadth = 75 feet
Crest = 1888.98



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT
PROJECT
SUBJECT
SHEET ___ OF ___
DATE
BY
PROJECT NO.

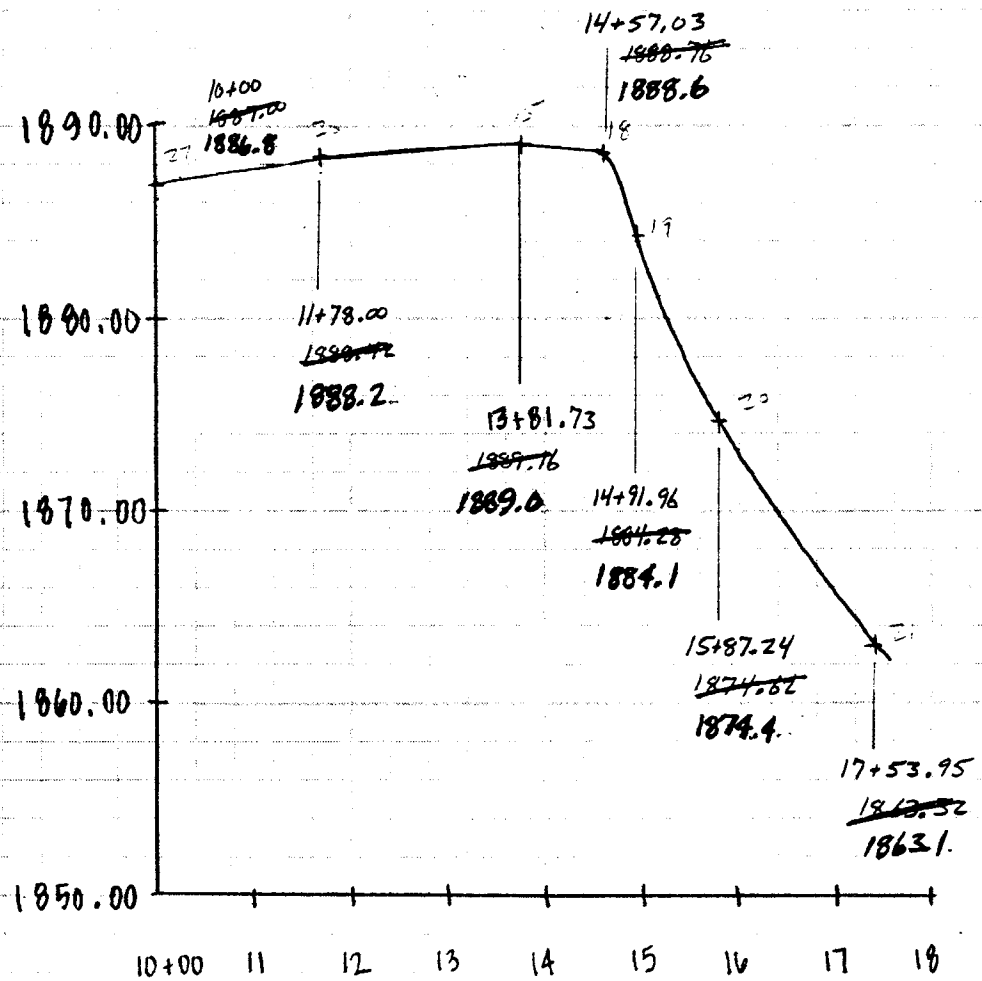
DAM 36

EMERGENCY SPILLWAY PROFILE

ALONG ℄

SCALE 1: 200 HORIZONTAL

1: 10 VERTICLE



Weir Breadth = 14+57.03 − 13+81.73 = 75 feet

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT FED MG

PROJECT FOUNTAIN HILLS

SUBJECT DAM 36 FIELD SURVEY

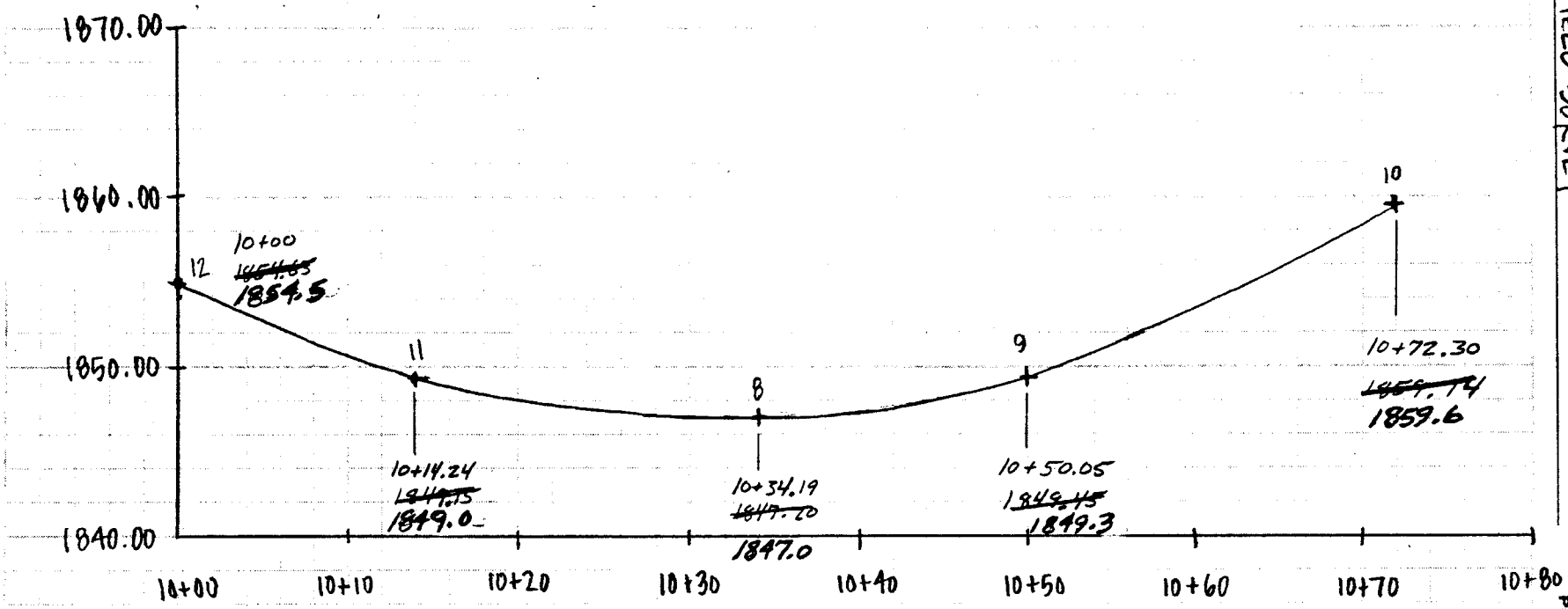
SHEET ____ OF ____

DATE 4/12/93

BY MG

PROJECT NO. 35

CHANNEL CROSS SECTION A-A SCALE 1:10 HORIZONTAL
1:10 VERTICLE
(DOWN STREAM)



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT FCD MC
PROJECT FOUNTAIN HILLS
SUBJECT DAM 36 FIELD SURVEY

SHEET ___ OF ___
DATE 4/12/93
BY MG
PROJECT NO. 35

Start At Point Number ..... Top of Dam Profile

File = DAM36.DAT

****

St[illegible] At Point Number ..... 42 STA = 10+ 0.00 EL ~~1909.22~~ 1909.04

Inverse	42	SW	0- 0- 0.00	26.39000	41	STA =	10+26.39	EL	~~1896.12~~ 1895.94
Inverse	41	SW	0- 0- 0.00	32.13000	40	STA =	10+58.52		
Inverse	40	SW	0- 0- 0.00	101.35000	39	STA =	11+59.87		
Inverse	39	SW	0- 0- 0.00	101.25000	38	STA =	12+61.12		
Inverse	38	SW	0- 0- 0.00	99.09000	37	STA =	13+60.21		
Inverse	37	SW	0- 0- 0.00	99.25000	36	STA =	14+59.46		
Inverse	36	SW	0- 0- 0.00	97.66000	35	STA =	15+57.12		
Inverse	35	SW	0- 0- 0.00	96.65000	34	STA =	16+53.77		
Inverse	34	SW	0- 0- 0.00	103.69000	33	STA =	17+57.46		
Inverse	33	SW	0- 0- 0.00	98.78000	32	STA =	18+56.24		
Inverse	32	SW	0- 0- 0.00	99.60000	31	STA =	19+55.84		
I[illegible]e	31	SW	0- 0- 0.00	102.55000	30	STA =	20+58.39		
Inverse	30	SW	0- 0- 0.00	50.38000	17	STA =	21+ 8.77	EL	~~1894.8~~ 1894.67
Inverse	17	SE	0- 0- 0.00	27.06000	16	STA =	21+35.83	EL	~~1889.61~~ 1889.46
Inverse	16	SW	0- 0- 0.00	144.58000	15	STA =	22+80.41	EL	~~1889.76~~ 1888.98
Inverse	15	SW	0- 0- 0.00	107.35000	14	STA =	23+87.76	EL	~~1890.76~~ 1890.58
Inverse	14	SW	0- 0- 0.00	40.21000	13	STA =	24+27.97	EL	~~1901.77~~ 1900.93

Spillway X-Section

DAm 36

File = DAM36.DAT DISCHARGE CHANNEL X - Section

****

Start At Point Number					12	STA =	10+ 0.00	EL	~~1854.63~~	1854.45
Inverse	12	SE	7-25- 5.45	14.24344	11	STA =	10+14.24	EL	~~1849.15~~	1848.37
Inverse	11	SE	4-41-33.57	19.94569	8	STA =	10+34.19	EL	~~1847.20~~	1847.02
Inverse	8	SE	4-46-46.37	15.85720	9	STA =	10+50.05	EL	~~1849.45~~	1849.27
Inverse	9	SE	13-41-24.71	22.25084	10	STA =	10+72.30	EL	~~1859.74~~	1859.56

SPILLWAY Profile DAm36

Start At Point Number ..... 27 STA = 10+ 0.00 EL ~~1887.00~~ 1886.82

Inverse	27	SE	31-36-30.12	178.00127	26	STA =	11+78.00	EL	~~1889.42~~	1889.24	
Inverse	26	SE	50- 4-40.98	203.72775	15	STA =	13+81.73	EL	~~1889.16~~	1888.98	CFST
Inverse	15	NE	71-46-42.17	75.30300	18	STA =	14+57.03	EL	~~1888.78~~	1888.58	
Inverse	18	NE	72-20-16.01	34.92685	19	STA =	14+91.96	EL	~~1884.28~~	1884.10	
Inverse	19	SE	86-25-25.52	95.27660	20	STA =	15+87.24	EL	~~1874.62~~	1874.14	
Inverse	20	NE	78-34- 7.34	166.71784	21	STA =	17+53.95	EL	~~1863.32~~	1863.14	

DAM 36 RCP

****

Dam 36 RCP angle right from CL of dam.

Inverse	33 NE	0- 0- 0.00	36.74451	43	9964.40451	20000.00000

RADIAL INVERSE FROM LINE - Base Pt. # 43 TO 33

Rad Inv	43 AR	84-42-33.31	81.64863	5	9956.87571	19918.69922
Rad Inv	43 SW	84-42-33.31	81.64863	5	9956.87571	19918.69922
Inverse	43 SW	84-42-33.31	81.64863	5	9956.87571	19918.69922
Inverse	5 NE	84-42-33.31	81.64863	43	9964.40451	20000.00000
Inverse	43 NE	84-42-33.31	90.95904	2	9972.79182	20090.57152
Inverse	2 SW	84-42-33.31	172.60767	5	9956.87571	19918.69922

CURRENT DATE: 07-13-1993
CURRENT TIME: 08:49:32

FILE DATE: 04-26-1993
FILE NAME: C536 (Dam 36)

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1851.88	1851.82	172.61	1 RCP	4.00	4.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C536 (Dam 36) DATE: 04-26-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1851.88	0	0	0	0	0	0	0	0	1
1855.05	38	38	0	0	0	0	0	0	1
1856.40	76	76	0	0	0	0	0	0	1
1858.27	114	114	0	0	0	0	0	0	1
1860.67	152	152	0	0	0	0	0	0	1
1863.70	190	190	0	0	0	0	0	0	1
1864.63	200	200	0	0	0	0	0	0	1
1872.38	266	266	0	0	0	0	0	0	1
1878.39	304	304	0	0	0	0	0	0	1
1886.89	342	342	0	0	0	0	0	0	1
1896.85	380	372	0	0	0	0	0	8	11
1895.00	367	367	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C536 (Dam 36) DATE: 04-26-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1851.88	0.00	0	0	0.00
1855.05	0.00	38	0	0.00
1856.40	0.00	76	0	0.00
1858.27	0.00	114	0	0.00
1860.67	0.00	152	0	0.00

1863.70	0.00	190	0	0.00
1864.63	0.00	200	0	0.00
1872.38	0.00	266	0	0.00
1878.39	0.00	304	0	0.00
1886.89	0.00	342	0	0.00
1896.85	-0.00	380	0	0.01

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 07-13-1993
CURRENT TIME: 08:49:32

FILE DATE: 04-26-1993
FILE NAME: C536 (Dam 36)

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (4 BY 4) RCP

DIS-	HEAD-	INLET	OUTLET

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*********************************************


    PROJECT:  Fountain Hills North FIS              C536 (Dam 36)
    ENGINEER:  MG
    DATE:   8/24/1993
    TIME:  10:16.34




---------------------------------------------
    INPUT PARAMETERS
---------------------------------------------


    STARTING WSEL:       1888.80
    MAXIMUM WSEL:        1893.40
    STEP SIZE:              0.20
    BREADTH OF WEIR:       75.00




*********************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills North FIS              C536 (Dam 36)
    DATE:   8/24/1993
    TIME:  10:16.34
*********************************************


    POINT    ELEVATION    STATION
    -----    ---------    -------
        1      1894.67    2108.77
        2      1889.46    2135.83
        3      1888.98    2280.41
        4      1890.58    2387.76
```

5 1900.93 2427.97

****
WEIR COEFFICIENT TABLE
PROJECT: Fountain Hills North FIS C536 (Dam 36)
DATE: 8/24/1993
TIME: 10:16.34
****

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.5089
3	0.40	2.5178
4	0.60	2.5267
5	0.80	2.5356
6	1.00	2.5444
7	1.20	2.5533
8	1.40	2.5622
9	1.60	2.5711
10	1.80	2.5800
11	2.00	2.5889
12	2.20	2.5978
13	2.40	2.6067
14	2.60	2.6156
15	2.80	2.6244
16	3.00	2.6333
17	3.20	2.6422
18	3.40	2.6511
19	3.60	2.6600
20	3.80	2.6689
21	4.00	2.6778
22	4.20	2.6867
23	4.40	2.6956

****
UNEVEN WEIR FLOW PROGRAM

FORTRAN VERSION 1.0
PROJECT: Fountain Hills North FIS C536 (Dam 36)
DATE: 8/24/1993
TIME: 10:16.34
****

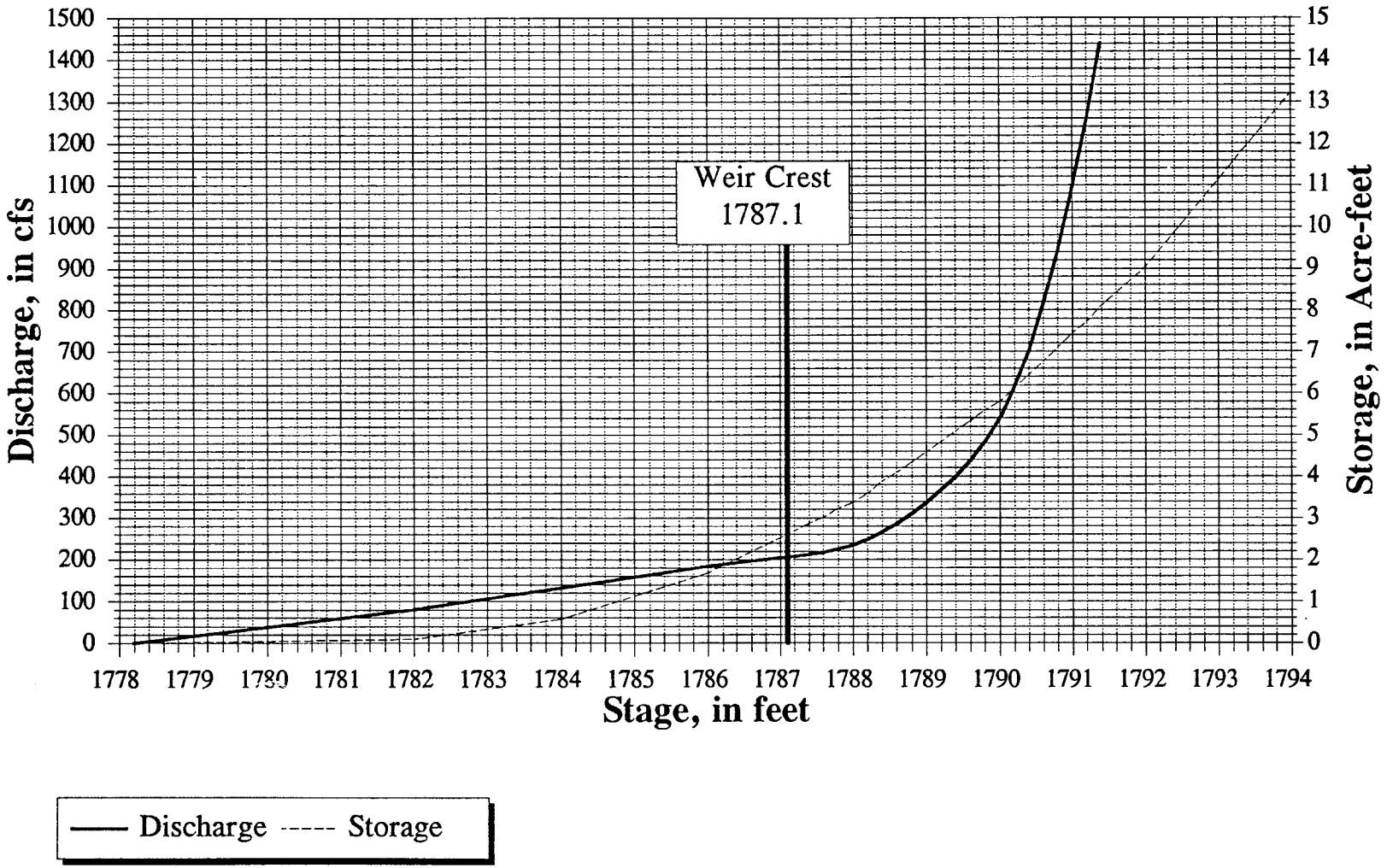
ELEVATION	DISCHARGE (CFS)
1888.80	0.00
1889.00	0.02
1889.20	8.37
1889.40	42.24
1889.60	109.97
1889.80	206.19
1890.00	327.56
1890.20	473.20
1890.40	642.93
1890.60	836.89
1890.80	1054.39
1891.00	1292.63
1891.20	1550.27
1891.40	1826.44
1891.60	2120.52
1891.80	2432.01
1892.00	2760.50
1892.20	3105.70
1892.40	3467.34
1892.60	3845.20
1892.80	4239.11
1893.00	4648.92
1893.20	5074.51

Table R-14
Storage and Discharge vs. Stage Data for C538

Stage (ft)	Surface Area (acres)	Storage Volume (acre-ft)	Discharge		
			Culvert Flow (cfs)	Weir Flow (cfs)	Total Flow (cfs)
1778.20	0.00	0.00	0	---	0
1782.00	0.08	0.10	82	---	82
1784.00	0.45	0.57	133	---	133
1786.00	0.67	1.69	185	---	185
1787.1	---	2.6	207	0	207
1787.20	---	2.7	208	0	208
1787.40	---	2.9	211	1	212
1787.60	---	3.0	214	4	218
1787.80	---	3.2	217	9	226
1788.00	1.03	3.38	219	16	235
1788.20	---	3.6	222	27	249
1788.40	---	3.9	224	41	265
1788.60	---	4.1	227	59	286
1788.80	---	4.3	230	80	310
1789.00	---	4.6	233	105	338
1789.20	---	4.8	235	132	367
1789.40	---	5.1	237	163	400
1789.60	---	5.3	240	197	437
1789.80	---	5.6	243	239	482
1790.00	1.42	5.82	245	294	539
1790.20	---	6.1	247	364	611
1790.40	---	6.4	250	451	701
1790.60	---	6.8	253	560	813
1790.80	---	7.1	254	688	942
1791.00	---	7.4	257	834	1091
1791.20	---	7.7	259	997	1256
1791.40	---	8.1	262	1177	1439
1792.00	1.80	9.03	---	---	---
1794.00	2.41	13.23	---	---	---

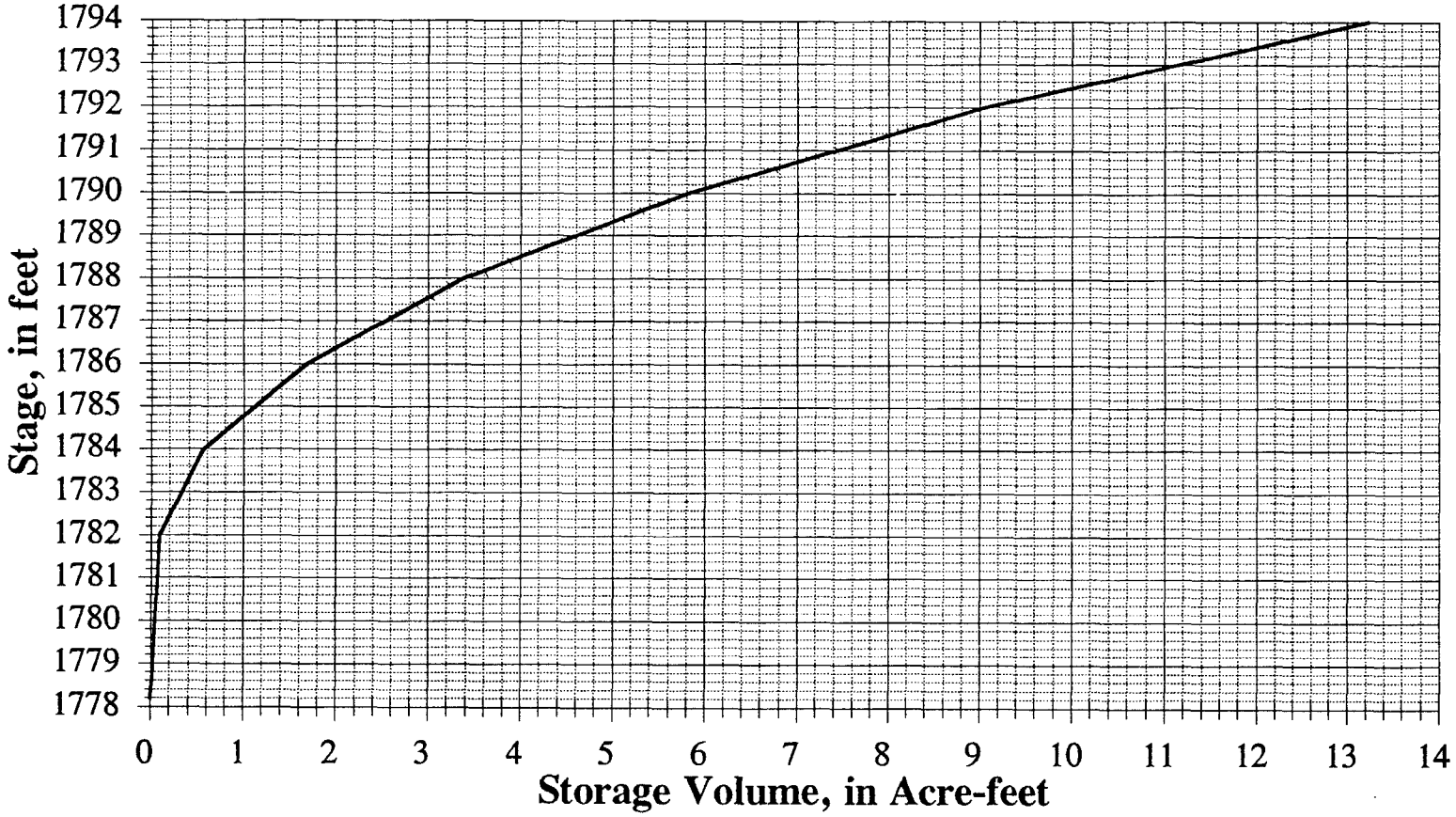
Figure R-10

Storage and Discharge vs Stage for C538



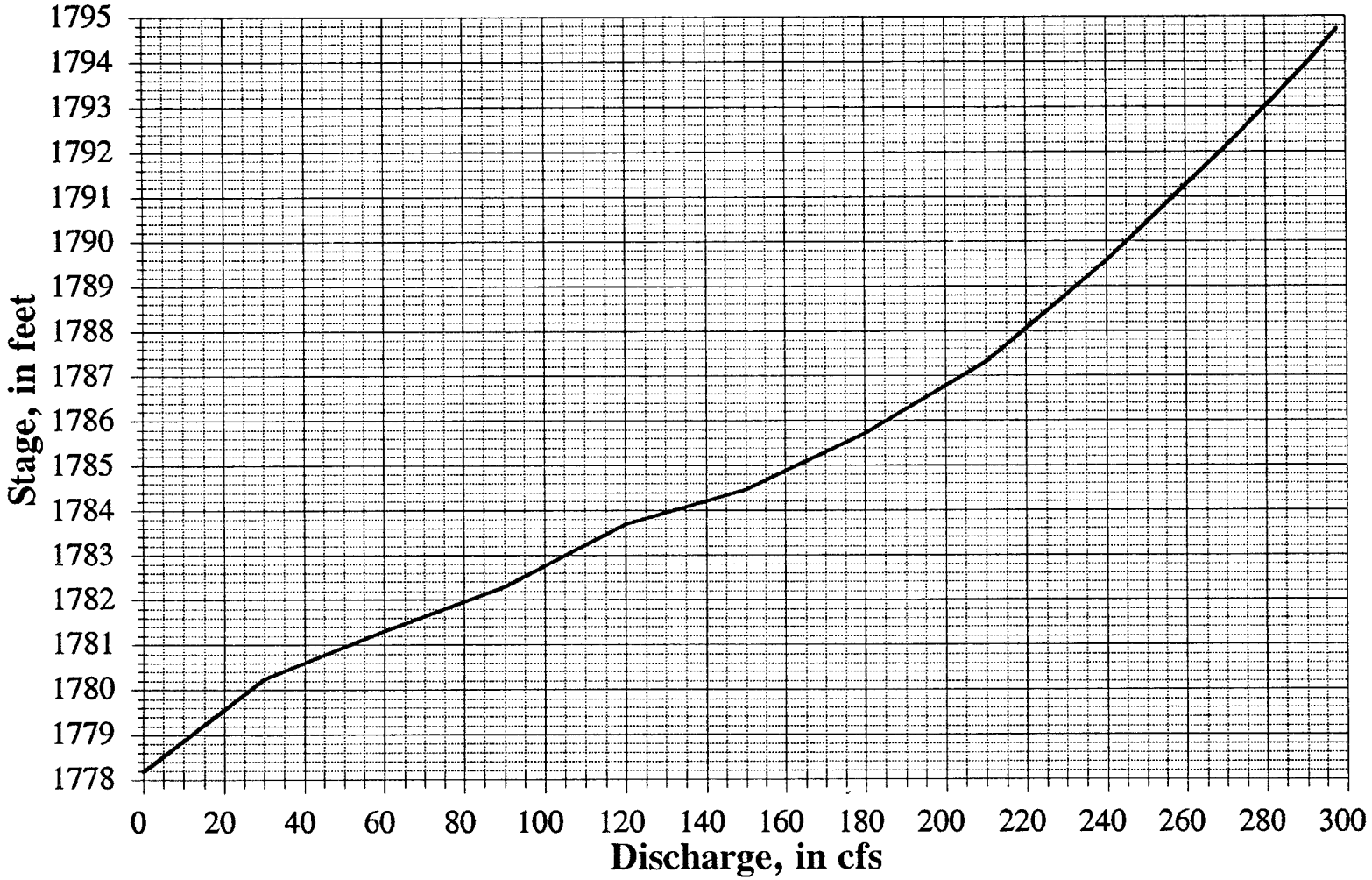
C538 Storage Volume

Calculated From Planimetered Contours



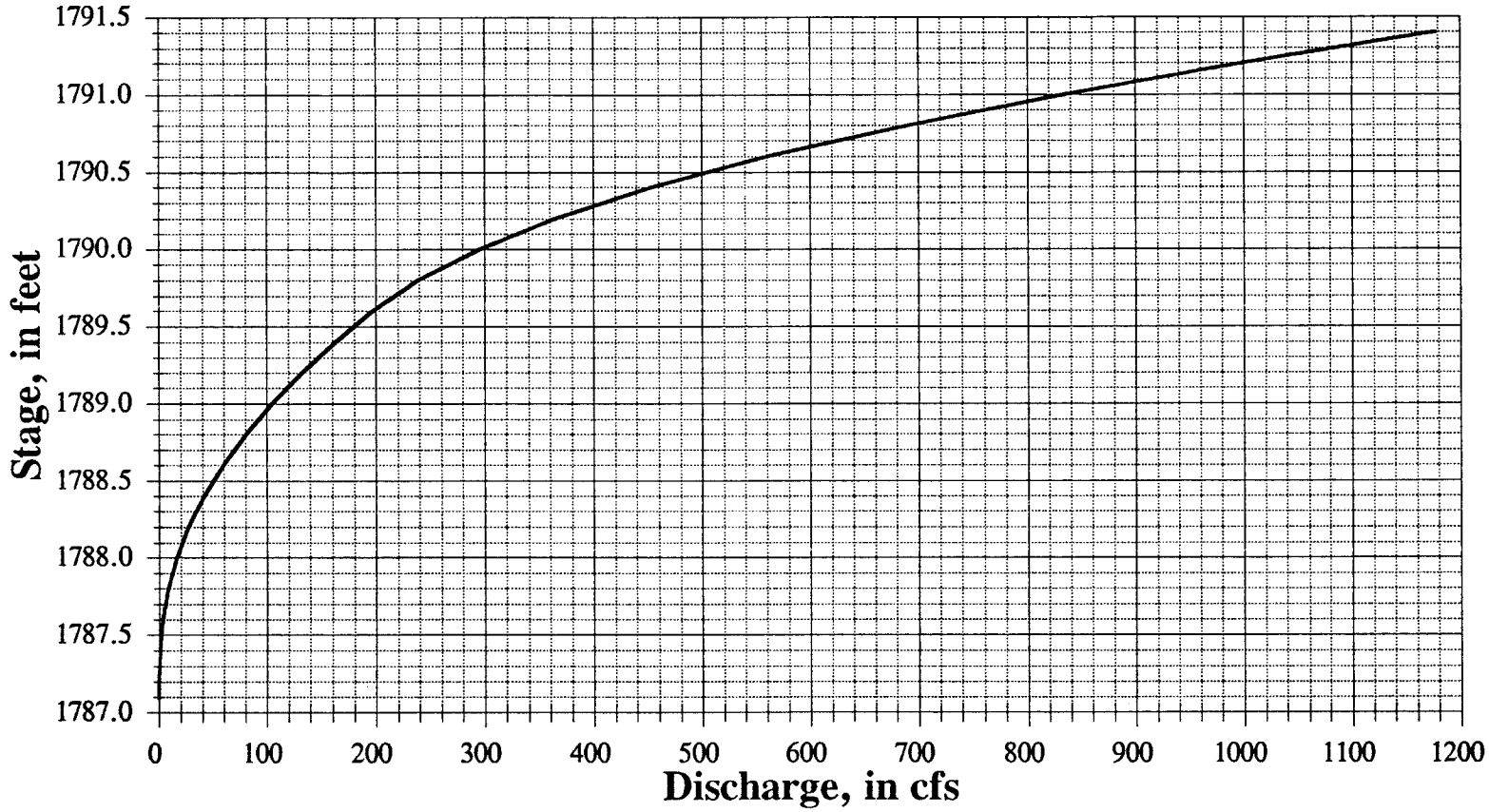
C538 Stage vs Discharge

Culvert Flow from HY8



C538 Stage vs Discharge

Weir Flow from Uneven Weir

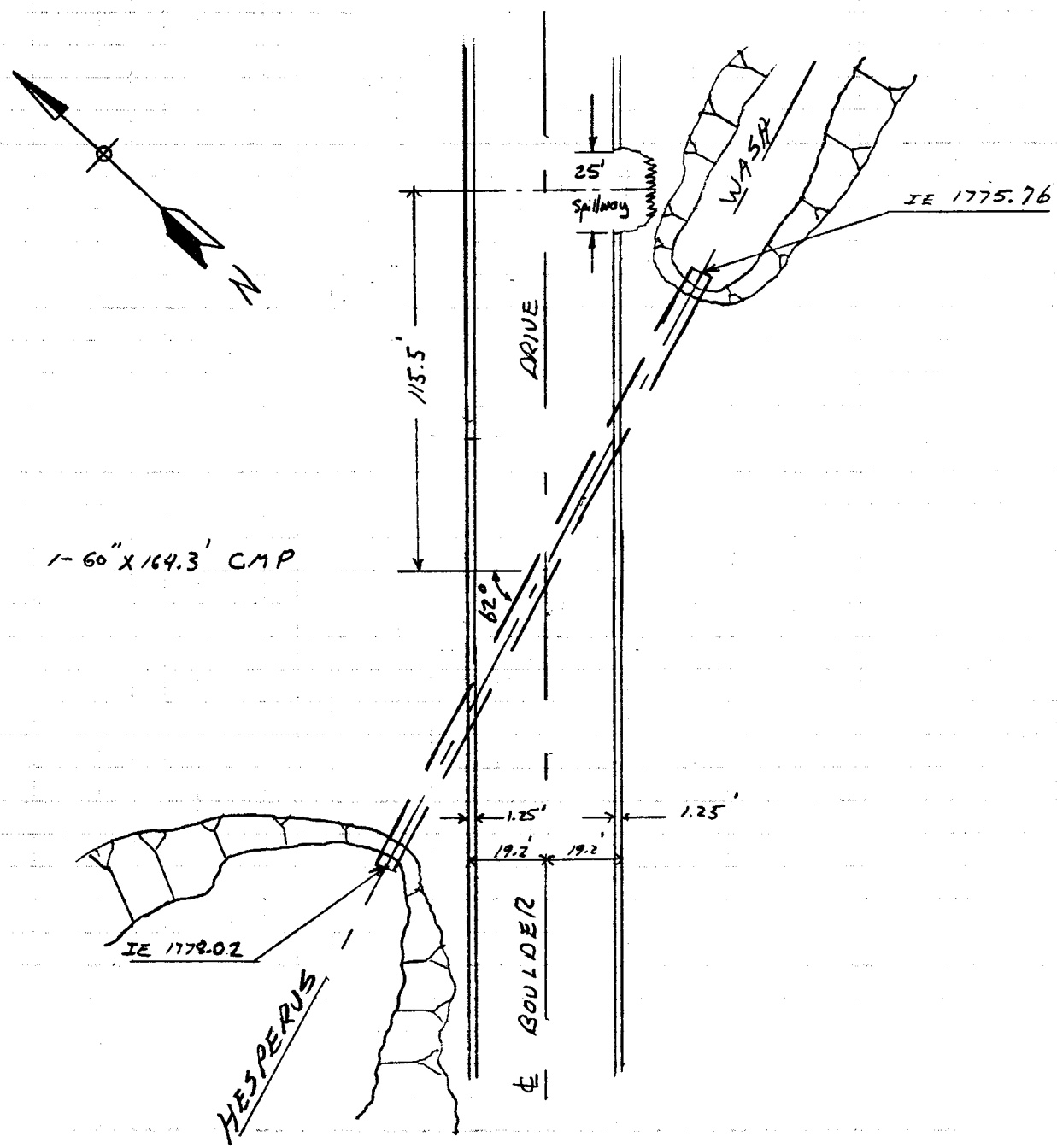


GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT: MC FCO
PROJECT: FOUNTAIN HILLS F.I.S.
SUBJECT: CULVERT 538 FIELD SURVEY

SHEET 1 OF 3
DATE 26-FEBRUARY-93
BY R.C.
PROJECT NO. 35

CULVERT 538 PLAN VIEW SCALE 1" = 40'



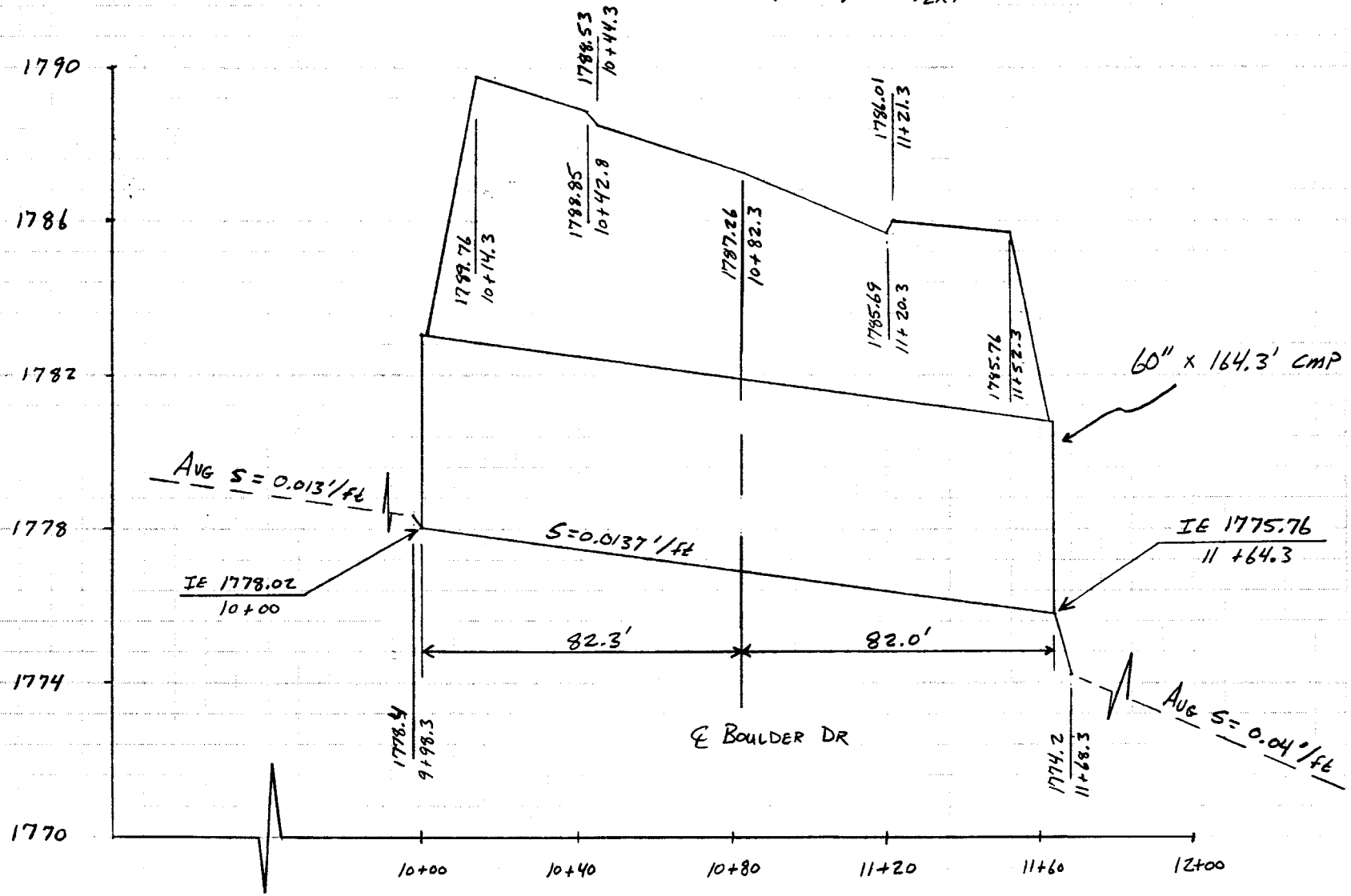
GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT: MC FCD
PROJECT: E. HILLS NORTH FIS
SUBJECT: CULVERT 538 AS-BUILT

SHEET 2 OF 3
DATE 22 JULY 93
BY DTP
PROJECT NO. 35

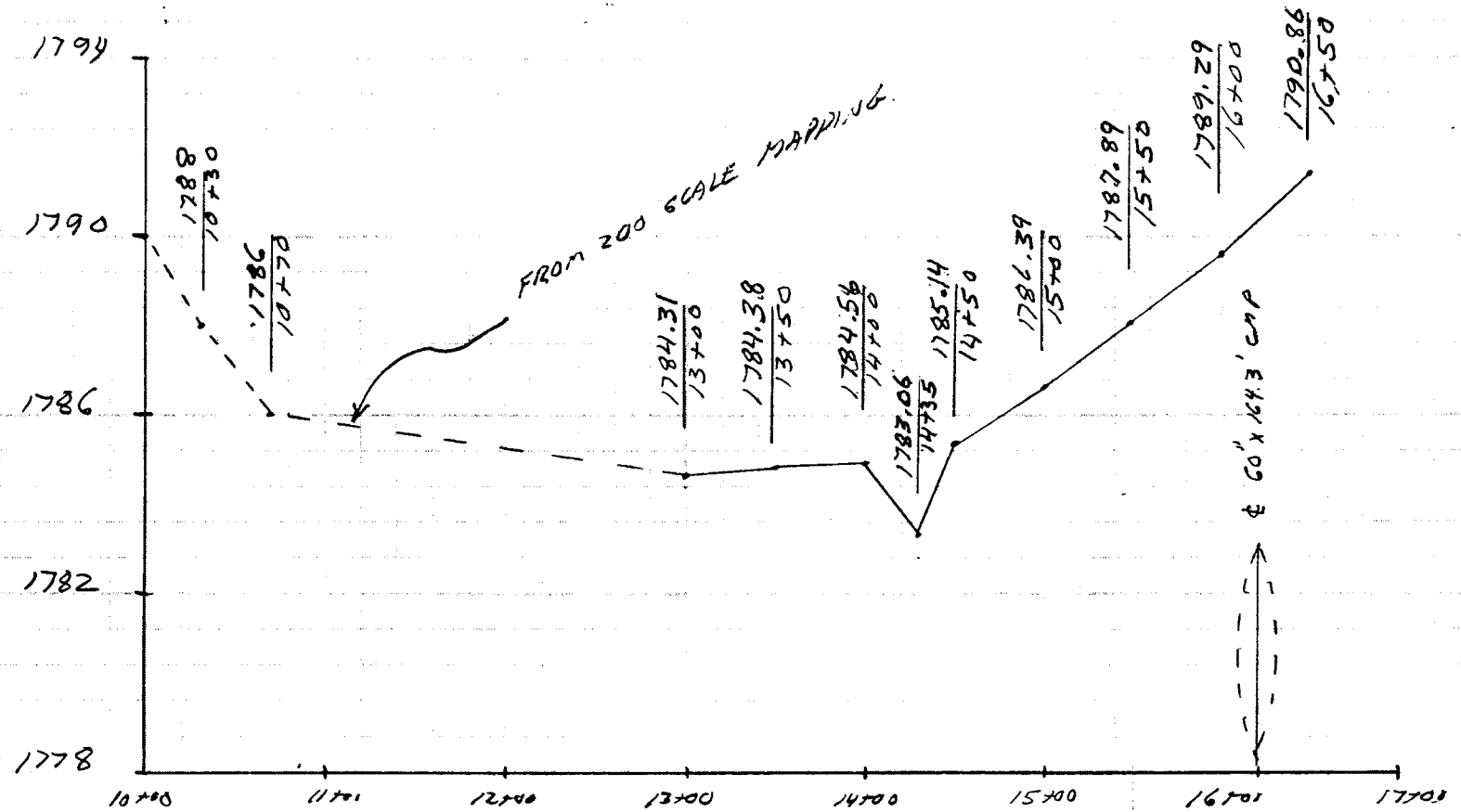
CULVERT 538 PROFILE

SCALE 1" = 40' HORZ
1" = 4' VERT



CULVERT 538 WEIR CROSS SECTION WEST TOP CURB

SCALE: HORZ. 1" = 100'
VERT. 1" = 4'



NOTE: PHOTO-DIGITIZED SECTION HE 8 (HESPERUS WASH 2.228 river Miles) WAS USED for Hydraulic Calculations as it controls.

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT MCFCD
PROJECT F. HILLS
SUBJECT CULVERT 538 FIELD SURVEY

SHEET 3 OF 3
DATE 16-JUN-93
BY R.C.
PROJECT NO. 35

CURRENT DATE: 07-13-1993
CURRENT TIME: 09:22:00

FILE DATE: 06-16-1993
FILE NAME: C538

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1778.02	1775.76	164.32	1 CSP	5.00	5.00	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C538 DATE: 06-16-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1778.02	0	0	0	0	0	0	0	0	1
1780.25	30	30	0	0	0	0	0	0	1
1781.32	60	60	0	0	0	0	0	0	1
1782.29	90	90	0	0	0	0	0	0	1
1783.70	120	120	0	0	0	0	0	0	1
1784.46	150	150	0	0	0	0	0	0	1
1785.72	180	180	0	0	0	0	0	0	1
1787.31	210	210	0	0	0	0	0	0	1
1789.56	240	240	0	0	0	0	0	0	1
1792.10	270	270	0	0	0	0	0	0	1
1794.74	300	298	0	0	0	0	0	2	5
1794.00	291	291	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C538 DATE: 06-16-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1778.02	0.00	0	0	0.00
1780.25	0.00	30	0	0.00
1781.32	0.00	60	0	0.00
1782.29	0.00	90	0	0.00
1783.70	0.00	120	0	0.00
1784.46	0.00	150	0	0.00
1785.72	0.00	180	0	0.00
1787.31	0.00	210	0	0.00
1789.56	0.00	240	0	0.00

1792.10	0.00	270	0	0.00
1794.74	0.00	300	-0	-0.00

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 07-13-1993 FILE DATE: 06-16-1993
CURRENT TIME: 09:22:00 FILE NAME: C538

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (5 BY 5) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1778.02	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
30	1780.25	2.23	2.23	1-S2n	1.43	1.52	6.44	1.43	2.58	0.29
60	1781.32	3.30	3.30	1-S2n	2.08	2.17	7.78	2.08	3.37	0.43
90	1782.29	4.27	4.27	1-S2n	2.62	2.68	8.62	2.62	3.95	0.54
120	1783.70	5.26	5.68	2-M2c	3.16	3.12	9.32	3.12	4.43	0.64
150	1784.46	6.37	6.44	2-M2c	3.74	3.51	10.19	3.51	4.84	0.73
180	1785.72	7.70	7.29	6-FFn	5.00	3.83	9.17	5.00	5.20	0.82
210	1787.31	9.28	9.29	6-FFn	5.00	4.10	10.70	5.00	5.52	0.90
240	1789.56	11.17	11.54	6-FFn	5.00	4.33	12.22	5.00	5.83	0.97
270	1792.10	13.37	14.08	6-FFn	5.00	4.55	13.75	5.00	6.11	1.04
298	1794.73	15.71	16.71	6-FFn	5.00	4.76	15.18	5.00	6.35	1.11

El. inlet face invert 1778.02 ft El. outlet invert 1775.76 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION (FT)                        0.00
      INLET ELEVATION (FT)                   1778.02
      OUTLET STATION (FT)                     164.30
      OUTLET ELEVATION (FT)                  1775.76
      NUMBER OF BARRELS                            1
      SLOPE (V-FT/H-FT)                       0.0138
      CULVERT LENGTH ALONG SLOPE (FT)         164.32

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          CIRCULAR
      BARREL DIAMETER         5.00 FT
      BARREL MATERIAL       CORRUGATED STEEL
      BARREL MANNING'S N    0.024
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   THIN EDGE PROJECTING
      INLET DEPRESSION      NONE
```

CURRENT DATE: 07-13-1993
CURRENT TIME: 09:22:00

FILE DATE: 06-16-1993
FILE NAME: C538

TAILWATER

***** USER DEFINED CHANNEL CROSS-SECTION
MAIN CHANNEL AND LT & RT OVER BANKS

FILE NAME: C538
FILE DATE: 06-16-1993

LEFT CHANNEL BOUNDARY	5
RIGHT CHANNEL BOUNDARY	6
MANNING N LEFT OVER BANK	0.075
MANNING N MAIN CHANNEL	0.050
MANNING N RIGHT OVER BAN	0.075
SLOPE OF CHANNEL (FT/FT)	0.0400

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	1000.00	1783.76
2	1006.00	1781.76
3	1011.00	1779.76
4	1017.00	1777.76
5	1022.00	1775.76
6	1064.00	1775.76
7	1067.00	1777.76
8	1071.00	1779.76
9	1076.00	1781.76
10	1078.00	1783.76

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1775.76	0.000	0.00	0.00	0.00
30.00	1776.05	0.850	0.29	2.58	0.71
60.00	1776.19	0.909	0.43	3.37	1.07
90.00	1776.30	0.946	0.54	3.95	1.35
120.00	1776.40	0.973	0.64	4.43	1.61
150.00	1776.49	0.995	0.73	4.84	1.83
180.00	1776.58	1.013	0.82	5.20	2.04
210.00	1776.66	1.029	0.90	5.52	2.24
240.00	1776.73	1.042	0.97	5.83	2.42
270.00	1776.80	1.055	1.04	6.11	2.60
300.00	1776.87	1.065	1.11	6.35	2.76

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	1.00
CREST LENGTH (FT)	1.00

OVERTOPPING CREST ELEVATION (FT) 1794.00

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*********************************************


    PROJECT:  Fountain Hills North FIS        C538
    ENGINEER:  MG
    DATE:   9/14/1993
    TIME:  11: 1.34




-----------------------------------------------
    INPUT PARAMETERS
-----------------------------------------------


    STARTING WSEL:      1787.00
    MAXIMUM WSEL:       1791.40
    STEP SIZE:             0.20
    BREADTH OF WEIR:      77.00
```

```
*********************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills North FIS        C538
    DATE:   9/14/1993
    TIME:  11: 1.34
*********************************************
```

POINT	ELEVATION	STATION
1	1797.10	9803.20
2	1796.70	9811.70
3	1797.20	9815.50
4	1797.20	9815.60
5	1797.00	9835.50
6	1795.00	9846.00
7	1793.40	9881.50
8	1792.60	9898.50
9	1792.20	9921.60
10	1791.70	9929.10
11	1788.40	9937.30
12	1787.10	9956.80
13	1788.20	9963.70
14	1789.80	9974.00
15	1789.50	9994.00
16	1789.70	10000.00
17	1790.20	10016.80
18	1790.40	10028.10
19	1789.70	10030.60
20	1790.30	10040.30
21	1790.50	10055.40
22	1789.90	10070.40
23	1790.60	10072.50
24	1791.40	10088.00
25	1790.60	10102.80
26	1789.60	10128.70
27	1796.50	10138.70

```
*********************************************
    WEIR COEFFICIENT TABLE
    PROJECT:  Fountain Hills North FIS        C538
    DATE:   9/14/1993
    TIME:  11: 1.34
*********************************************
```

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.5087
3	0.40	2.5173
4	0.60	2.5260
5	0.80	2.5346
6	1.00	2.5433
7	1.20	2.5519
8	1.40	2.5606
9	1.60	2.5693
10	1.80	2.5779
11	2.00	2.5866
12	2.20	2.5952
13	2.40	2.6039
14	2.60	2.6126
15	2.80	2.6212
16	3.00	2.6299
17	3.20	2.6385
18	3.40	2.6472
19	3.60	2.6558
20	3.80	2.6645
21	4.00	2.6732
22	4.20	2.6818
23	4.40	2.6905

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
    PROJECT:  Fountain Hills North FIS        C538
    DATE:   9/14/1993
    TIME:  11: 1.34
*********************************************
```

ELEVATION	DISCHARGE (CFS)
1787.00	0.00
1787.20	0.07
1787.40	1.05
1787.60	3.77
1787.80	8.77
1788.00	16.46
1788.20	27.24
1788.40	41.45
1788.60	59.26
1788.80	80.34
1789.00	104.60
1789.20	132.04
1789.40	162.68
1789.60	196.87
1789.80	239.05
1790.00	294.14
1790.20	363.92
1790.40	451.16
1790.60	559.81
1790.80	687.94
1791.00	833.83
1791.20	997.05
1791.40	1177.45

Table R-15
Storage and Discharge vs Stage Data for C560 (Dam 6)

Stage (ft)	Surface Area (Acres)	Storage Volume (acre-feet)		Discharge: Principal Spillway (cfs)	Discharge: Emergency Spillway (cfs)	Total Discharge (cfs)	
		GVSCE	Tri-Co.			GVSCE	Tri-Co.
1808.79	0	0	---	0	---	0	0
1810.00	0.11	0.00	0.00	20	---	20	0
1812.00	1.99	1.71	---	57	---	57	---
1814.00	3.46	7.09	---	102	---	102	---
1816.00	4.27	14.81	0.30	136	---	136	183
1818.00	4.97	24.04	---	163	---	163	---
1820.00	5.65	34.65	6.30	184	---	184	263
1822.00	6.40	46.70	---	206	---	206	---
1824.00	7.34	60.43	25.10	224	---	224	331
1826.00	8.22	75.98	---	242	---	242	---
1828.00	9.28	93.47	55.20	257	---	257	385
1830.00	10.45	113.19	---	272	---	272	---
1832.00	12.02	135.64	97.30	285	---	285	431
1834.00	13.84	161.48	---	296	---	296	---
1835.36	---	183	---	303	0	303	---
1835.40	---	183	---	304	0	304	---
1835.60	---	186	---	305	14	319	---
1835.80	---	188	---	306	58	364	---
1836.00	16.15	191.44	152.10	307	133	440	474
1836.20	---	194	---	308	240	548	---
1836.40	---	197	---	309	382	691	---
1836.60	---	201	---	311	551	862	---
1836.80	---	205	---	312	743	1055	---
1837.00	17.60	208.31	169.60	313	955	1268	---
1837.20	---	212	---	314	1186	1500	---
1837.40	---	215	---	315	1436	1751	---
1837.60	---	219	---	316	1702	2018	---
1837.80	---	223	---	317	1984	2301	---
1838.00	18.85	226.40	187.00	318	2282	2600	1146
1838.20	---	230	---	319	2595	2914	---
1838.40	---	234	---	320	2923	3243	---
1838.60	---	238	---	321	3265	3586	---
1838.80	---	242	---	322	3622	3944	---
1839.00	---	246	---	323	3992	4315	---
1839.20	---	250	---	324	4375	4699	---
1839.40	---	254	---	325	4772	5097	---
1840.00	20.92	266.15	---	---	---	---	---
1842.00	23.64	310.69	255.00	---	---	---	---
1844.00	26.45	360.75	---	---	---	---	12012
1846.00	28.89	416.07	---	---	---	---	19610

Figure R-11a

Storage and Discharge vs Stage for C560 (Dam 6) Below Emergency Spillway Crest

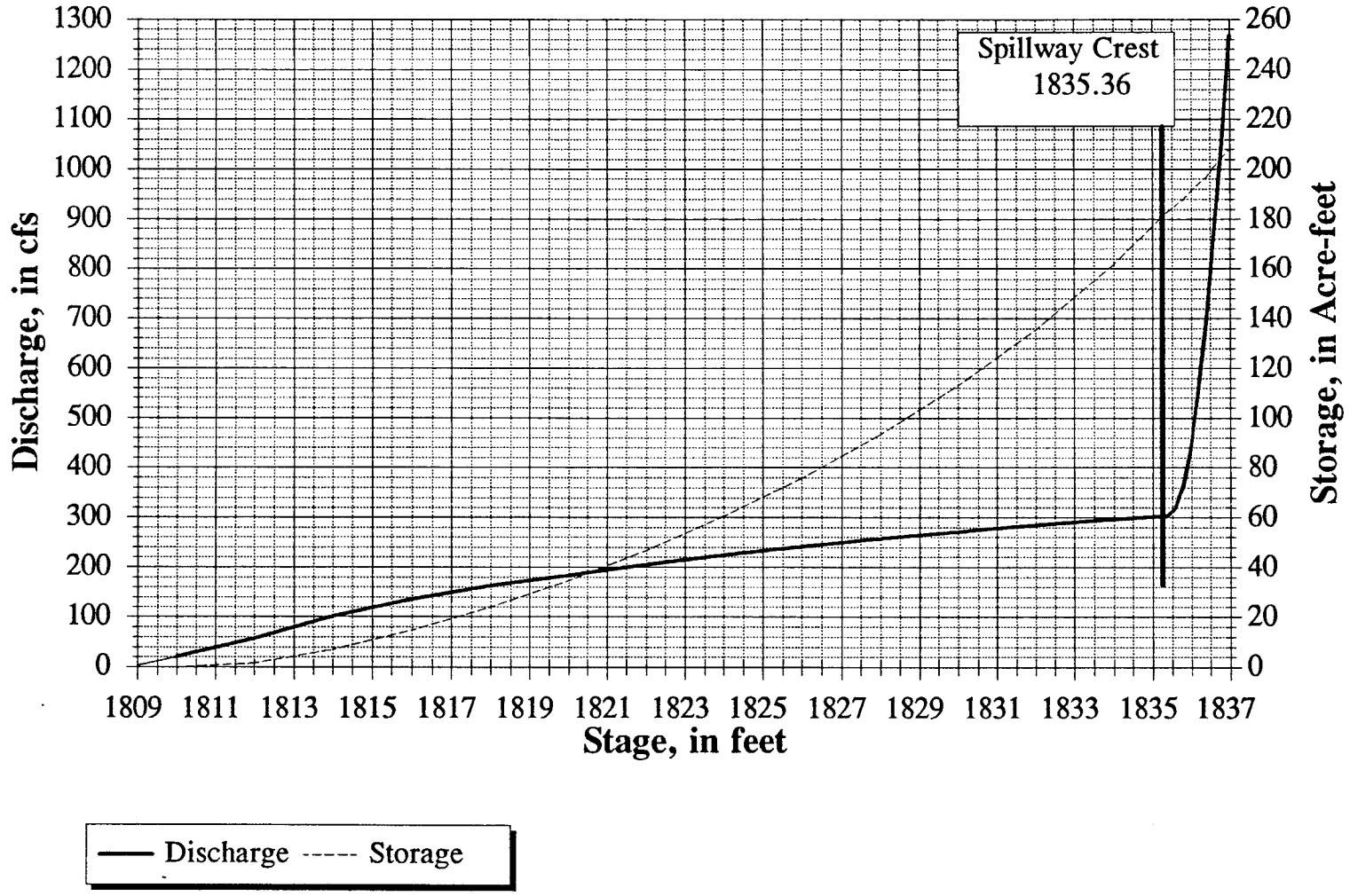
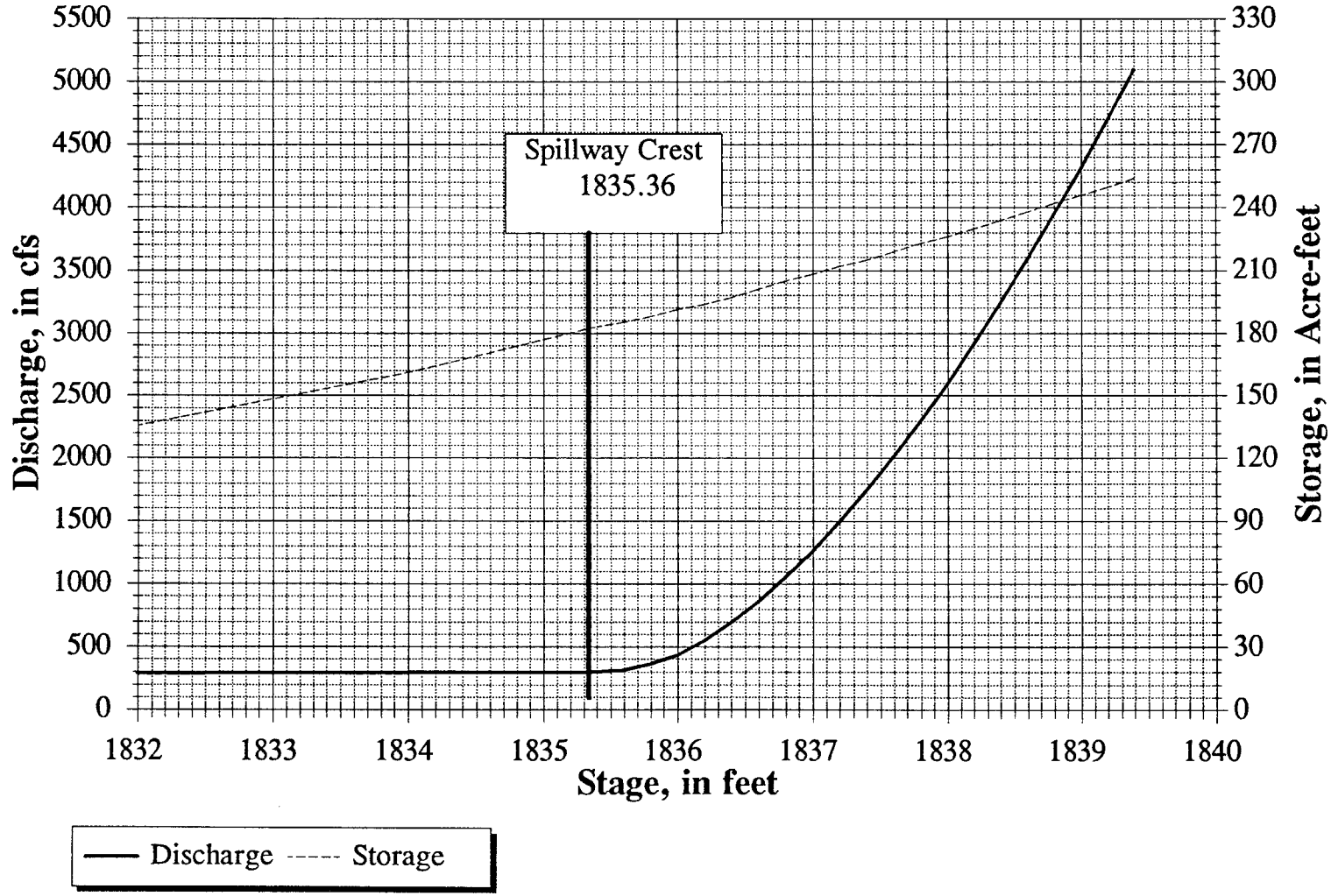


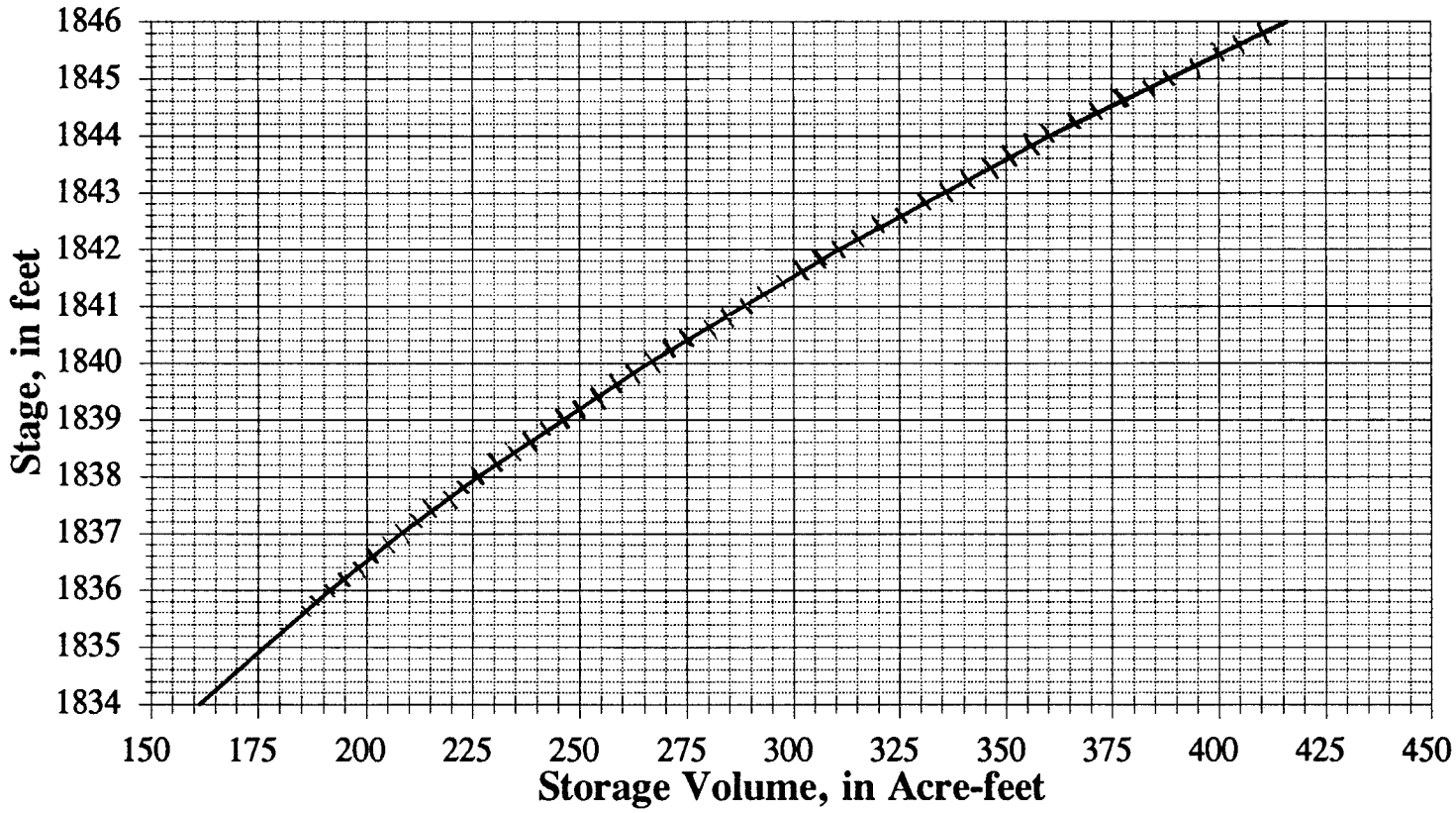
Figure R-11b

Storage and Discharge vs Stage for C560 (Dam 6) Above Emergency Spillway Crest



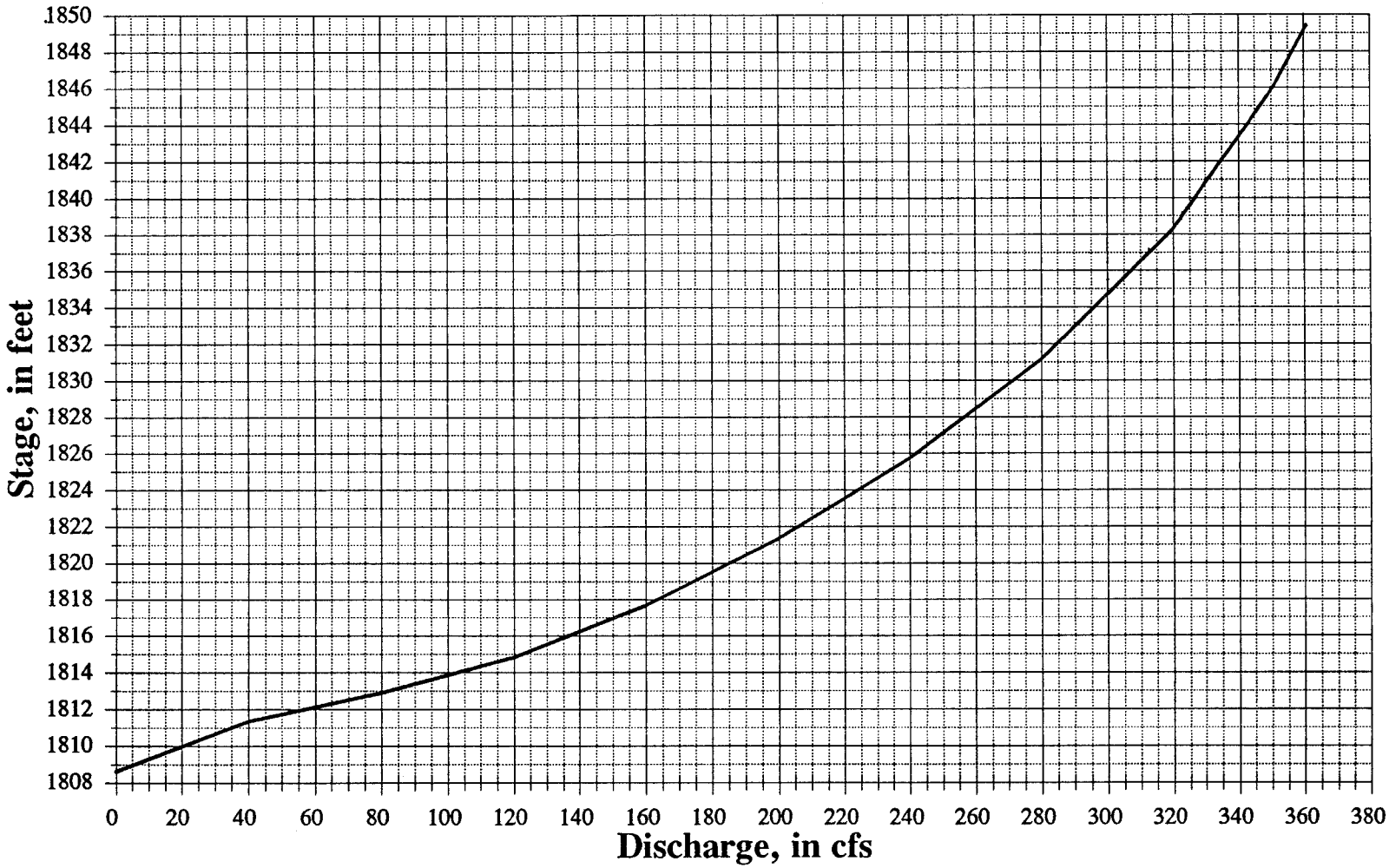
Dam 6 Storage Volume

Calculated from planimetered contours



Dam 6 Stage vs. Discharge

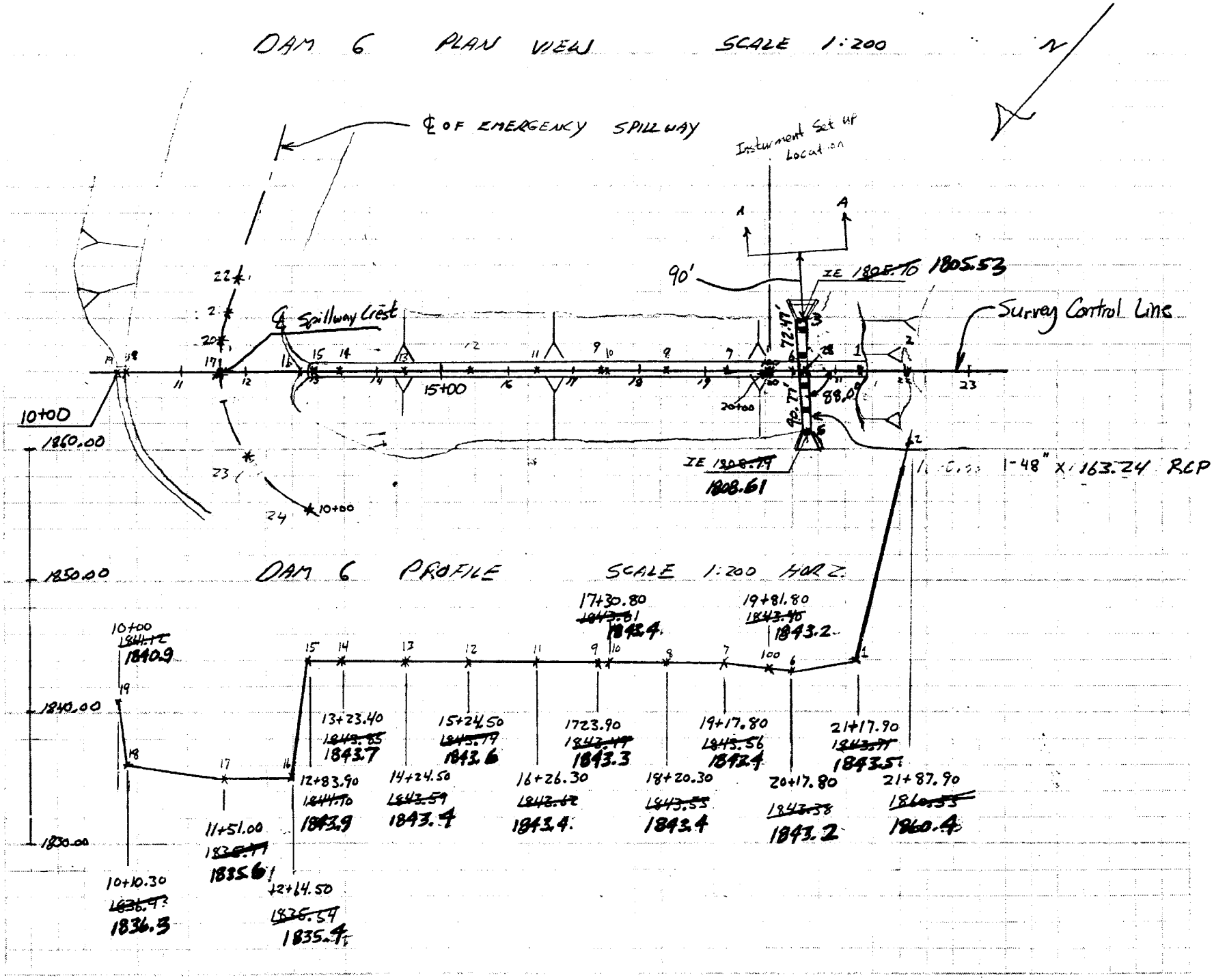
Principal Spillway from HY8



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT F.C.D. M.C.
PROJECT FOUNTAIN HILLS F.I.S.
SUBJECT DAM #6 FIELD SURVEY

SHEET 1 OF 2
DATE 4-7-93
BY R.C.
PROJECT NO. 35



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT F.C.D.M.C.

PROJECT FOUNTAIN HILLS F.I.S.

SUBJECT DAM #6 FIELD SURVEY

SHEET 2 OF 2

DATE 4-7-93

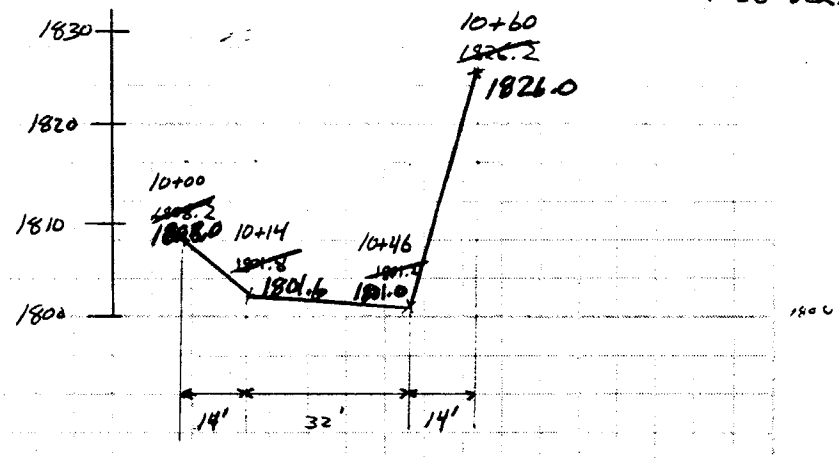
BY R.C.

PROJECT NO. 35

DAM 6

DISCHARGE CHANNEL CROSS SECTION A/A

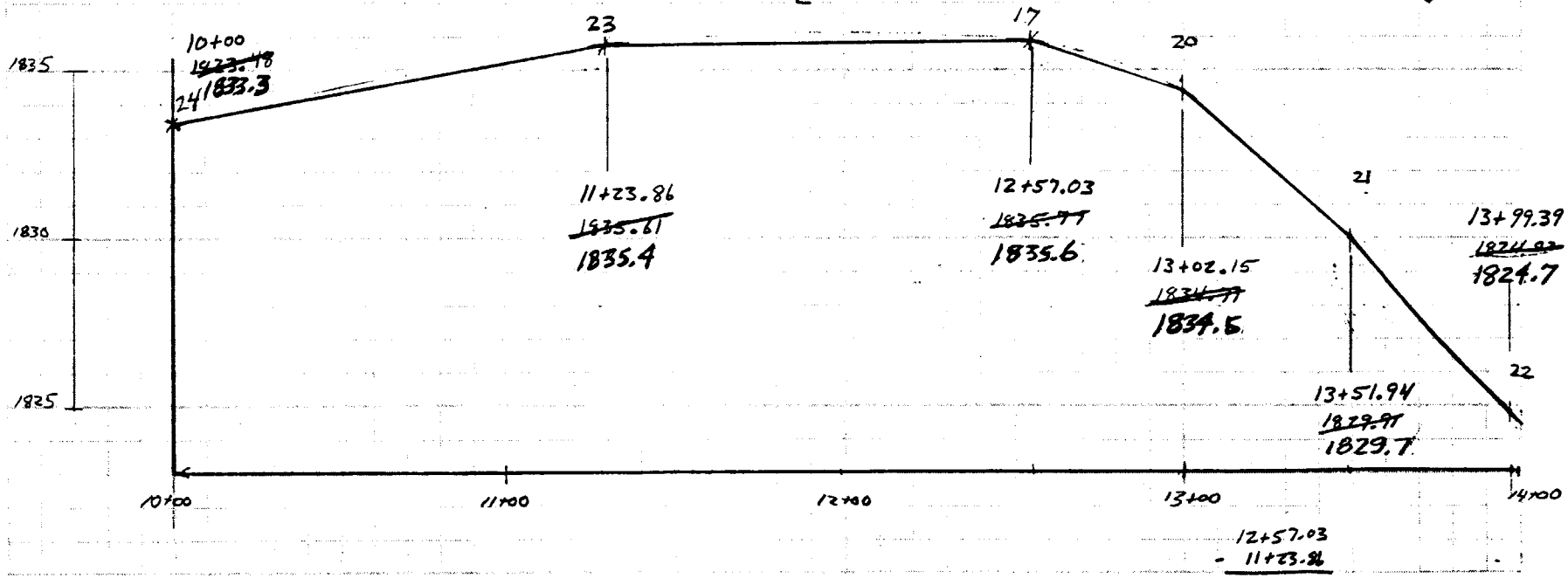
SCALE 1:40 HORZ.
1:20 VERT.



DAM 6

EMERGENCY SPILLWAY PROFILE ALONG ℄

SCALE 1:50 HORZ
1:5 VERT.



12+57.03
- 11+23.86

Weir Breadth: 133 feet

Weir CREST = 1835.36

DAM 6 Profile

File = DAM6.DAT

****

Start At Point Number ..... 19 STA = 10+ 0.00

Inverse	19	SW	0- 0- 0.00	10.30000	18	STA =	10+10.30
Inverse	18	SW	0- 0- 0.00	140.70000	17	STA =	11+51.00
Inverse	17	SW	0- 0- 0.00	113.50000	16	STA =	12+64.50
Inverse	16	SW	0- 0- 0.00	19.40000	15	STA =	12+83.90
Inverse	15	SW	0- 0- 0.00	39.50000	14	STA =	13+23.40
Inverse	14	SW	0- 0- 0.00	101.10000	13	STA =	14+24.50
Inverse	13	SW	0- 0- 0.00	100.00000	12	STA =	15+24.50
Inverse	12	SW	0- 0- 0.00	101.80000	11	STA =	16+26.30
Inverse	11	SW	0- 0- 0.00	97.60000	9	STA =	17+23.90
Inverse	9	SW	0- 0- 0.00	6.90000	10	STA =	17+30.80
Inverse	10	SW	0- 0- 0.00	89.50000	8	STA =	18+20.30
Inverse	8	SW	0- 0- 0.00	97.50000	7	STA =	19+17.80
Inverse	7	SW	0- 0- 0.00	64.00000	100	STA =	19+81.80
Inverse	100	SW	0- 0- 0.00	36.00000	6	STA =	20+17.80
Inverse	6	SW	0- 0- 0.00	100.10000	1	STA =	21+17.90
Inverse	1	SW	0- 0- 0.00	70.00000	2	STA =	21+87.90

Start At Point Number ..... 24 STA = 10+ 0.00

Inverse	24	NE	40-17-52.46	123.85914	23	STA =	11+23.86
Inverse	23	NE	73-59-20.46	133.16857	17	STA =	12+57.03
Inverse	17	SE	83-37- 1.43	45.12703	20	STA =	13+ 2.15
Inverse	20	SE	77-33-35.57	49.78223	21	STA =	13+51.94
Inverse	21	SE	77-41-42.23	47.45159	22	STA =	13+99.39

Emergency Spillway

48" RCP

Dam 6 Angle Right to RCP from dam CL.

Inverse	0 NE	63-44-51.78	22300.14626	1	9863.90000	20000.00000
Inverse	1 NE	0- 0- 0.00	87.85226	28	9951.75226	20000.00000

RADIAL INVERSE FROM LINE - Base Pt. # 28 TO 1

[redacted]					9948.52628	19909.28646
Rad Inv	28 SW	87-57-47.84	90.77088	5	9948.52628	19909.28646
Inverse	28 SW	87-57-47.84	90.77088	5	9948.52628	19909.28646
Inverse	5 NE	87-57-47.84	90.77088	28	9951.75226	20000.00000
Inverse	28 NE	87-57-47.84	72.46696	3	9954.32772	20072.42118
Inverse	3 SW	87-57-47.84	163.23784	5	9948.52628	19909.28646

CURRENT DATE: 07-13-1993
CURRENT TIME: 08:45:16

FILE DATE: 04-27-1993
FILE NAME: C560 (Dam 6)

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1808.61	1805.53	163.27	1 RCP	4.00	4.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C560 (Dam 6) DATE: 04-27-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1808.61	0	0	0	0	0	0	0	0	1
1811.33	40	40	0	0	0	0	0	0	1
1812.89	80	80	0	0	0	0	0	0	1
1814.85	120	120	0	0	0	0	0	0	1
1817.67	160	160	0	0	0	0	0	0	1
1821.32	200	200	0	0	0	0	0	0	1
1825.73	240	240	0	0	0	0	0	0	1
1831.10	280	280	0	0	0	0	0	0	1
1838.25	320	320	0	0	0	0	0	0	1
1846.09	360	351	0	0	0	0	0	9	10
1849.41	400	361	0	0	0	0	0	39	5
1844.00	343	343	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C560 (Dam 6) DATE: 04-27-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1808.61	0.00	0	0	0.00
1811.33	0.00	40	0	0.00
1812.89	0.00	80	0	0.00
1814.85	0.00	120	0	0.00
1817.67	0.00	160	0	0.00

1821.32	0.00	200	0	0.00
1825.73	0.00	240	0	0.00
1831.10	0.00	280	0	0.00
1838.25	0.00	320	0	0.00
1846.09	-0.00	360	0	0.00
1849.41	-0.01	400	0	0.03

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 07-13-1993
CURRENT TIME: 08:45:16

FILE DATE: 04-27-1993
FILE NAME: C560 (Dam 6)

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (4 BY 4) RCP

DIS- HEAD- INLET OUTLET

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*********************************************

    PROJECT:  Fountain Hills North FIS                C560 (Dam 6)
    ENGINEER:  MG
    DATE:   8/24/1993
    TIME:  10:11.22

---------------------------------------------
    INPUT PARAMETERS
---------------------------------------------

    STARTING WSEL:       1835.20
    MAXIMUM WSEL:        1839.60
    STEP SIZE:              0.20
    BREADTH OF WEIR:      133.00

*********************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills North FIS                C560 (Dam 6)
    DATE:   8/24/1993
    TIME:  10:11.22
*********************************************

    POINT    ELEVATION    STATION
    -----    ---------    -------
        1      1840.94    1000.00
        2      1836.25    1010.30
        3      1835.59    1151.00
        4      1835.36    1264.50
```

5 1843.92 1283.90

****
WEIR COEFFICIENT TABLE
PROJECT: Fountain Hills North FIS C560 (Dam 6)
DATE: 8/24/1993
TIME: 10:11.22
****

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.5050
3	0.40	2.5100
4	0.60	2.5150
5	0.80	2.5201
6	1.00	2.5251
7	1.20	2.5301
8	1.40	2.5351
9	1.60	2.5401
10	1.80	2.5451
11	2.00	2.5501
12	2.20	2.5551
13	2.40	2.5602
14	2.60	2.5652
15	2.80	2.5702
16	3.00	2.5752
17	3.20	2.5802
18	3.40	2.5852
19	3.60	2.5902
20	3.80	2.5952
21	4.00	2.6003
22	4.20	2.6053
23	4.40	2.6103

****
UNEVEN WEIR FLOW PROGRAM
FORTRAN VERSION 1.0

PROJECT: Fountain Hills North FIS C560 (Dam 6)
DATE: 8/24/1993
TIME: 10:11.22
****

ELEVATION	DISCHARGE (CFS)
1835.20	0.00
1835.40	0.16
1835.60	13.99
1835.80	58.13
1836.00	132.80
1836.20	240.44
1836.40	382.17
1836.60	551.07
1836.80	742.80
1837.00	955.09
1837.20	1186.39
1837.40	1435.55
1837.60	1701.68
1837.80	1984.06
1838.00	2282.08
1838.20	2595.26
1838.40	2923.17
1838.60	3265.44
1838.80	3621.76
1839.00	3991.85
1839.20	4375.46
1839.40	4772.37
1839.60	5182.40

Table R-16

Storage and Discharge vs Stage Data for C578 (Dam 11)

Stage (ft)	Surface Area (Acres)	Storage Volume (acre-feet)		Discharge		Total Discharge (cfs)	
				Principal Spillway (cfs)	Emergency Spillway (cfs)		
		GVSCE	Tri-Co.			GVSCE	Tri-Co.
1779.15	0.00	0.00	0.00	0	---	0	0
1784.00	0.09	0.15	0.00	95	---	95	88
1786.00	0.63	0.78	---	131	---	131	---
1788.00	1.41	2.77	3.04	160	---	160	153
1790.00	1.98	6.15	---	181	---	181	---
1792.00	2.62	10.73	10.64	203	---	203	198
1794.00	3.03	16.38	---	221	---	221	---
1796.00	3.65	23.05	22.68	239	---	239	234
1798.00	4.62	31.30	---	254	---	254	---
1800.00	5.59	41.49	42.40	269	---	269	265
1802.00	6.58	53.65	---	283	---	283	---
1804.00	7.68	67.89	72.60	294	---	294	293
1806.00	8.83	84.39	---	305	---	305	---
1808.00	10.23	103.43	112.80	316	---	316	319
1810.00	12.55	126.17	---	325	---	325	---
1810.78	---	137	---	327	0	327	---
1810.80	---	138	---	328	0	328	---
1811.00	---	139	---	329	7	336	---
1811.20	---	143	---	330	36	366	---
1811.40	---	145	---	331	95	426	---
1811.60	---	147	---	332	190	522	---
1811.80	---	151	---	332	321	653	---
1812.00	15.81	154.47	165.40	333	479	812	343
1812.20	---	157	---	333	659	992	---
1812.40	---	161	---	334	860	1194	---
1812.60	---	164	---	334	1080	1414	---
1812.80	---	167	---	335	1317	1651	---
1813.00	---	171	---	336	1570	1906	---
1813.20	---	174	---	336	1840	2176	---
1813.40	---	177	---	337	2125	2462	---
1813.60	---	181	---	338	2425	2763	---
1813.80	---	184	---	339	2739	3077	---
1814.00	17.16	187.43	---	340	3066	3406	---
1814.20	---	190	---	340	3408	3748	---
1814.40	---	194	---	341	3763	4104	---
1814.60	---	197	---	342	4131	4473	---
1814.80	---	202	---	343	4512	4855	---
1815.00	---	205	---	344	4906	5250	---
1816.00	18.44	223.03	230.70	---	---	---	5793
1818.00	19.92	261.38	---	---	---	---	---
1820.00	20.71	302.00	307.50	---	---	---	16225
1822.00	23.18	345.87	353.00	---	---	---	22850

Figure R-12a

Storage and Discharge vs Stage for C578 (Dam 11) Below Emergency Spillway Crest

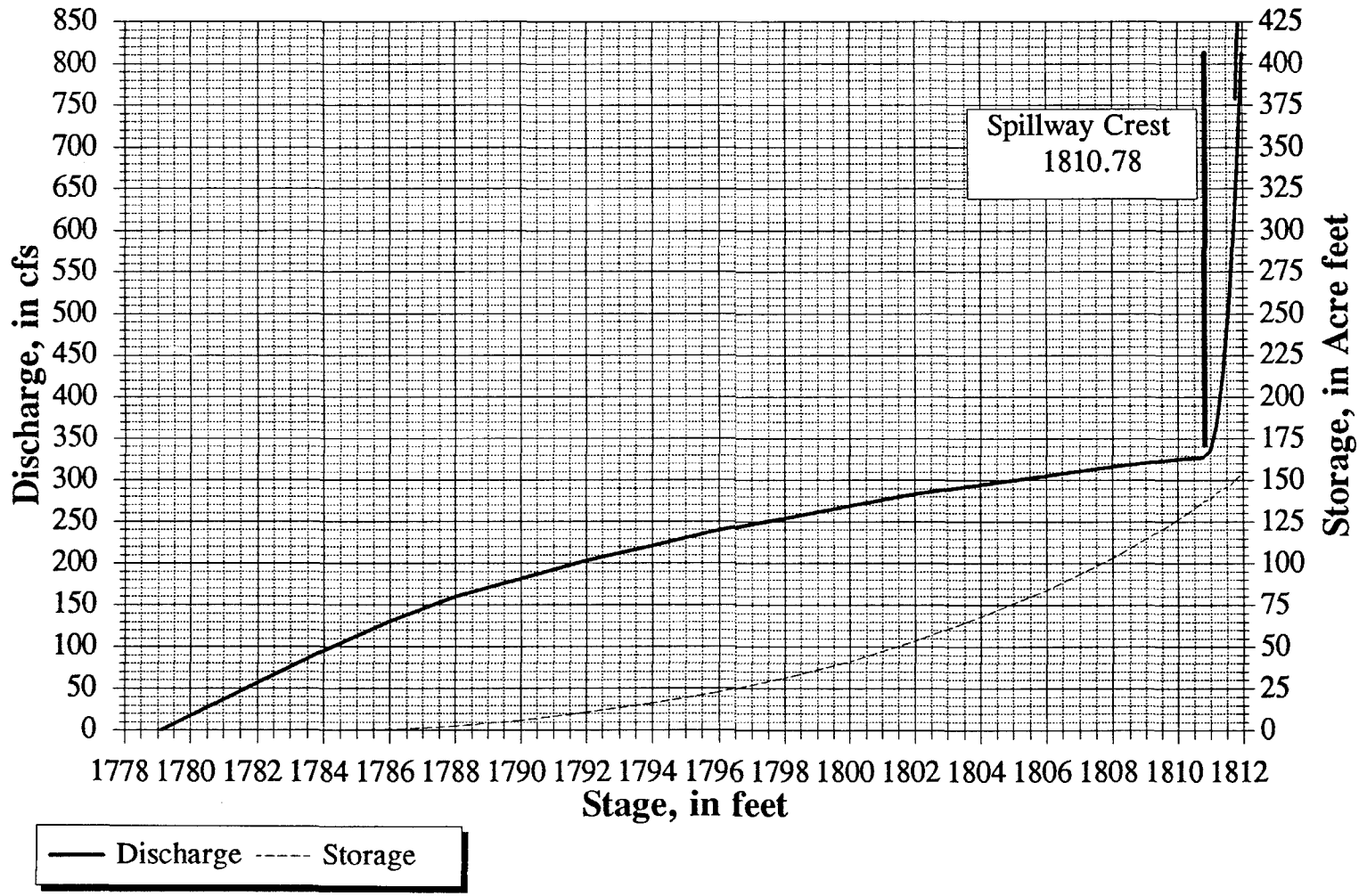
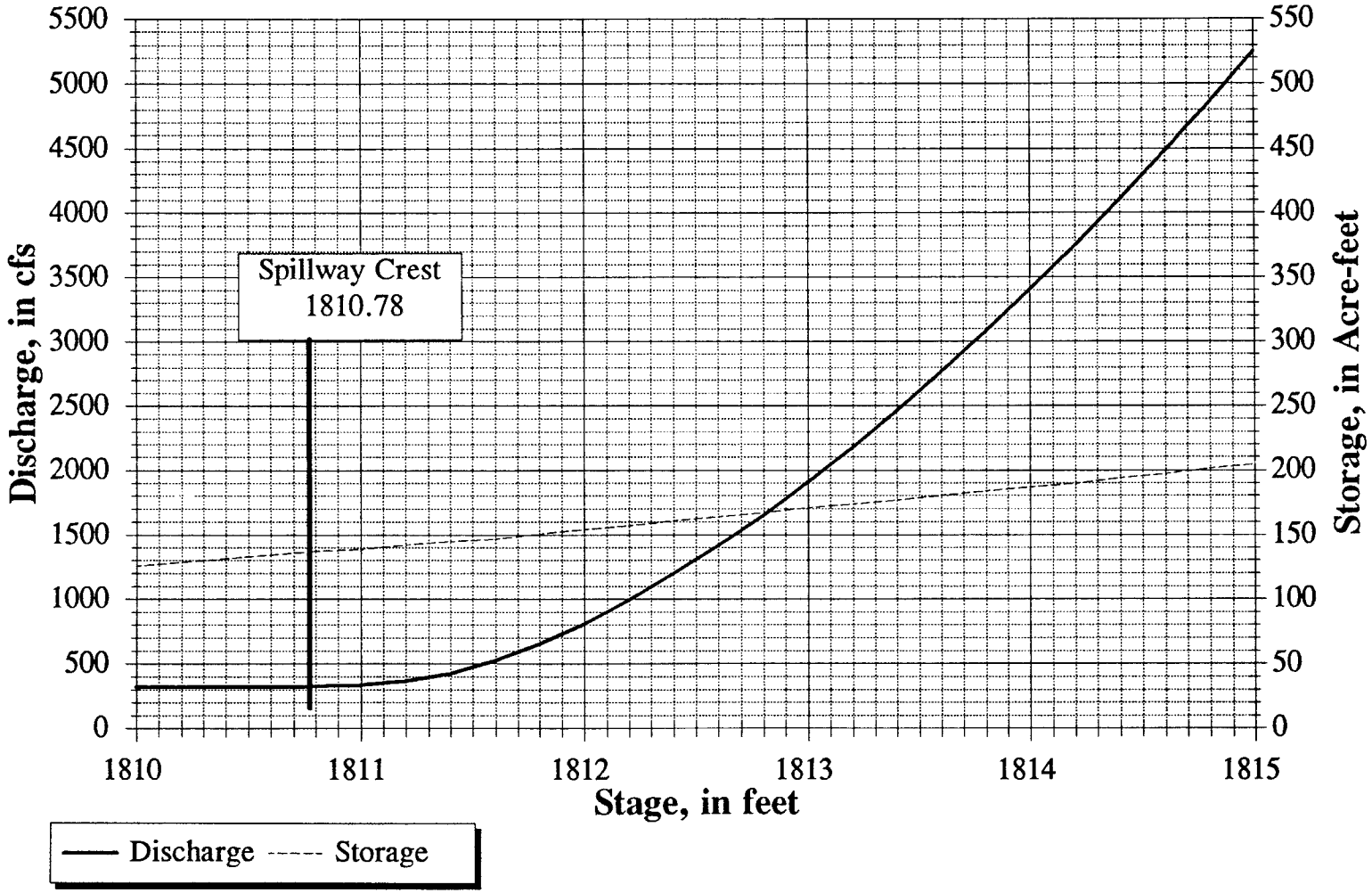


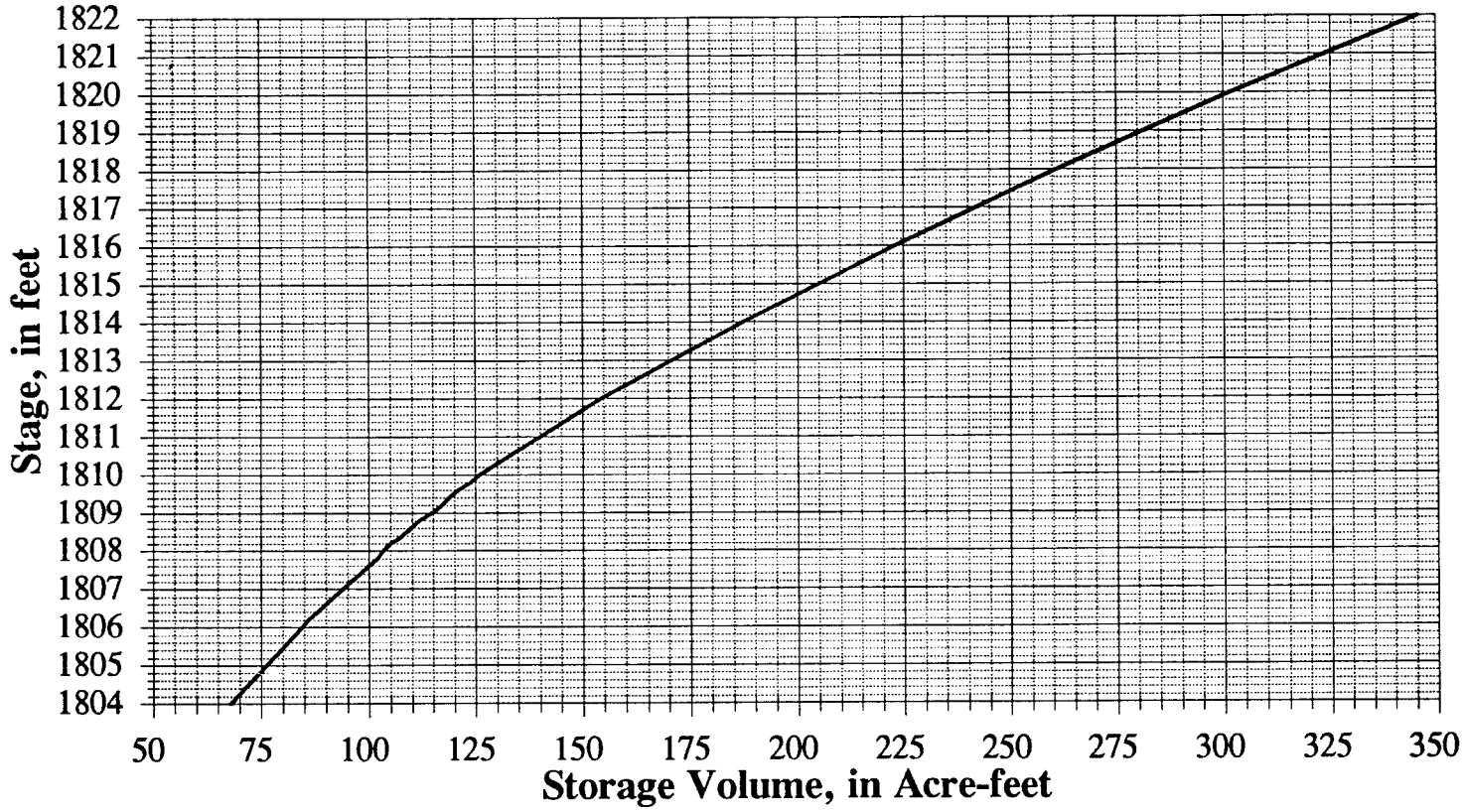
Figure R-12b

Storage and Discharge vs Stage for C578 (Dam 11) Above Emergency Spillway Crest



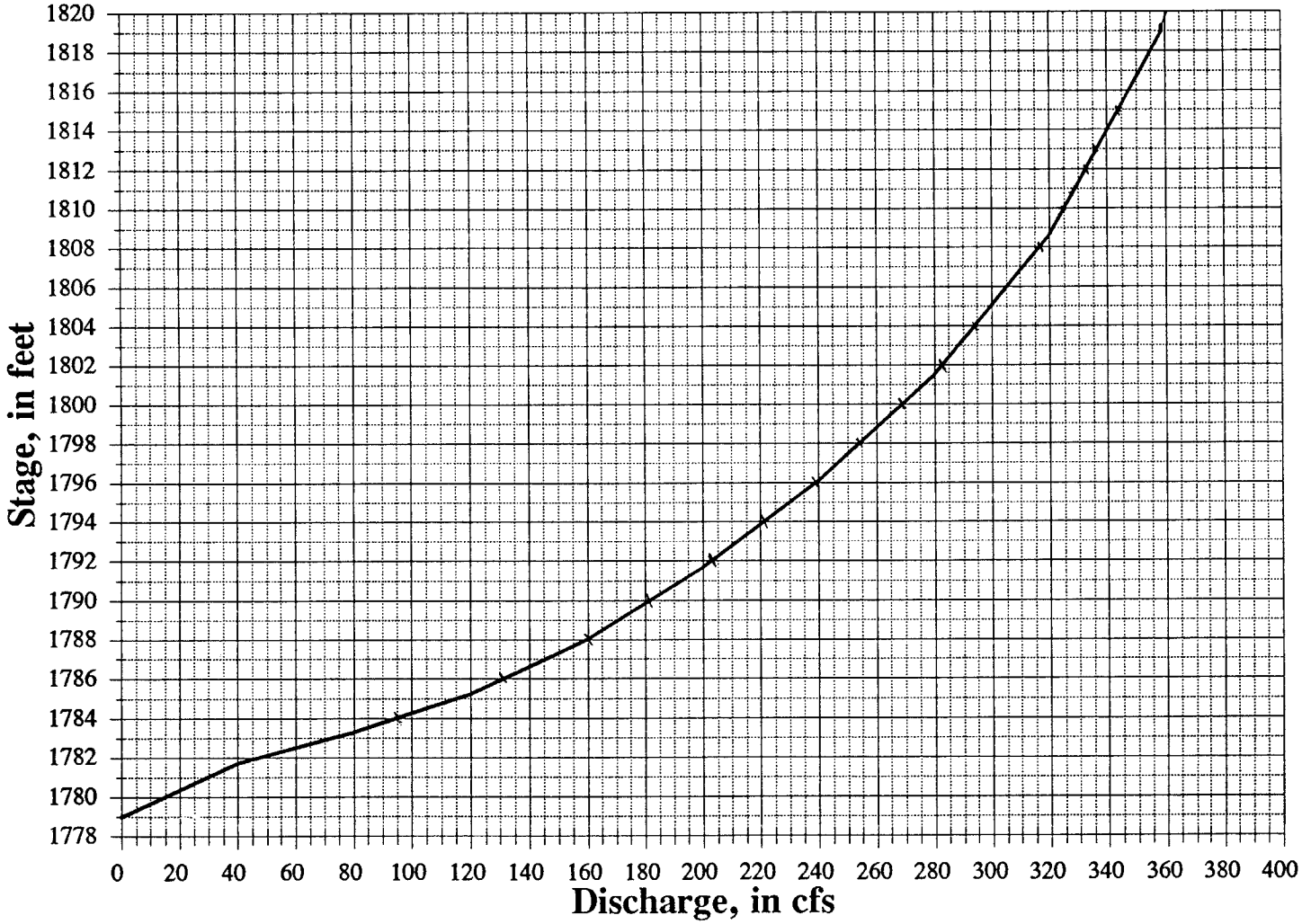
Dam 11 Storage Volume

Calculated from planimetered contours



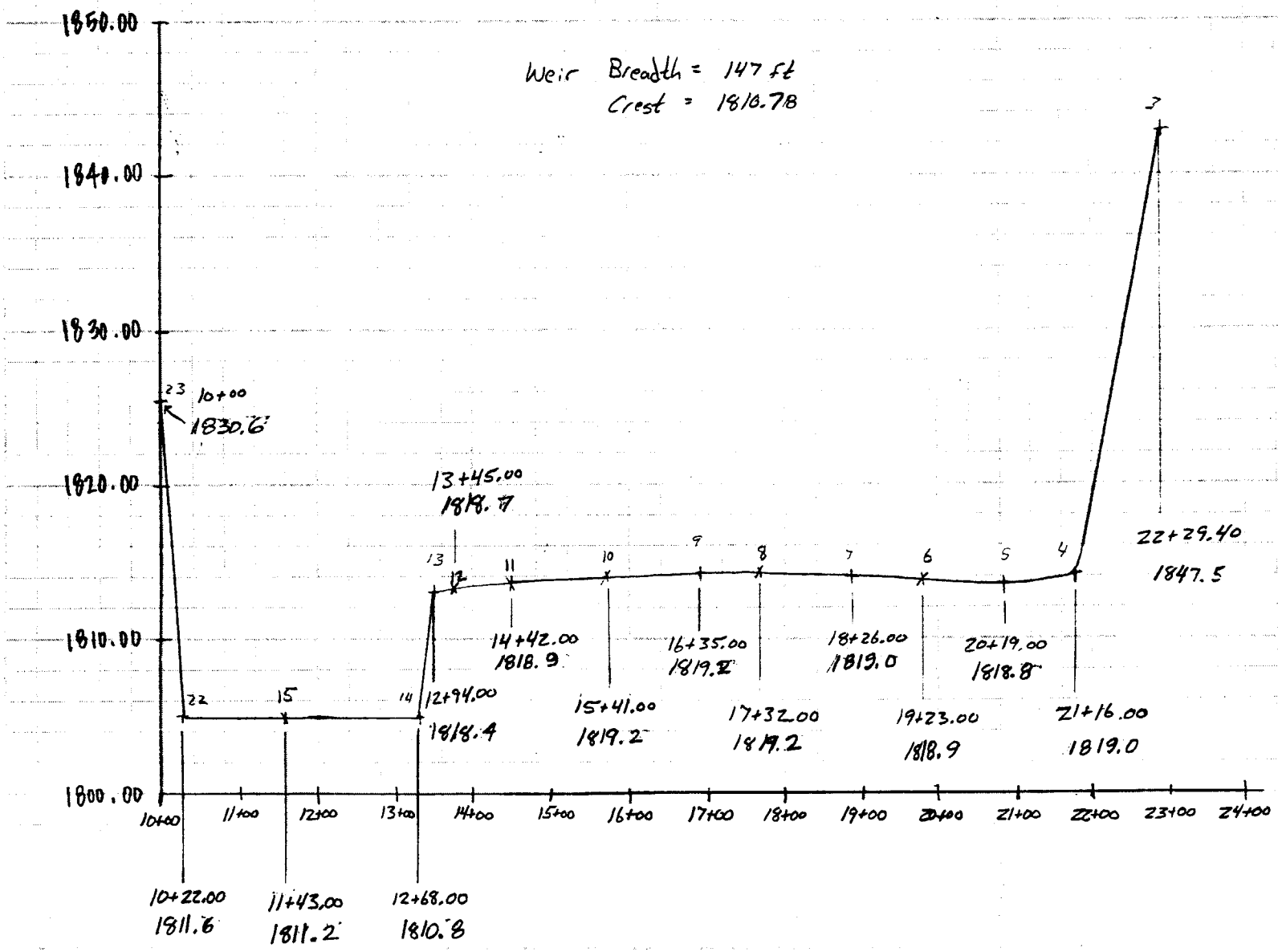
Dam 11 Stage vs. Discharge

Principal Spillway from HY8



DAM 11 PROFILE

SCALE 1:200 HORZ.
1:10 VERT

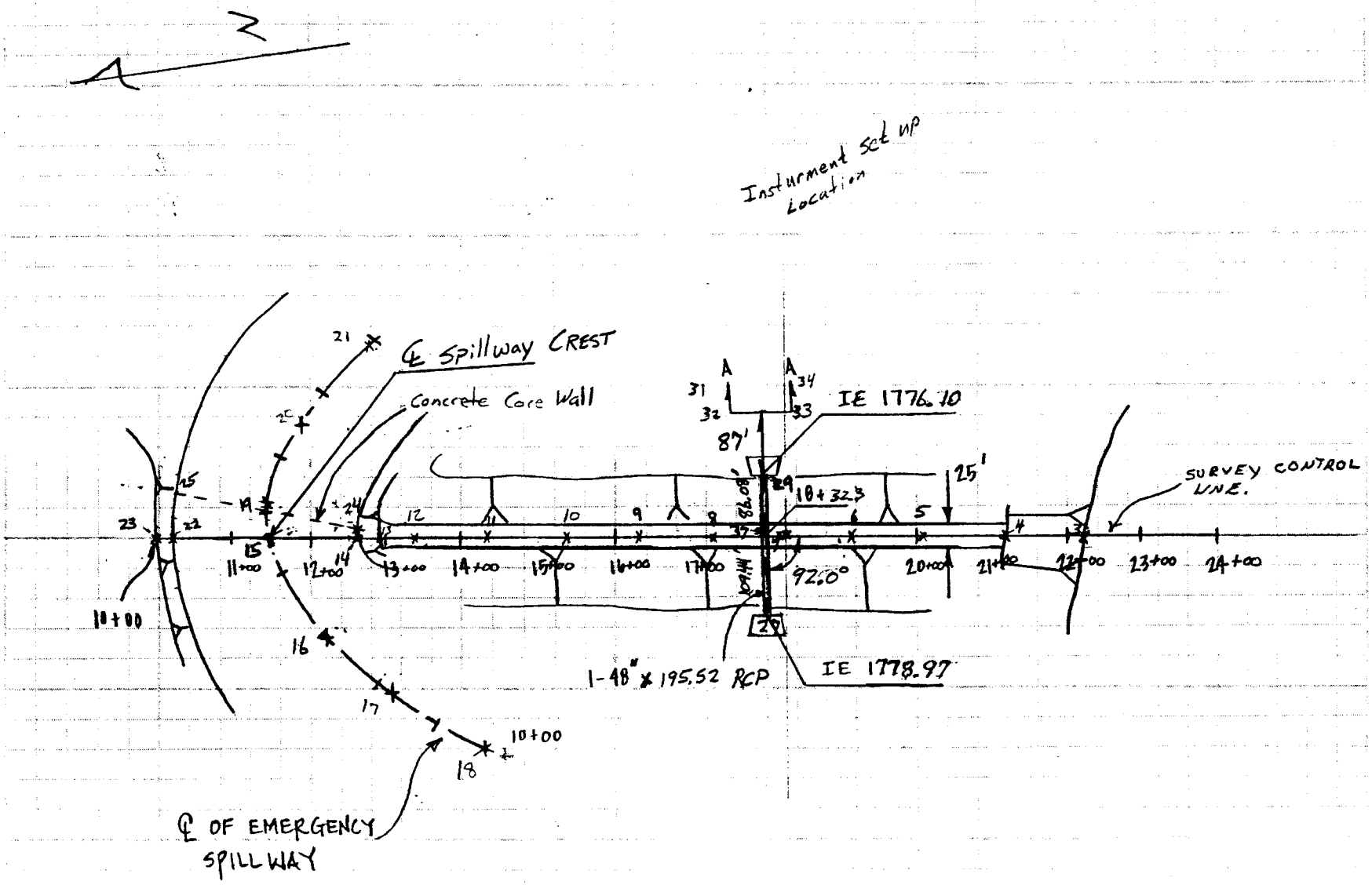


GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT FCD MC
PROJECT FOUNTAIN HILLS
SUBJECT DAM 11 FIELD SURVEY

SHEET ____ OF ____
DATE 4/12/93
BY MG
PROJECT NO. 35

DAM 11 PLAN VIEW SCALE 1:200



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT FCD MC

PROJECT FOUNTAIN HILLS

SUBJECT DAM 11 FIELD SURVEY

SHEET ___ OF ___

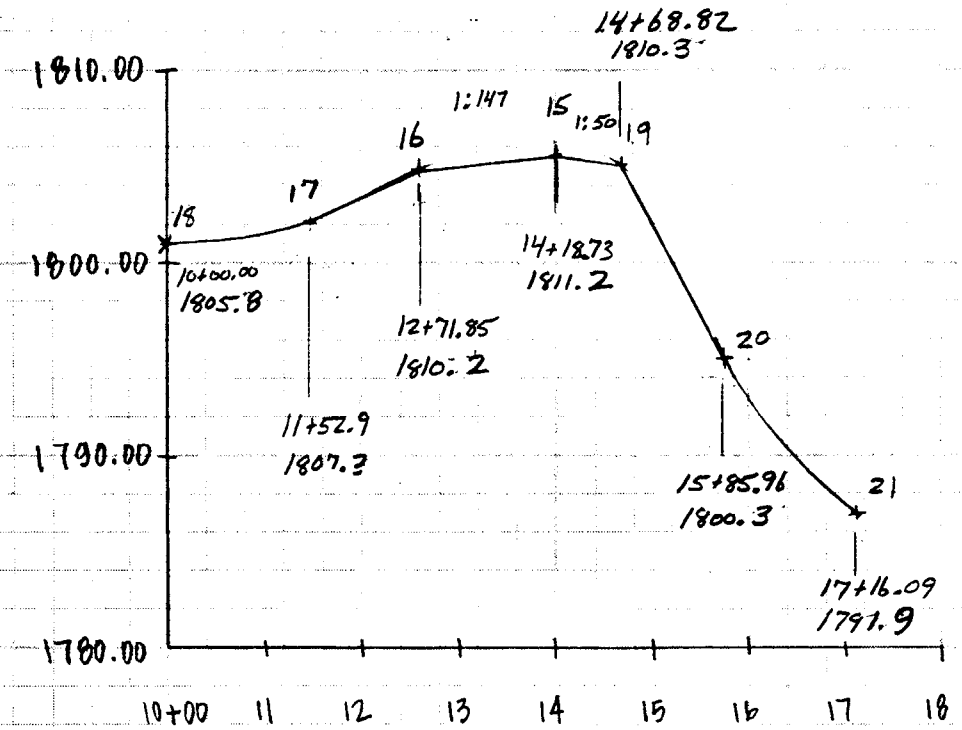
DATE 4/12/93

BY MG

PROJECT NO. 35

EMERGENCY SPILLWAY PROFILE
ALONG ℄

SCALE 1:200 HORZ
1:10 VERT



14+18.73
−12+71.85
Breadth = 147 feet

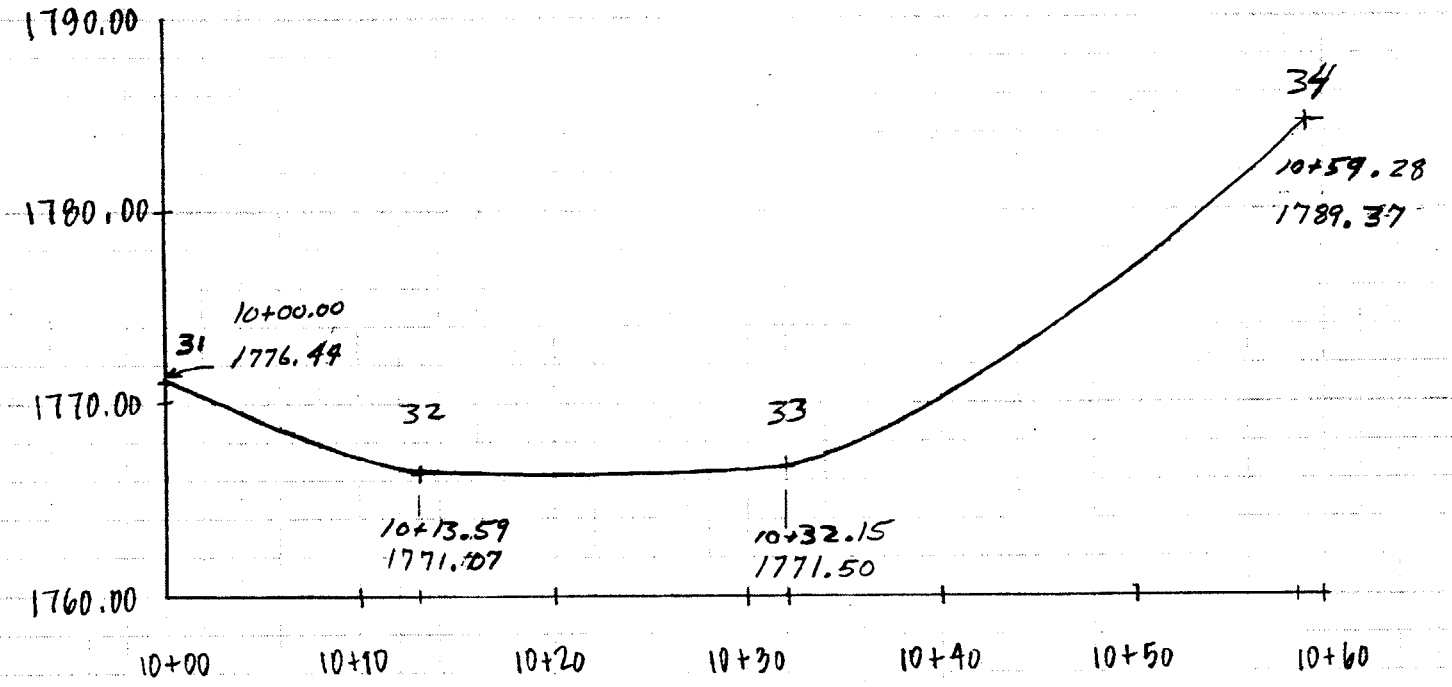
GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT FLD MC
PROJECT FOUNTAIN HILLS
SUBJECT DAM 11 FIELD SURVEY

SHEET ___ OF ___
DATE 4/12/93
BY MG
PROJECT NO. 35

CHANNEL CROSS SECTION A-A

SCALE 1:10 HORZ
1:10 VERT



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT FLD MC
PROJECT FOUNTAIN HILLS
SUBJECT DAM 11 FIELD SURVEY

SHEET ____ OF ____
DATE 4/12/93
BY MG
PROJECT NO. 35

Dam 11 Profile

File = DAM11.DAT Page No. 1

****

Start At Point Number ..... 23 STA = 10+ 0.00

Inverse	23	SW	0- 0- 0.00	22.00000	22	STA =	10+22.00
Inverse	22	SW	0- 0- 0.00	121.00000	15	STA =	11+43.00
Inverse	15	SW	0- 0- 0.00	125.00000	14	STA =	12+68.00
Inverse	14	SW	0- 0- 0.00	26.00000	13	STA =	12+94.00
Inverse	13	SW	0- 0- 0.00	51.00000	12	STA =	13+45.00
Inverse	12	SW	0- 0- 0.00	97.00000	11	STA =	14+42.00
Inverse	11	SW	0- 0- 0.00	99.00000	10	STA =	15+41.00
Inverse	10	SW	0- 0- 0.00	94.00000	9	STA =	16+35.00
Inverse	9	SW	0- 0- 0.00	97.00000	8	STA =	17+32.00
Inverse	8	SW	0- 0- 0.00	94.00000	7	STA =	18+26.00
Inverse	7	SW	0- 0- 0.00	97.00000	6	STA =	19+23.00
Inverse	6	SW	0- 0- 0.00	96.00000	5	STA =	20+19.00
Inverse	5	SW	0- 0- 0.00	97.00000	4	STA =	21+16.00
Inverse	4	SW	0- 0- 0.00	113.40000	3	STA =	22+29.40

Dam 11 Emergency Spillway Profile

File = DAM11.DAT Page No. 1

****

Start At Point Number ..... 18 STA = 10+ 0.00 EL =

Inverse	18	NE	25-38-22.64	152.89562	17	STA = 11+52.90	EL =
Inverse	17	NE	42-58- 9.00	118.95717	16	STA = 12+71.85	EL =
Inverse	16	NE	56-27-13.26	146.87419	15	STA = 14+18.73	EL =
Inverse	15	SE	82-12- 2.75	50.09112	19	STA = 14+68.82	EL =
Inverse	19	SE	67-13- 1.16	117.14220	20	STA = 15+85.96	EL =
Inverse	20	SE	55-53-21.16	130.12612	21	STA = 17+16.09	EL =

File = DAM11.DAT Page No. 2

****

48" RCP

Dam 11 Angle Right from RCP to dam CL.

Inverse	21	SW	22- 3-32.68	706.59052	6	9911.00000	20000.00000
Inverse	6	NE	0- 0- 0.00	90.66645	37	10001.66645	20000.00000

RADIAL INVERSE FROM LINE - Base Pt. # 37 TO 6

==========

[redacted]						10005.41635	19890.62403
Rad Inv	37	NW	88- 2-11.09	109.44023	27	10005.41635	19890.62403
Inverse	37	NW	88- 2-11.09	109.44023	27	10005.41635	19890.62403
Inverse	27	SE	88- 2-11.09	109.44023	37	10001.66645	20000.00000
Inverse	37	SE	88- 2-11.09	86.08098	29	9998.71694	20086.03043
Inverse	29	NW	88- 2-11.09	195.52121	27	10005.41635	19890.62403

****

Inverse	27 SE	88- 2-11.09	195.52121	29	9998.71694	20086.03043
Inverse	29 NE	84-42- 6.20	89.41275	32	10006.97338	20175.06117
Inverse	32 SW	84-42- 6.20	89.41275	29	9998.71694	20086.03043
Inverse	29 SE	83-26- 9.43	84.87210	33	9989.01489	20170.34617

Avg dist to X-section = 87 ft

Start At Point Number ..... 31 STA = 10+ 0.00

Inverse	31 SE	5-46- 8.02	13.58620	32	STA =	10+13.59
Inverse	32 SW	14-42-39.51	18.56713	33	STA =	10+32.15
Inverse	33 SE	1-10-38.71	27.12554	34	STA =	10+59.28

Downstream X-Section

CURRENT DATE: 07-13-1993
CURRENT TIME: 08:48:41

FILE DATE: 04-27-1993
FILE NAME: C578 (Dam 11)

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1778.97	1776.10	195.54	1 RCP	4.00	4.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C578 (Dam 11) DATE: 04-27-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1778.97	0	0	0	0	0	0	0	0	1
1781.70	40	40	0	0	0	0	0	0	1
1783.26	80	80	0	0	0	0	0	0	1
1785.22	120	120	0	0	0	0	0	0	1
1788.03	160	160	0	0	0	0	0	0	1
1791.69	200	200	0	0	0	0	0	0	1
1796.10	240	240	0	0	0	0	0	0	1
1801.46	280	280	0	0	0	0	0	0	1
1808.62	320	320	0	0	0	0	0	0	1
1819.28	360	359	0	0	0	0	0	0	13
1823.44	400	371	0	0	0	0	0	29	6
1819.00	359	359	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C578 (Dam 11) DATE: 04-27-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1778.97	0.00	0	0	0.00
1781.70	0.00	40	0	0.00
1783.26	0.00	80	0	0.00
1785.22	0.00	120	0	0.00
1788.03	0.00	160	0	0.00

1791.69	0.00	200	0	0.00
1796.10	0.00	240	0	0.00
1801.46	0.00	280	0	0.00
1808.62	0.00	320	0	0.00
1819.28	-0.01	360	0	0.02
1823.44	-0.01	400	0	0.02

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 07-13-1993
CURRENT TIME: 08:48:41

FILE DATE: 04-27-1993
FILE NAME: C578 (Dam 11)

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (4 BY 4) RCP

DIS- HEAD- INLET OUTLET

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*********************************************


    PROJECT:  Fountain Hills North FIS                C578 (Dam 11)
    ENGINEER:  MG
    DATE:   8/24/1993
    TIME:  10:14.10




---------------------------------------------
    INPUT PARAMETERS
---------------------------------------------


    STARTING WSEL:       1810.60
    MAXIMUM WSEL:        1816.00
    STEP SIZE:              0.20
    BREADTH OF WEIR:      147.00




*********************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills North FIS                C578 (Dam 11)
    DATE:   8/24/1993
    TIME:  10:14.10
*********************************************


    POINT    ELEVATION    STATION
    -----    ---------    -------
        1      1830.59    1000.00
        2      1811.60    1022.00
        3      1811.18    1143.00
        4      1810.78    1268.00
```

5 1818.35 1294.00

****
WEIR COEFFICIENT TABLE
PROJECT: Fountain Hills North FIS C578 (Dam 11)
DATE: 8/24/1993
TIME: 10:14.10
****

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.5045
3	0.40	2.5091
4	0.60	2.5136
5	0.80	2.5181
6	1.00	2.5227
7	1.20	2.5272
8	1.40	2.5317
9	1.60	2.5363
10	1.80	2.5408
11	2.00	2.5454
12	2.20	2.5499
13	2.40	2.5544
14	2.60	2.5590
15	2.80	2.5635
16	3.00	2.5680
17	3.20	2.5726
18	3.40	2.5771
19	3.60	2.5816
20	3.80	2.5862
21	4.00	2.5907
22	4.20	2.5952
23	4.40	2.5998
24	4.60	2.6043
25	4.80	2.6088
26	5.00	2.6134
27	5.20	2.6179
28	5.40	2.6224

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
    PROJECT:  Fountain Hills North FIS                C578 (Dam 11)
    DATE:   8/24/1993
    TIME:  10:14.10
*********************************************
```

ELEVATION	DISCHARGE (CFS)
1810.60	0.00
1810.80	0.02
1811.00	7.17
1811.20	36.14
1811.40	95.32
1811.60	190.34
1811.80	321.26
1812.00	478.99
1812.20	659.41
1812.40	860.17
1812.60	1079.67
1812.80	1316.71
1813.00	1570.40
1813.20	1839.98
1813.40	2124.85
1813.60	2424.51
1813.80	2738.51
1814.00	3066.49
1814.20	3408.12
1814.40	3763.12
1814.60	4131.25
1814.80	4512.27
1815.00	4905.99
1815.20	5312.23
1815.40	5730.85
1815.60	6161.68
1815.80	6604.60
1816.00	7059.50

Table R-17
Storage and Discharge vs Stage Data for C584 (Dam 7)

Stage (ft)	Surface Area (Acres)	Storage Volume (acre-feet)		Discharge: Principal Spillway (cfs)	Discharge: Emergency Spillway (cfs)	Total Discharge (cfs)	
		GVSCE	Tri-Co.			GVSCE	Tri-Co.
1884.84	0.00	0.00	0.00	0	---	0	---
1886.00	0.00	0.00	0.00	18	---	18	---
1888.00	0.00	0.00	0.00	55	---	55	---
1890.00	0.00	0.00	0.00	100	---	100	---
1892.00	0.14	0.09	0.00	135	---	135	---
1894.00	0.39	0.60	0.00	163	---	163	---
1896.00	0.48	1.47	2.80	185	---	185	198
1898.00	0.72	2.66	---	205	---	205	---
1900.00	0.92	4.30	6.40	223	---	223	233
1902.00	1.02	6.24	---	241	---	241	---
1904.00	1.28	8.53	11.60	257	---	257	265
1906.00	1.46	11.27	---	272	---	272	---
1908.00	1.83	14.55	18.60	285	---	285	293
1910.00	2.28	18.66	---	296	---	296	---
1912.00	2.81	23.74	28.60	307	---	307	319
1914.00	3.30	29.84	---	318	---	318	---
1916.00	4.04	37.17	41.80	326	---	326	343
1918.00	5.10	46.29	---	333	---	333	---
1920.00	6.15	57.52	61.80	341	---	341	365
1922.00	7.32	70.97	---	348	---	348	---
1924.00	8.37	86.65	---	355	---	355	---
1924.76	---	94	---	357	0	357	---
1924.80	---	94	---	358	0	358	---
1925.00	---	96	---	359	6	365	---
1925.20	---	97	---	359	26	385	---
1925.40	---	99	---	360	67	427	---
1925.60	---	101	---	360	133	493	---
1925.80	---	103	---	361	226	587	---
1926.00	9.90	104.90	108.00	362	342	704	395
1926.20	---	107	---	362	481	843	---
1926.40	---	109	---	363	644	1007	---
1926.60	---	111	---	364	828	1192	---
1926.80	---	113	---	364	1030	1394	---
1927.00	---	115	---	365	1250	1615	---
1927.20	---	118	---	365	1487	1852	---
1927.40	---	120	---	366	1740	2106	---
1927.60	---	122	---	366	2008	2374	---
1927.80	---	124	---	367	2291	2658	---
1928.00	11.47	126.25	148.20	367	2589	2956	1640
1928.20	---	128	---	368	2901	3269	---
1928.40	---	131	---	369	3227	3596	---
1928.60	---	133	---	370	3567	3937	---
1928.80	---	136	---	371	3921	4292	---
1929.00	---	139	---	372	4289	4661	---
1930.00	13.37	151.07	173.70	---	---	---	4033
1932.00	15.08	179.50	203.70	---	---	---	7306
1934.00	16.66	211.23	233.60	---	---	---	11384

Figure R-13a

Storage and Discharge vs Stage for C584 (Dam 7) Below Emergency Spillway Crest

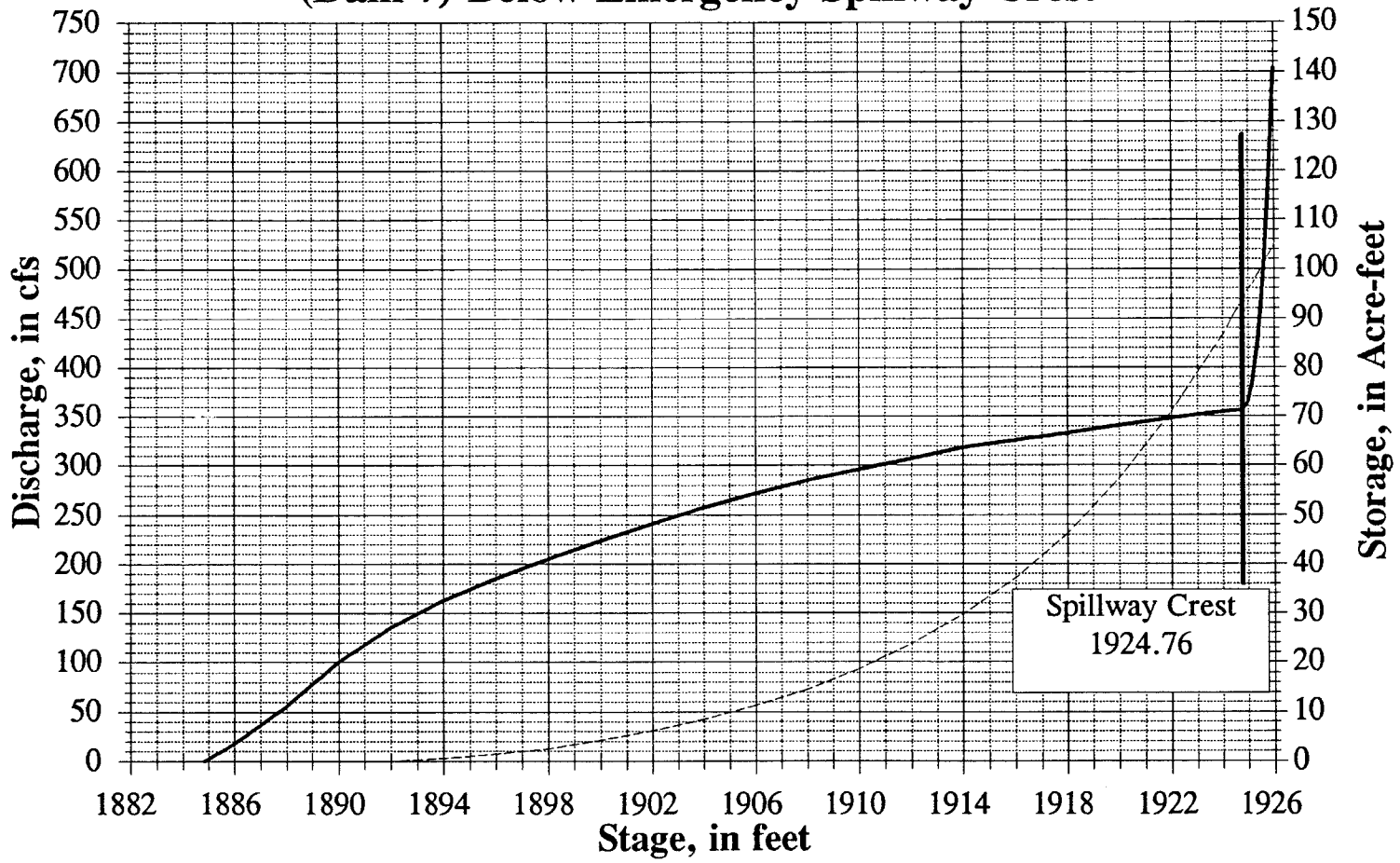
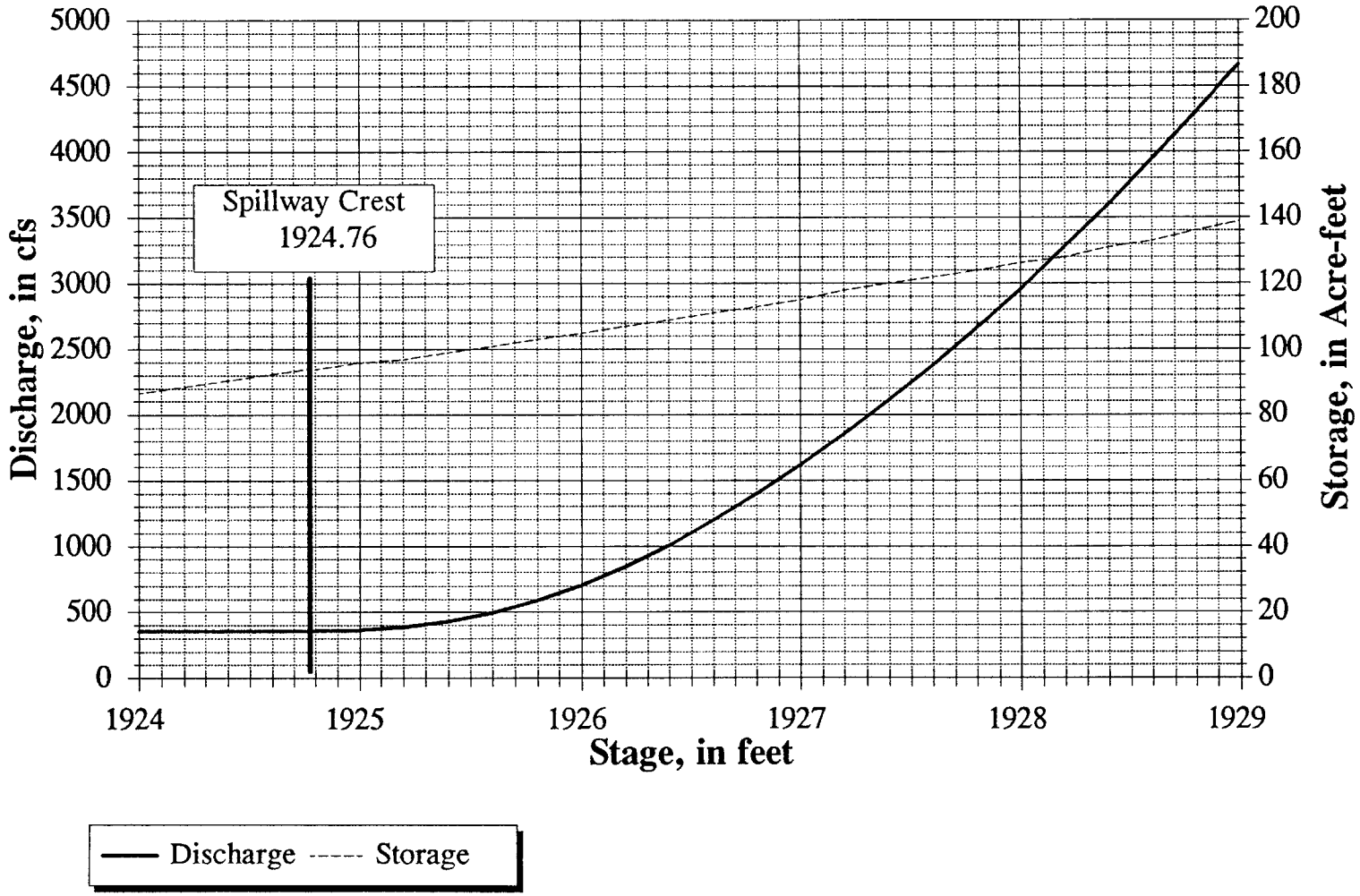


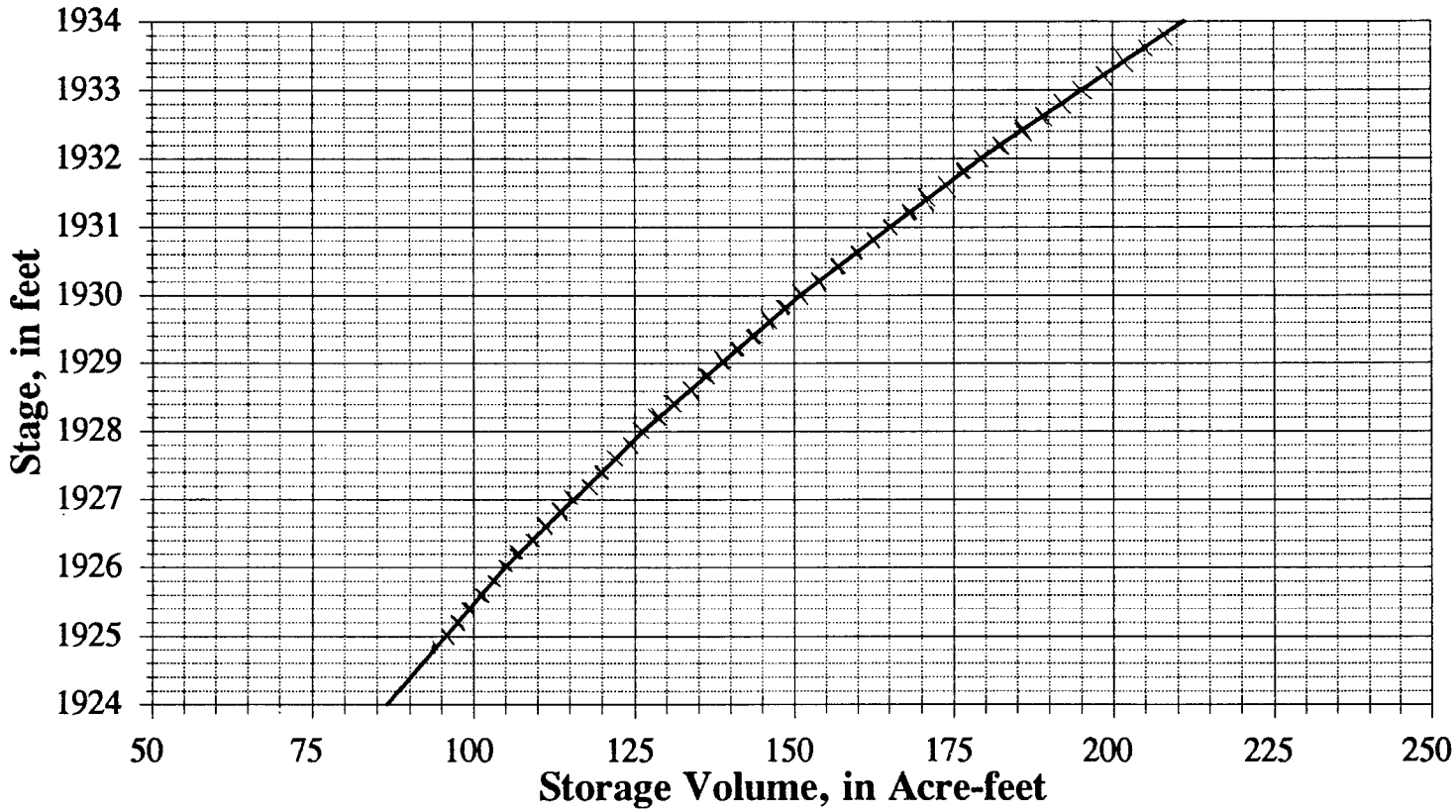
Figure R-13b

Storage and Discharge vs Stage for C584 (Dam 7) Above Emergency Spillway Crest



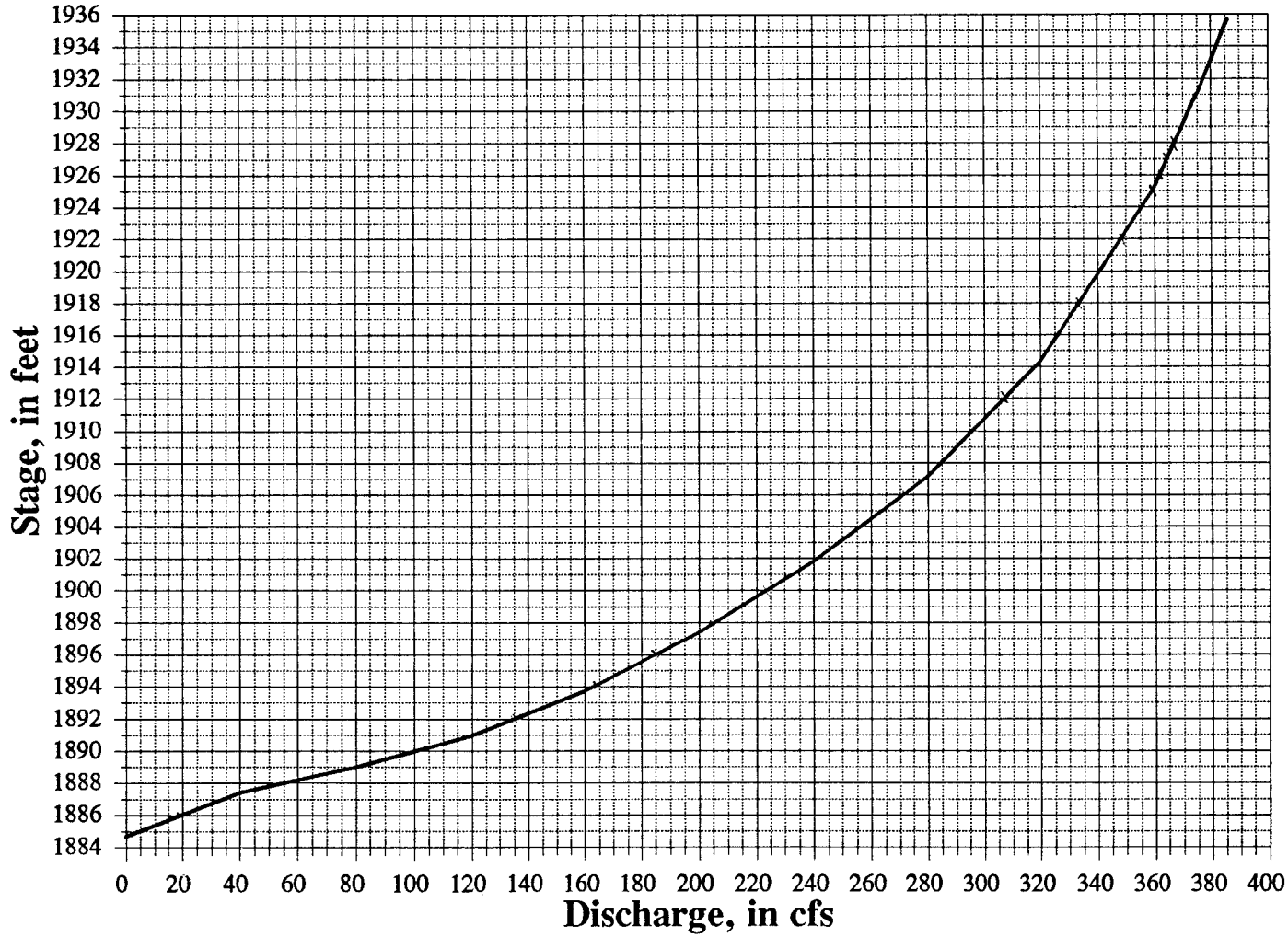
Dam 7 Storage Volume

Calculated from planimetered contours



Dam 7 Stage vs. Discharge

Principal Spillway from HY8

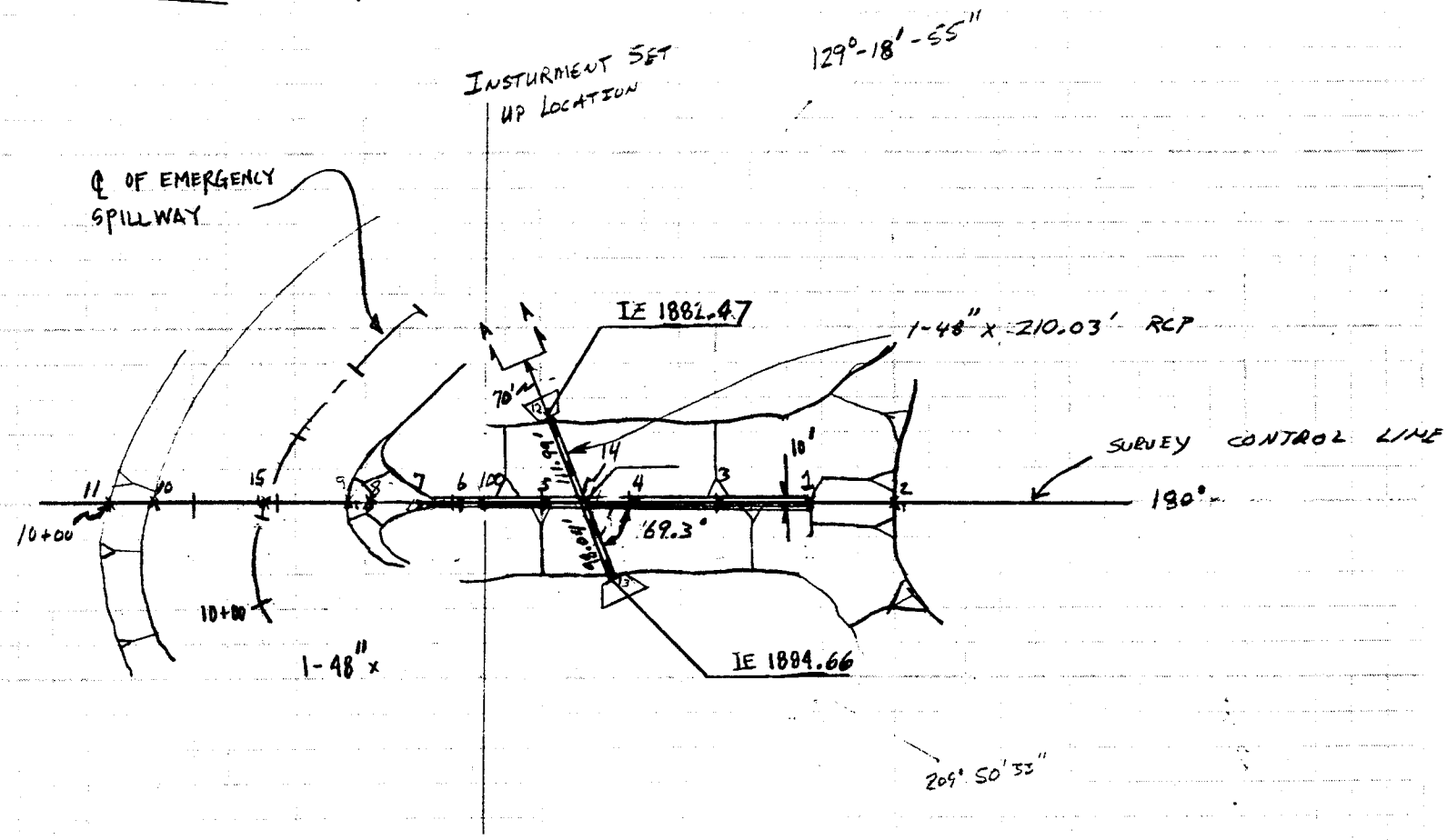


DAM 7 PLAN VIEW SCALE 1:200

SHEET ____ OF ____
DATE 4/13/93
BY MG
PROJECT NO. 35

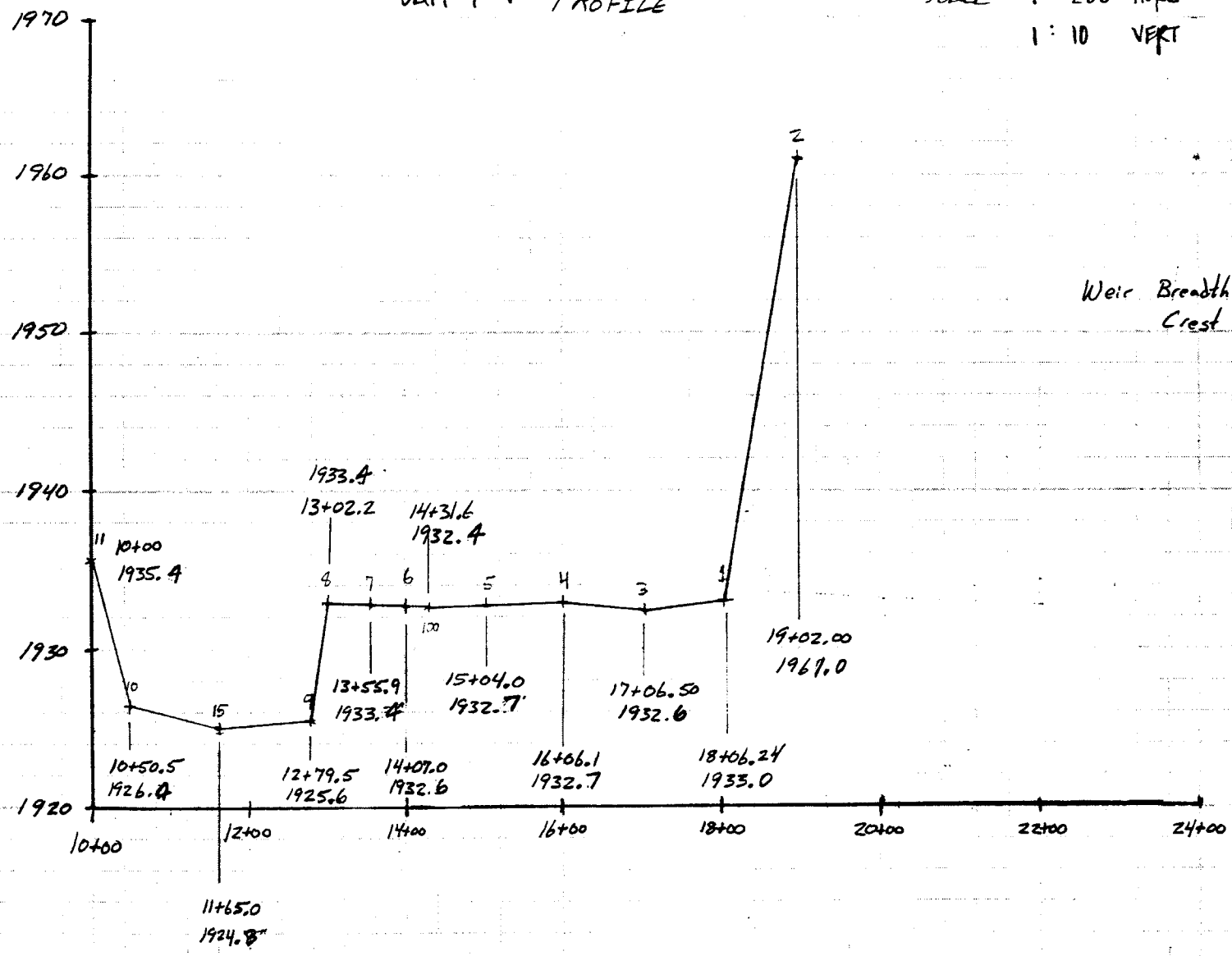
GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT FCD MC
PROJECT FOUNTAIN HILLS
SUBJECT DAM 7 FIELD SURVEY



DAM 7 : PROFILE

SCALE 1 : 200 HORZ
1 : 10 VERT



Weir Breadth = 100 ft
Crest = 1924.76

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

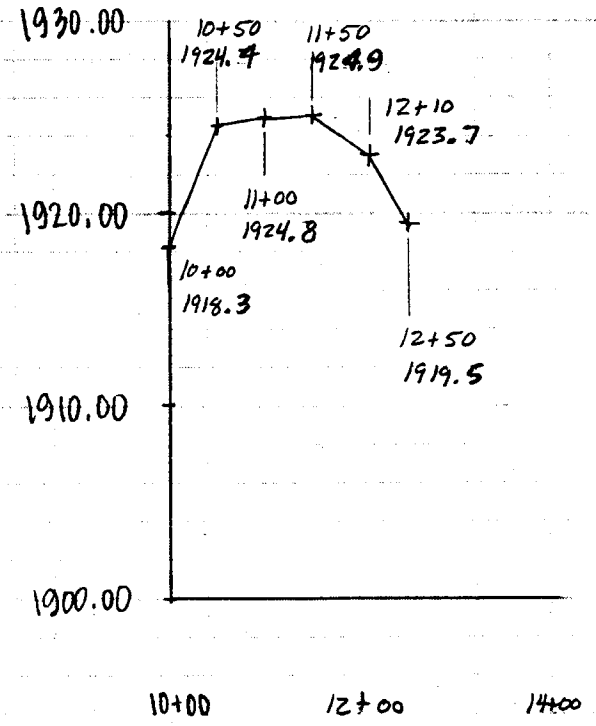
CLIENT FLD MC
PROJECT FOUNTAIN HILLS
SUBJECT DAM 7 FIELD SURVEY

SHEET ___ OF ___
DATE 4/13/93
BY MG
PROJECT NO. 35

DAM 7 : EMERGENCY SPILLWAY PROFILE

SCALE 1:200 HORZ
1:10 VERT

Weir Breadth = 11+50 − 10+50 = 100 ft



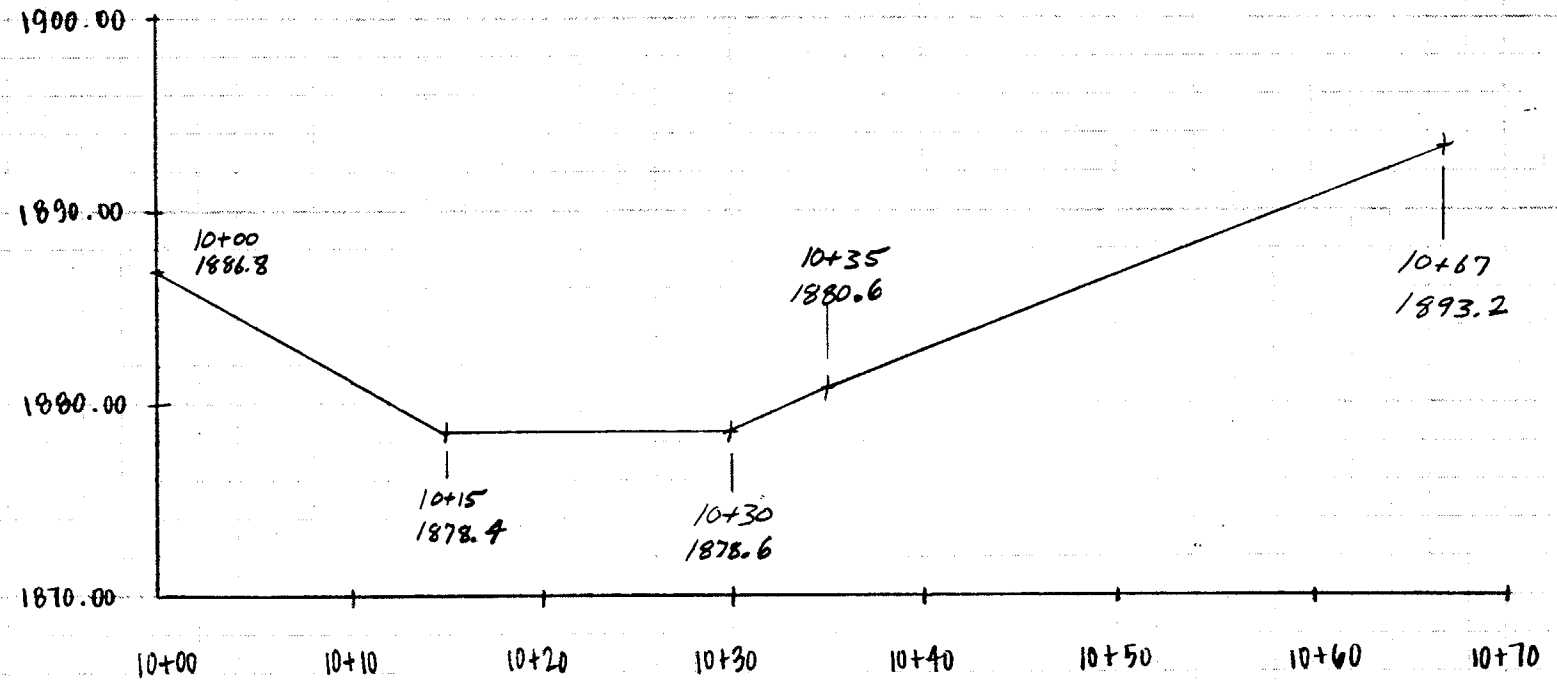
: STATIONING IS FROM SURVEY NOTES
(Distances were chained)

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT FCD MC
PROJECT FOUNTAIN HILLS
SUBJECT DAM 7 FIELD SURVEY

SHEET ___ OF ___
DATE 4/13/93
BY MG
PROJECT NO. 35

DAM 7 : CHANNEL CROSS SECTION SCALE 1" = 10'



ELEV. and STATIONING FROM SURVEY NOTES.

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT FLD MC

PROJECT FOUNTAIN HILLS

SUBJECT DAM 7 FIELD SURVEY

SHEET ____ OF ____

DATE 4/13/93

BY MG

PROJECT NO. 35

DAM 7 PROFILE

File = DAM7.DAT

****

Start At Point Number					11	STA =	10+ 0.00	EL	1935.55	35.37
Inverse	11	SW	0- 0- 0.00	50.50000	10	STA =	10+50.50	EL	1926.54	26.36
Inverse	10	SW	0- 0- 0.00	114.50000	15	STA =	11+65.00	EL	1924.77	24.79
Inverse	15	SW	0- 0- 0.00	114.50000	9	STA =	12+79.50	EL	1925.80	25.62
Inverse	9	SW	0- 0- 0.00	22.70000	8	STA =	13+ 2.20	EL	1933.57	33.39
Inverse	8	SW	0- 0- 0.00	53.70000	7	STA =	13+55.90	EL	1932.54	33.36
Inverse	7	SW	0- 0- 0.00	51.10000	6	STA =	14+ 7.00	EL	1932.77	32.59
Inverse	6	SW	0- 0- 0.00	24.60000	100	STA =	14+31.60	EL	1932.56	32.38
Inverse	100	SW	0- 0- 0.00	72.40000	5	STA =	15+ 4.00	EL	1932.84	32.66
Inverse	5	SW	0- 0- 0.00	102.10000	4	STA =	16+ 6.10	EL	1932.84	32.66
Inverse	4	SW	0- 0- 0.00	100.40000	3	STA =	17+ 6.50	EL	1932.76	32.58
Inverse	3	SW	0- 0- 0.00	99.74000	1	STA =	18+ 6.24	EL	1933.20	33.02
Inverse	1	SW	0- 0- 0.00	95.76000	2	STA =	19+ 2.00	EL	1911.74	6096

See Survey Notes for Spillway Profile Stationing.

Pt	Desc.	STA	EL	
17	100' LT	10+00	1918.44	18.26
16	50' LT	10+50	1924.54	24.36
15	℄ Spillway	11+00	1924.94	24.76
19	50' RT	11+50	1925.04	24.86
18	110' RT	12+10	1923.84	23.66
20	150' RT	12+50	1919.64	19.46

DAm 7 48" RCP

****

Dam 7 Angle Right to RCP from dam CL.

RADIAL INVERSE FROM LINE - Base Pt. # 13 TO 2

Rad Inv	14 AR	69-20-28.00	98.04533	13	-159.91323	-91.74076
Rad Inv	14 SW	69-20-28.00	98.04533	13	-159.91323	-91.74076
Inverse	14 SW	69-20-28.00	98.04533	13	-159.91323	-91.74076
Inverse	13 NE	69-20-28.00	98.04533	14	-125.32249	-0.00000
Inverse	14 NE	69-20-28.01	111.98710	12	-85.81305	104.78604
Inverse	12 SW	69-20-28.00	210.03243	13	-159.91323	-91.74076

CURRENT DATE: 07-13-1993
CURRENT TIME: 08:47:14

FILE DATE: 04-27-1993
FILE NAME: C584 (Dam 7)

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1884.66	1882.47	210.04	1 RCP	4.00	4.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C584 (Dam 7) DATE: 04-27-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1884.66	0	0	0	0	0	0	0	0	1
1887.40	40	40	0	0	0	0	0	0	1
1888.96	80	80	0	0	0	0	0	0	1
1890.92	120	120	0	0	0	0	0	0	1
1893.73	160	160	0	0	0	0	0	0	1
1897.39	200	200	0	0	0	0	0	0	1
1901.80	240	240	0	0	0	0	0	0	1
1907.16	280	280	0	0	0	0	0	0	1
1914.32	320	320	0	0	0	0	0	0	1
1925.15	360	360	0	0	0	0	0	0	1
1935.71	400	386	0	0	0	0	0	14	13
1933.00	380	380	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C584 (Dam 7) DATE: 04-27-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1884.66	0.00	0	0	0.00
1887.40	0.00	40	0	0.00
1888.96	0.00	80	0	0.00
1890.92	0.00	120	0	0.00
1893.73	0.00	160	0	0.00

1897.39	0.00	200	0	0.00
1901.80	0.00	240	0	0.00
1907.16	0.00	280	0	0.00
1914.32	0.00	320	0	0.00
1925.15	0.00	360	0	0.00
1935.71	-0.00	400	0	0.00

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 07-13-1993 FILE DATE: 04-27-1993
CURRENT TIME: 08:47:14 FILE NAME: C584 (Dam 7)

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (4 BY 4) RCP

DIS- HEAD- INLET OUTLET

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*********************************************


    PROJECT:  Fountain Hills North FIS                C584 (Dam 7)
    ENGINEER:  MG
    DATE:   8/24/1993
    TIME:  10: 5.59




-----------------------------------------------
    INPUT PARAMETERS
-----------------------------------------------


    STARTING WSEL:       1924.60
    MAXIMUM WSEL:        1930.00
    STEP SIZE:              0.20
    BREADTH OF WEIR:      100.00




*********************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills North FIS                C584 (Dam 7)
    DATE:   8/24/1993
    TIME:  10: 5.59
*********************************************
```

POINT	ELEVATION	STATION
1	1935.37	1000.00
2	1926.36	1050.50
3	1924.76	1165.00
4	1925.62	1279.50

5 1933.39 1302.20

```
*********************************************
    WEIR COEFFICIENT TABLE
    PROJECT:  Fountain Hills North FIS                C584 (Dam 7)
    DATE:   8/24/1993
    TIME:  10: 5.59
*********************************************
```

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.5067
3	0.40	2.5133
4	0.60	2.5200
5	0.80	2.5267
6	1.00	2.5333
7	1.20	2.5400
8	1.40	2.5467
9	1.60	2.5533
10	1.80	2.5600
11	2.00	2.5667
12	2.20	2.5733
13	2.40	2.5800
14	2.60	2.5867
15	2.80	2.5933
16	3.00	2.6000
17	3.20	2.6067
18	3.40	2.6133
19	3.60	2.6200
20	3.80	2.6267
21	4.00	2.6333
22	4.20	2.6400
23	4.40	2.6467
24	4.60	2.6533
25	4.80	2.6600
26	5.00	2.6667
27	5.20	2.6733
28	5.40	2.6800

^L

****

UNEVEN WEIR FLOW PROGRAM
FORTRAN VERSION 1.0
PROJECT: Fountain Hills North FIS C584 (Dam 7)
DATE: 8/24/1993
TIME: 10: 5.59
****

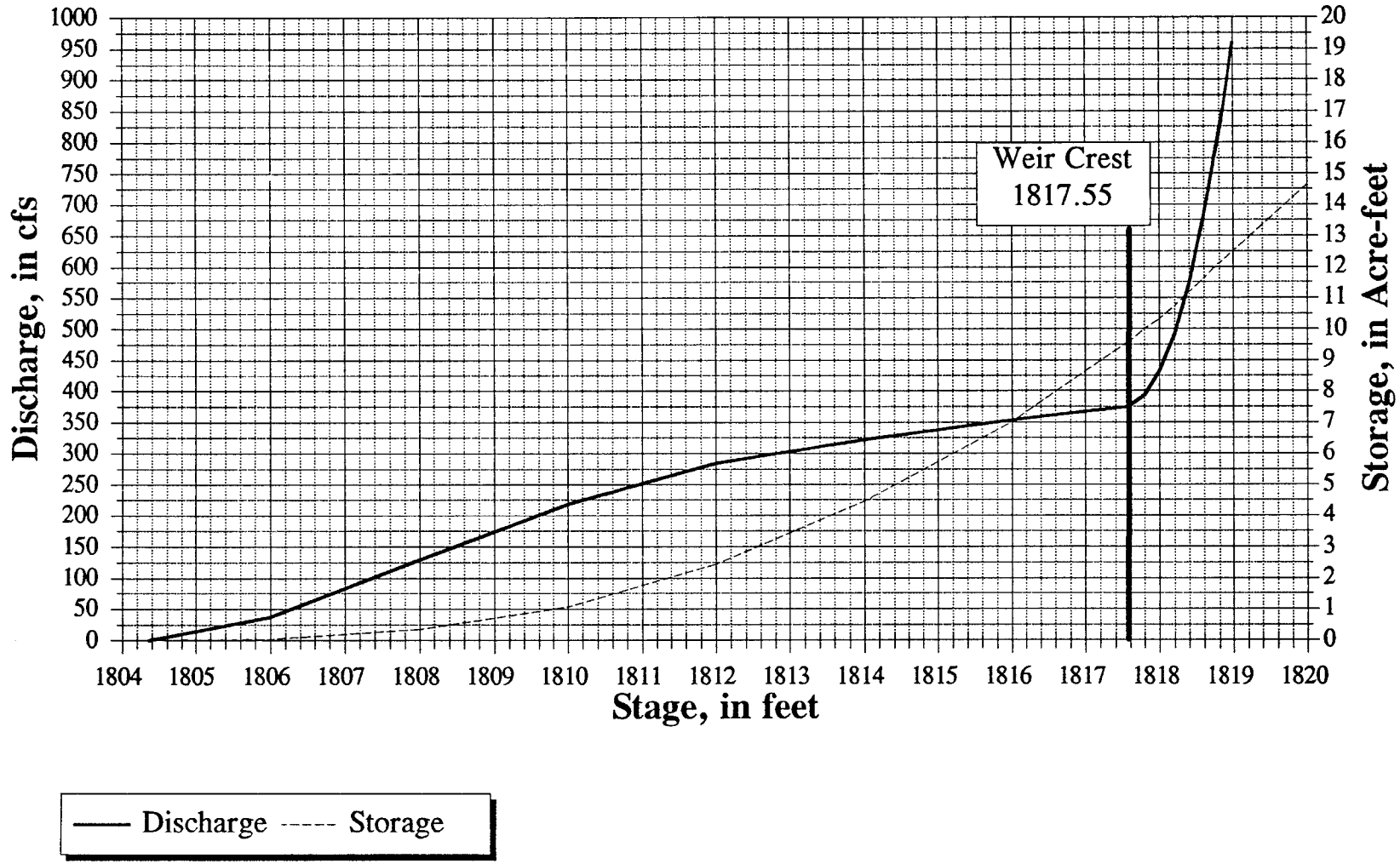
ELEVATION	DISCHARGE (CFS)
1924.60	0.00
1924.80	0.07
1925.00	5.78
1925.20	26.34
1925.40	67.30
1925.60	133.01
1925.80	225.56
1926.00	342.01
1926.20	481.40
1926.40	643.69
1926.60	827.58
1926.80	1030.30
1927.00	1250.49
1927.20	1487.26
1927.40	1739.95
1927.60	2008.03
1927.80	2291.11
1928.00	2588.83
1928.20	2900.92
1928.40	3227.15
1928.60	3567.31
1928.80	3921.25
1929.00	4288.83
1929.20	4669.91
1929.40	5064.41
1929.60	5472.23
1929.80	5893.31
1930.00	6327.58

Table R-18
Storage and Discharge vs. Stage Data for C586

Stage (ft)	Surface Area (acres)	Storage Volume (acre-ft)	Discharge		
			Culvert Flow (cfs)	Weir Flow (cfs)	Total Flow (cfs)
1804.37	0.00	0.00	0	---	0
1806.00	0.09	0.05	37	---	37
1808.00	0.23	0.36	130	---	130
1810.00	0.53	1.09	219	---	219
1812.00	0.85	2.45	284	---	284
1814.00	1.16	4.45	322	---	322
1816.00	1.39	7.00	353	---	353
1817.55	---	9.5	375	0	375
1817.60	---	9.6	377	0	377
1817.80	---	10.0	379	14	393
1818.00	1.96	10.34	382	50	432
1818.20	---	10.7	385	107	492
1818.40	---	11.2	387	187	574
1818.60	---	11.6	391	289	680
1818.80	---	12.1	393	415	808
1819.00	---	12.5	396	563	959
1820.00	2.38	14.67	---	---	---

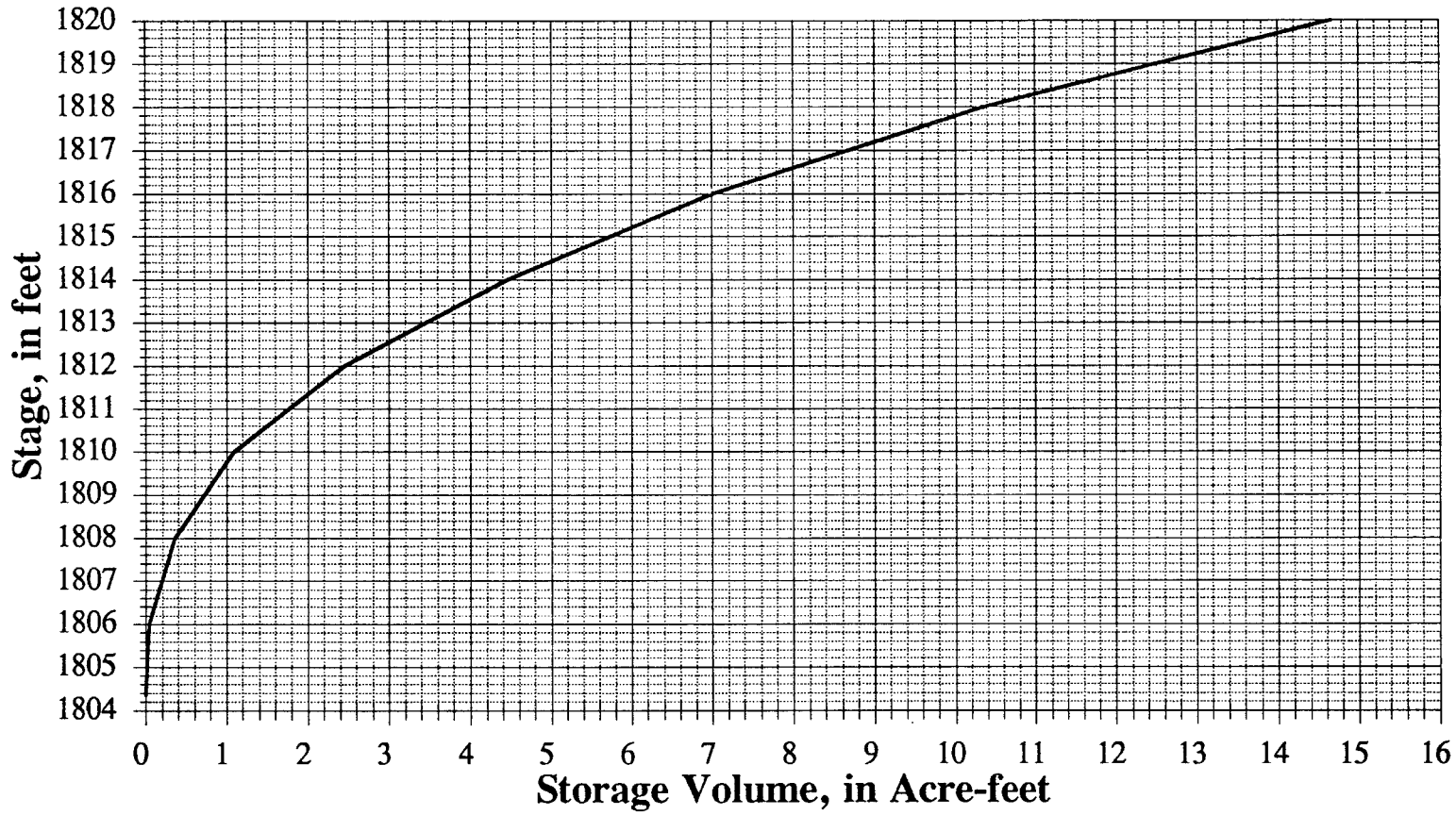
Figure R-14

Storage and Discharge vs Stage for C586



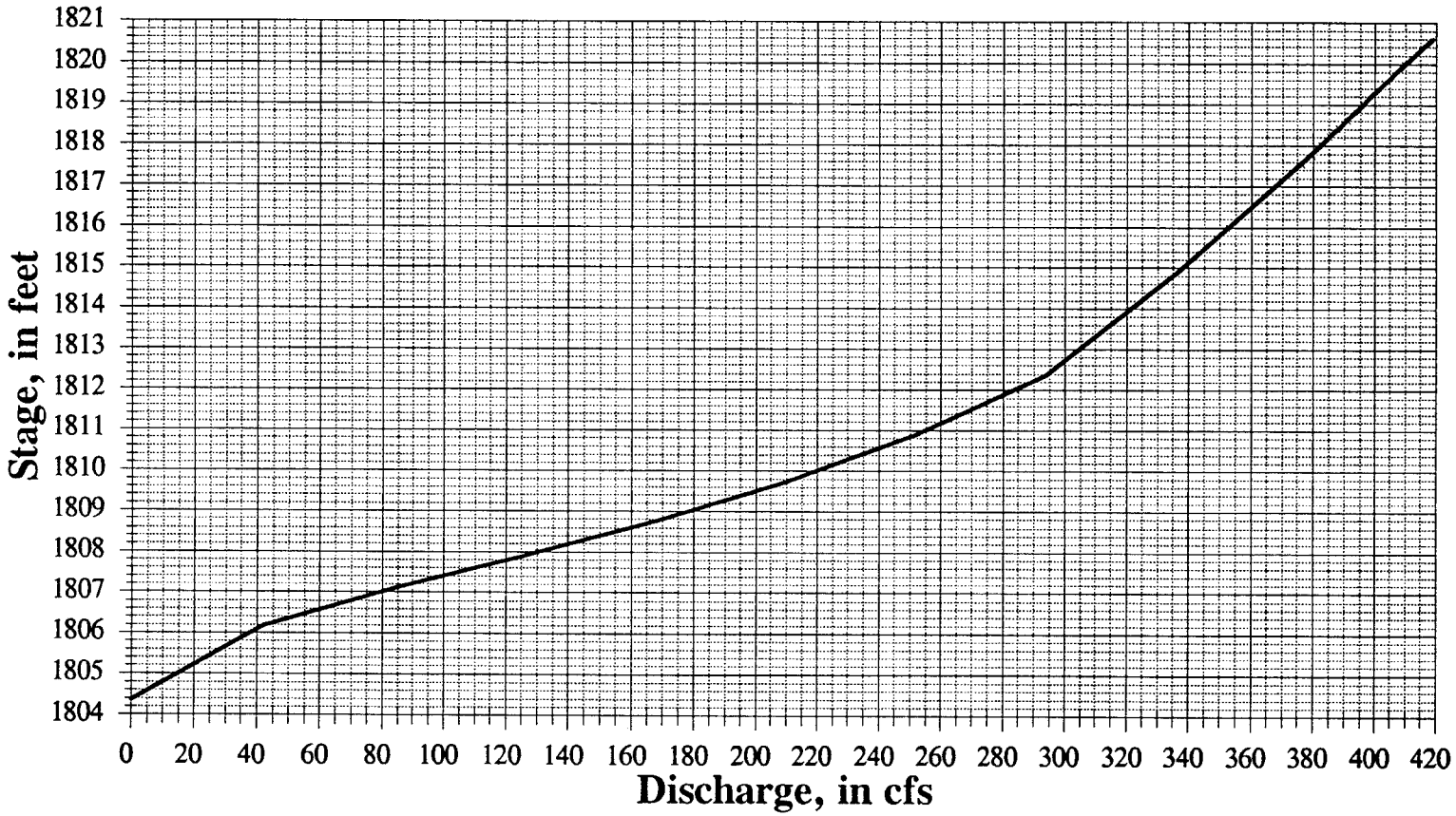
C586 Storage Volume

Calculated From Planimetered Contours



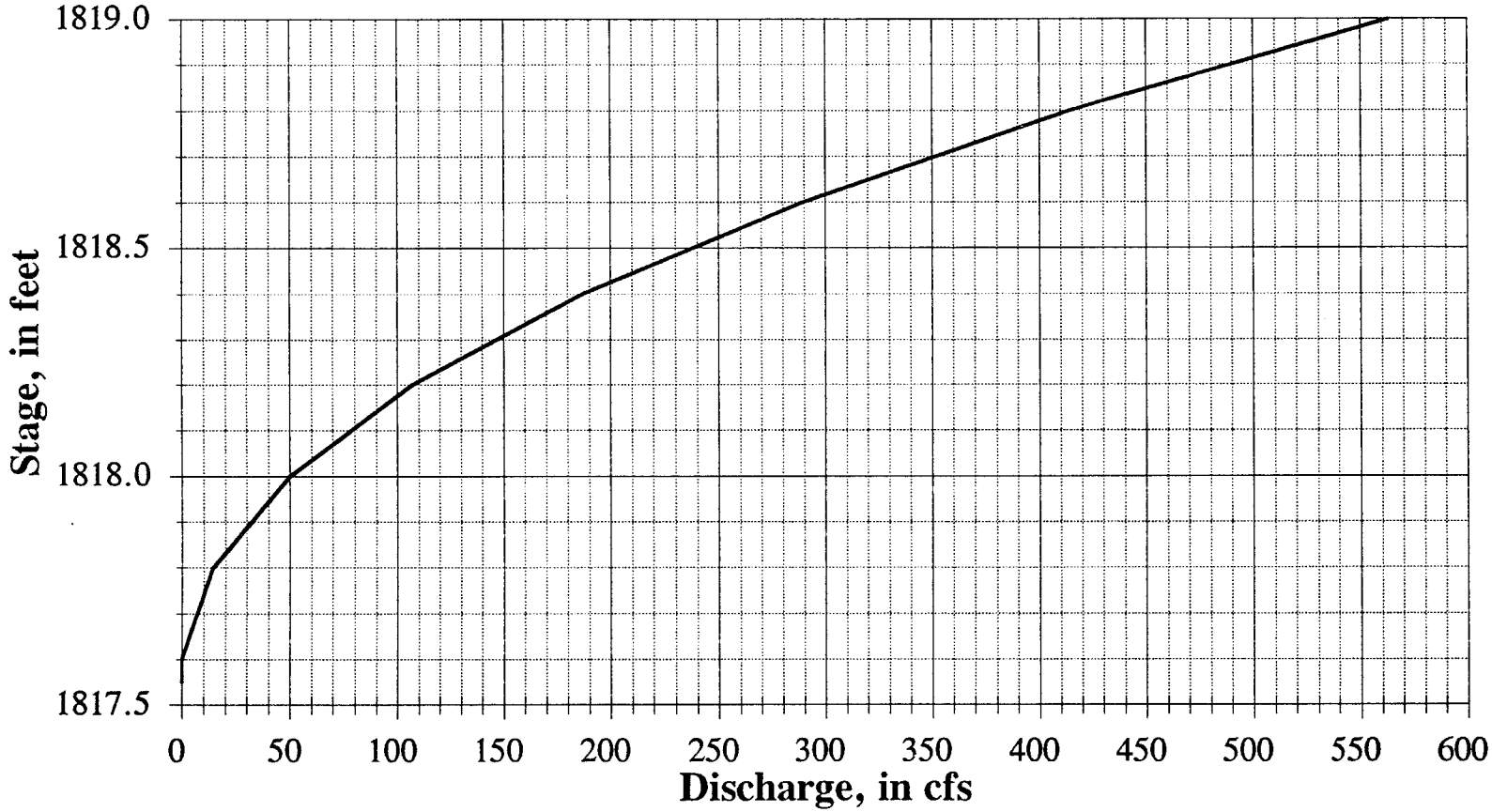
C586 Stage vs. Discharge

Culvert Flow from HY8



C586 Stage vs Discharge

Weir Flow from Uneven Weir



CURRENT DATE: 07-13-1993
CURRENT TIME: 09:22:00

FILE DATE: 06-16-1993
FILE NAME: C538

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1778.02	1775.76	164.32	1 CSP	5.00	5.00	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C538 DATE: 06-16-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1778.02	0	0	0	0	0	0	0	0	1
1780.25	30	30	0	0	0	0	0	0	1
1781.32	60	60	0	0	0	0	0	0	1
1782.29	90	90	0	0	0	0	0	0	1
1783.70	120	120	0	0	0	0	0	0	1
1784.46	150	150	0	0	0	0	0	0	1
1785.72	180	180	0	0	0	0	0	0	1
1787.31	210	210	0	0	0	0	0	0	1
1789.56	240	240	0	0	0	0	0	0	1
1792.10	270	270	0	0	0	0	0	0	1
1794.74	300	298	0	0	0	0	0	2	5
1794.00	291	291	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C538 DATE: 06-16-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1778.02	0.00	0	0	0.00
1780.25	0.00	30	0	0.00
1781.32	0.00	60	0	0.00
1782.29	0.00	90	0	0.00
1783.70	0.00	120	0	0.00
1784.46	0.00	150	0	0.00
1785.72	0.00	180	0	0.00
1787.31	0.00	210	0	0.00
1789.56	0.00	240	0	0.00

1792.10	0.00	270	0	0.00
1794.74	0.00	300	-0	-0.00

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 07-13-1993 FILE DATE: 06-16-1993
CURRENT TIME: 09:22:00 FILE NAME: C538

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (5 BY 5) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1778.02	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
30	1780.25	2.23	2.23	1-S2n	1.43	1.52	6.44	1.43	2.58	0.29
60	1781.32	3.30	3.30	1-S2n	2.08	2.17	7.78	2.08	3.37	0.43
90	1782.29	4.27	4.27	1-S2n	2.62	2.68	8.62	2.62	3.95	0.54
120	1783.70	5.26	5.68	2-M2c	3.16	3.12	9.32	3.12	4.43	0.64
150	1784.46	6.37	6.44	2-M2c	3.74	3.51	10.19	3.51	4.84	0.73
180	1785.72	7.70	7.29	6-FFn	5.00	3.83	9.17	5.00	5.20	0.82
210	1787.31	9.28	9.29	6-FFn	5.00	4.10	10.70	5.00	5.52	0.90
240	1789.56	11.17	11.54	6-FFn	5.00	4.33	12.22	5.00	5.83	0.97
270	1792.10	13.37	14.08	6-FFn	5.00	4.55	13.75	5.00	6.11	1.04
298	1794.73	15.71	16.71	6-FFn	5.00	4.76	15.18	5.00	6.35	1.11

El. inlet face invert 1778.02 ft El. outlet invert 1775.76 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION (FT)                      0.00
      INLET ELEVATION (FT)                 1778.02
      OUTLET STATION (FT)                   164.30
      OUTLET ELEVATION (FT)                1775.76
      NUMBER OF BARRELS                       1
      SLOPE (V-FT/H-FT)                       0.0138
      CULVERT LENGTH ALONG SLOPE (FT)       164.32

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          CIRCULAR
      BARREL DIAMETER         5.00 FT
      BARREL MATERIAL       CORRUGATED STEEL
      BARREL MANNING'S N    0.024
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   THIN EDGE PROJECTING
      INLET DEPRESSION      NONE
```

CURRENT DATE: 07-13-1993
CURRENT TIME: 09:22:00

FILE DATE: 06-16-1993
FILE NAME: C538

TAILWATER

***** USER DEFINED CHANNEL CROSS-SECTION
MAIN CHANNEL AND LT & RT OVER BANKS

FILE NAME: C538
FILE DATE: 06-16-1993

LEFT CHANNEL BOUNDARY	5
RIGHT CHANNEL BOUNDARY	6
MANNING N LEFT OVER BANK	0.075
MANNING N MAIN CHANNEL	0.050
MANNING N RIGHT OVER BAN	0.075
SLOPE OF CHANNEL (FT/FT)	0.0400

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	1000.00	1783.76
2	1006.00	1781.76
3	1011.00	1779.76
4	1017.00	1777.76
5	1022.00	1775.76
6	1064.00	1775.76
7	1067.00	1777.76
8	1071.00	1779.76
9	1076.00	1781.76
10	1078.00	1783.76

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1775.76	0.000	0.00	0.00	0.00
30.00	1776.05	0.850	0.29	2.58	0.71
60.00	1776.19	0.909	0.43	3.37	1.07
90.00	1776.30	0.946	0.54	3.95	1.35
120.00	1776.40	0.973	0.64	4.43	1.61
150.00	1776.49	0.995	0.73	4.84	1.83
180.00	1776.58	1.013	0.82	5.20	2.04
210.00	1776.66	1.029	0.90	5.52	2.24
240.00	1776.73	1.042	0.97	5.83	2.42
270.00	1776.80	1.055	1.04	6.11	2.60
300.00	1776.87	1.065	1.11	6.35	2.76

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	1.00
CREST LENGTH (FT)	1.00

OVERTOPPING CREST ELEVATION (FT) 1794.00

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*********************************************


    PROJECT:  Fountain Hills North FIS                C586
    ENGINEER:  dtp
    DATE:  10/29/1993
    TIME:   3:49.56




-----------------------------------------------
    INPUT PARAMETERS
-----------------------------------------------


    STARTING WSEL:       1817.40
    MAXIMUM WSEL:        1819.20
    STEP SIZE:              0.20
    BREADTH OF WEIR:       42.00
```

```
*********************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills North FIS                C586
    DATE:  10/29/1993
    TIME:   3:49.56
*********************************************
```

POINT	ELEVATION	STATION
1	1820.00	1000.00
2	1818.38	1065.00
3	1817.67	1115.00
4	1817.55	1140.00
5	1817.62	1165.00
6	1817.76	1190.00
7	1818.09	1215.00
8	1818.60	1240.00
9	1819.26	1265.00

```
*********************************************
    WEIR COEFFICIENT TABLE
    PROJECT:  Fountain Hills North FIS                C586
    DATE:  10/29/1993
    TIME:   3:49.56
*********************************************
```

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.5159
3	0.40	2.5317
4	0.60	2.5476
5	0.80	2.5635
6	1.00	2.5794
7	1.20	2.5952
8	1.40	2.6111
9	1.60	2.6270

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
    PROJECT:  Fountain Hills North FIS                C586
    DATE:  10/29/1993
    TIME:   3:49.56
*********************************************
```

ELEVATION	DISCHARGE (CFS)
1817.40	0.00
1817.60	0.32
1817.80	14.41
1818.00	49.90
1818.20	106.98
1818.40	186.54
1818.60	289.16
1818.80	414.68
1819.00	563.21

Table R-19
Storage and Discharge vs Stage Data for C599 (Dam 4)

Stage (ft)	Surface Area (Acres)	Storage Volume (acre-feet)		Discharge: Principal Spillway (cfs)	Discharge: Emergency Spillway (cfs)	Total Discharge (cfs)	
		GVSCE	Tri-Co.			GVSCE	Tri-Co.
1694.69	0.00	0.00	0.00	0	---	0	0
1696.00	0.00	0.00	0.00	38	---	38	0
1698.00	0.00	0.00	0.00	95	---	95	0
1700.00	0.05	0.03	1.70	214	---	214	31
1702.00	0.45	0.47	---	312	---	312	---
1704.00	1.54	2.35	11.70	384	---	384	497
1706.00	3.61	7.35	---	443	---	443	---
1708.00	5.99	16.85	31.50	497	---	497	630
1710.00	8.91	31.66	---	543	---	543	---
1712.00	12.23	52.71	70.90	587	---	587	744
1714.00	15.99	80.85	--	628	---	628	---
1714.84	---	95	---	642	0	642	---
1715.00	---	98	---	647	4	651	---
1715.20	---	102	---	650	39	689	---
1715.40	---	105	---	654	100	754	---
1715.60	---	109	---	658	185	843	---
1715.80	---	113	---	661	296	957	---
1716.00	19.36	116.14	140.00	655	431	1086	840
1716.20	---	120	---	658	594	1252	---
1716.40	---	124	---	662	781	1443	---
1716.60	---	128	---	667	988	1655	---
1718.00	20.73	156.22	188.00	---	---	---	1989
1720.00	23.97	200.89	236.00	---	---	---	6987
1722.00	27.28	252.10	---	---	---	---	---
1724.00	31.13	310.47	---	---	---	---	---

Note: NE Corner of High School Cafeteria EL = 1716.49

Figure R-15a

Storage and Discharge vs Stage for C599 (Dam 4) Below Emergency Spillway Crest

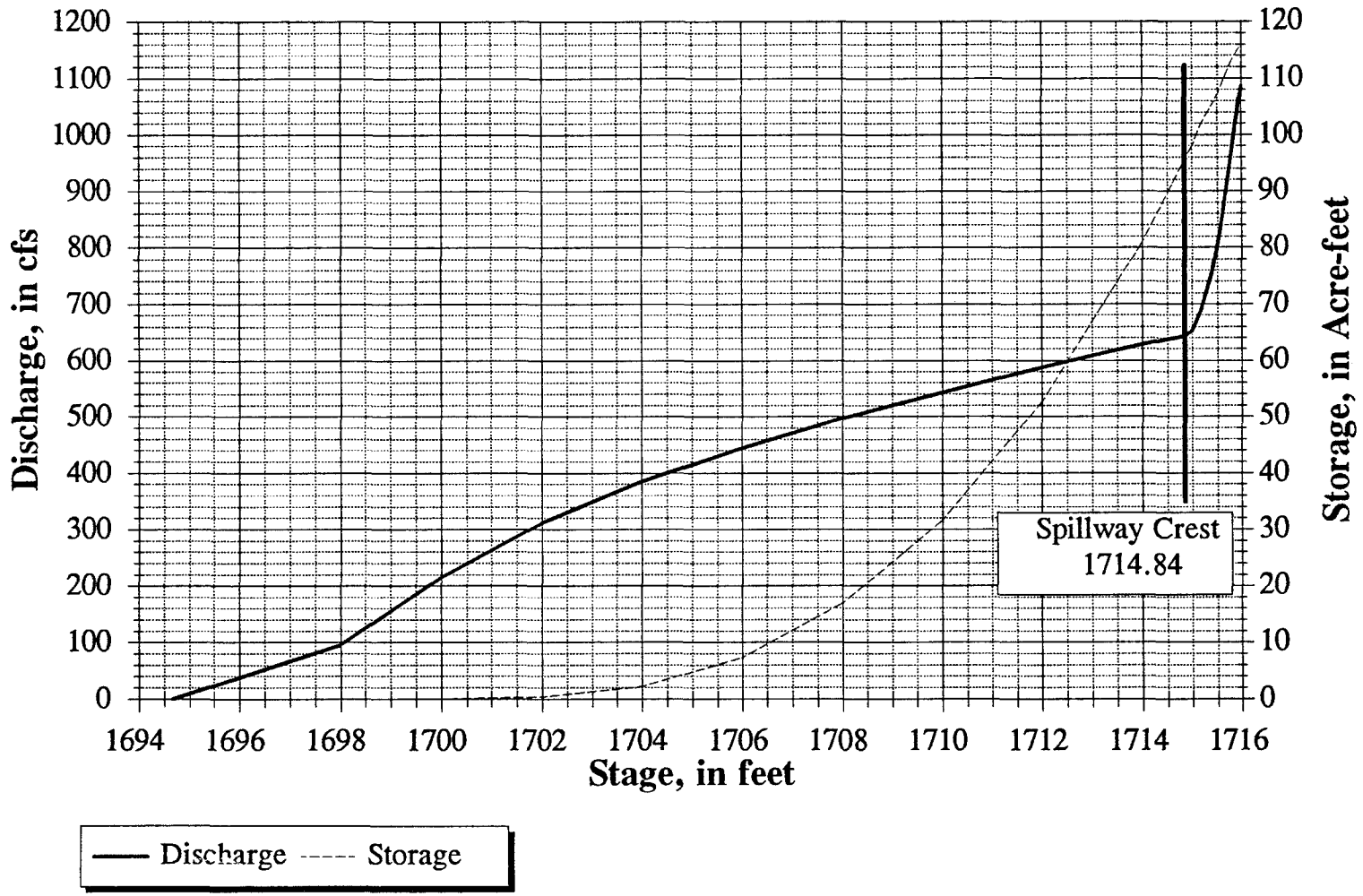
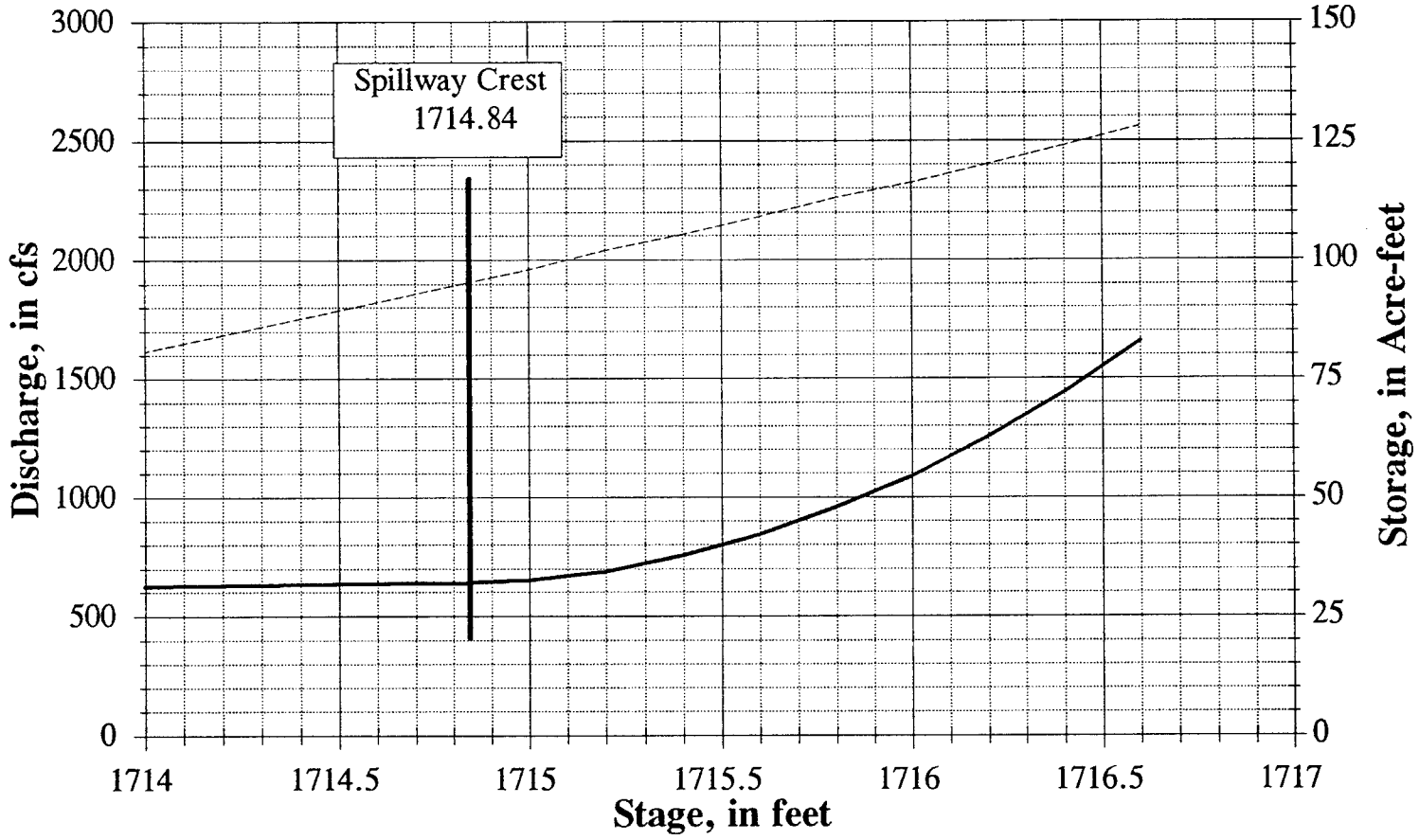


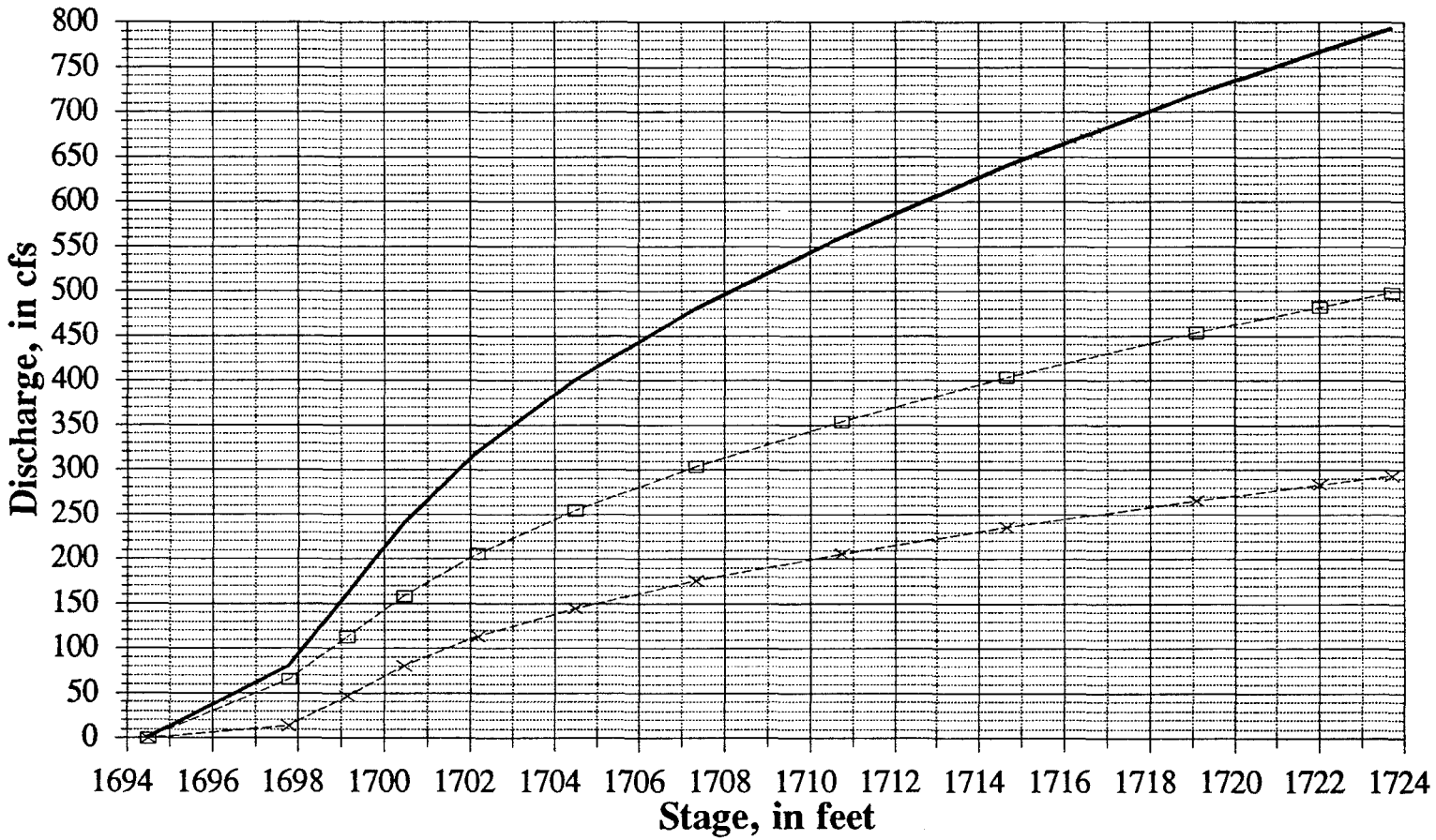
Figure R-15b

Storage and Discharge vs Stage for C599 (Dam 4) Above Emergency Spillway Crest



Dam 4 Stage vs. Discharge

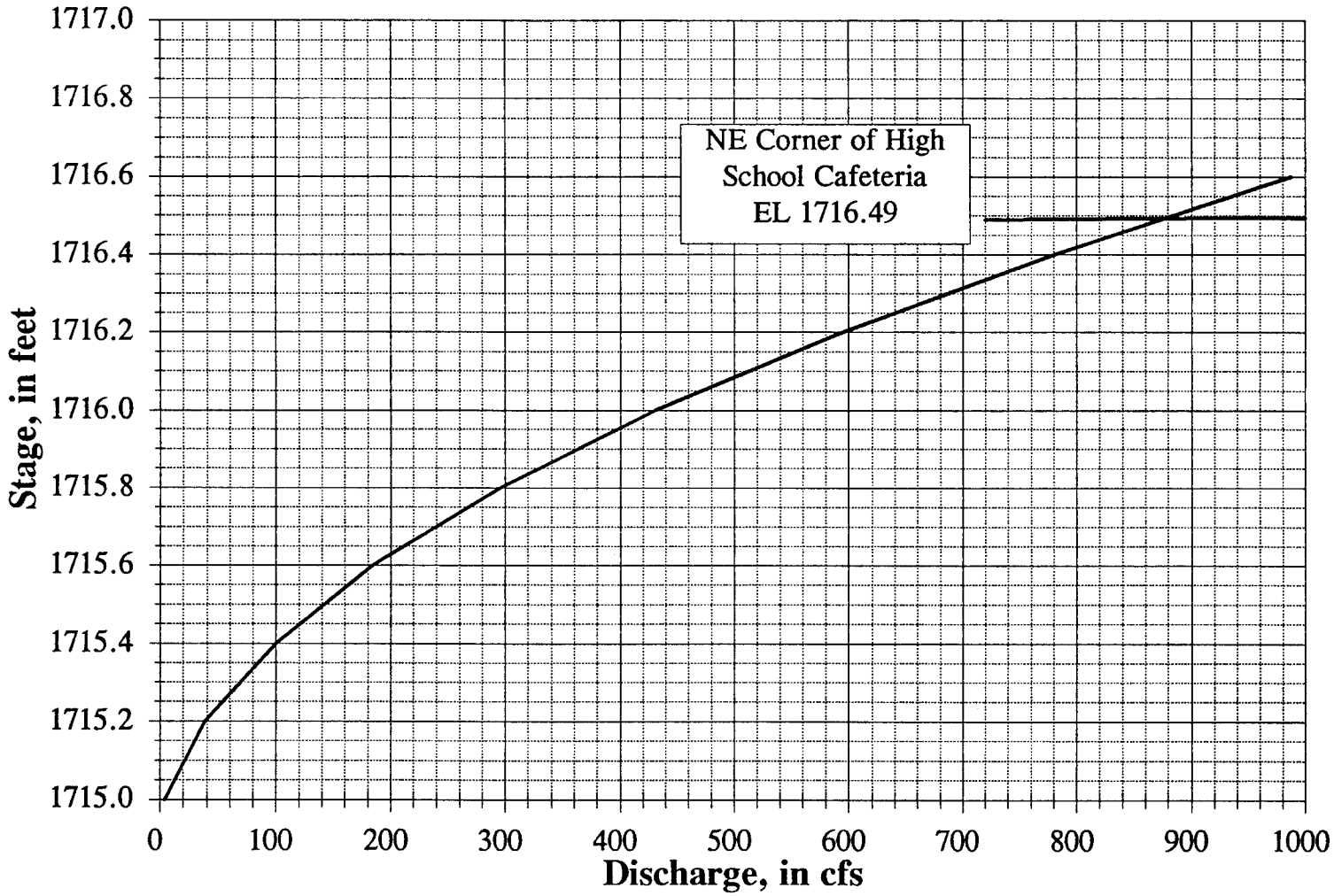
Principal Spillway from HY8



Left (5 ft dia) Right (Arch) Total

Dam 4 Stage vs. Discharge

Emergency Spillway From Uneven Weir



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

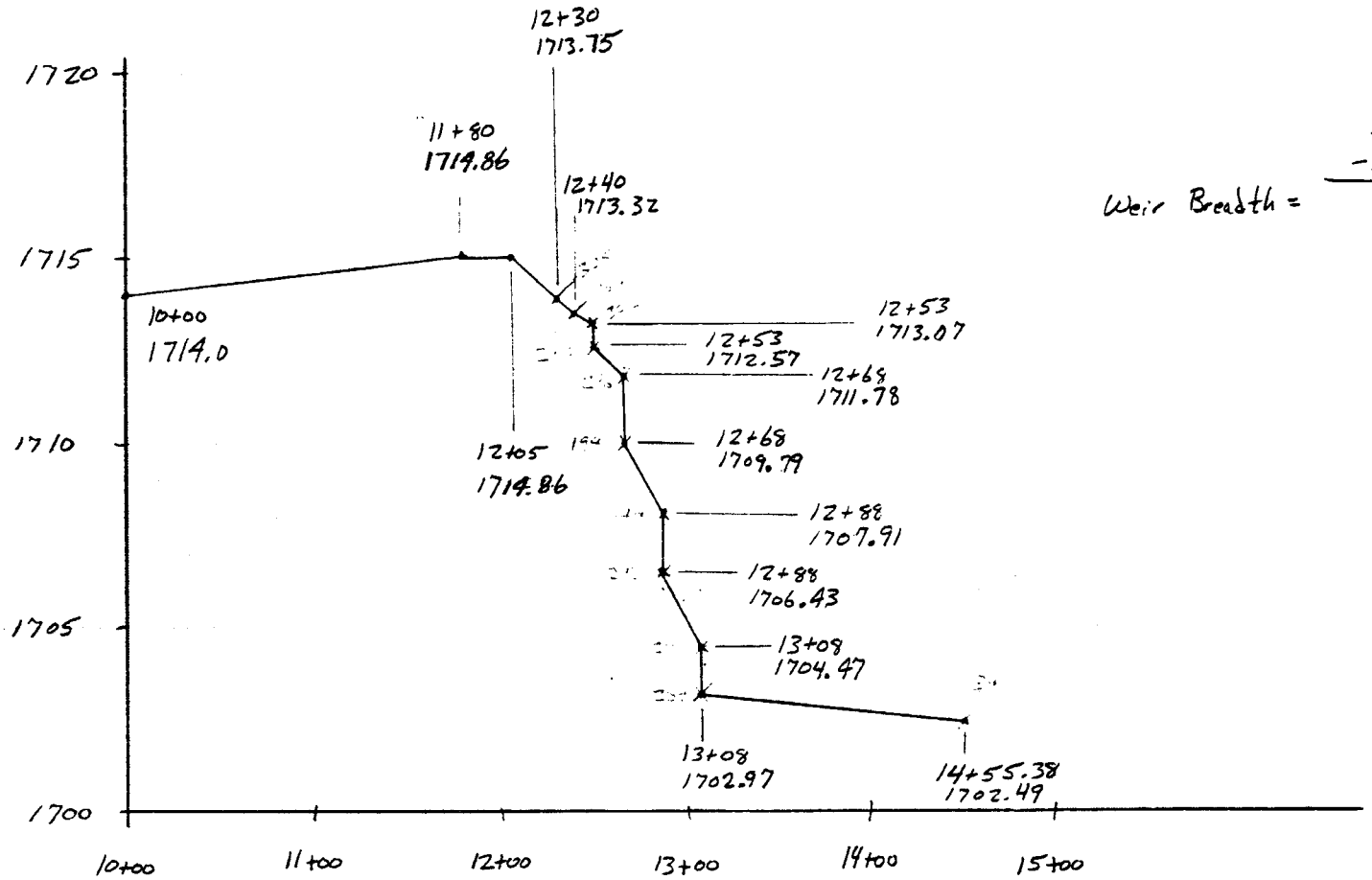
CLIENT: MC FCD
PROJECT: F. Hills
SUBJECT: Dam 4 Field Survey

SHEET 4 OF 4
DATE 10 May 93
BY DTP
PROJECT NO. 35

DAM 4 EMERGENCY SPILLWAY PROFILE

(Along Crest ℄)

Scale
1" = 5' VERT
1" = 100' HORZ



Weir Breadth = 1205 − 1180 = 25 feet

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT F.C.O.M.C.

PROJECT FOUNTAIN HILLS F.E.S.

SUBJECT DAM 4 FIELD SURVEY

SHEET 1 OF 4

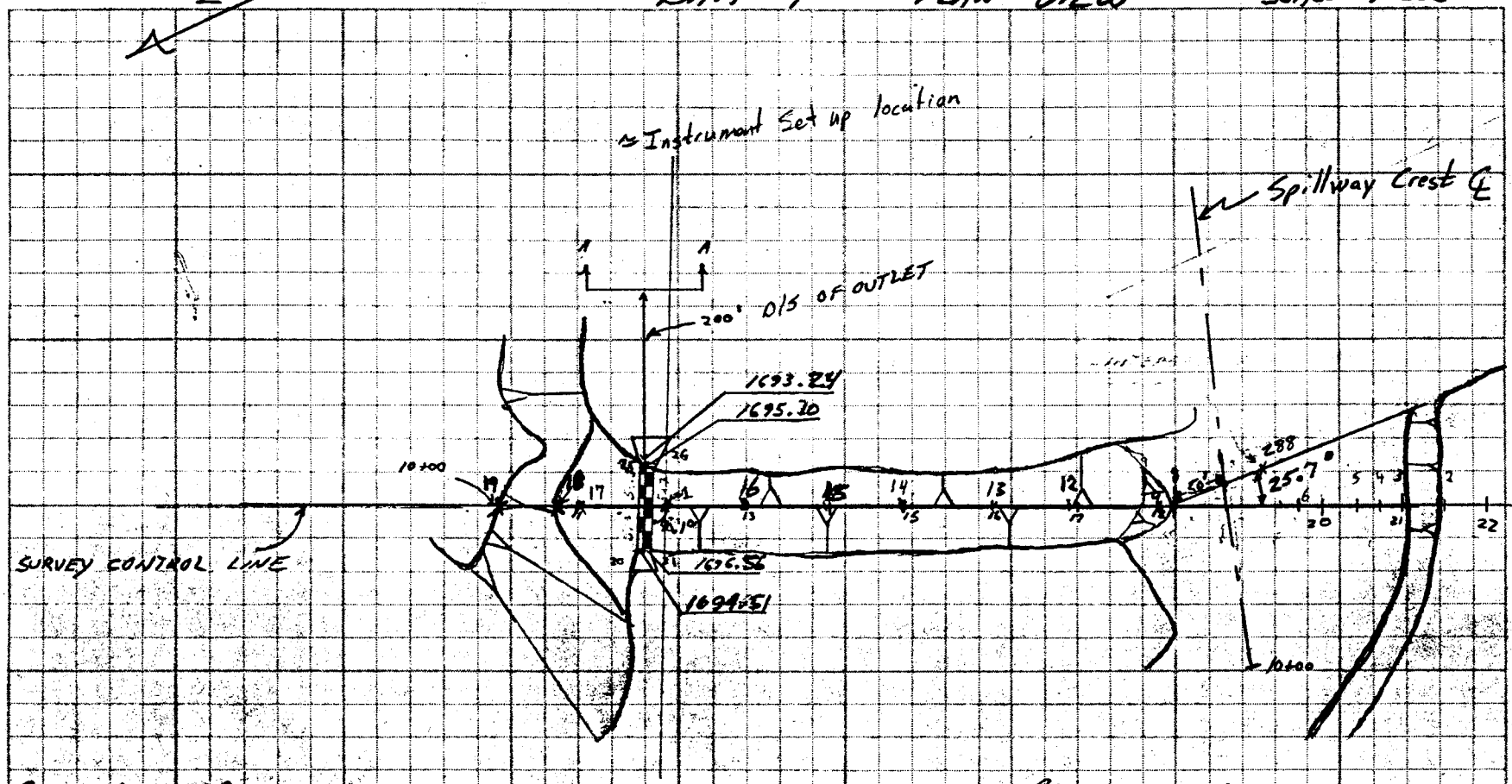
DATE 4-14-93

BY R.C.

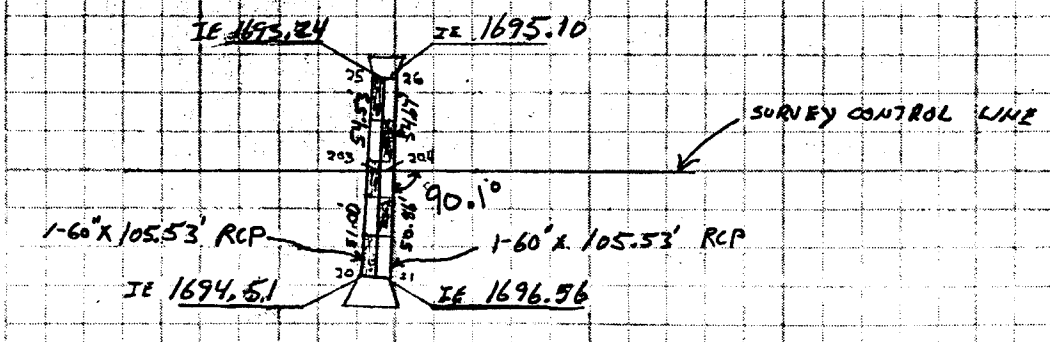
PROJECT NO. 35

DAM 4 PLAN VIEW

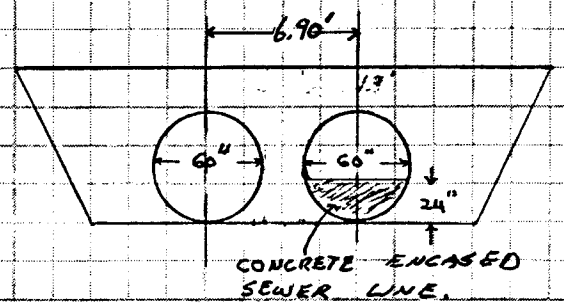
SCALE 1:200



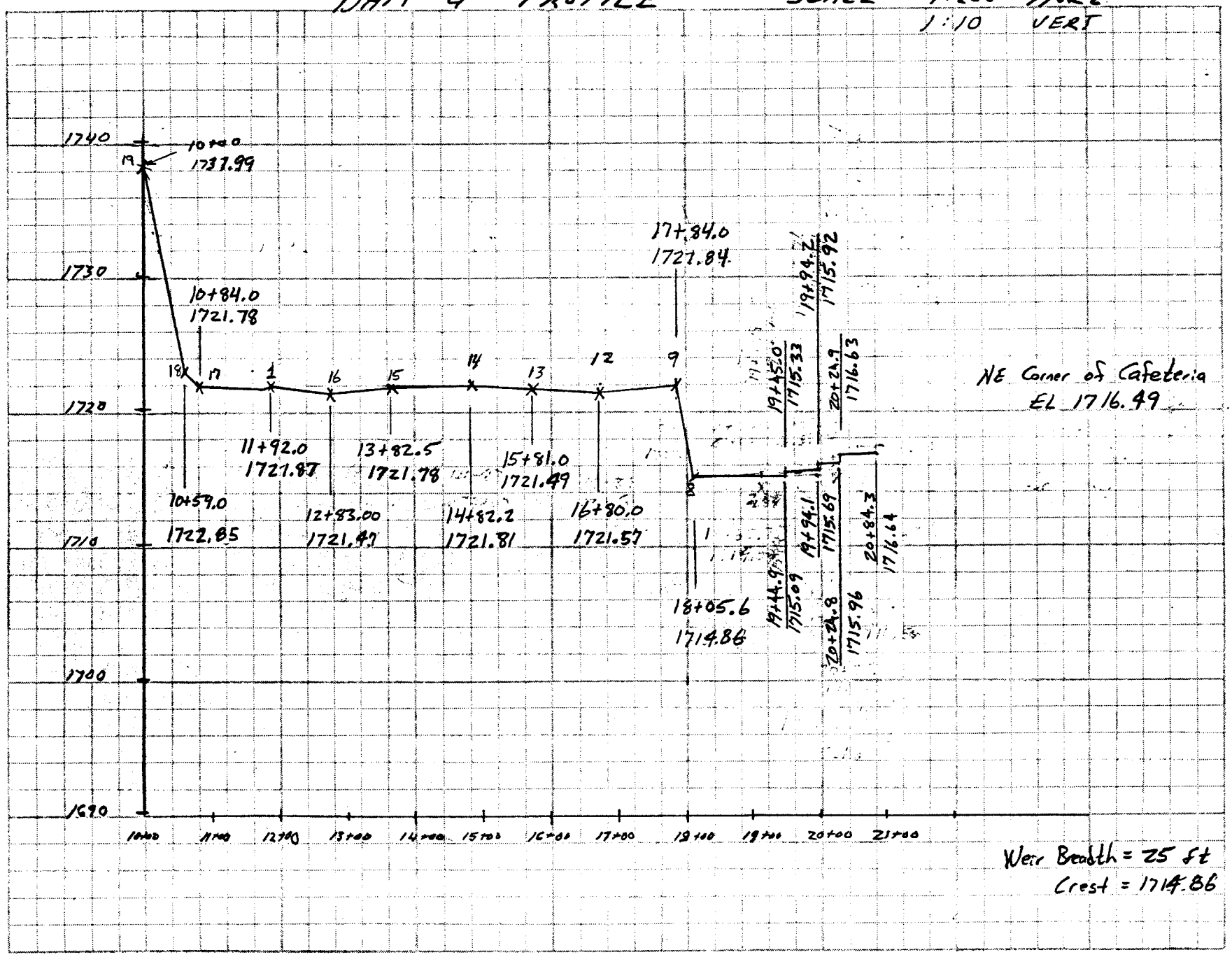
PRINCIPAL SPILLWAY DETAIL
SCALE 1:100



PRINCIPAL SPILLWAY INLET PROFILE



DAM 4 PROFILE SCALE 1:200 HORZ
1:10 VERT



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT F.C.D. M.C.

PROJECT FOUNTAIN HILLS F.I.S.

SUBJECT DAM 4 FIELD SURVEY

SHEET 2 OF 4

DATE 5-5-93

BY R.C.

PROJECT NO. 35

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT FCOMC

PROJECT FOUNTAIN HILLS F. I. S.

SUBJECT DAM 4 FIELD SURVEY

SHEET 3 OF 4

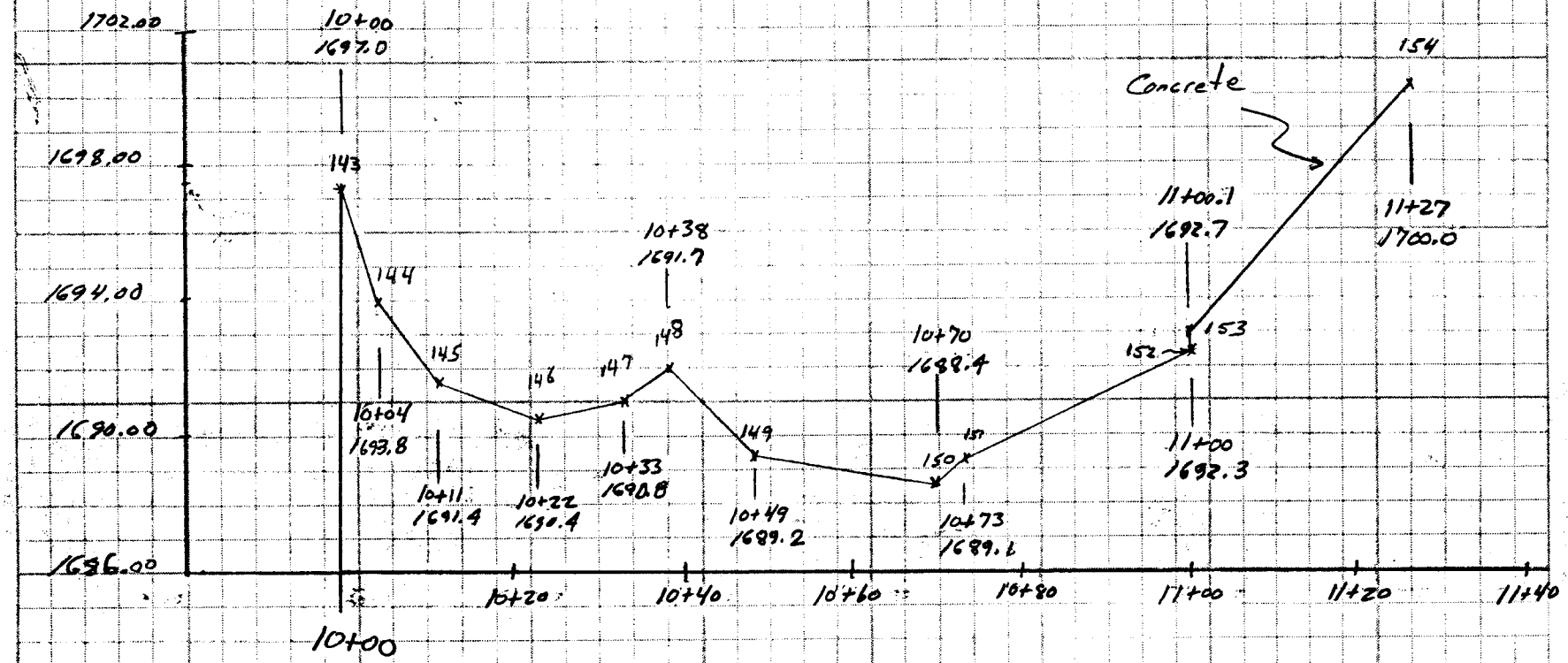
DATE 4-26-93

BY R.C.

PROJECT NO. 35

CHANNEL CROSS SECTION A-A

SCALE 1: HORZ
1: VERT.



DAM 4 SPILLWAY

File = DAM4.DAT

****

St At Point Number ..... 600 STA = 18+ 5.60

Inverse	600	SW	10-41-33.88	139.39989	609	STA =	19+45.00
Inverse	609	SE	16-29-14.25	49.23773	613	STA =	19+94.24
Inverse	613	SE	30-31-51.96	30.65746	617	STA =	20+24.90
Inverse	617	SE	43-27- 5.18	59.36088	620	STA =	20+84.26

STA	EL	(cogo pt)
17+84.0	1721.84	9
18+05.6	1714.86	8
19+44.9	1715.09	611
19+45.0	15.33	609
19+94.1	15.69	615
19+94.2	15.92	613
20+24.8	15.96	619
20+24.9	16.63	617
20+84.3	16.64	620

DAM 4 Spillway

Horizontal Distances

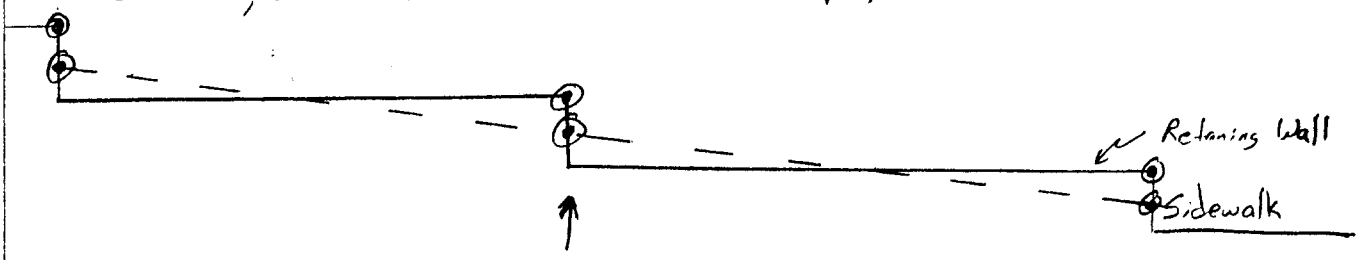
Based on radial distance along 1st retaining wall

. Point 600 sta = pt 8 sta (Toe of spillway)

Controling elevations were chosen with respect to the general flow direction. Point #s and elevations are highlited on drawing.

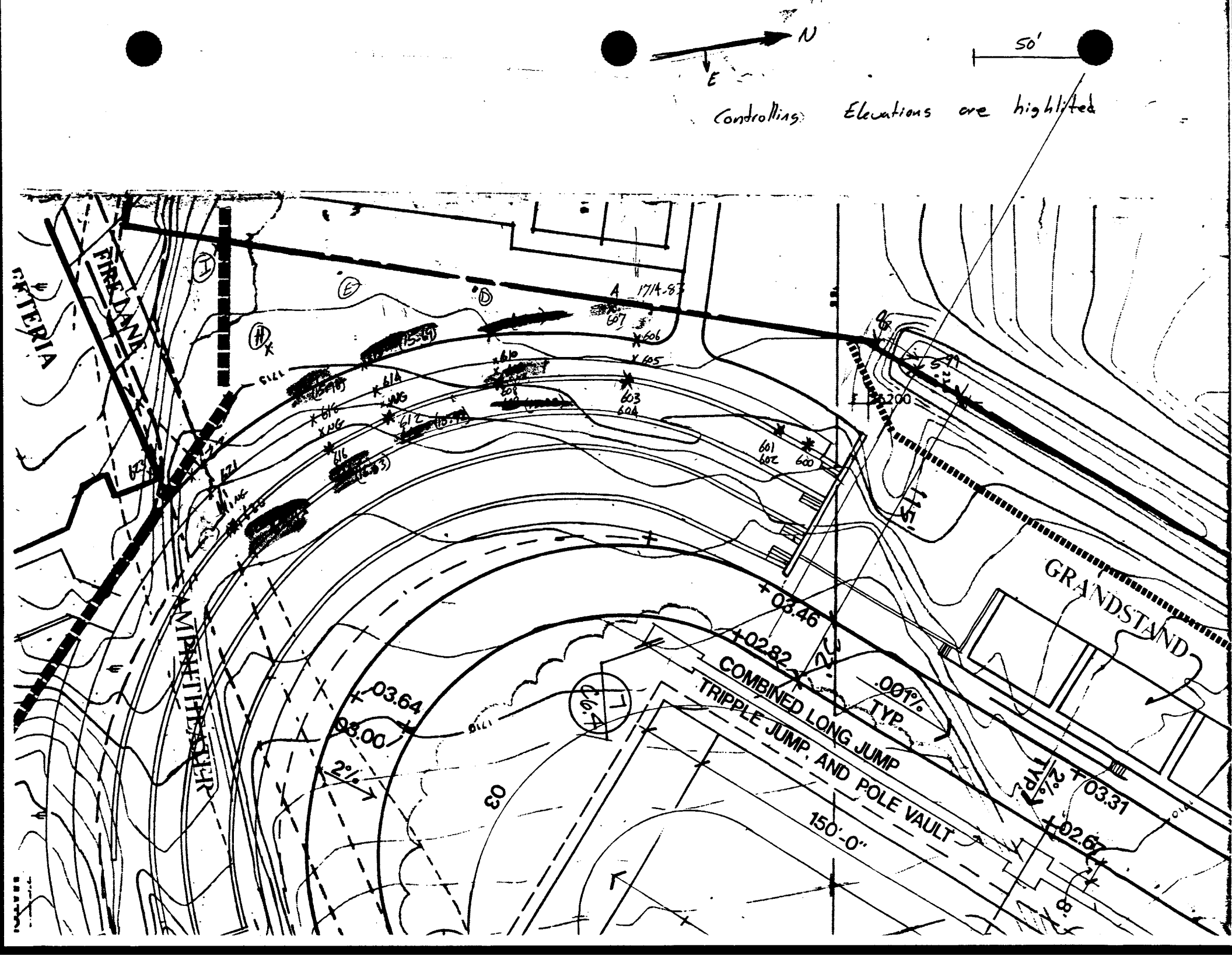
The complexity is due to the west edge of sidewalk elevations increasing along a constant slope while the top of retaning wall increases in steps.

So before the wall steps up vertically, the sidewalk controls, but once the wall "steps up", it controls.



Survey info is only taken at each step in retaning wall.

Thus location (STA) when sidewalk starts controling weir flow is unknown. To be consiverative elevations of side walk are used as bottom step of wall. [⊙ points on figure (above)]


N
E
50'
Controlling Elevations are highlited
CAFETERIA
FIRE LANE
AMPHITHEATER
GRANDSTAND
COMBINED LONG JUMP
TRIPPLE JUMP, AND POLE VAULT
150'-0"
+03.46
+02.82
.001% TYP.
+03.64
03.00
2%
+03.31
+02.67
2%
FILL
CUT
603
604
601
602
600
605
606
607
616
614
612
610
609
608
549
03

ELEV ADJ. -0.18' DJP 9 July 93

DAM 4

Profile Stationing

File = DAM4.DAT Page No. 1

****

St[illegible]t Point Number				19	STA =	10+ 0.00	EL	~~1738.17~~	1737.99
Inverse	19	SW	29-47-32.91	59.00000	18	STA =	10+59.00	EL	~~1723.03~~ 1722.85
Inverse	18	SW	29-47-32.91	25.00000	17	STA =	10+84.00	EL	~~1721.96~~ 1721.78
Inverse	17	SW	29-47-32.91	108.00000	1	STA =	11+92.00	EL	~~1722.05~~ 1721.87
Inverse	1	SW	29-47-32.91	91.00000	16	STA =	12+83.00	EL	~~1721.65~~ 21.47
Inverse	16	SW	29-47-32.91	99.50000	15	STA =	13+82.50	EL	~~1721.96~~ 21.78
Inverse	15	SW	29-47-32.91	99.70000	14	STA =	14+82.20	EL	~~1721.99~~ 21.81
Inverse	14	SW	29-47-32.91	98.80000	13	STA =	15+81.00	EL	~~1721.67~~ 21.49
Inverse	13	SW	29-47-32.91	99.00000	12	STA =	16+80.00	EL	~~1721.75~~ 21.57
Inverse	12	SW	29-47-32.91	104.00000	9	STA =	17+84.00	EL	~~1722.02~~ 21.84
Inverse	9	SW	29-47-32.91	21.60000	8	STA =	18+ 5.60	EL	~~1715.04~~ 14.86
Inverse	8	SW	4- 4-49.48	112.14647	288	STA =	19+17.75	EL	~~1714.63~~ 14.45

See Toms Survey notes pg (4) for rest of spillway.

File = DAM4.DAT Page No. 2

****

Start At Point Number ..... 155 STA = 10+ 0.00 EL 1697.4

DOWN Stream X-Section

Inverse	155	SW	29-47-32.91	17.00000	143	STA =	10+17.00	EL	1697.2
Inverse	143	SW	29-47-32.91	4.00000	144	STA =	10+21.00	EL	1694.0
Inverse	144	SW	29-47-32.91	7.00000	145	STA =	10+28.00	EL	1691.6
Inverse	145	SW	29-47-32.91	11.00000	146	STA =	10+39.00	EL	1690.6
Inverse	146	SW	29-47-32.91	11.00000	147	STA =	10+50.00	EL	1691.0
Inverse	147	SW	29-47-32.91	5.00000	148	STA =	10+55.00	EL	1691.9
Inverse	148	SW	29-47-32.91	11.00000	149	STA =	10+66.00	EL	1689.4
Inverse	149	SW	29-47-32.91	21.00000	150	STA =	10+87.00	EL	1688.6
Inverse	150	SW	29-47-32.91	3.00000	151	STA =	10+90.00	EL	1689.3
In[illegible]	151	SW	29-47-32.91	27.00000	152	STA =	11+17.00	EL	1692.5
Inverse	152	NE	0- 0- 0.00	0.00000	153	STA =	11+17.00	EL	1692.9
	153	SW	29-47-32.91	27.000	154	STA	11+44.00	EL	1700.18

File = DAM4.DAT

Page No. 1

Down Stream
X-Section

****

St	At Point Number				143	STA =	10+ 0.00	EL	1697.2	97.02
Inverse	143	SW	29-47-32.91	4.00000	144	STA =	10+ 4.00	EL	1694.0	93.82
Inverse	144	SW	29-47-32.91	7.00000	145	STA =	10+11.00	EL	1691.6	91.42
Inverse	145	SW	29-47-32.91	11.00000	146	STA =	10+22.00	EL	1690.6	90.42
Inverse	146	SW	29-47-32.91	11.00000	147	STA =	10+33.00	EL	1690.0	90.82
Inverse	147	SW	29-47-32.91	5.00000	148	STA =	10+38.00	EL	1691.9	91.72
Inverse	148	SW	29-47-32.91	11.00000	149	STA =	10+49.00	EL	1689.9	89.22
Inverse	149	SW	29-47-32.91	21.00000	150	STA =	10+70.00	EL	1688.6	88.42
Inverse	150	SW	29-47-32.91	3.00000	151	STA =	10+73.00	EL	1689.3	89.12
Inverse	151	SW	29-47-32.91	27.00000	152	STA =	11+ 0.00	EL	1692.5	92.32
Inverse	152	NE	0- 0- 0.00	0.00000	153	STA =	11+ 0.00	EL	1692.9	92.72
Inverse	153	SW	29-47-32.91	27.00000	154	STA =	11+27.00	EL	1700.18	1700.00

DAM 4 Emergency Spillway Profile

File = DAM4.DAT Page No. 1

D/S portion Station distances.

At Point Number				305 STA =	0+ 0.00	EL	1713.93	13.75
Inverse	305	SE	66-13- 7.25	10.00000	304 STA =	0+10.00		1713.50	13.32
Inverse	304	SE	66-13- 7.25	13.00000	302 STA =	0+23.00		1713.25	13.07
Inverse	302	NE	0- 0- 0.00	0.00000	298 STA =	0+23.00		1712.75	12.57
Inverse	298	SE	66-13- 7.25	14.99999	296 STA =	0+38.00		1711.96	11.78
Inverse	296	NE	0- 0- 0.00	0.00000	198 STA =	0+38.00		1709.97	09.79
Inverse	198	SE	66-13- 7.25	20.00000	294 STA =	0+58.00		1708.09	07.91
Inverse	294	NE	0- 0- 0.00	0.00000	293 STA =	0+58.00		1706.67	06.43
Inverse	293	SE	66-13- 7.25	20.00000	291 STA =	0+78.00		1704.65	04.47
Inverse	291	NE	0- 0- 0.00	0.00000	289 STA =	0+78.00		1703.15	02.97
~~Inverse~~	~~289~~	~~SE~~	~~66-13- 7.25~~	~~116.48014~~	~~184 STA =~~	~~1+94.48~~			
Inverse	289	SE	72-36- 1.48	147.38178	134			1702.67	02.49

from 200 scale maping

		Coso Pt
10+00	1714	N/A
Crest ℄ intersects Dam Survey Control line → 11+80	1715.04 (14.86)	N/A
25' 12+05	1715.04 (14.86)	N/A
25' 12+30	1713.25 (.75)	305
12+40	1713.50 (.32)	304
12+53	13.25 (.07)	302
12+53	12.75 (.57)	298
12+68	11.96 (.78)	296
12+68	09.97 (.79)	198
12+88	08.09 (07.91)	294
12+88	06.67 (.43)	293
13+08	04.65 (.47)	291
13+08	03.15 (02.97)	289
14+55.38	1702.67 (.49)	134

Inverse 153 SW 29-47-32.91 27.00000 154 STA = 11+44.00

[redacted] from dam CL

Inverse 16 NE 29-47-32.91 114.32952 204 33754.03299 25487.97186

RADIAL INVERSE FROM LINE - Base Pt. # 204 TO 16

Rad Inv 204 [redacted] 50.86429 21 33779.39014 25443.87887

Rad Inv 204 NW 60- 5-51.01 50.86429 21 33779.39014 25443.87887

Inverse 204 SW 29-47-32.91 23.32952 1 33733.78692 25476.38035

Inverse 1 NE 29-47-32.91 30.22511 203 33760.01720 25491.39800

[redacted]IAL INVERSE FROM LINE - Base Pt. # 203 TO 1

Rad Inv 203 [redacted] 51.00099 20 33785.44250 25447.18651

Rad Inv 203 NW 60- 5-51.01 51.00099 20 33785.44250 25447.18651

Inverse 203 NW 60- 5-51.01 51.00099 20 33785.44250 25447.18651

Inverse 20 SE 60- 5-51.01 51.00099 203 33760.01720 25491.39800

Inverse 203 SE 60- 5-51.01 54.53497 25 33732.83012 25538.67300

Inverse 25 NW 60- 5-51.01 105.53597 20 33785.44250 25447.18651

Left 60" RCP

Inverse 20 SW 28-39-24.48 6.89721 21 33779.39014 25443.87887

Dist from ℄ to ℄

Inverse 21 SE 60- 5-51.01 50.86429 204 33754.03299 25487.97186

Inverse 204 SE 60- 5-51.01 54.67167 26 33726.77777 25535.36537

Inverse 26 NW 60- 5-51.01 105.53597 21 33779.39014 25443.87887

Right Arch RCP

60" RCP with sewer line

****

Dam 4 Spillway Angle Right from Spillway to Dam CL.

Inverse	288 NE	4- 4-49.48	112.14647	8	33201.28599	25171.50706

RADIAL INVERSE FROM LINE - Base Pt. # 8 TO 288

Rad Inv	8 [redacted]		155.20000	6	33066.59867	25094.39439
Rad Inv	8 SW	29-47-32.91	155.20000	6	33066.59867	25094.39439

CURRENT DATE: 07-13-1993
CURRENT TIME: 08:43:32

FILE DATE: 04-27-1993
FILE NAME: C599 (Dam 4)

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1694.51	1693.24	105.54	1 RCP	5.00	5.00	.012	CONVENTIONAL
2	1696.56	1695.10	105.54	1 CMPA	4.75	3.17	.012	CONVENTIONAL
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C599 (Dam 4) DATE: 04-27-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1694.51	0	0	0	0	0	0	0	0	0
1697.79	80	66	14	0	0	0	0	0	6
1699.13	160	113	47	0	0	0	0	0	3
1700.46	240	159	81	0	0	0	0	0	4
1702.20	320	206	114	0	0	0	0	0	4
1704.48	400	255	145	0	0	0	0	0	5
1707.34	480	304	176	0	0	0	0	0	4
1710.74	560	354	206	0	0	0	0	0	5
1714.64	640	404	236	0	0	0	0	0	5
1719.08	720	454	266	0	0	0	0	0	6
1723.72	800	499	294	0	0	0	0	7	6
1722.00	767	483	284	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C599 (Dam 4) DATE: 04-27-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1694.51	0.00	0	0	0.00
1697.79	-0.00	80	0	0.13
1699.13	0.01	160	-0	-0.22
1700.46	-0.00	240	0	0.01
1702.20	0.00	320	-0	-0.01

1704.48	0.00	400	-0	-0.00
1707.34	0.00	480	-0	-0.02
1710.74	0.00	560	-0	-0.02
1714.64	0.00	640	-0	-0.01
1719.08	0.00	720	-0	-0.00
1723.72	-0.01	800	0	0.02

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 07-13-1993
CURRENT TIME: 08:43:32

FILE DATE: 04-27-1993
FILE NAME: C599 (Dam 4)

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (5 BY 5) RCP

DIS- HEAD- INLET OUTLET

```
*******************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*******************************************


    PROJECT:  Fountain Hills North FIS        C599 (Dam 4)
    ENGINEER:  dtp
    DATE:  10/19/1993
    TIME:  17:30. 6




---------------------------------------------
    INPUT PARAMETERS
---------------------------------------------


    STARTING WSEL:      1714.80
    MAXIMUM WSEL:       1716.64
    STEP SIZE:             0.20
    BREADTH OF WEIR:      25.00




*******************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills North FIS        C599 (Dam 4)
    DATE:  10/19/1993
    TIME:  17:30. 6
*******************************************
```

POINT	ELEVATION	STATION
1	1721.84	1784.00
2	1714.86	1805.60
3	1715.09	1944.90
4	1715.33	1945.00
5	1715.69	1994.10
6	1715.92	1994.20
7	1715.96	2024.80

8	1716.63	2024.90
9	1716.64	2084.30

1

```
*********************************************
    WEIR COEFFICIENT TABLE
    PROJECT:  Fountain Hills North FIS        C599 (Dam 4)
    DATE:  10/19/1993
    TIME:  17:30. 6
*********************************************
```

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.5267
3	0.40	2.5533
4	0.60	2.5800
5	0.80	2.6067
6	1.00	2.6333
7	1.20	2.6600
8	1.40	2.6867
9	1.60	2.7133
10	1.80	2.7400

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
    PROJECT:  Fountain Hills North FIS        C599 (Dam 4)
    DATE:  10/19/1993
    TIME:  17:30. 6
*********************************************
```

ELEVATION	DISCHARGE (CFS)
1714.80	0.00
1715.00	4.48
1715.20	39.05
1715.40	100.41
1715.60	185.23
1715.80	296.22
1716.00	431.25

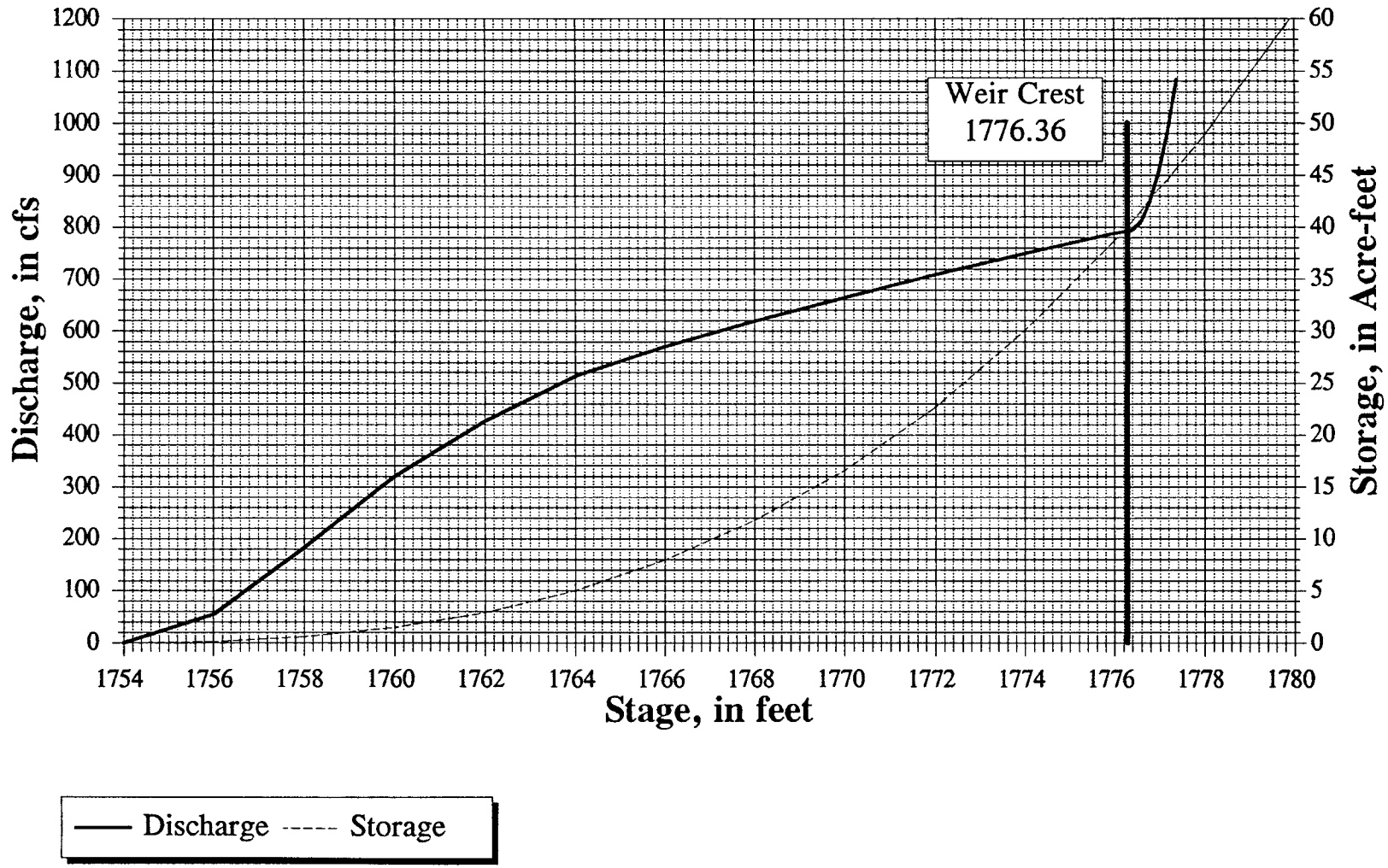
1716.20	594.13
1716.40	780.51
1716.60	988.34

Table R-20
Storage and Discharge vs. Stage Data for C600

Stage (ft)	Surface Area (acres)	Storage Volume (acre-ft)	Discharge		
			Culvert Flow (cfs)	Weir Flow (cfs)	Total Flow (cfs)
1754.00	0.01	0.00	0	---	0
1756.00	0.15	0.14	55	---	55
1758.00	0.35	0.62	183	---	183
1760.00	0.57	1.52	320	---	320
1762.00	0.87	2.95	427	---	427
1764.00	1.25	5.06	513	---	513
1766.00	1.69	7.98	570	---	570
1768.00	2.14	11.80	620	---	620
1770.00	2.68	16.61	665	---	665
1772.00	3.39	22.67	709	---	709
1774.00	4.03	30.07	750	---	750
1776.00	4.61	38.71	789	---	789
1776.36	---	40.5	795	0	795
1776.40	---	40.6	795	0	795
1776.60	---	41.6	799	13	812
1776.80	---	42.7	803	46	849
1777.00	---	43.7	806	100	906
1777.20	---	44.6	810	174	984
1777.40	---	45.7	814	270	1084
1778.00	5.48	48.78	---	---	---
1780.00	6.25	60.50	---	---	----

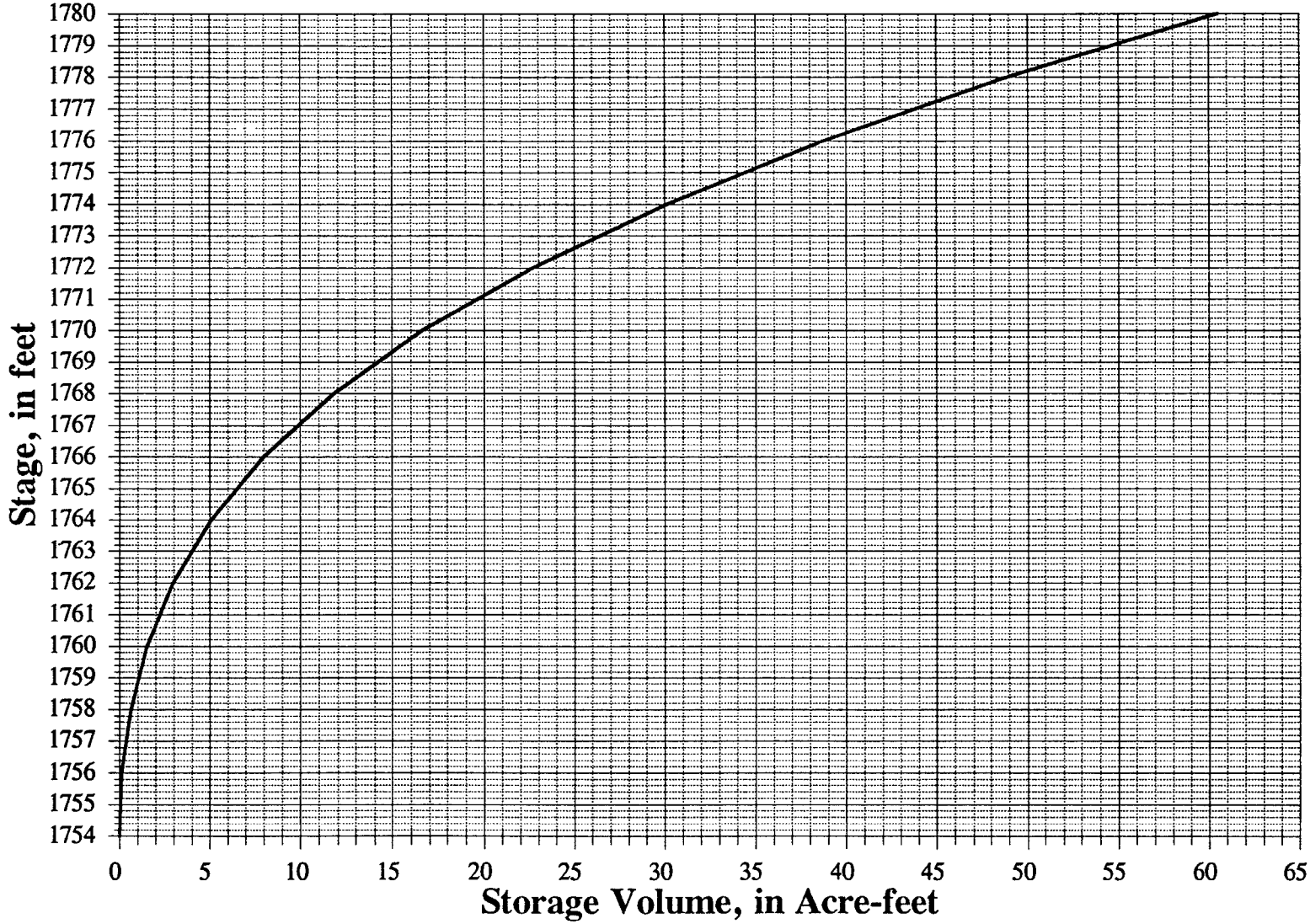
Figure R-16

Storage and Discharge vs Stage for C600



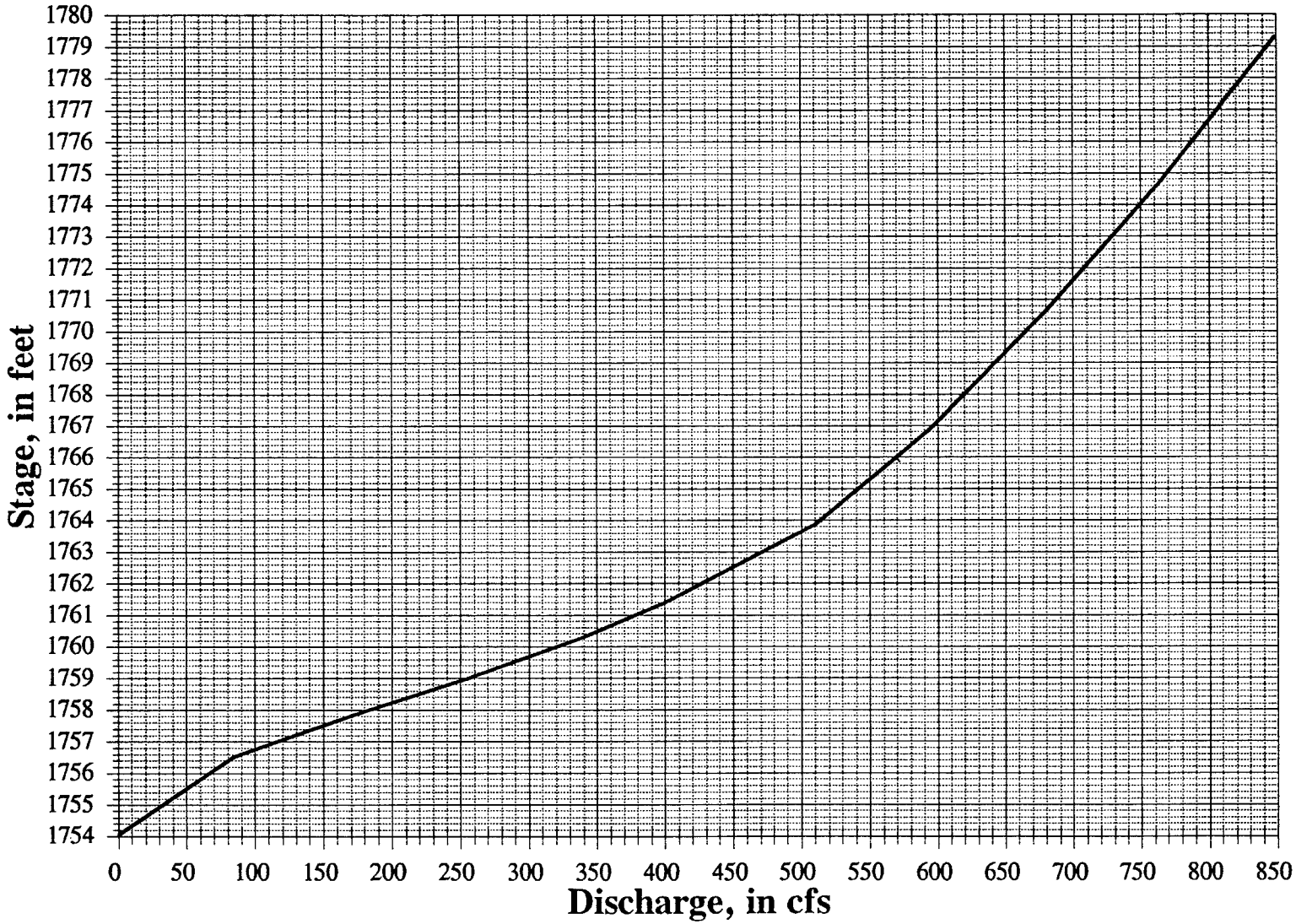
C600 Storage Volume

Calculated From Planimetered Contours



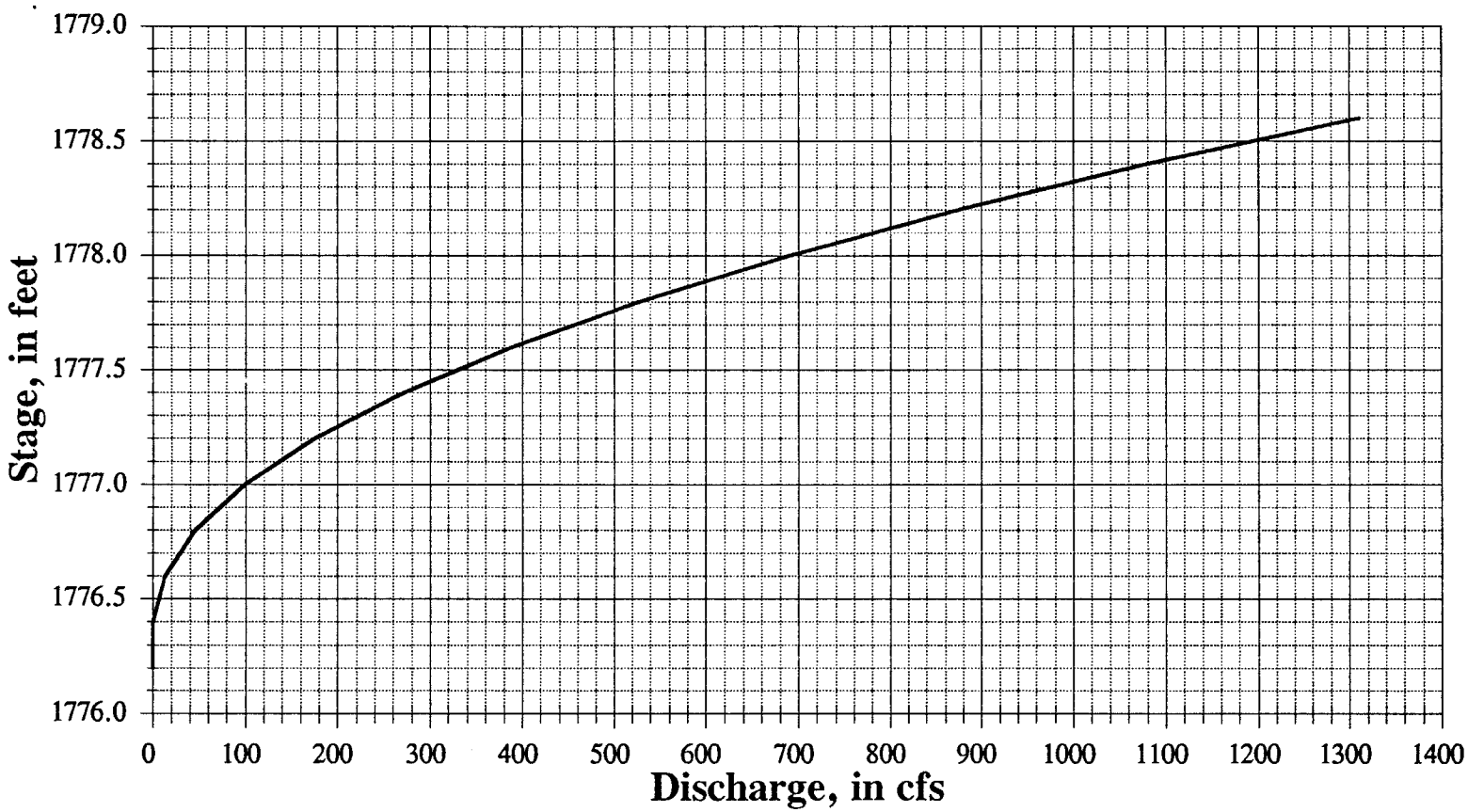
C600 Stage vs Discharge

Culvert Flow from HY8



C600 Stage vs Discharge

Weir Flow from Uneven Weir



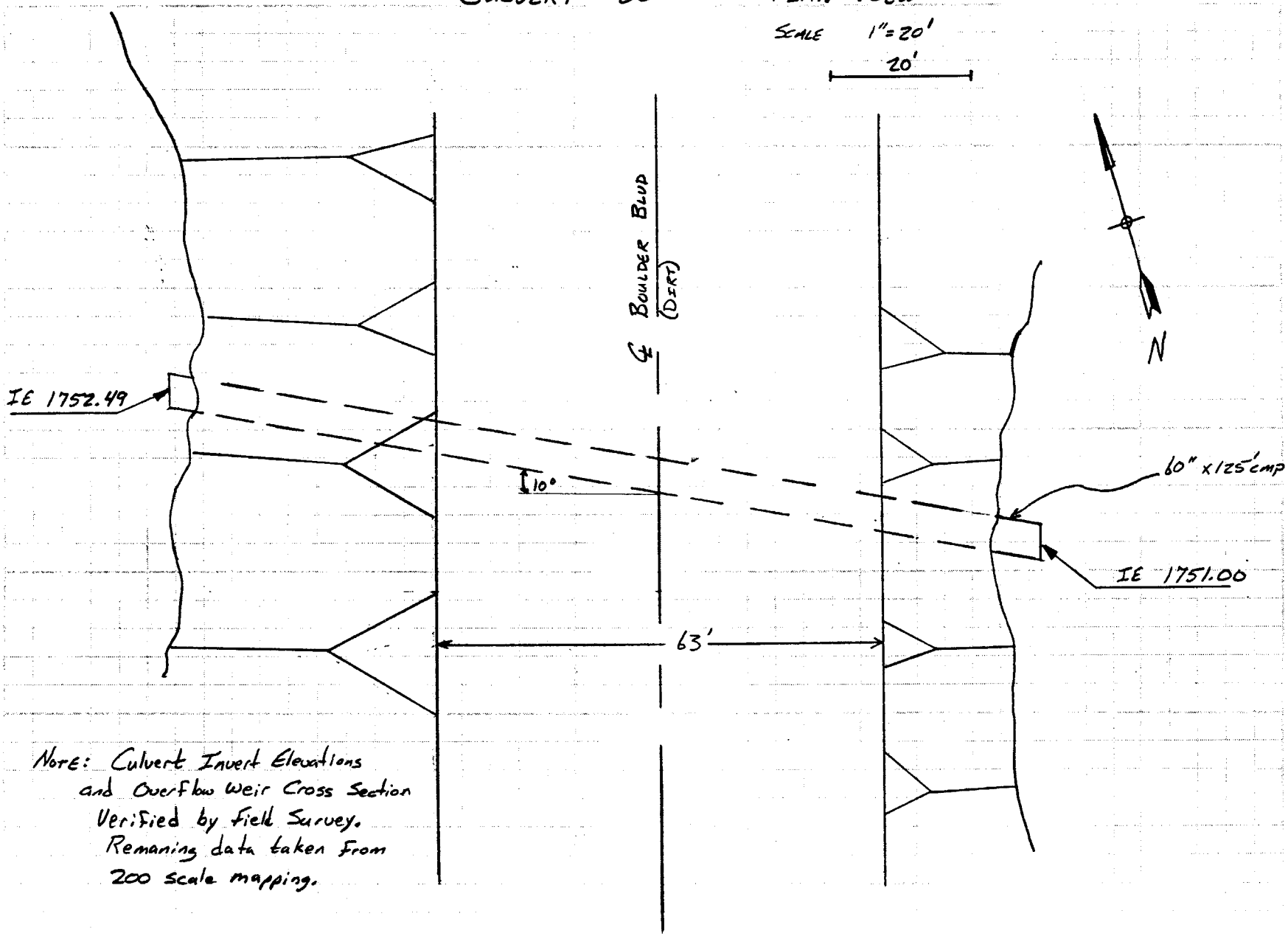
GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT: MC FLD
PROJECT: FOUNTAIN HILLS NORTH FIS
SUBJECT: CULVERT 600 Field Survey

SHEET 1 OF 3
DATE 16 July 93
BY DTP
PROJECT NO. 35

CULVERT 600 PLAN VIEW

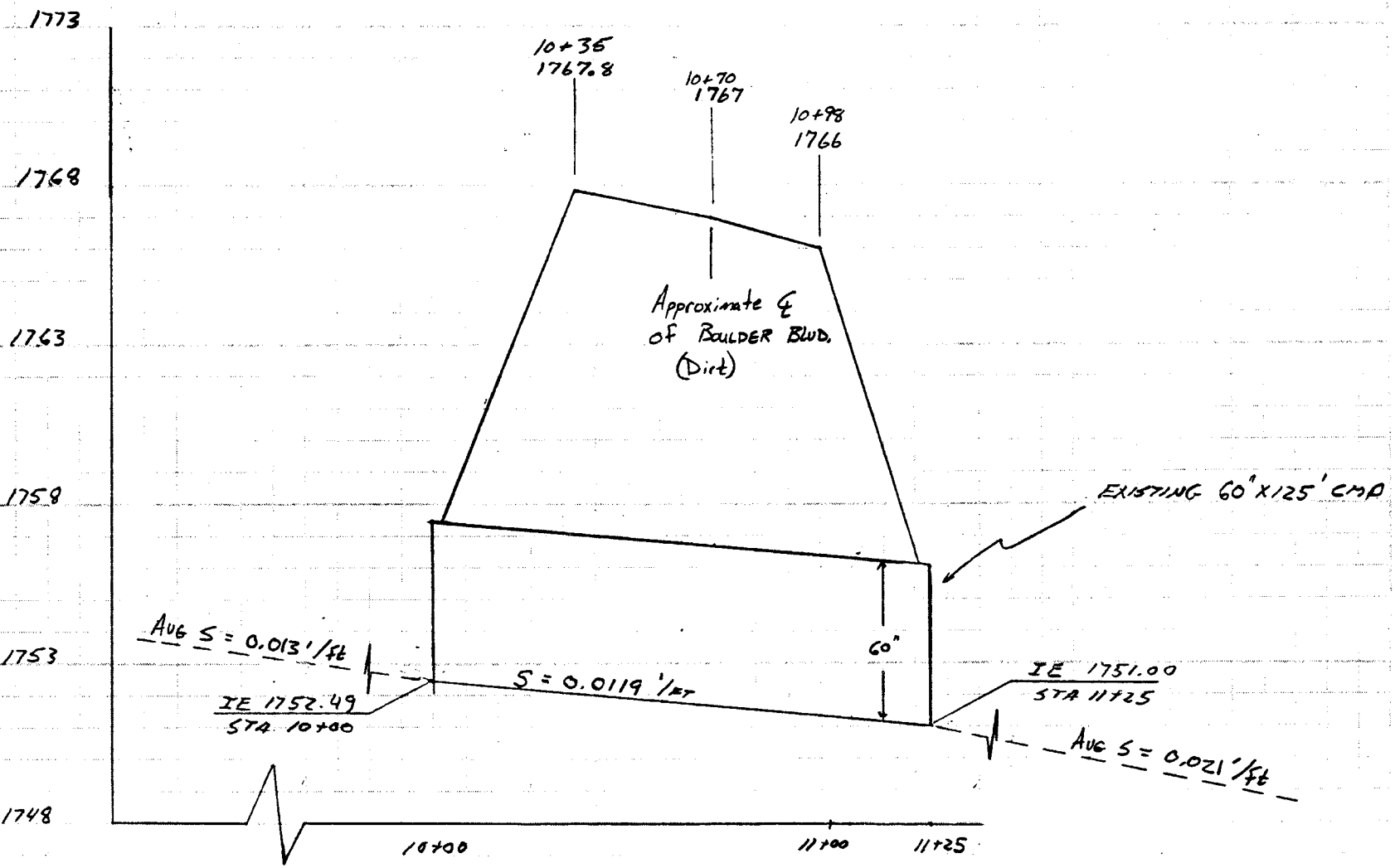
SCALE 1" = 20'



Note: Culvert Invert Elevations and Overflow Weir Cross Section Verified by Field Survey. Remaning data taken from 200 scale mapping.

CULVERT 600 PROFILE

SCALE 1" = 40' HORZ
1" = 5' VERT



NOTE: CULVERT Invert elevations and overflow Weir cross section verified by field Survey. Remaning data taken from 200 scale mapping.

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT M.C.F.C.D.

PROJECT F. HILLS

SUBJECT CULVERT #600 FIELD SURVEY

SHEET 2 OF 3

DATE 12-JUL-93

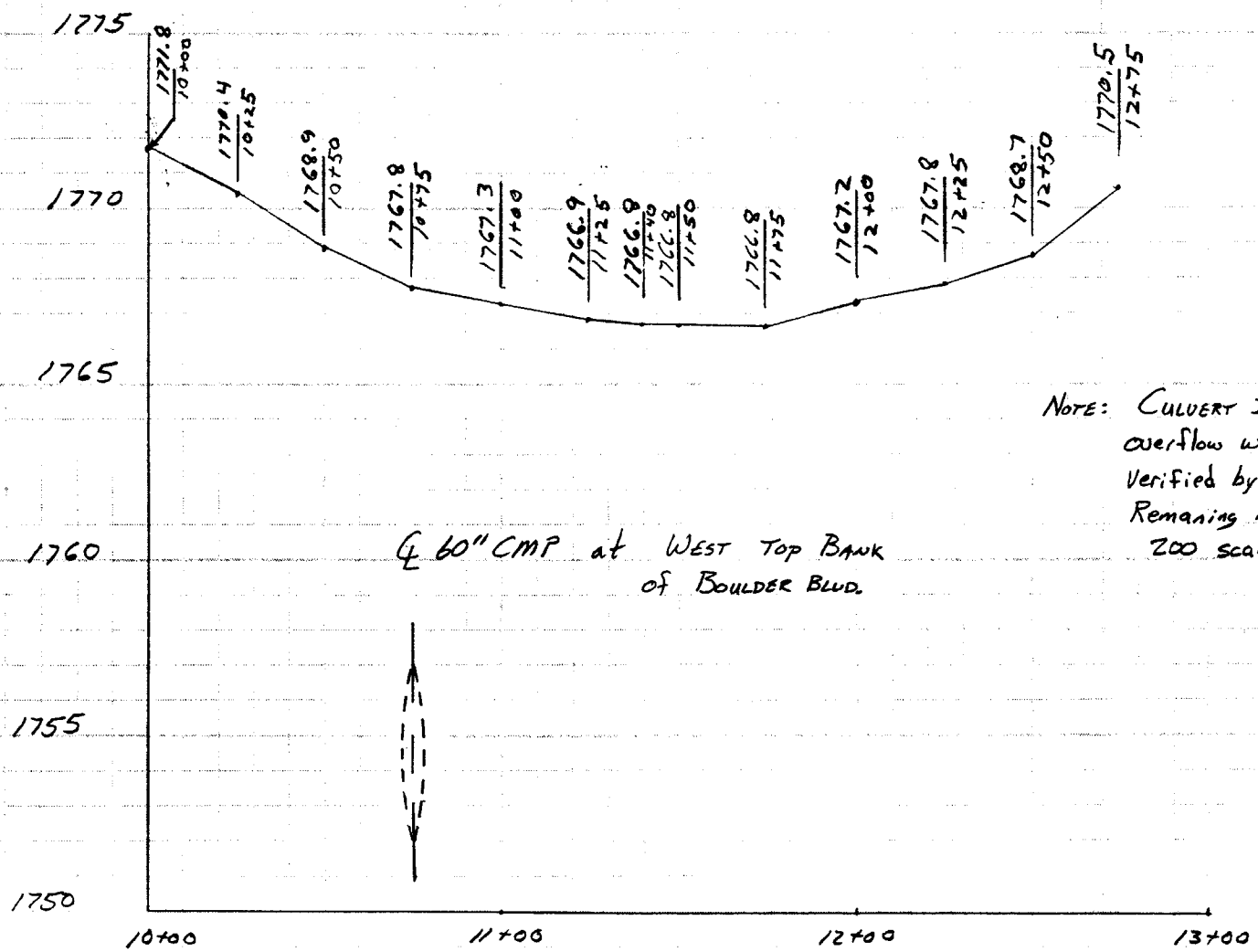
BY R.C.

PROJECT NO. 35

1750
1772

CULVERT # 600 WIER CROSS SECTION WEST TOP BANK

SCALE: 1" = 50' HOR Z
1" = 5' VERT



NOTE: CULVERT Invert elevations and overflow weir cross section Verified by field Survey. Remaning Data taken from 200 scale mapping.

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT MC FCD
PROJECT F. HILLS F.I.S.
SUBJECT CULVERT #600 FIELD SURVEY
SHEET 3 OF 3
DATE 12-JUL-93
BY R.C.
PROJECT NO. 35

CURRENT DATE: 10-29-1993
CURRENT TIME: 16:31:29

FILE DATE: 06-16-1993
FILE NAME: C600

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1754.07	1750.24	146.05	2 CSP	5.00	5.00	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C600 DATE: 06-16-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1754.07	0	0	0	0	0	0	0	0	1
1756.54	85	85	0	0	0	0	0	0	1
1757.81	170	170	0	0	0	0	0	0	1
1758.99	255	255	0	0	0	0	0	0	1
1760.31	340	340	0	0	0	0	0	0	1
1761.40	400	400	0	0	0	0	0	0	1
1763.86	510	510	0	0	0	0	0	0	1
1766.92	595	595	0	0	0	0	0	0	1
1770.66	680	680	0	0	0	0	0	0	1
1774.76	765	765	0	0	0	0	0	0	1
1779.31	850	849	0	0	0	0	0	1	7
1779.00	844	844	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C600 DATE: 06-16-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1754.07	0.00	0	0	0.00
1756.54	0.00	85	0	0.00
1757.81	0.00	170	0	0.00
1758.99	0.00	255	0	0.00
1760.31	0.00	340	0	0.00
1761.40	0.00	400	0	0.00
1763.86	0.00	510	0	0.00
1766.92	0.00	595	0	0.00
1770.66	0.00	680	0	0.00

1774.76	0.00	765	0	0.00
1779.31	0.00	850	-0	-0.00

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 10-29-1993 FILE DATE: 06-16-1993
CURRENT TIME: 16:31:29 FILE NAME: C600

PERFORMANCE CURVE FOR CULVERT # 1 - 2 (5 BY 5) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1754.07	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
85	1756.54	2.47	2.47	1-S2n	1.45	1.81	8.95	1.45	4.01	0.98
170	1757.81	3.74	3.74	1-S2n	2.11	2.61	10.82	2.11	5.15	1.42
255	1758.99	4.92	4.92	1-S2n	2.67	3.22	11.98	2.67	5.94	1.76
340	1760.31	6.24	6.24	5-S2n	3.21	3.72	12.76	3.21	6.57	2.05
400	1761.40	7.33	7.33	5-S2n	3.63	4.03	13.12	3.63	6.96	2.24
510	1763.86	9.79	9.56	6-FFn	5.00	4.44	12.99	5.00	7.56	2.53
595	1766.92	12.14	12.85	6-FFn	5.00	4.76	15.15	5.00	7.97	2.74
680	1770.66	14.86	16.59	6-FFn	5.00	5.00	17.32	5.00	8.33	2.93
765	1774.76	17.94	20.69	6-FFn	5.00	5.00	19.48	5.00	8.66	3.10
849	1779.30	21.34	25.23	6-FFn	5.00	5.00	21.63	5.00	8.97	3.27

El. inlet face invert 1754.07 ft El. outlet invert 1750.24 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1754.07
OUTLET STATION (FT)	146.00
OUTLET ELEVATION (FT)	1750.24
NUMBER OF BARRELS	2
SLOPE (V-FT/H-FT)	0.0262
CULVERT LENGTH ALONG SLOPE (FT)	146.05

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	5.00 FT
BARREL MATERIAL	CORRUGATED STEEL
BARREL MANNING'S N	0.024
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

CURRENT DATE: 10-29-1993
CURRENT TIME: 16:31:29

FILE DATE: 06-16-1993
FILE NAME: C600

TAILWATER

***** USER DEFINED CHANNEL CROSS-SECTION
MAIN CHANNEL AND LT & RT OVER BANKS

FILE NAME: C600
FILE DATE: 06-16-1993

LEFT CHANNEL BOUNDARY	6
RIGHT CHANNEL BOUNDARY	7
MANNING N LEFT OVER BANK	0.055
MANNING N MAIN CHANNEL	0.040
MANNING N RIGHT OVER BAN	0.055
SLOPE OF CHANNEL (FT/FT)	0.0120

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	1000.00	1760.24
2	1003.00	1758.24
3	1007.00	1756.24
4	1018.00	1754.24
5	1029.00	1752.24
6	1039.00	1750.24
7	1058.00	1750.24
8	1075.00	1752.24
9	1095.00	1754.24
10	1123.00	1756.24
11	1133.00	1758.24
12	1149.00	1760.24

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1750.24	0.000	0.00	0.00	0.00
85.00	1751.22	0.714	0.98	4.01	0.73
170.00	1751.66	0.760	1.42	5.15	1.06
255.00	1752.00	0.788	1.76	5.94	1.32
340.00	1752.29	0.808	2.05	6.57	1.54
400.00	1752.48	0.820	2.24	6.96	1.67
510.00	1752.77	0.837	2.53	7.56	1.90
595.00	1752.98	0.848	2.74	7.97	2.05
680.00	1753.17	0.858	2.93	8.33	2.19
765.00	1753.34	0.866	3.10	8.66	2.32
850.00	1753.51	0.874	3.27	8.97	2.45

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE GRAVEL

EMBANKMENT TOP WIDTH (FT)	1.00
CREST LENGTH (FT)	1.00
OVERTOPPING CREST ELEVATION (FT)	1779.00

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*********************************************


    PROJECT:  Fountain Hills North FIS          C600
    ENGINEER:  dtp
    DATE:  10/29/1993
    TIME:   3:43.43



---------------------------------------------
    INPUT PARAMETERS
---------------------------------------------


    STARTING WSEL:      1776.20
    MAXIMUM WSEL:       1778.60
    STEP SIZE:             0.20
    BREADTH OF WEIR:      36.00
```

```
*********************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills North FIS          C600
    DATE:  10/29/1993
    TIME:   3:43.43
*********************************************
```

POINT	ELEVATION	STATION
1	1779.46	0.00
2	1778.50	25.00
3	1777.72	50.00
4	1777.11	75.00
5	1776.68	100.00
6	1776.43	125.00
7	1776.36	150.00
8	1776.46	175.00
9	1776.74	200.00
10	1777.20	225.00
11	1777.84	250.00
12	1778.65	275.00

```
*********************************************
    WEIR COEFFICIENT TABLE
    PROJECT:  Fountain Hills North FIS          C600
    DATE:  10/29/1993
    TIME:   3:43.43
*********************************************
```

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.5185
3	0.40	2.5370
4	0.60	2.5556
5	0.80	2.5741
6	1.00	2.5926
7	1.20	2.6111
8	1.40	2.6296
9	1.60	2.6481
10	1.80	2.6667
11	2.00	2.6852
12	2.20	2.7037
13	2.40	2.7222

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
    PROJECT:  Fountain Hills North FIS            C600
    DATE:  10/29/1993
    TIME:   3:43.43
*********************************************
```

ELEVATION	DISCHARGE (CFS)
1776.20	0.00
1776.40	0.19
1776.60	12.96
1776.80	46.02
1777.00	99.58
1777.20	174.05
1777.40	269.90
1777.60	387.15
1777.80	526.42
1778.00	688.18
1778.20	872.55
1778.40	1079.92
1778.60	1310.84

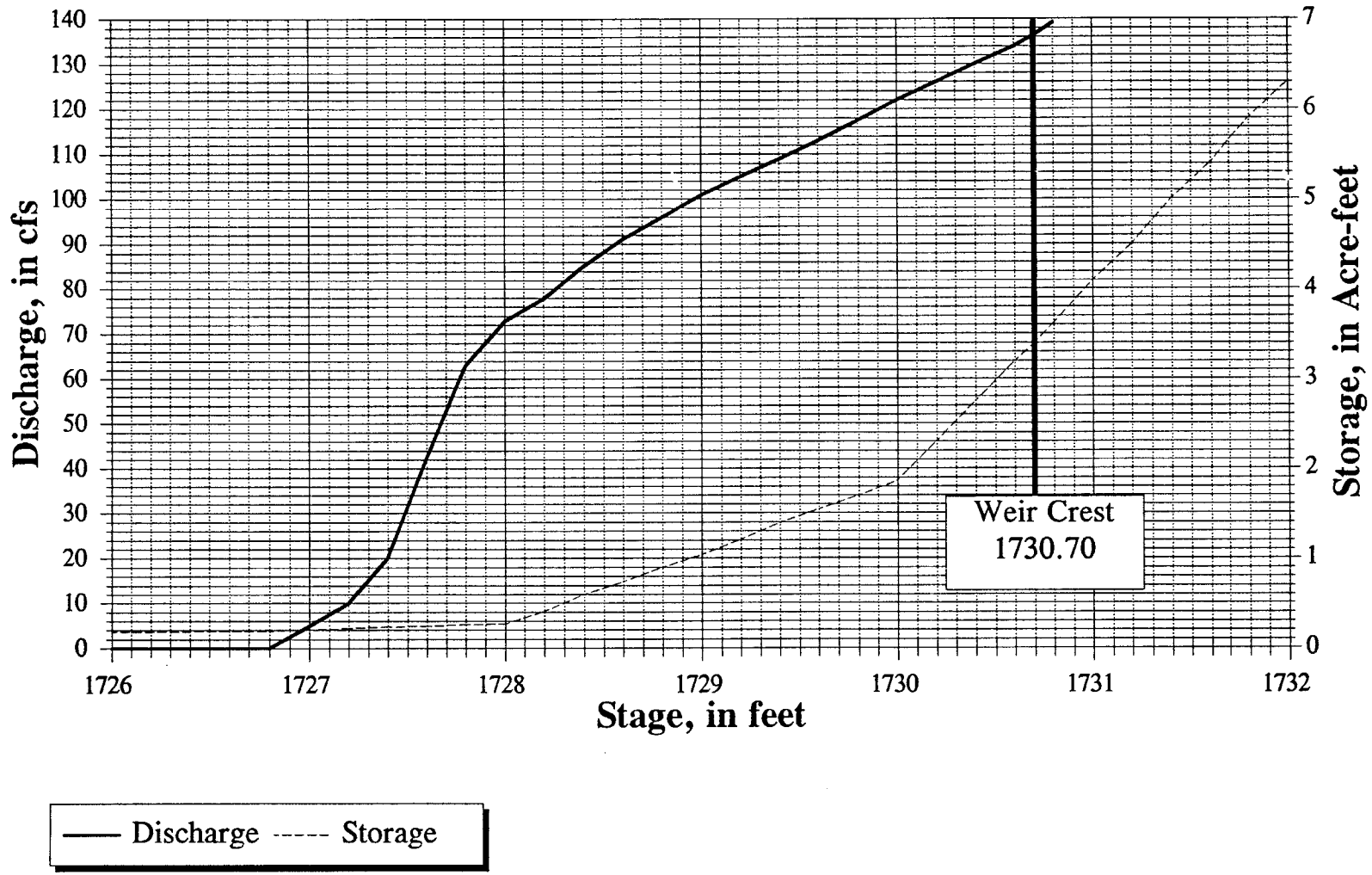
Table R-21
Storage and Discharge vs. Stage Data for C605

[1] Stage (ft)	[2] Head (d) at Inlet Trash Rack (feet)	[3] Surface Area (acres)	[4] Storage Volume (acre-ft)	[5] Discharge: Culvert Flow (cfs)	[6] Discharge: Inlet Flow (cfs)	[7] Discharge: Weir Flow (cfs)	[8] Discharge: Total Flow (cfs)
1722.45	0.00	0.00	0.00	0	---	---	0
1723.00	0.00	---	0.0	7	---	---	0
1724.00	0.00	---	0.1	22	---	---	0
1725.00	0.00	---	0.1	44	---	---	0
1726.00	0.00	---	0.2	77	---	---	0
1726.80	0.00	---	0.2	107	0	---	0
1727.00	0.15	---	0.2	113	5	---	5
1727.20	0.35	---	0.2	120	10	---	10
1727.40	0.55	---	0.2	128	20	---	20
1727.60	0.75	---	0.3	135	43	---	43
1727.80	0.95	---	0.3	142	63	---	63
1728.00	1.15	0.15	0.28	147	73	---	73
1728.20	1.35	---	0.4	154	78	---	78
1728.40	1.55	---	0.6	160	85	---	85
1728.60	1.75	---	0.7	166	91	---	91
1728.80	1.95	---	0.9	173	96	---	96
1729.00	2.15	---	1.0	178	101	---	101
1729.20	2.35	---	1.2	183	105	---	105
1729.40	2.55	---	1.4	189	109	---	109
1729.60	2.75	---	1.6	194	113	---	113
1729.80	2.95	---	1.7	200	117	---	117
1730.00	3.15	1.72	1.86	205	122	---	122
1730.20	3.35	---	2.3	210	126	---	126
1730.40	3.55	---	2.8	214	130	---	130
1730.60	3.75	---	3.2	218	134	---	134
1730.70	**3.85**	---	**3.4**	**220**	**136**	**0**	**136**
1730.80	3.95	---	3.6	223	138	1	139
1731.00	4.15	---	4.1	226	---	---	---
1731.20	4.35	---	4.5	230	---	---	---
1731.40	4.55	---	5.0	234	---	---	---
1731.60	4.75	---	5.4	236	---	---	---
1731.80	4.95	---	5.9	238	---	---	---
1732.00	5.15	2.77	6.31	240	---	---	---
1734.00	7.15	3.44	12.50	---	---	---	---

* **Note:** 1. Weir flow over the road will start at EL > 1730.70.
2. Total flow is the lesser of columns 5 and 6 plus column 7.

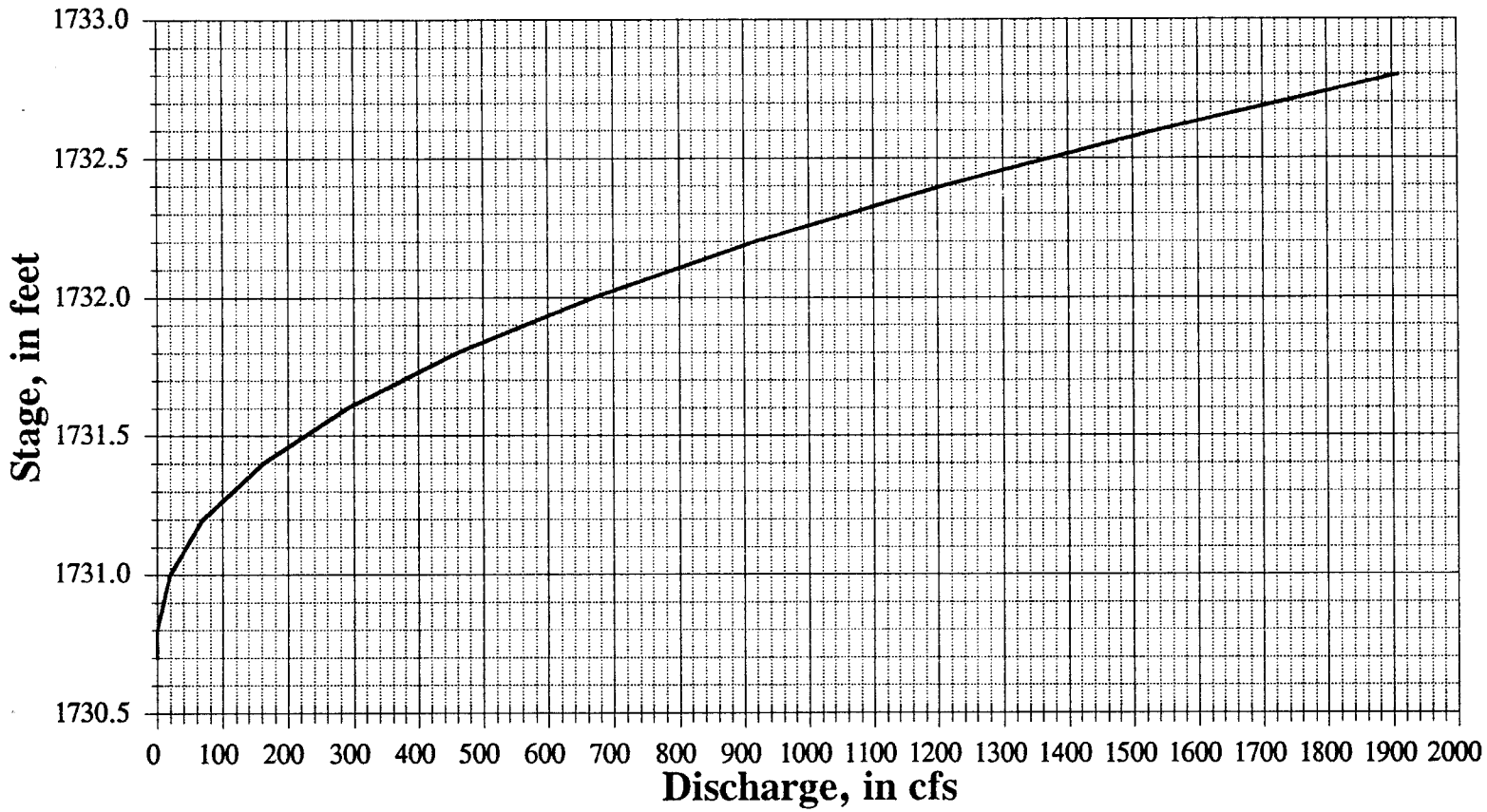
Figure R-17

Storage and Discharge vs Stage for C605



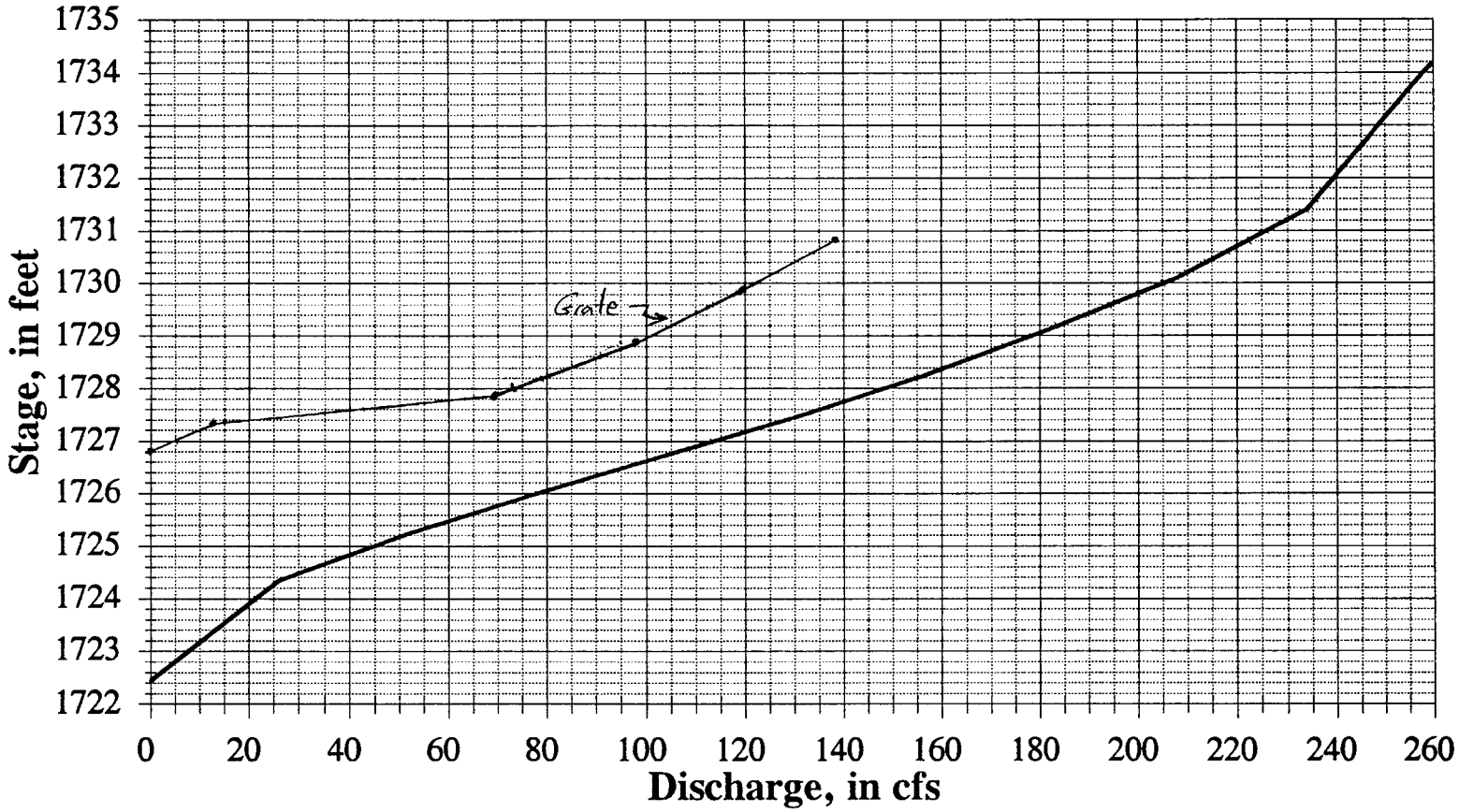
C605 Stage vs Discharge

Weir Flow from Uneven Weir



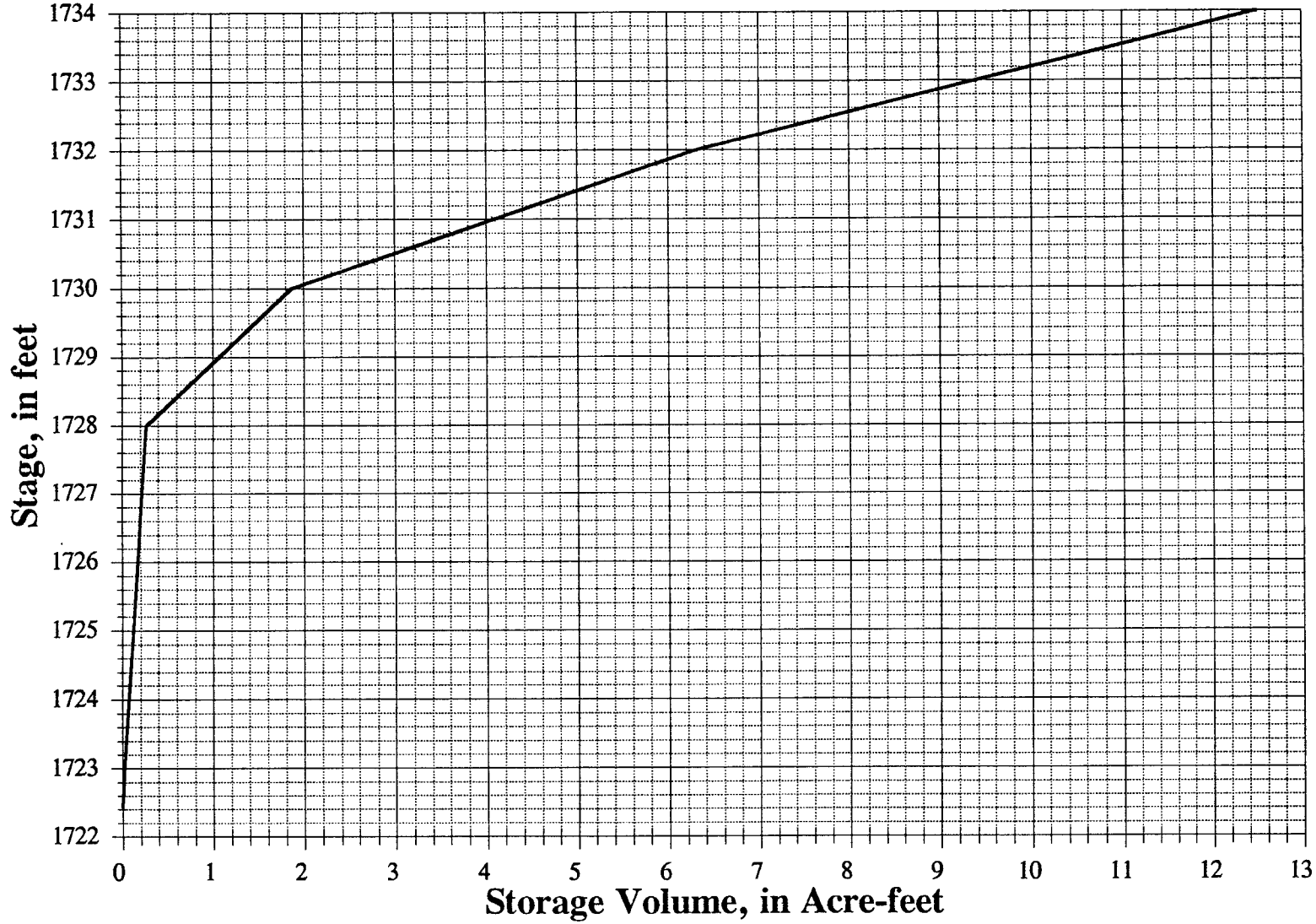
C605 Stage vs. Discharge

Culvert Flow from HY8



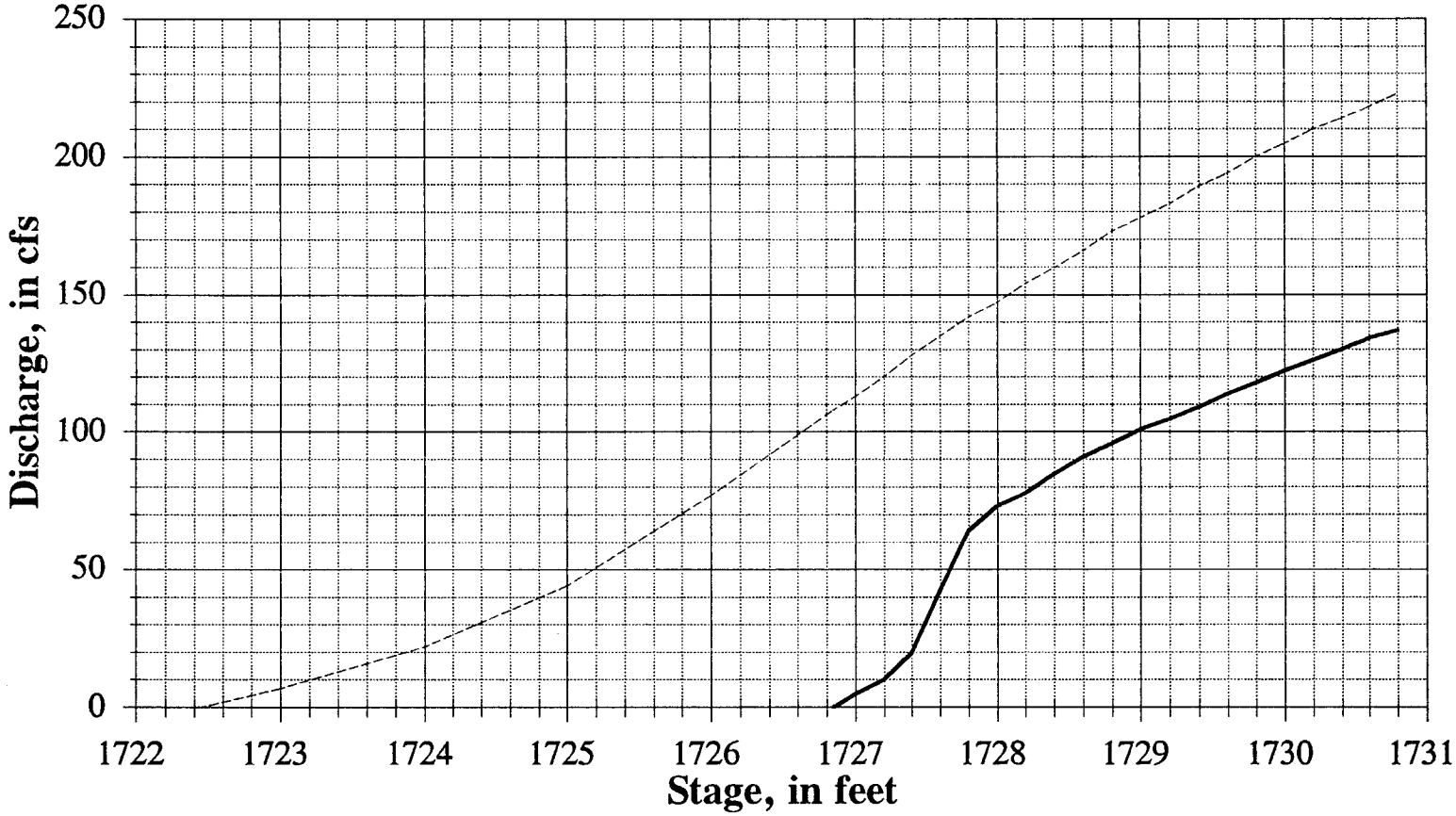
C605 Storage Volume

Calculated From Planimetered Contours



C605 Stage vs Discharge

Culvert/Grate Analysis



----- Cluvert —— Grate

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 1 OF

CLIENT FCDMC

DATE 10/29/93

PROJECT Fountain Hills North FIS

BY TRL

SUBJECT C605 Inlet

PROJECT NO. 35

Double 4x4 grate in a sag with a P-1 7/8 Grate

Clear Opening Area = $(4 \times 4)\, 2 \times 0.8 = 25.6 ft^2$

Assume a clogging factor of 2.

head = 0.5' : Weir flow

$Q = C_w P d^{1.5}$

$C_w = 3.0$

$P = 8 \times 2 + 4 \times 2 = 24'$

$d = 0.5'$

$Q = 3(24)0.5^{1.5} = 25.5$ cfs

Adj. for Clogging

$Q = Q/2 = 12.7$ cfs

head = 1.0' : Orifice flow

$Q = 0.67\, A\, (2gd)^{0.5} / 2$

$= \frac{(0.67)}{2}(25.6)(64.4)^{.5}$

$= 69$ cfs

head = 2.0' : Orifice Flow

$Q = \frac{(0.67)}{2}(25.6)(64.4 \cdot 2)^{0.5}$

$= 97$ cfs

head = 3.0 : $Q = \frac{0.67}{2}(25.6)(64.4 \cdot 3)^{0.5} = 119$ cfs

head = 4.0 $Q = \frac{0.67}{2}(25.6)(64.4 \cdot 4)^{0.5} = 138$ cfs

CURRENT DATE: 06-16-1993
CURRENT TIME: 09:48:56

FILE DATE: 06-16-1993
FILE NAME: C605

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1722.45	1715.23	357.57	1 CSP	5.00	5.00	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C605 DATE: 06-16-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1722.45	0	0	0	0	0	0	0	0	1
1724.31	25	25	0	0	0	0	0	0	1
1725.18	50	50	0	0	0	0	0	0	1
1725.92	75	75	0	0	0	0	0	0	1
1726.62	100	100	0	0	0	0	0	0	1
1727.32	125	125	0	0	0	0	0	0	1
1728.06	150	150	0	0	0	0	0	0	1
1728.88	175	175	0	0	0	0	0	0	1
1729.80	200	200	0	0	0	0	0	0	1
1731.94	225	225	0	0	0	0	0	0	1
1734.67	250	248	0	0	0	0	0	2	5
1734.00	243	243	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C605 DATE: 06-16-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1722.45	0.00	0	0	0.00
1724.31	0.00	25	0	0.00
1725.18	0.00	50	0	0.00
1725.92	0.00	75	0	0.00
1726.62	0.00	100	0	0.00
1727.32	0.00	125	0	0.00
1728.06	0.00	150	0	0.00
1728.88	0.00	175	0	0.00
1729.80	0.00	200	0	0.00

1731.94	0.00	225	0	0.00
1734.67	-0.01	250	0	0.04

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 06-16-1993 FILE DATE: 06-16-1993
CURRENT TIME: 09:48:56 FILE NAME: C605

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (5 BY 5) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1722.45	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
25	1724.31	1.86	1.86	1-S2n	1.17	1.37	7.08	1.17	3.80	0.77
50	1725.18	2.73	2.73	1-S2n	1.69	1.98	8.55	1.69	4.55	1.08
75	1725.92	3.47	3.47	1-S2n	2.11	2.44	9.51	2.11	5.06	1.30
100	1726.62	4.17	4.17	1-S2n	2.49	2.84	10.22	2.49	5.46	1.49
125	1727.32	4.87	4.87	1-S2n	2.86	3.19	10.79	2.86	5.78	1.65
150	1728.06	5.61	5.61	5-S2n	3.23	3.51	11.21	3.23	6.06	1.79
175	1728.88	6.43	6.43	5-S2n	3.62	3.78	11.51	3.62	6.30	1.92
200	1729.80	7.35	7.24	2-M2c	4.10	4.03	11.79	4.03	6.55	2.03
225	1731.94	8.39	9.49	6-FFn	5.00	4.22	11.46	5.00	6.86	2.12
248	1734.66	9.47	12.21	6-FFn	5.00	4.39	12.64	5.00	7.15	2.20

El. inlet face invert 1722.45 ft El. outlet invert 1715.23 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION (FT)                      0.00
      INLET ELEVATION (FT)                 1722.45
      OUTLET STATION (FT)                   357.50
      OUTLET ELEVATION (FT)                1715.23
      NUMBER OF BARRELS                       1
      SLOPE (V-FT/H-FT)                       0.0202
      CULVERT LENGTH ALONG SLOPE (FT)       357.57

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          CIRCULAR
      BARREL DIAMETER         5.00 FT
      BARREL MATERIAL       CORRUGATED STEEL
      BARREL MANNING'S N    0.024
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   SQUARE EDGE WITH HEADWALL
      INLET DEPRESSION      NONE
```

CURRENT DATE: 06-16-1993
CURRENT TIME: 09:48:56

FILE DATE: 06-16-1993
FILE NAME: C605

TAILWATER

***** USER DEFINED CHANNEL CROSS-SECTION
MAIN CHANNEL AND LT & RT OVER BANKS

FILE NAME: C605
FILE DATE: 06-16-1993

LEFT CHANNEL BOUNDARY	2
RIGHT CHANNEL BOUNDARY	5
MANNING N LEFT OVER BANK	0.035
MANNING N MAIN CHANNEL	0.050
MANNING N RIGHT OVER BAN	0.023
SLOPE OF CHANNEL (FT/FT)	0.0380

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	1000.00	1719.20
2	1045.00	1717.23
3	1060.00	1715.23
4	1065.00	1715.23
5	1070.00	1717.23
6	1080.00	1719.23
7	1100.00	1721.23
8	1110.00	1723.23

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1715.23	0.000	0.00	0.00	0.00
25.00	1716.00	0.912	0.77	3.80	1.26
50.00	1716.31	0.953	1.08	4.55	1.65
75.00	1716.53	0.978	1.30	5.06	1.94
100.00	1716.72	0.996	1.49	5.46	2.17
125.00	1716.88	1.010	1.65	5.78	2.36
150.00	1717.02	1.022	1.79	6.06	2.54
175.00	1717.15	1.032	1.92	6.30	2.69
200.00	1717.26	1.042	2.03	6.55	2.85
225.00	1717.35	1.054	2.12	6.86	3.06
250.00	1717.43	1.065	2.20	7.15	3.25

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	1.00
CREST LENGTH (FT)	1.00
OVERTOPPING CREST ELEVATION (FT)	1734.00

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*********************************************


    PROJECT:  Fountain Hills North FIS                    C605
    ENGINEER:  dtp
    DATE:  10/20/1993
    TIME:  15:13. 8




---------------------------------------------
    INPUT PARAMETERS
---------------------------------------------


    STARTING WSEL:      1730.60
    MAXIMUM WSEL:       1732.80
    STEP SIZE:             0.20
    BREADTH OF WEIR:      85.00
```

```
*********************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills North FIS                    C605
    DATE:  10/20/1993
    TIME:  15:13. 8
*********************************************
```

POINT	ELEVATION	STATION
1	1732.94	1000.00
2	1732.74	1050.00
3	1732.24	1100.00
4	1731.74	1150.00
5	1731.44	1200.00
6	1730.92	1250.00
7	1730.70	1300.00
8	1731.00	1350.00
9	1731.10	1400.00
10	1731.25	1438.43
11	1732.27	1488.00
12	1733.94	1538.00

```
*********************************************
    WEIR COEFFICIENT TABLE
    PROJECT:  Fountain Hills North FIS                    C605
    DATE:  10/20/1993
    TIME:  15:13. 8
*********************************************
```

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.5078
3	0.40	2.5157
4	0.60	2.5235
5	0.80	2.5314
6	1.00	2.5392
7	1.20	2.5471
8	1.40	2.5549
9	1.60	2.5627
10	1.80	2.5706
11	2.00	2.5784
12	2.20	2.5863

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
    PROJECT:  Fountain Hills North FIS                    C605
    DATE:  10/20/1993
    TIME:  15:13. 8
*********************************************
```

ELEVATION	DISCHARGE (CFS)
1730.60	0.00
1730.80	1.25
1731.00	19.22
1731.20	69.69
1731.40	161.57
1731.60	290.98
1731.80	459.87
1732.00	668.89
1732.20	917.76
1732.40	1207.20
1732.60	1537.51
1732.80	1909.34

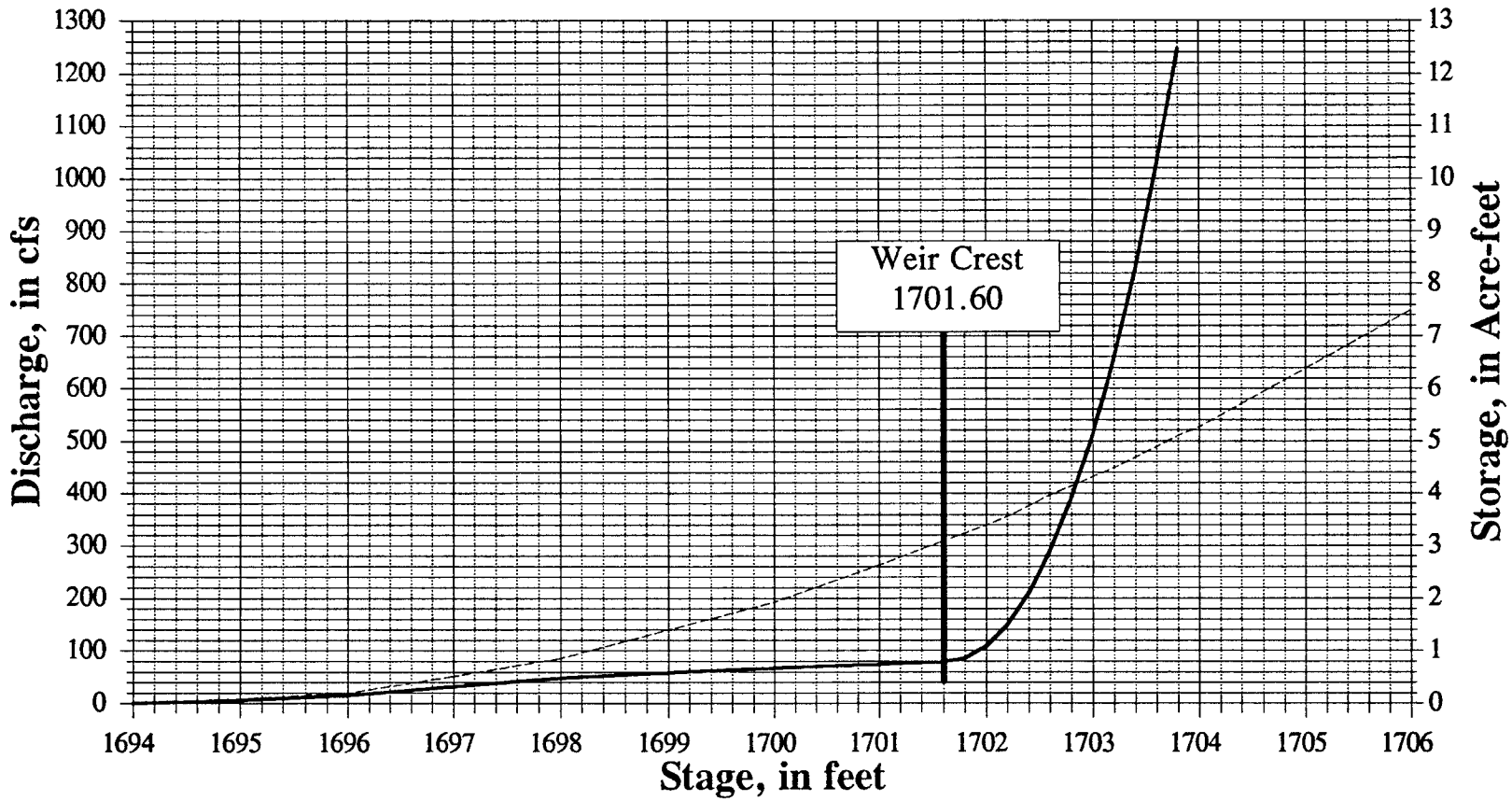
Table R-22

Storage and Discharge vs. Stage Data for C609

Stage (ft)	Surface Area (acres)	Storage Volume (acre-ft)	Discharge		
			Culvert Flow (cfs)	Weir Flow (cfs)	Total Flow (cfs)
1694.00	0.03	0.00	0	---	0
1695.00	---	0.1	6	---	6
1696.00	0.21	0.21	16	---	16
1697.00	---	0.5	33	---	33
1698.00	0.46	0.86	48	---	48
1699.00	---	1.4	59	---	59
1700.00	0.61	1.93	68	---	68
1701.00	---	2.6	75	---	75
1701.60	---	3.1	79	0	79
1701.80	---	3.2	81	5	85
1702.00	0.85	3.39	82	26	108
1702.20	---	3.6	83	66	149
1702.40	---	3.8	84	125	209
1702.60	---	4.0	85	204	289
1702.80	---	4.1	87	303	390
1703.00	---	4.3	88	424	512
1703.20	---	4.5	89	569	658
1703.40	---	4.7	90	739	829
1703.60	---	4.9	91	934	1025
1703.80	---	5.1	92	1155	1247
1704.00	1.03	5.27		---	0
1706.00	1.20	7.50		---	0

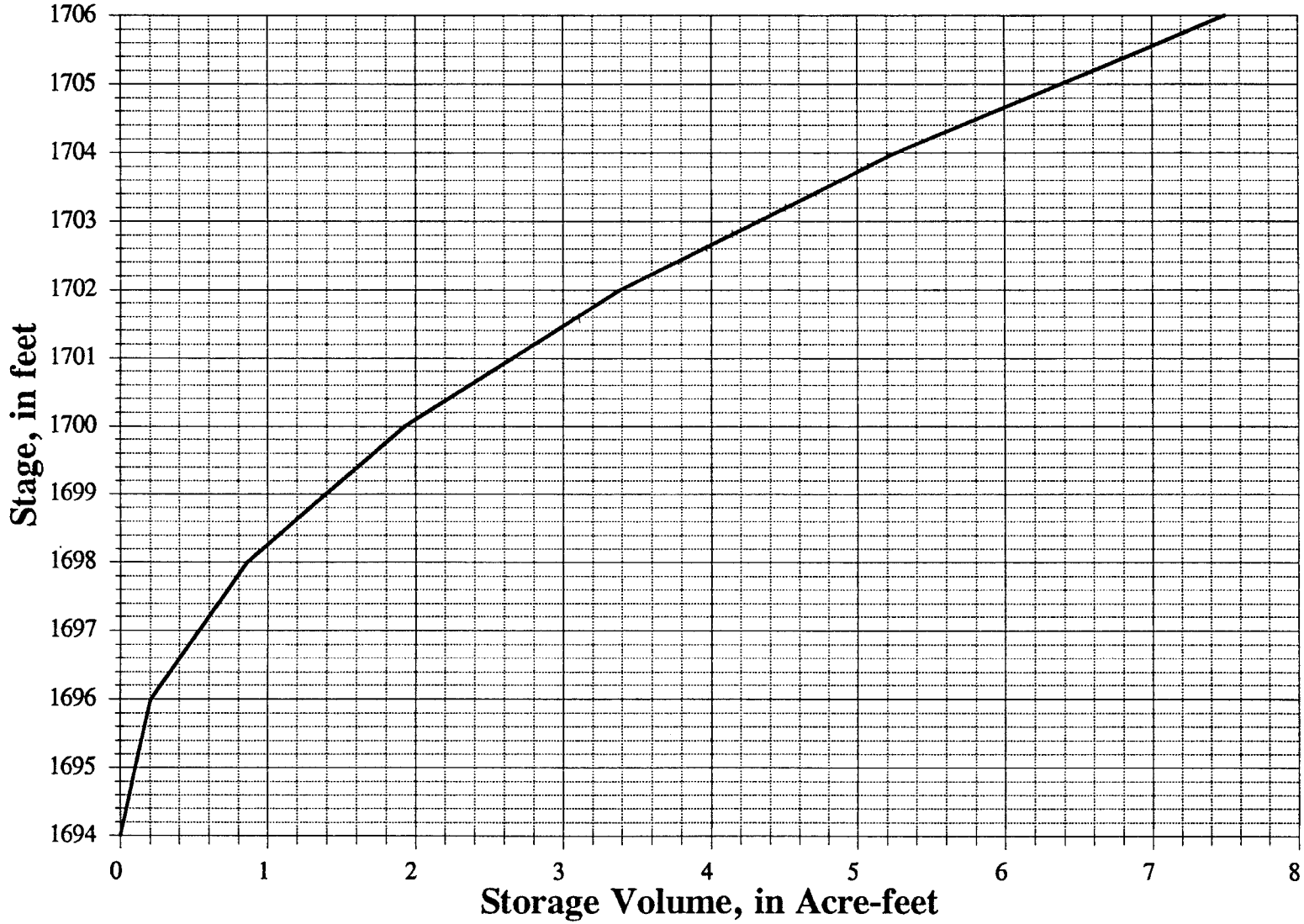
Figure R-18

Storage and Discharge vs Stage for C609



C609 Storage Volume

Calculated From Planimetered Contours

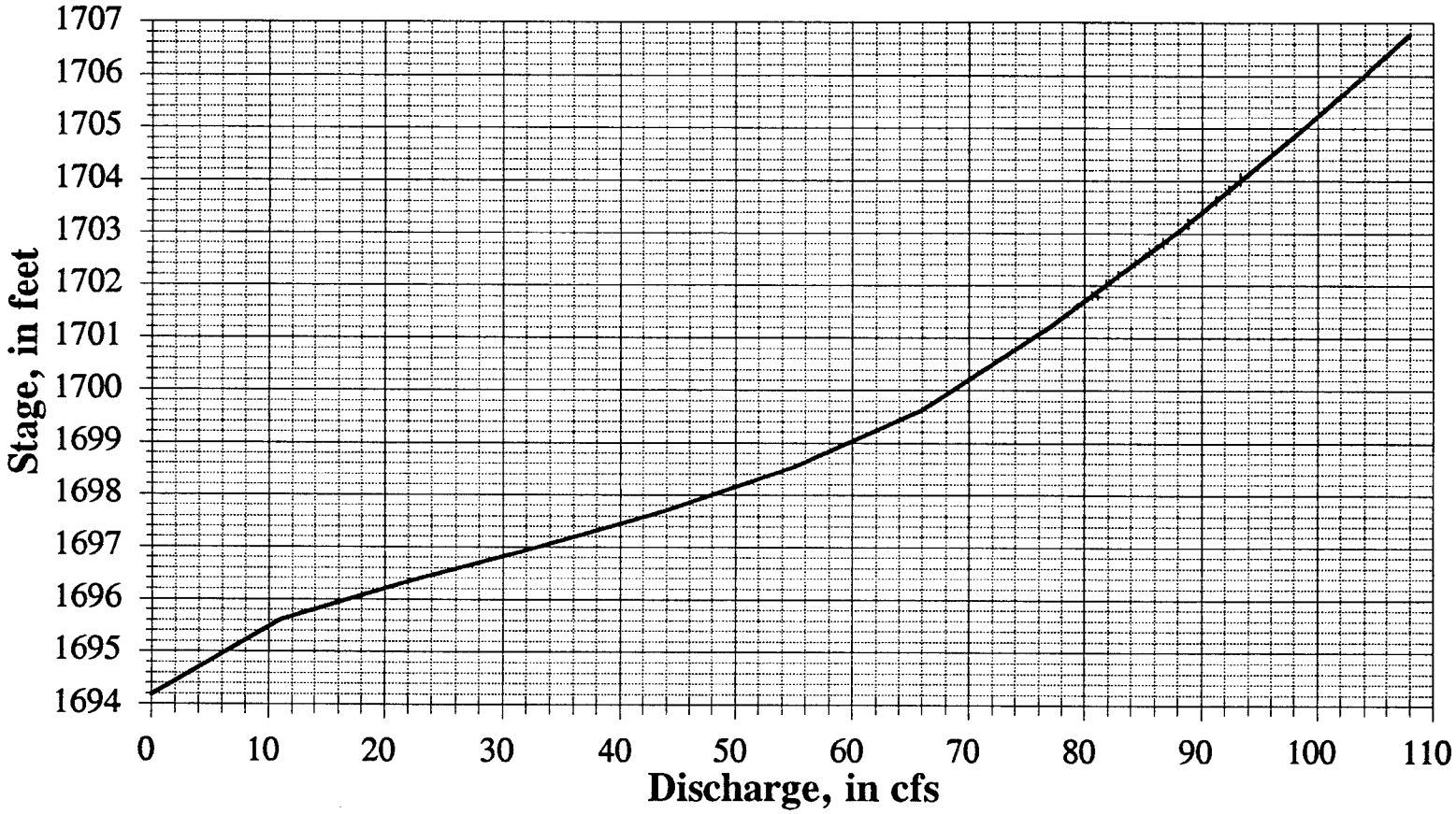


storrout.wb1

01-Nov-93

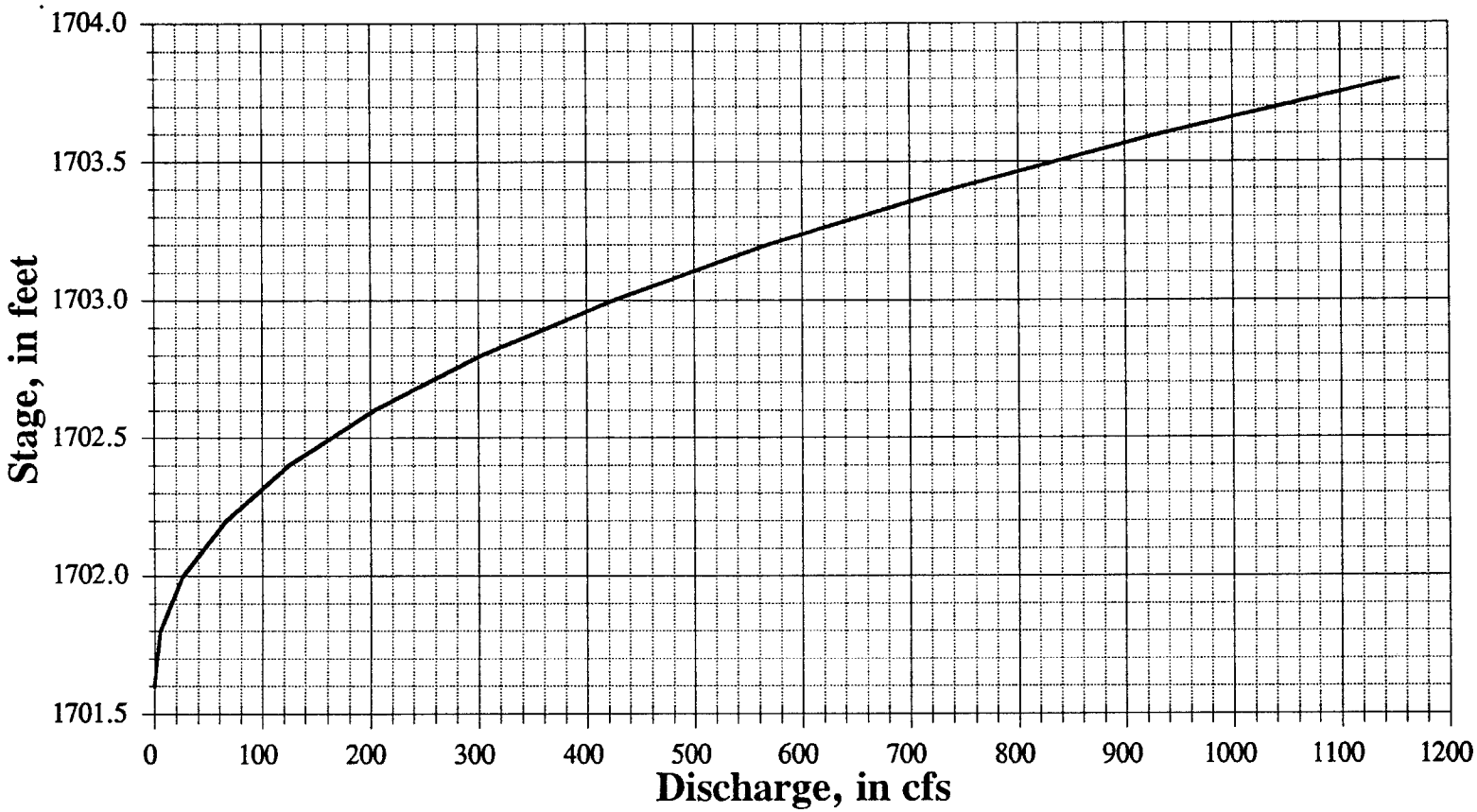
C609 Stage vs. Discharge

Culvert Flow from HY8



C609 Stage vs Discharge

Weir Flow from Uneven Weir



CURRENT DATE: 07-13-1993
CURRENT TIME: 08:42:07

FILE DATE: 06-16-1993
FILE NAME: C609

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1694.19	1692.69	76.01	1 CSP	3.00	3.00	.022	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C609 DATE: 06-16-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1694.19	0	0	0	0	0	0	0	0	1
1695.62	11	11	0	0	0	0	0	0	1
1696.34	22	22	0	0	0	0	0	0	1
1697.00	33	33	0	0	0	0	0	0	1
1697.70	44	44	0	0	0	0	0	0	1
1698.54	55	55	0	0	0	0	0	0	1
1699.63	66	66	0	0	0	0	0	0	1
1701.22	77	77	0	0	0	0	0	0	1
1703.04	88	88	0	0	0	0	0	0	1
1705.03	99	99	0	0	0	0	0	0	1
1706.78	110	108	0	0	0	0	0	2	4
1706.00	104	104	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C609 DATE: 06-16-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1694.19	0.00	0	0	0.00
1695.62	0.00	11	0	0.00
1696.34	0.00	22	0	0.00
1697.00	0.00	33	0	0.00
1697.70	0.00	44	0	0.00
1698.54	0.00	55	0	0.00
1699.63	0.00	66	0	0.00
1701.22	0.00	77	0	0.00
1703.04	0.00	88	0	0.00

1705.03	0.00	99	0	0.00
1706.78	-0.00	110	0	0.00

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 07-13-1993 FILE DATE: 06-16-1993
CURRENT TIME: 08:42:07 FILE NAME: C609

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (3 BY 3) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1694.19	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
11	1695.62	1.43	1.43	1-S2n	0.91	1.04	6.12	0.91	3.51	0.32
22	1696.34	2.15	2.15	1-S2n	1.31	1.51	7.42	1.31	4.45	0.47
33	1697.00	2.81	2.81	1-S2n	1.67	1.86	8.19	1.67	5.12	0.59
44	1697.70	3.51	3.51	5-S2n	2.02	2.16	8.70	2.02	5.65	0.70
55	1698.54	4.35	4.31	2-M2c	2.45	2.41	9.05	2.41	6.08	0.80
66	1699.63	5.35	5.44	6-FFn	3.00	2.58	9.34	3.00	6.46	0.88
77	1701.22	6.56	7.03	6-FFn	3.00	2.76	10.89	3.00	6.79	0.96
88	1703.04	7.96	8.85	6-FFn	3.00	2.93	12.45	3.00	7.09	1.04
99	1705.03	9.55	10.84	6-FFn	3.00	3.00	14.01	3.00	7.37	1.11
108	1706.78	10.97	12.59	6-FFn	3.00	3.00	15.26	3.00	7.62	1.18

El. inlet face invert 1694.19 ft El. outlet invert 1692.69 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1694.19
OUTLET STATION (FT)	76.00
OUTLET ELEVATION (FT)	1692.69
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0197
CULVERT LENGTH ALONG SLOPE (FT)	76.01

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	3.00 FT
BARREL MATERIAL	CORRUGATED STEEL
BARREL MANNING'S N	0.022
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

CURRENT DATE: 07-13-1993
CURRENT TIME: 08:42:07

FILE DATE: 06-16-1993
FILE NAME: C609

TAILWATER

***** USER DEFINED CHANNEL CROSS-SECTION
MAIN CHANNEL AND LT & RT OVER BANKS

FILE NAME: C609
FILE DATE: 06-16-1993

LEFT CHANNEL BOUNDARY	3
RIGHT CHANNEL BOUNDARY	6
MANNING N LEFT OVER BANK	0.035
MANNING N MAIN CHANNEL	0.050
MANNING N RIGHT OVER BAN	0.035
SLOPE OF CHANNEL (FT/FT)	0.0700

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	1000.00	1700.69
2	1025.00	1698.69
3	1050.00	1694.69
4	1054.00	1692.69
5	1064.00	1692.69
6	1068.00	1694.69
7	1088.00	1698.69
8	1103.00	1700.69

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1692.69	0.000	0.00	0.00	0.00
11.00	1693.01	1.126	0.32	3.51	1.30
22.00	1693.16	1.191	0.47	4.45	1.86
33.00	1693.28	1.231	0.59	5.12	2.29
44.00	1693.39	1.259	0.70	5.65	2.66
55.00	1693.48	1.281	0.80	6.08	2.97
66.00	1693.57	1.299	0.88	6.46	3.25
77.00	1693.65	1.315	0.96	6.79	3.51
88.00	1693.73	1.328	1.04	7.09	3.74
99.00	1693.80	1.339	1.11	7.37	3.96
110.00	1693.87	1.350	1.18	7.62	4.17

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	1.00
CREST LENGTH (FT)	1.00
OVERTOPPING CREST ELEVATION (FT)	1706.00

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*********************************************


    PROJECT:  Fountain Hills FIS North                        C609
    ENGINEER:  MG
    DATE:   8/26/1993
    TIME:  13:40.36




---------------------------------------------
    INPUT PARAMETERS
---------------------------------------------


    STARTING WSEL:       1701.60
    MAXIMUM WSEL:        1703.91
    STEP SIZE:              0.20
    BREADTH OF WEIR:       36.00
```

```
*******************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills FIS North                    C609
    DATE:   8/26/1993
    TIME:  13:40.36
*******************************************
```

POINT	ELEVATION	STATION
1	1705.33	1000.00
2	1704.22	1025.00
3	1703.32	1050.00
4	1702.10	1100.00
5	1701.96	1110.00
6	1701.79	1125.00
7	1701.60	1150.00
8	1701.77	1175.00
9	1702.06	1200.00
10	1703.91	1308.17

```
*********************************************
    WEIR COEFFICIENT TABLE
    PROJECT:  Fountain Hills FIS North                    C609
    DATE:   8/26/1993
    TIME:  13:40.36
*********************************************
```

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.5185
3	0.40	2.5370
4	0.60	2.5556
5	0.80	2.5741
6	1.00	2.5926
7	1.20	2.6111
8	1.40	2.6296
9	1.60	2.6481
10	1.80	2.6667
11	2.00	2.6852
12	2.20	2.7037

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
    PROJECT:  Fountain Hills FIS North                    C609
    DATE:   8/26/1993
    TIME:  13:40.36
*********************************************
```

ELEVATION	DISCHARGE (CFS)
1701.60	0.00
1701.80	4.99
1702.00	26.02
1702.20	65.90
1702.40	124.87
1702.60	203.50
1702.80	302.93
1703.00	424.40
1703.20	569.18
1703.40	738.64
1703.60	933.75
1703.80	1155.09

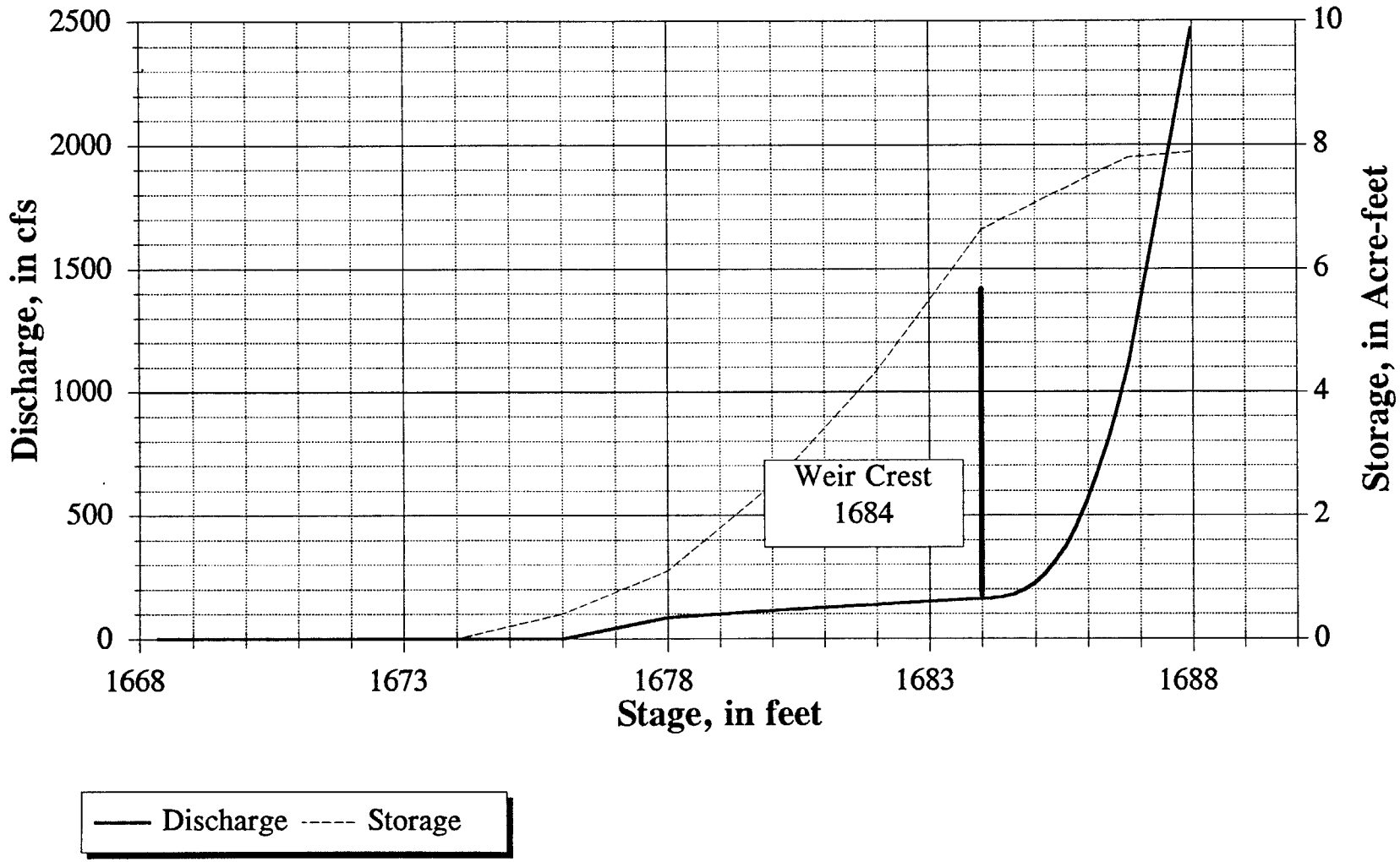
Table R-23
Storage and Discharge vs Stage Data for C611

[1] Stage (ft)	[2] Head (d) at Inlet Trash Rack (feet)	[3] Surface Area (acres)	[4] Storage Volume (acre-ft)	[5] Discharge: Culvert Flow (cfs)	[6] Discharge: Inlet Flow (cfs)	[7] Discharge: Weir Flow (cfs)	[8] Discharge: Total Flow (cfs)
1668.36	0.00	0.00	0.00	0	0	0	0
1670.00	0.00	---	0.00	18	0	0	0
1672.00	0.00	---	0.00	59	0	0	0
1674.00	0.00	---	0.00	98	0	0	0
1676.00	0.00	0.16	0.41	152	0	0	0
1678.00	2.35	0.58	1.10	162	86	0	86
1680.00	4.35	0.81	2.49	174	117	0	117
1682.00	6.35	1.05	4.34	187	141	0	141
1684.00	***8.35***	***1.25***	***6.64***	***198***	***162***	***0***	***162***
1684.20	8.55	---	6.72	199	164	1	164
1684.40	8.75	---	6.81	200	165	5	170
1684.60	8.95	---	6.89	202	167	14	181
1684.80	9.15	---	6.97	203	169	29	199
1685.00	9.35	---	7.06	204	171	54	225
1685.20	9.55	---	7.14	205	173	89	262
1685.40	9.75	---	7.22	206	175	138	313
1685.60	9.95	---	7.31	208	176	202	378
1685.80	10.15	---	7.39	209	178	282	460
1686.00	10.35	---	7.47	210	180	378	558
1686.20	10.55	---	7.56	211	182	491	673
1686.40	10.75	---	7.64	212	183	624	807
1686.60	10.95	---	7.72	214	185	773	958
1686.80	11.15	---	7.81	215	187	932	1118
1688.00	12.35	---	7.89	216	197	2274	2471

* **Note:** 1. Weir flow over the road will start at EL > 1684.0.
2. Total flow is the lesser of columns 5 and 6 plus column 7.
3. Column 5 is calculated using the equation Q=0.67A(2gd)^0.5, where A is the cross sectional area of the grated inlet and d is the depth above elevation 1675.65. The value of A is assumed to be 10.4 sf which reflects a clogging factor of 2.

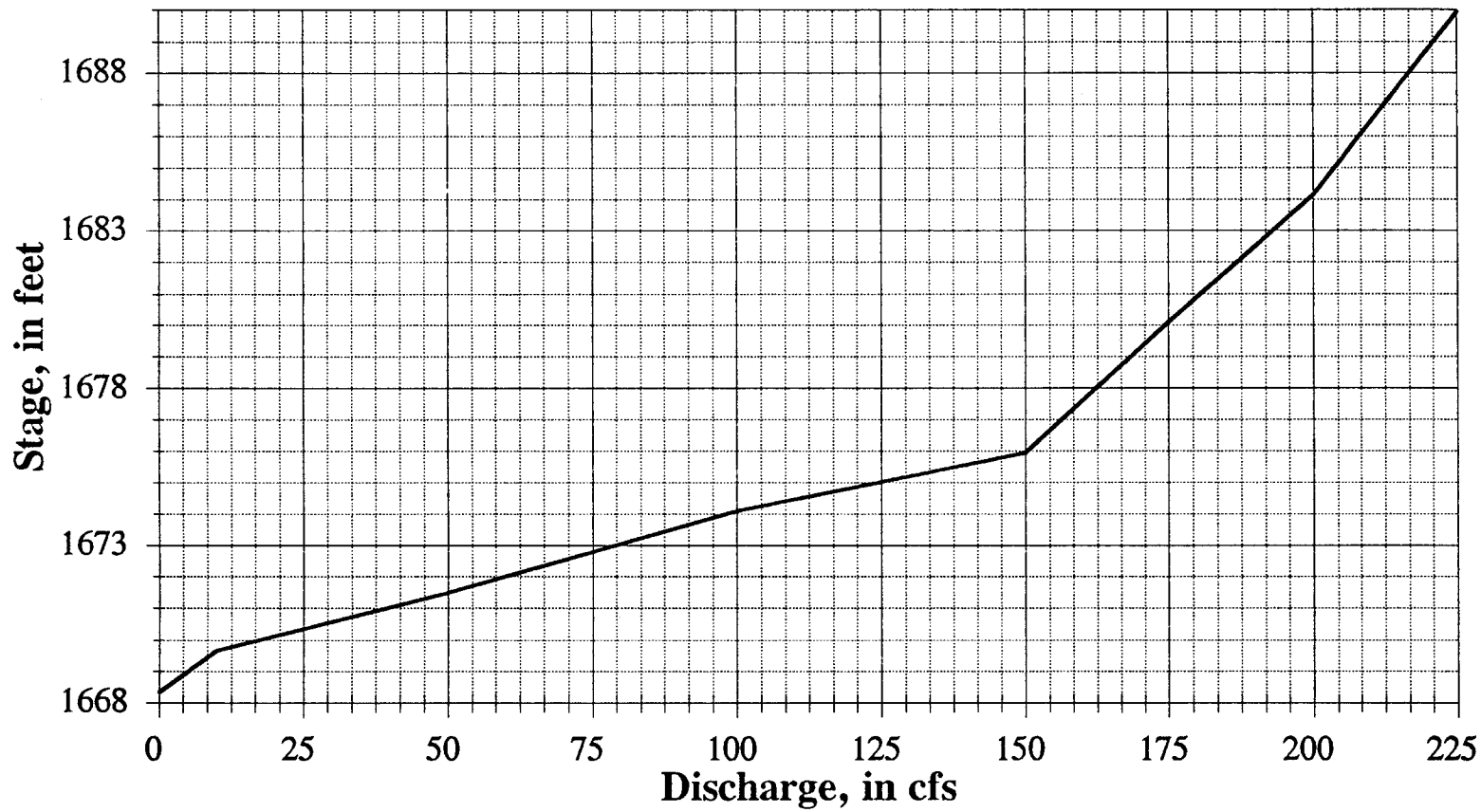
Figure R-19

Storage and Discharge vs Stage for C611



C611 Stage vs Discharge

Culvert Flow from THYSYS



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 1 OF 3
CLIENT FCDMC
DATE 10/26/93
PROJECT Fountain Hills North FIS
BY TRL
SUBJECT C611 Storm Drain
PROJECT NO. 35

Problem: Analyze storm drain hydraulics for purpose of developing a rating curve at the inlet (C611).

Assumptions: 1. Tailwater depth is the average of critical depth and the pipe diameter.

2. Junction losses can be estimated by:

$$h = k_e V^2/2g$$

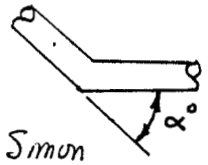
k_e Estimates:

B04: Drop inlet with a dome trash rack.

Assume $k_e = 0.5$. Add 0.5 to approximate the effects of the trash rack.

$\therefore k_e = 0.1$

B03: Sharp elbow: $k_e = 67.6 \times 10^{-6} (\alpha^\circ)^{2.17}$



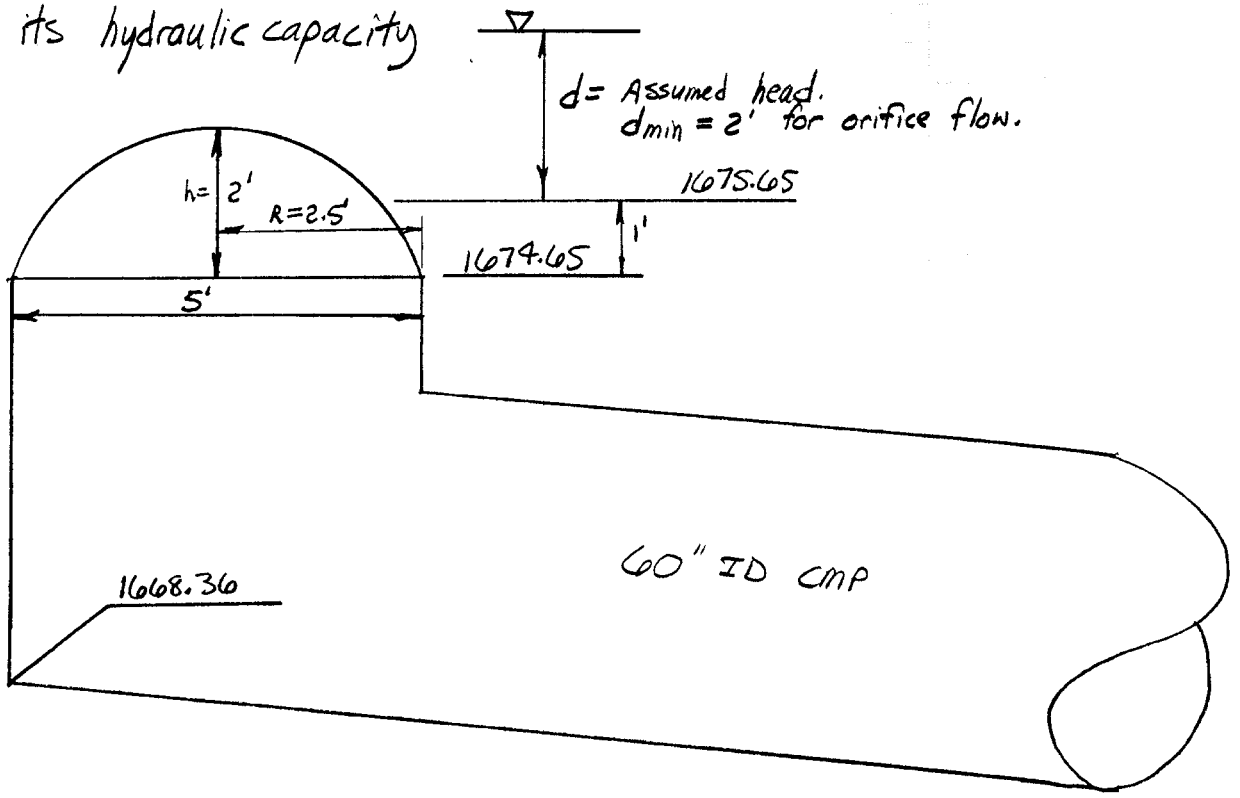
Ref: Practical Hydraulics, Andrew L. Simon 2nd Ed. 1981. Table 4.4 Local Loss Coefficients

$k_e = 67.6 \times 10^{-6} (18^\circ)^{2.17} = 0.04$. Use $k_e = 0.1$

B02: $\alpha^\circ = 60^\circ$: $k_e = 67.6 \times 10^{-6} (60^\circ)^{2.17} = 0.5$

B01: Outlet: Assume $k_e = 1.0$ for sudden expansion

Check the effects of the "Bee Hive" trash rack by calculating its hydraulic capacity



1. Assumptions:

   1. Assume a clogging factor of 2
   2. Assume that weir flow is negligle
   3. Assume that the effective head, d, is measured from stage 1675.65
   4. Assume that full orifice flow starts at $d = 2'$

2. Calculations: Orifice Eqn.: $Q = 0.67 A (2gd)^{0.5}$ Ref. FCDMC Drainage Design Manual Vol. II. Eqn. 3.17.

The bee hive is constructed using 4x4 mesh of #6 rebar

Total Surface Area $= 2\pi R h = 2\pi(2.5)(2) = 31.4\ ft^2$

Each square is 4"x4" made of #6 (Assumed 3/4") rebar

Squares $= 31.4 / (.33)^2 = 283$

Effective area $= \dfrac{283\left(\frac{4-0.75}{12}\right)^2}{2} = \dfrac{20.8}{2}$ sf. $= 10.4$ sf

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 3 OF 3
DATE 10/26/93
BY TRL
PROJECT NO. 35

CLIENT
PROJECT
SUBJECT Cell Storm Drain

Discharge	B04 V	B04 h	B03 V	B03 h	B02 V	B02 h	B01 V	B01 h	Critical Depth	$\frac{D_c+D}{2}$	Assumed T.W.
10	2.8	0.1	1.8	0	0.8	0	0.8	0	0.9'	3.0	1663.5
50	4.3	0.3	4.9	0	3.4	0.1	3.4	0.2	2.0	3.5	1664.0
100	5.1	0.4	5.9	0.1	5.9	0.3	5.9	0.5	2.9	4.0	1664.5
150	7.6	0.9	7.6	0.1	8.2	0.5	8.2	1.1	3.5	4.3	1664.8
175	8.9	1.2	8.9	0.1	8.9	0.6	8.9	1.2	3.8	4.4	1664.9
200	10.2	1.6	10.2	0.2	10.2	0.8	10.2	1.6	FF	5.0	1665.5
225	11.5	2.1	11.5	0.2	11.5	1.0	11.5	2.1	FF	5.0	1665.5

Note:

1. B02 to B01 : S = 1.74%, D = 60", n = 0.024
2. Outlet channel is steep & has good conveyance. Assume TW = outlet top of pipe above 200 cfs.
3. Add B02 & B01 losses for pipe 003.

Summary Table : B04

Q	W.S.
10	1669.66
50	1671.51
100	1674.10
150	1675.95
175	1680.11
200	1684.76
225	1689.94

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 1 OF 7

CLIENT MCFCD

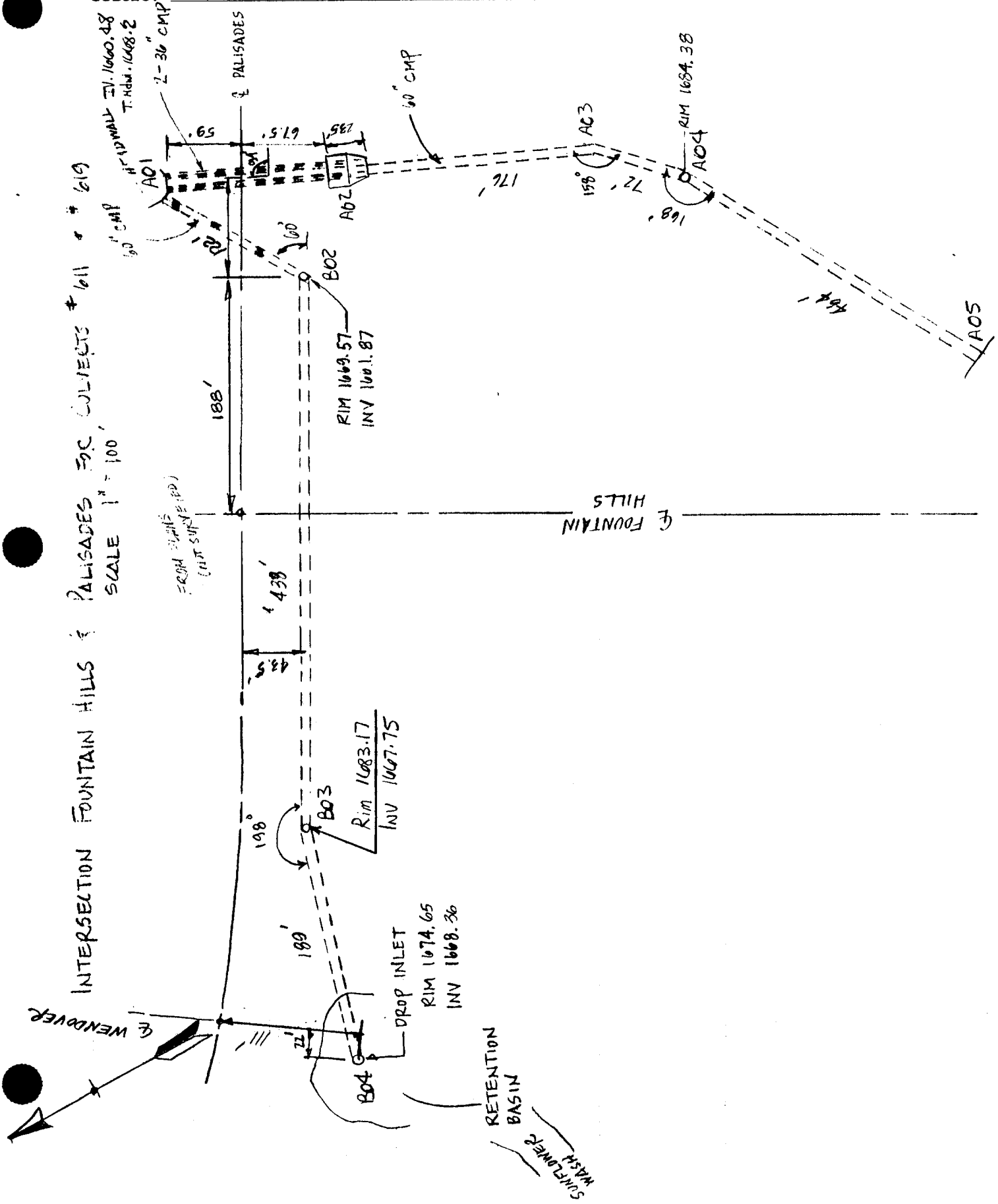
DATE 6/2

PROJECT FOUNTAIN HILLS

BY MGT

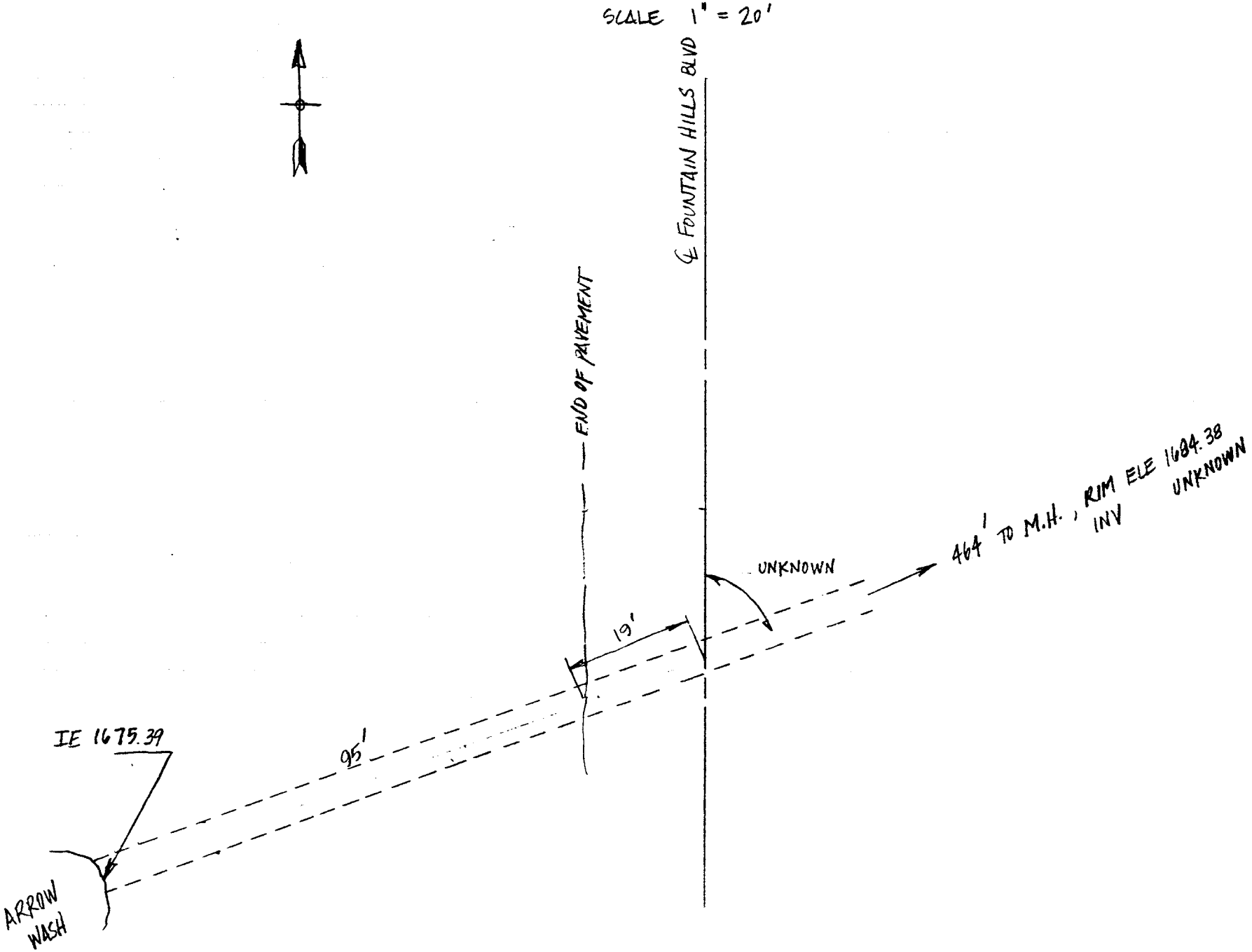
SUBJECT CULVERTS 611 & 613 FIELD SURVEY

PROJECT NO. 35



CULVERT 619 PLAN VIEW OF INLET

SCALE 1" = 20'



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT MCFCD

PROJECT FOUNTAIN HILLS

SUBJECT CULVERT 619 FIELD STUDY

SHEET 2 OF 7

DATE 6/8

BY MGT

PROJECT NO. 35

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 3 OF 7

CLIENT MCFCD

DATE 6/8

PROJECT FOUNTAIN HILLS

BY MGT

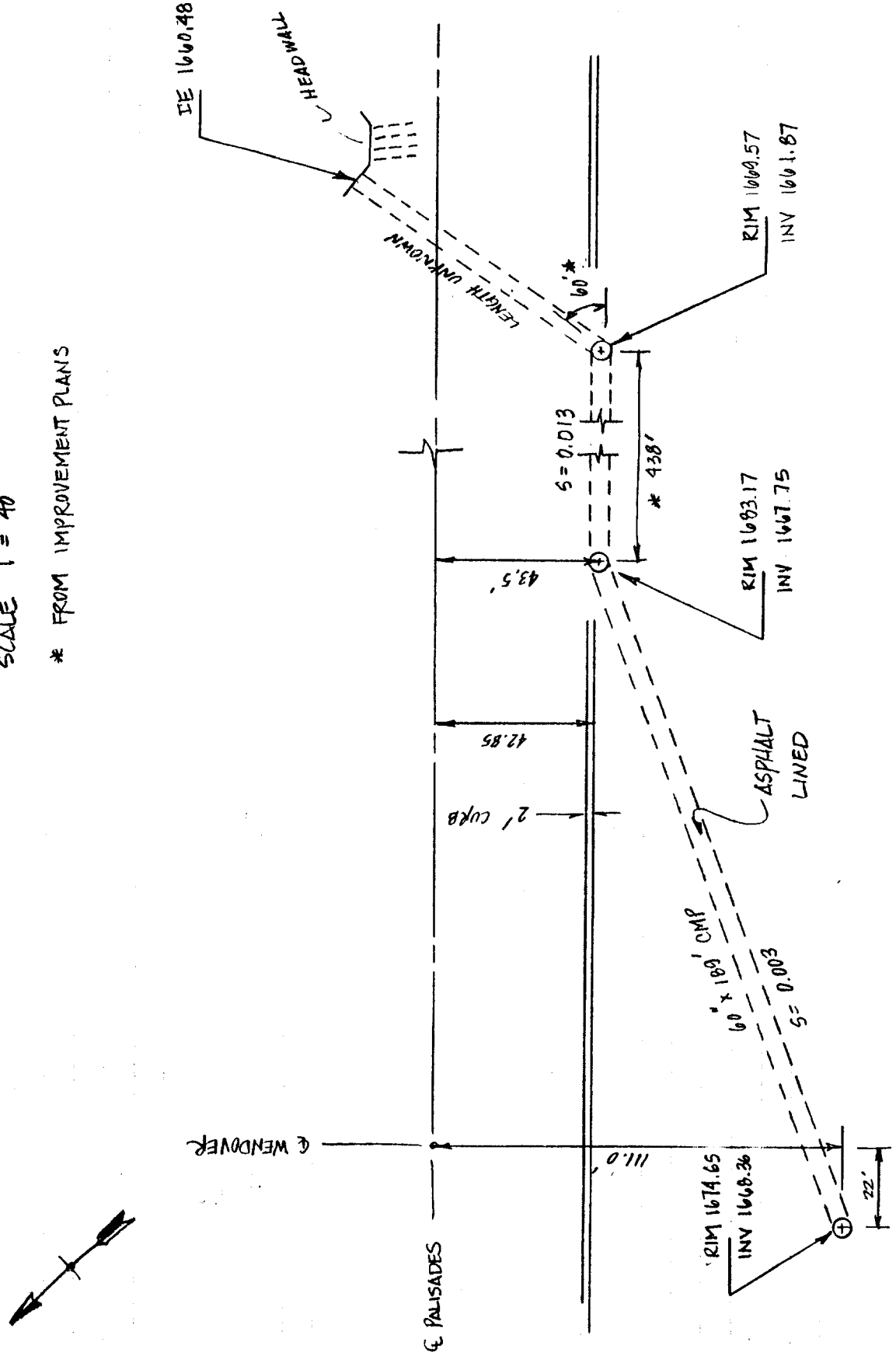
SUBJECT CULVERT 611 FIELD SURVEY

PROJECT NO. 35

CULVERT 611 PLAN VIEW

SCALE 1" = 40'

* FROM IMPROVEMENT PLANS



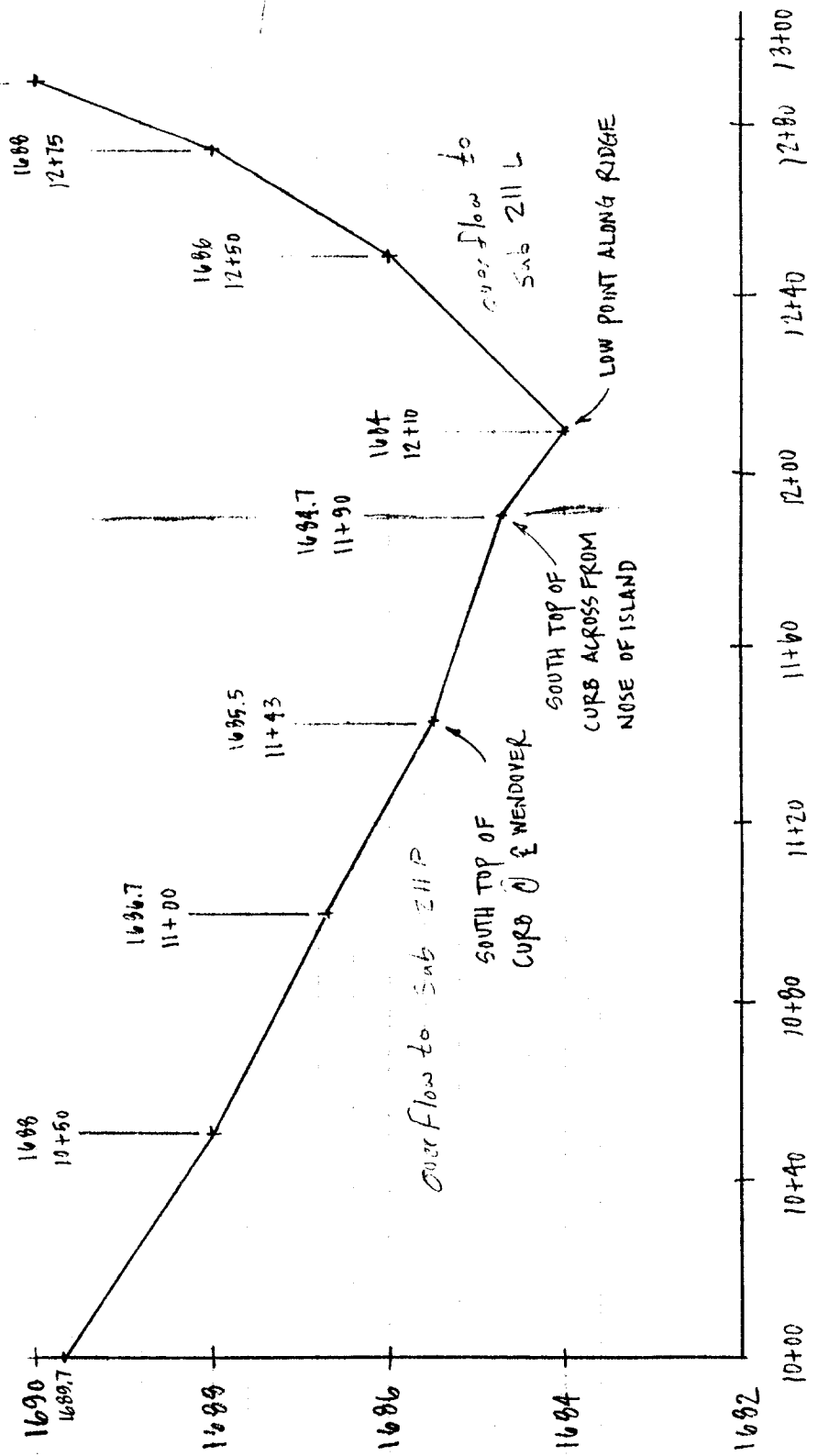
GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 4 OF 7
DATE 6/8
BY MGT
PROJECT NO. 35

CLIENT MCFCD
PROJECT FOUNTAIN HILLS
SUBJECT CULVERT 611 FIELD SURVEY

CULVERT 611 ② PALISADES BLVD WEIR CROSS-SECTION SOUTH TOP OF CURB

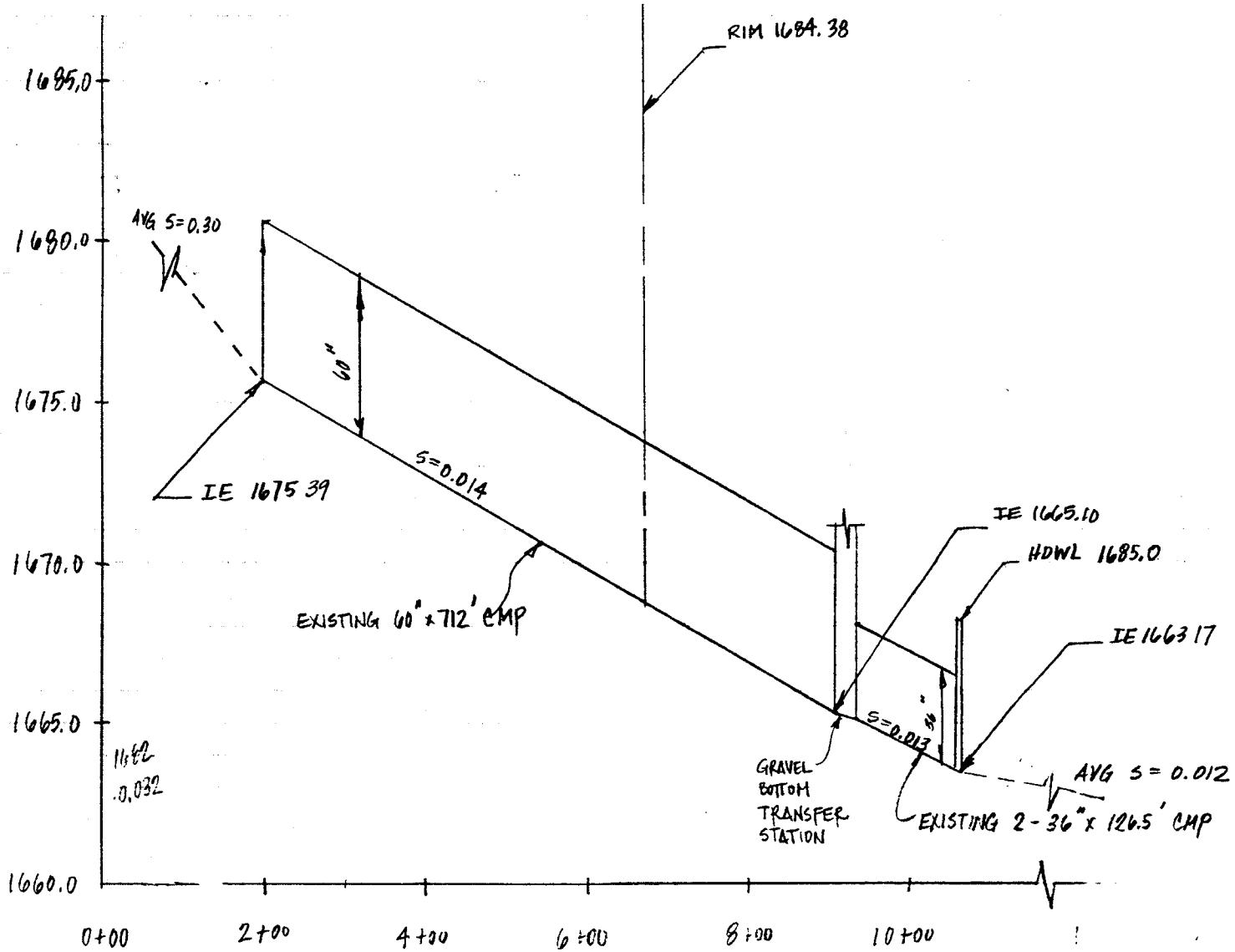
SCALE HORZ 1" = 40'
VERT 1" = 2'



* CROSS-SECT. FROM 200 SCALE CONTOUR MAP & PALISADES STREET PLANS

CULVERT 619 PROFILE

SCALE HORZ 1" = 200'
℄ M.H. VERT 1" = 5'



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT MCFCD
PROJECT FOUNTAIN HILLS
SUBJECT CULVERT 619 FIELD SURVEY

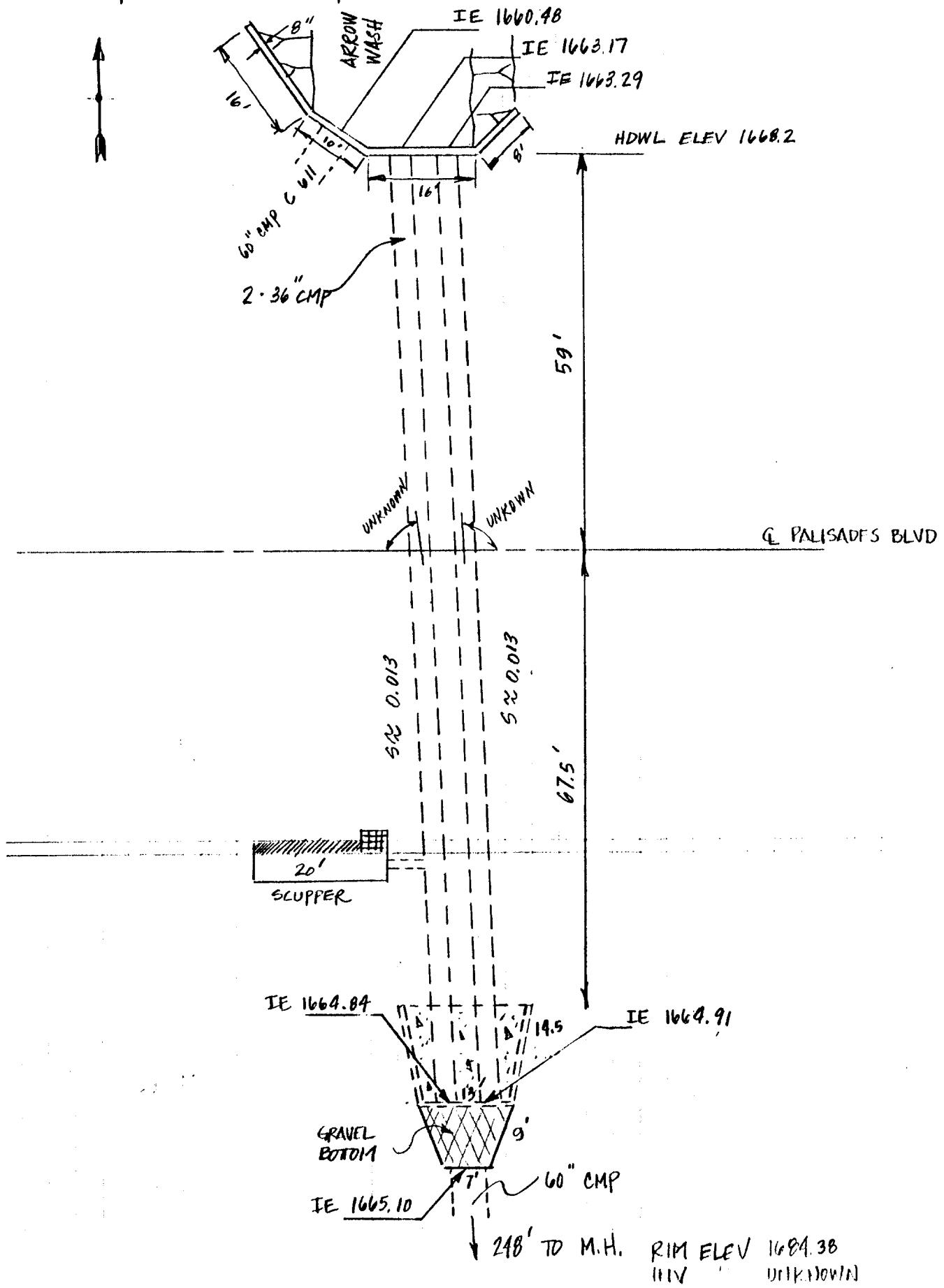
SHEET 5 OF 7
DATE 6/8
BY MGT
PROJECT NO. 35

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 6 OF 7
DATE 6/8
BY MG
PROJECT NO. 35

CLIENT MCFCD
PROJECT FOUNTAIN HILLS
SUBJECT CULVERT 619 FIELD SURVEY

CULVERT 619 PLAN VIEW : OUTLET STRUCTURE
SCALE 1" = 20'

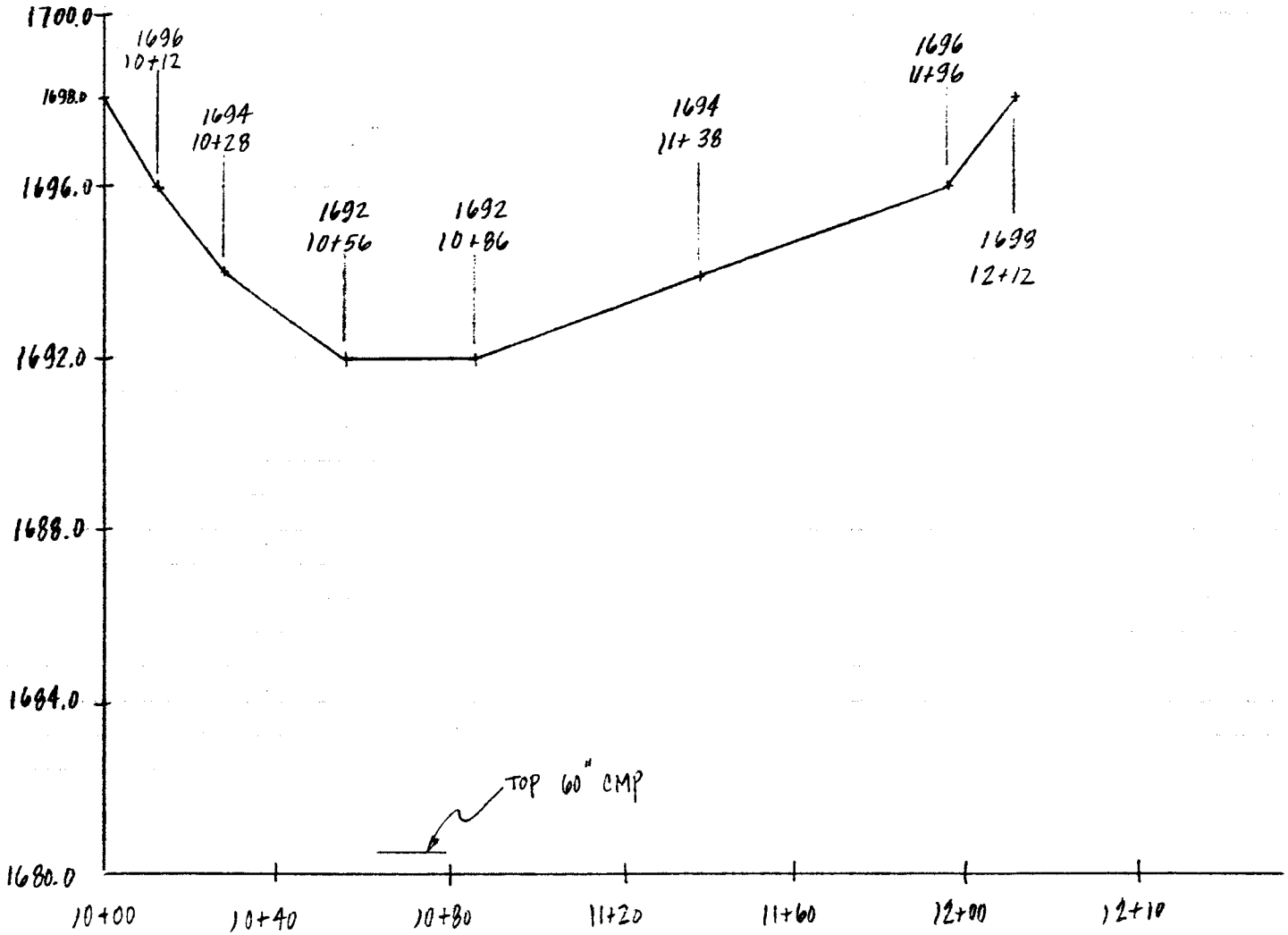


INV 60" CMP – 1675.57 CULVERT 619 @ FOUNTAIN HILLS BLVD. WEIR CROSS-SECTION RIDGE LINE

SCALE HORZ 1" = 40'
VERT 1' = 4'

10+00	1698.0
10+12	1696.0
10+28	1694.0
10+56	1692.0
10+86	1692.0
11+38	1694.0
11+96	1696.0
12+12	1698.0

* CROSS-SECTION FROM 200 SCALE CONTOUR MAP



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT MCFCD
PROJECT FOUNTAIN HILLS
SUBJECT CULVERT 619 FIELD SURVEY

SHEET 7 OF 7
DATE 6/3
BY MG
PROJECT NO. 35

```
$    Storm drain system at C611 under Palisades Plaza.
$    Line A is C619 to C620.
$    Line B is C611 to C620.
$    Q=10cfs
SEWER              ANALYSIS                    SEWER     FREQUENCY=100YR
JUNC B 04 TYPE=JUNCT
JUNC B 03 TYPE=JUNCT
JUNC B 02 TYPE=JUNCT
JUNC B 01 TYPE=JUNCT
OUTLET    STATIONING     0.00 T.W. ELEV 1663.50    B 01
DSGN 001  B 04 B 03 US1673.36 DS1672.75 189.0      10. 0024          CIRC
DSGN 002  B 03 B 02 US1672.75 DS1666.87 438.0          0024          CIRC
DSGN 003  B 02 B 01 US1666.87 DS1665.48 122.0          0024          CIRC
ANAL 001  B 04 B 03 1.00 60.00          0.1
ANAL 002  B 03 B 02 1.00 60.00          0.0
ANAL 003  B 02 B 01 1.00 60.00          0.0
ENDATA
```


SEWER

CUMULATIVE RUNOFF CALCULATIONS FOR PIPE RUNS

RUN	U.S. I.D.	D.S. I.D.	"CA"	"TC"	AREA	CUMULATIVE "CA"	CUMULATIVE "TC"	SUPPLY Q	INTENSITY	FLOW
001	B 4	B 3	.00	.00	.00	.00	.00	10.00	.00	10.00
002	B 3	B 2	.00	.00	.00	.00	.00	10.00	.00	10.00
003	B 2	B 1	.00	.00	.00	.00	.00	10.00	.00	10.00

SEWER

SEWER ANALYSIS

CONFIGURATION DATA

RUN	U.S. ID	D.S. ID	U.S. F.L. ELEV	D.S. F.L. ELEV	LENGTH FEET	SLOPE	BBLS	RISE	SPAN	SHAPE
001	B 4	B 3	1668.36	1667.75	189	.00323	1	60	60	CIRC
002	B 3	B 2	1667.75	1661.87	438	.01342	1	60	60	CIRC
003	B 2	B 1	1661.87	1660.48	122	.01139	1	60	60	CIRC

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HYDRAULIC DATA

RUN	U.S. ID	D.S. ID	'N'	JUNC LOSS	FLOW	U.S. HEAD	D.S. HEAD	HYDR. GRAD	DEPTH	VELOC.	PIPE CAPAC.
001	B 4	B 3	.024	.10	10.00	1669.66	1668.95	.00005	.24	2.8	80.1
002	B 3	B 2	.024	.00	10.00	1668.60	1663.51	.00005	.17	1.8*	163.5
003	B 2	B 1	.024	.00	10.00	1663.51	1663.50	.00005	.17	.8*	150.6

SEW0071--*PIPE FLOW DEPTH > NORMAL DEPTH DUE TO DOWNSTREAM CONTROL, NOT INSUFFICIENT CAPACITY- VELOCITY IS BASED ON ELEVATION OF HYDRAULIC GRADE LINE AT DOWNSTREAM ELEVATION.
JUNCTION LOSSES MAY NEED TO BE CONSIDERED AT SUBMERGED JUNCTIONS

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STATIONING

RUN	UPSTREAM JUNCTION ID	STATIONING
001	B 4	749
002	B 3	560
003	B 2	122

FINISH

```
$    Storm drain system at C611 under Palisades Plaza.
$    Line A is C619 to C620.
$    Line B is C611 to C620.
$    Q=50cfs
SEWER              ANALYSIS                    SEWER     FREQUENCY=100YR
JUNC B 04 TYPE=JUNCT
JUNC B 03 TYPE=JUNCT
JUNC B 02 TYPE=JUNCT
JUNC B 01 TYPE=JUNCT
OUTLET    STATIONING     0.00 T.W. ELEV 1664.00    B 01
DSGN 001  B 04 B 03 US1673.36 DS1672.75 189.0      50. 0024          CIRC
DSGN 002  B 03 B 02 US1672.75 DS1666.87 438.0          0024          CIRC
DSGN 003  B 02 B 01 US1666.87 DS1665.48 122.0          0024          CIRC
ANAL 001  B 04 B 03 1.00 60.00          0.3
ANAL 002  B 03 B 02 1.00 60.00          0.0
ANAL 003  B 02 B 01 1.00 60.00          0.3
ENDATA
```


SEWER

CUMULATIVE RUNOFF CALCULATIONS FOR PIPE RUNS

RUN	U.S. I.D.	D.S. I.D.	"CA"	"TC"	AREA	CUMULATIVE "CA"	CUMULATIVE "TC"	SUPPLY Q	INTENSITY	FLOW
001	B 4	B 3	.00	.00	.00	.00	.00	50.00	.00	50.00
002	B 3	B 2	.00	.00	.00	.00	.00	50.00	.00	50.00
003	B 2	B 1	.00	.00	.00	.00	.00	50.00	.00	50.00

SEWER

SEWER ANALYSIS

CONFIGURATION DATA

RUN	U.S. ID	D.S. ID	U.S. F.L. ELEV	D.S. F.L. ELEV	LENGTH FEET	SLOPE	BBLS	RISE	SPAN	SHAPE
001	B 4	B 3	1668.36	1667.75	189	.00323	1	60	60	CIRC
002	B 3	B 2	1667.75	1661.87	438	.01342	1	60	60	CIRC
003	B 2	B 1	1661.87	1660.48	122	.01139	1	60	60	CIRC

HYDRAULIC DATA

RUN	U.S. ID	D.S. ID	'N'	JUNC LOSS	FLOW	U.S. HEAD	D.S. HEAD	HYDR. GRAD	DEPTH	VELOC.	PIPE CAPAC.
001	B 4	B 3	.024	.30	50.00	1671.51	1670.60	.00126	.57	4.3	80.1
002	B 3	B 2	.024	.00	50.00	1669.65	1664.45	.00126	.38	4.9*	163.5
003	B 2	B 1	.024	.30	50.00	1664.45	1664.00	.00126	.40	3.4*	150.6

SEW0071--*PIPE FLOW DEPTH > NORMAL DEPTH DUE TO DOWNSTREAM CONTROL, NOT INSUFFICIENT CAPACITY- VELOCITY IS BASED ON ELEVATION OF HYDRAULIC GRADE LINE AT DOWNSTREAM ELEVATION.
JUNCTION LOSSES MAY NEED TO BE CONSIDERED AT SUBMERGED JUNCTIONS

STATIONING

RUN	UPSTREAM JUNCTION ID	STATIONING
001	B 4	749
002	B 3	560
003	B 2	122

FINISH

```
$    Storm drain system at C611 under Palisades Plaza.
$    Line A is C619 to C620.
$    Line B is C611 to C620.
$    Q=100cfs
SEWER              ANALYSIS                    SEWER     FREQUENCY=100YR
JUNC B 04 TYPE=JUNCT
JUNC B 03 TYPE=JUNCT
JUNC B 02 TYPE=JUNCT
JUNC B 01 TYPE=JUNCT
OUTLET    STATIONING     0.00 T.W. ELEV 1664.50    B 01
DSGN 001  B 04 B 03 US1673.36 DS1672.75 189.0     100. 0024          CIRC
DSGN 002  B 03 B 02 US1672.75 DS1666.87 438.0          0024          CIRC
DSGN 003  B 02 B 01 US1666.87 DS1665.48 122.0          0024          CIRC
ANAL 001  B 04 B 03 1.00 60.00          0.4
ANAL 002  B 03 B 02 1.00 60.00          0.1
ANAL 003  B 02 B 01 1.00 60.00          0.8
ENDATA
```


SEWER

CUMULATIVE RUNOFF CALCULATIONS FOR PIPE RUNS

RUN	U.S. I.D.	D.S. I.D.	"CA"	"TC"	AREA	CUMULATIVE "CA"	CUMULATIVE "TC"	SUPPLY Q	INTENSITY	FLOW
001	B 4	B 3	.00	.00	.00	.00	.00	100.00	.00	100.00
002	B 3	B 2	.00	.00	.00	.00	.00	100.00	.00	100.00
003	B 2	B 1	.00	.00	.00	.00	.00	100.00	.00	100.00

SEWER

SEWER ANALYSIS

CONFIGURATION DATA

RUN	U.S. ID	D.S. ID	U.S. F.L. ELEV	D.S. F.L. ELEV	LENGTH FEET	SLOPE	BBLS	RISE	SPAN	SHAPE
001	B 4	B 3	1668.36	1667.75	189	.00323	1	60	60	CIRC
002	B 3	B 2	1667.75	1661.87	438	.01342	1	60	60	CIRC
003	B 2	B 1	1661.87	1660.48	122	.01139	1	60	60	CIRC

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HYDRAULIC DATA

RUN	U.S. ID	D.S. ID	'N'	JUNC LOSS	FLOW	U.S. HEAD	D.S. HEAD	HYDR. GRAD	DEPTH	VELOC.	PIPE CAPAC.
001	B 4	B 3	.024	.40	100.00	1674.10	1672.75	.00503	1.00	5.1	80.1***
002	B 3	B 2	.024	.10	100.00	1670.70	1665.91	.00503	.57	5.9*	163.5
003	B 2	B 1	.024	.80	100.00	1665.91	1664.50	.00503	.60	5.9*	150.6

SEW0071--*PIPE FLOW DEPTH > NORMAL DEPTH DUE TO DOWNSTREAM CONTROL, NOT INSUFFICIENT CAPACITY- VELOCITY IS BASED ON ELEVATION OF HYDRAULIC GRADE LINE AT DOWNSTREAM ELEVATION.
JUNCTION LOSSES MAY NEED TO BE CONSIDERED AT SUBMERGED JUNCTIONS

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SEW0008--CAPACITY OF RUN 001 IS EXCEEDED.

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STATIONING

RUN	UPSTREAM JUNCTION ID	STATIONING

001	B 4	749
002	B 3	560
003	B 2	122

FINISH

```
$    Storm drain system at C611 under Palisades Plaza.
$    Line A is C619 to C620.
$    Line B is C611 to C620.
$    Q=150cfs
SEWER              ANALYSIS                    SEWER     FREQUENCY=100YR
JUNC B 04 TYPE=JUNCT
JUNC B 03 TYPE=JUNCT
JUNC B 02 TYPE=JUNCT
JUNC B 01 TYPE=JUNCT
OUTLET    STATIONING     0.00 T.W. ELEV 1664.88    B 01
DSGN 001  B 04 B 03 US1673.36 DS1672.75 189.0     150. 0024          CIRC
DSGN 002  B 03 B 02 US1672.75 DS1666.87 438.0          0024          CIRC
DSGN 003  B 02 B 01 US1666.87 DS1665.48 122.0          0024          CIRC
ANAL 001  B 04 B 03 1.00 60.00          0.9
ANAL 002  B 03 B 02 1.00 60.00          0.1
ANAL 003  B 02 B 01 1.00 60.00          1.6
ENDATA
```


SEWER

CUMULATIVE RUNOFF CALCULATIONS FOR PIPE RUNS

RUN	U.S. I.D.	D.S. I.D.	"CA"	"TC"	AREA	CUMULATIVE "CA"	CUMULATIVE "TC"	SUPPLY Q	INTENSITY	FLOW
001	B 4	B 3	.00	.00	.00	.00	.00	150.00	.00	150.00
002	B 3	B 2	.00	.00	.00	.00	.00	150.00	.00	150.00
003	B 2	B 1	.00	.00	.00	.00	.00	150.00	.00	150.00

SEWER

SEWER ANALYSIS

CONFIGURATION DATA

RUN	U.S. ID	D.S. ID	U.S. F.L. ELEV	D.S. F.L. ELEV	LENGTH FEET	SLOPE	BBLS	RISE	SPAN	SHAPE
001	B 4	B 3	1668.36	1667.75	189	.00323	1	60	60	CIRC
002	B 3	B 2	1667.75	1661.87	438	.01342	1	60	60	CIRC
003	B 2	B 1	1661.87	1660.48	122	.01139	1	60	60	CIRC

HYDRAULIC DATA

RUN	U.S. ID	D.S. ID	'N'	JUNC LOSS	FLOW	U.S. HEAD	D.S. HEAD	HYDR. GRAD	DEPTH	VELOC.	PIPE CAPAC.
001	B 4	B 3	.024	.90	150.00	1675.95	1672.91	.01131	1.00	7.6	80.1***
002	B 3	B 2	.024	.10	150.00	1672.91	1667.86	.01131	.75	7.6**	163.5
003	B 2	B 1	.024	1.60	150.00	1667.86	1664.88	.01131	.82	8.2*	150.6

SEW0069--**PIPE FLOWING FULL DUE TO DOWNSTREAM CONTROL, NOT INSUFFICIENT CAPACITY- VELOCITY IS BASED ON FULL FLOW.
JUNCTION LOSSES MAY NEED TO BE CONSIDERED AT SUBMERGED JUNCTIONS

SEW0071--*PIPE FLOW DEPTH > NORMAL DEPTH DUE TO DOWNSTREAM CONTROL, NOT INSUFFICIENT CAPACITY- VELOCITY IS BASED ON ELEVATION OF HYDRAULIC GRADE LINE AT DOWNSTREAM ELEVATION.
JUNCTION LOSSES MAY NEED TO BE CONSIDERED AT SUBMERGED JUNCTIONS

SEW0008--CAPACITY OF RUN 001 IS EXCEEDED.

STATIONING

RUN	UPSTREAM JUNCTION ID	STATIONING
001	B 4	749
002	B 3	560
003	B 2	122

FINISH

```
$    Storm drain system at C611 under Palisades Plaza.
$    Line A is C619 to C620.
$    Line B is C611 to C620.
$    Q=200cfs
SEWER              ANALYSIS                    SEWER     FREQUENCY=100YR
JUNC B 04 TYPE=JUNCT
JUNC B 03 TYPE=JUNCT
JUNC B 02 TYPE=JUNCT
JUNC B 01 TYPE=JUNCT
OUTLET    STATIONING     0.00 T.W. ELEV 1665.50    B 01
DSGN 001  B 04 B 03 US1673.36 DS1672.75 189.0     200. 0024          CIRC
DSGN 002  B 03 B 02 US1672.75 DS1666.87 438.0          0024          CIRC
DSGN 003  B 02 B 01 US1666.87 DS1665.48 122.0          0024          CIRC
ANAL 001  B 04 B 03 1.00 60.00          1.6
ANAL 002  B 03 B 02 1.00 60.00          0.2
ANAL 003  B 02 B 01 1.00 60.00          2.4
ENDATA
```


SEWER

CUMULATIVE RUNOFF CALCULATIONS FOR PIPE RUNS

RUN	U.S. I.D.	D.S. I.D.	"CA"	"TC"	AREA	CUMULATIVE "CA"	CUMULATIVE "TC"	SUPPLY Q	INTENSITY	FLOW
001	B 4	B 3	.00	.00	.00	.00	.00	200.00	.00	200.00
002	B 3	B 2	.00	.00	.00	.00	.00	200.00	.00	200.00
003	B 2	B 1	.00	.00	.00	.00	.00	200.00	.00	200.00

SEWER

SEWER ANALYSIS

CONFIGURATION DATA

RUN	U.S. ID	D.S. ID	U.S. F.L. ELEV	D.S. F.L. ELEV	LENGTH FEET	SLOPE	BBLS	RISE	SPAN	SHAPE
001	B 4	B 3	1668.36	1667.75	189	.00323	1	60	60	CIRC
002	B 3	B 2	1667.75	1661.87	438	.01342	1	60	60	CIRC
003	B 2	B 1	1661.87	1660.48	122	.01139	1	60	60	CIRC

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HYDRAULIC DATA

RUN	U.S. ID	D.S. ID	'N'	JUNC LOSS	FLOW	U.S. HEAD	D.S. HEAD	HYDR. GRAD	DEPTH	VELOC.	PIPE CAPAC.
001	B 4	B 3	.024	1.60	200.00	1684.76	1679.36	.02010	1.00	10.2	80.1***
002	B 3	B 2	.024	.20	200.00	1679.36	1670.35	.02010	1.00	10.2	163.5***
003	B 2	B 1	.024	2.40	200.00	1670.35	1665.50	.02010	1.00	10.2	150.6***

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SEW0008--CAPACITY OF RUN 001 IS EXCEEDED.
SEW0008--CAPACITY OF RUN 002 IS EXCEEDED.
SEW0008--CAPACITY OF RUN 003 IS EXCEEDED.

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THYSYS TEXAS HYDRAULICS SYSTEM DOS- VER 2.4.2
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STATIONING

RUN	UPSTREAM JUNCTION ID	STATIONING
001	B 4	749
002	B 3	560
003	B 2	122

FINISH

```
$    Storm drain system at C611 under Palisades Plaza.
$    Line A is C619 to C620.
$    Line B is C611 to C620.
$    Q=225cfs
SEWER            ANALYSIS                    SEWER     FREQUENCY=100YR
JUNC B 04 TYPE=JUNCT
JUNC B 03 TYPE=JUNCT
JUNC B 02 TYPE=JUNCT
JUNC B 01 TYPE=JUNCT
OUTLET    STATIONING     0.00 T.W. ELEV 1665.48    B 01
DSGN 001  B 04 B 03 US1673.36 DS1672.75 189.0     225. 0024          CIRC
DSGN 002  B 03 B 02 US1672.75 DS1666.87 438.0          0024          CIRC
DSGN 003  B 02 B 01 US1666.87 DS1665.48 122.0          0024          CIRC
ANAL 001  B 04 B 03 1.00 60.00          2.1
ANAL 002  B 03 B 02 1.00 60.00          0.2
ANAL 003  B 02 B 01 1.00 60.00          3.1
ENDATA
```


SEWER

CUMULATIVE RUNOFF CALCULATIONS FOR PIPE RUNS

RUN	U.S. I.D.	D.S. I.D.	"CA"	"TC"	AREA	CUMULATIVE "CA"	CUMULATIVE "TC"	SUPPLY Q	INTENSITY	FLOW
001	B 4	B 3	.00	.00	.00	.00	.00	225.00	.00	225.00
002	B 3	B 2	.00	.00	.00	.00	.00	225.00	.00	225.00
003	B 2	B 1	.00	.00	.00	.00	.00	225.00	.00	225.00

SEWER

SEWER ANALYSIS

CONFIGURATION DATA

RUN	U.S. ID	D.S. ID	U.S. F.L. ELEV	D.S. F.L. ELEV	LENGTH FEET	SLOPE	BBLS	RISE	SPAN	SHAPE
001	B 4	B 3	1668.36	1667.75	189	.00323	1	60	60	CIRC
002	B 3	B 2	1667.75	1661.87	438	.01342	1	60	60	CIRC
003	B 2	B 1	1661.87	1660.48	122	.01139	1	60	60	CIRC

1 TEXAS DEPARTMENT OF TRANSPORTATION
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THYSYS TEXAS HYDRAULICS SYSTEM DOS- VER 2.4.2
1992
THYSYS 27-Oct-1993
12: 7

HYDRAULIC DATA

RUN	U.S. ID	D.S. ID	'N'	JUNC LOSS	FLOW	U.S. HEAD	D.S. HEAD	HYDR. GRAD	DEPTH	VELOC.	PIPE CAPAC.
001	B 4	B 3	.024	2.10	225.00	1689.94	1683.03	.02544	1.00	11.5	80.1***
002	B 3	B 2	.024	.20	225.00	1683.03	1671.68	.02544	1.00	11.5	163.5***
003	B 2	B 1	.024	3.10	225.00	1671.68	1665.48	.02544	1.00	11.5	150.6***

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THYSYS TEXAS HYDRAULICS SYSTEM DOS- VER 2.4.2
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SEW0008--CAPACITY OF RUN 001 IS EXCEEDED.
SEW0008--CAPACITY OF RUN 002 IS EXCEEDED.
SEW0008--CAPACITY OF RUN 003 IS EXCEEDED.

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STATIONING

RUN	UPSTREAM JUNCTION ID	STATIONING
001	B 4	749
002	B 3	560
003	B 2	122

FINISH

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*********************************************


    PROJECT:  Fountain Hills North FIS
    ENGINEER:  C611 Detention Basin Weir Flow
    DATE:  10/26/1993
    TIME:  12:58.11




---------------------------------------------
    INPUT PARAMETERS
---------------------------------------------


    STARTING WSEL:       1684.00
    MAXIMUM WSEL:        1688.00
    STEP SIZE:              0.20
    BREADTH OF WEIR:       10.00
```

```
*********************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills North FIS
    DATE:  10/26/1993
    TIME:  12:58.11
*********************************************
```

POINT	ELEVATION	STATION
1	1690.00	1000.00
2	1689.70	1000.00
3	1688.00	1050.00
4	1686.70	1100.00
5	1685.50	1143.00
6	1684.70	1190.00
7	1684.00	1210.00
8	1686.00	1250.00
9	1688.00	1275.00
10	1690.00	1290.00

****

WEIR COEFFICIENT TABLE
PROJECT: Fountain Hills North FIS
DATE: 10/26/1993
TIME: 12:58.11

****

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.5667
3	0.40	2.6333
4	0.60	2.7000
5	0.80	2.7667
6	1.00	2.8333
7	1.20	2.9000
8	1.40	2.9667
9	1.60	3.0022
10	1.80	3.0067
11	2.00	3.0111
12	2.20	3.0156
13	2.40	3.0200
14	2.60	3.0244
15	2.80	3.0289
16	3.00	3.0333
17	3.20	3.0378
18	3.40	3.0422
19	3.60	3.0467
20	3.80	3.0511

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
    PROJECT:  Fountain Hills North FIS
    DATE:  10/26/1993
    TIME:  12:58.11
*********************************************
```

ELEVATION	DISCHARGE (CFS)
1684.00	0.00
1684.20	0.88
1684.40	5.04
1684.60	14.08
1684.80	29.47
1685.00	53.77
1685.20	89.30
1685.40	138.01
1685.60	201.93
1685.80	282.27
1686.00	377.71
1686.20	491.49
1686.40	623.71
1686.60	772.64
1686.80	931.72
1687.00	1108.67
1687.20	1304.03
1687.40	1518.63
1687.60	1753.33
1687.80	2003.03

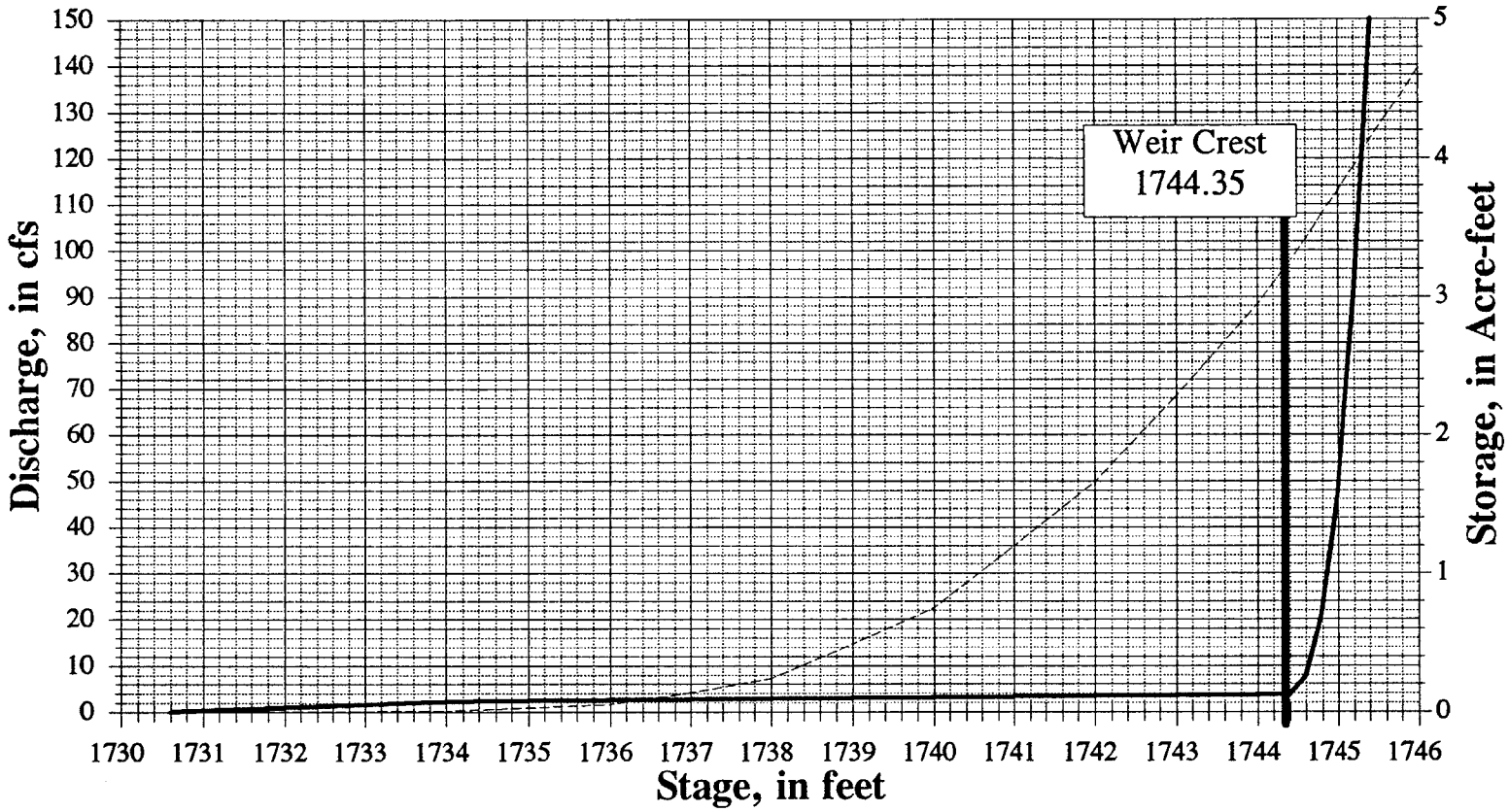
Table R-24
Storage and Discharge vs. Stage Data for C618

Stage (ft)	Surface Area (acres)	Storage Volume (acre-ft)	Discharge		
			Culvert Flow (cfs)	Weir Flow (cfs)	Total Flow (cfs)
1730.62	0.00	0.00	0.0	---	0
1734.00	0.01	0.01	2.2	---	2
1736.00	0.04	0.06	2.6	---	3
1737.00	---	0.1	2.8	---	3
1738.00	0.16	0.24	3.0	---	3
1739.00	---	0.5	3.1	---	3
1740.00	0.36	0.75	3.2	---	3
1741.00	---	1.2	3.3	---	3
1742.00	0.56	1.66	3.5	---	3
1743.00	---	2.3	3.6	---	4
1744.00	0.72	2.94	3.7	---	4
1744.35	---	3.2	3.7	0	4
1744.40	---	3.3	3.8	0	4
1744.60	---	3.4	3.8	4	8
1744.80	---	3.6	3.8	17	21
1745.00	---	3.8	3.8	44	48
1745.20	---	3.9	3.8	85	88
1745.40	---	4.1	3.9	139	143
1745.60	---	4.3	3.9	208	212
1745.80	---	4.5	3.9	291	295
1746.00	1.00	4.65	3.9	386	390

* Note: Weir flow over the road will start at EL > 1744.35

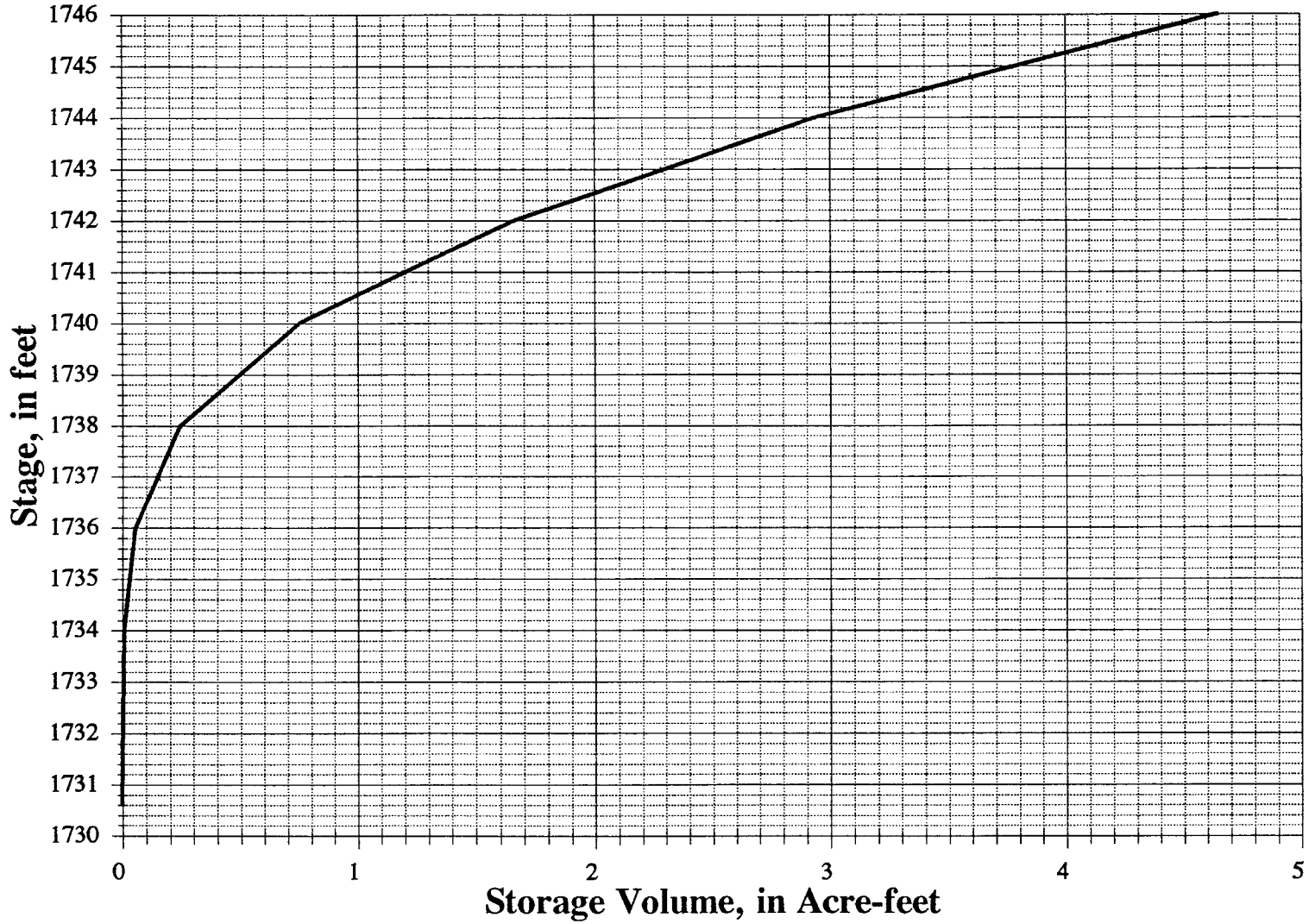
Figure R-20

Storage and Discharge vs Stage for C618



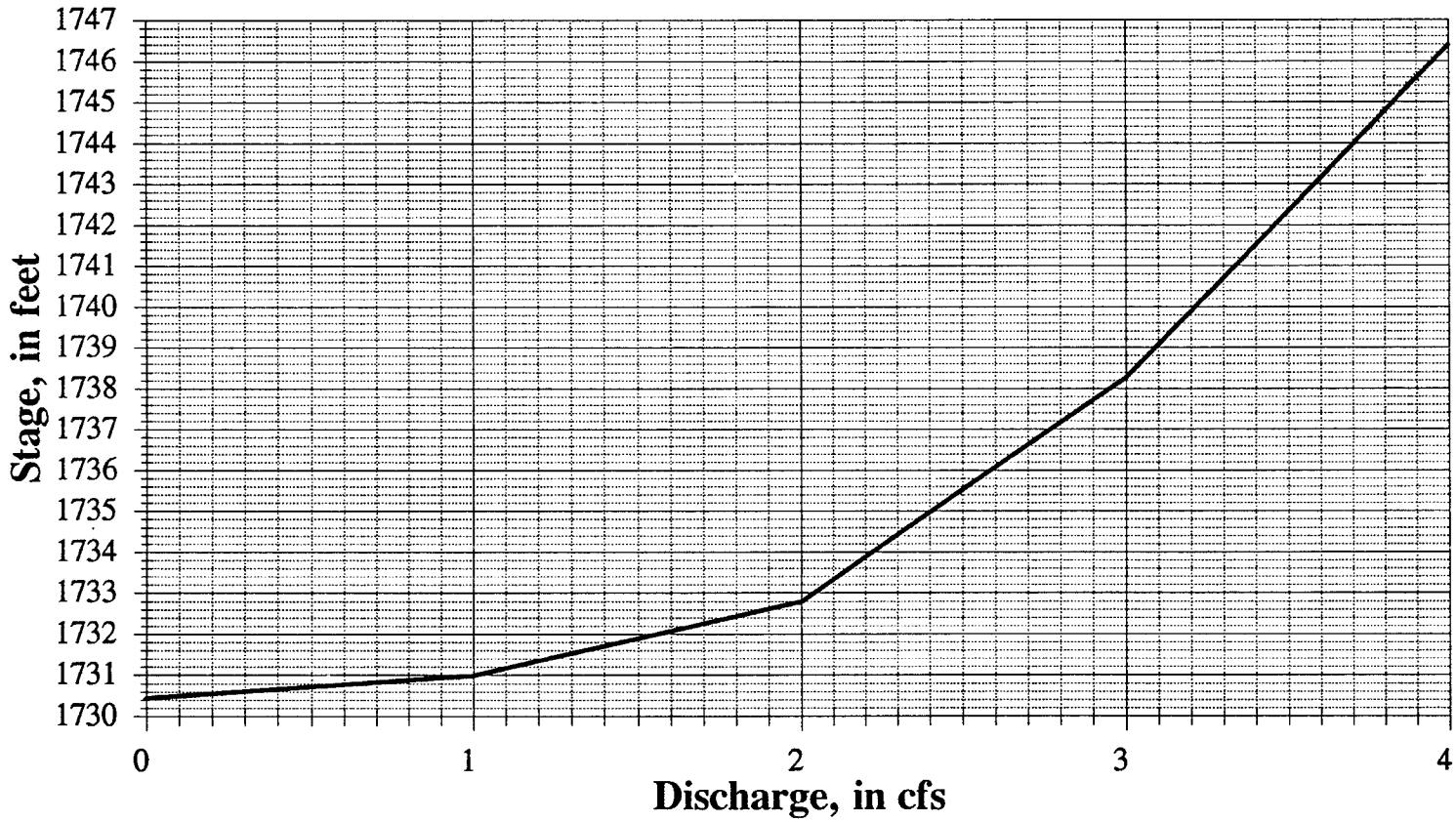
C618 Storage Volume

Calculated from Planimetered Contours



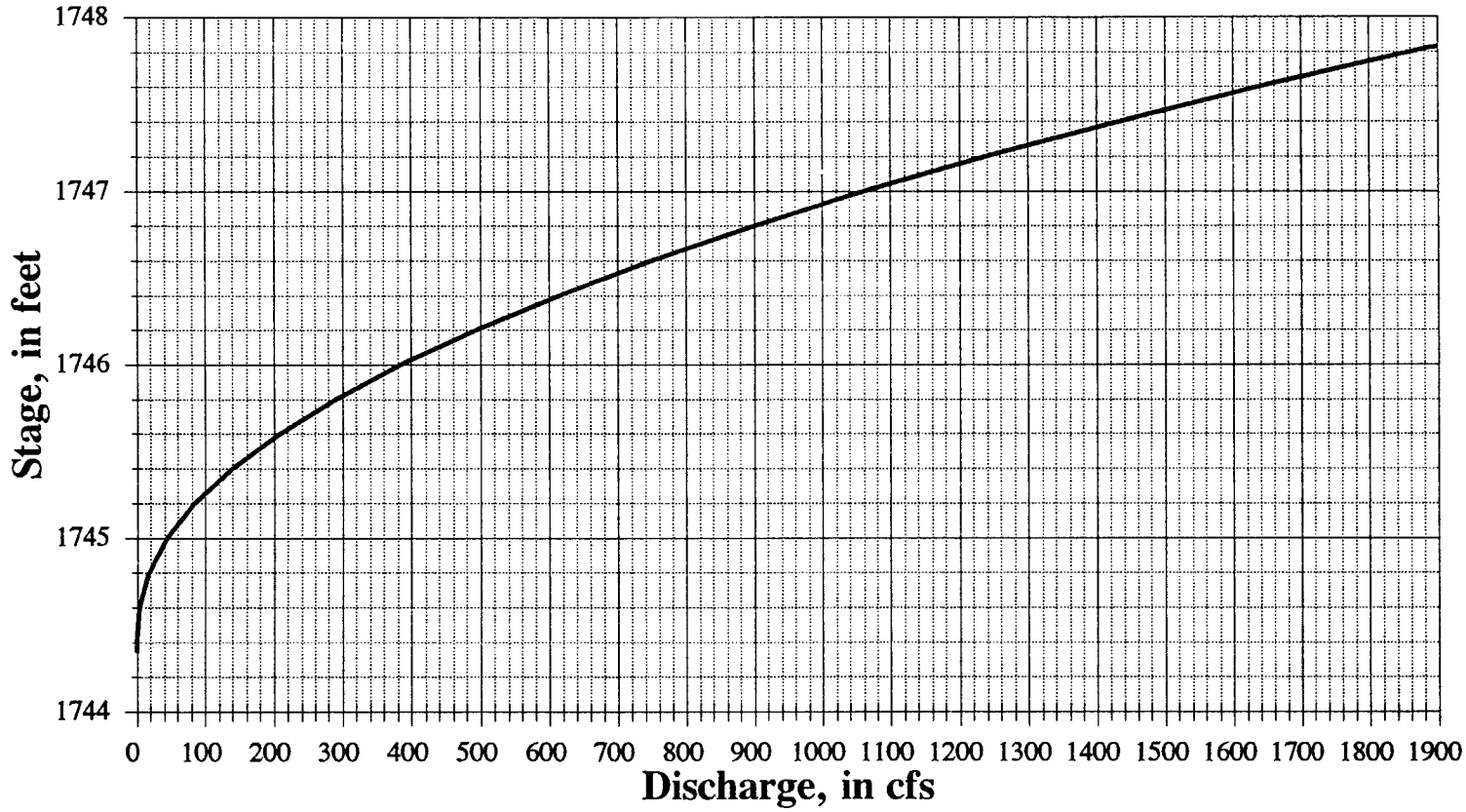
C618 Stage vs Discharge

Culvert Flow form HY8



C618 Stage vs Discharge

Weir Flow from Uneven Weir



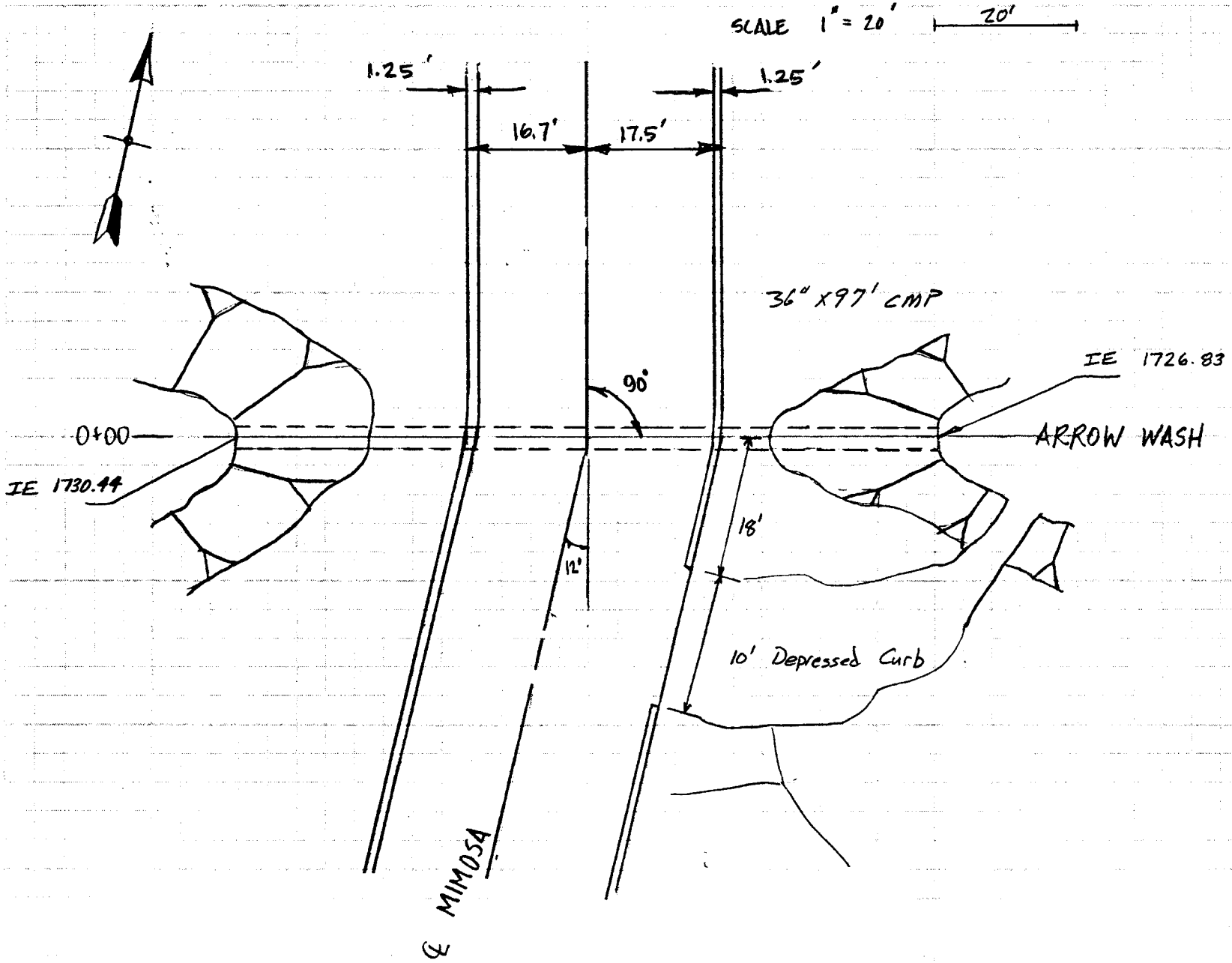
GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT: MCFCD
PROJECT: FOUNTAIN HILLS
SUBJECT: CULVERT 618 FIELD SURVEY

SHEET 1 OF 3
DATE 5/27
BY MG
PROJECT NO. 35

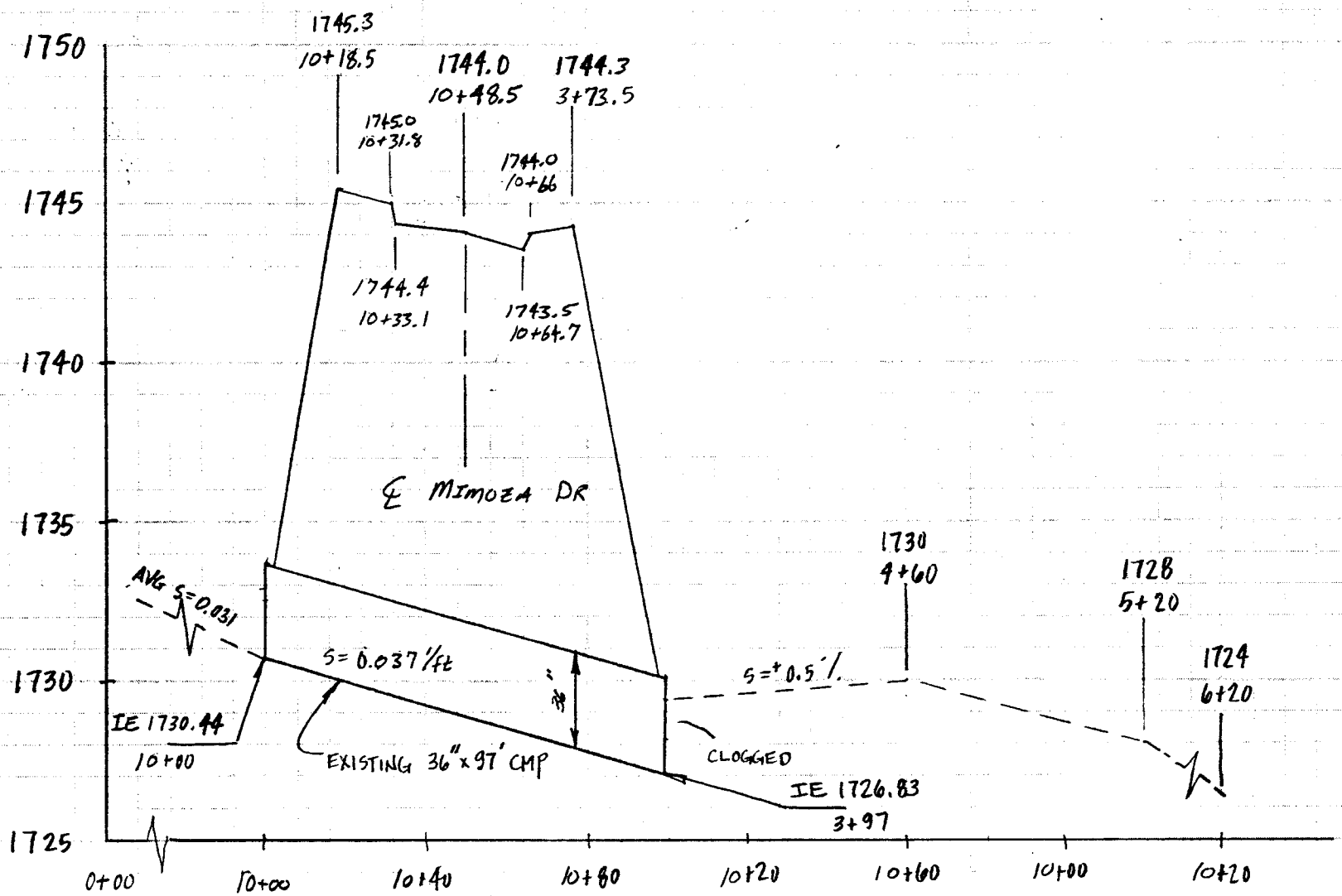
CULVERT 618 PLAN VIEW

SCALE 1" = 20'



CULVERT 618 PROFILE

SCALE : HORZ 1" = 40
VERT 1" = 5'



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT MCFLD
PROJECT FOUNTAIN HILLS
SUBJECT CULVERT 618 FIELD SURVEY

SHEET 2 OF 3
DATE 5/27
BY MG
PROJECT NO. 35

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 3 OF 3

CLIENT MCFCD

DATE

PROJECT FOUNTAIN HILLS

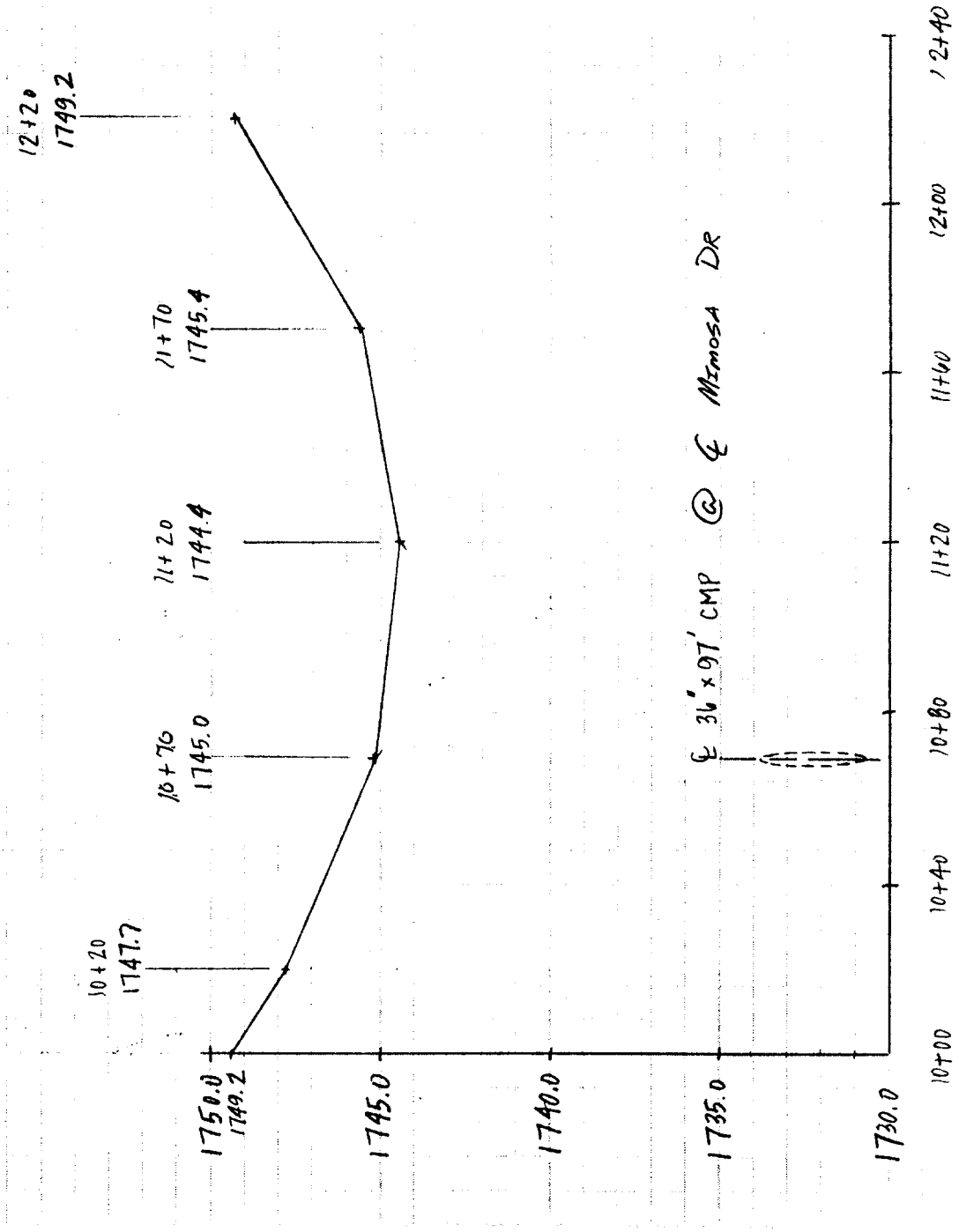
BY

SUBJECT CULVERT 618 FIELD SURVEY

PROJECT NO.

CULVERT 618 WEIR CROSS-SECTION

SCALE: HORZ 1" = 40'
VERT 1" = 5'



CURRENT DATE: 11-02-1993
CURRENT TIME: 10:22:34

FILE DATE: 11-02-1993
FILE NAME: C618

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1730.44	1729.08	97.01	1 CSP	0.75	0.75	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C618 DATE: 11-02-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1730.44	0	0	0	0	0	0	0	0	1
1730.99	1	1	0	0	0	0	0	0	1
1731.23	1	1	0	0	0	0	0	0	1
1732.78	2	2	0	0	0	0	0	0	1
1735.18	2	2	0	0	0	0	0	0	1
1738.26	3	3	0	0	0	0	0	0	1
1742.00	3	3	0	0	0	0	0	0	1
1746.40	4	4	0	0	0	0	0	0	1
1747.64	4	4	0	0	0	0	0	0	6
1747.82	5	4	0	0	0	0	0	1	4
1747.96	5	4	0	0	0	0	0	1	3
1747.40	4	4	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C618 DATE: 11-02-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1730.44	0.00	0	0	0.00
1730.99	0.00	1	0	0.00
1731.23	0.00	1	0	0.00
1732.78	0.00	2	0	0.00
1735.18	0.00	2	0	0.00
1738.26	0.00	3	0	0.00
1742.00	0.00	3	0	0.00
1746.40	0.00	4	0	0.00
1747.64	-0.00	4	0	0.33

1747.82	-0.00	5	0	0.31
1747.96	-0.01	5	0	0.70

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 11-02-1993 FILE DATE: 11-02-1993
CURRENT TIME: 10:22:34 FILE NAME: C618

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (.75 BY .75) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1730.44	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
1	1730.99	0.48	0.55	2-M2c	0.36	0.32	2.81	0.32	1.57	0.30
1	1731.23	0.76	0.79	2-M2c	0.58	0.46	3.54	0.46	1.68	0.34
2	1732.78	1.10	2.34	6-FFn	0.75	0.56	3.40	0.75	1.78	0.36
2	1735.18	1.57	4.74	6-FFn	0.75	0.64	4.53	0.75	1.86	0.39
3	1738.26	2.21	7.82	6-FFn	0.75	0.70	5.66	0.75	1.94	0.41
3	1742.00	3.02	11.56	6-FFn	0.75	0.75	6.79	0.75	2.00	0.43
4	1746.40	3.99	15.96	6-FFn	0.75	0.75	7.92	0.75	2.06	0.45
4	1747.64	4.26	17.20	6-FFn	0.75	0.75	8.21	0.75	2.12	0.47
4	1747.82	4.30	17.38	6-FFn	0.75	0.75	8.25	0.75	2.17	0.49
4	1747.96	4.33	17.52	6-FFn	0.75	0.75	8.29	0.75	2.23	0.51

El. inlet face invert 1730.44 ft El. outlet invert 1729.08 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION (FT)                      0.00
      INLET ELEVATION (FT)                 1730.44
      OUTLET STATION (FT)                    97.00
      OUTLET ELEVATION (FT)                1729.08
      NUMBER OF BARRELS                       1
      SLOPE (V-FT/H-FT)                       0.0140
      CULVERT LENGTH ALONG SLOPE (FT)        97.01

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          CIRCULAR
      BARREL DIAMETER         0.75 FT
      BARREL MATERIAL       CORRUGATED STEEL
      BARREL MANNING'S N    0.024
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   THIN EDGE PROJECTING
      INLET DEPRESSION      NONE
```

CURRENT DATE: 11-02-1993
CURRENT TIME: 10:22:34

FILE DATE: 11-02-1993
FILE NAME: C618

TAILWATER

***** USER DEFINED CHANNEL CROSS-SECTION
MAIN CHANNEL AND LT & RT OVER BANKS

FILE NAME: C618
FILE DATE: 11-02-1993

LEFT CHANNEL BOUNDARY	7
RIGHT CHANNEL BOUNDARY	8
MANNING N LEFT OVER BANK	0.070
MANNING N MAIN CHANNEL	0.060
MANNING N RIGHT OVER BAN	0.070
SLOPE OF CHANNEL (FT/FT)	0.0500

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	9906.00	1742.08
2	9939.80	1735.78
3	9946.10	1737.58
4	9956.60	1739.18
5	9968.70	1738.48
6	9980.60	1734.98
7	10000.00	1729.08
8	10009.20	1729.58
9	10033.20	1734.48
10	10048.00	1742.98
11	10063.70	1743.78

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1729.08	0.000	0.00	0.00	0.00
0.50	1729.38	0.711	0.30	1.57	0.47
1.00	1729.42	0.724	0.34	1.68	0.52
1.50	1729.44	0.734	0.36	1.78	0.57
2.00	1729.47	0.743	0.39	1.86	0.61
2.50	1729.49	0.750	0.41	1.94	0.64
3.00	1729.51	0.756	0.43	2.00	0.68
3.50	1729.53	0.762	0.45	2.06	0.71
4.00	1729.55	0.767	0.47	2.12	0.74
4.50	1729.57	0.771	0.49	2.17	0.76
5.00	1729.59	0.777	0.51	2.23	0.80

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	1.00
CREST LENGTH (FT)	1.00
OVERTOPPING CREST ELEVATION (FT)	1747.40

```
*******************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*******************************************


    PROJECT:  Fountain Hills North FIS                    C618
    ENGINEER:  MG
    DATE:   9/14/1993
    TIME:  11:41.11




---------------------------------------------
    INPUT PARAMETERS
---------------------------------------------


    STARTING WSEL:       1744.20
    MAXIMUM WSEL:        1749.09
    STEP SIZE:              0.20
    BREADTH OF WEIR:       34.20
```

```
*********************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills North FIS                    C618
    DATE:   9/14/1993
    TIME:  11:41.11
*********************************************
```

POINT	ELEVATION	STATION
1	1749.24	9930.00
2	1747.65	9950.00
3	1744.97	10000.00
4	1744.35	10050.00
5	1745.43	10100.00
6	1749.09	10150.00

```
*********************************************
    WEIR COEFFICIENT TABLE
    PROJECT:  Fountain Hills North FIS                    C618
    DATE:   9/14/1993
    TIME:  11:41.11
*********************************************
```

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.5195
3	0.40	2.5390
4	0.60	2.5585
5	0.80	2.5780
6	1.00	2.5975
7	1.20	2.6170
8	1.40	2.6365
9	1.60	2.6559
10	1.80	2.6754
11	2.00	2.6949
12	2.20	2.7144
13	2.40	2.7339
14	2.60	2.7534
15	2.80	2.7729
16	3.00	2.7924
17	3.20	2.8119
18	3.40	2.8314
19	3.60	2.8509
20	3.80	2.8704

21	4.00	2.8899
22	4.20	2.9094
23	4.40	2.9288
24	4.60	2.9483
25	4.80	2.9678

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
    PROJECT:  Fountain Hills North FIS                    C618
    DATE:   9/14/1993
    TIME:  11:41.11
*********************************************
```

ELEVATION	DISCHARGE (CFS)
1744.20	0.00
1744.40	0.07
1744.60	3.98
1744.80	17.38
1745.00	43.76
1745.20	84.52
1745.40	139.23
1745.60	208.22
1745.80	290.61
1746.00	386.09
1746.20	494.68
1746.40	616.54
1746.60	751.89
1746.80	900.98
1747.00	1064.11
1747.20	1241.57
1747.40	1433.70
1747.60	1640.81
1747.80	1863.91
1748.00	2102.86
1748.20	2357.58
1748.40	2628.29
1748.60	2915.24
1748.80	3218.68
1749.00	3538.88

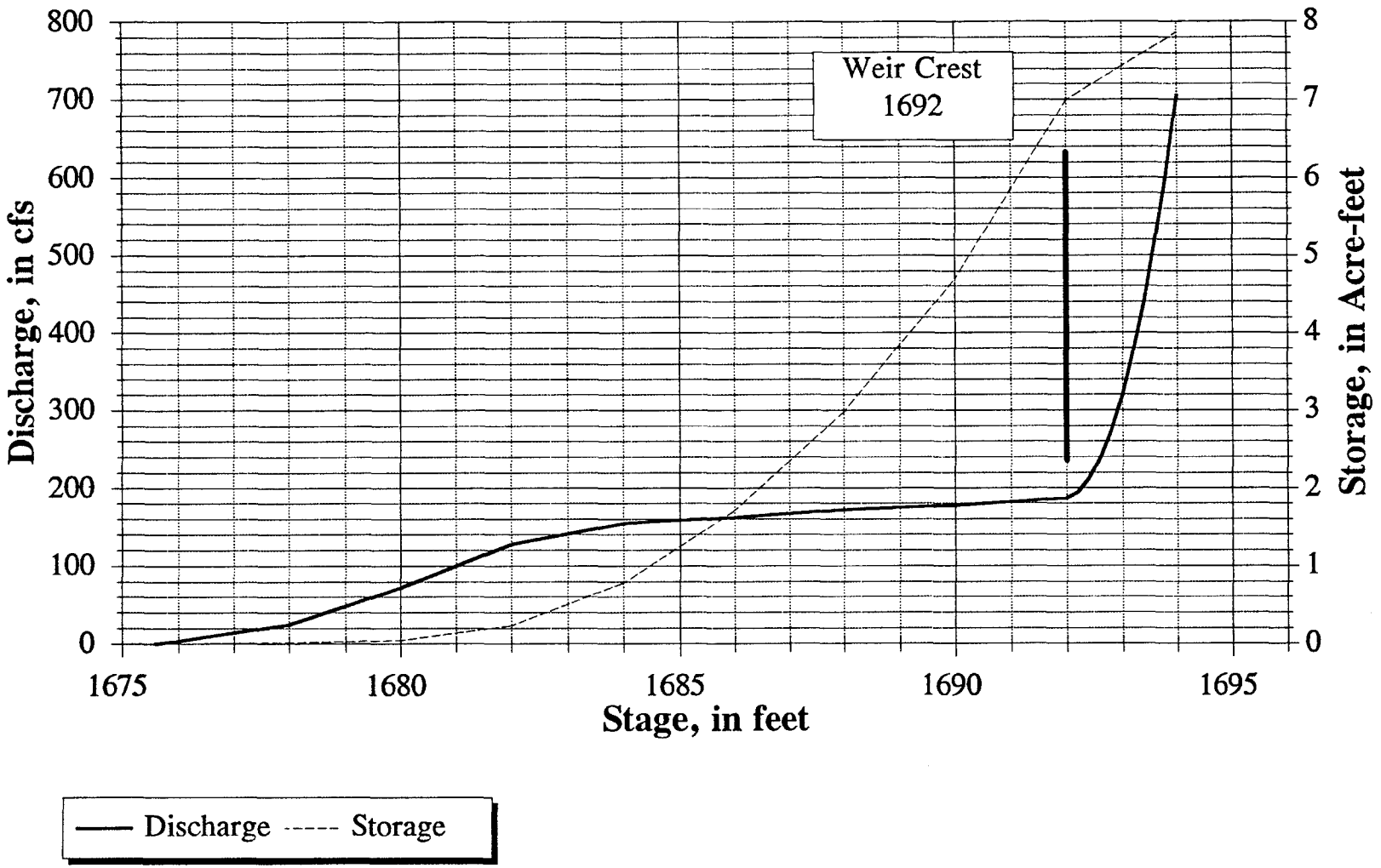
Table R-25
Storage and Discharge vs. Stage Data for C619

Stage (ft)	Surface Area (acres)	Storage Volume (acre-ft)	Discharge		
			Culvert Flow (cfs)	Weir Flow (cfs)	Total Flow (cfs)
1675.60	0.00	0.00	0	0	0
1676.00	---	0.00	4	0	4
1678.00	---	0.02	25	0	25
1680.00	0.03	0.04	72	0	72
1682.00	0.18	0.23	128	0	128
1684.00	0.39	0.79	155	0	155
1686.00	0.54	1.72	163	0	163
1688.00	0.73	2.98	172	0	172
1690.00	1.00	4.70	178	0	178
1692.00	***1.30***	***7.00***	***187***	0	***187***
1692.20	---	7.08	188	8	195
1692.40	---	7.17	188	24	213
1692.60	---	7.26	189	49	238
1692.80	---	7.34	190	83	273
1693.00	---	7.43	190	128	318
1693.20	---	7.51	191	182	374
1693.40	---	7.60	192	249	441
1693.60	---	7.69	193	325	518
1693.80	---	7.77	193	412	606
1694.00	---	7.86	194	512	706

* Note: Weir flow over the road will start at EL > 1692.0

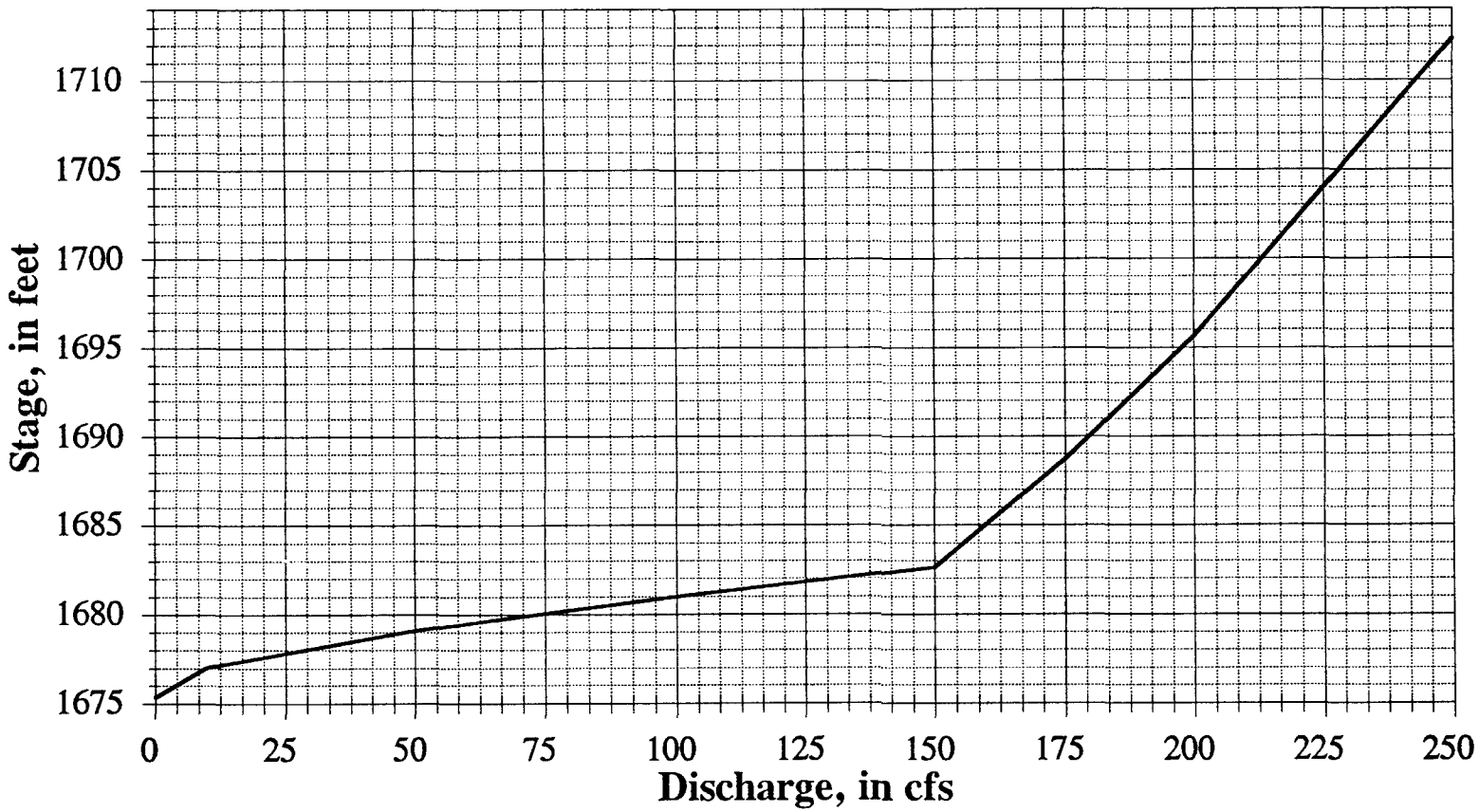
Figure R-21

Storage and Discharge vs Stage for C619



C619 Stage vs Discharge

Culvert Flow from THYSYS



Problem: Analyze storm drain hydraulics for purpose of developing a rating curve at the inlet (C619)

Assumptions: Same as for C611.

Ke Estimates:

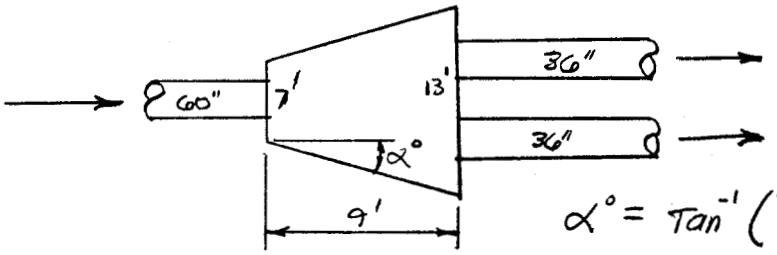
A05: Projecting inlet.

Assume $k_e = 1.0$

A04: $\alpha° = 12°$, $k_e = 0$

A03: $\alpha° = 22°$, $k_e = 0.06$, Use $k_e = 0.1$

A02: Expansion from 1-60" to 2-36" cmps



$\alpha° = \tan^{-1}(3/9) = 18.4° \approx 20°$

$k_e = 0.2$

A01: Outlet: Assume $k_e = 1.0$ for sudden expansion

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 2 OF 2
DATE 10/26/93
BY TRL
PROJECT NO. 35

CLIENT
PROJECT
SUBJECT C619 Storm Drain

Discharge	A05 V	A05 h	A04 V	A04 h	A03 V	A03 h	A02 V	A02 h	A01 V	A01 h	Critical Depth (36")	$\frac{D_c+D}{2}$	Assumed T.W.
10	4.9	0.4'	4.9	0	3.2	0	4.1	0.1	4.1	0.3	1.0'	2.0	1663.5
50	7.6	0.9	7.1	0	5.4	0.1	6.6	0.1	6.6	0.7	F.F.	C611	1664.0
100	9.0	1.3	8.4	0	5.4	0.1	7.1	0.2	7.1	0.8	F.F.	C611	1664.5
150	7.6	0.9	7.6	0	7.6	0.1	10.6	0.3	10.6	1.7	F.F.	C611	1664.8
175	8.9	1.2	8.9	0	8.9	0.1	12.4	0.5	12.4	2.4	F.F.	C611	1664.9
200	10.2	1.6	10.2	0	10.2	0.2	14.1	0.6	14.1	3.1	F.F.	C611	1665.5
250	12.7	2.5	12.7	0	12.7	0.3	17.7	1.0	17.7	4.9	F.F.	C611	1665.5
~~300~~											~~F.F.~~	~~C611~~	~~1665.5~~

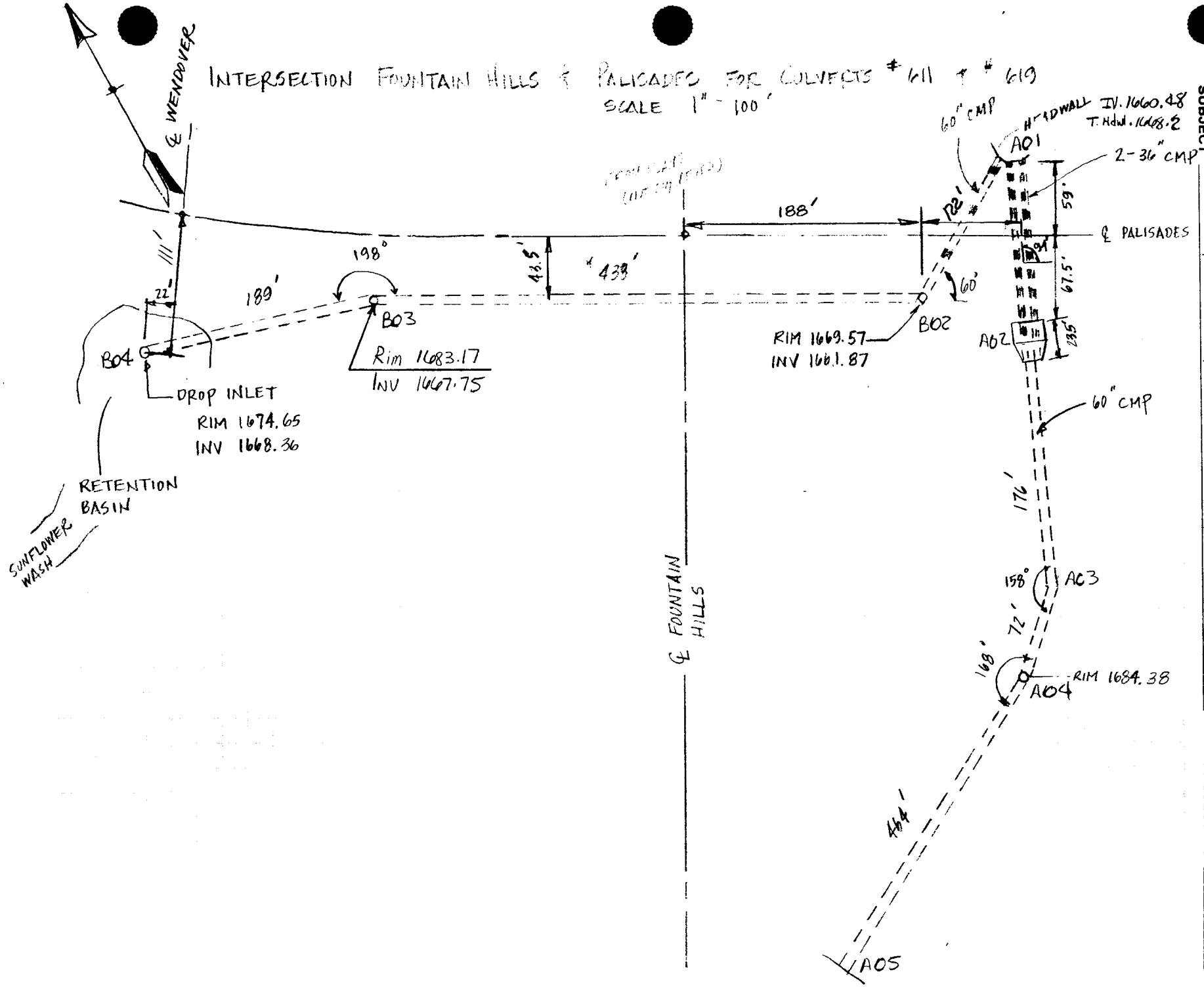
Note:
1. A02 to A01: S = 1.5%, D = 36", n = 0.024
2. Outlet channel is steep. Assume TW = Outlet top of pipe above 200 cfs. (using C611 for control)
3. Add A02 & A01 losses for pipe 007.

Summary Table: A05

Q	W.S.
10	1677.10
50	1679.12
100	1680.99
150	1682.65
175	1688.72
200	1695.64
250	1712.32

Stage	Q
1676	4
1678	25
1680	72
1682	128
1684	155
1686	163
1688	172
1690	178
1692	187
1694	194
1696	202
1698	207
1700	213

INTERSECTION FOUNTAIN HILLS & PALISADES FOR CULVERTS # 611 + # 619
SCALE 1" = 100'



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT: MCFCD
PROJECT: FOUNTAIN HILLS
SUBJECT: CULVERTS 611 + 619 FIELD SURVEY

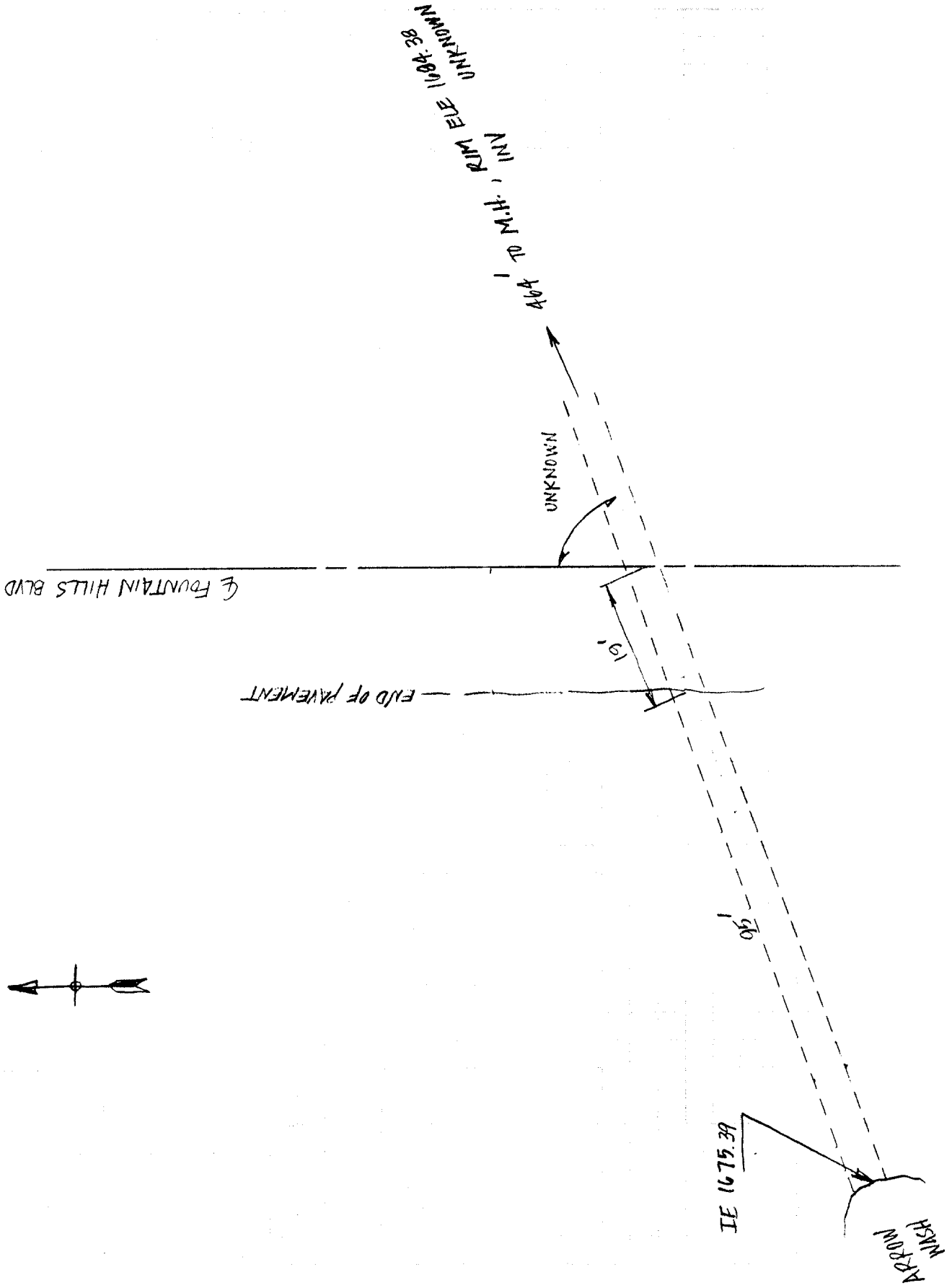
SHEET 1 OF 7
DATE 6/2
BY MG
PROJECT NO. 75

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 2 OF 7
DATE 6/8
BY MG
PROJECT NO. 38

CLIENT MCFCD
PROJECT FOUNTAIN HILLS
SUBJECT CULVERT 619 FIELD STUDY

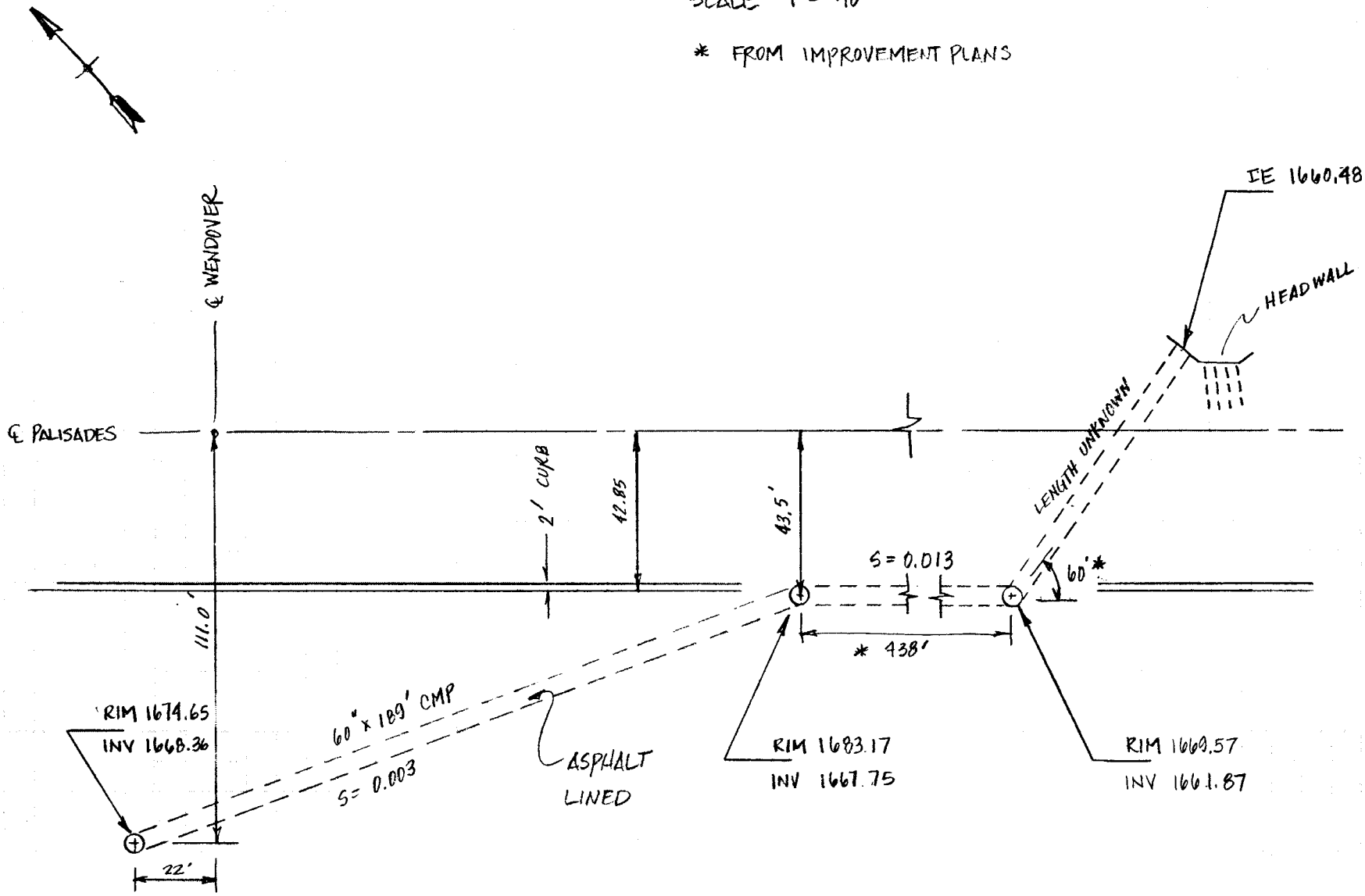
CULVERT 619 PLAN VIEW OF INLET
SCALE 1" = 20'



CULVERT 611 PLAN VIEW

SCALE 1" = 40'

* FROM IMPROVEMENT PLANS



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT MLFLD

PROJECT FOUNTAIN HILLS

SUBJECT CULVERT 611 FIELD SURVEY

SHEET 3 OF 7

DATE 6/8

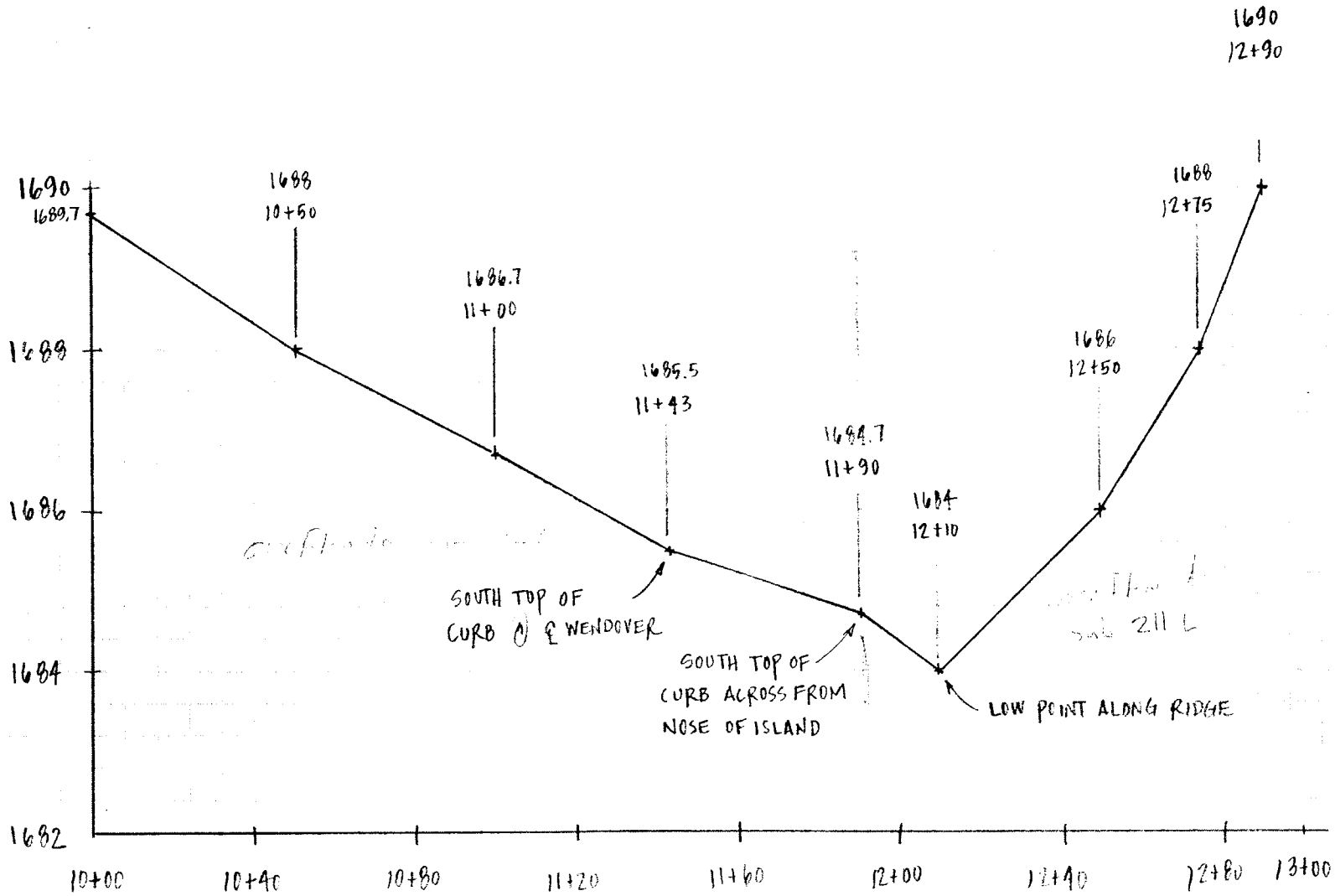
BY MGT

PROJECT NO. 35

CULVERT 611 @ PALISADES BLVD WEIR CROSS-SECTION SOUTH TOP OF CURB

SCALE HORZ 1" = 40'
VERT 1" = 2'

* CROSS-SECT. FROM 200 SCALE CONTOUR MAP & PALISADES STREET PLANS



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT MCFED
PROJECT FOUNTAIN HILLS
SUBJECT CULVERT 611 FIELD SURVEY

SHEET 4 OF 7
DATE 6/8
BY MG
PROJECT NO. 35

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 5 OF 7

CLIENT MCFCD

DATE 6/8

PROJECT FOUNTAIN HILLS

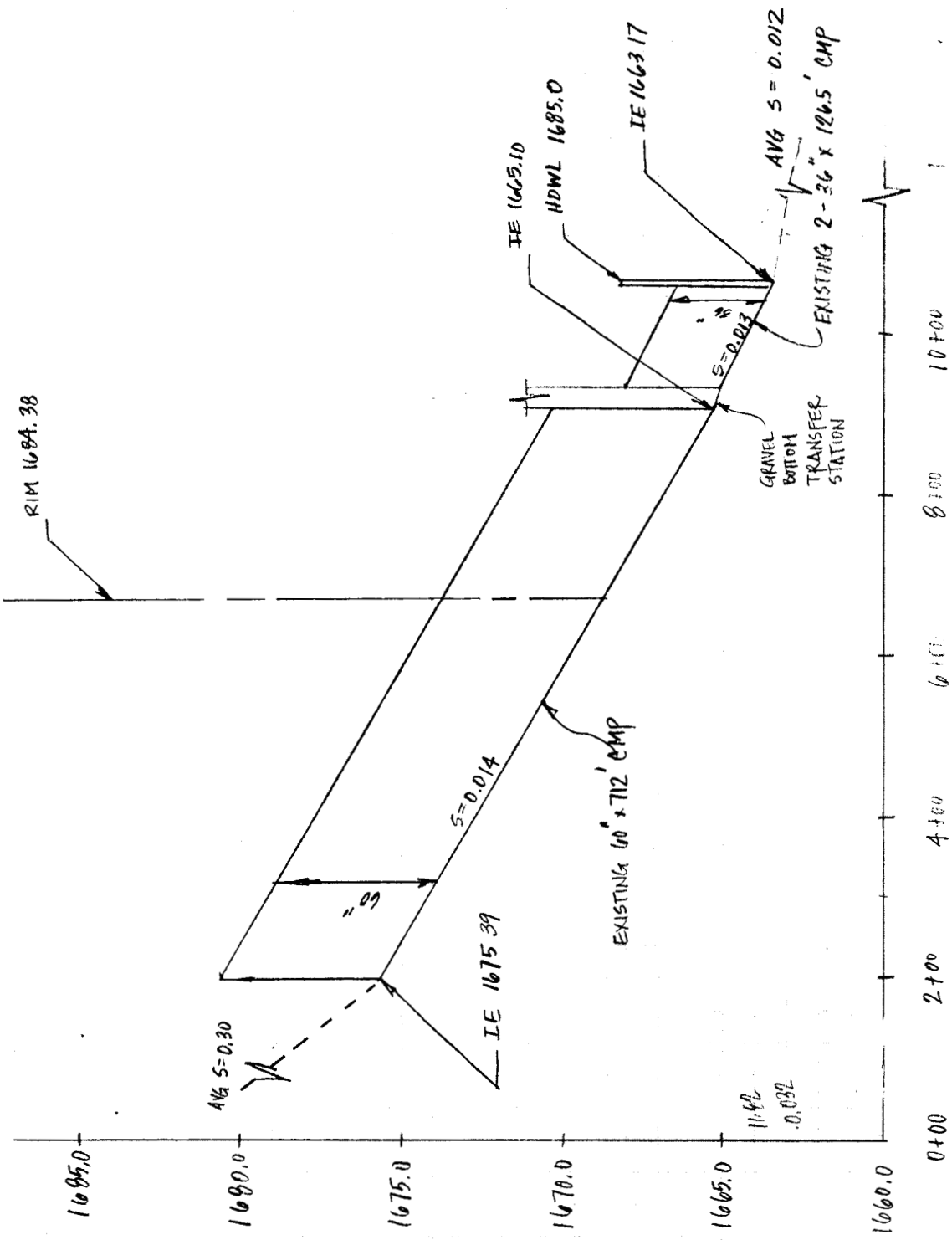
BY MGT

SUBJECT CULVERT 619 FIELD SURVEY

PROJECT NO. 35

CULVERT 619 PROFILE

SCALE HORZ 1" = 200'
VERT 1" = 5'

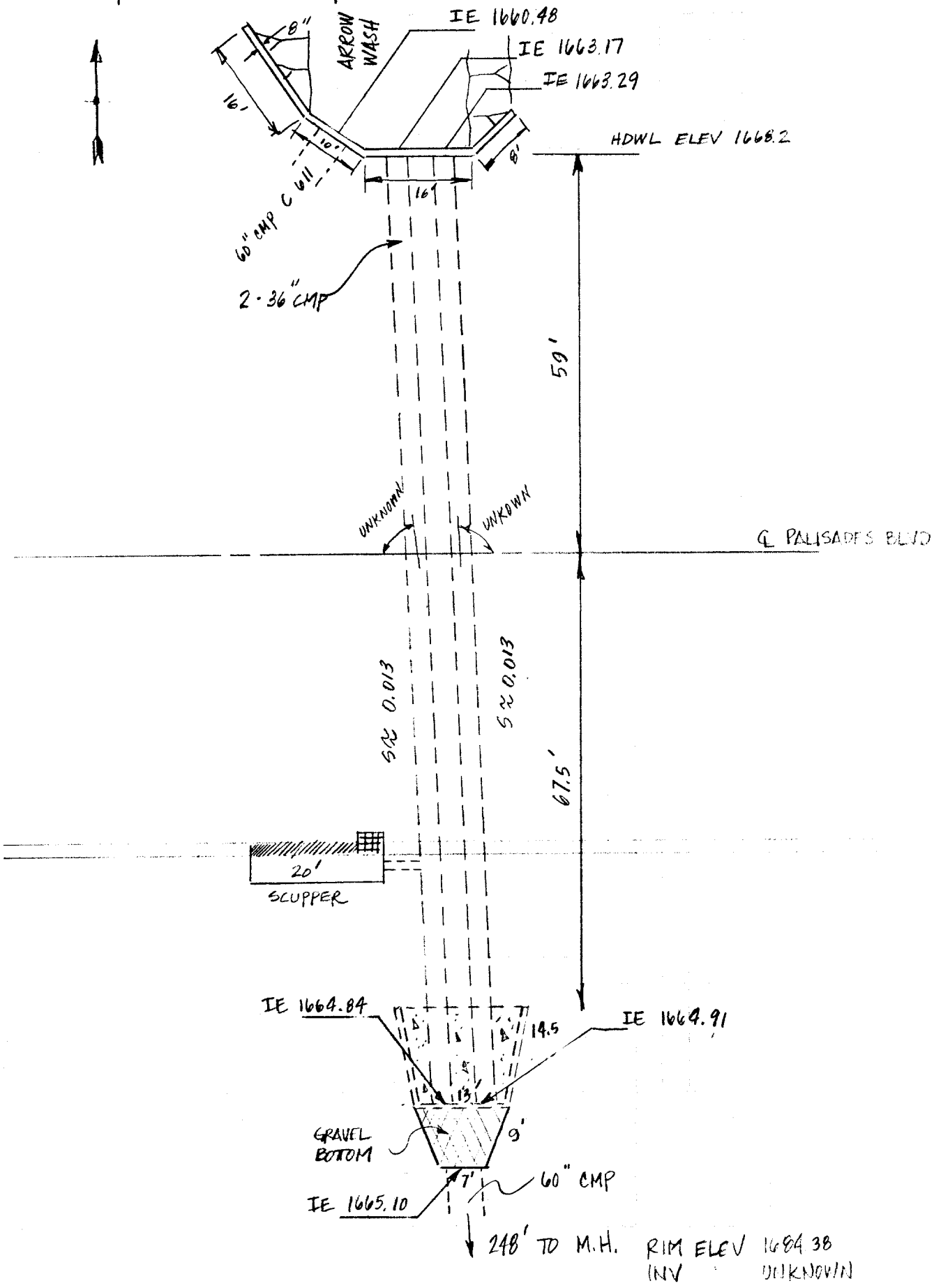


GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 6 OF 7
DATE 6/8
BY MG
PROJECT NO. 35

CLIENT MCFCD
PROJECT FOUNTAIN HILLS
SUBJECT CULVERT 619 FIELD SURVEY

CULVERT 619 PLAN VIEW : OUTLET STRUCTURE
SCALE 1" = 20'



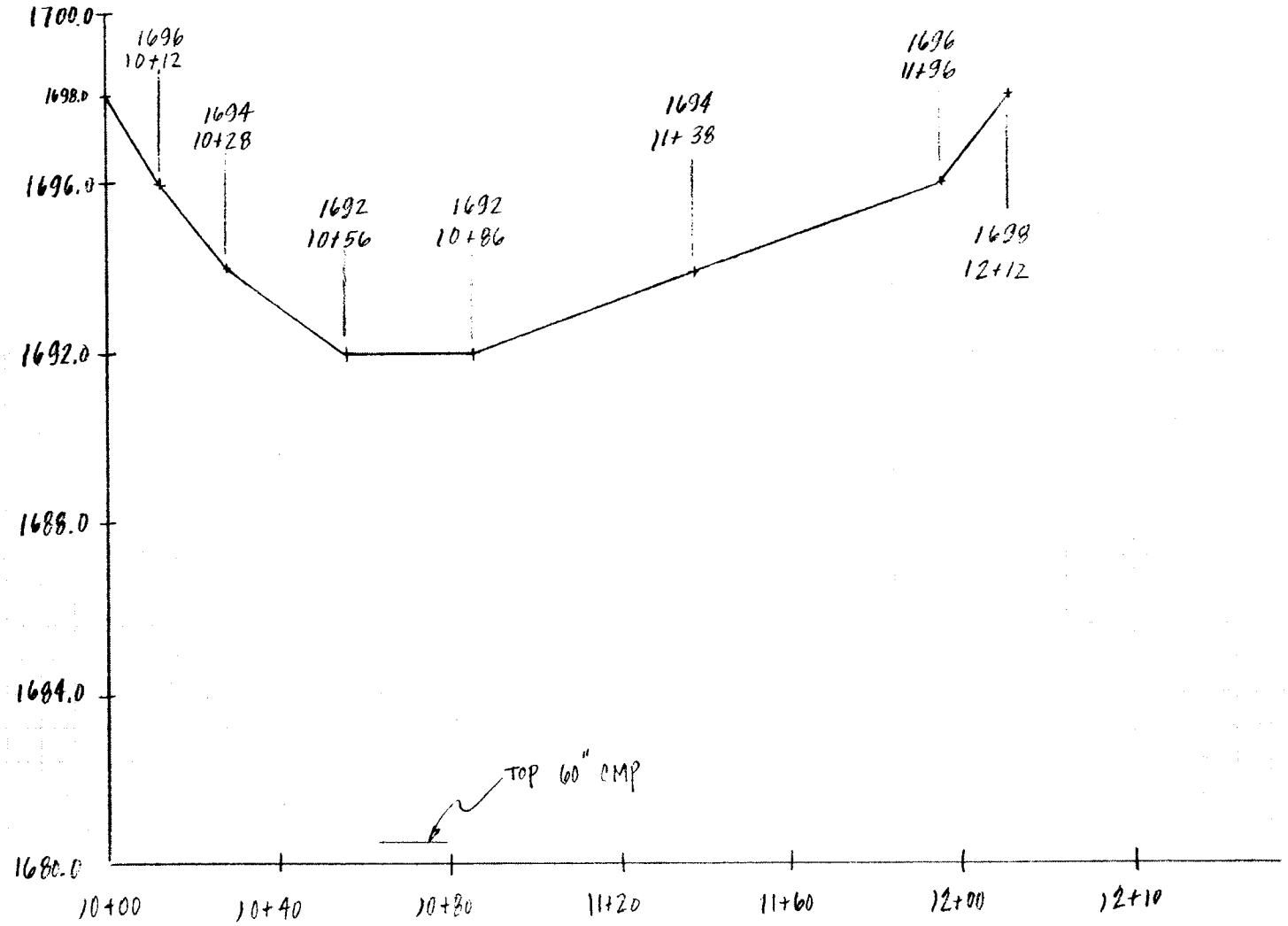
INV 60" CMP – 1675.57

CULVERT 619 @ FOUNTAIN HILLS BLVD. WEIR CROSS-SECTION RIDGE LINE

SCALE HORZ 1" = 40'
VERT 1" = 4'

* CROSS-SECTION FROM 200 SCALE CONTOUR MAP

10+00	1698.0
10+12	1696.0
10+28	1694.0
10+56	1692.0
10+86	1692.0
11+38	1694.0
11+96	1696.0
12+12	1698.0



GEORGE V. SABOL CONSULTING ENGINEERS, INC.

CLIENT MCFCD
PROJECT FOUNTAIN HILLS
SUBJECT CULVERT 619 FIELD SURVEY

SHEET 7 OF 7
DATE 6/3
BY MG
PROJECT NO. 35

```
$    Storm drain system at C619 under Palisades Plaza.
$    Line A is C619 to C620.
$    Line B is C611 to C620.
$    Q=10cfs
SEWER              ANALYSIS                    SEWER     FREQUENCY=100YR
JUNC A 05 TYPE=JUNCT
JUNC A 04 TYPE=JUNCT
JUNC A 03 TYPE=JUNCT
JUNC A 02 TYPE=JUNCT
JUNC A 01 TYPE=JUNCT
OUTLET    STATIONING     0.00 T.W. ELEV 1663.50    A 01
DSGN 004  A 05 A 04 US1680.39 DS1673.68 464.0      10. 0024  010      CIRC
DSGN 005  A 04 A 03 US1673.68 DS1672.64  72.0          0024  010      CIRC
DSGN 006  A 03 A 02 US1672.64 DS1670.10 176.0          0024  010      CIRC
DSGN 007  A 02 A 01 US1668.10 DS1666.17 126.5          0024  010      CIRC
ANAL 004  A 05 A 04 1.00 60.00            0.4
ANAL 005  A 04 A 03 1.00 60.00            0.0
ANAL 006  A 03 A 02 1.00 60.00            0.0
ANAL 007  A 02 A 01 2.00 36.00            0.4
ENDATA
```


SEWER

CUMULATIVE RUNOFF CALCULATIONS FOR PIPE RUNS

RUN	U.S. I.D.	D.S. I.D.	"CA"	"TC"	AREA	CUMULATIVE "CA"	CUMULATIVE "TC"	SUPPLY Q	INTENSITY	FLOW
004	A 5	A 4	.00	.00	.00	.00	.00	10.00	.00	10.00
005	A 4	A 3	.00	.00	.00	.00	.00	10.00	.00	10.00
006	A 3	A 2	.00	.00	.00	.00	.00	10.00	.00	10.00
007	A 2	A 1	.00	.00	.00	.00	.00	10.00	.00	10.00

SEWER

SEWER ANALYSIS

CONFIGURATION DATA

RUN	U.S. ID	D.S. ID	U.S. F.L. ELEV	D.S. F.L. ELEV	LENGTH FEET	SLOPE	BBLS	RISE	SPAN	SHAPE
004	A 5	A 4	1675.39	1668.68	464	.01446	1	60	60	CIRC
005	A 4	A 3	1668.68	1667.64	72	.01444	1	60	60	CIRC
006	A 3	A 2	1667.64	1665.10	176	.01443	1	60	60	CIRC
007	A 2	A 1	1665.10	1663.17	126	.01532	2	36	36	CIRC

HYDRAULIC DATA

RUN	U.S. ID	D.S. ID	'N'	JUNC LOSS	FLOW	U.S. HEAD	D.S. HEAD	HYDR. GRAD	DEPTH	VELOC.	PIPE CAPAC.
ENTRANCE CONTROLS. TOTAL HEAD AT UPSTREAM END FOR RUN NO. 004 IS 1.31											
004	A 5	A 4	.024	.40	10.00	1677.10	1669.48	.00005	.16	4.9*	169.6
005	A 4	A 3	.024	.00	10.00	1669.48	1668.44	.00005	.16	4.9*	169.5
006	A 3	A 2	.024	.00	10.00	1668.44	1666.19	.00005	.16	3.2*	169.5
007	A 2	A 1	.024	.40	10.00	1666.19	1663.86	.00019	.23	4.1	89.4

SEW0071--*PIPE FLOW DEPTH > NORMAL DEPTH DUE TO DOWNSTREAM CONTROL, NOT INSUFFICIENT CAPACITY- VELOCITY IS BASED ON ELEVATION OF HYDRAULIC GRADE LINE AT DOWNSTREAM ELEVATION.
JUNCTION LOSSES MAY NEED TO BE CONSIDERED AT SUBMERGED JUNCTIONS

STATIONING

RUN	UPSTREAM JUNCTION ID	STATIONING
004	A 5	838
005	A 4	374
006	A 3	302
007	A 2	126

FINISH

```
$    Storm drain system at C619 under Palisades Plaza.
$    Line A is C619 to C620.
$    Line B is C611 to C620.
$    Q=50cfs
SEWER              ANALYSIS                    SEWER     FREQUENCY=100YR
JUNC A 05 TYPE=JUNCT
JUNC A 04 TYPE=JUNCT
JUNC A 03 TYPE=JUNCT
JUNC A 02 TYPE=JUNCT
JUNC A 01 TYPE=JUNCT
OUTLET    STATIONING     0.00 T.W. ELEV 1664.00    A 01
DSGN 004  A 05 A 04 US1680.39 DS1673.68 464.0      50. 0024  010      CIRC
DSGN 005  A 04 A 03 US1673.68 DS1672.64  72.0          0024  010      CIRC
DSGN 006  A 03 A 02 US1672.64 DS1670.10 176.0          0024  010      CIRC
DSGN 007  A 02 A 01 US1668.10 DS1666.17 126.5          0024  010      CIRC
ANAL 004  A 05 A 04 1.00 60.00            0.9
ANAL 005  A 04 A 03 1.00 60.00            0.0
ANAL 006  A 03 A 02 1.00 60.00            0.1
ANAL 007  A 02 A 01 2.00 36.00            0.8
ENDATA
```


SEWER

CUMULATIVE RUNOFF CALCULATIONS FOR PIPE RUNS

RUN	U.S. I.D.	D.S. I.D.	"CA"	"TC"	AREA	CUMULATIVE "CA"	CUMULATIVE "TC"	SUPPLY Q	INTENSITY	FLOW
004	A 5	A 4	.00	.00	.00	.00	.00	50.00	.00	50.00
005	A 4	A 3	.00	.00	.00	.00	.00	50.00	.00	50.00
006	A 3	A 2	.00	.00	.00	.00	.00	50.00	.00	50.00
007	A 2	A 1	.00	.00	.00	.00	.00	50.00	.00	50.00

SEWER

SEWER ANALYSIS

CONFIGURATION DATA

RUN	U.S. ID	D.S. ID	U.S. F.L. ELEV	D.S. F.L. ELEV	LENGTH FEET	SLOPE	BBLS	RISE	SPAN	SHAPE
004	A 5	A 4	1675.39	1668.68	464	.01446	1	60	60	CIRC
005	A 4	A 3	1668.68	1667.64	72	.01444	1	60	60	CIRC
006	A 3	A 2	1667.64	1665.10	176	.01443	1	60	60	CIRC
007	A 2	A 1	1665.10	1663.17	126	.01532	2	36	36	CIRC

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HYDRAULIC DATA

RUN	U.S. ID	D.S. ID	'N'	JUNC LOSS	FLOW	U.S. HEAD	D.S. HEAD	HYDR. GRAD	DEPTH	VELOC.	PIPE CAPAC.
ENTRANCE CONTROLS. TOTAL HEAD AT UPSTREAM END FOR RUN NO. 004 IS 2.83											
004	A 5	A 4	.024	.90	50.00	1679.12	1670.53	.00126	.37	7.6	169.6
005	A 4	A 3	.024	.00	50.00	1670.53	1669.59	.00126	.37	7.1*	169.5
006	A 3	A 2	.024	.10	50.00	1669.59	1667.49	.00126	.37	5.4*	169.5
007	A 2	A 1	.024	.80	50.00	1667.49	1664.76	.00479	.53	6.6	89.4

SEW0071--*PIPE FLOW DEPTH > NORMAL DEPTH DUE TO DOWNSTREAM CONTROL, NOT INSUFFICIENT CAPACITY- VELOCITY IS BASED ON ELEVATION OF HYDRAULIC GRADE LINE AT DOWNSTREAM ELEVATION.
JUNCTION LOSSES MAY NEED TO BE CONSIDERED AT SUBMERGED JUNCTIONS

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STATIONING

RUN	UPSTREAM JUNCTION ID	STATIONING
004	A 5	838
005	A 4	374
006	A 3	302
007	A 2	126

FINISH

```
$    Storm drain system at C619 under Palisades Plaza.
$    Line A is C619 to C620.
$    Line B is C611 to C620.
$    Q=100cfs
SEWER              ANALYSIS                    SEWER     FREQUENCY=100YR
JUNC A 05 TYPE=JUNCT
JUNC A 04 TYPE=JUNCT
JUNC A 03 TYPE=JUNCT
JUNC A 02 TYPE=JUNCT
JUNC A 01 TYPE=JUNCT
OUTLET    STATIONING     0.00 T.W. ELEV 1664.50    A 01
DSGN 004  A 05 A 04 US1680.39 DS1673.68 464.0     100. 0024  010      CIRC
DSGN 005  A 04 A 03 US1673.68 DS1672.64  72.0          0024  010      CIRC
DSGN 006  A 03 A 02 US1672.64 DS1670.10 176.0          0024  010      CIRC
DSGN 007  A 02 A 01 US1668.10 DS1666.17 126.5          0024  010      CIRC
ANAL 004  A 05 A 04 1.00 60.00            1.3
ANAL 005  A 04 A 03 1.00 60.00            0.0
ANAL 006  A 03 A 02 1.00 60.00            0.1
ANAL 007  A 02 A 01 2.00 36.00            1.0
ENDATA
```


SEWER

CUMULATIVE RUNOFF CALCULATIONS FOR PIPE RUNS

RUN	U.S. I.D.	D.S. I.D.	"CA"	"TC"	AREA	CUMULATIVE "CA"	CUMULATIVE "TC"	SUPPLY Q	INTENSITY	FLOW
004	A 5	A 4	.00	.00	.00	.00	.00	100.00	.00	100.00
005	A 4	A 3	.00	.00	.00	.00	.00	100.00	.00	100.00
006	A 3	A 2	.00	.00	.00	.00	.00	100.00	.00	100.00
007	A 2	A 1	.00	.00	.00	.00	.00	100.00	.00	100.00

SEWER

SEWER ANALYSIS

CONFIGURATION DATA

RUN	U.S. ID	D.S. ID	U.S. F.L. ELEV	D.S. F.L. ELEV	LENGTH FEET	SLOPE	BBLS	RISE	SPAN	SHAPE
004	A 5	A 4	1675.39	1668.68	464	.01446	1	60	60	CIRC
005	A 4	A 3	1668.68	1667.64	72	.01444	1	60	60	CIRC
006	A 3	A 2	1667.64	1665.10	176	.01443	1	60	60	CIRC
007	A 2	A 1	1665.10	1663.17	126	.01532	2	36	36	CIRC

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HYDRAULIC DATA

RUN	U.S. ID	D.S. ID	'N'	JUNC LOSS	FLOW	U.S. HEAD	D.S. HEAD	HYDR. GRAD	DEPTH	VELOC.	PIPE CAPAC.
ENTRANCE CONTROLS. TOTAL HEAD AT UPSTREAM END FOR RUN NO. 004 IS 4.30											
004	A 5	A 4	.024	1.30	100.00	1680.99	1671.43	.00503	.55	9.0*	169.6
005	A 4	A 3	.024	.00	100.00	1671.43	1670.57	.00503	.55	8.4*	169.5
006	A 3	A 2	.024	.10	100.00	1670.57	1669.58	.00503	.55	5.4*	169.5
007	A 2	A 1	.024	1.00	100.00	1669.58	1666.17	.01916	1.00	7.1	89.4***

SEW0071--*PIPE FLOW DEPTH > NORMAL DEPTH DUE TO DOWNSTREAM CONTROL, NOT INSUFFICIENT CAPACITY- VELOCITY IS BASED ON ELEVATION OF HYDRAULIC GRADE LINE AT DOWNSTREAM ELEVATION.
JUNCTION LOSSES MAY NEED TO BE CONSIDERED AT SUBMERGED JUNCTIONS

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SEW0008--CAPACITY OF RUN 007 IS EXCEEDED.

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STATIONING

RUN	UPSTREAM JUNCTION ID	STATIONING
004	A 5	838
005	A 4	374
006	A 3	302
007	A 2	126

FINISH

```
$    Storm drain system at C619 under Palisades Plaza.
$    Line A is C619 to C620.
$    Line B is C611 to C620.
$    Q=150cfs
SEWER              ANALYSIS                    SEWER     FREQUENCY=100YR
JUNC A 05 TYPE=JUNCT
JUNC A 04 TYPE=JUNCT
JUNC A 03 TYPE=JUNCT
JUNC A 02 TYPE=JUNCT
JUNC A 01 TYPE=JUNCT
OUTLET    STATIONING     0.00 T.W. ELEV 1664.80    A 01
DSGN 004  A 05 A 04 US1680.39 DS1673.68 464.0     150. 0024  010      CIRC
DSGN 005  A 04 A 03 US1673.68 DS1672.64  72.0          0024  010      CIRC
DSGN 006  A 03 A 02 US1672.64 DS1670.10 176.0          0024  010      CIRC
DSGN 007  A 02 A 01 US1668.10 DS1666.17 126.5          0024  010      CIRC
ANAL 004  A 05 A 04 1.00 60.00            0.9
ANAL 005  A 04 A 03 1.00 60.00            0.0
ANAL 006  A 03 A 02 1.00 60.00            0.1
ANAL 007  A 02 A 01 2.00 36.00            2.0
ENDATA
```


SEWER

CUMULATIVE RUNOFF CALCULATIONS FOR PIPE RUNS

RUN	U.S. I.D.	D.S. I.D.	"CA"	"TC"	AREA	CUMULATIVE "CA"	CUMULATIVE "TC"	SUPPLY Q	INTENSITY	FLOW
004	A 5	A 4	.00	.00	.00	.00	.00	150.00	.00	150.00
005	A 4	A 3	.00	.00	.00	.00	.00	150.00	.00	150.00
006	A 3	A 2	.00	.00	.00	.00	.00	150.00	.00	150.00
007	A 2	A 1	.00	.00	.00	.00	.00	150.00	.00	150.00

SEWER

SEWER ANALYSIS

CONFIGURATION DATA

RUN	U.S. ID	D.S. ID	U.S. F.L. ELEV	D.S. F.L. ELEV	LENGTH FEET	SLOPE	BBLS	RISE	SPAN	SHAPE
004	A 5	A 4	1675.39	1668.68	464	.01446	1	60	60	CIRC
005	A 4	A 3	1668.68	1667.64	72	.01444	1	60	60	CIRC
006	A 3	A 2	1667.64	1665.10	176	.01443	1	60	60	CIRC
007	A 2	A 1	1665.10	1663.17	126	.01532	2	36	36	CIRC

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HYDRAULIC DATA

RUN	U.S. ID	D.S. ID	'N'	JUNC LOSS	FLOW	U.S. HEAD	D.S. HEAD	HYDR. GRAD	DEPTH	VELOC.	PIPE CAPAC.
004	A 5	A 4	.024	.90	150.00	1682.65	1676.50	.01131	.73	7.6**	169.6
005	A 4	A 3	.024	.00	150.00	1676.50	1675.69	.01131	.73	7.6**	169.5
006	A 3	A 2	.024	.10	150.00	1675.69	1673.60	.01131	.73	7.6**	169.5
007	A 2	A 1	.024	2.00	150.00	1673.60	1666.17	.04310	1.00	10.6	89.4***

SEW0069--**PIPE FLOWING FULL DUE TO DOWNSTREAM CONTROL, NOT INSUFFICIENT CAPACITY- VELOCITY IS BASED ON FULL FLOW.
JUNCTION LOSSES MAY NEED TO BE CONSIDERED AT SUBMERGED JUNCTIONS

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SEW0008--CAPACITY OF RUN 007 IS EXCEEDED.

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STATIONING

RUN	UPSTREAM JUNCTION ID	STATIONING
004	A 5	838
005	A 4	374
006	A 3	302
007	A 2	126

FINISH

```
$    Storm drain system at C619 under Palisades Plaza.
$    Line A is C619 to C620.
$    Line B is C611 to C620.
$    Q=175cfs
SEWER              ANALYSIS                    SEWER     FREQUENCY=100YR
JUNC A 05 TYPE=JUNCT
JUNC A 04 TYPE=JUNCT
JUNC A 03 TYPE=JUNCT
JUNC A 02 TYPE=JUNCT
JUNC A 01 TYPE=JUNCT
OUTLET    STATIONING     0.00 T.W. ELEV 1664.90    A 01
DSGN 004  A 05 A 04 US1680.39 DS1673.68 464.0     175. 0024  010      CIRC
DSGN 005  A 04 A 03 US1673.68 DS1672.64  72.0          0024  010      CIRC
DSGN 006  A 03 A 02 US1672.64 DS1670.10 176.0          0024  010      CIRC
DSGN 007  A 02 A 01 US1668.10 DS1666.17 126.5          0024  010      CIRC
ANAL 004  A 05 A 04 1.00 60.00            1.2
ANAL 005  A 04 A 03 1.00 60.00            0.0
ANAL 006  A 03 A 02 1.00 60.00            0.1
ANAL 007  A 02 A 01 2.00 36.00            2.9
ENDATA
```


SEWER

CUMULATIVE RUNOFF CALCULATIONS FOR PIPE RUNS

RUN	U.S. I.D.	D.S. I.D.	"CA"	"TC"	AREA	CUMULATIVE "CA"	CUMULATIVE "TC"	SUPPLY Q	INTENSITY	FLOW
004	A 5	A 4	.00	.00	.00	.00	.00	175.00	.00	175.00
005	A 4	A 3	.00	.00	.00	.00	.00	175.00	.00	175.00
006	A 3	A 2	.00	.00	.00	.00	.00	175.00	.00	175.00
007	A 2	A 1	.00	.00	.00	.00	.00	175.00	.00	175.00

SEWER

SEWER ANALYSIS

CONFIGURATION DATA

RUN	U.S. ID	D.S. ID	U.S. F.L. ELEV	D.S. F.L. ELEV	LENGTH FEET	SLOPE	BBLS	RISE	SPAN	SHAPE
004	A 5	A 4	1675.39	1668.68	464	.01446	1	60	60	CIRC
005	A 4	A 3	1668.68	1667.64	72	.01444	1	60	60	CIRC
006	A 3	A 2	1667.64	1665.10	176	.01443	1	60	60	CIRC
007	A 2	A 1	1665.10	1663.17	126	.01532	2	36	36	CIRC

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HYDRAULIC DATA

RUN	U.S. ID	D.S. ID	'N'	JUNC LOSS	FLOW	U.S. HEAD	D.S. HEAD	HYDR. GRAD	DEPTH	VELOC.	PIPE CAPAC.
004	A 5	A 4	.024	1.20	175.00	1688.72	1680.38	.01539	1.00	8.9	169.6***
005	A 4	A 3	.024	.00	175.00	1680.38	1679.27	.01539	1.00	8.9	169.5***
006	A 3	A 2	.024	.10	175.00	1679.27	1676.46	.01539	1.00	8.9	169.5***
007	A 2	A 1	.024	2.90	175.00	1676.46	1666.17	.05866	1.00	12.4	89.4***

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SEW0008--CAPACITY OF RUN 004 IS EXCEEDED.
SEW0008--CAPACITY OF RUN 005 IS EXCEEDED.
SEW0008--CAPACITY OF RUN 006 IS EXCEEDED.
SEW0008--CAPACITY OF RUN 007 IS EXCEEDED.

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STATIONING

RUN	UPSTREAM JUNCTION ID	STATIONING
004	A 5	838
005	A 4	374
006	A 3	302
007	A 2	126

FINISH

```
$    Storm drain system at C619 under Palisades Plaza.
$    Line A is C619 to C620.
$    Line B is C611 to C620.
$    Q=200cfs
SEWER              ANALYSIS                    SEWER     FREQUENCY=100YR
JUNC A 05 TYPE=JUNCT
JUNC A 04 TYPE=JUNCT
JUNC A 03 TYPE=JUNCT
JUNC A 02 TYPE=JUNCT
JUNC A 01 TYPE=JUNCT
OUTLET    STATIONING     0.00 T.W. ELEV 1665.50    A 01
DSGN 004  A 05 A 04 US1680.39 DS1673.68 464.0     200. 0024  010      CIRC
DSGN 005  A 04 A 03 US1673.68 DS1672.64  72.0          0024  010      CIRC
DSGN 006  A 03 A 02 US1672.64 DS1670.10 176.0          0024  010      CIRC
DSGN 007  A 02 A 01 US1668.10 DS1666.17 126.5          0024  010      CIRC
ANAL 004  A 05 A 04 1.00 60.00            1.6
ANAL 005  A 04 A 03 1.00 60.00            0.0
ANAL 006  A 03 A 02 1.00 60.00            0.2
ANAL 007  A 02 A 01 2.00 36.00            3.7
ENDATA
```


SEWER

CUMULATIVE RUNOFF CALCULATIONS FOR PIPE RUNS

RUN	U.S. I.D.	D.S. I.D.	"CA"	"TC"	AREA	CUMULATIVE "CA"	CUMULATIVE "TC"	SUPPLY Q	INTENSITY	FLOW
004	A 5	A 4	.00	.00	.00	.00	.00	200.00	.00	200.00
005	A 4	A 3	.00	.00	.00	.00	.00	200.00	.00	200.00
006	A 3	A 2	.00	.00	.00	.00	.00	200.00	.00	200.00
007	A 2	A 1	.00	.00	.00	.00	.00	200.00	.00	200.00

SEWER

SEWER ANALYSIS

CONFIGURATION DATA

RUN	U.S. ID	D.S. ID	U.S. F.L. ELEV	D.S. F.L. ELEV	LENGTH FEET	SLOPE	BBLS	RISE	SPAN	SHAPE
004	A 5	A 4	1675.39	1668.68	464	.01446	1	60	60	CIRC
005	A 4	A 3	1668.68	1667.64	72	.01444	1	60	60	CIRC
006	A 3	A 2	1667.64	1665.10	176	.01443	1	60	60	CIRC
007	A 2	A 1	1665.10	1663.17	126	.01532	2	36	36	CIRC

1 TEXAS DEPARTMENT OF TRANSPORTATION
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THYSYS TEXAS HYDRAULICS SYSTEM DOS- VER 2.4.2
1992
THYSYS 26-Oct-1993
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HYDRAULIC DATA

RUN	U.S. ID	D.S. ID	'N'	JUNC LOSS	FLOW	U.S. HEAD	D.S. HEAD	HYDR. GRAD	DEPTH	VELOC.	PIPE CAPAC.
004	A 5	A 4	.024	1.60	200.00	1695.64	1684.71	.02010	1.00	10.2	169.6***
005	A 4	A 3	.024	.00	200.00	1684.71	1683.26	.02010	1.00	10.2	169.5***
006	A 3	A 2	.024	.20	200.00	1683.26	1679.52	.02010	1.00	10.2	169.5***
007	A 2	A 1	.024	3.70	200.00	1679.52	1666.17	.07662	1.00	14.1	89.4***

1 TEXAS DEPARTMENT OF TRANSPORTATION
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THYSYS TEXAS HYDRAULICS SYSTEM DOS- VER 2.4.2
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SEW0008--CAPACITY OF RUN 004 IS EXCEFDED.
SEW0008--CAPACITY OF RUN 005 IS EXCEEDED.
SEW0008--CAPACITY OF RUN 006 IS EXCEEDED.
SEW0008--CAPACITY OF RUN 007 IS EXCEEDED.

1 TEXAS DEPARTMENT OF TRANSPORTATION
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THYSYS TEXAS HYDRAULICS SYSTEM DOS- VER 2.4.2
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STATIONING

RUN	UPSTREAM JUNCTION ID	STATIONING
004	A 5	838
005	A 4	374
006	A 3	302
007	A 2	126

FINISH

```
$    Storm drain system at C619 under Palisades Plaza.
$    Line A is C619 to C620.
$    Line B is C611 to C620.
$    Q=250cfs
SEWER              ANALYSIS                    SEWER     FREQUENCY=100YR
JUNC A 05 TYPE=JUNCT
JUNC A 04 TYPE=JUNCT
JUNC A 03 TYPE=JUNCT
JUNC A 02 TYPE=JUNCT
JUNC A 01 TYPE=JUNCT
OUTLET    STATIONING     0.00 T.W. ELEV 1665.50    A 01
DSGN 004  A 05 A 04 US1680.39 DS1673.68 464.0     250. 0024  010      CIRC
DSGN 005  A 04 A 03 US1673.68 DS1672.64  72.0          0024  010      CIRC
DSGN 006  A 03 A 02 US1672.64 DS1670.10 176.0          0024  010      CIRC
DSGN 007  A 02 A 01 US1668.10 DS1666.17 126.5          0024  010      CIRC
ANAL 004  A 05 A 04 1.00 60.00            2.5
ANAL 005  A 04 A 03 1.00 60.00            0.0
ANAL 006  A 03 A 02 1.00 60.00            0.3
ANAL 007  A 02 A 01 2.00 36.00            5.9
ENDATA
```


SEWER

CUMULATIVE RUNOFF CALCULATIONS FOR PIPE RUNS

RUN	U.S. I.D.	D.S. I.D.	"CA"	"TC"	AREA	CUMULATIVE "CA"	CUMULATIVE "TC"	SUPPLY Q	INTENSITY	FLOW
004	A 5	A 4	.00	.00	.00	.00	.00	250.00	.00	250.00
005	A 4	A 3	.00	.00	.00	.00	.00	250.00	.00	250.00
006	A 3	A 2	.00	.00	.00	.00	.00	250.00	.00	250.00
007	A 2	A 1	.00	.00	.00	.00	.00	250.00	.00	250.00

SEWER

SEWER ANALYSIS

CONFIGURATION DATA

RUN	U.S. ID	D.S. ID	U.S. F.L. ELEV	D.S. F.L. ELEV	LENGTH FEET	SLOPE	BBLS	RISE	SPAN	SHAPE
004	A 5	A 4	1675.39	1668.68	464	.01446	1	60	60	CIRC
005	A 4	A 3	1668.68	1667.64	72	.01444	1	60	60	CIRC
006	A 3	A 2	1667.64	1665.10	176	.01443	1	60	60	CIRC
007	A 2	A 1	1665.10	1663.17	126	.01532	2	36	36	CIRC

1 TEXAS DEPARTMENT OF TRANSPORTATION
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THYSYS TEXAS HYDRAULICS SYSTEM DOS- VER 2.4.2
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HYDRAULIC DATA

RUN	U.S. ID	D.S. ID	'N'	JUNC LOSS	FLOW	U.S. HEAD	D.S. HEAD	HYDR. GRAD	DEPTH	VELOC.	PIPE CAPAC.
004	A 5	A 4	.024	2.50	250.00	1712.32	1695.24	.03141	1.00	12.7	169.6***
005	A 4	A 3	.024	.00	250.00	1695.24	1692.98	.03141	1.00	12.7	169.5***
006	A 3	A 2	.024	.30	250.00	1692.98	1687.16	.03141	1.00	12.7	169.5***
007	A 2	A 1	.024	5.90	250.00	1687.16	1666.17	.11972	1.00	17.7	89.4***

1 TEXAS DEPARTMENT OF TRANSPORTATION
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THYSYS TEXAS HYDRAULICS SYSTEM DOS- VER 2.4.2
1992
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9:37

SEW0008--CAPACITY OF RUN 004 IS EXCEEDED.
SEW0008--CAPACITY OF RUN 005 IS EXCEFDED.
SEW0008--CAPACITY OF RUN 006 IS EXCEEDED.
SEW0008--CAPACITY OF RUN 007 IS EXCEEDED.

1 TEXAS DEPARTMENT OF TRANSPORTATION
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THYSYS TEXAS HYDRAULICS SYSTEM DOS- VER 2.4.2
1992
THYSYS 26-Oct-1993
9:37

STATIONING

RUN	UPSTREAM JUNCTION ID	STATIONING
004	A 5	838
005	A 4	374
006	A 3	302
007	A 2	126

FINISH

```
*******************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*******************************************


    PROJECT:  Fountain Hills North FIS
    ENGINEER:  C619 Detention Basin Weir Flow
    DATE:  10/26/1993
    TIME:  12:32.37




---------------------------------------------
    INPUT PARAMETERS
---------------------------------------------


    STARTING WSEL:       1692.00
    MAXIMUM WSEL:        1696.00
    STEP SIZE:              0.20
    BREADTH OF WEIR:       10.00
```

```
*********************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills North FIS
    DATE:  10/26/1993
    TIME:  12:32.37
*********************************************
```

POINT	ELEVATION	STATION
1	1696.00	1012.00
2	1694.00	1028.00
3	1692.00	1056.00
4	1692.00	1086.00
5	1694.00	1138.00
6	1696.00	1196.00

```
*********************************************
    WEIR COEFFICIENT TABLE
    PROJECT:  Fountain Hills North FIS
    DATE:  10/26/1993
    TIME:  12:32.37
*********************************************
```

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.5667
3	0.40	2.6333
4	0.60	2.7000
5	0.80	2.7667
6	1.00	2.8333
7	1.20	2.9000
8	1.40	2.9667
9	1.60	3.0022
10	1.80	3.0067
11	2.00	3.0111
12	2.20	3.0156
13	2.40	3.0200
14	2.60	3.0244
15	2.80	3.0289
16	3.00	3.0333
17	3.20	3.0378
18	3.40	3.0422
19	3.60	3.0467
20	3.80	3.0511

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
    PROJECT:  Fountain Hills North FIS
    DATE:  10/26/1993
    TIME:  12:32.37
*********************************************
```

ELEVATION	DISCHARGE (CFS)
1692.00	0.00
1692.20	7.61
1692.40	24.13
1692.60	49.22
1692.80	83.47
1693.00	127.61
1693.20	182.42
1693.40	248.73
1693.60	325.47
1693.80	412.37
1694.00	511.69
1694.20	627.81
1694.40	759.05
1694.60	900.86
1694.80	1051.08
1695.00	1214.53
1695.20	1391.70
1695.40	1583.08
1695.60	1789.19
1695.80	2010.60

C504 Flow Split Table

Stage (ft)	Discharge, in cfs		
	Left Channel	Right Channel	Total
1538.14	0	---	0
1540.00	11	---	11
1541.66	20	0	20
1541.80	20	2	22
1542.00	21	4	24
1542.20	22	8	30
1542.40	22	19	41
1542.60	23	37	60
1542.80	23	62	85
1543.00	24	97	121
1543.20	24	147	171
1543.40	25	215	240
1543.60	26	296	322
1543.74	26	370	396

* Note: Weir flow over the road will start at EL > 1543.74

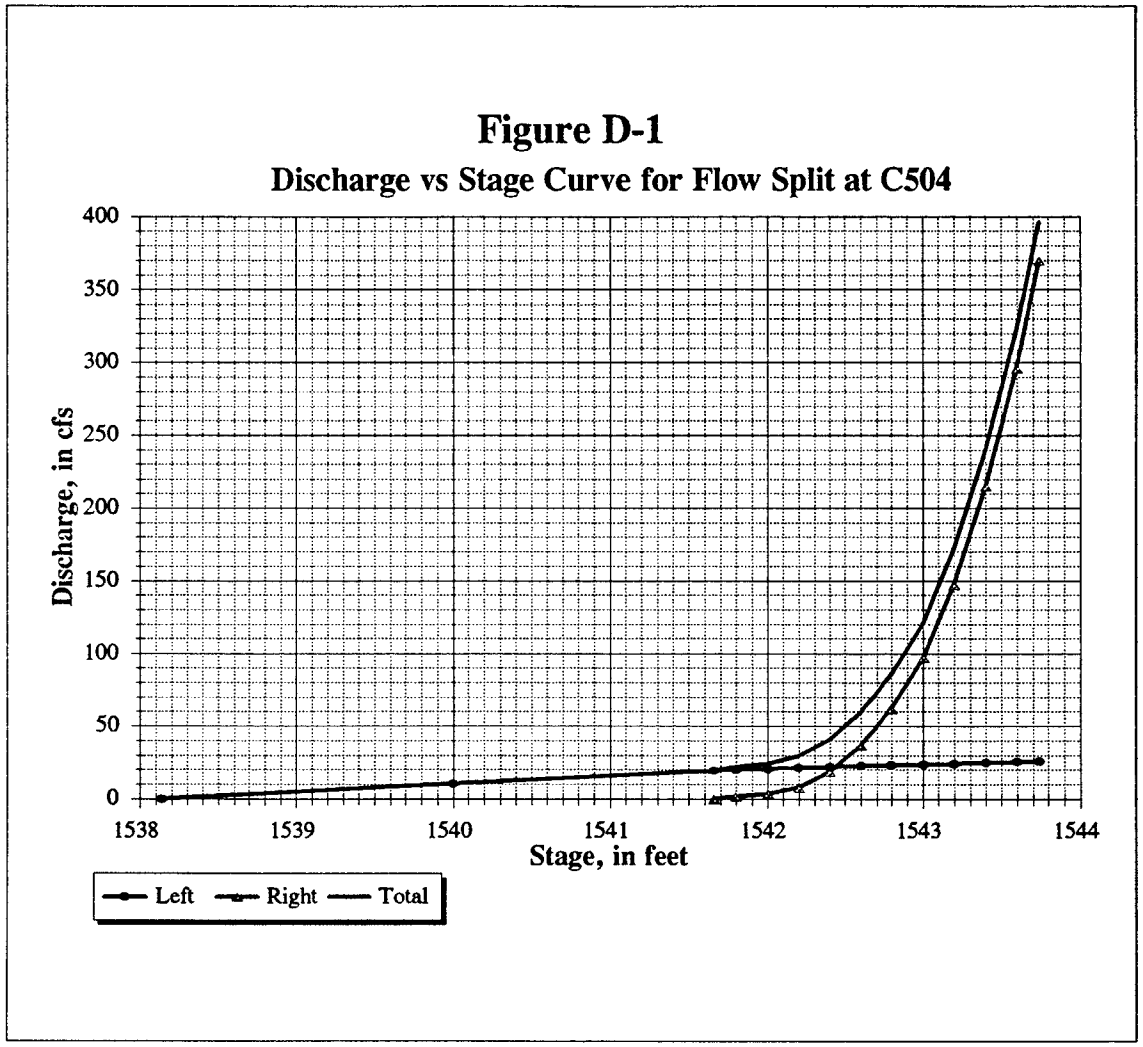
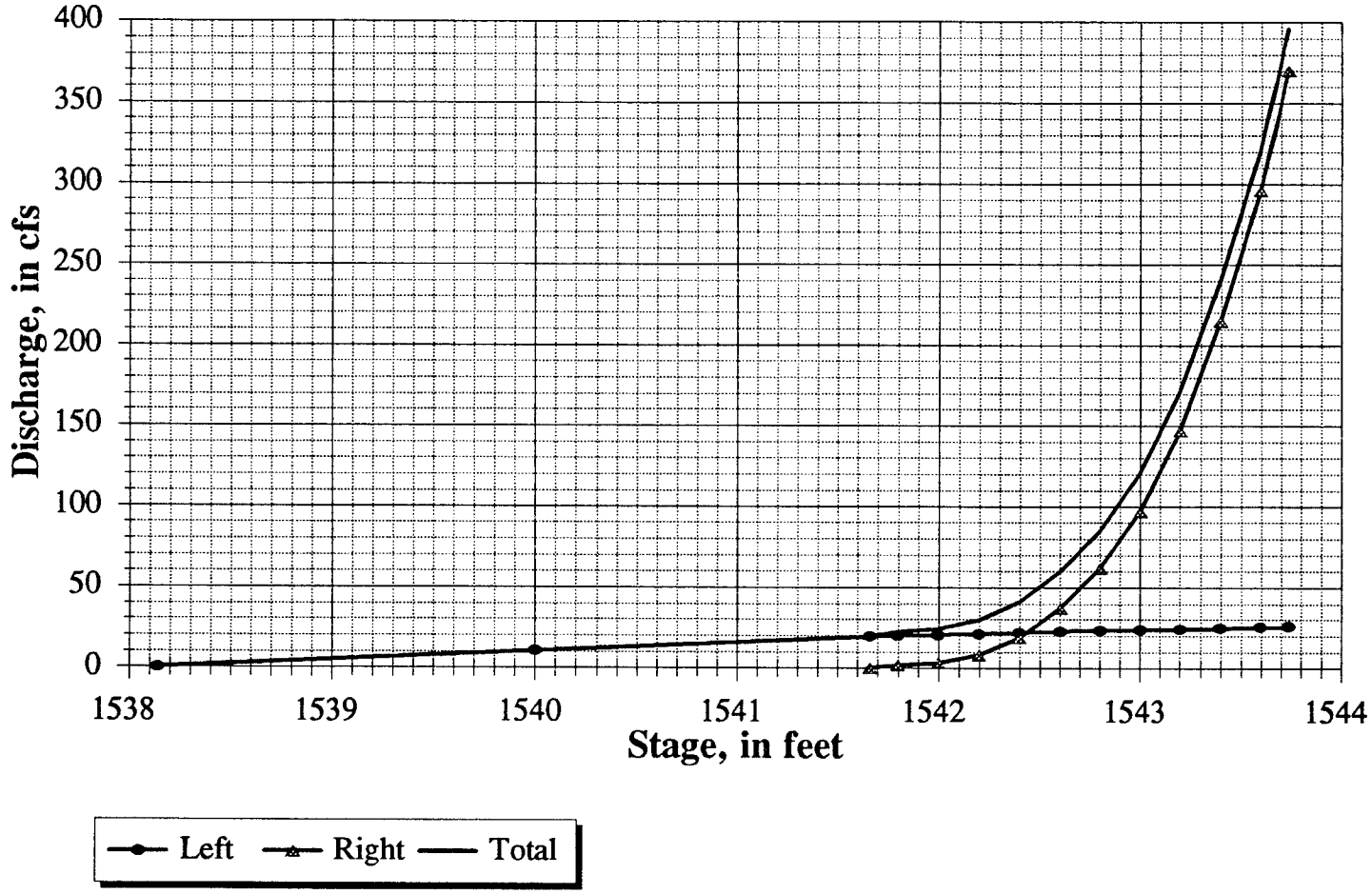


Figure D-1

Discharge vs Stage Curve for Flow Split at C504

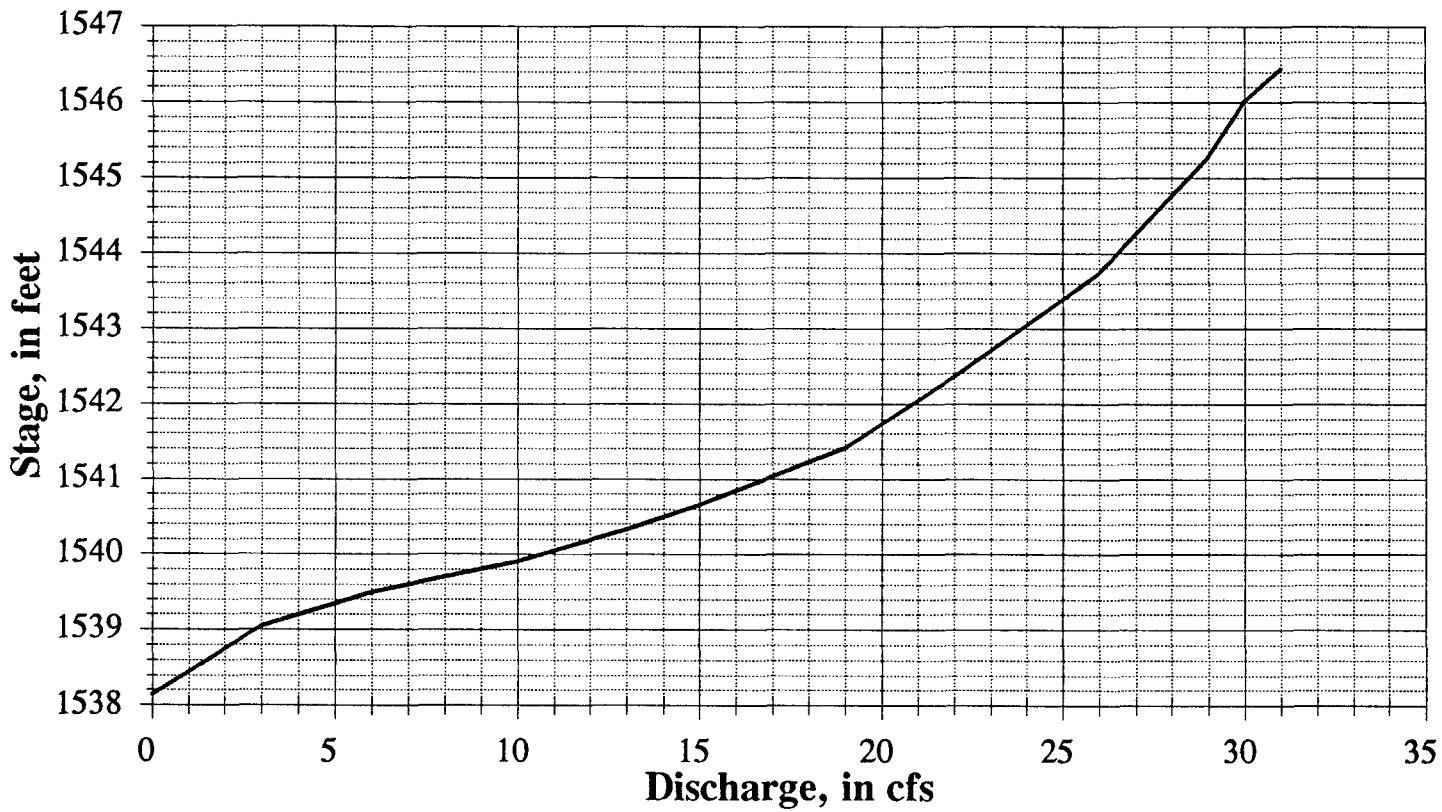


flowsplt.wb1

21-Jun-93

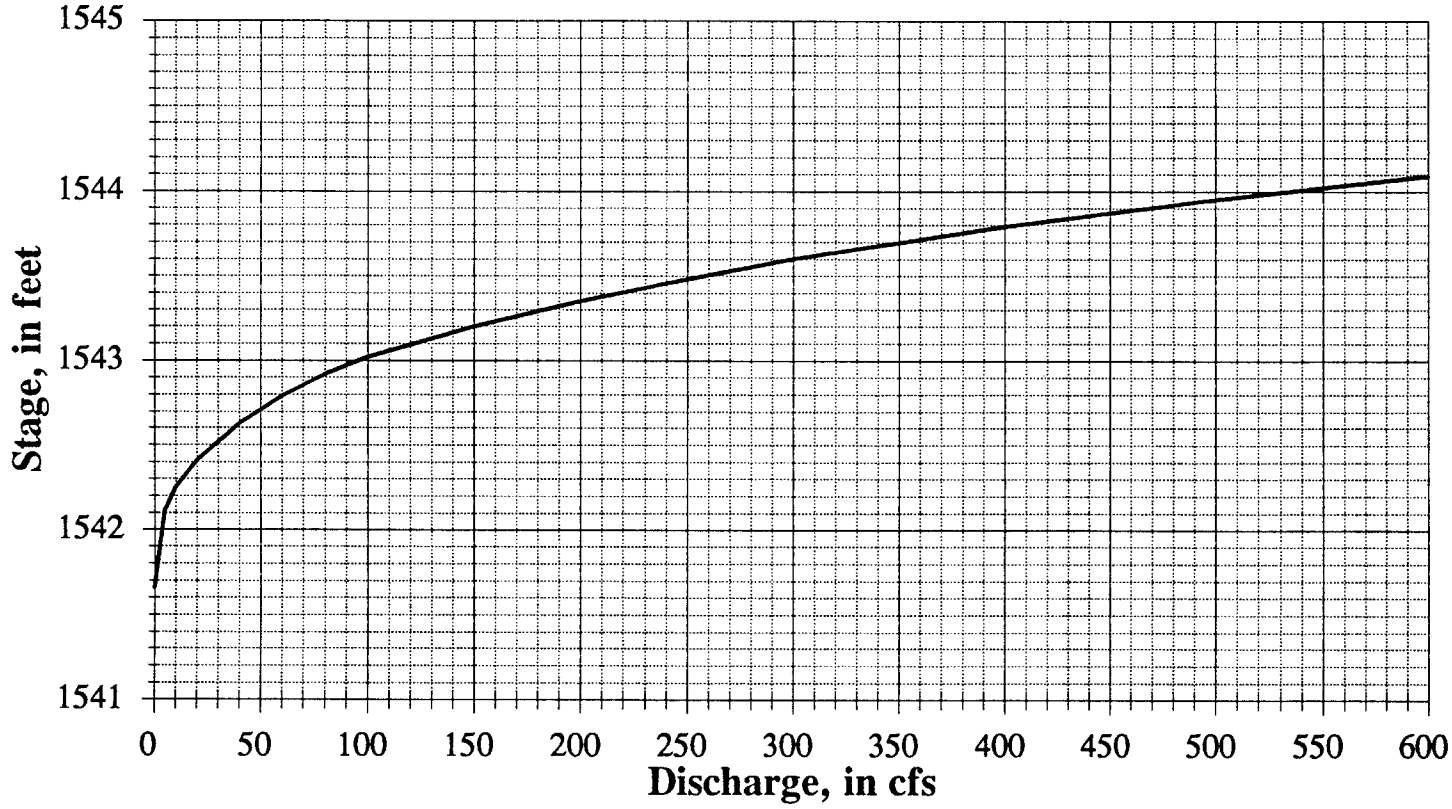
C504 Stage vs Discharge

Left Channel (Culvert Flow) from HY8



C504 Stage vs Discharge

Right Channel (Ditch Flow) from HEC-2



Refer to Appendix A for supporting calculations

C505 Flow Split Table

Stage (ft)	Discharge, in cfs		
	Left Channel	Right Channel	Total
1536.34	0	---	0
1537.40	3	---	3
1538.00	7	---	7
1538.30	9	---	9
1538.77	11	0	11
1539.00	12	2	14
1539.20	12	3	15
1539.40	13	4	17
1539.60	14	9	23
1539.80	14	17	31
1540.00	15	29	44
1540.20	15	40	55
1540.40	16	59	75
1540.60	16	79	95
1540.80	16	107	123
1540.85	17	117	134

* Note: Weir flow over the road will start at EL > 1540.85

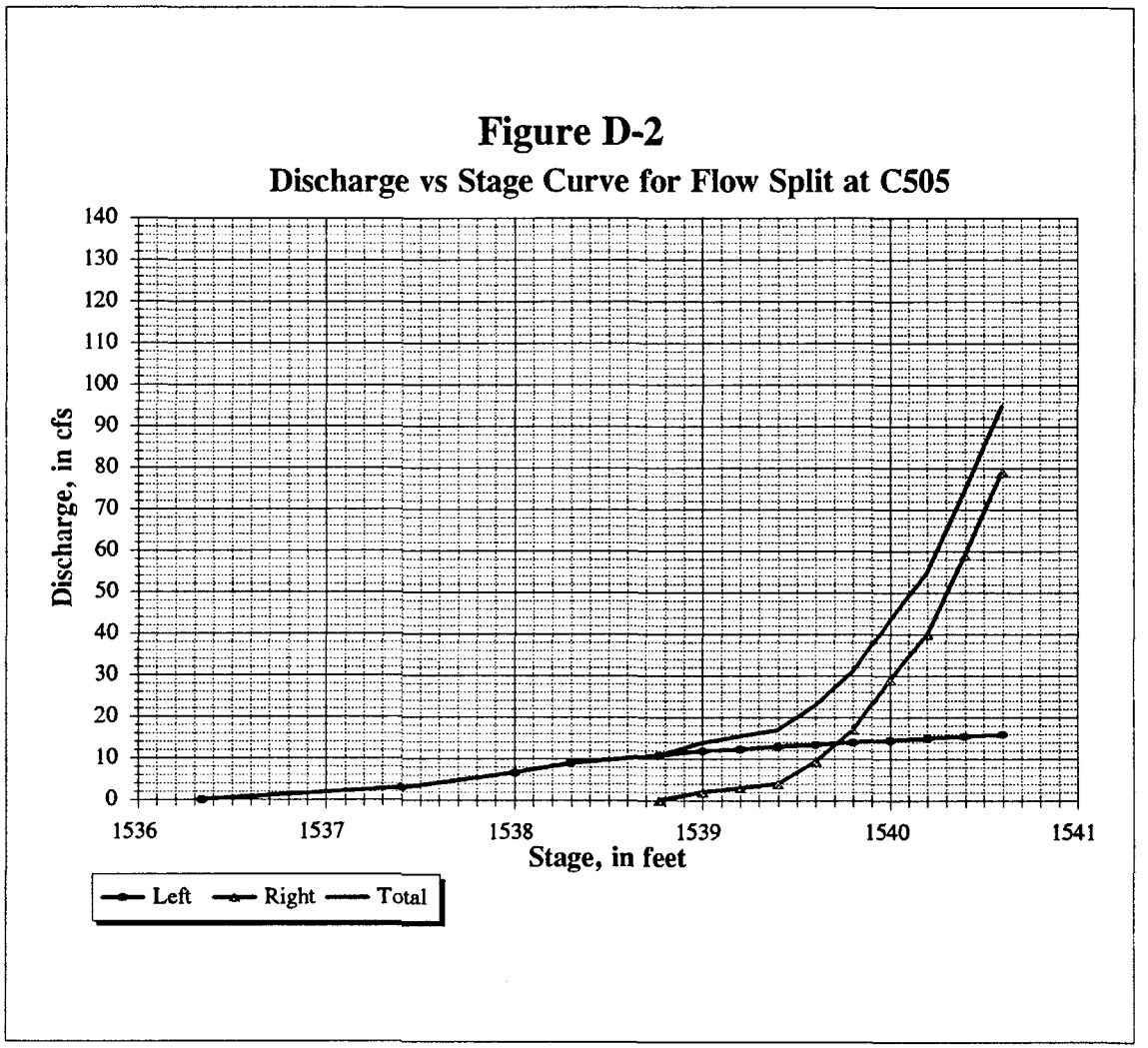
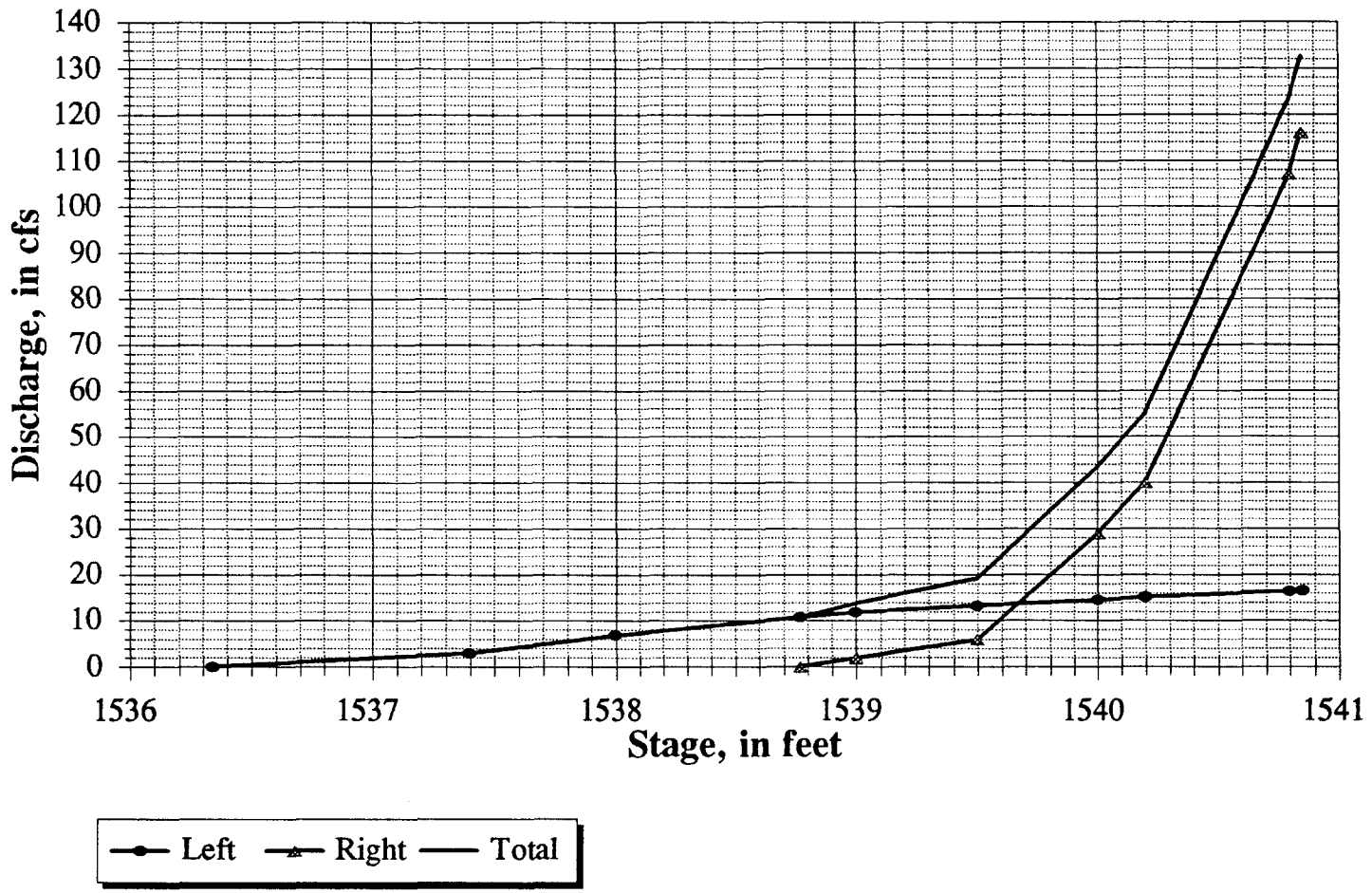


Figure D-2

Discharge vs Stage Curve for Flow Split at C505

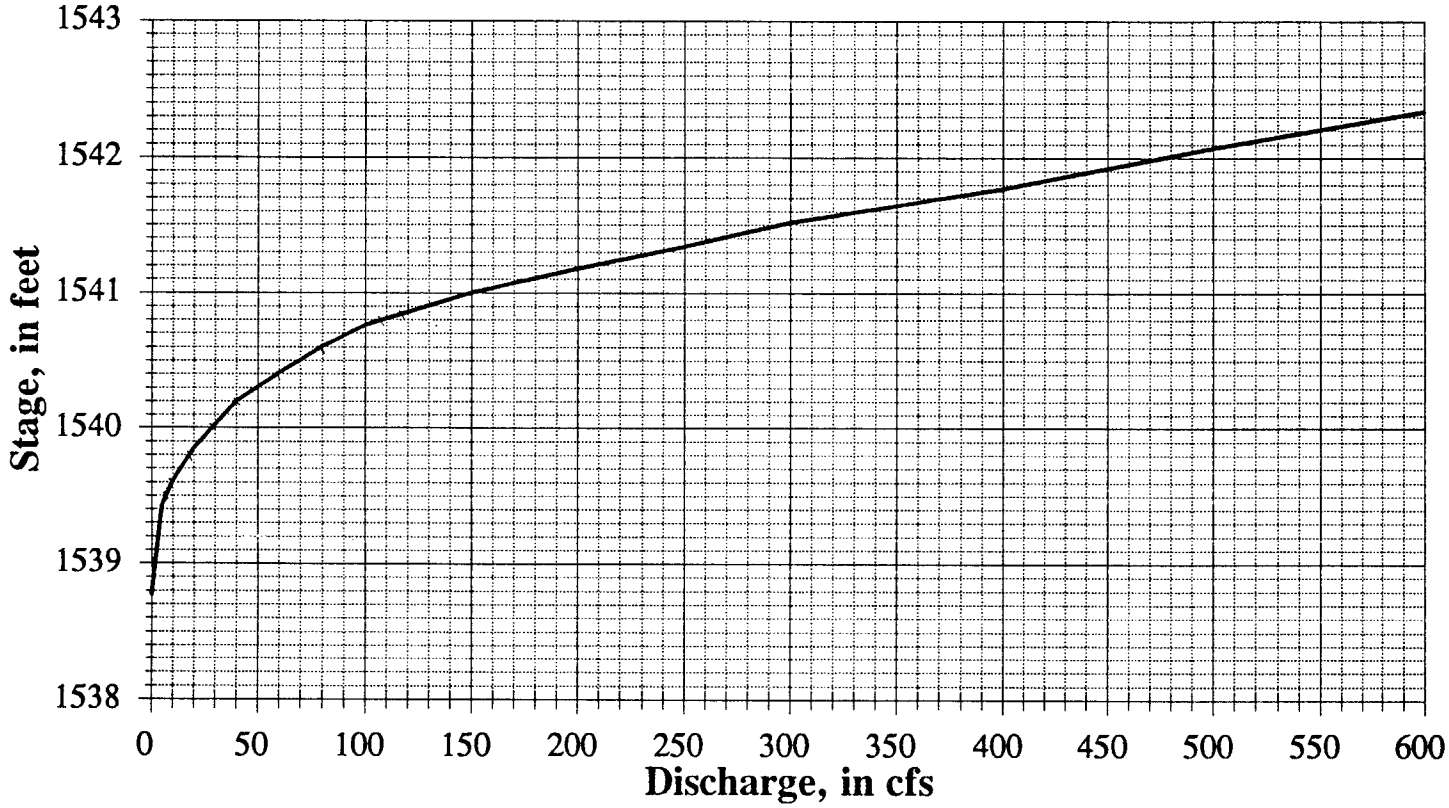


flowsplt.wb1

21-Jun-93

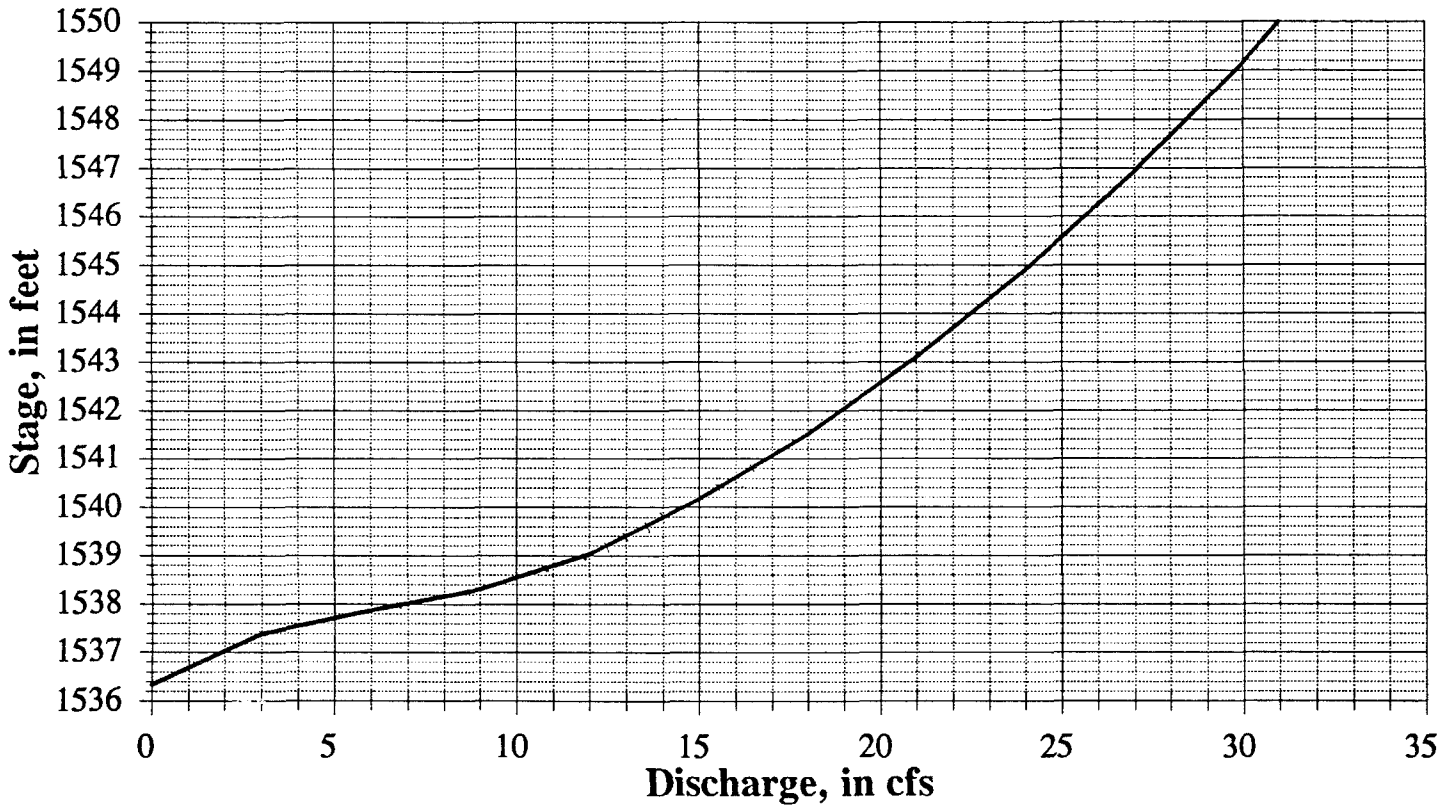
C505 Stage vs Discharge

Right Channel (Ditch Flow) from HEC-2



C505 Stage vs Discharge

Left Channel (Culvert Flow) from HY8



CURRENT DATE: 06-18-1993
CURRENT TIME: 20:30:14

FILE DATE: 06-16-1993
FILE NAME: C505

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1536.34	1535.64	70.00	1 CSP	1.75	1.75	.022	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C505 DATE: 06-16-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1536.34	0	0	0	0	0	0	0	0	1
1537.37	3	3	0	0	0	0	0	0	1
1537.87	6	6	0	0	0	0	0	0	1
1538.30	9	9	0	0	0	0	0	0	1
1539.04	12	12	0	0	0	0	0	0	1
1540.16	15	15	0	0	0	0	0	0	1
1541.51	18	18	0	0	0	0	0	0	1
1543.09	21	21	0	0	0	0	0	0	1
1544.90	24	24	0	0	0	0	0	0	1
1546.90	27	27	0	0	0	0	0	0	1
1549.13	30	30	0	0	0	0	0	0	1
1550.00	31	31	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C505 DATE: 06-16-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1536.34	0.00	0	0	0.00
1537.37	0.00	3	0	0.00
1537.87	0.00	6	0	0.00
1538.30	0.00	9	0	0.00
1539.04	0.00	12	0	0.00
1540.16	0.00	15	0	0.00
1541.51	0.00	18	0	0.00
1543.09	0.00	21	0	0.00
1544.90	0.00	24	0	0.00

1546.90	0.00	27	0	0.00
1549.13	0.00	30	0	0.00

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 06-18-1993 FILE DATE: 06-16-1993
CURRENT TIME: 20:30:14 FILE NAME: C505

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (1.75 BY 1.75) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1536.34	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
3	1537.37	0.93	1.03	2-M2c	0.68	0.62	3.89	0.62	2.05	0.22
6	1537.87	1.42	1.53	2-M2c	1.02	0.90	4.81	0.90	2.45	0.30
9	1538.30	1.89	1.96	2-M2c	1.38	1.11	5.59	1.11	2.74	0.37
12	1539.04	2.46	2.70	6-FFn	1.75	1.29	4.99	1.75	2.97	0.42
15	1540.16	3.19	3.82	6-FFn	1.75	1.43	6.24	1.75	3.15	0.47
18	1541.51	4.12	5.17	6-FFn	1.75	1.54	7.48	1.75	3.32	0.52
21	1543.09	5.25	6.75	6-FFn	1.75	1.64	8.73	1.75	3.46	0.56
24	1544.90	6.59	8.56	6-FFn	1.75	1.75	9.98	1.75	3.59	0.60
27	1546.90	8.13	10.56	6-FFn	1.75	1.75	11.23	1.75	3.70	0.63
30	1549.13	9.83	12.79	6-FFn	1.75	1.75	12.47	1.75	3.81	0.67

El. inlet face invert 1536.34 ft El. outlet invert 1535.64 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION (FT)                      0.00
      INLET ELEVATION (FT)                 1536.34
      OUTLET STATION (FT)                    70.00
      OUTLET ELEVATION (FT)                1535.64
      NUMBER OF BARRELS                       1
      SLOPE (V-FT/H-FT)                       0.0100
      CULVERT LENGTH ALONG SLOPE (FT)        70.00

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          CIRCULAR
      BARREL DIAMETER         1.75 FT
      BARREL MATERIAL       CORRUGATED STEEL
      BARREL MANNING'S N    0.022
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   THIN EDGE PROJECTING
      INLET DEPRESSION      NONE
```

CURRENT DATE: 06-18-1993
CURRENT TIME: 20:30:14

FILE DATE: 06-16-1993
FILE NAME: C505

TAILWATER

***** USER DEFINED CHANNEL CROSS-SECTION
MAIN CHANNEL AND LT & RT OVER BANKS

FILE NAME: C505
FILE DATE: 06-16-1993

LEFT CHANNEL BOUNDARY	4
RIGHT CHANNEL BOUNDARY	7
MANNING N LEFT OVER BANK	0.055
MANNING N MAIN CHANNEL	0.035
MANNING N RIGHT OVER BAN	0.060
SLOPE OF CHANNEL (FT/FT)	0.0210

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	1000.00	1545.64
2	1010.00	1543.64
3	1021.00	1541.64
4	1031.00	1539.64
5	1059.00	1537.64
6	1083.00	1535.64
7	1090.00	1535.64
8	1107.00	1537.64
9	1118.00	1539.64
10	1130.00	1541.64
11	1143.00	1543.64
12	1155.00	1545.64

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1535.64	0.000	0.00	0.00	0.00
3.00	1535.86	0.824	0.22	2.05	0.25
6.00	1535.94	0.861	0.30	2.45	0.33
9.00	1536.01	0.885	0.37	2.74	0.39
12.00	1536.06	0.903	0.42	2.97	0.44
15.00	1536.11	0.917	0.47	3.15	0.48
18.00	1536.16	0.928	0.52	3.32	0.52
21.00	1536.20	0.938	0.56	3.46	0.55
24.00	1536.24	0.946	0.60	3.59	0.58
27.00	1536.27	0.954	0.63	3.70	0.61
30.00	1536.31	0.961	0.67	3.81	0.64

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	1.00
CREST LENGTH (FT)	1.00
OVERTOPPING CREST ELEVATION (FT)	1550.00

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    22JUN93    TIME   19:05:53 *
 *****************************************
```

```
*************************************
 *  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
```

```
1
   22JUN93      19:05:53                                                                                PAGE    1


                                                                                THIS RUN EXECUTED 22JUN93    19:05:53
 ************************************
  HEC-2 WATER SURFACE PROFILES

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


 T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY:  FCD#92-04
 T2      FOUNTAIN HILLS NORTH FIS STUDY by GVSCE                dtp
 T3                                                   FILE:     CH505.IH2
 T4
 T5              This model is used to develop a rating curve for culvert 505
 T6              Ditch flow to south of C505 is diverted to C506
 T7
 T8      Single X-Section Run
                 Ditch slope =     .020 ft/ft  From 200 scale map

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           .020

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1                  -1                                      -1


    SECNO       Q   CWSEL   DEPTH     VCH   CRIWS      EG      HL   SLOPE  KRATIO

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38         43          1          8         26          2          3         11          5         58


         Manning's n:          Min  Normal     Max
                  Earth      .015    .022    .030
               Pavement      .013    .016    .020
                 Desert      .040    .060    .080
               Veg Des.      .070    .100    .160

                 Earthy
    earth  desert  desert

 NC     .020       .055       .035        .1         .3
 QT       14          5         10        20         40         60         80        100        150        200
 QT      250        300        400       500        600


         X-Section 1
            this section needs to be input from 200 scale map
 X1        1          7       1022       1046
 GR     1543     999.99    1540.85       1000    1540.57       1014    1539.77       1022    1538.77       1026
 GR     1542       1046       1543       1076
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1
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 X1        2                                        .2         .2         .2

 X1        3                                        .2         .2         .2

 X1        4                                        .2         .2         .2

 X1        5                                        .2         .2         .2

 X1        6                                        .2         .2         .2
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1
   22JUN93      19:05:53                                                                                PAGE    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
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*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .61   1539.38   1539.34       .00   1539.49       .11       .00       .00   1539.77
       5.0        .0       5.0        .0        .0       1.9        .0        .0        .0   1542.00
       .00       .00      2.67       .00      .000      .035      .000      .000   1538.77   1023.57
   .019890        0.        0.        0.         0        14        13       .00      6.18   1029.76


*SECNO 2.000
     2.000       .61   1539.38   1539.34       .00   1539.49       .11       .00       .00   1539.77
       5.0        .0       5.0        .0        .0       1.9        .0        .0        .0   1542.00
       .00       .00      2.63       .00      .000      .035      .000      .000   1538.77   1023.56
   .019200        0.        0.        0.         0        11         0       .00      6.22   1029.78


*SECNO 3.000
     3.000       .62   1539.39   1539.34       .00   1539.50       .10       .00       .00   1539.77
       5.0        .0       5.0        .0        .0       1.9        .0        .0        .0   1542.00
       .00       .00      2.57       .00      .000      .035      .000      .000   1538.77   1023.53
   .018074        0.        0.        0.         0        11         0       .00      6.29   1029.82


*SECNO 4.000
     4.000       .63   1539.40   1539.34       .00   1539.50       .10       .00       .00   1539.77
       5.0        .0       5.0        .0        .0       2.0        .0        .0        .0   1542.00
       .00       .00      2.50       .00      .000      .035      .000      .000   1538.77   1023.50
   .016762        0.        0.        0.         0        12         0       .00      6.38   1029.88


*SECNO 5.000
     5.000       .64   1539.41   1539.34       .00   1539.50       .09       .00       .00   1539.77
       5.0        .0       5.0        .0        .0       2.1        .0        .0        .0   1542.00
       .00       .00      2.43       .00      .000      .035      .000      .000   1538.77   1023.46
   .015482        0.        0.        0.         0        15         0       .00      6.48   1029.94


*SECNO 6.000
     6.000       .65   1539.42   1539.34       .00   1539.51       .09       .00       .00   1539.77
       5.0        .0       5.0        .0        .0       2.1        .0        .0        .0   1542.00
       .00       .00      2.36       .00      .000      .035      .000      .000   1538.77   1023.42
   .014360        0.        0.        0.         0        15         0       .00      6.57   1029.99

1
   22JUN93      19:05:53                                                                                PAGE    4

T3            Q2

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           .020

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      2                 -1                                      -1

1
   22JUN93      19:05:53                                                                                PAGE    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 2

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .79   1539.56   1539.52       .00   1539.71       .16       .00       .00   1539.77
      10.0        .0      10.0        .0        .0       3.1        .0        .0        .0   1542.00
       .00       .00      3.18       .00      .000      .035      .000      .000   1538.77   1022.86
   .020039        0.        0.        0.         0        22        14       .00      8.00   1030.86


*SECNO 2.000
     2.000       .79   1539.56   1539.52       .00   1539.72       .15       .00       .00   1539.77
      10.0        .0      10.0        .0        .0       3.2        .0        .0        .0   1542.00
       .00       .00      3.15       .00      .000      .035      .000      .000   1538.77   1022.84
   .019499        0.        0.        0.         0        11         0       .00      8.05   1030.89


*SECNO 3.000
     3.000       .80   1539.57   1539.52       .00   1539.72       .15       .00       .00   1539.77
      10.0        .0      10.0        .0        .0       3.2        .0        .0        .0   1542.00
       .00       .00      3.09       .00      .000      .035      .000      .000   1538.77   1022.81
   .018563        0.        0.        0.         0        11         0       .00      8.12   1030.93


*SECNO 4.000
     4.000       .81   1539.58   1539.52       .00   1539.73       .14       .00       .00   1539.77
      10.0        .0      10.0        .0        .0       3.3        .0        .0        .0   1542.00
       .00       .00      3.02       .00      .000      .035      .000      .000   1538.77   1022.77
   .017381        0.        0.        0.         0        11         0       .00      8.22   1030.99


*SECNO 5.000
     5.000       .83   1539.60   1539.52       .00   1539.73       .13       .00       .00   1539.77
      10.0        .0      10.0        .0        .0       3.4        .0        .0        .0   1542.00
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      .00       .00      2.93       .00      .000      .035      .000      .000   1538.77   1022.73
   .016158       0.        0.        0.         0        11         0       .00      8.33   1031.06

 *SECNO 6.000
     6.000       .84   1539.61   1539.52       .00   1539.73       .13       .00       .00   1539.77
      10.0        .0      10.0        .0        .0       3.5        .0        .0        .0   1542.00
       .00       .00      2.85       .00      .000      .035      .000      .000   1538.77   1022.68
   .015001       0.        0.        0.         0        15         0       .00      8.45   1031.13
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1
   22JUN93      19:05:53                                                                          PAGE    6

 T3            Q3

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 4                           .020

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       3                 -1                                      -1
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1
   22JUN93      19:05:53                                                                          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

 *PROF 3

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000      1.02   1539.79   1539.76       .00   1540.01       .22       .00       .00   1539.77
      20.0        .0      20.0        .0        .0       5.3        .0        .0        .0   1542.00
       .00       .11      3.79       .00      .020      .035      .000      .000   1538.77   1021.83
   .020036       0.        0.        0.         0        12        14       .00     10.47   1032.30

 *SECNO 2.000
     2.000      1.02   1539.79   1539.76       .00   1540.01       .22       .00       .00   1539.77
      20.0        .0      20.0        .0        .0       5.3        .0        .0        .0   1542.00
       .00       .10      3.77       .00      .020      .035      .000      .000   1538.77   1021.79
   .019581       0.        0.        0.         0         8         0       .00     10.53   1032.32

 *SECNO 3.000
     3.000      1.04   1539.81   1539.76       .00   1540.02       .21       .00       .00   1539.77
      20.0        .0      20.0        .0        .0       5.4        .0        .0        .0   1542.00
       .00       .10      3.71       .00      .020      .035      .000      .000   1538.77   1021.71
   .018748       0.        0.        0.         0         8         0       .00     10.66   1032.37

 *SECNO 4.000
     4.000      1.05   1539.82   1539.76       .00   1540.02       .20       .00       .00   1539.77
      20.0        .0      20.0        .0        .0       5.5        .0        .0        .0   1542.00
       .00       .10      3.63       .00      .020      .035      .000      .000   1538.77   1021.60
   .017645       0.        0.        0.         0        11         0       .00     10.83   1032.44

 *SECNO 5.000
     5.000      1.07   1539.84   1539.75       .00   1540.03       .19       .00       .00   1539.77
      20.0        .0      20.0        .0        .0       5.7        .0        .0        .0   1542.00
       .00       .09      3.51       .00      .020      .035      .000      .000   1538.77   1021.42
   .015963       0.        0.        0.         1         9         0       .00     11.13   1032.55

 *SECNO 6.000
     6.000      1.08   1539.85   1539.76       .00   1540.03       .18       .00       .00   1539.77
      20.0        .0      20.0        .0        .0       5.8        .0        .0        .0   1542.00
       .00       .09      3.43       .00      .020      .035      .000      .000   1538.77   1021.29
   .014904       0.        0.        0.         0         9         0       .00     11.34   1032.63
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1
   22JUN93      19:05:53                                                                          PAGE    8

 T3            Q4

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 5                           .020

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       4                 -1                                      -1
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1
   22JUN93      19:05:53                                                                          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

 *PROF 4
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CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      1.31   1540.08   1540.08       .00   1540.39       .31       .00       .00   1539.77
      40.0       1.4      38.6        .0        .5       8.5        .0        .0        .0   1542.00
       .00      2.90      4.53       .00      .020      .035      .000      .000   1538.77   1018.92
   .018593        0.        0.        0.         0        11        12       .00     15.18   1034.10

*SECNO 2.000
     2.000      1.34   1540.11   1540.09       .00   1540.40       .29       .00       .00   1539.77
      40.0       1.6      38.4        .0        .6       8.8        .0        .0        .0   1542.00
       .00      2.89      4.35       .00      .020      .035      .000      .000   1538.77   1018.67
   .016651        0.        0.        0.         0         5         0       .00     15.58   1034.25

*SECNO 3.000
     3.000      1.35   1540.12   1540.08       .00   1540.40       .28       .00       .00   1539.77
      40.0       1.7      38.3        .0        .6       8.9        .0        .0        .0   1542.00
       .00      2.88      4.28       .00      .020      .035      .000      .000   1538.77   1018.58
   .015956        0.        0.        0.         0         5         0       .00     15.73   1034.31

*SECNO 4.000
     4.000      1.40   1540.17   1540.09       .00   1540.41       .23       .00       .00   1539.77
      40.0       2.2      37.8        .0        .8       9.6        .0        .0        .0   1542.00
       .00      2.83      3.93       .00      .020      .035      .000      .000   1538.77   1018.04
   .012617        0.        0.        0.         3         8         0       .00     16.61   1034.65

*SECNO 5.000
     5.000      1.42   1540.19   1540.08       .00   1540.41       .22       .00       .00   1539.77
      40.0       2.3      37.7        .0        .8       9.8        .0        .0        .0   1542.00
       .00      2.81      3.86       .00      .020      .035      .000      .000   1538.77   1017.93
   .012041        0.        0.        0.         0        11         0       .00     16.79   1034.71

1
   22JUN93      19:05:53                                                                          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

*SECNO 6.000
     6.000      1.43   1540.20   1540.08       .00   1540.41       .22       .00       .00   1539.77
      40.0       2.4      37.6        .0        .9       9.9        .0        .0        .0   1542.00
       .00      2.80      3.79       .00      .020      .035      .000      .000   1538.77   1017.82
   .011494        0.        0.        0.         0        11         0       .00     16.97   1034.78

1
   22JUN93      19:05:53                                                                          PAGE   11

T3           Q5

J1  ICHECK   INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                6                           .020

J2  NPROF    IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     5                 -1                                      -1

1
   22JUN93      19:05:53                                                                          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

*PROF 5

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      1.54   1540.31   1540.31       .00   1540.65       .34       .00       .00   1539.77
      60.0       5.6      54.4        .0       1.4      11.5        .0        .0        .0   1542.00
       .00      3.89      4.74       .00      .020      .035      .000      .000   1538.77   1016.62
   .015890        0.        0.        0.         0        16        11       .00     18.90   1035.52

*SECNO 2.000
     2.000      1.54   1540.31   1540.30       .00   1540.65       .33       .00       .00   1539.77
      60.0       5.7      54.3        .0       1.5      11.5        .0        .0        .0   1542.00
       .00      3.88      4.72       .00      .020      .035      .000      .000   1538.77   1016.59
   .015692        0.        0.        0.         0         5         0       .00     18.95   1035.54

*SECNO 3.000
     3.000      1.55   1540.32   1540.30       .00   1540.65       .33       .00       .00   1539.77
      60.0       5.8      54.2        .0       1.5      11.6        .0        .0        .0   1542.00
       .00      3.86      4.67       .00      .020      .035      .000      .000   1538.77   1016.52
   .015292        0.        0.        0.         0         5         0       .00     19.06   1035.58
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*SECNO 4.000
     4.000      1.61   1540.38   1540.29       .00   1540.66       .28       .00       .01   1539.77
      60.0       6.8      53.2        .0       1.8      12.4        .0        .0        .0   1542.00
       .00      3.69      4.29       .00      .020      .035      .000      .000   1538.77   1015.95
   .012250        0.        0.        0.         5         5         0       .00     19.99   1035.94

*SECNO 5.000
     5.000      1.62   1540.39   1540.30       .00   1540.66       .27       .00       .00   1539.77
      60.0       6.9      53.1        .0       1.9      12.5        .0        .0        .0   1542.00
       .00      3.66      4.23       .00      .020      .035      .000      .000   1538.77   1015.84
   .011768        0.        0.        0.         0        11         0       .00     20.16   1036.00
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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

*SECNO 6.000
     6.000      1.64   1540.41   1540.30       .00   1540.67       .26       .00       .00   1539.77
      60.0       7.1      52.9        .0       2.0      12.7        .0        .0        .0   1542.00
       .00      3.63      4.16       .00      .020      .035      .000      .000   1538.77   1015.73
   .011286        0.        0.        0.         0        11         0       .00     20.34   1036.07
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T3          Q6

J1  ICHECK  INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

            7                             .020

J2  NPROF   IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    6                 -1                                      -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

*PROF 6

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      1.69   1540.46   1540.46       .00   1540.85       .40       .00       .00   1539.77
      80.0      10.8      69.2        .0       2.3      13.5        .0        .0        .0   1542.00
       .00      4.61      5.11       .00      .020      .035      .000      .000   1538.77   1015.15
   .016160        0.        0.        0.         0        15        10       .00     21.29   1036.44

*SECNO 2.000
     2.000      1.72   1540.49   1540.47       .00   1540.86       .36       .00       .00   1539.77
      80.0      11.6      68.4        .0       2.6      14.0        .0        .0        .0   1542.00
       .00      4.48      4.89       .00      .020      .035      .000      .000   1538.77   1014.82
   .014376        0.        0.        0.         0         5         0       .00     21.82   1036.64

*SECNO 3.000
     3.000      1.76   1540.53   1540.48       .00   1540.86       .33       .00       .00   1539.77
      80.0      12.2      67.8        .0       2.8      14.5        .0        .0        .0   1542.00
       .00      4.37      4.69       .00      .020      .035      .000      .000   1538.77   1014.52
   .012907        0.        0.        0.         4         6         0       .00     22.31   1036.83

*SECNO 4.000
     4.000      1.82   1540.59   1540.49       .00   1540.87       .28       .00       .01   1539.77
      80.0      13.8      66.2        .0       3.3      15.5        .0        .0        .0   1542.00
       .00      4.15      4.28       .00      .020      .035      .000      .000   1538.77   1013.21
   .010183        0.        0.        0.         3         6         0       .00     24.03   1037.24

*SECNO 5.000
     5.000      1.83   1540.60   1540.49       .00   1540.87       .28       .00       .00   1539.77
      80.0      14.0      66.0        .0       3.4      15.6        .0        .0        .0   1542.00
       .00      4.14      4.24       .00      .020      .035      .000      .000   1538.77   1012.94
   .009981        0.        0.        0.         0        10         0       .00     24.34   1037.28
```



```
    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 6.000
     6.000      1.83   1540.60   1540.45       .00   1540.88       .27       .00       .00   1539.77
```

```
      80.0      14.2      65.8        .0       3.4      15.6        .0       .0        .0   1542.00
       .00      4.13      4.21       .00      .020      .035      .000      .000   1538.77   1012.63
   .009757        0.        0.        0.         0        11         0       .00     24.69   1037.32

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   22JUN93      19:05:53                                                                                PAGE   17

 T3            Q7

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 8                           .020

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       7                  -1                                      -1

1
   22JUN93      19:05:53                                                                                PAGE   18

     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 7

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

 CCHV=      .100 CEHV=      .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 3720 CRITICAL DEPTH ASSUMED
      1.000      1.88   1540.65   1540.65       .00   1541.02       .37       .00       .00   1539.77
      100.0      19.7      80.3        .0       4.0      16.5        .0        .0        .0   1542.00
        .00      4.94      4.88       .00      .020      .035      .000      .000   1538.77   1010.03
   .012634        0.        0.        0.         0        11         9       .00     27.61   1037.64

 *SECNO 2.000
      2.000      1.88   1540.65   1540.65       .00   1541.02       .37       .00       .00   1539.77
      100.0      19.8      80.2        .0       4.0      16.5        .0        .0        .0   1542.00
        .00      4.92      4.86       .00      .020      .035      .000      .000   1538.77   1009.90
   .012518        0.        0.        0.         0         5         0       .00     27.75   1037.65

 *SECNO 3.000
      3.000      1.89   1540.66   1540.65       .00   1541.03       .36       .00       .00   1539.77
      100.0      20.0      80.0        .0       4.1      16.6        .0        .0        .0   1542.00
        .00      4.89      4.83       .00      .020      .035      .000      .000   1538.77   1009.63
   .012280        0.        0.        0.         0         5         0       .00     28.06   1037.69

 *SECNO 4.000
      4.000      1.90   1540.67   1540.65       .00   1541.03       .36       .00       .00   1539.77
      100.0      20.3      79.7        .0       4.2      16.7        .0        .0        .0   1542.00
        .00      4.85      4.77       .00      .020      .035      .000      .000   1538.77   1009.22
   .011921        0.        0.        0.         0         5         0       .00     28.52   1037.74

 *SECNO 5.000
      5.000      1.98   1540.75   1540.65       .00   1541.04       .29       .00       .01   1539.77
      100.0      23.1      76.9        .0       5.2      17.8        .0        .0        .0   1542.00
        .00      4.41      4.31       .00      .020      .035      .000      .000   1538.77   1005.67
   .009265        0.        0.        0.         7         5         0       .00     32.51   1038.18

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   22JUN93      19:05:53                                                                                PAGE   19

     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 6.000
      6.000      1.99   1540.76   1540.65       .00   1541.04       .28       .00       .00   1539.77
      100.0      23.7      76.3        .0       5.5      18.1        .0        .0        .0   1542.00
        .00      4.31      4.21       .00      .020      .035      .000      .000   1538.77   1004.82
   .008722        0.        0.        0.         1         8         0       .00     33.47   1038.28

1
   22JUN93      19:05:53                                                                                PAGE   20

 T3            Q8

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 9                           .020

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       8                  -1                                      -1

1
   22JUN93      19:05:53                                                                                PAGE   21

     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 8

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000     2.16   1540.93   1540.93      .00   1541.31      .39      .00      .00   1539.77
     150.0     46.6     103.4        .0      9.1      21.0       .0       .0       .0   1542.00
       .00     5.14      4.92       .00     .020      .035     .000     .000  1538.77   1000.00
   .010644       0.        0.        0.        0         5        8      .00    39.35   1039.35

*SECNO 2.000
     2.000     2.16   1540.93   1540.91      .00   1541.31      .38      .00      .00   1539.77
     150.0     46.7     103.2        .0      9.1      21.0       .0       .0       .0   1542.00
       .00     5.13      4.91       .00     .020      .035     .000     .000  1538.77   1000.00
   .010566       0.        0.        0.        0         5        0      .00    39.36   1039.36

*SECNO 3.000
     3.000     2.17   1540.94   1540.90      .00   1541.32      .38      .00      .00   1539.77
     150.0     47.0     103.0        .0      9.2      21.1       .0       .0       .0   1542.00
       .00     5.11      4.87       .00     .020      .035     .000     .000  1538.77   1000.00
   .010403       0.        0.        0.        0         5        0      .00    39.39   1039.39

*SECNO 4.000
     4.000     2.18   1540.95   1540.90      .00   1541.32      .37      .00      .00   1539.77
     150.0     47.5     102.5        .0      9.4      21.2       .0       .0       .0   1542.00
       .00     5.07      4.83       .00     .020      .035     .000     .000  1538.77   1000.00
   .010155       0.        0.        0.        0         5        0      .00    39.43   1039.43

*SECNO 5.000
     5.000     2.19   1540.96   1540.93      .00   1541.32      .37      .00      .00   1539.77
     150.0     48.1     101.9        .0      9.6      21.4       .0       .0       .0   1542.00
       .00     5.03      4.76       .00     .020      .035     .000     .000  1538.77   1000.00
   .009829       0.        0.        0.        0         6        0      .00    39.49   1039.49

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   22JUN93      19:05:53                                                                  PAGE   22

    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 6.000
     6.000     2.23   1541.00   1540.93      .00   1541.33      .33      .00      .00   1539.77
     150.0     51.0      99.0        .0     10.6      22.2       .0       .0       .0   1542.00
       .00     4.81      4.46       .00     .020      .035     .000     .000  1538.77   1000.00
   .008364       0.        0.        0.        3         6        0      .00    39.78   1039.78

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   22JUN93      19:05:53                                                                  PAGE   23

T3           Q9

J1  ICHECK   INQ      NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

             10                           .020

J2  NPROF    IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     9                -1                                      -1

1
   22JUN93      19:05:53                                                                  PAGE   24

    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 9

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000     2.30   1541.07   1541.07      .00   1541.56      .49      .00      .00   1539.77
     200.0     73.8     126.2        .0     12.3      23.6       .0       .0       .0   1542.00
       .00     6.01      5.34       .00     .020      .035     .000     .000  1538.77   1000.00
   .011496       0.        0.        0.        0         8        5      .00    40.26   1040.25

*SECNO 2.000
     2.000     2.31   1541.08   1541.07      .00   1541.56      .48      .00      .00   1539.77
     200.0     74.0     126.0        .0     12.3      23.7       .0       .0       .0   1542.00
       .00     5.99      5.33       .00     .020      .035     .000     .000  1538.77   1000.00
   .011409       0.        0.        0.        0         5        0      .00    40.27   1040.27

*SECNO 3.000
```

```
     3.000      2.31   1541.08   1541.07       .00   1541.56       .48       .00       .00   1539.77
     200.0      74.3     125.7        .0      12.4      23.7        .0        .0        .0   1542.00
       .00      5.97      5.29       .00      .020      .035      .000      .000   1538.77   1000.00
   .011226        0.        0.        0.         0         5         0       .00     40.30   1040.30

*SECNO 4.000
     4.000      2.33   1541.10   1541.07       .00   1541.57       .47       .00       .00   1539.77
     200.0      74.9     125.1        .0      12.6      23.9        .0        .0        .0   1542.00
       .00      5.93      5.24       .00      .020      .035      .000      .000   1538.77   1000.00
   .010941        0.        0.        0.         0         5         0       .00     40.35   1040.35

*SECNO 5.000
     5.000      2.40   1541.17   1541.06       .00   1541.58       .41       .00       .01   1539.77
     200.0      79.6     120.4        .0      14.2      25.2        .0        .0        .0   1542.00
       .00      5.60      4.77       .00      .020      .035      .000      .000   1538.77   1000.00
   .008700        0.        0.        0.         7         5         0       .00     40.80   1040.80

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   22JUN93      19:05:53                                                                          PAGE   25

    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 6.000
     6.000      2.41   1541.18   1541.12       .00   1541.58       .40       .00       .00   1539.77
     200.0      80.3     119.7        .0      14.5      25.5        .0        .0        .0   1542.00
       .00      5.55      4.70       .00      .020      .035      .000      .000   1538.77   1000.00
   .008412        0.        0.        0.         0         6         0       .00     40.87   1040.87

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   22JUN93      19:05:53                                                                          PAGE   26

T3          Q10

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              11                          .020

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    10                  -1                                      -1

1
   22JUN93      19:05:53                                                                          PAGE   27

    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

*PROF10

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      2.44   1541.21   1541.21       .00   1541.79       .58       .00       .00   1539.77
     250.0     103.2     146.8        .0      15.3      26.2        .0        .0        .0   1542.00
       .00      6.74      5.61       .00      .020      .035      .000      .000   1538.77   1000.00
   .011709        0.        0.        0.         0        11         5       .00     41.11   1041.11

*SECNO 2.000
     2.000      2.49   1541.26   1541.22       .00   1541.79       .54       .00       .00   1539.77
     250.0     105.9     144.1        .0      16.2      26.9        .0        .0        .0   1542.00
       .00      6.55      5.35       .00      .020      .035      .000      .000   1538.77   1000.00
   .010432        0.        0.        0.         0         5         0       .00     41.35   1041.35

*SECNO 3.000
     3.000      2.50   1541.27   1541.20       .00   1541.80       .53       .00       .00   1539.77
     250.0     106.5     143.5        .0      16.4      27.1        .0        .0        .0   1542.00
       .00      6.50      5.29       .00      .020      .035      .000      .000   1538.77   1000.00
   .010167        0.        0.        0.         0         5         0       .00     41.41   1041.41

*SECNO 4.000
     4.000      2.54   1541.31   1541.24       .00   1541.80       .49       .00       .00   1539.77
     250.0     109.2     140.8        .0      17.3      28.0        .0        .0        .0   1542.00
       .00      6.31      5.04       .00      .020      .035      .000      .000   1538.77   1000.00
   .009005        0.        0.        0.         3         6         0       .00     41.67   1041.67

*SECNO 5.000
     5.000      2.56   1541.33   1541.26       .00   1541.81       .48       .00       .00   1539.77
     250.0     110.2     139.8        .0      17.7      28.3        .0        .0        .0   1542.00
       .00      6.23      4.94       .00      .020      .035      .000      .000   1538.77   1000.00
   .008588        0.        0.        0.         1         6         0       .00     41.78   1041.78

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   22JUN93      19:05:53                                                                          PAGE   28

    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 6.000
      6.000     2.57   1541.34   1541.27      .00   1541.81      .46       .00       .00   1539.77
      250.0    111.2     138.8        .0     18.1      28.6       .0       .0        .0   1542.00
        .00     6.16      4.85       .00     .020      .035     .000      .000   1538.77   1000.00
    .008206       0.        0.        0.        1         6        0       .00     41.88   1041.88

1
   22JUN93      19:05:53                                                                                PAGE   29

 T3           Q11

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                12                            .020

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      11                  -1                                      -1

1
   22JUN93      19:05:53                                                                                PAGE   30

     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

 *PROF11

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 3720 CRITICAL DEPTH ASSUMED
      1.000     2.59   1541.36   1541.36      .00   1542.00      .65       .00       .00   1539.77
      300.0    134.9     165.1        .0     18.5      29.0       .0        .0        .0   1542.00
        .00     7.28      5.69       .00     .020      .035     .000      .000   1538.77   1000.00
    .011162       0.        0.        0.        0        11        5       .00     42.01   1042.01

 *SECNO 2.000
      2.000     2.62   1541.39   1541.36      .00   1542.01      .61       .00       .00   1539.77
      300.0    137.0     163.0        .0     19.3      29.7       .0        .0        .0   1542.00
        .00     7.11      5.48       .00     .020      .035     .000      .000   1538.77   1000.00
    .010208       0.        0.        0.        0         5        0       .00     42.22   1042.22

 *SECNO 3.000
      3.000     2.63   1541.40   1541.34      .00   1542.01      .61       .00       .00   1539.77
      300.0    137.5     162.5        .0     19.4      29.9       .0        .0        .0   1542.00
        .00     7.08      5.44       .00     .020      .035     .000      .000   1538.77   1000.00
    .010001       0.        0.        0.        0         5        0       .00     42.27   1042.27

 *SECNO 4.000
      4.000     2.68   1541.45   1541.38      .00   1542.02      .57       .00       .00   1539.77
      300.0    139.9     160.1        .0     20.3      30.7       .0        .0        .0   1542.00
        .00     6.89      5.22       .00     .020      .035     .000      .000   1538.77   1000.00
    .009011       0.        0.        0.        3         6        0       .00     42.52   1042.51

 *SECNO 5.000
      5.000     2.74   1541.51   1541.35      .00   1542.02      .51       .00       .01   1539.77
      300.0    143.8     156.2        .0     21.9      32.2       .0        .0        .0   1542.00
        .00     6.57      4.86       .00     .020      .035     .000      .000   1538.77   1000.00
    .007554       0.        0.        0.        3        11        0       .00     42.96   1042.95

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   22JUN93      19:05:53                                                                                PAGE   31

     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 6.000
      6.000     2.75   1541.52   1541.40      .00   1542.02      .51       .00       .00   1539.77
      300.0    144.0     156.0        .0     22.0      32.3       .0        .0        .0   1542.00
        .00     6.56      4.84       .00     .020      .035     .000      .000   1538.77   1000.00
    .007471       0.        0.        0.        0        10        0       .00     42.98   1042.98

1
   22JUN93      19:05:53                                                                                PAGE   32

 T3           Q12

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                13                            .020

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      12                  -1                                      -1
```

```
1
   22JUN93      19:05:53                                                                                                PAGE   33

    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

*PROF12

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      2.85   1541.62   1541.62       .00   1542.40       .78       .00       .00   1539.77
     400.0     198.8     201.2        .0      24.4      34.6        .0        .0        .0   1542.00
       .00      8.16      5.82       .00      .020      .035      .000      .000   1538.77   1000.00
   .010290        0.        0.        0.         0        14         5       .00     43.66   1043.65

*SECNO 2.000
     2.000      2.90   1541.67   1541.63       .00   1542.41       .74       .00       .00   1539.77
     400.0     201.1     198.9        .0      25.2      35.4        .0        .0        .0   1542.00
       .00      7.97      5.62       .00      .020      .035      .000      .000   1538.77   1000.00
   .009408        0.        0.        0.         0         5         0       .00     43.90   1043.90

*SECNO 3.000
     3.000      2.91   1541.68   1541.61       .00   1542.41       .73       .00       .00   1539.77
     400.0     201.5     198.5        .0      25.4      35.6        .0        .0        .0   1542.00
       .00      7.93      5.58       .00      .020      .035      .000      .000   1538.77   1000.00
   .009242        0.        0.        0.         0         5         0       .00     43.95   1043.95

*SECNO 4.000
     4.000      2.98   1541.75   1541.61       .00   1542.42       .67       .00       .01   1539.77
     400.0     204.9     195.1        .0      26.9      37.1        .0        .0        .0   1542.00
       .00      7.61      5.25       .00      .020      .035      .000      .000   1538.77   1000.00
   .007966        0.        0.        0.         3         5         0       .00     44.38   1044.37

*SECNO 5.000
     5.000      2.99   1541.76   1541.68       .00   1542.42       .66       .00       .00   1539.77
     400.0     205.4     194.6        .0      27.1      37.4        .0        .0        .0   1542.00
       .00      7.57      5.21       .00      .020      .035      .000      .000   1538.77   1000.00
   .007789        0.        0.        0.         0         6         0       .00     44.44   1044.44

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   22JUN93      19:05:53                                                                                                PAGE   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

*SECNO 6.000
     6.000      3.00   1541.77   1541.69       .00   1542.42       .65       .00       .00   1539.77
     400.0     205.9     194.0        .0      27.4      37.6        .0        .0        .0   1542.00
       .00      7.52      5.16       .00      .020      .035      .000      .000   1538.77   1000.00
   .007608        0.        0.        0.         0         6         0       .00     44.51   1044.51

1
   22JUN93      19:05:53                                                                                                PAGE   35

T3          Q13

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

               14                               .020

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     13                   -1                                           -1

1
   22JUN93      19:05:53                                                                                                PAGE   36

    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

*PROF13

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      3.11   1541.88   1541.88       .00   1542.76       .88       .00       .00   1539.77
     500.0     263.8     236.2        .0      30.1      40.4        .0        .0        .0   1542.00
       .00      8.78      5.85       .00      .020      .035      .000      .000   1538.77   1000.00
   .009291        0.        0.        0.         0        14         5       .00     45.26   1045.26

*SECNO 2.000
     2.000      3.11   1541.88   1541.88       .00   1542.76       .88       .00       .00   1539.77
```

```
     500.0     263.9     236.1        .0      30.1      40.4        .0        .0        .0   1542.00
       .00      8.77      5.84       .00      .020      .035      .000      .000   1538.77   1000.00
   .009258        0.        0.        0.         0         5         0       .00     45.27   1045.27

*SECNO 3.000
     3.000      3.12   1541.89   1541.88       .00   1542.77       .88       .00       .00   1539.77
     500.0     264.1     235.9        .0      30.2      40.5        .0        .0        .0   1542.00
       .00      8.75      5.82       .00      .020      .035      .000      .000   1538.77   1000.00
   .009187        0.        0.        0.         0         5         0       .00     45.30   1045.29

*SECNO 4.000
     4.000      3.13   1541.90   1541.88       .00   1542.77       .87       .00       .00   1539.77
     500.0     264.4     235.6        .0      30.3      40.7        .0        .0        .0   1542.00
       .00      8.72      5.80       .00      .020      .035      .000      .000   1538.77   1000.00
   .009077        0.        0.        0.         0         5         0       .00     45.33   1045.33

*SECNO 5.000
     5.000      3.14   1541.91   1541.88       .00   1542.77       .86       .00       .00   1539.77
     500.0     264.8     235.2        .0      30.5      40.9        .0        .0        .0   1542.00
       .00      8.68      5.76       .00      .020      .035      .000      .000   1538.77   1000.00
   .008925        0.        0.        0.         0         5         0       .00     45.39   1045.38

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   22JUN93      19:05:53                                                                          PAGE   37

    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 6.000
     6.000      3.30   1542.07   1541.88       .00   1542.79       .72       .00       .01   1539.77
     500.0     270.1     229.9        .0      34.0      44.7        .1        .0        .0   1542.00
       .00      7.94      5.15       .02      .020      .035      .055      .000   1538.77    999.99
   .006556        0.        0.        0.         9         5         0       .00     47.81   1047.81

1
   22JUN93      19:05:53                                                                          PAGE   38

T3          Q14

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              15                          .020

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    14                  -1                                      -1


1
   22JUN93      19:05:53                                                                          PAGE   39

    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

*PROF14

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      3.38   1542.15   1542.15       .00   1543.08       .93       .00       .00   1539.77
     600.0     325.8     274.1        .1      36.0      46.8        .3        .0        .0   1542.00
       .00      9.05      5.85       .43      .020      .035      .055      .000   1538.77    999.99
   .007962        0.        0.        0.         0        17         5       .00     50.51   1050.51

*SECNO 2.000
     2.000      3.43   1542.20   1542.16       .00   1543.09       .89       .00       .00   1539.77
     600.0     326.5     273.2        .3      37.0      47.9        .6        .0        .0   1542.00
       .00      8.82      5.70       .49      .020      .035      .055      .000   1538.77    999.99
   .007317        0.        0.        0.         0         5         0       .00     51.90   1051.90

*SECNO 3.000
     3.000      3.44   1542.21   1542.14       .00   1543.09       .88       .00       .00   1539.77
     600.0     326.6     273.1        .3      37.2      48.1        .6        .0        .0   1542.00
       .00      8.78      5.67       .50      .020      .035      .055      .000   1538.77    999.99
   .007214        0.        0.        0.         0         5         0       .00     52.14   1052.13

*SECNO 4.000
     4.000      3.45   1542.22   1542.14       .00   1543.09       .87       .00       .00   1539.77
     600.0     326.8     272.9        .4      37.4      48.4        .7        .0        .0   1542.00
       .00      8.73      5.64       .51      .020      .035      .055      .000   1538.77    999.99
   .007092        0.        0.        0.         0         5         0       .00     52.42   1052.42

*SECNO 5.000
     5.000      3.56   1542.33   1542.17       .00   1543.10       .78       .00       .01   1539.77
     600.0     328.1     270.9       1.0      39.8      50.9       1.6        .0        .0   1542.00
       .00      8.25      5.32       .61      .020      .035      .055      .000   1538.77    999.99
   .005872        0.        0.        0.         3         8         0       .00     55.67   1055.66
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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 6.000									
6.000	3.57	1542.34	1542.15	.00	1543.11	.77	.00	.00	1539.77
600.0	328.2	270.8	1.0	40.0	51.1	1.6	.0	.0	1542.00
.00	8.21	5.29	.62	.020	.035	.055	.000	1538.77	999.99
.005791	0.	0.	0.	0	11	0	.00	55.91	1055.91

THIS RUN EXECUTED 22JUN93 19:05:56

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

 Version   4.6.2;  May 1991
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SUMMARY PRINTOUT

	SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
	1.000	5.00	1539.38	.61	2.67	1539.34	1539.49	.00	198.90	.00
	1.000	10.00	1539.56	.79	3.18	1539.52	1539.71	.00	200.39	.00
	1.000	20.00	1539.79	1.02	3.79	1539.76	1540.01	.00	200.36	.00
*	1.000	40.00	1540.08	1.31	4.53	1540.08	1540.39	.00	185.93	.00
*	1.000	60.00	1540.31	1.54	4.74	1540.31	1540.65	.00	158.90	.00
*	1.000	80.00	1540.46	1.69	5.11	1540.46	1540.85	.00	161.60	.00
*	1.000	100.00	1540.65	1.88	4.88	1540.65	1541.02	.00	126.34	.00
*	1.000	150.00	1540.93	2.16	4.92	1540.93	1541.31	.00	106.44	.00
*	1.000	200.00	1541.07	2.30	5.34	1541.07	1541.56	.00	114.96	.00
*	1.000	250.00	1541.21	2.44	5.61	1541.21	1541.79	.00	117.09	.00
*	1.000	300.00	1541.36	2.59	5.69	1541.36	1542.00	.00	111.62	.00
*	1.000	400.00	1541.62	2.85	5.82	1541.62	1542.40	.00	102.90	.00
*	1.000	500.00	1541.88	3.11	5.85	1541.88	1542.76	.00	92.91	.00
*	1.000	600.00	1542.15	3.38	5.85	1542.15	1543.08	.00	79.62	.00
	2.000	5.00	1539.38	.61	2.63	1539.34	1539.49	.00	192.00	1.02
	2.000	10.00	1539.56	.79	3.15	1539.52	1539.72	.00	194.99	1.01
	2.000	20.00	1539.79	1.02	3.77	1539.76	1540.01	.00	195.81	1.01
	2.000	40.00	1540.11	1.34	4.35	1540.09	1540.40	.00	166.51	1.06
	2.000	60.00	1540.31	1.54	4.72	1540.30	1540.65	.00	156.92	1.01
	2.000	80.00	1540.49	1.72	4.89	1540.47	1540.86	.00	143.76	1.06
	2.000	100.00	1540.65	1.88	4.86	1540.65	1541.02	.00	125.18	1.00
	2.000	150.00	1540.93	2.16	4.91	1540.91	1541.31	.00	105.66	1.00
	2.000	200.00	1541.08	2.31	5.33	1541.07	1541.56	.00	114.09	1.00
	2.000	250.00	1541.26	2.49	5.35	1541.22	1541.79	.00	104.32	1.06
	2.000	300.00	1541.39	2.62	5.48	1541.36	1542.01	.00	102.08	1.05
	2.000	400.00	1541.67	2.90	5.62	1541.63	1542.41	.00	94.08	1.05
	2.000	500.00	1541.88	3.11	5.84	1541.88	1542.76	.00	92.58	1.00
	2.000	600.00	1542.20	3.43	5.70	1542.16	1543.09	.00	73.17	1.04

SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
3.000	5.00	1539.39	.62	2.57	1539.34	1539.50	.00	180.74	1.03
3.000	10.00	1539.57	.80	3.09	1539.52	1539.72	.00	185.63	1.02
3.000	20.00	1539.81	1.04	3.71	1539.76	1540.02	.00	187.48	1.02
3.000	40.00	1540.12	1.35	4.28	1540.08	1540.40	.00	159.56	1.02
3.000	60.00	1540.32	1.55	4.67	1540.30	1540.65	.00	152.92	1.01
3.000	80.00	1540.53	1.76	4.69	1540.48	1540.86	.00	129.07	1.06
3.000	100.00	1540.66	1.89	4.83	1540.65	1541.03	.00	122.80	1.01
3.000	150.00	1540.94	2.17	4.87	1540.90	1541.32	.00	104.03	1.01
3.000	200.00	1541.08	2.31	5.29	1541.07	1541.56	.00	112.26	1.01
3.000	250.00	1541.27	2.50	5.29	1541.20	1541.80	.00	101.67	1.01
3.000	300.00	1541.40	2.63	5.44	1541.34	1542.01	.00	100.01	1.01
3.000	400.00	1541.68	2.91	5.58	1541.61	1542.41	.00	92.42	1.01
3.000	500.00	1541.89	3.12	5.82	1541.88	1542.77	.00	91.87	1.00
3.000	600.00	1542.21	3.44	5.67	1542.14	1543.09	.00	72.14	1.01
4.000	5.00	1539.40	.63	2.50	1539.34	1539.50	.00	167.62	1.04
4.000	10.00	1539.58	.81	3.02	1539.52	1539.73	.00	173.81	1.03
4.000	20.00	1539.82	1.05	3.63	1539.76	1540.02	.00	176.45	1.03
4.000	40.00	1540.17	1.40	3.93	1540.09	1540.41	.00	126.17	1.12
4.000	60.00	1540.38	1.61	4.29	1540.29	1540.66	.00	122.50	1.12
4.000	80.00	1540.59	1.82	4.28	1540.49	1540.87	.00	101.83	1.13
4.000	100.00	1540.67	1.90	4.77	1540.65	1541.03	.00	119.21	1.01
4.000	150.00	1540.95	2.18	4.83	1540.90	1541.32	.00	101.55	1.01
4.000	200.00	1541.10	2.33	5.24	1541.07	1541.57	.00	109.41	1.01
4.000	250.00	1541.31	2.54	5.04	1541.24	1541.80	.00	90.05	1.06
4.000	300.00	1541.45	2.68	5.22	1541.38	1542.02	.00	90.11	1.05
4.000	400.00	1541.75	2.98	5.25	1541.61	1542.42	.00	79.66	1.08
4.000	500.00	1541.90	3.13	5.80	1541.88	1542.77	.00	90.77	1.01
4.000	600.00	1542.22	3.45	5.64	1542.14	1543.09	.00	70.92	1.01
5.000	5.00	1539.41	.64	2.43	1539.34	1539.50	.00	154.82	1.04
5.000	10.00	1539.60	.83	2.93	1539.52	1539.73	.00	161.58	1.04

5.000	20.00	1539.84	1.07	3.51	1539.75	1540.03	.00	159.63	1.05
5.000	40.00	1540.19	1.42	3.86	1540.08	1540.41	.00	120.41	1.02
5.000	60.00	1540.39	1.62	4.23	1540.30	1540.66	.00	117.68	1.02
5.000	80.00	1540.60	1.83	4.24	1540.49	1540.87	.00	99.81	1.01
5.000	100.00	1540.75	1.98	4.31	1540.65	1541.04	.00	92.65	1.13
5.000	150.00	1540.96	2.19	4.76	1540.93	1541.32	.00	98.29	1.02
5.000	200.00	1541.17	2.40	4.77	1541.06	1541.58	.00	87.00	1.12
5.000	250.00	1541.33	2.56	4.94	1541.26	1541.81	.00	85.88	1.02
5.000	300.00	1541.51	2.74	4.86	1541.35	1542.02	.00	75.54	1.09
5.000	400.00	1541.76	2.99	5.21	1541.68	1542.42	.00	77.89	1.01
5.000	500.00	1541.91	3.14	5.76	1541.88	1542.77	.00	89.25	1.01
5.000	600.00	1542.33	3.56	5.32	1542.17	1543.10	.00	58.72	1.10

1

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SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
6.000	5.00	1539.42	.65	2.36	1539.34	1539.51	.00	143.60	1.04
6.000	10.00	1539.61	.84	2.85	1539.52	1539.73	.00	150.01	1.04
6.000	20.00	1539.85	1.08	3.43	1539.76	1540.03	.00	149.04	1.03
6.000	40.00	1540.20	1.43	3.79	1540.08	1540.41	.00	114.94	1.02
6.000	60.00	1540.41	1.64	4.16	1540.30	1540.67	.00	112.86	1.02
6.000	80.00	1540.60	1.83	4.21	1540.45	1540.88	.00	97.57	1.01
6.000	100.00	1540.76	1.99	4.21	1540.65	1541.04	.00	87.22	1.03
6.000	150.00	1541.00	2.23	4.46	1540.93	1541.33	.00	83.64	1.08
6.000	200.00	1541.18	2.41	4.70	1541.12	1541.58	.00	84.12	1.02
6.000	250.00	1541.34	2.57	4.85	1541.27	1541.81	.00	82.06	1.02
6.000	300.00	1541.52	2.75	4.84	1541.40	1542.02	.00	74.71	1.01
6.000	400.00	1541.77	3.00	5.16	1541.69	1542.42	.00	76.08	1.01
6.000	500.00	1542.07	3.30	5.15	1541.88	1542.79	.00	65.56	1.17
6.000	600.00	1542.34	3.57	5.29	1542.15	1543.11	.00	57.91	1.01

1

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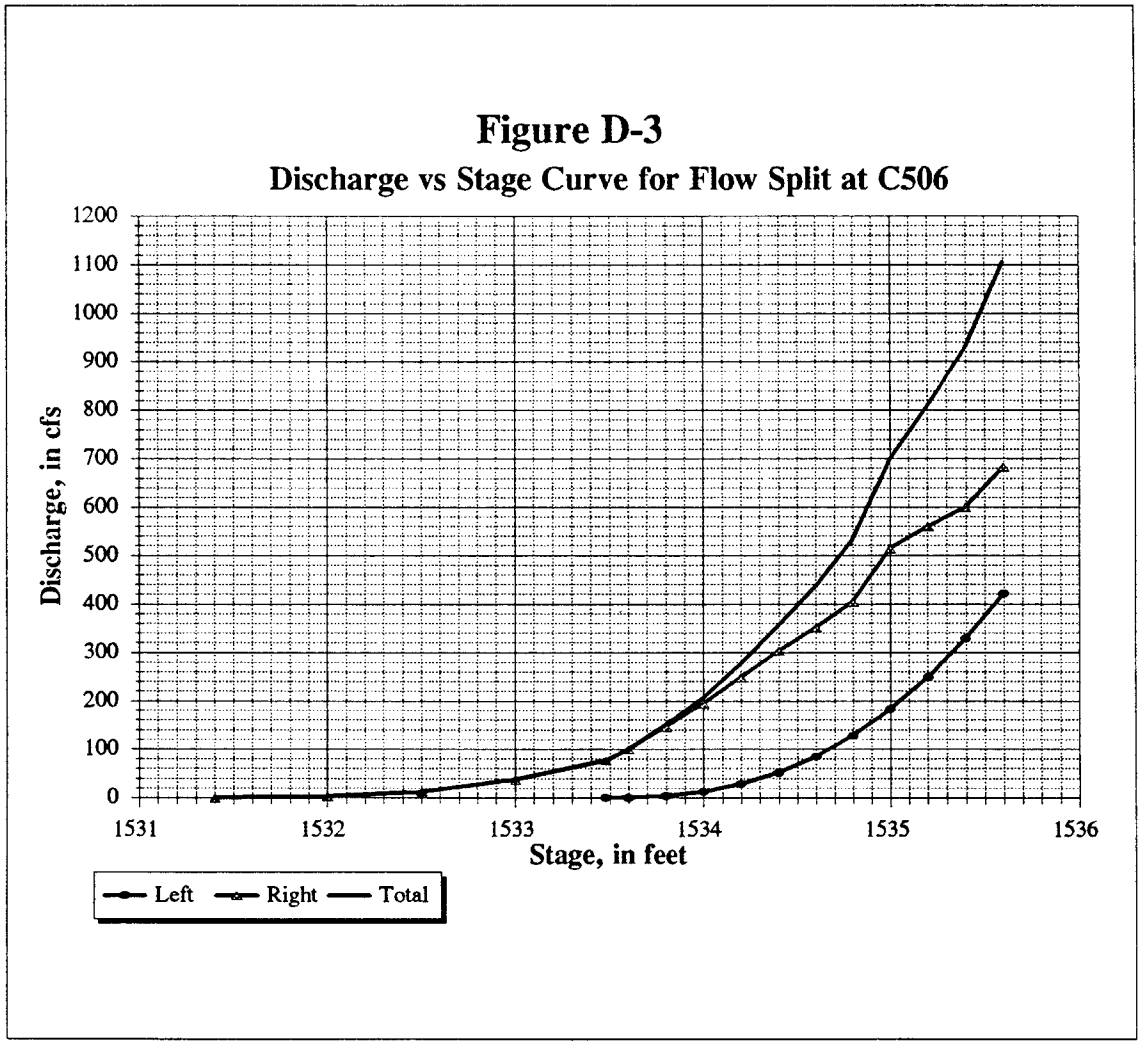
SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      1.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  6  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  7  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  8  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  9  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 10  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 11  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 12  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 13  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 14  CRITICAL DEPTH ASSUMED
```

C506 Flow Split Table

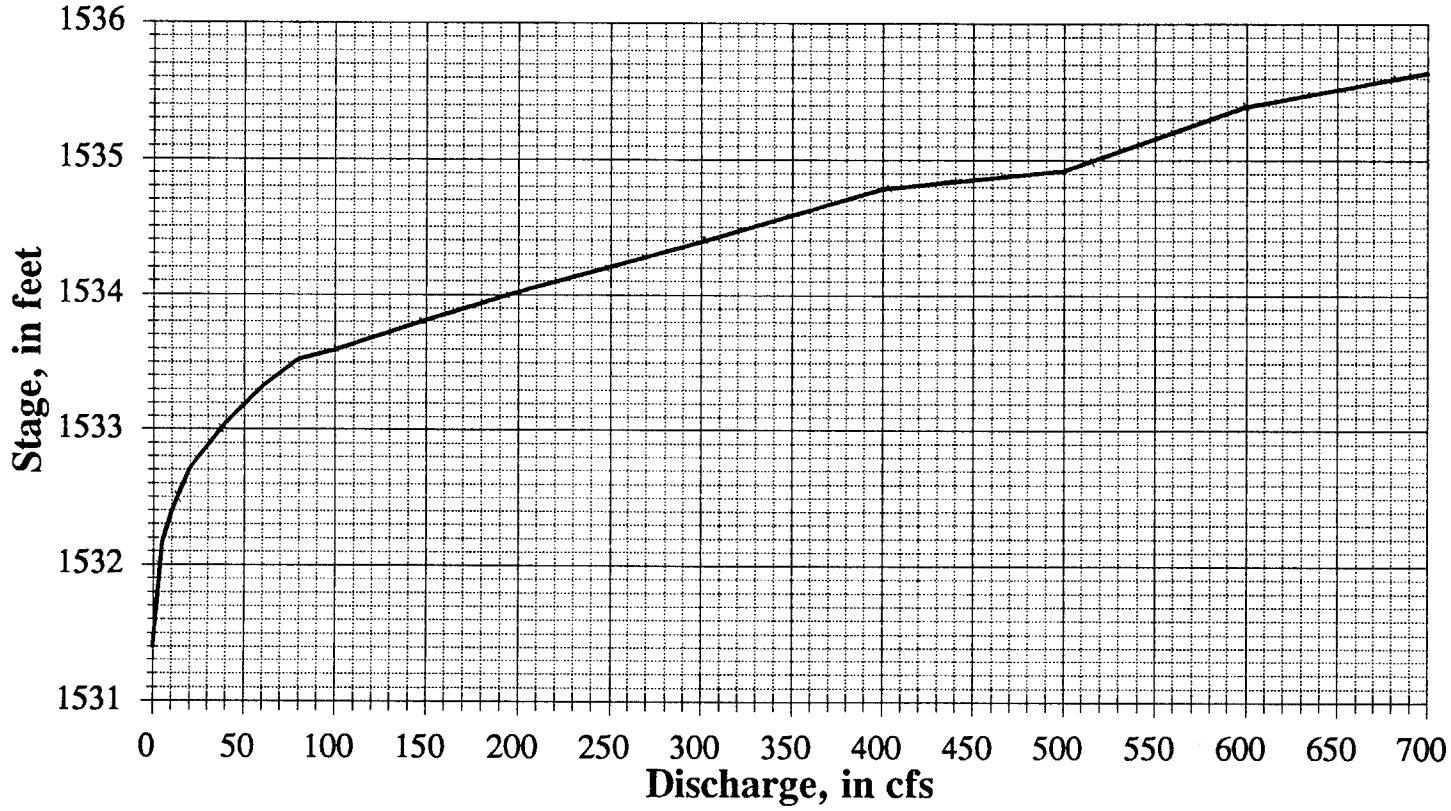
Stage (ft)	Discharge, in cfs		
	Left Channel	Right Channel	Total
1531.40	---	0	0
1532.00	---	3	3
1532.50	---	13	13
1533.00	---	37	37
1533.48	0	77	77
1533.60	0	100	100
1533.80	4	147	151
1534.00	12	194	206
1534.20	28	248	276
1534.40	52	303	355
1534.60	85	352	437
1534.80	128	404	532
1535.00	183	515	698
1535.20	249	560	809
1535.40	328	600	928
1535.60	421	683	1104

Note: Culvert 506 is clogged, thus it is not modeled



C506 Stage vs Discharge

Right Channel (Ditch Flow) from HEC-2

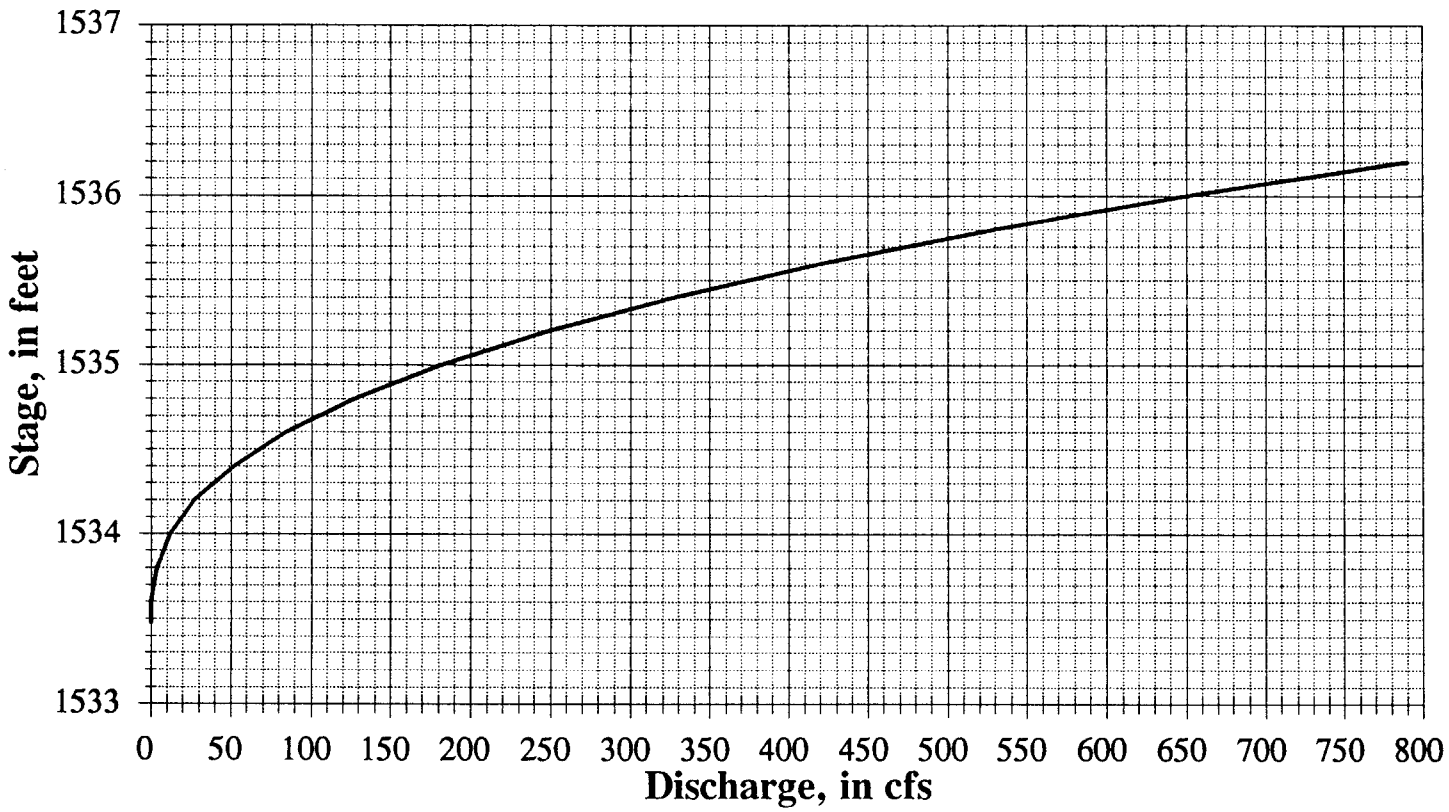


flowsplt.wb1

21-Jun-93

C506 Stage vs Discharge

Left Channel (Weir Flow) from Uneven Weir



CURRENT DATE: 11-11-1993
CURRENT TIME: 11:27:27

FILE DATE: 06-16-1993
FILE NAME: C506

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.0

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1530.24	1529.04	60.01	1 CSP	1.50	1.50	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: C506 DATE: 06-16-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1530.24	0	0	0	0	0	0	0	0	1
1531.02	2	2	0	0	0	0	0	0	1
1531.43	4	4	0	0	0	0	0	0	1
1531.96	6	6	0	0	0	0	0	0	1
1532.30	8	8	0	0	0	0	0	0	1
1533.19	10	10	0	0	0	0	0	0	1
1534.46	12	12	0	0	0	0	0	0	1
1535.95	14	14	0	0	0	0	0	0	1
1537.67	16	16	0	0	0	0	0	0	1
1539.57	18	18	0	0	0	0	0	0	1
1540.50	20	19	0	0	0	0	0	1	3
1540.00	18	18	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: C506 DATE: 06-16-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1530.24	0.00	0	0	0.00
1531.02	0.00	2	0	0.00
1531.43	0.00	4	0	0.00
1531.96	0.00	6	0	0.00
1532.30	0.00	8	0	0.00
1533.19	0.00	10	0	0.00
1534.46	0.00	12	0	0.00
1535.95	0.00	14	0	0.00
1537.67	0.00	16	0	0.00

1539.57	0.00	18	0	0.00
1540.50	-0.00	20	0	0.04

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 11-11-1993 FILE DATE: 06-16-1993
CURRENT TIME: 11:27:27 FILE NAME: C506

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (1.5 BY 1.5) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1530.24	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
2	1531.02	0.78	0.78	1-S2n	0.51	0.53	3.81	0.51	1.77	0.14
4	1531.43	1.19	1.19	1-S2n	0.75	0.76	4.55	0.75	2.13	0.19
6	1531.96	1.59	1.72	2-M2c	0.97	0.94	5.12	0.94	2.40	0.23
8	1532.30	2.06	2.03	2-M2c	1.23	1.09	5.79	1.09	2.63	0.27
10	1533.19	2.66	2.95	6-FFn	1.50	1.22	5.66	1.50	2.81	0.30
12	1534.46	3.42	4.22	6-FFn	1.50	1.31	6.79	1.50	2.97	0.33
14	1535.95	4.35	5.71	6-FFn	1.50	1.40	7.92	1.50	3.12	0.36
16	1537.67	5.45	7.43	6-FFn	1.50	1.49	9.05	1.50	3.26	0.39
18	1539.57	6.72	9.33	6-FFn	1.50	1.50	10.19	1.50	3.37	0.41
19	1540.50	7.33	10.26	6-FFn	1.50	1.50	10.70	1.50	3.49	0.43

El. inlet face invert 1530.24 ft El. outlet invert 1529.04 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION (FT)                      0.00
      INLET ELEVATION (FT)                 1530.24
      OUTLET STATION (FT)                    60.00
      OUTLET ELEVATION (FT)                1529.04
      NUMBER OF BARRELS                       1
      SLOPE (V-FT/H-FT)                       0.0200
      CULVERT LENGTH ALONG SLOPE (FT)        60.01

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          CIRCULAR
      BARREL DIAMETER         1.50 FT
      BARREL MATERIAL       CORRUGATED STEEL
      BARREL MANNING'S N    0.024
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   THIN EDGE PROJECTING
      INLET DEPRESSION      NONE
```

CURRENT DATE: 11-11-1993
CURRENT TIME: 11:27:27

FILE DATE: 06-16-1993
FILE NAME: C506

TAILWATER

***** USER DEFINED CHANNEL CROSS-SECTION
MAIN CHANNEL AND LT & RT OVER BANKS

FILE NAME: C506
FILE DATE: 06-16-1993

LEFT CHANNEL BOUNDARY	6
RIGHT CHANNEL BOUNDARY	8
MANNING N LEFT OVER BANK	0.040
MANNING N MAIN CHANNEL	0.030
MANNING N RIGHT OVER BAN	0.040
SLOPE OF CHANNEL (FT/FT)	0.0190

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	1000.00	1541.04
2	1008.00	1539.04
3	1016.00	1537.04
4	1022.00	1535.04
5	1027.00	1533.04
6	1039.00	1531.04
7	1062.00	1529.04
8	1073.00	1529.04
9	1081.00	1531.04
10	1089.00	1533.04
11	1098.00	1535.04
12	1108.00	1537.04
13	1115.00	1539.04
14	1123.00	1541.04

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1529.04	0.000	0.00	0.00	0.00
2.00	1529.18	0.859	0.14	1.77	0.16
4.00	1529.23	0.899	0.19	2.13	0.21
6.00	1529.27	0.927	0.23	2.40	0.25
8.00	1529.31	0.947	0.27	2.63	0.28
10.00	1529.34	0.963	0.30	2.81	0.31
12.00	1529.37	0.977	0.33	2.97	0.34
14.00	1529.40	0.989	0.36	3.12	0.37
16.00	1529.43	0.999	0.39	3.26	0.39
18.00	1529.45	1.008	0.41	3.37	0.41
20.00	1529.47	1.017	0.43	3.49	0.43

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	1.00
CREST LENGTH (FT)	1.00
OVERTOPPING CREST ELEVATION (FT)	1540.00

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
*********************************************


    PROJECT:  Fountain Hills North FIS                C506
    ENGINEER:  dtp
    DATE:   6/22/1993
    TIME:  12:10.31




---------------------------------------------
    INPUT PARAMETERS
---------------------------------------------


    STARTING WSEL:      1533.40
    MAXIMUM WSEL:       1536.21
    STEP SIZE:             0.20
    BREADTH OF WEIR:      28.00


*********************************************
    INPUT ELEVATION/STATION TABLE.
    PROJECT:  Fountain Hills North FIS                C506
    DATE:   6/22/1993
    TIME:  12:10.31
*********************************************
```

POINT	ELEVATION	STATION
1	1536.29	1000.00
2	1535.92	1020.00
3	1535.55	1040.00
4	1535.18	1060.00
5	1534.82	1080.00
6	1534.47	1100.00
7	1534.30	1110.00
8	1534.13	1120.00
9	1533.96	1130.00
10	1533.80	1140.00
11	1533.64	1150.00
12	1533.56	1155.00

13	1533.48	1160.00
14	1536.30	1160.01

```
*********************************************
    WEIR COEFFICIENT TABLE
    PROJECT:  Fountain Hills North FIS                C506
    DATE:   6/22/1993
    TIME:  12:10.31
*********************************************
```

REFERENCE: COE CHART - UPPER CURVE

POINT	HEAD	COEFFICIENT
1	0.00	2.5000
2	0.20	2.5238
3	0.40	2.5476
4	0.60	2.5714
5	0.80	2.5952
6	1.00	2.6190
7	1.20	2.6429
8	1.40	2.6667
9	1.60	2.6905
10	1.80	2.7143
11	2.00	2.7381
12	2.20	2.7619
13	2.40	2.7857
14	2.60	2.8095
15	2.80	2.8333

```
*********************************************
    UNEVEN WEIR FLOW PROGRAM
    FORTRAN VERSION 1.0
    PROJECT:  Fountain Hills North FIS                C506
    DATE:   6/22/1993
    TIME:  12:10.31
*********************************************
```

ELEVATION	DISCHARGE (CFS)
1533.40	0.00
1533.60	0.31
1533.80	3.66
1534.00	12.39
1534.20	28.04
1534.40	51.81
1534.60	84.83

1534.80	128.08
1535.00	182.52
1535.20	248.99
1535.40	328.34
1535.60	421.35
1535.80	528.84
1536.00	651.61
1536.20	790.46

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *                                        *
 *  RUN DATE    22JUN93    TIME   19:06:36  *
 *****************************************
```

```
*************************************
 *  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
```

```
1
   22JUN93      19:06:36                                                                                    PAGE    1


                                                                                THIS RUN EXECUTED 22JUN93    19:06:36
 ************************************
  HEC-2 WATER SURFACE PROFILES

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


 T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY:  FCD#92-04
 T2      FOUNTAIN HILLS NORTH FIS STUDY by GVSCE                dtp
 T3                                                   FILE:     CH506.IH2
 T4
 T5              This model is used to develop a rating curve for culvert 506
 T6              Ditch flow to south of C506 is diverted to C507
 T7
 T8      Single X-Section Run
                 Ditch slope =     .020 ft/ft  From 200 scale map

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           .020

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1                 -1                                        -1

    SECNO       Q   CWSEL   DEPTH     VCH   CRIWS      EG      HL   SLOPE  KRATIO

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38         43          1          8         26          2          3         11          5         58


         Manning's n:          Min  Normal     Max
                   Earth      .015    .022     .030
                Pavement      .013    .016     .020
                  Desert      .040    .060     .080
                Veg Des.      .070    .100     .160

                  Earthy
    earth  desert  desert

 NC     .020       .055       .035        .1         .3
 QT       14          5         10        20         40          60          80         100         150         200
 QT      300        400        500       600        700


         X-Section 1
            this section needs to be input from 200 scale map
 X1        1          7       1022       1035
 GR     1542     999.99    1533.48       1000    1533.20       1014      1532.4       1022      1531.4       1026
 GR     1535       1035       1542       1051
```

```
1
   22JUN93      19:06:36                                                                                    PAGE    2


 X1        2                                          .2          .2          .2

 X1        3                                          .2          .2          .2

 X1        4                                          .2          .2          .2

 X1        5                                          .2          .2          .2

 X1        6                                          .2          .2          .2
```

```
1
   22JUN93      19:06:36                                                                                    PAGE    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 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .72   1532.12   1532.08       .00   1532.26       .13       .00       .00   1532.40
       5.0        .0       5.0        .0        .0       1.7        .0        .0        .0   1535.00
       .00       .00      2.95       .00      .000      .035      .000      .000   1531.40   1023.11
   .019918        0.        0.        0.         0        17        11       .00      4.70   1027.81


*SECNO 2.000
     2.000       .73   1532.13   1532.08       .00   1532.26       .13       .00       .00   1532.40
       5.0        .0       5.0        .0        .0       1.7        .0        .0        .0   1535.00
       .00       .00      2.91       .00      .000      .035      .000      .000   1531.40   1023.09
   .019336        0.        0.        0.         0        11         0       .00      4.72   1027.82


*SECNO 3.000
     3.000       .74   1532.14   1532.08       .00   1532.27       .13       .00       .00   1532.40
       5.0        .0       5.0        .0        .0       1.7        .0        .0        .0   1535.00
       .00       .00      2.86       .00      .000      .035      .000      .000   1531.40   1023.06
   .018362        0.        0.        0.         0        11         0       .00      4.77   1027.83


*SECNO 4.000
     4.000       .75   1532.15   1532.08       .00   1532.27       .12       .00       .00   1532.40
       5.0        .0       5.0        .0        .0       1.8        .0        .0        .0   1535.00
       .00       .00      2.79       .00      .000      .035      .000      .000   1531.40   1023.03
   .017188        0.        0.        0.         0        11         0       .00      4.83   1027.86


*SECNO 5.000
     5.000       .76   1532.16   1532.08       .00   1532.27       .11       .00       .00   1532.40
       5.0        .0       5.0        .0        .0       1.8        .0        .0        .0   1535.00
       .00       .00      2.71       .00      .000      .035      .000      .000   1531.40   1022.99
   .016004        0.        0.        0.         0        11         0       .00      4.89   1027.88


*SECNO 6.000
     6.000       .77   1532.17   1532.08       .00   1532.28       .11       .00       .00   1532.40
       5.0        .0       5.0        .0        .0       1.9        .0        .0        .0   1535.00
       .00       .00      2.64       .00      .000      .035      .000      .000   1531.40   1022.95
   .014916        0.        0.        0.         0        15         0       .00      4.96   1027.91

1
   22JUN93      19:06:36                                                                          PAGE    4

T3            Q2

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           .020

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                  -1                                      -1

1
   22JUN93      19:06:36                                                                          PAGE    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 2

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .94   1532.34   1532.29       .00   1532.53       .19       .00       .00   1532.40
      10.0        .0      10.0        .0        .0       2.9        .0        .0        .0   1535.00
       .00       .00      3.49       .00      .000      .035      .000      .000   1531.40   1022.25
   .019762        0.        0.        0.         0        24        10       .00      6.10   1028.35


*SECNO 2.000
     2.000       .95   1532.35   1532.30       .00   1532.53       .19       .00       .00   1532.40
      10.0        .0      10.0        .0        .0       2.9        .0        .0        .0   1535.00
       .00       .00      3.46       .00      .000      .035      .000      .000   1531.40   1022.23
   .019329        0.        0.        0.         0         8         0       .00      6.13   1028.36


*SECNO 3.000
     3.000       .96   1532.36   1532.29       .00   1532.54       .18       .00       .00   1532.40
      10.0        .0      10.0        .0        .0       2.9        .0        .0        .0   1535.00
       .00       .00      3.41       .00      .000      .035      .000      .000   1531.40   1022.20
   .018548        0.        0.        0.         0        11         0       .00      6.17   1028.37


*SECNO 4.000
     4.000       .97   1532.37   1532.29       .00   1532.54       .17       .00       .00   1532.40
      10.0        .0      10.0        .0        .0       3.0        .0        .0        .0   1535.00
       .00       .00      3.34       .00      .000      .035      .000      .000   1531.40   1022.16
   .017539        0.        0.        0.         0        11         0       .00      6.24   1028.40


*SECNO 5.000
     5.000       .98   1532.38   1532.29       .00   1532.55       .16       .00       .00   1532.40
      10.0        .0      10.0        .0        .0       3.1        .0        .0        .0   1535.00
```

```
      .00       .00      3.26       .00      .000      .035      .000      .000   1531.40   1022.11
   .016440       0.        0.        0.         0        11         0       .00      6.32   1028.43

*SECNO 6.000
     6.000       .99   1532.39   1532.29       .00   1532.55       .16       .00       .00   1532.40
      10.0        .0      10.0        .0        .0       3.1        .0        .0        .0   1535.00
       .00       .00      3.18       .00      .000      .035      .000      .000   1531.40   1022.06
   .015381       0.        0.        0.         0        11         0       .00      6.39   1028.46
```

1 22JUN93 19:06:36 PAGE 6

```
T3          Q3
J1  ICHECK  INQ     NINV    IDIR    STRT    METRIC  HVINS   Q       WSEL    FQ
            4                       .020
J2  NPROF   IPLOT   PRFVS   XSECV   XSECH   FN      ALLDC   IBW     CHNIM   ITRACE
    3               -1                              -1
```

1 22JUN93 19:06:36 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

*PROF 3

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      1.20   1532.60   1532.60       .00   1532.88       .28       .00       .00   1532.40
      20.0        .4      19.6        .0        .2       4.6        .0        .0        .0   1535.00
       .00      2.18      4.26       .00      .020      .035      .000      .000   1531.40   1020.01
   .018864       0.        0.        0.         0        17         9       .00      8.99   1029.00

*SECNO 2.000
     2.000      1.21   1532.61   1532.60       .00   1532.88       .27       .00       .00   1532.40
      20.0        .4      19.5        .0        .2       4.6        .0        .0        .0   1535.00
       .00      2.19      4.23       .00      .020      .035      .000      .000   1531.40   1019.97
   .018506       0.        0.        0.         0         5         0       .00      9.03   1029.01

*SECNO 3.000
     3.000      1.22   1532.62   1532.60       .00   1532.88       .27       .00       .00   1532.40
      20.0        .5      19.5        .0        .2       4.7        .0        .0        .0   1535.00
       .00      2.20      4.17       .00      .020      .035      .000      .000   1531.40   1019.89
   .017769       0.        0.        0.         0         5         0       .00      9.13   1029.03

*SECNO 4.000
     4.000      1.29   1532.69   1532.59       .00   1532.89       .20       .00       .01   1532.40
      20.0        .9      19.1        .0        .4       5.2        .0        .0        .0   1535.00
       .00      2.24      3.68       .00      .020      .035      .000      .000   1531.40   1019.17
   .012437       0.        0.        0.         5         5         0       .00     10.04   1029.21

*SECNO 5.000
     5.000      1.30   1532.70   1532.60       .00   1532.90       .20       .00       .00   1532.40
      20.0       1.0      19.0        .0        .4       5.3        .0        .0        .0   1535.00
       .00      2.24      3.62       .00      .020      .035      .000      .000   1531.40   1019.07
   .011881       0.        0.        0.         0        11         0       .00     10.16   1029.23
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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 6.000
     6.000      1.31   1532.71   1532.60       .00   1532.90       .19       .00       .00   1532.40
      20.0       1.0      19.0        .0        .5       5.3        .0        .0        .0   1535.00
       .00      2.24      3.56       .00      .020      .035      .000      .000   1531.40   1018.98
   .011359       0.        0.        0.         0        11         0       .00     10.28   1029.26
```

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T3          Q4
J1  ICHECK  INQ     NINV    IDIR    STRT    METRIC  HVINS   Q       WSEL    FQ
            5                       .020
J2  NPROF   IPLOT   PRFVS   XSECV   XSECH   FN      ALLDC   IBW     CHNIM   ITRACE
    4               -1                              -1
```

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1
  22JUN93      19:06:36                                                                                                                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

*PROF 4

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      1.55   1532.95   1532.95       .00   1533.28       .33       .00       .00   1532.40
      40.0       5.8      34.2        .0       1.5       7.2        .0        .0        .0   1535.00
       .00      3.84      4.74       .00      .020      .035      .000      .000   1531.40   1016.49
   .015026        0.        0.        0.         0        17         8       .00     13.39   1029.88

*SECNO 2.000
     2.000      1.58   1532.98   1532.96       .00   1533.29       .31       .00       .00   1532.40
      40.0       6.2      33.8        .0       1.6       7.4        .0        .0        .0   1535.00
       .00      3.78      4.59       .00      .020      .035      .000      .000   1531.40   1016.29
   .013841        0.        0.        0.         0         5         0       .00     13.64   1029.93

*SECNO 3.000
     3.000      1.59   1532.99   1532.95       .00   1533.29       .30       .00       .00   1532.40
      40.0       6.3      33.7        .0       1.7       7.4        .0        .0        .0   1535.00
       .00      3.75      4.54       .00      .020      .035      .000      .000   1531.40   1016.21
   .013404        0.        0.        0.         0         5         0       .00     13.73   1029.95

*SECNO 4.000
     4.000      1.63   1533.03   1532.96       .00   1533.30       .27       .00       .00   1532.40
      40.0       6.9      33.1        .0       1.9       7.7        .0        .0        .0   1535.00
       .00      3.62      4.29       .00      .020      .035      .000      .000   1531.40   1015.84
   .011517        0.        0.        0.         3         8         0       .00     14.20   1030.04

*SECNO 5.000
     5.000      1.64   1533.04   1532.95       .00   1533.30       .26       .00       .00   1532.40
      40.0       7.1      32.9        .0       2.0       7.8        .0        .0        .0   1535.00
       .00      3.59      4.21       .00      .020      .035      .000      .000   1531.40   1015.72
   .011000        0.        0.        0.         0        11         0       .00     14.35   1030.07

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  22JUN93      19:06:36                                                                                                                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

*SECNO 6.000
     6.000      1.65   1533.05   1532.95       .00   1533.30       .25       .00       .00   1532.40
      40.0       7.3      32.7        .0       2.1       8.0        .0        .0        .0   1535.00
       .00      3.53      4.10       .00      .020      .035      .000      .000   1531.40   1015.55
   .010279        0.        0.        0.         1        11         0       .00     14.56   1030.11

1
  22JUN93      19:06:36                                                                                                                PAGE   12

T3           Q5

J1  ICHECK   INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

             6                                .020

J2  NPROF    IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     5                  -1                                           -1

1
  22JUN93      19:06:36                                                                                                                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

*PROF 5

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      1.80   1533.20   1533.20       .00   1533.56       .36       .00       .00   1532.40
      60.0      14.5      45.5        .0       3.2       9.2        .0        .0        .0   1535.00
       .00      4.57      4.93       .00      .020      .035      .000      .000   1531.40   1014.03
   .012968        0.        0.        0.         0        19         8       .00     16.47   1030.49

*SECNO 2.000
     2.000      1.80   1533.20   1533.20       .00   1533.56       .36       .00       .00   1532.40
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     60.0      14.6      45.4        .0       3.2       9.2       .0       .0        .0   1535.00
      .00      4.56      4.91       .00      .020      .035      .000     .000   1531.40   1014.00
  .012848        0.        0.        0.         0         5         0      .00     16.50   1030.50

*SECNO 3.000
    3.000      1.81   1533.21   1533.20       .00   1533.57       .36      .00       .00   1532.40
     60.0      14.7      45.3        .0       3.2       9.3        .0       .0        .0   1535.00
      .00      4.55      4.87       .00      .020      .035      .000     .000   1531.40   1013.74
  .012579        0.        0.        0.         0         5         0      .00     16.77   1030.51

*SECNO 4.000
    4.000      1.82   1533.22   1533.20       .00   1533.57       .35      .00       .00   1532.40
     60.0      15.0      45.0        .0       3.3       9.4        .0       .0        .0   1535.00
      .00      4.53      4.81       .00      .020      .035      .000     .000   1531.40   1013.33
  .012167        0.        0.        0.         0         5         0      .00     17.20   1030.53

*SECNO 5.000
    5.000      1.91   1533.31   1533.20       .00   1533.58       .27      .00       .01   1532.40
     60.0      17.6      42.4        .0       4.3      10.1        .0       .0        .0   1535.00
      .00      4.13      4.18       .00      .020      .035      .000     .000   1531.40   1008.92
  .008595        0.        0.        0.         8         5         0      .00     21.84   1030.75

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  22JUN93      19:06:36                                                                          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

*SECNO 6.000
    6.000      1.92   1533.32   1533.20       .00   1533.58       .26      .00       .00   1532.40
     60.0      18.0      42.0        .0       4.4      10.2        .0       .0        .0   1535.00
      .00      4.06      4.11       .00      .020      .035      .000     .000   1531.40   1008.34
  .008219        0.        0.        0.         0         8         0      .00     22.44   1030.78

1
  22JUN93      19:06:36                                                                          PAGE   15

T3           Q6

J1  ICHECK   INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

             7                                .020

J2  NPROF    IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     6                  -1                                           -1

1
  22JUN93      19:06:36                                                                          PAGE   16

   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 6

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
    1.000      2.02   1533.42   1533.42       .00   1533.75       .33      .00       .00   1532.40
     80.0      28.4      51.6        .0       6.2      11.2        .0       .0        .0   1535.00
      .00      4.56      4.61       .00      .020      .035      .000     .000   1531.40   1002.87
  .009553        0.        0.        0.         0        16         7      .00     28.18   1031.06

*SECNO 2.000
    2.000      2.07   1533.47   1533.44       .00   1533.76       .29      .00       .00   1532.40
     80.0      29.9      50.1        .0       7.0      11.6        .0       .0        .0   1535.00
      .00      4.28      4.34       .00      .020      .035      .000     .000   1531.40   1000.96
  .008234        0.        0.        0.         0         5         0      .00     30.19   1031.15

*SECNO 3.000
    3.000      2.08   1533.48   1533.42       .00   1533.76       .28      .00       .00   1532.40
     80.0      30.2      49.8        .0       7.1      11.6        .0       .0        .0   1535.00
      .00      4.23      4.29       .00      .020      .035      .000     .000   1531.40   1000.59
  .008000        0.        0.        0.         0         5         0      .00     30.58   1031.17

*SECNO 4.000
    4.000      2.09   1533.49   1533.44       .00   1533.76       .27      .00       .00   1532.40
     80.0      30.6      49.4        .0       7.3      11.7        .0       .0        .0   1535.00
      .00      4.16      4.22       .00      .020      .035      .000     .000   1531.40   1000.13
  .007725        0.        0.        0.         0         8         0      .00     31.06   1031.19

*SECNO 5.000
    5.000      2.10   1533.50   1533.44       .00   1533.76       .26      .00       .00   1532.40
     80.0      31.2      48.7        .0       7.7      11.8        .0       .0        .0   1535.00
      .00      4.07      4.11       .00      .020      .035      .000     .000   1531.40   1000.00
  .007253        0.        0.        0.         1         8         0      .00     31.23   1031.23
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  22JUN93      19:06:36                                                                                                                PAGE   17

    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 6.000
     6.000      2.12    1533.52    1533.43        .00    1533.77        .25        .00        .00    1532.40
      80.0      32.0       48.0         .0        8.0       12.0         .0        .0         .0    1535.00
       .00      3.97       4.00        .00       .020       .035       .000       .000    1531.40    1000.00
   .006792        0.         0.         0.          1         11          0        .00      31.27    1031.27

1
  22JUN93      19:06:36                                                                                                                PAGE   18

 T3            Q7
 J1  ICHECK    INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                 8                             .020

 J2  NPROF     IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

       7                  -1                                           -1

1
  22JUN93      19:06:36                                                                                                                PAGE   19

    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 7

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

 CCHV=      .100 CEHV=      .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 3720 CRITICAL DEPTH ASSUMED
     1.000      2.16    1533.56    1533.56        .00    1533.89        .34        .00        .00    1532.40
     100.0      42.4       57.6         .0        9.1       12.4         .0        .0         .0    1535.00
       .00      4.68       4.63        .00       .020       .035       .000       .000    1531.40    1000.00
   .008817        0.         0.         0.          0         17          7        .00      31.39    1031.39

 *SECNO 2.000
     2.000      2.16    1533.56    1533.52        .00    1533.89        .33        .00        .00    1532.40
     100.0      42.5       57.5         .0        9.1       12.4         .0        .0         .0    1535.00
       .00      4.67       4.62        .00       .020       .035       .000       .000    1531.40    1000.00
   .008758        0.         0.         0.          0          5          0        .00      31.39    1031.39

 *SECNO 3.000
     3.000      2.16    1533.56    1533.52        .00    1533.90        .33        .00        .00    1532.40
     100.0      42.7       57.3         .0        9.2       12.5         .0        .0         .0    1535.00
       .00      4.65       4.59        .00       .020       .035       .000       .000    1531.40    1000.00
   .008632        0.         0.         0.          0          5          0        .00      31.40    1031.40

 *SECNO 4.000
     4.000      2.17    1533.57    1533.52        .00    1533.90        .33        .00        .00    1532.40
     100.0      43.0       57.0         .0        9.3       12.5         .0        .0         .0    1535.00
       .00      4.62       4.55        .00       .020       .035       .000       .000    1531.40    1000.00
   .008445        0.         0.         0.          0          5          0        .00      31.42    1031.42

 *SECNO 5.000
     5.000      2.18    1533.58    1533.55        .00    1533.90        .32        .00        .00    1532.40
     100.0      43.4       56.6         .0        9.5       12.6         .0        .0         .0    1535.00
       .00      4.58       4.49        .00       .020       .035       .000       .000    1531.40    1000.00
   .008203        0.         0.         0.          0          6          0        .00      31.44    1031.44

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  22JUN93      19:06:36                                                                                                                PAGE   20

    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 6.000
     6.000      2.19    1533.59    1533.56        .00    1533.90        .31        .00        .00    1532.40
     100.0      43.8       56.2         .0        9.7       12.7         .0        .0         .0    1535.00
       .00      4.53       4.43        .00       .020       .035       .000       .000    1531.40    1000.00
   .007916        0.         0.         0.          0          6          0        .00      31.46    1031.46

1
  22JUN93      19:06:36                                                                                                                PAGE   21

 T3            Q8
 J1  ICHECK    INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                 9                             .020
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J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     8                  -1                                      -1

1
  22JUN93      19:06:36                                                                                    PAGE   22

    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 8

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      2.37   1533.77   1533.77       .00   1534.21       .44       .00       .00   1532.40
     150.0      77.5      72.5        .0      13.8      14.5        .0        .0        .0   1535.00
       .00      5.61      4.99       .00      .020      .035      .000      .000   1531.40   1000.00
   .008986        0.        0.        0.         0        13         6       .00     31.93   1031.93

*SECNO 2.000
     2.000      2.38   1533.78   1533.73       .00   1534.21       .44       .00       .00   1532.40
     150.0      77.6      72.4        .0      13.9      14.5        .0        .0        .0   1535.00
       .00      5.60      4.98       .00      .020      .035      .000      .000   1531.40   1000.00
   .008930        0.        0.        0.         0         5         0       .00     31.93   1031.93

*SECNO 3.000
     3.000      2.38   1533.78   1533.72       .00   1534.22       .43       .00       .00   1532.40
     150.0      77.8      72.2        .0      13.9      14.6        .0        .0        .0   1535.00
       .00      5.58      4.95       .00      .020      .035      .000      .000   1531.40   1000.00
   .008821        0.        0.        0.         0         5         0       .00     31.94   1031.94

*SECNO 4.000
     4.000      2.39   1533.79   1533.76       .00   1534.22       .43       .00       .00   1532.40
     150.0      78.1      71.9        .0      14.1      14.6        .0        .0        .0   1535.00
       .00      5.55      4.92       .00      .020      .035      .000      .000   1531.40   1000.00
   .008656        0.        0.        0.         0         6         0       .00     31.96   1031.96

*SECNO 5.000
     5.000      2.40   1533.80   1533.77       .00   1534.22       .42       .00       .00   1532.40
     150.0      78.5      71.5        .0      14.2      14.7        .0        .0        .0   1535.00
       .00      5.52      4.87       .00      .020      .035      .000      .000   1531.40   1000.00
   .008447        0.        0.        0.         0         6         0       .00     31.98   1031.98

1
  22JUN93      19:06:36                                                                                    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

*SECNO 6.000
     6.000      2.41   1533.81   1533.77       .00   1534.22       .41       .00       .00   1532.40
     150.0      78.9      71.1        .0      14.4      14.8        .0        .0        .0   1535.00
       .00      5.47      4.81       .00      .020      .035      .000      .000   1531.40   1000.00
   .008197        0.        0.        0.         0         6         0       .00     32.00   1032.00

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  22JUN93      19:06:36                                                                                    PAGE   24

T3            Q9

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              10                            .020

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     9                  -1                                      -1

1
  22JUN93      19:06:36                                                                                    PAGE   25

    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 9

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      2.59   1533.99   1533.99       .00   1534.50       .52       .00       .00   1532.40
     200.0     115.6      84.4        .0      18.5      16.7        .0        .0        .0   1535.00
```

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      .00      6.24      5.05       .00      .020      .035      .000      .000   1531.40   1000.00
  .008193        0.        0.        0.         0         9         6       .00     32.47   1032.46

*SECNO 2.000
     2.000      2.59   1533.99   1533.96       .00   1534.50       .52       .00       .00   1532.40
     200.0     115.7      84.3        .0     18.6      16.7        .0        .0        .0   1535.00
      .00      6.23      5.04       .00      .020      .035      .000      .000   1531.40   1000.00
  .008156        0.        0.        0.         0         6         0       .00     32.47   1032.47

*SECNO 3.000
     3.000      2.59   1533.99   1533.96       .00   1534.51       .51       .00       .00   1532.40
     200.0     115.9      84.1        .0     18.6      16.8        .0        .0        .0   1535.00
      .00      6.22      5.02       .00      .020      .035      .000      .000   1531.40   1000.00
  .008079        0.        0.        0.         0         6         0       .00     32.48   1032.48

*SECNO 4.000
     4.000      2.60   1534.00   1533.96       .00   1534.51       .51       .00       .00   1532.40
     200.0     116.1      83.9        .0     18.7      16.8        .0        .0        .0   1535.00
      .00      6.19      4.99       .00      .020      .035      .000      .000   1531.40   1000.00
  .007967        0.        0.        0.         0         6         0       .00     32.49   1032.49

*SECNO 5.000
     5.000      2.61   1534.01   1533.97       .00   1534.51       .50       .00       .00   1532.40
     200.0     116.4      83.6        .0     18.9      16.9        .0        .0        .0   1535.00
      .00      6.16      4.96       .00      .020      .035      .000      .000   1531.40   1000.00
  .007825        0.        0.        0.         0         6         0       .00     32.51   1032.51

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  22JUN93      19:06:36                                                                          PAGE   26

    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 6.000
     6.000      2.62   1534.02   1533.97       .00   1534.51       .50       .00       .00   1532.40
     200.0     116.7      83.3        .0     19.1      17.0        .0        .0        .0   1535.00
      .00      6.13      4.91       .00      .020      .035      .000      .000   1531.40   1000.00
  .007659        0.        0.        0.         0         6         0       .00     32.52   1032.52

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  22JUN93      19:06:36                                                                          PAGE   27

T3          Q10
J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
              11                            .020
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
    10                  -1                                      -1

1
  22JUN93      19:06:36                                                                          PAGE   28

    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

*PROF10

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      2.87   1534.27   1534.27       .00   1535.02       .75       .00       .00   1532.40
     300.0     189.2     110.8        .0     24.8      19.8        .0        .0        .0   1535.00
      .00      7.62      5.60       .00      .020      .035      .000      .000   1531.40   1000.00
  .008769        0.        0.        0.         0        11         5       .00     33.18   1033.18

*SECNO 2.000
     2.000      2.91   1534.31   1534.28       .00   1535.03       .72       .00       .00   1532.40
     300.0     190.5     109.5        .0     25.5      20.2        .0        .0        .0   1535.00
      .00      7.46      5.43       .00      .020      .035      .000      .000   1531.40   1000.00
  .008140        0.        0.        0.         0         5         0       .00     33.26   1033.26

*SECNO 3.000
     3.000      2.92   1534.32   1534.26       .00   1535.03       .71       .00       .00   1532.40
     300.0     190.8     109.2        .0     25.7      20.2        .0        .0        .0   1535.00
      .00      7.43      5.40       .00      .020      .035      .000      .000   1531.40   1000.00
  .008018        0.        0.        0.         0         5         0       .00     33.28   1033.28

*SECNO 4.000
     4.000      2.93   1534.33   1534.25       .00   1535.03       .70       .00       .00   1532.40
     300.0     191.1     108.9        .0     25.9      20.3        .0        .0        .0   1535.00
      .00      7.39      5.36       .00      .020      .035      .000      .000   1531.40   1000.00
  .007865        0.        0.        0.         0         5         0       .00     33.30   1033.30

*SECNO 5.000
```

```
     5.000      2.98   1534.38   1534.28       .00   1535.04       .65       .00       .00   1532.40
     300.0     193.2     106.8        .0      27.0      20.9        .0        .0        .0   1535.00
       .00      7.15      5.10       .00      .020      .035      .000      .000   1531.40   1000.00
   .006981        0.        0.        0.         4         8         0       .00     33.43   1033.43

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   22JUN93      19:06:36                                                                          PAGE   29

    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 6.000
     6.000      2.99   1534.39   1534.27       .00   1535.04       .65       .00       .00   1532.40
     300.0     193.5     106.5        .0      27.3      21.1        .0        .0        .0   1535.00
       .00      7.10      5.06       .00      .020      .035      .000      .000   1531.40   1000.00
   .006818        0.        0.        0.         0        11         0       .00     33.46   1033.46

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   22JUN93      19:06:36                                                                          PAGE   30

 T3          Q11

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

               12                            .020

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      11                 -1                                      -1

1
   22JUN93      19:06:36                                                                          PAGE   31

    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

 *PROF11

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 3720 CRITICAL DEPTH ASSUMED
     1.000      3.18   1534.58   1534.58       .00   1535.48       .90       .00       .00   1532.40
     400.0     266.2     133.8        .0      31.6      23.4        .0        .0        .0   1535.00
       .00      8.42      5.73       .00      .020      .035      .000      .000   1531.40   1000.00
   .008068        0.        0.        0.         0        14         5       .00     33.95   1033.95

 *SECNO 2.000
     2.000      3.23   1534.63   1534.59       .00   1535.49       .86       .00       .00   1532.40
     400.0     267.6     132.4        .0      32.5      23.9        .0        .0        .0   1535.00
       .00      8.23      5.55       .00      .020      .035      .000      .000   1531.40   1000.00
   .007431        0.        0.        0.         0         5         0       .00     34.06   1034.06

 *SECNO 3.000
     3.000      3.24   1534.64   1534.57       .00   1535.49       .85       .00       .00   1532.40
     400.0     267.9     132.1        .0      32.7      24.0        .0        .0        .0   1535.00
       .00      8.19      5.51       .00      .020      .035      .000      .000   1531.40   1000.00
   .007325        0.        0.        0.         0         5         0       .00     34.08   1034.07

 *SECNO 4.000
     4.000      3.25   1534.65   1534.57       .00   1535.49       .85       .00       .00   1532.40
     400.0     268.2     131.8        .0      32.9      24.1        .0        .0        .0   1535.00
       .00      8.15      5.48       .00      .020      .035      .000      .000   1531.40   1000.00
   .007197        0.        0.        0.         0         5         0       .00     34.10   1034.10

 *SECNO 5.000
     5.000      3.37   1534.77   1534.60       .00   1535.51       .73       .00       .01   1532.40
     400.0     272.1     127.9        .0      35.8      25.7        .0        .0        .0   1535.00
       .00      7.60      4.98       .00      .020      .035      .000      .000   1531.40   1000.00
   .005652        0.        0.        0.         4         8         0       .00     34.43   1034.43

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   22JUN93      19:06:36                                                                          PAGE   32

    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 6.000
     6.000      3.38   1534.78   1534.60       .00   1535.51       .73       .00       .00   1532.40
     400.0     272.2 .  127.8        .0      35.9      25.7        .0        .0        .0   1535.00
       .00      7.58      4.96       .00      .020      .035      .000      .000   1531.40   1000.00
   .005618        0.        0.        0.         0        12         0       .00     34.44   1034.44

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   22JUN93      19:06:36                                                                          PAGE   33
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T3          Q12
J1  ICHECK   INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ
             13                         .020
J2  NPROF    IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE
    12                -1                                    -1

1
  22JUN93      19:06:36                                                                          PAGE   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

*PROF12

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      3.48   1534.88   1534.88       .00   1535.91      1.02       .00       .00   1532.40
     500.0     343.7     156.3        .0      38.3     27.1        .0        .0        .0   1535.00
       .00      8.98      5.77       .00      .020     .035      .000      .000   1531.40   1000.00
   .007290        0.        0.        0.         0       14         4       .00     34.71   1034.71

*SECNO 2.000
     2.000      3.49   1534.89   1534.88       .00   1535.91      1.02       .00       .00   1532.40
     500.0     343.7     156.3        .0      38.3     27.1        .0        .0        .0   1535.00
       .00      8.97      5.76       .00      .020     .035      .000      .000   1531.40   1000.00
   .007272        0.        0.        0.         0        5         0       .00     34.71   1034.71

*SECNO 3.000
     3.000      3.49   1534.89   1534.89       .00   1535.91      1.02       .00       .00   1532.40
     500.0     343.8     156.2        .0      38.4     27.2        .0        .0        .0   1535.00
       .00      8.96      5.75       .00      .020     .035      .000      .000   1531.40   1000.00
   .007235        0.        0.        0.         0        5         0       .00     34.72   1034.72

*SECNO 4.000
     4.000      3.50   1534.90   1534.88       .00   1535.91      1.01       .00       .00   1532.40
     500.0     343.9     156.1        .0      38.5     27.2        .0        .0        .0   1535.00
       .00      8.94      5.73       .00      .020     .035      .000      .000   1531.40   1000.00
   .007177        0.        0.        0.         0        5         0       .00     34.73   1034.73

*SECNO 5.000
     5.000      3.51   1534.91   1534.89       .00   1535.91      1.01       .00       .00   1532.40
     500.0     344.1     155.9        .0      38.6     27.3        .0        .0        .0   1535.00
       .00      8.91      5.71       .00      .020     .035      .000      .000   1531.40   1000.00
   .007096        0.        0.        0.         0        5         0       .00     34.75   1034.75

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  22JUN93      19:06:36                                                                          PAGE   35

    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 6.000
     6.000      3.52   1534.92   1534.89       .00   1535.92      1.00       .00       .00   1532.40
     500.0     344.4     155.6        .0      38.8     27.4        .0        .0        .0   1535.00
       .00      8.87      5.68       .00      .020     .035      .000      .000   1531.40   1000.00
   .006994        0.        0.        0.         0        5         0       .00     34.77   1034.77

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  22JUN93      19:06:36                                                                          PAGE   36

T3          Q13
J1  ICHECK   INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ
             14                         .020
J2  NPROF    IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE
    13                -1                                    -1

1
  22JUN93      19:06:36                                                                          PAGE   37

    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

*PROF13

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
```

```
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      3.77   1535.17   1535.17       .00   1536.29      1.12       .00       .00   1532.40
     600.0     418.2     181.8        .0      44.6      30.8        .0        .0        .0   1535.00
       .00      9.38      5.90       .02      .020      .035      .055      .000   1531.40   1000.00
   .006626        0.        0.        0.         0        19         4       .00     35.39   1035.39

*SECNO 2.000
     2.000      3.83   1535.23   1535.18       .00   1536.29      1.07       .00       .00   1532.40
     600.0     418.7     181.3        .0      45.7      31.5        .1        .0        .0   1535.00
       .00      9.17      5.76       .02      .020      .035      .055      .000   1531.40   1000.00
   .006156        0.        0.        0.         0         5         0       .00     35.50   1035.50

*SECNO 3.000
     3.000      3.83   1535.23   1535.16       .00   1536.29      1.06       .00       .00   1532.40
     600.0     418.8     181.2        .0      45.8      31.5        .1        .0        .0   1535.00
       .00      9.14      5.75       .02      .020      .035      .055      .000   1531.40   1000.00
   .006090        0.        0.        0.         0         5         0       .00     35.52   1035.52

*SECNO 4.000
     4.000      3.84   1535.24   1535.16       .00   1536.30      1.05       .00       .00   1532.40
     600.0     418.9     181.1        .0      46.0      31.7        .1        .0        .0   1535.00
       .00      9.10      5.72       .02      .020      .035      .055      .000   1531.40   1000.00
   .006010        0.        0.        0.         0         5         0       .00     35.54   1035.54

*SECNO 5.000
     5.000      3.98   1535.38   1535.15       .00   1536.31       .93       .00       .01   1532.40
     600.0     420.1     179.8        .1      49.2      33.5        .2        .0        .0   1535.00
       .00      8.54      5.36       .59      .020      .035      .055      .000   1531.40   1000.00
   .004888        0.        0.        0.         4         5         0       .00     35.87   1035.87

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   22JUN93      19:06:36                                                                          PAGE   38

    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 6.000
     6.000      3.99   1535.39   1535.17       .00   1536.31       .92       .00       .00   1532.40
     600.0     420.2     179.7        .1      49.3      33.6        .2        .0        .0   1535.00
       .00      8.52      5.35       .59      .020      .035      .055      .000   1531.40   1000.00
   .004857        0.        0.        0.         0        11         0       .00     35.88   1035.88

1
   22JUN93      19:06:36                                                                          PAGE   39

T3          Q14

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              15                            .020

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    14                  -1                                      -1


1
   22JUN93      19:06:36                                                                          PAGE   40

    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

*PROF14

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
     1.000      4.01   1535.41   1535.41       .00   1536.64      1.23       .00       .00   1532.40
     700.0     490.4     209.5        .1      49.9      33.9        .2        .0        .0   1535.00
       .00      9.84      6.17       .71      .020      .035      .055      .000   1531.40   1000.00
   .006384        0.        0.        0.         0        19         2       .00     35.94   1035.94

*SECNO 2.000
     2.000      4.07   1535.47   1535.42       .00   1536.65      1.18       .00       .01   1532.40
     700.0     490.9     209.0        .2      51.0      34.6        .2        .0        .0   1535.00
       .00      9.63      6.04       .74      .020      .035      .055      .000   1531.40   1000.00
   .005950        0.        0.        0.         0         5         0       .00     36.06   1036.05

*SECNO 3.000
     3.000      4.08   1535.48   1535.40       .00   1536.65      1.17       .00       .00   1532.40
     700.0     490.9     208.9        .2      51.2      34.7        .3        .0        .0   1535.00
       .00      9.60      6.02       .74      .020      .035      .055      .000   1531.40   1000.00
   .005889        0.        0.        0.         0         5         0       .00     36.07   1036.07

*SECNO 4.000
```

4.000	4.09	1535.49	1535.40	.00	1536.65	1.16	.00	.00	1532.40
700.0	491.0	208.8	.2	51.4	34.8	.3	.0	.0	1535.00
.00	9.56	6.00	.75	.020	.035	.055	.000	1531.40	1000.00
.005816	0.	0.	0.	0	5	0	.00	36.10	1036.09

*SECNO 5.000

5.000	4.24	1535.64	1535.39	.00	1536.66	1.03	.00	.01	1532.40
700.0	492.1	207.5	.4	54.7	36.8	.5	.0	.0	1535.00
.00	8.99	5.64	.82	.020	.035	.055	.000	1531.40	1000.00
.004774	0.	0.	0.	4	5	0	.00	36.45	1036.44

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 6.000

6.000	4.24	1535.64	1535.41	.00	1536.67	1.02	.00	.00	1532.40
700.0	492.2	207.5	.4	54.8	36.9	.5	.0	.0	1535.00
.00	8.97	5.63	.82	.020	.035	.055	.000	1531.40	1000.00
.004744	0.	0.	0.	0	11	0	.00	36.46	1036.45

THIS RUN EXECUTED 22JUN93 19:06:39

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

 Version   4.6.2;  May 1991
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SUMMARY PRINTOUT

	SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
	1.000	5.00	1532.12	.72	2.95	1532.08	1532.26	.00	199.18	.00
	1.000	10.00	1532.34	.94	3.49	1532.29	1532.53	.00	197.62	.00
*	1.000	20.00	1532.60	1.20	4.26	1532.60	1532.88	.00	188.64	.00
*	1.000	40.00	1532.95	1.55	4.74	1532.95	1533.28	.00	150.26	.00
*	1.000	60.00	1533.20	1.80	4.93	1533.20	1533.56	.00	129.68	.00
*	1.000	80.00	1533.42	2.02	4.61	1533.42	1533.75	.00	95.53	.00
*	1.000	100.00	1533.56	2.16	4.63	1533.56	1533.89	.00	88.17	.00
*	1.000	150.00	1533.77	2.37	4.99	1533.77	1534.21	.00	89.86	.00
*	1.000	200.00	1533.99	2.59	5.05	1533.99	1534.50	.00	81.93	.00
*	1.000	300.00	1534.27	2.87	5.60	1534.27	1535.02	.00	87.69	.00
*	1.000	400.00	1534.58	3.18	5.73	1534.58	1535.48	.00	80.68	.00
*	1.000	500.00	1534.88	3.48	5.77	1534.88	1535.91	.00	72.90	.00
*	1.000	600.00	1535.17	3.77	5.90	1535.17	1536.29	.00	66.26	.00
*	1.000	700.00	1535.41	4.01	6.17	1535.41	1536.64	.00	63.84	.00
	2.000	5.00	1532.13	.73	2.91	1532.08	1532.26	.00	193.36	1.01
	2.000	10.00	1532.35	.95	3.46	1532.30	1532.53	.00	193.29	1.01
	2.000	20.00	1532.61	1.21	4.23	1532.60	1532.88	.00	185.06	1.01
	2.000	40.00	1532.98	1.58	4.59	1532.96	1533.29	.00	138.41	1.04
	2.000	60.00	1533.20	1.80	4.91	1533.20	1533.56	.00	128.48	1.00
	2.000	80.00	1533.47	2.07	4.34	1533.44	1533.76	.00	82.34	1.08
	2.000	100.00	1533.56	2.16	4.62	1533.52	1533.89	.00	87.58	1.00
	2.000	150.00	1533.78	2.38	4.98	1533.73	1534.21	.00	89.30	1.00
	2.000	200.00	1533.99	2.59	5.04	1533.96	1534.50	.00	81.56	1.00
	2.000	300.00	1534.31	2.91	5.43	1534.28	1535.03	.00	81.40	1.04
	2.000	400.00	1534.63	3.23	5.55	1534.59	1535.49	.00	74.31	1.04
	2.000	500.00	1534.89	3.49	5.76	1534.88	1535.91	.00	72.72	1.00
	2.000	600.00	1535.23	3.83	5.76	1535.18	1536.29	.00	61.56	1.04
	2.000	700.00	1535.47	4.07	6.04	1535.42	1536.65	.00	59.50	1.04

SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
3.000	5.00	1532.14	.74	2.86	1532.08	1532.27	.00	183.62	1.03
3.000	10.00	1532.36	.96	3.41	1532.29	1532.54	.00	185.48	1.02
3.000	20.00	1532.62	1.22	4.17	1532.60	1532.88	.00	177.69	1.02
3.000	40.00	1532.99	1.59	4.54	1532.95	1533.29	.00	134.04	1.02
3.000	60.00	1533.21	1.81	4.87	1533.20	1533.57	.00	125.79	1.01
3.000	80.00	1533.48	2.08	4.29	1533.42	1533.76	.00	80.00	1.01
3.000	100.00	1533.56	2.16	4.59	1533.52	1533.90	.00	86.32	1.01
3.000	150.00	1533.78	2.38	4.95	1533.72	1534.22	.00	88.21	1.01
3.000	200.00	1533.99	2.59	5.02	1533.96	1534.51	.00	80.79	1.00
3.000	300.00	1534.32	2.92	5.40	1534.26	1535.03	.00	80.18	1.01
3.000	400.00	1534.64	3.24	5.51	1534.57	1535.49	.00	73.25	1.01
3.000	500.00	1534.89	3.49	5.75	1534.89	1535.91	.00	72.35	1.00
3.000	600.00	1535.23	3.83	5.75	1535.16	1536.29	.00	60.90	1.01
3.000	700.00	1535.48	4.08	6.02	1535.40	1536.65	.00	58.89	1.01
4.000	5.00	1532.15	.75	2.79	1532.08	1532.27	.00	171.88	1.03
4.000	10.00	1532.37	.97	3.34	1532.29	1532.54	.00	175.39	1.03
4.000	20.00	1532.69	1.29	3.68	1532.59	1532.89	.00	124.37	1.20
4.000	40.00	1533.03	1.63	4.29	1532.96	1533.30	.00	115.17	1.08
4.000	60.00	1533.22	1.82	4.81	1533.20	1533.57	.00	121.67	1.02

4.000	80.00	1533.49	2.09	4.22	1533.44	1533.76	.00	77.25	1.02
4.000	100.00	1533.57	2.17	4.55	1533.52	1533.90	.00	84.45	1.01
4.000	150.00	1533.79	2.39	4.92	1533.76	1534.22	.00	86.56	1.01
4.000	200.00	1534.00	2.60	4.99	1533.96	1534.51	.00	79.67	1.01
4.000	300.00	1534.33	2.93	5.36	1534.25	1535.03	.00	78.65	1.01
4.000	400.00	1534.65	3.25	5.48	1534.57	1535.49	.00	71.97	1.01
4.000	500.00	1534.90	3.50	5.73	1534.88	1535.91	.00	71.77	1.00
4.000	600.00	1535.24	3.84	5.72	1535.16	1536.30	.00	60.10	1.01
4.000	700.00	1535.49	4.09	6.00	1535.40	1536.65	.00	58.16	1.01
5.000	5.00	1532.16	.76	2.71	1532.08	1532.27	.00	160.04	1.04
5.000	10.00	1532.38	.98	3.26	1532.29	1532.55	.00	164.40	1.03
5.000	20.00	1532.70	1.30	3.62	1532.60	1532.90	.00	118.81	1.02
5.000	40.00	1533.04	1.64	4.21	1532.95	1533.30	.00	110.00	1.02
5.000	60.00	1533.31	1.91	4.18	1533.20	1533.58	.00	85.95	1.19
5.000	80.00	1533.50	2.10	4.11	1533.44	1533.76	.00	72.53	1.03
5.000	100.00	1533.58	2.18	4.49	1533.55	1533.90	.00	82.03	1.01
5.000	150.00	1533.80	2.40	4.87	1533.77	1534.22	.00	84.47	1.01
5.000	200.00	1534.01	2.61	4.96	1533.97	1534.51	.00	78.25	1.01
5.000	300.00	1534.38	2.98	5.10	1534.28	1535.04	.00	69.81	1.06
5.000	400.00	1534.77	3.37	4.98	1534.60	1535.51	.00	56.52	1.13
5.000	500.00	1534.91	3.51	5.71	1534.89	1535.91	.00	70.96	1.01
5.000	600.00	1535.38	3.98	5.36	1535.15	1536.31	.00	48.88	1.11
5.000	700.00	1535.64	4.24	5.64	1535.39	1536.66	.00	47.74	1.10

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SECNO	Q	CWSEL	DEPTH	VCH	CRIWS	EG	HL	10*KS	KRATIO
6.000	5.00	1532.17	.77	2.64	1532.08	1532.28	.00	149.16	1.04
6.000	10.00	1532.39	.99	3.18	1532.29	1532.55	.00	153.81	1.03
6.000	20.00	1532.71	1.31	3.56	1532.60	1532.90	.00	113.59	1.02
6.000	40.00	1533.05	1.65	4.10	1532.95	1533.30	.00	102.79	1.03
6.000	60.00	1533.32	1.92	4.11	1533.20	1533.58	.00	82.19	1.02
6.000	80.00	1533.52	2.12	4.00	1533.43	1533.77	.00	67.92	1.03
6.000	100.00	1533.59	2.19	4.43	1533.56	1533.90	.00	79.16	1.02
6.000	150.00	1533.81	2.41	4.81	1533.77	1534.22	.00	81.97	1.02
6.000	200.00	1534.02	2.62	4.91	1533.97	1534.51	.00	76.59	1.01
6.000	300.00	1534.39	2.99	5.06	1534.27	1535.04	.00	68.18	1.01
6.000	400.00	1534.78	3.38	4.96	1534.60	1535.51	.00	56.18	1.00
6.000	500.00	1534.92	3.52	5.68	1534.89	1535.92	.00	69.94	1.01
6.000	600.00	1535.39	3.99	5.35	1535.17	1536.31	.00	48.57	1.00
6.000	700.00	1535.64	4.24	5.63	1535.41	1536.67	.00	47.44	1.00

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SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      1.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  6  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  7  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  8  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  9  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 10  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 11  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 12  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 13  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 14  CRITICAL DEPTH ASSUMED
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C508 Flow Split Table

Stage (ft)	Discharge, in cfs		
	Left Channel	Right Channel	Total
1524.24	---	0	0
1525.00	---	6	6
1525.50	---	9	9
1526.00	---	16	16
1526.50	---	22	22
1527.00	---	28	28
1527.56	0	38	38
1528.00	4	47	51
1528.20	6	52	58
1528.40	14	56	70
1528.60	24	60	84
1528.80	37	63	100
1529.00	56	66	122
1529.20	81	68	149
1529.40	112	71	183
1529.60	143	73	216
1529.64	154	73	227

* Note: Weir flow over the Road will start at El > 1529.64

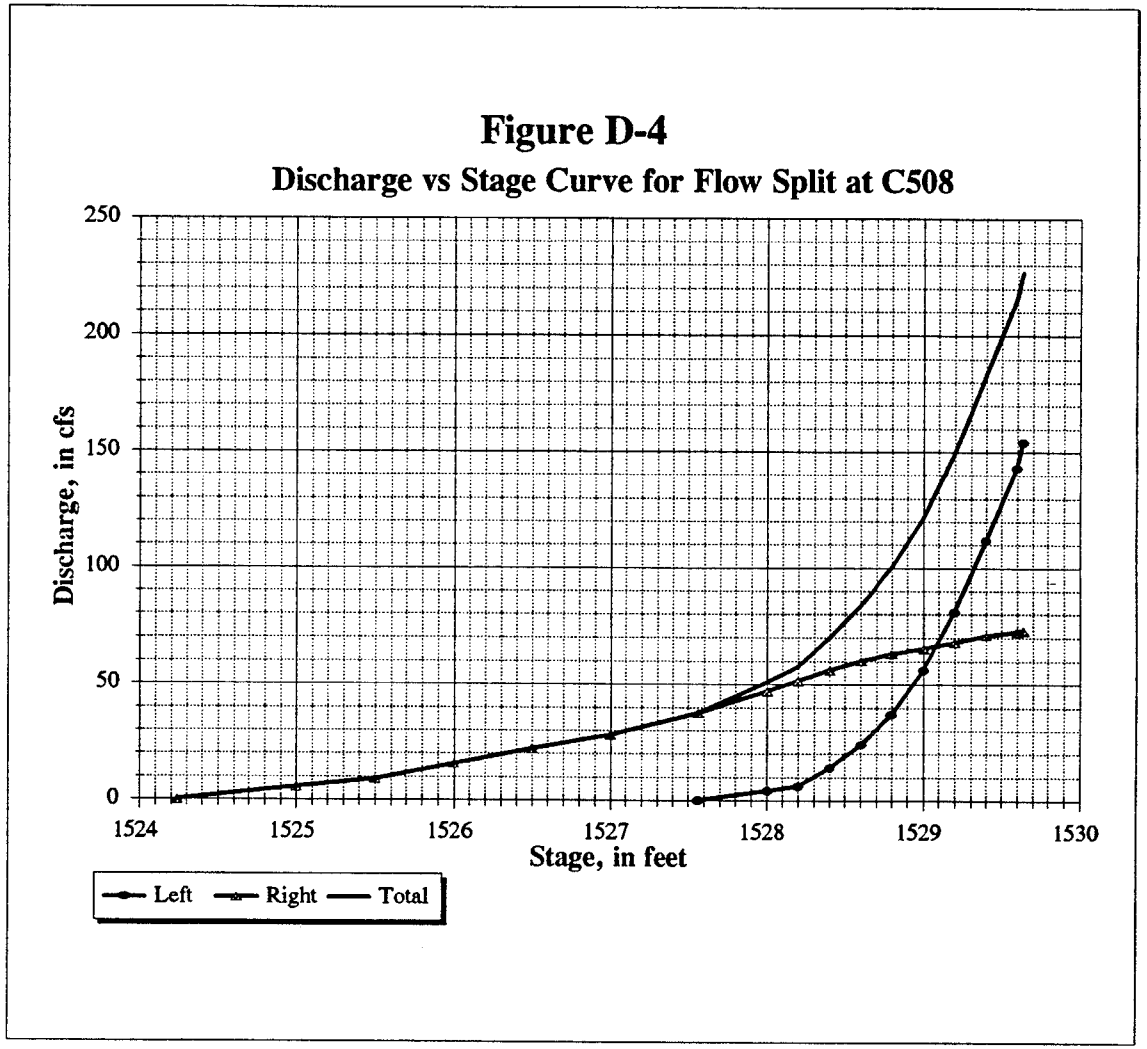
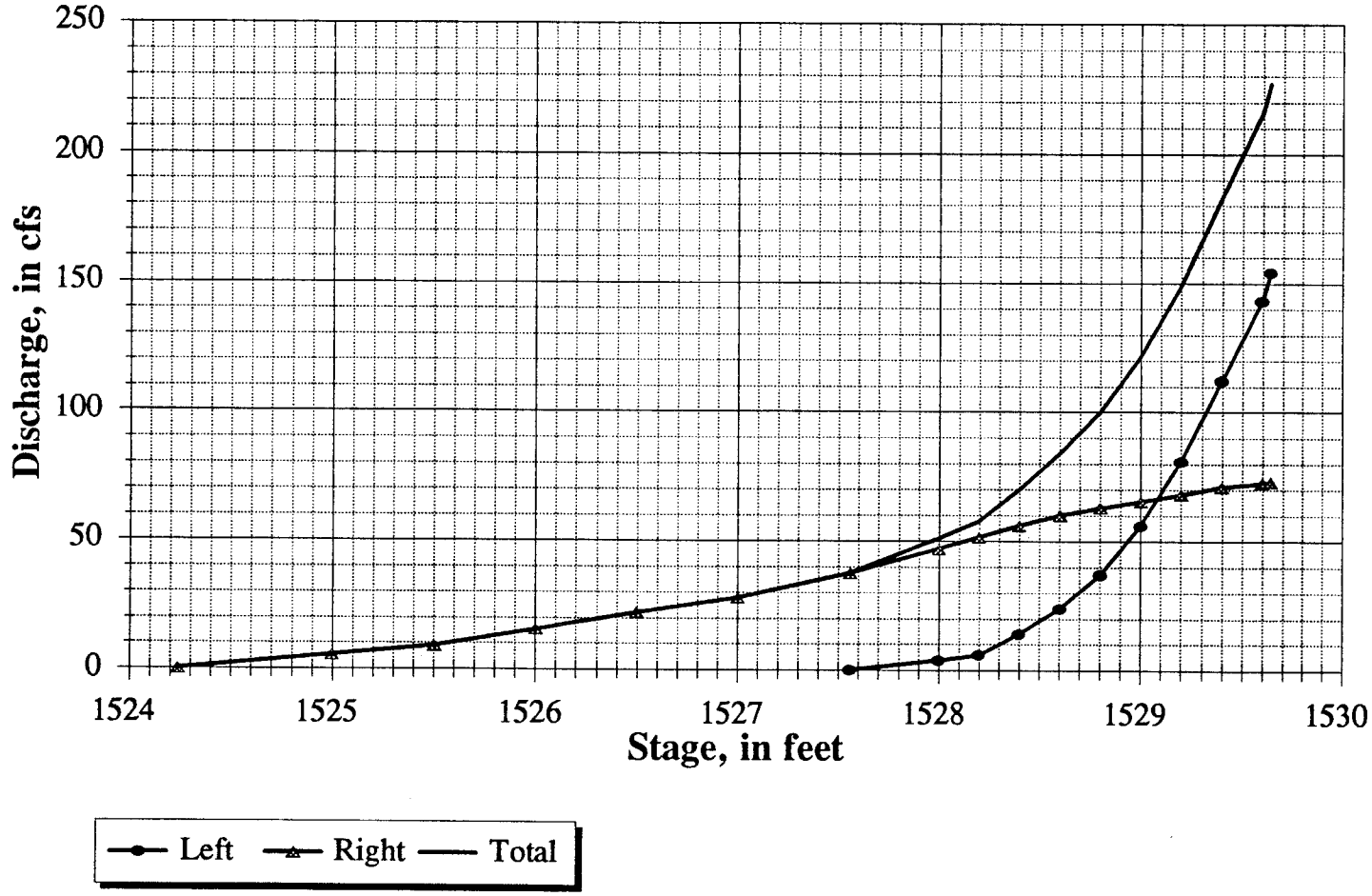


Figure D-4

Discharge vs Stage Curve for Flow Split at C508

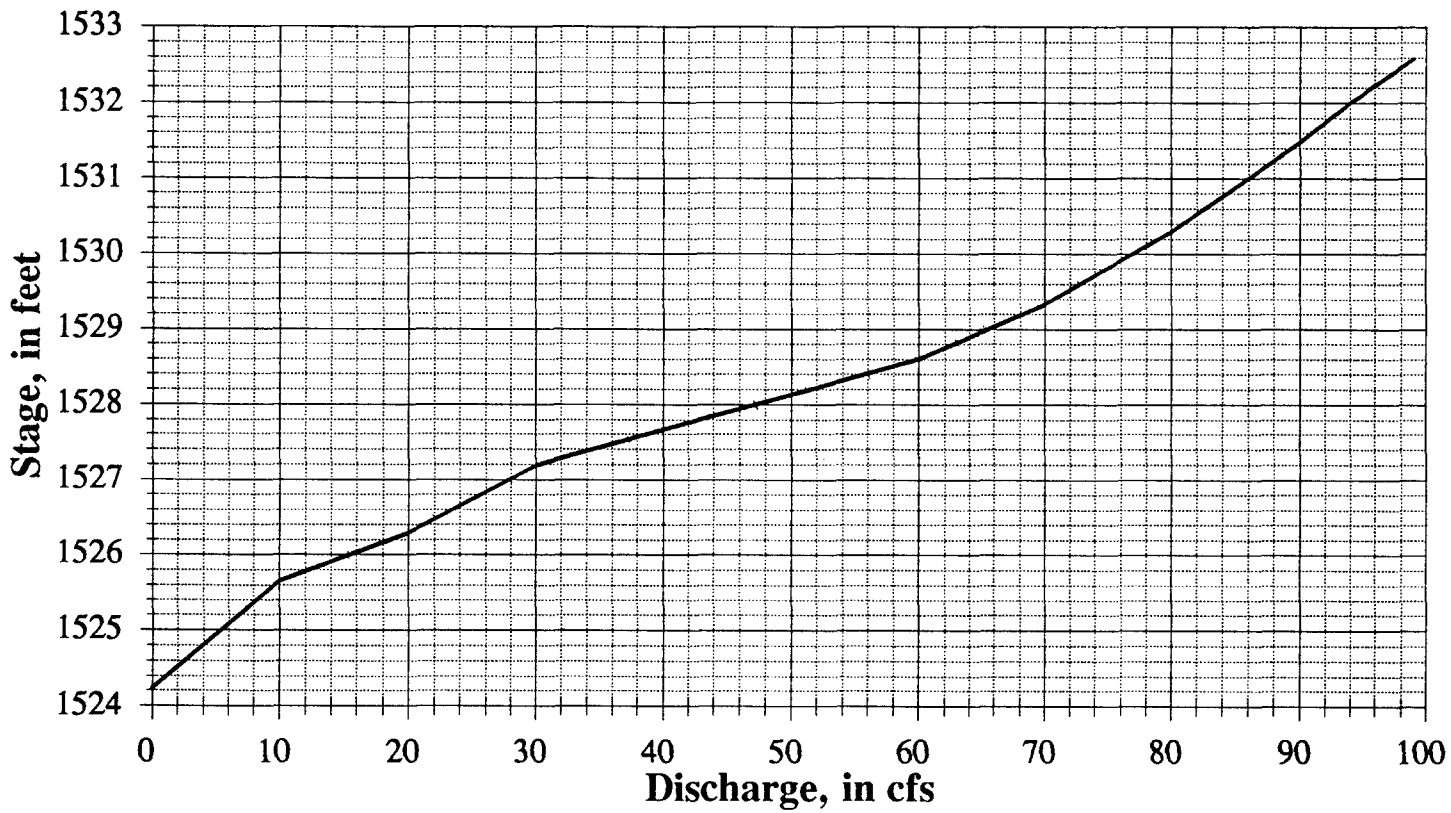


flowsplt.wb1

21-Jun-93

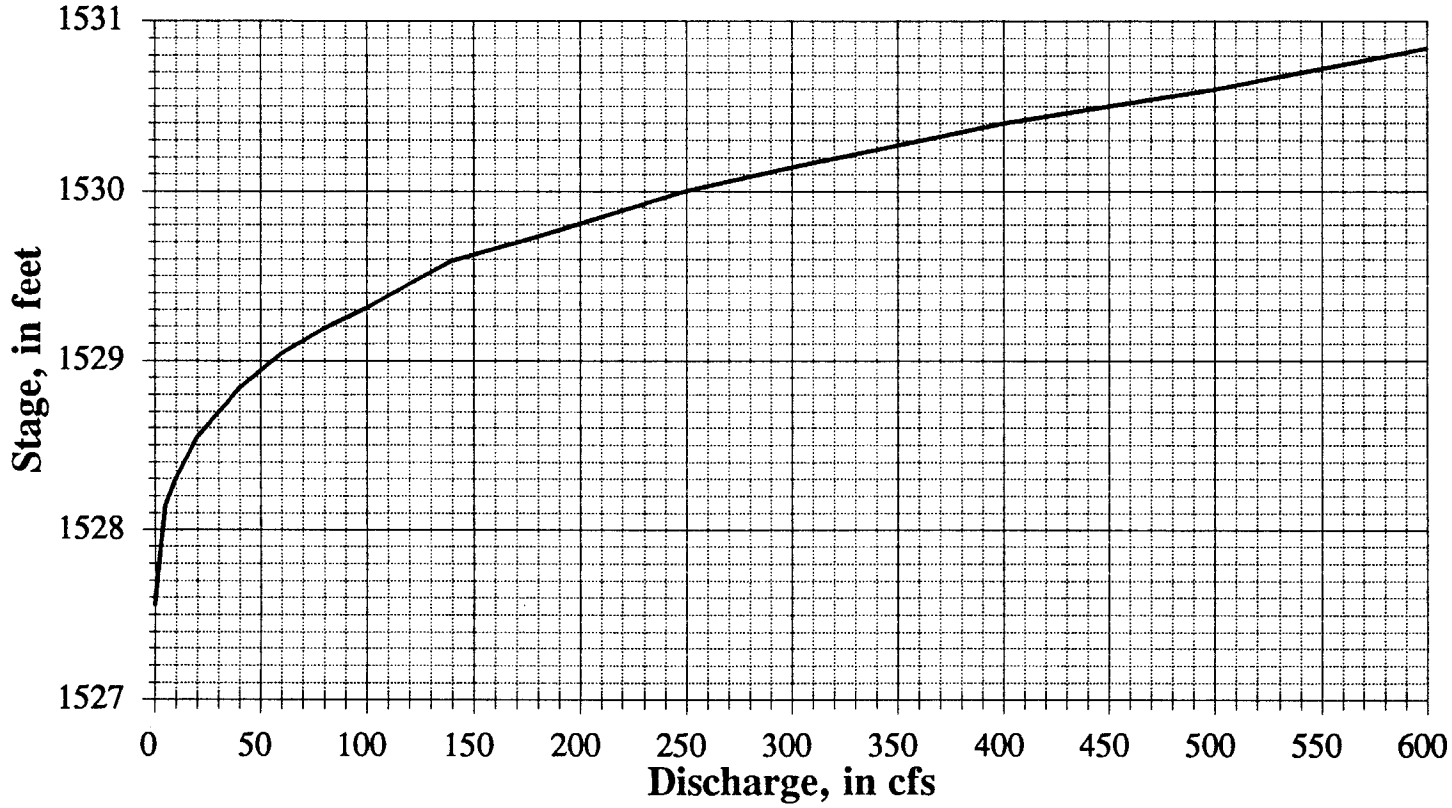
C508 Stage vs Discharge

Right Channel (Culvert Flow) from HY8



C508 Stage vs Discharge

Left Channel (Ditch Flow) from HEC-2



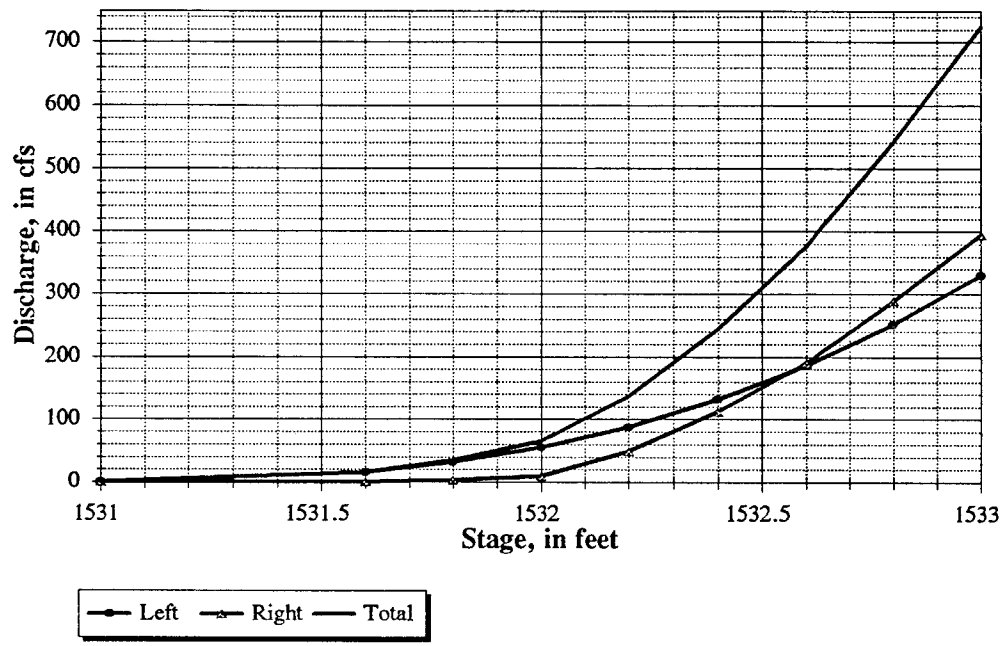
Refer to Appendix A for supporting calculations

C512 Flow Split Table

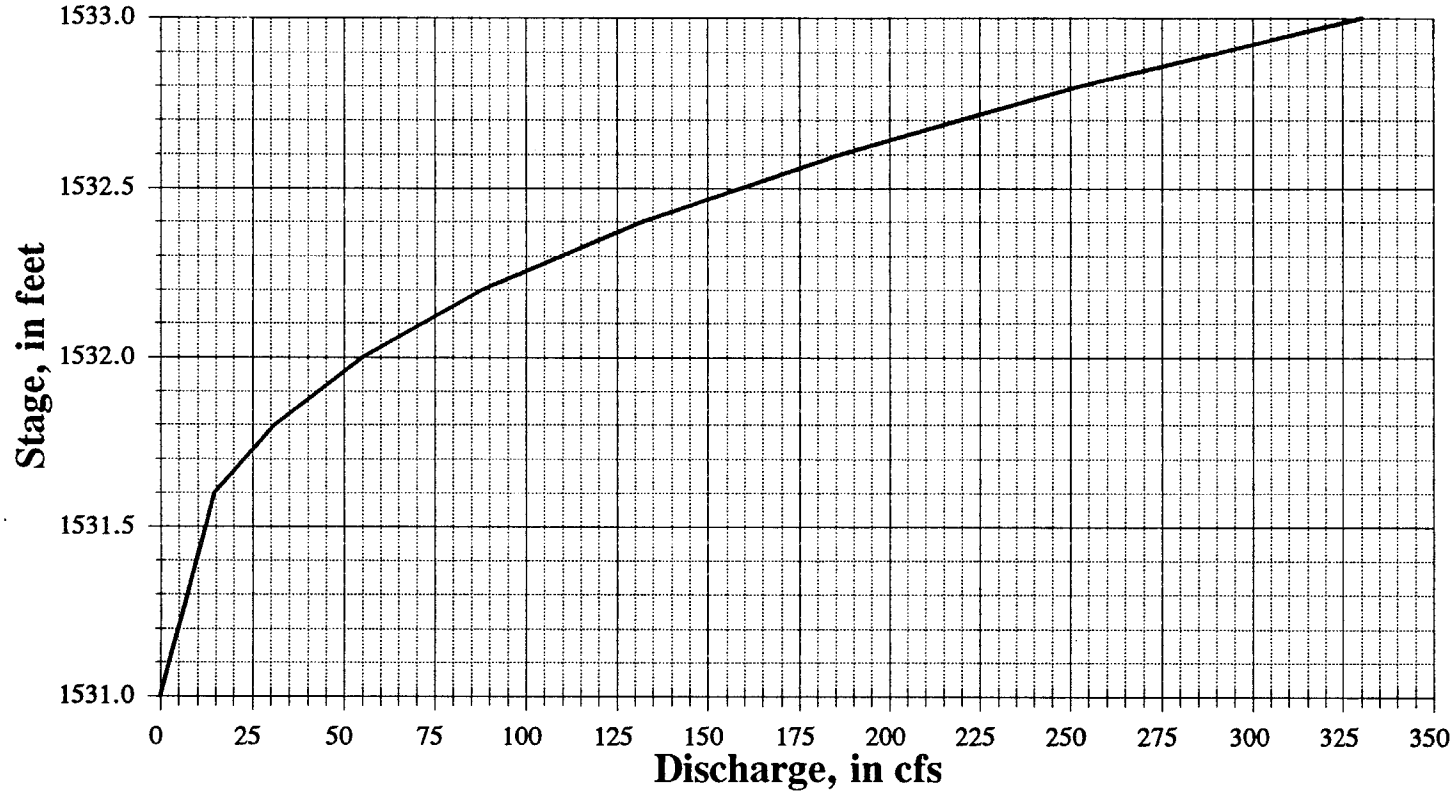
Stage (ft)	Discharge, in cfs		
	Left Weir	Right Channel	Total
1531.00	0	0	0
1531.60	15	0	15
1531.80	31	4	35
1532.00	55	10	65
1532.20	88	49	137
1532.40	132	112	244
1532.60	186	190	376
1532.80	252	289	541
1533.00	330	395	725

Figure D-5

Discharge vs Stage Curve for Flow Split at C512 (Stock Tank)

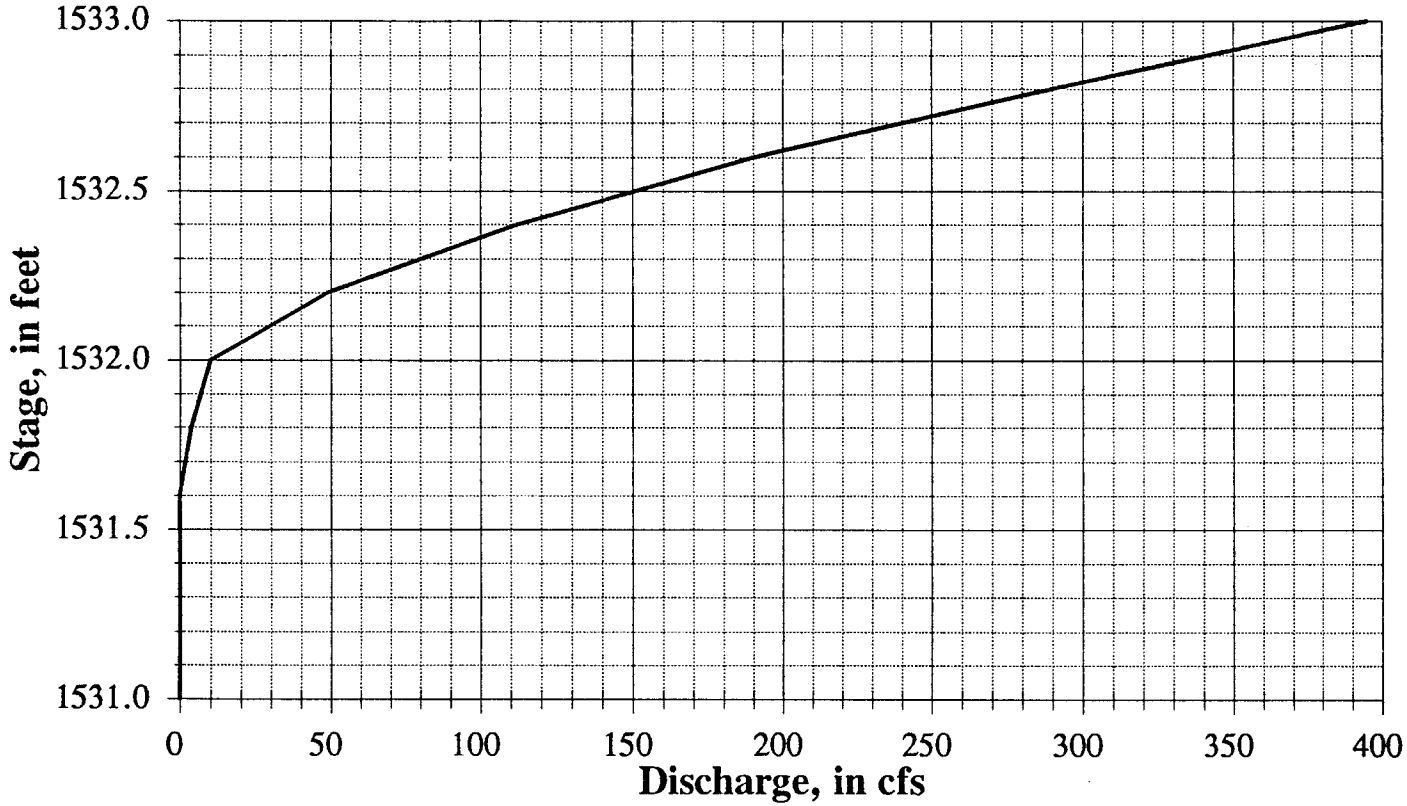


C512 Stage vs Discharge
Left Channel (Weir Flow)



C512 Stage vs Discharge

Right Channel (Bahia Drive) from HEC-2



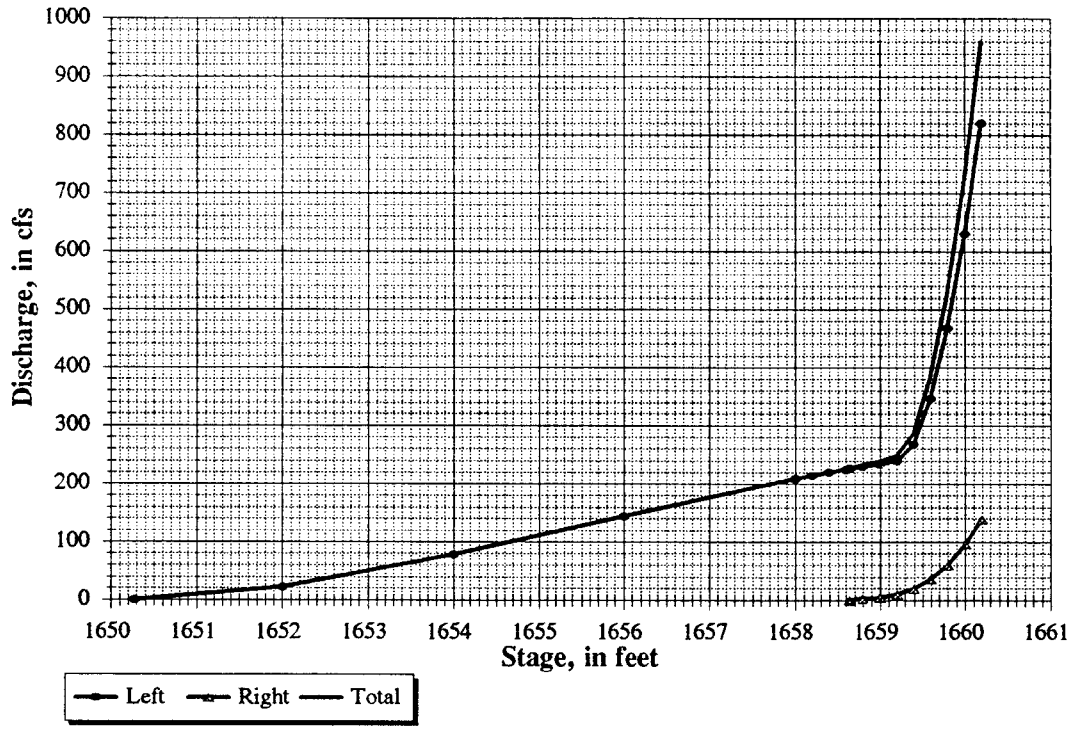
Refer to Appendix A for supporting calculations

C523 Flow Split Table

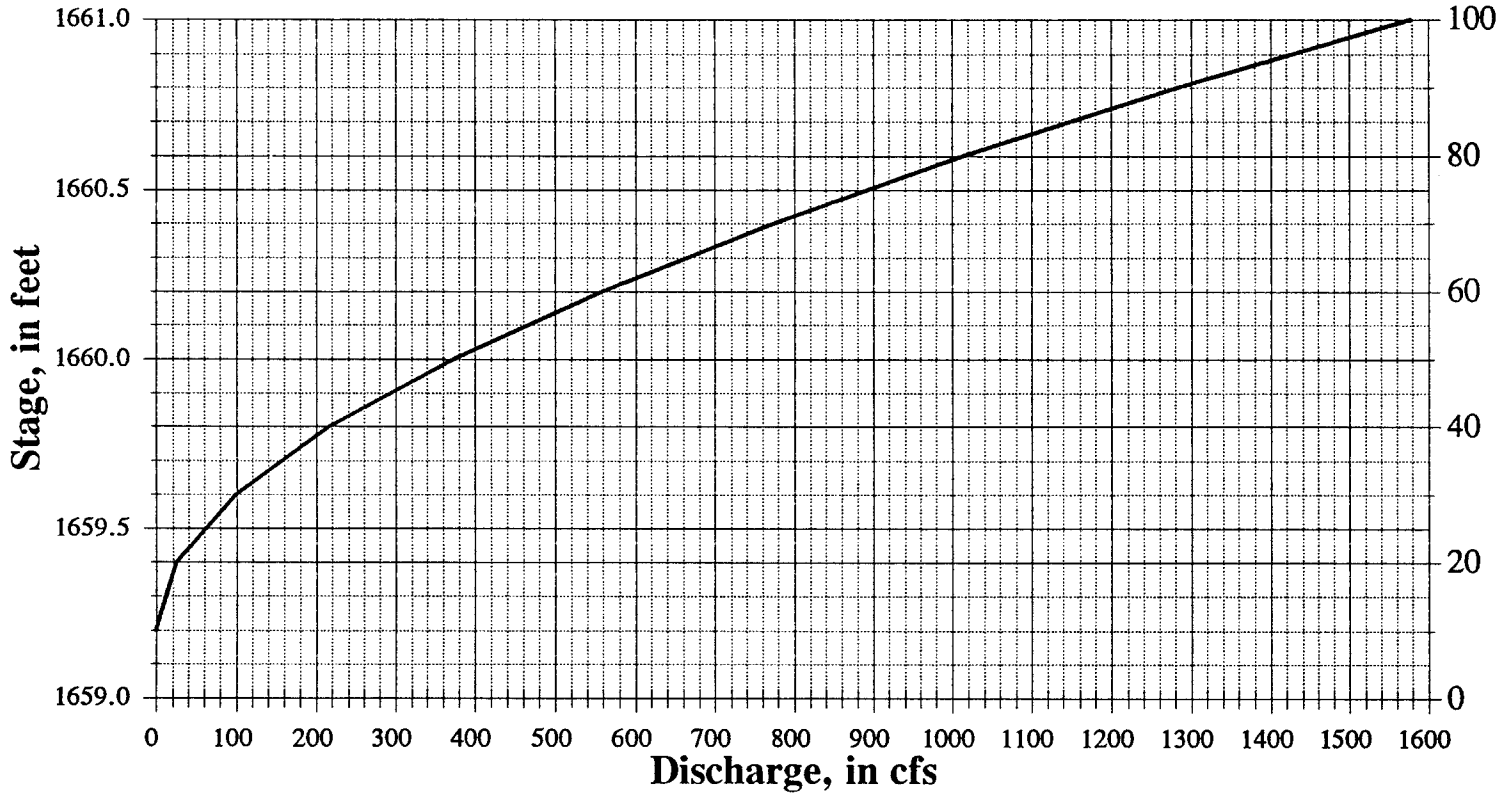
Stage (ft)	Discharge, in cfs		
	Left Channel	Right Channel	Total
1650.28	0	---	0
1652.00	22	---	22
1654.00	78	---	78
1656.00	144	---	144
1658.00	209	---	209
1658.20	214	---	214
1658.40	220	---	220
1658.60	224	---	224
1658.64	226	0	226
1658.80	229	3	232
1659.00	234	5	239
1659.20	239	10	249
1659.40	268	20	288
1659.60	347	37	384
1659.80	468	61	529
1660.00	630	96	726
1660.20	821	139	960

Figure D-6

Discharge vs Stage Curve for Flow Split at C523

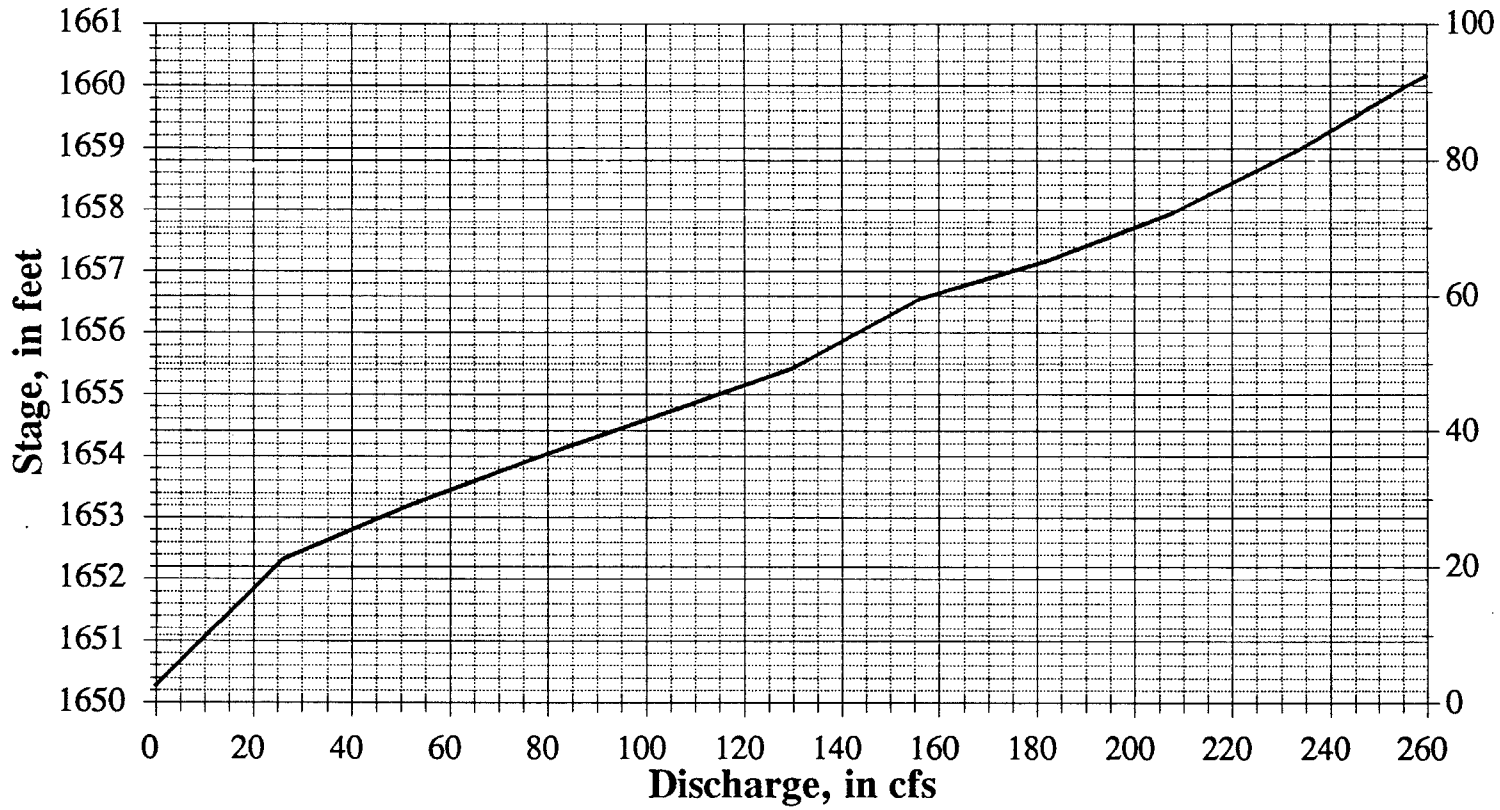


C523 Stage vs Discharge
Left Channel (Weir Flow)



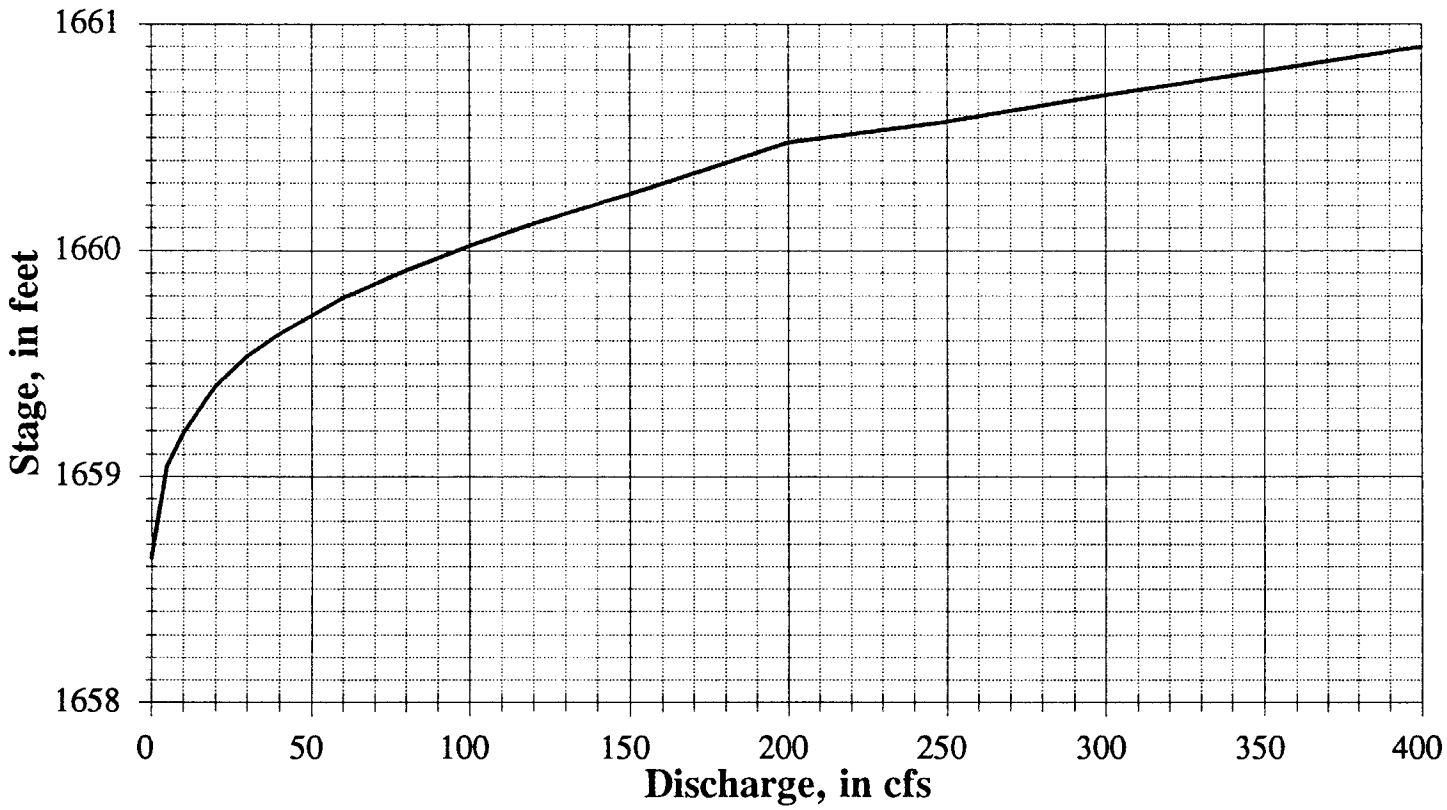
C523 Stage vs Discharge

Left Channel (Culvert Flow) from HY8



C523 Stage vs Discharge

Right Channel (Ditch Flow) from HEC-2



flowsplt.wb1

09-Jul-93

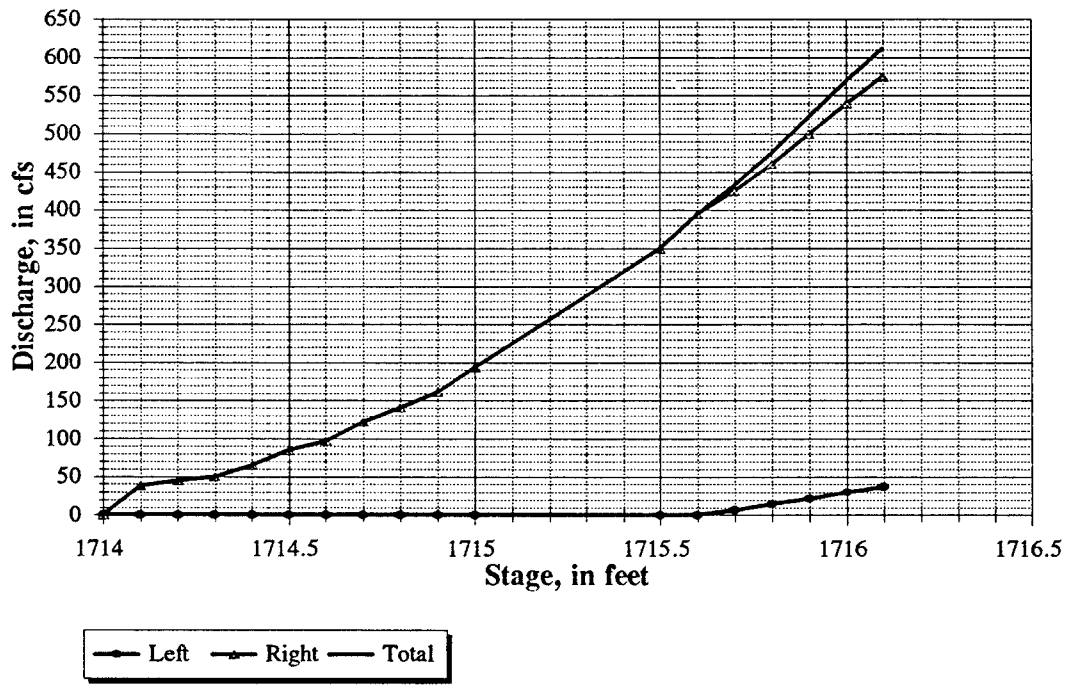
Refer to Appendix A for supporting calculations

C543 Flow Split Table

Stage (ft)	Discharge, in cfs		
	Left Channel	Right Channel	Total
1714.00	0	0	0
1714.10	0	38	38
1714.20	0	45	45
1714.30	0	50	50
1714.40	0	65	65
1714.50	0	85	85
1714.60	0	97	97
1714.70	0	122	122
1714.80	0	141	141
1714.90	0	162	162
1715.00	0	194	194
1715.50	0	350	350
1715.60	0	395	395
1715.70	7	425	432
1715.80	15	460	475
1715.90	22	500	522
1716.00	30	540	570
1716.10	37	575	612

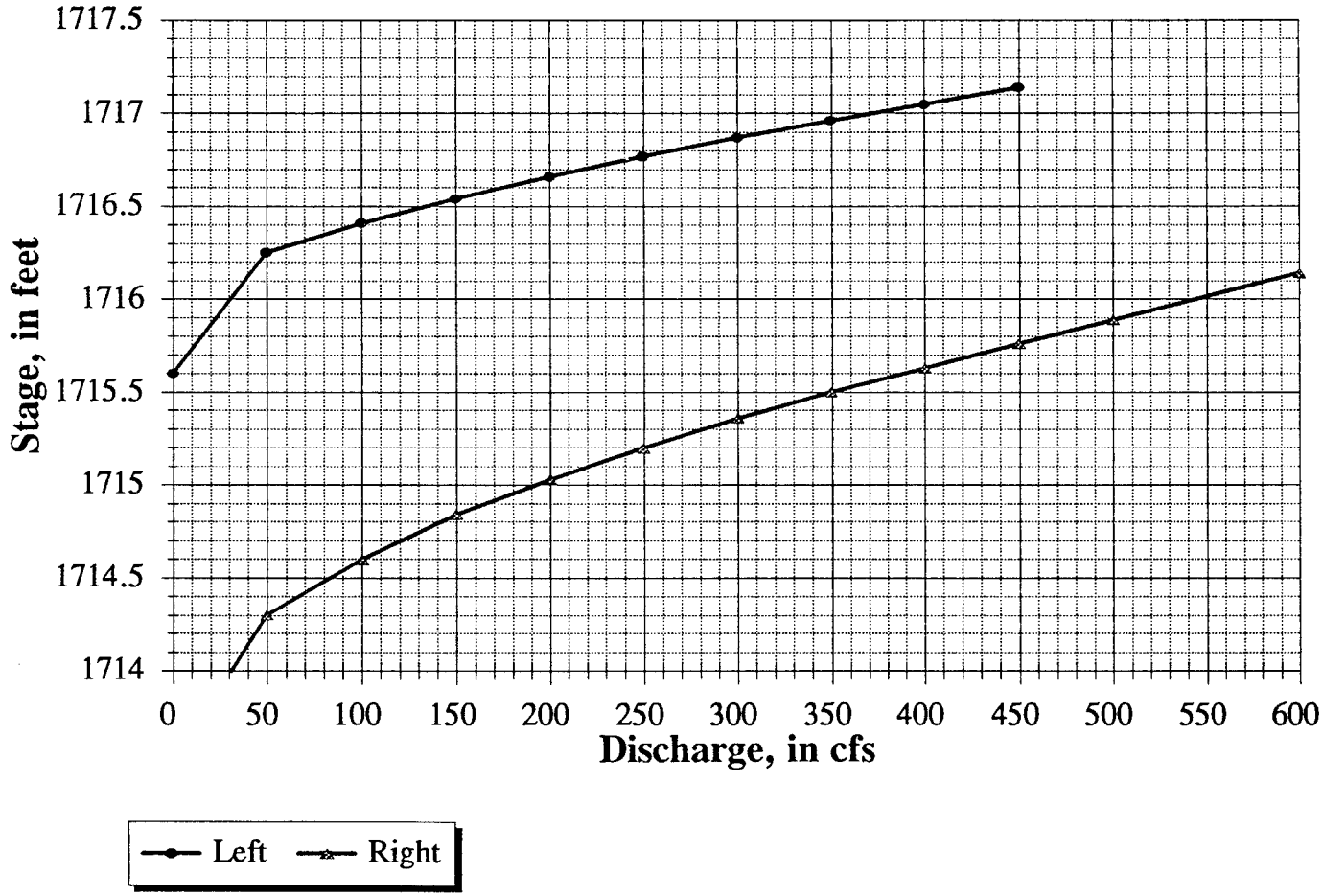
Figure D-7

Discharge vs Stage Curve for Flow Split at C543



C543 HEC-2 Results

Discharge vs Stage Curve for Flow Split at C543



flowsplt.wb1

17-Nov-93

GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 1 OF

CLIENT FCDMC

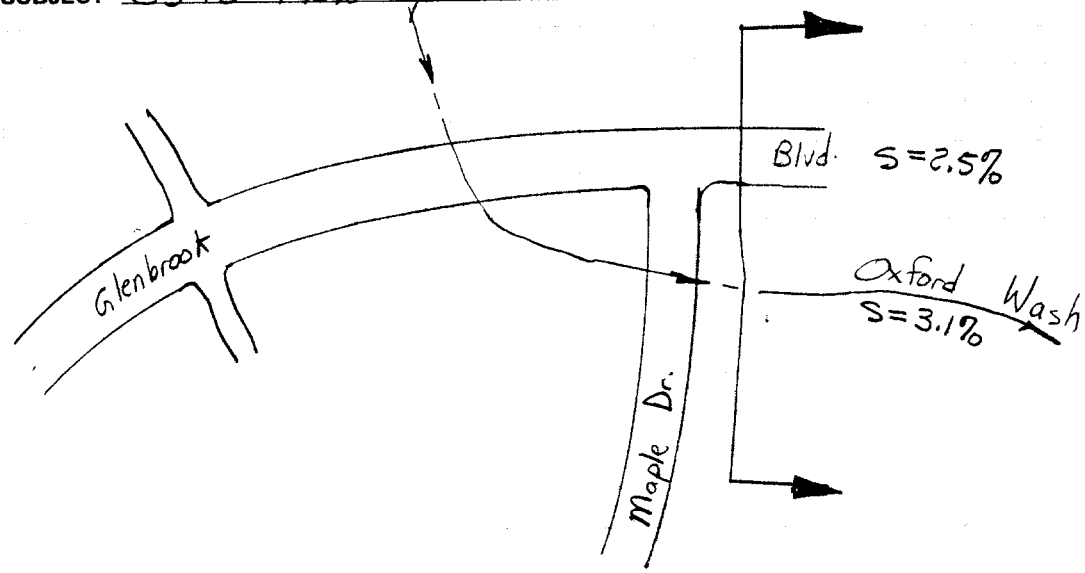
PROJECT Fountain Hills North FIS

SUBJECT CS43 Flow Split

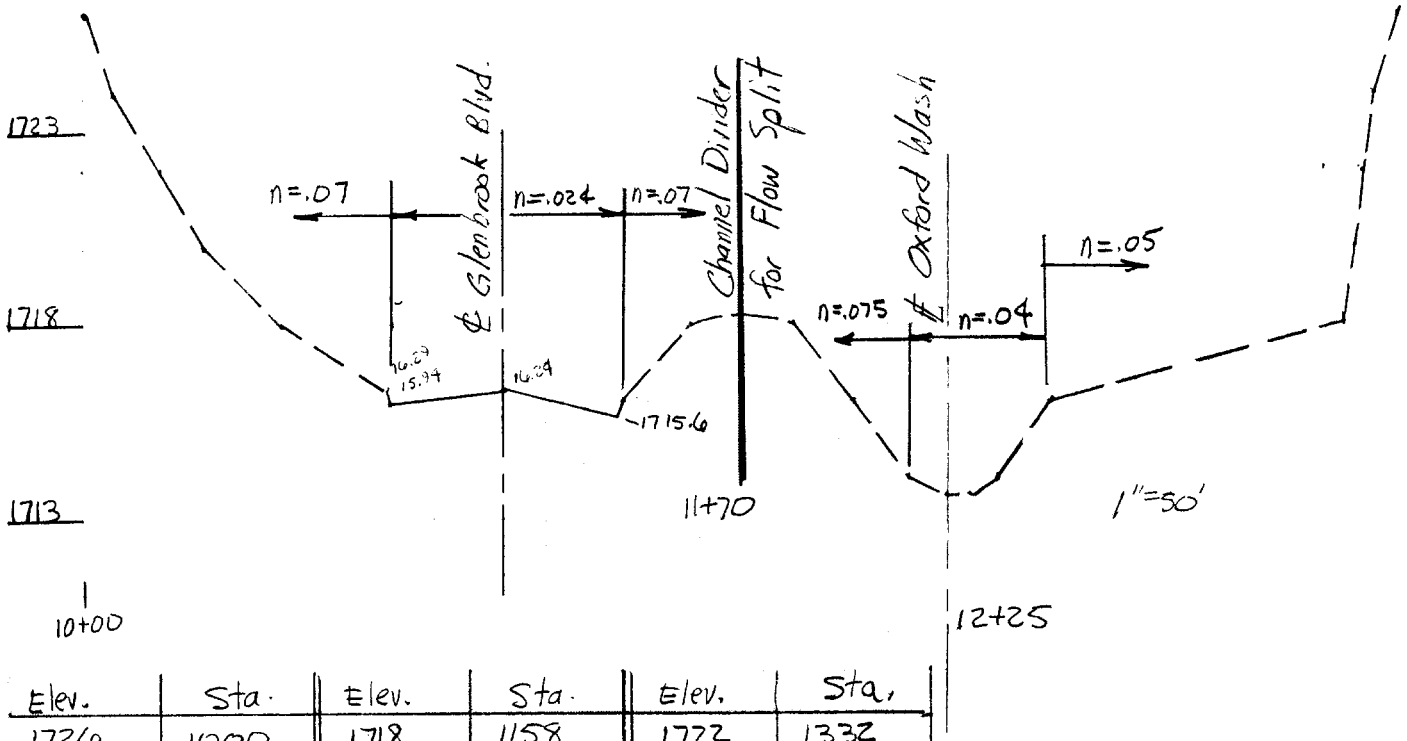
DATE 10/29/93

BY TRL

PROJECT NO. 35



Q_{100} = 182 cfs



Elev.	Sta.	Elev.	Sta.	Elev.	Sta.
1726	1000	1718	1158	1722	1332
1724	1008	1718	1185	1724	1336
1722	1020	1716	1200	1726	1341
1720	1031	1714	1215		
1718	1051	1713.5	1225		
1716.3	1077.6	1713.5	1230		
1715.9	1078.8	1714	1238		
1716.2	1108.8	1716	1252		
1715.6	1138.8	1718	1328		
1716	1140	1720	1330		

```
1*****************************************
*************************************
 *  HEC-2 WATER SURFACE PROFILES          *                                    *  U.S. ARMY CORPS OF ENGINEERS
 *                                        *                                    *  HYDROLOGIC ENGINEERING CENTER
 *                                        *                                    *  609 SECOND STREET, SUITE D
 *  Version   4.6.2;  May 1991            *                                    *  DAVIS, CALIFORNIA 95616-4687
 *                                        *                                    *          (916) 756-1104
 *  RUN DATE    29OCT93    TIME   15:25:47 *
 *****************************************
*************************************

                                    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
1
   29OCT93      15:25:47                                                                                    PAGE    1


                                                                                THIS RUN EXECUTED 29OCT93    15:25:47
 *************************************
  HEC-2 WATER SURFACE PROFILES

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


 T1  Flow split at C543 left channel (Glenbrook Blvd.)
 T2  Fountain Hills North FIS
 T3  Q = 50  C543L.IH2.  29 Oct 93 trl

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           .025                                    1718.0

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        43         1         2         3         4         8         5        26

 QT        9        50       100       150       200       250       300       350       400       450
 NC     .070      .070      .024        .1        .3
 X1      1.0      13.0    1077.6    1140.0
 GR   1726.0    1000.0    1724.0    1008.0    1722.0    1020.0    1720.0    1031.0    1718.0    1051.0
 GR   1716.3    1077.6    1715.9    1079.8    1716.2    1108.8    1715.6    1138.8    1716.0    1140.0
 GR   1718.0    1158.0    1718.0    1170.0    1726.0    1170.0

 X1      1.1                                   0.1       0.1       0.1

 X1      1.2                                   0.1       0.1       0.1
1
   29OCT93      15:25:47                                                                                    PAGE    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

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 3720 CRITICAL DEPTH ASSUMED
      1.000      .64   1716.24   1716.24   1718.00   1716.38      .14       .00       .00   1716.30
       50.0       .0      49.8       .2        .0      16.5       .3        .0        .0   1716.00
        .00      .00      3.02       .61      .000      .024      .070      .000   1715.60   1077.78
    .013978       0.        0.        0.         0        14         0       .00     64.36   1142.15

 *SECNO 1.100
      1.100      .65   1716.25   1716.24       .00   1716.38      .14       .00       .00   1716.30
       50.0       .0      49.8       .2        .0      16.8       .3        .0        .0   1716.00
        .00      .00      2.97       .60      .000      .024      .070      .000   1715.60   1077.77
    .013215       0.        0.        0.         0         5         0       .00     64.42   1142.19

 *SECNO 1.200
      1.200      .65   1716.25   1716.24       .00   1716.38      .13       .00       .00   1716.30
       50.0       .0      49.8       .2        .0      17.0       .3        .0        .0   1716.00
        .00      .00      2.93       .59      .000      .024      .070      .000   1715.60   1077.76
    .012674       0.        0.        0.         0         5         0       .00     64.46   1142.22

1
   29OCT93      15:25:47                                                                                    PAGE    3

 T1  Flow split at C543 left channel (Cavern Drive)
 T2  Fountain Hills North FIS
```

```
T3  Q=100 C543L.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           .025                                    1718.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2

1
   29OCT93      15:25:47                                                                                    PAGE    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 2

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .80   1716.40   1716.40   1718.00   1716.62       .22       .00       .00   1716.30
     100.0        .0      99.4       .6        .1      26.5        .7        .0        .0   1716.00
       .00       .02      3.75       .77      .070      .024      .070      .000   1715.60   1076.05
   .011476        0.        0.        0.         0        26         0       .00     67.55   1143.59

*SECNO 1.100
     1.100       .80   1716.40   1716.40       .00   1716.62       .21       .00       .00   1716.30
     100.0        .0      99.4       .6        .1      26.8        .7        .0        .0   1716.00
       .00       .02      3.72       .77      .070      .024      .070      .000   1715.60   1075.99
   .011173        0.        0.        0.         0         5         0       .00     67.63   1143.63

*SECNO 1.200
     1.200       .81   1716.41   1716.40       .00   1716.62       .21       .00       .00   1716.30
     100.0        .0      99.4       .6        .1      26.9        .7        .0        .0   1716.00
       .00       .02      3.69       .76      .070      .024      .070      .000   1715.60   1075.95
   .010942        0.        0.        0.         0         5         0       .00     67.70   1143.65

1
   29OCT93      15:25:47                                                                                    PAGE    5

T1  Flow split at C543 left channel (Cavern Drive)
T2  Fountain Hills North FIS
T3  Q=150 C543L.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                           .025                                    1718.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3

1
   29OCT93      15:25:47                                                                                    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

*PROF 3

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .93   1716.53   1716.53   1718.00   1716.81       .28       .00       .00   1716.30
     150.0        .2     148.6       1.1        .4      34.8       1.3        .0        .0   1716.00
       .00       .51      4.27       .89      .070      .024      .070      .000   1715.60   1073.97
   .010366        0.        0.        0.         0        22         0       .00     70.82   1144.79

*SECNO 1.100
     1.100       .94   1716.54   1716.53       .00   1716.81       .28       .00       .00   1716.30
     150.0        .2     148.6       1.1        .4      35.0       1.3        .0        .0   1716.00
       .00       .51      4.24       .89      .070      .024      .070      .000   1715.60   1073.92
   .010170        0.        0.        0.         0         5         0       .00     70.90   1144.82

*SECNO 1.200
     1.200       .94   1716.54   1716.53       .00   1716.82       .27       .00       .00   1716.30
     150.0        .2     148.6       1.1        .4      35.2       1.3        .0        .0   1716.00
       .00       .51      4.22       .88      .070      .024      .070      .000   1715.60   1073.88
   .010023        0.        0.        0.         0         5         0       .00     70.96   1144.84

1
   29OCT93      15:25:47                                                                                    PAGE    7

T1  Flow split at C543 left channel (Cavern Drive)
T2  Fountain Hills North FIS
T3  Q=200 C543L.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                5                           .025                                    1718.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
```

```
     4

1
   29OCT93      15:25:47                                                                                                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

*PROF 4

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       1.05   1716.65   1716.65   1718.00   1716.99       .34       .00       .00   1716.30
     200.0        .6     197.5       1.9       1.0      42.2       1.9        .0        .0   1716.00
       .00        .65     4.68       .98      .070      .024      .070      .000   1715.60   1072.13
   .009673        0.       0.        0.         0        18         0       .00     73.72   1145.85

*SECNO 1.100
     1.100       1.06   1716.66   1716.65       .00   1716.99       .33       .00       .00   1716.30
     200.0        .6     197.5       1.9       1.0      42.4       1.9        .0        .0   1716.00
       .00        .65     4.66       .98      .070      .024      .070      .000   1715.60   1072.07
   .009492        0.       0.        0.         0         5         0       .00     73.82   1145.88

*SECNO 1.200
     1.200       1.06   1716.66   1716.65       .00   1716.99       .33       .00       .00   1716.30
     200.0        .6     197.5       1.9       1.0      42.6       1.9        .0        .0   1716.00
       .00        .65     4.64       .97      .070      .024      .070      .000   1715.60   1072.03
   .009384        0.       0.        0.         0         5         0       .00     73.87   1145.90

1
   29OCT93      15:25:47                                                                                                PAGE    9

T1  Flow split at C543 left channel (Cavern Drive)
T2  Fountain Hills North FIS
T3  Q=250 C543L.IH2.  29 Oct 93 trl

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                 6                             .025                                         1718.0

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     5

1
   29OCT93      15:25:47                                                                                                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

*PROF 5

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       1.16   1716.76   1716.76   1718.00   1717.14       .38       .00       .00   1716.30
     250.0        1.3     246.0       2.8       1.7      49.3       2.6        .0        .0   1716.00
       .00        .76     4.99      1.05      .070      .024      .070      .000   1715.60   1070.34
   .008927        0.       0.        0.         0        11         0       .00     76.53   1146.87

*SECNO 1.100
     1.100       1.17   1716.77   1716.76       .00   1717.15       .38       .00       .00   1716.30
     250.0        1.3     246.0       2.8       1.7      49.3       2.6        .0        .0   1716.00
       .00        .76     4.99      1.05      .070      .024      .070      .000   1715.60   1070.33
   .008894        0.       0.        0.         0         5         0       .00     76.55   1146.88

*SECNO 1.200
     1.200       1.17   1716.77   1716.76       .00   1717.15       .38       .00       .00   1716.30
     250.0        1.3     245.9       2.8       1.7      49.4       2.6        .0        .0   1716.00
       .00        .75     4.97      1.05      .070      .024      .070      .000   1715.60   1070.30
   .008825        0.       0.        0.         0         5         0       .00     76.60   1146.90

1
   29OCT93      15:25:47                                                                                                PAGE   11

T1  Flow split at C543 left channel (Cavern Drive)
T2  Fountain Hills North FIS
T3  Q=300 C543L.IH2.  29 Oct 93 trl

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                 7                             .025                                         1718.0

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     6

1
   29OCT93      15:25:47                                                                                                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

*PROF 6

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000      1.26   1716.86   1716.86   1718.00   1717.29       .43       .00       .00   1716.30
     300.0       2.1     294.2       3.7       2.4      55.2       3.3        .0        .0   1716.00
       .00       .85      5.33      1.13      .070      .024      .070      .000   1715.60   1068.86
   .008751        0.        0.        0.         0        11         0       .00     78.87   1147.73

*SECNO 1.100
     1.100      1.26   1716.86   1716.86       .00   1717.29       .43       .00       .00   1716.30
     300.0       2.1     294.2       3.8       2.5      55.4       3.3        .0        .0   1716.00
       .00       .84      5.31      1.12      .070      .024      .070      .000   1715.60   1068.80
   .008625        0.        0.        0.         0         5         0       .00     78.96   1147.76

*SECNO 1.200
     1.200      1.27   1716.87   1716.86       .00   1717.29       .43       .00       .00   1716.30
     300.0       2.1     294.1       3.8       2.5      55.6       3.4        .0        .0   1716.00
       .00       .84      5.29      1.12      .070      .024      .070      .000   1715.60   1068.77
   .008553        0.        0.        0.         0         5         0       .00     79.02   1147.78

1
   29OCT93      15:25:47                                                                          PAGE   13

T1  Flow split at C543 left channel (Cavern Drive)
T2  Fountain Hills North FIS
T3  Q=350 C543L.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                8                           .025                                    1718.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      7

1
   29OCT93      15:25:47                                                                          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

*PROF 7

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000      1.36   1716.96   1716.96   1718.00   1717.43       .47       .00       .00   1716.30
     350.0       3.1     342.0       4.9       3.4      61.4       4.1        .0        .0   1716.00
       .00       .92      5.57      1.18      .070      .024      .070      .000   1715.60   1067.29
   .008273        0.        0.        0.         0        11         0       .00     81.34   1148.63

*SECNO 1.100
     1.100      1.36   1716.96   1716.95       .00   1717.43       .47       .00       .00   1716.30
     350.0       3.1     342.0       4.9       3.4      61.5       4.1        .0        .0   1716.00
       .00       .92      5.56      1.18      .070      .024      .070      .000   1715.60   1067.28
   .008248        0.        0.        0.         0         5         0       .00     81.36   1148.64

*SECNO 1.200
     1.200      1.36   1716.96   1716.95       .00   1717.43       .47       .00       .00   1716.30
     350.0       3.1     342.0       4.9       3.4      61.6       4.2        .0        .0   1716.00
       .00       .92      5.55      1.17      .070      .024      .070      .000   1715.60   1067.25
   .008200        0.        0.        0.         0         5         0       .00     81.40   1148.65

1
   29OCT93      15:25:47                                                                          PAGE   15

T1  Flow split at C543 left channel (Cavern Drive)
T2  Fountain Hills North FIS
T3  Q=400 C543L.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                9                           .025                                    1718.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      8

1
   29OCT93      15:25:47                                                                          PAGE   16

    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 8

CCHV=     .100 CEHV=     .300
*SECNO 1.000
```

```
3720 CRITICAL DEPTH ASSUMED
     1.000      1.44   1717.04   1717.04   1718.00   1717.56       .52       .00       .00   1716.30
     400.0       4.3     389.7       6.1       4.3      66.8       4.9        .0        .0   1716.00
       .00       .99      5.84      1.24      .070      .024      .070      .000   1715.60   1065.96
   .008146        0.        0.        0.         0        14         0       .00     83.43   1149.39

*SECNO 1.100
     1.100      1.45   1717.05   1717.05       .00   1717.56       .51       .00       .00   1716.30
     400.0       4.3     389.6       6.1       4.4      67.0       4.9        .0        .0   1716.00
       .00       .99      5.82      1.23      .070      .024      .070      .000   1715.60   1065.90
   .008052        0.        0.        0.         0         5         0       .00     83.52   1149.43

*SECNO 1.200
     1.200      1.45   1717.05   1717.05       .00   1717.56       .51       .00       .00   1716.30
     400.0       4.3     389.6       6.1       4.4      67.1       5.0        .0        .0   1716.00
       .00       .99      5.80      1.23      .070      .024      .070      .000   1715.60   1065.87
   .007999        0.        0.        0.         0         5         0       .00     83.57   1149.45

1
   29OCT93      15:25:47                                                                          PAGE   17

T1  Flow split at C543 left channel (Cavern Drive)
T2  Fountain Hills North FIS
T3  Q=450 C543L.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              10                            .025                                    1718.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    15

1
   29OCT93      15:25:47                                                                          PAGE   18

    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 9

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000      1.53   1717.13   1717.13   1718.00   1717.68       .55       .00       .00   1716.30
     450.0       5.7     436.9       7.4       5.4      72.2       5.8        .0        .0   1716.00
       .00      1.05      6.05      1.28      .070      .024      .070      .000   1715.60   1064.60
   .007887        0.        0.        0.         0        14         0       .00     85.58   1150.18

*SECNO 1.100
     1.100      1.54   1717.14   1717.13       .00   1717.69       .55       .00       .00   1716.30
     450.0       5.7     436.9       7.4       5.4      72.4       5.8        .0        .0   1716.00
       .00      1.05      6.03      1.28      .070      .024      .070      .000   1715.60   1064.54
   .007805        0.        0.        0.         0         5         0       .00     85.67   1150.21

*SECNO 1.200
     1.200      1.54   1717.14   1717.13       .00   1717.69       .55       .00       .00   1716.30
     450.0       5.7     436.9       7.4       5.5      72.5       5.8        .0        .0   1716.00
       .00      1.04      6.02      1.28      .070      .024      .070      .000   1715.60   1064.51
   .007760        0.        0.        0.         0         5         0       .00     85.72   1150.23

1
   29OCT93      15:25:47                                                                          PAGE   19


                                                                    THIS RUN EXECUTED 29OCT93    15:25:51
*************************************
 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

50  C543L.IH2.  29 Oct 9

SUMMARY PRINTOUT

      SECNO       Q       CWSEL     CRIWS      EG       TOPWID     DEPTH     10*KS      VCH

*     1.000     50.00   1716.24   1716.24   1716.38    64.36       .64     139.78     3.02
*     1.000    100.00   1716.40   1716.40   1716.62    67.55       .80     114.76     3.75
*     1.000    150.00   1716.53   1716.53   1716.81    70.82       .93     103.66     4.27
*     1.000    200.00   1716.65   1716.65   1716.99    73.72      1.05      96.73     4.68
*     1.000    250.00   1716.76   1716.76   1717.14    76.53      1.16      89.27     4.99
*     1.000    300.00   1716.86   1716.86   1717.29    78.87      1.26      87.51     5.33
*     1.000    350.00   1716.96   1716.96   1717.43    81.34      1.36      82.73     5.57
*     1.000    400.00   1717.04   1717.04   1717.56    83.43      1.44      81.46     5.84
*     1.000    450.00   1717.13   1717.13   1717.68    85.58      1.53      78.87     6.05

      1.100     50.00   1716.25   1716.24   1716.38    64.42       .65     132.15     2.97
      1.100    100.00   1716.40   1716.40   1716.62    67.63       .80     111.73     3.72
      1.100    150.00   1716.54   1716.53   1716.81    70.90       .94     101.70     4.24
      1.100    200.00   1716.66   1716.65   1716.99    73.82      1.06      94.92     4.66
```

1.100	250.00	1716.77	1716.76	1717.15	76.55	1.17	88.94	4.99
1.100	300.00	1716.86	1716.86	1717.29	78.96	1.26	86.25	5.31
1.100	350.00	1716.96	1716.95	1717.43	81.36	1.36	82.48	5.56
1.100	400.00	1717.05	1717.05	1717.56	83.52	1.45	80.52	5.82
1.100	450.00	1717.14	1717.13	1717.69	85.67	1.54	78.05	6.03
1.200	50.00	1716.25	1716.24	1716.38	64.46	.65	126.74	2.93
1.200	100.00	1716.41	1716.40	1716.62	67.70	.81	109.42	3.69
1.200	150.00	1716.54	1716.53	1716.82	70.96	.94	100.23	4.22
1.200	200.00	1716.66	1716.65	1716.99	73.87	1.06	93.84	4.64
1.200	250.00	1716.77	1716.76	1717.15	76.60	1.17	88.25	4.97
1.200	300.00	1716.87	1716.86	1717.29	79.02	1.27	85.53	5.29
1.200	350.00	1716.96	1716.95	1717.43	81.40	1.36	82.00	5.55
1.200	400.00	1717.05	1717.05	1717.56	83.57	1.45	79.99	5.80
1.200	450.00	1717.14	1717.13	1717.69	85.72	1.54	77.60	6.02

1

29OCT93 15:25:47 PAGE 20

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      1.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  6  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  7  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  8  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  9  CRITICAL DEPTH ASSUMED
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1*****************************************
*************************************
 *  HEC-2 WATER SURFACE PROFILES          *                                    *  U.S. ARMY CORPS OF ENGINEERS
 *                                        *                                    *  HYDROLOGIC ENGINEERING CENTER
 *  Version   4.6.2;  May 1991            *                                    *  609 SECOND STREET, SUITE D
 *                                        *                                    *  DAVIS, CALIFORNIA 95616-4687
 *  RUN DATE    04NOV93    TIME   12:00:39 *                                    *          (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
1
   04NOV93      12:00:39                                                                                    PAGE    1


                                                                                THIS RUN EXECUTED 04NOV93    12:00:39
 *************************************
 HEC-2 WATER SURFACE PROFILES

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


 T1  Flow split at C543 right channel (Oxford Wash)
 T2  Fountain Hills North FIS
 T3  Q = 50  C543R.IH2.  29 Oct 93 trl

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           .031                                    1718.0

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        43         1         2         3         4         8         5        26

 QT        9        50       100       150       200       250       300       400       500       600
 NC     .075      .050      .050        .1        .3
 X1      1.0      14.0    1215.0    1252.0
 GR   1726.0    1170.0    1718.0    1170.0    1718.0    1185.0    1716.0    1200.0    1714.0    1215.0
 GR   1713.5    1225.0    1713.5    1230.0    1714.0    1238.0    1716.0    1252.0    1718.0    1328.0
 GR   1720.0    1330.0    1722.0    1332.0    1724.0    1336.0    1726.0    1341.0

 X1      1.1                                   0.1       0.1       0.1

 X1      1.2                                   0.1       0.1       0.1
1
   04NOV93      12:00:39                                                                                    PAGE    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

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
      1.000      .79   1714.29       .00   1718.00   1714.49       .19       .00       .00   1714.00
       50.0       .3      49.7       .0        .3      14.0        .0        .0        .0   1716.00
        .00      .96      3.55      .00      .075      .050      .000      .000   1713.50   1212.81
    .030992       0.        0.       0.         0         0         8       .00     27.23   1240.04


 *SECNO 1.100
      1.100      .80   1714.30       .00       .00   1714.49       .19       .00       .00   1714.00
       50.0       .3      49.7       .0        .3      14.1        .0        .0        .0   1716.00
        .00      .96      3.53      .00      .075      .050      .000      .000   1713.50   1212.79
    .030462       0.        0.       0.         0         0         0       .00     27.27   1240.06


 *SECNO 1.200
      1.200      .80   1714.30       .00       .00   1714.49       .19       .00       .00   1714.00
       50.0       .3      49.7       .0        .3      14.2        .0        .0        .0   1716.00
        .00      .96      3.49      .00      .075      .050      .000      .000   1713.50   1212.75
    .029537       0.        0.       0.         0         0         0       .00     27.35   1240.10


1
   04NOV93      12:00:39                                                                                    PAGE    3

 T1  Flow split at C543 right channel (Oxford Wash)
 T2  Fountain Hills North FIS
 T3  Q=100 C543R.IH2.  29 Oct 93 trl
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```
J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           .031                                    1718.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2

1
   04NOV93      12:00:39                                                                                    PAGE    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 2

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
     1.000      1.09   1714.59       .00   1718.00   1714.90       .31       .00       .00   1714.00
     100.0       2.0      98.0        .0       1.3      21.8        .0        .0        .0   1716.00
       .00      1.53      4.51       .00      .075      .050      .000      .000   1713.50   1210.58
   .030938        0.        0.        0.         0         0         7       .00     31.54   1242.12

 *SECNO 1.100
     1.100      1.09   1714.59       .00       .00   1714.90       .31       .00       .00   1714.00
     100.0       2.0      98.0        .0       1.3      21.8        .0        .0        .0   1716.00
       .00      1.53      4.49       .00      .075      .050      .000      .000   1713.50   1210.56
   .030571        0.        0.        0.         0         0         0       .00     31.58   1242.14

 *SECNO 1.200
     1.200      1.10   1714.60       .00       .00   1714.91       .30       .00       .00   1714.00
     100.0       2.0      98.0        .0       1.3      22.0        .0        .0        .0   1716.00
       .00      1.52      4.45       .00      .075      .050      .000      .000   1713.50   1210.52
   .029897        0.        0.        0.         0         0         0       .00     31.66   1242.18

1
   04NOV93      12:00:39                                                                                    PAGE    5

 T1  Flow split at C543 right channel (Oxford Wash)
 T2  Fountain Hills North FIS
 T3  Q=150 C543R.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                           .031                                    1718.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3

1
   04NOV93      12:00:39                                                                                    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

 *PROF 3

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
     1.000      1.32   1714.82       .00   1718.00   1715.22       .40       .00       .00   1714.00
     150.0       4.8     145.2        .0       2.5      28.3        .0        .0        .0   1716.00
       .00      1.91      5.13       .00      .075      .050      .000      .000   1713.50   1208.83
   .030642        0.        0.        0.         0         0         6       .00     34.92   1243.76

 *SECNO 1.100
     1.100      1.33   1714.83       .00       .00   1715.22       .40       .00       .00   1714.00
     150.0       4.9     145.1        .0       2.6      28.4        .0        .0        .0   1716.00
       .00      1.90      5.12       .00      .075      .050      .000      .000   1713.50   1208.81
   .030347        0.        0.        0.         0         0         0       .00     34.97   1243.78

 *SECNO 1.200
     1.200      1.34   1714.84       .00       .00   1715.23       .39       .00       .00   1714.00
     150.0       4.9     145.1        .0       2.6      28.5        .0        .0        .0   1716.00
       .00      1.89      5.08       .00      .075      .050      .000      .000   1713.50   1208.77
   .029779        0.        0.        0.         0         0         0       .00     35.05   1243.82

1
   04NOV93      12:00:39                                                                                    PAGE    7

 T1  Flow split at C543 right channel (Oxford Wash)
 T2  Fountain Hills North FIS
 T3  Q=200 C543R.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                5                           .031                                    1718.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     4

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

*PROF 4

CCHV=     .100 CEHV=     .300
*SECNO 1.000
     1.000      1.51    1715.01    1714.98    1718.00    1715.49       .48        .00        .00    1714.00
     200.0       8.5      191.5         .0        3.9       33.9         .0        .0         .0    1716.00
       .00      2.20       5.64        .00       .075       .050       .000       .000    1713.50    1207.39
   .030892        0.         0.         0.          0         17          0        .00      37.71    1245.10

*SECNO 1.100
     1.100      1.52    1715.02    1714.98        .00    1715.49       .47        .00        .00    1714.00
     200.0       8.5      191.5         .0        3.9       34.0         .0        .0         .0    1716.00
       .00      2.20       5.63        .00       .075       .050       .000       .000    1713.50    1207.37
   .030633        0.         0.         0.          0          8          0        .00      37.75    1245.12

*SECNO 1.200
     1.200      1.53    1715.03        .00        .00    1715.50       .47        .00        .00    1714.00
     200.0       8.6      191.4         .0        3.9       34.2         .0        .0         .0    1716.00
       .00      2.19       5.60        .00       .075       .050       .000       .000    1713.50    1207.33
   .030135        0.         0.         0.          0          0          0        .00      37.84    1245.16

1
   04NOV93      12:00:39                                                                                PAGE 9

T1  Flow split at C543 right channel (Oxford Wash)
T2  Fountain Hills North FIS
T3  Q=250 C543R.IH2.  29 Oct 93 trl

J1  ICHECK    INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                6                             .031                                         1718.0

J2  NPROF     IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

      5

1
   04NOV93      12:00:39                                                                                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

*PROF 5

CCHV=     .100 CEHV=     .300
*SECNO 1.000
     1.000      1.68    1715.18    1715.16    1718.00    1715.73       .55        .00        .00    1714.00
     250.0      12.9      237.1         .0        5.3       39.1         .0        .0         .0    1716.00
       .00      2.44       6.06        .00       .075       .050       .000       .000    1713.50    1206.12
   .030970        0.         0.         0.          0         18          0        .00      40.17    1246.29

*SECNO 1.100
     1.100      1.69    1715.19    1715.15        .00    1715.73       .54        .00        .00    1714.00
     250.0      12.9      237.1         .0        5.3       39.2         .0        .0         .0    1716.00
       .00      2.44       6.04        .00       .075       .050       .000       .000    1713.50    1206.10
   .030737        0.         0.         0.          0          5          0        .00      40.22    1246.31

*SECNO 1.200
     1.200      1.70    1715.20    1715.16        .00    1715.74       .54        .00        .00    1714.00
     250.0      13.0      237.0         .0        5.3       39.4         .0        .0         .0    1716.00
       .00      2.43       6.01        .00       .075       .050       .000       .000    1713.50    1206.05
   .030260        0.         0.         0.          0          8          0        .00      40.31    1246.36

1
   04NOV93      12:00:39                                                                                PAGE 11

T1  Flow split at C543 right channel (Oxford Wash)
T2  Fountain Hills North FIS
T3  Q=300 C543R.IH2.  29 Oct 93 trl

J1  ICHECK    INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                7                             .031                                         1718.0

J2  NPROF     IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

      6

1
   04NOV93      12:00:39                                                                                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

*PROF 6
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CCHV=     .100 CEHV=     .300
*SECNO 1.000
     1.000      1.84   1715.34   1715.32   1718.00   1715.94       .60       .00       .00   1714.00
     300.0      17.9     282.1        .0       6.8      44.2        .0        .0        .0   1716.00
       .00      2.64      6.38       .00      .075      .050      .000      .000   1713.50   1204.92
   .030551        0.        0.        0.         0        18         0       .00     42.49   1247.41

*SECNO 1.100
     1.100      1.85   1715.35   1715.32       .00   1715.95       .60       .00       .00   1714.00
     300.0      17.9     282.1        .0       6.8      44.3        .0        .0        .0   1716.00
       .00      2.64      6.36       .00      .075      .050      .000      .000   1713.50   1204.90
   .030341        0.        0.        0.         0         5         0       .00     42.54   1247.43

*SECNO 1.200
     1.200      1.86   1715.36   1715.32       .00   1715.95       .59       .00       .00   1714.00
     300.0      18.0     282.0        .0       6.9      44.5        .0        .0        .0   1716.00
       .00      2.63      6.33       .00      .075      .050      .000      .000   1713.50   1204.85
   .029918        0.        0.        0.         0         5         0       .00     42.63   1247.47

1
   04NOV93      12:00:39                                                                          PAGE   13

T1  Flow split at C543 right channel (Oxford Wash)
T2  Fountain Hills North FIS
T3  Q=400 C543R.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                8                           .031                                    1718.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     7

1
   04NOV93      12:00:39                                                                          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

*PROF 7

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000      2.11   1715.61   1715.61   1718.00   1716.32       .71       .00       .00   1714.00
     400.0      29.2     370.8        .0       9.7      53.2        .0        .0        .0   1716.00
       .00      3.00      6.98       .00      .075      .050      .000      .000   1713.50   1202.91
   .030860        0.        0.        0.         0        14         0       .00     46.37   1249.28

*SECNO 1.100
3720 CRITICAL DEPTH ASSUMED
     1.100      2.12   1715.62   1715.61       .00   1716.33       .71       .00       .00   1714.00
     400.0      29.2     370.8        .0       9.8      53.3        .0        .0        .0   1716.00
       .00      2.99      6.96       .00      .075      .050      .000      .000   1713.50   1202.89
   .030674        0.        0.        0.         0         5         0       .00     46.41   1249.30

*SECNO 1.200
     1.200      2.13   1715.63   1715.61       .00   1716.33       .70       .00       .00   1714.00
     400.0      29.4     370.6        .0       9.9      53.5        .0        .0        .0   1716.00
       .00      2.98      6.93       .00      .075      .050      .000      .000   1713.50   1202.84
   .030277        0.        0.        0.         0         5         0       .00     46.51   1249.35

1
   04NOV93      12:00:39                                                                          PAGE   15

T1  Flow split at C543 right channel (Oxford Wash)
T2  Fountain Hills North FIS
T3  Q=500 C543R.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                9                           .031                                    1718.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     8

1
   04NOV93      12:00:39                                                                          PAGE   16

    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 8

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000      2.36   1715.86   1715.86   1718.00   1716.65       .80       .00       .00   1714.00
     500.0      42.2     457.8        .0      12.9      61.7        .0        .0        .0   1716.00
       .00      3.27      7.42       .00      .075      .050      .000      .000   1713.50   1201.08
   .030512        0.        0.        0.         0        11         0       .00     49.90   1250.99
```

```
*SECNO 1.100
     1.100      2.38   1715.88   1715.87       .00   1716.66       .78       .00       .00   1714.00
     500.0      42.6     457.4        .0      13.1      62.3        .0        .0        .0   1716.00
       .00      3.25      7.35       .00      .075      .050      .000      .000   1713.50   1200.97
   .029695        0.        0.        0.         0         5         0       .00     50.12   1251.09

*SECNO 1.200
     1.200      2.39   1715.89   1715.86       .00   1716.66       .77       .00       .00   1714.00
     500.0      42.8     457.2        .0      13.2      62.6        .0        .0        .0   1716.00
       .00      3.23      7.31       .00      .075      .050      .000      .000   1713.50   1200.91
   .029281        0.        0.        0.         0         5         0       .00     50.24   1251.15

1
   04NOV93      12:00:39                                                                          PAGE   17

T1  Flow split at C543 right channel (Oxford Wash)
T2  Fountain Hills North FIS
T3  Q=600 C543R.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              10                            .031                                    1718.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    15

1
   04NOV93      12:00:39                                                                          PAGE   18

    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 9

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000      2.62   1716.12   1716.12   1718.00   1716.94       .82       .00       .00   1714.00
     600.0      59.0     540.8        .2      16.9      71.6        .3        .0        .0   1716.00
       .00      3.48      7.55       .77      .075      .050      .050      .000   1713.50   1199.07
   .026951        0.        0.        0.         0        11         0       .00     57.65   1256.72

*SECNO 1.100
     1.100      2.63   1716.13   1716.11       .00   1716.94       .81       .00       .00   1714.00
     600.0      59.1     540.7        .2      17.0      71.7        .3        .0        .0   1716.00
       .00      3.48      7.54       .77      .075      .050      .050      .000   1713.50   1199.05
   .026816        0.        0.        0.         0         5         0       .00     57.78   1256.82

*SECNO 1.200
     1.200      2.64   1716.14   1716.11       .00   1716.95       .81       .00       .00   1714.00
     600.0      59.2     540.5        .3      17.1      71.9        .3        .0        .0   1716.00
       .00      3.47      7.52       .79      .075      .050      .050      .000   1713.50   1199.01
   .026544        0.        0.        0.         0         5         0       .00     58.03   1257.03

1
   04NOV93      12:00:39                                                                          PAGE   19


                                                                    THIS RUN EXECUTED 04NOV93    12:00:44
*************************************
 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

50  C543R.IH2.  29 Oct 9

SUMMARY PRINTOUT

      SECNO       Q       CWSEL     CRIWS      EG       TOPWID     DEPTH     10*KS      VCH

       1.000     50.00   1714.29       .00   1714.49     27.23       .79    309.92      3.55
       1.000    100.00   1714.59       .00   1714.90     31.54      1.09    309.38      4.51
       1.000    150.00   1714.82       .00   1715.22     34.92      1.32    306.42      5.13
       1.000    200.00   1715.01   1714.98   1715.49     37.71      1.51    308.92      5.64
       1.000    250.00   1715.18   1715.16   1715.73     40.17      1.68    309.70      6.06
       1.000    300.00   1715.34   1715.32   1715.94     42.49      1.84    305.51      6.38
*      1.000    400.00   1715.61   1715.61   1716.32     46.37      2.11    308.60      6.98
*      1.000    500.00   1715.86   1715.86   1716.65     49.90      2.36    305.12      7.42
*      1.000    600.00   1716.12   1716.12   1716.94     57.65      2.62    269.51      7.55

       1.100     50.00   1714.30       .00   1714.49     27.27       .80    304.62      3.53
       1.100    100.00   1714.59       .00   1714.90     31.58      1.09    305.71      4.49
       1.100    150.00   1714.83       .00   1715.22     34.97      1.33    303.47      5.12
       1.100    200.00   1715.02   1714.98   1715.49     37.75      1.52    306.33      5.63
       1.100    250.00   1715.19   1715.15   1715.73     40.22      1.69    307.37      6.04
       1.100    300.00   1715.35   1715.32   1715.95     42.54      1.85    303.41      6.36
*      1.100    400.00   1715.62   1715.61   1716.33     46.41      2.12    306.74      6.96
       1.100    500.00   1715.88   1715.87   1716.66     50.12      2.38    296.95      7.35
       1.100    600.00   1716.13   1716.11   1716.94     57.78      2.63    268.16      7.54
```

1.200	50.00	1714.30	.00	1714.49	27.35	.80	295.37	3.49
1.200	100.00	1714.60	.00	1714.91	31.66	1.10	298.97	4.45
1.200	150.00	1714.84	.00	1715.23	35.05	1.34	297.79	5.08
1.200	200.00	1715.03	.00	1715.50	37.84	1.53	301.35	5.60
1.200	250.00	1715.20	1715.16	1715.74	40.31	1.70	302.60	6.01
1.200	300.00	1715.36	1715.32	1715.95	42.63	1.86	299.18	6.33
1.200	400.00	1715.63	1715.61	1716.33	46.51	2.13	302.77	6.93
1.200	500.00	1715.89	1715.86	1716.66	50.24	2.39	292.81	7.31
1.200	600.00	1716.14	1716.11	1716.95	58.03	2.64	265.44	7.52

1

04NOV93 12:00:39 PAGE 20

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 1.000 PROFILE= 7 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.000 PROFILE= 8 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.000 PROFILE= 9 CRITICAL DEPTH ASSUMED

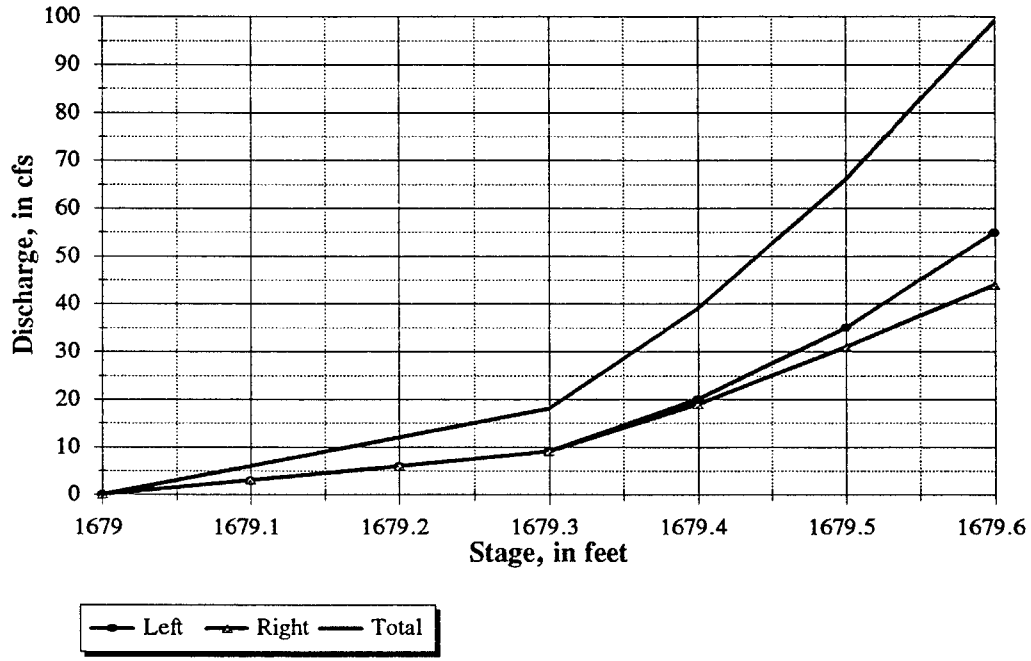
CAUTION SECNO= 1.100 PROFILE= 7 CRITICAL DEPTH ASSUMED

C545 Flow Split Table

Stage (ft)	Discharge, in cfs		
	Left Channel	Right Channel	Total
1679.00	0	0	0
1679.10	3	3	6
1679.20	6	6	12
1679.30	9	9	18
1679.40	20	19	39
1679.50	35	31	66
1679.60	55	44	99

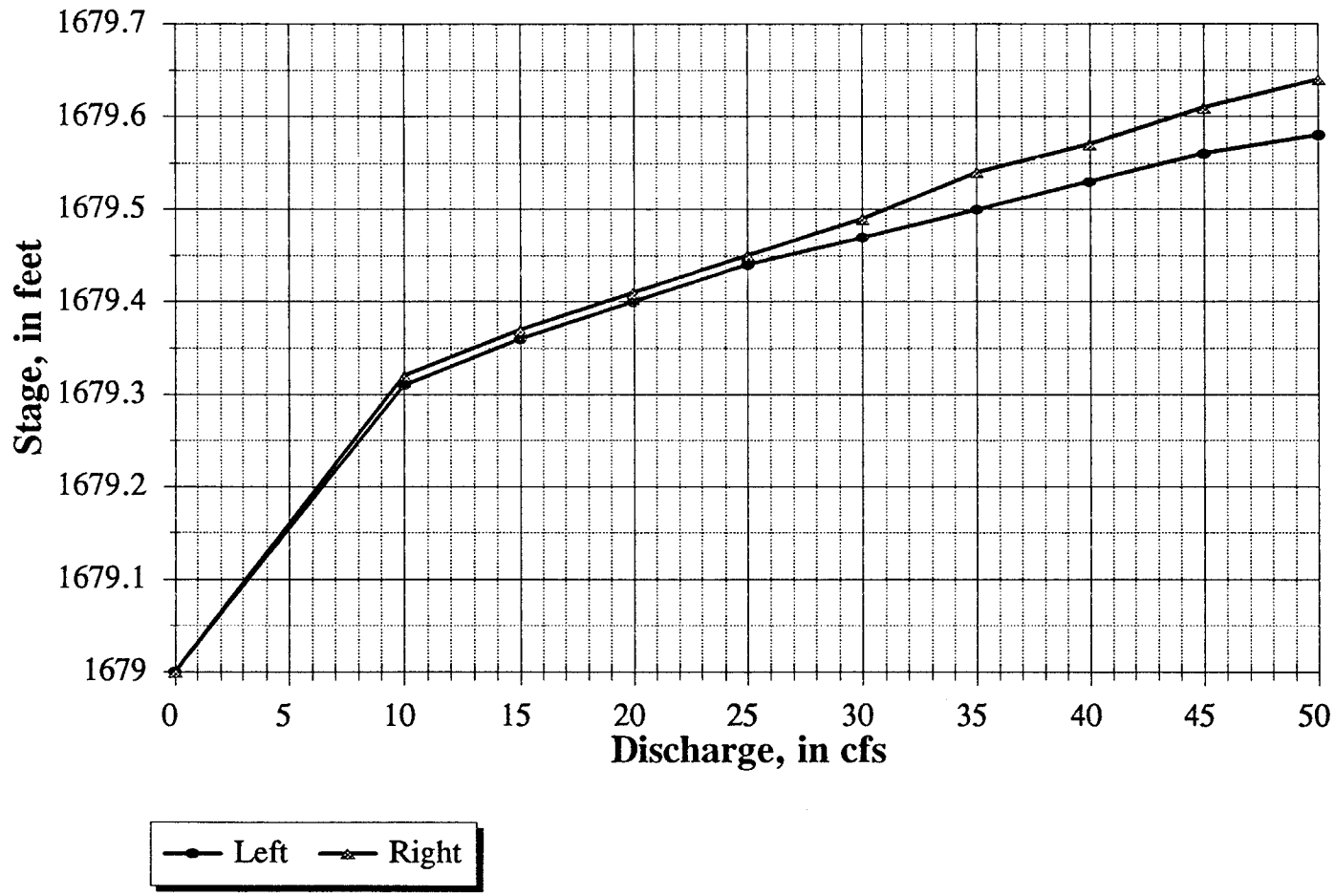
Figure D-8

Discharge vs Stage Curve for Flow Split at C545



C545 HEC-2 Results

Discharge vs Stage Curve for Flow Split at C545



flowsplt.wb1

17-Nov-93

George V. Sabol Consulting Engineers, Inc.

SHEET 1 OF

CLIENT FCDMC

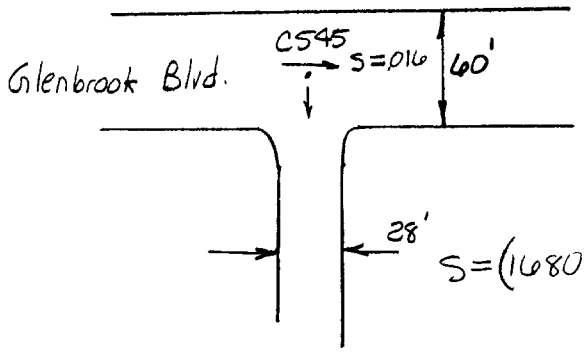
DATE 11/4/93

PROJECT Fountain Hills North FIS

BY TRL

SUBJECT C545 Flow Split

PROJECT NO. 35



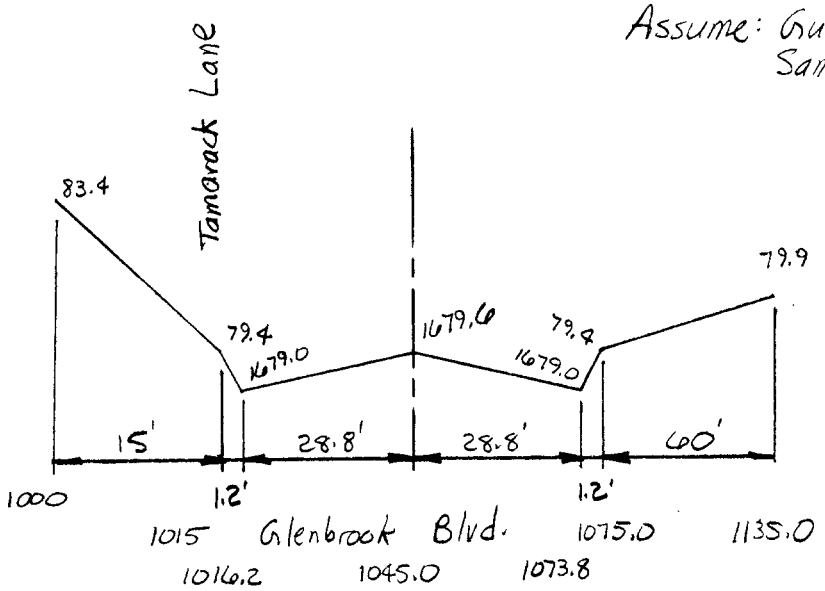
$S = (1680 - 1678)/125$

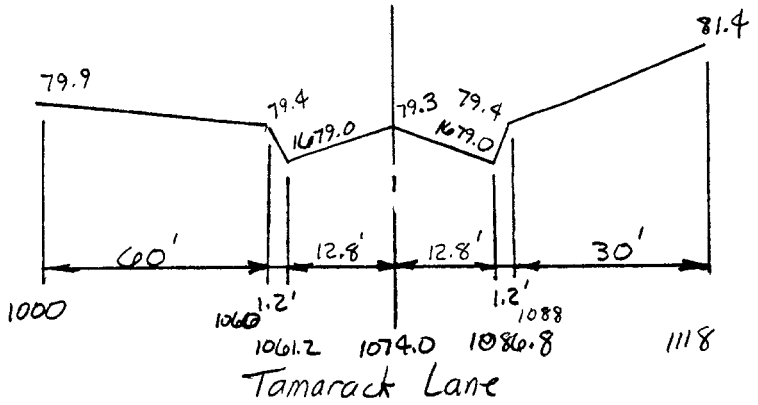
$= 0.016'/'$

$S = (1680 - 1678)/100 = 0.02'/'$

N

Assume: Gutters are at the Same elevation.





```
1*****************************************
*************************************
 *  HEC-2 WATER SURFACE PROFILES          *                                    *  U.S. ARMY CORPS OF ENGINEERS
 *                                        *                                    *  HYDROLOGIC ENGINEERING CENTER
 *                                        *                                    *  609 SECOND STREET, SUITE D
 *  Version   4.6.2;  May 1991            *                                    *  DAVIS, CALIFORNIA 95616-4687
 *                                        *                                    *          (916) 756-1104
 *  RUN DATE    04NOV93    TIME   12:00:54 *
 *****************************************
*************************************
```

```
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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1
   04NOV93      12:00:54                                                                                    PAGE    1


                                                                                  THIS RUN EXECUTED 04NOV93    12:00:54
 *************************************
  HEC-2 WATER SURFACE PROFILES

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


 T1  Flow split at C545 left channel (Glenbrook Blvd.)
 T2  Fountain Hills North FIS
 T3  Q = 10  C545L.IH2.  04 Nov 93 trl

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           .016                                    1679.4

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        43         1         2         3         4         8         5        26

QT        9        10        15        20        25        30        35        40        45        50
NC     .050      .050      .024        .1        .3
X1      1.0       7.0    1015.0    1075.0
GR   1683.4    1000.0    1679.4    1015.0    1679.0    1016.2    1679.6    1045.0    1679.0    1073.8
GR   1679.4    1075.0    1679.9    1135.0

X1      1.1                                   0.1       0.1       0.1

X1      1.2                                   0.1       0.1       0.1
1
   04NOV93      12:00:54                                                                                    PAGE    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

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000

 3265 DIVIDED FLOW

     1.000       .30   1679.30   1679.30   1679.40   1679.37       .08       .00       .00   1679.40
      10.0        .0      10.0        .0        .0       4.5        .0        .0        .0   1679.40
       .00       .00      2.20       .00      .000      .024      .000      .000   1679.00   1015.30
   .016001        0.        0.        0.         0        19         0       .00     30.46   1074.70


 *SECNO 1.100

 3265 DIVIDED FLOW

     1.100       .30   1679.30   1679.30       .00   1679.38       .07       .00       .00   1679.40
      10.0        .0      10.0        .0        .0       4.6        .0        .0        .0   1679.40
       .00       .00      2.18       .00      .000      .024      .000      .000   1679.00   1015.30
   .015555        0.        0.        0.         0         5         0       .00     30.62   1074.70


 *SECNO 1.200

 3265 DIVIDED FLOW

     1.200       .31   1679.31       .00       .00   1679.38       .07       .00       .00   1679.40
      10.0        .0      10.0        .0        .0       4.7        .0        .0        .0   1679.40
       .00       .00      2.13       .00      .000      .024      .000      .000   1679.00   1015.29
   .014675        0.        0.        0.         0         0         0       .00     30.95   1074.71
```

```
1
   04NOV93      12:00:54                                                                                                PAGE    3

T1  Flow split at C545 left channel (Glenbrook Blvd.)
T2  Fountain Hills North FIS
T3  Q= 15 C545L.IH2.  04 Nov 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           .016                                    1679.4

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2

1
   04NOV93      12:00:54                                                                                                PAGE    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 2

CCHV=     .100 CEHV=     .300
*SECNO 1.000

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED
    1.000       .35   1679.35   1679.35   1679.40   1679.44       .09       .00       .00   1679.40
     15.0        .0      15.0       .0        .0       6.2        .0        .0        .0   1679.40
      .00       .00      2.41       .00      .000      .024      .000      .000   1679.00   1015.15
  .015550        0.        0.        0.         0        15         0       .00     35.65   1074.85

*SECNO 1.100

3265 DIVIDED FLOW

    1.100       .35   1679.35   1679.35       .00   1679.44       .09       .00       .00   1679.40
     15.0        .0      15.0       .0        .0       6.3        .0        .0        .0   1679.40
      .00       .00      2.39       .00      .000      .024      .000      .000   1679.00   1015.15
  .015179        0.        0.        0.         0         5         0       .00     35.81   1074.85

*SECNO 1.200

3265 DIVIDED FLOW

    1.200       .36   1679.36   1679.35       .00   1679.44       .09       .00       .00   1679.40
     15.0        .0      15.0       .0        .0       6.4        .0        .0        .0   1679.40
      .00       .00      2.34       .00      .000      .024      .000      .000   1679.00   1015.14
  .014441        0.        0.        0.         0         5         0       .00     36.15   1074.86

1
   04NOV93      12:00:54                                                                                                PAGE    5

T1  Flow split at C545 left channel (Glenbrook Blvd.)
T2  Fountain Hills North FIS
T3  Q= 20 C545L.IH2.  04 Nov 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                           .016                                    1679.4

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3

1
   04NOV93      12:00:54                                                                                                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

*PROF 3

CCHV=     .100 CEHV=     .300
*SECNO 1.000

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED
    1.000       .39   1679.39   1679.39   1679.40   1679.49       .10       .00       .00   1679.40
     20.0        .0      20.0       .0        .0       7.8        .0        .0        .0   1679.40
      .00       .00      2.56       .00      .000      .024      .000      .000   1679.00   1015.03
  .015120        0.        0.        0.         0         5         0       .00     39.92   1074.97

*SECNO 1.100

3265 DIVIDED FLOW

    1.100       .40   1679.40   1679.39       .00   1679.49       .10       .00       .00   1679.40
     20.0        .0      20.0       .0        .0       7.9        .0        .0        .0   1679.40
      .00       .00      2.52       .00      .000      .024      .000      .000   1679.00   1015.02
  .014554        0.        0.        0.         0         5         0       .00     40.21   1074.98
```

```
*SECNO 1.200

3265 DIVIDED FLOW

     1.200       .40   1679.40   1679.39       .00   1679.50       .10       .00       .00   1679.40
      20.0        .0      20.0        .0        .0       8.1        .0        .0        .0   1679.40
       .00       .00      2.48       .00      .000      .024      .000      .000   1679.00   1015.01
   .013899        0.        0.        0.         0         5         0       .00     40.55   1074.99

1
   04NOV93      12:00:54                                                                          PAGE    7

T1  Flow split at C545 left channel (Glenbrook Blvd.)
T2  Fountain Hills North FIS
T3  Q= 25 C545L.IH2.  04 Nov 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                5                           .016                                    1679.4

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      4

1
   04NOV93      12:00:54                                                                          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

*PROF 4

CCHV=     .100 CEHV=     .300
*SECNO 1.000

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED
     1.000       .43   1679.43   1679.43   1679.40   1679.54       .11       .00       .00   1679.40
      25.0        .0      25.0        .0        .0       9.5        .1        .0        .0   1679.40
       .00       .04      2.63       .04      .000      .024      .050      .000   1679.00   1014.88
   .013981        0.        0.        0.         0         8         0       .00     47.70   1078.76

*SECNO 1.100

3265 DIVIDED FLOW

     1.100       .43   1679.43   1679.43       .00   1679.54       .11       .00       .00   1679.40
      25.0        .0      25.0        .0        .0       9.5        .1        .0        .0   1679.40
       .00       .03      2.62       .03      .000      .024      .050      .000   1679.00   1014.88
   .013748        0.        0.        0.         0         5         0       .00     47.99   1078.93

*SECNO 1.200

3265 DIVIDED FLOW

     1.200       .44   1679.44   1679.43       .00   1679.54       .10       .00       .00   1679.40
      25.0        .0      25.0        .0        .0       9.7        .1        .0        .0   1679.40
       .00       .03      2.58       .03      .000      .024      .050      .000   1679.00   1014.87
   .013278        0.        0.        0.         0         5         0       .00     48.61   1079.26

1
   04NOV93      12:00:54                                                                          PAGE    9

T1  Flow split at C545 left channel (Glenbrook Blvd.)
T2  Fountain Hills North FIS
T3  Q= 30 C545L.IH2.  04 Nov 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                6                           .016                                    1679.4

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      5

1
   04NOV93      12:00:54                                                                          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

*PROF 5

CCHV=     .100 CEHV=     .300
*SECNO 1.000

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED
     1.000       .46   1679.46   1679.46   1679.40   1679.58       .12       .00       .00   1679.40
      30.0        .0      29.9        .1        .0      10.9        .2        .0        .0   1679.40
       .00       .03      2.73       .35      .050      .024      .050      .000   1679.00   1014.76
   .013637        0.        0.        0.         0        11         0       .00     54.73   1082.60
```

```
*SECNO 1.100

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED
     1.100       .47   1679.47   1679.46       .00   1679.58       .11       .00       .00   1679.40
      30.0        .0      29.9        .1        .0      11.0        .3        .0        .0   1679.40
       .00       .03      2.72       .35      .050      .024      .050      .000   1679.00   1014.76
   .013423        0.        0.        0.         0         5         0       .00     55.02   1082.76


*SECNO 1.200

3265 DIVIDED FLOW

     1.200       .47   1679.47   1679.46       .00   1679.58       .11       .00       .00   1679.40
      30.0        .0      29.9        .1        .0      11.1        .3        .0        .0   1679.40
       .00       .03      2.68       .35      .050      .024      .050      .000   1679.00   1014.75
   .012971        0.        0.        0.         0         5         0       .00     55.67   1083.12


1
   04NOV93      12:00:54                                                                          PAGE   11

T1  Flow split at C545 left channel (Glenbrook Blvd.)
T2  Fountain Hills North FIS
T3  Q= 35 C545L.IH2.  04 Nov 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 7                           .016                                    1679.4

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      6

1
   04NOV93      12:00:54                                                                          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

*PROF 6

CCHV=     .100 CEHV=     .300
*SECNO 1.000

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED
     1.000       .49   1679.49   1679.49   1679.40   1679.61       .12       .00       .00   1679.40
      35.0        .0      34.8        .2        .0      12.4        .5        .0        .0   1679.40
       .00       .03      2.79       .44      .050      .024      .050      .000   1679.00   1014.65
   .013004        0.        0.        0.         0        11         0       .00     61.57   1086.34


*SECNO 1.100

3265 DIVIDED FLOW

     1.100       .50   1679.50   1679.49       .00   1679.62       .12       .00       .00   1679.40
      35.0        .0      34.8        .2        .0      12.5        .6        .0        .0   1679.40
       .00       .03      2.78       .44      .050      .024      .050      .000   1679.00   1014.64
   .012812        0.        0.        0.         0         5         0       .00     61.86   1086.50


*SECNO 1.200

3265 DIVIDED FLOW

     1.200       .50   1679.50   1679.49       .00   1679.62       .12       .00       .00   1679.40
      35.0        .0      34.7        .3        .0      12.7        .6        .0        .0   1679.40
       .00       .03      2.75       .45      .050      .024      .050      .000   1679.00   1014.63
   .012421        0.        0.        0.         0         5         0       .00     62.48   1086.84


1
   04NOV93      12:00:54                                                                          PAGE   13

T1  Flow split at C545 left channel (Glenbrook Blvd.)
T2  Fountain Hills North FIS
T3  Q= 40 C545L.IH2.  04 Nov 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 8                           .016                                    1679.4

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      7

1
   04NOV93      12:00:54                                                                          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

*PROF 7

CCHV=     .100 CEHV=     .300
```

```
*SECNO 1.000

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED
     1.000       .52   1679.52   1679.52   1679.40   1679.65       .12       .00       .00   1679.40
      40.0        .0      39.5        .5        .0      13.9        .9        .0        .0   1679.40
       .00       .03      2.85       .52      .050      .024      .050      .000   1679.00   1014.54
   .012593        0.        0.        0.         0        11         0       .00     67.63   1089.65


*SECNO 1.100

3265 DIVIDED FLOW

     1.100       .52   1679.52   1679.52       .00   1679.65       .12       .00       .00   1679.40
      40.0        .0      39.5        .5        .0      13.9        .9        .0        .0   1679.40
       .00       .03      2.84       .52      .050      .024      .050      .000   1679.00   1014.54
   .012432        0.        0.        0.         0         5         0       .00     67.90   1089.79


*SECNO 1.200

3265 DIVIDED FLOW

     1.200       .53   1679.53   1679.52       .00   1679.65       .12       .00       .00   1679.40
      40.0        .0      39.5        .5        .0      14.1       1.0        .0        .0   1679.40
       .00       .03      2.81       .52      .050      .024      .050      .000   1679.00   1014.53
   .012100        0.        0.        0.         0         5         0       .00     68.46   1090.10


1
   04NOV93      12:00:54                                                                          PAGE   15

T1  Flow split at C545 left channel (Glenbrook Blvd.)
T2  Fountain Hills North FIS
T3  Q= 45 C545L.IH2.  04 Nov 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                9                           .016                                    1679.4

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      8

1
   04NOV93      12:00:54                                                                          PAGE   16

    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 8

CCHV=     .100 CEHV=     .300
*SECNO 1.000

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED
     1.000       .55   1679.55   1679.55   1679.40   1679.68       .13       .00       .00   1679.40
      45.0        .0      44.2        .8        .0      15.3       1.3        .0        .0   1679.40
       .00       .03      2.90       .58      .050      .024      .050      .000   1679.00   1014.44
   .012128        0.        0.        0.         0        11         0       .00     73.42   1092.81


*SECNO 1.100

3265 DIVIDED FLOW

     1.100       .55   1679.55   1679.55       .00   1679.68       .13       .00       .00   1679.40
      45.0        .0      44.2        .8        .0      15.3       1.3        .0        .0   1679.40
       .00       .03      2.88       .58      .050      .024      .050      .000   1679.00   1014.44
   .011979        0.        0.        0.         0         5         0       .00     73.69   1092.96


*SECNO 1.200

3265 DIVIDED FLOW

     1.200       .56   1679.56   1679.55       .00   1679.68       .12       .00       .00   1679.40
      45.0        .0      44.2        .8        .0      15.5       1.4        .0        .0   1679.40
       .00       .03      2.85       .58      .050      .024      .050      .000   1679.00   1014.43
   .011673        0.        0.        0.         0         5         0       .00     74.26   1093.27


1
   04NOV93      12:00:54                                                                          PAGE   17

T1  Flow split at C545 left channel (Glenbrook Blvd.)
T2  Fountain Hills North FIS
T3  Q= 50 C545L.IH2.  04 Nov 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

               10                           .016                                    1679.4

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15

1
   04NOV93      12:00:54                                                                          PAGE   18
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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

*PROF 9

CCHV=     .100 CEHV=     .300
*SECNO 1.000

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED
     1.000       .57   1679.57   1679.57   1679.40   1679.70       .13       .00       .00   1679.40
      50.0        .0      48.9       1.1        .1      16.5       1.7        .0        .0   1679.40
       .00       .03      2.96       .63      .050      .024      .050      .000   1679.00   1014.36
   .012000        0.        0.        0.         0        14         0       .00     78.31   1095.48

*SECNO 1.100

3265 DIVIDED FLOW

     1.100       .57   1679.57   1679.57       .00   1679.71       .13       .00       .00   1679.40
      50.0        .0      48.9       1.1        .1      16.6       1.8        .0        .0   1679.40
       .00       .03      2.95       .63      .050      .024      .050      .000   1679.00   1014.36
   .011858        0.        0.        0.         0         5         0       .00     78.57   1095.63

*SECNO 1.200

3265 DIVIDED FLOW

     1.200       .58   1679.58   1679.57       .00   1679.71       .13       .00       .00   1679.40
      50.0        .0      48.8       1.1        .1      16.7       1.8        .0        .0   1679.40
       .00       .03      2.92       .63      .050      .024      .050      .000   1679.00   1014.35
   .011565        0.        0.        0.         0         5         0       .00     79.14   1095.93

1
   04NOV93      12:00:54                                                                                    PAGE   19


                                                                                THIS RUN EXECUTED 04NOV93    12:00:58
************************************
 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

10  C545L.IH2.  04 Nov 9

SUMMARY PRINTOUT

      SECNO       Q       CWSEL     CRIWS      EG       TOPWID     DEPTH     10*KS      VCH

       1.000    10.00   1679.30   1679.30   1679.37     30.46       .30    160.01      2.20
*      1.000    15.00   1679.35   1679.35   1679.44     35.65       .35    155.50      2.41
*      1.000    20.00   1679.39   1679.39   1679.49     39.92       .39    151.20      2.56
*      1.000    25.00   1679.43   1679.43   1679.54     47.70       .43    139.81      2.63
*      1.000    30.00   1679.46   1679.46   1679.58     54.73       .46    136.37      2.73
*      1.000    35.00   1679.49   1679.49   1679.61     61.57       .49    130.04      2.79
*      1.000    40.00   1679.52   1679.52   1679.65     67.63       .52    125.93      2.85
*      1.000    45.00   1679.55   1679.55   1679.68     73.42       .55    121.28      2.90
*      1.000    50.00   1679.57   1679.57   1679.70     78.31       .57    120.00      2.96

       1.100    10.00   1679.30   1679.30   1679.38     30.62       .30    155.55      2.18
       1.100    15.00   1679.35   1679.35   1679.44     35.81       .35    151.79      2.39
       1.100    20.00   1679.40   1679.39   1679.49     40.21       .40    145.54      2.52
       1.100    25.00   1679.43   1679.43   1679.54     47.99       .43    137.48      2.62
*      1.100    30.00   1679.47   1679.46   1679.58     55.02       .47    134.23      2.72
       1.100    35.00   1679.50   1679.49   1679.62     61.86       .50    128.12      2.78
       1.100    40.00   1679.52   1679.52   1679.65     67.90       .52    124.32      2.84
       1.100    45.00   1679.55   1679.55   1679.68     73.69       .55    119.79      2.88
       1.100    50.00   1679.57   1679.57   1679.71     78.57       .57    118.58      2.95

       1.200    10.00   1679.31       .00   1679.38     30.95       .31    146.75      2.13
       1.200    15.00   1679.36   1679.35   1679.44     36.15       .36    144.41      2.34
       1.200    20.00   1679.40   1679.39   1679.50     40.55       .40    138.99      2.48
       1.200    25.00   1679.44   1679.43   1679.54     48.61       .44    132.78      2.58
       1.200    30.00   1679.47   1679.46   1679.58     55.67       .47    129.71      2.68
       1.200    35.00   1679.50   1679.49   1679.62     62.48       .50    124.21      2.75
       1.200    40.00   1679.53   1679.52   1679.65     68.46       .53    121.00      2.81
       1.200    45.00   1679.56   1679.55   1679.68     74.26       .56    116.73      2.85
       1.200    50.00   1679.58   1679.57   1679.71     79.14       .58    115.65      2.92

1
   04NOV93      12:00:54                                                                                    PAGE   20


 SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO=      1.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  6  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  7  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  8  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      1.000  PROFILE=  9  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.100  PROFILE=  5  CRITICAL DEPTH ASSUMED
```

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1*****************************************
*************************************
 *  HEC-2 WATER SURFACE PROFILES          *                                    *  U.S. ARMY CORPS OF ENGINEERS
 *                                        *                                    *  HYDROLOGIC ENGINEERING CENTER
 *                                        *                                    *  609 SECOND STREET, SUITE D
 *  Version   4.6.2;  May 1991            *                                    *  DAVIS, CALIFORNIA 95616-4687
 *                                        *                                    *          (916) 756-1104
 *  RUN DATE    04NOV93    TIME   12:03:45 *
 *****************************************
*************************************
```

```
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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1
   04NOV93      12:03:45                                                                                    PAGE    1


                                                                                THIS RUN EXECUTED 04NOV93    12:03:45
 *************************************
  HEC-2 WATER SURFACE PROFILES

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


 T1  Flow split at C545 right channel (Tamarack Lane)
 T2  Fountain Hills North FIS
 T3  Q = 50  C545R.IH2.  04 Nov 93 trl

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           .020                                    1679.4

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        43         1         2         3         4         8         5        26

 QT        9        10        15        20        25        30        35        40        45        50
 NC     .050      .050      .024        .1        .3
 X1      1.0       7.0    1060.0    1088.0
 GR   1679.9    1000.0    1679.4    1060.0    1679.0    1061.2    1679.3    1074.0    1679.0    1086.8
 GR   1679.4    1088.0    1681.4    1118.0

 X1      1.1                                       0.1       0.1       0.1

 X1      1.2                                       0.1       0.1       0.1
1
   04NOV93      12:03:45                                                                                    PAGE    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

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 3720 CRITICAL DEPTH ASSUMED
      1.000       .32   1679.32   1679.32   1679.40   1679.39       .08       .00       .00   1679.40
       10.0        .0      10.0        .0        .0       4.5        .0        .0        .0   1679.40
        .00       .00      2.20       .00      .000      .024      .000      .000   1679.00   1060.25
    .013979        0.        0.        0.         0        14         0       .00     27.50   1087.75


 *SECNO 1.100
      1.100       .32   1679.32       .00       .00   1679.39       .07       .00       .00   1679.40
       10.0        .0      10.0        .0        .0       4.6        .0        .0        .0   1679.40
        .00       .00      2.18       .00      .000      .024      .000      .000   1679.00   1060.25
    .013612        0.        0.        0.         0         0         0       .00     27.50   1087.75


 *SECNO 1.200
      1.200       .32   1679.32       .00       .00   1679.39       .07       .00       .00   1679.40
       10.0        .0      10.0        .0        .0       4.7        .0        .0        .0   1679.40
        .00       .00      2.15       .00      .000      .024      .000      .000   1679.00   1060.24
    .012916        0.        0.        0.         0         0         0       .00     27.52   1087.76


1
   04NOV93      12:03:45                                                                                    PAGE    3

 T1  Flow split at C545 right channel (Tamarack Lane)
 T2  Fountain Hills North FIS
 T3  Q= 15 C545R.IH2.  04 Nov 93 trl
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```
J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           .020                                    1679.4

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2

1
   04NOV93      12:03:45                                                                                    PAGE    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 2

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .36   1679.36   1679.36   1679.40   1679.47       .11       .00       .00   1679.40
      15.0        .0      15.0        .0        .0       5.7        .0        .0        .0   1679.40
       .00       .00      2.63       .00      .000      .024      .000      .000   1679.00   1060.13
   .015053        0.        0.        0.         0        15         0       .00     27.74   1087.87

*SECNO 1.100
     1.100       .36   1679.36   1679.36       .00   1679.47       .10       .00       .00   1679.40
      15.0        .0      15.0        .0        .0       5.8        .0        .0        .0   1679.40
       .00       .00      2.59       .00      .000      .024      .000      .000   1679.00   1060.12
   .014316        0.        0.        0.         0         5         0       .00     27.76   1087.88

*SECNO 1.200
     1.200       .37   1679.37   1679.36       .00   1679.47       .10       .00       .00   1679.40
      15.0        .0      15.0        .0        .0       5.9        .0        .0        .0   1679.40
       .00       .00      2.55       .00      .000      .024      .000      .000   1679.00   1060.11
   .013574        0.        0.        0.         0         5         0       .00     27.78   1087.89

1
   04NOV93      12:03:45                                                                                    PAGE    5

T1  Flow split at C545 right channel (Tamarack Lane)
T2  Fountain Hills North FIS
T3  Q= 20 C545R.IH2.  04 Nov 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                           .020                                    1679.4

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3

1
   04NOV93      12:03:45                                                                                    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

*PROF 3

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .40   1679.40   1679.40   1679.40   1679.53       .13       .00       .00   1679.40
      20.0        .0      20.0        .0        .0       7.0        .0        .0        .0   1679.40
       .00       .03      2.85       .00      .000      .024      .000      .000   1679.00   1059.41
   .013500        0.        0.        0.         0         5         0       .00     28.66   1088.07

*SECNO 1.100
     1.100       .41   1679.41   1679.40       .00   1679.53       .12       .00       .00   1679.40
      20.0        .0      20.0        .0        .0       7.1        .0        .0        .0   1679.40
       .00       .03      2.83       .00      .000      .024      .000      .000   1679.00   1059.25
   .013262        0.        0.        0.         0         5         0       .00     28.84   1088.09

*SECNO 1.200
     1.200       .41   1679.41   1679.40       .00   1679.53       .12       .00       .00   1679.40
      20.0        .0      20.0        .0        .0       7.1        .0        .0        .0   1679.40
       .00       .03      2.80       .00      .050      .024      .000      .000   1679.00   1058.92
   .012781        0.        0.        0.         0         5         0       .00     29.22   1088.14

1
   04NOV93      12:03:45                                                                                    PAGE    7

T1  Flow split at C545 right channel (Tamarack Lane)
T2  Fountain Hills North FIS
T3  Q= 25 C545R.IH2.  04 Nov 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                5                           .020                                    1679.4

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     4
```

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1
   04NOV93      12:03:45                                                                                                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

 *PROF 4

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 3720 CRITICAL DEPTH ASSUMED
     1.000       .45   1679.45   1679.45   1679.40   1679.59       .14       .00       .00   1679.40
      25.0        .0      25.0        .0        .1       8.2        .0        .0        .0   1679.40
       .00       .27      3.04       .03      .050      .024      .050      .000   1679.00   1054.29
   .012444        0.        0.        0.         0         8         0       .00     34.43   1088.71

 *SECNO 1.100
     1.100       .45   1679.45   1679.45       .00   1679.59       .14       .00       .00   1679.40
      25.0        .0      25.0        .0        .1       8.2        .0        .0        .0   1679.40
       .00       .28      3.03       .03      .050      .024      .050      .000   1679.00   1054.14
   .012271        0.        0.        0.         0         5         0       .00     34.59   1088.73

 *SECNO 1.200
     1.200       .45   1679.45   1679.45       .00   1679.59       .14       .00       .00   1679.40
      25.0        .0      25.0        .0        .2       8.3        .0        .0        .0   1679.40
       .00       .28      3.00       .03      .050      .024      .050      .000   1679.00   1053.83
   .011916        0.        0.        0.         0         5         0       .00     34.94   1088.77

1
   04NOV93      12:03:45                                                                                                PAGE    9

 T1  Flow split at C545 right channel (Tamarack Lane)
 T2  Fountain Hills North FIS
 T3  Q= 30 C545R.IH2.  04 Nov 93 trl

 J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                  6                             .020                                         1679.4

 J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

       5

1
   04NOV93      12:03:45                                                                                                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

 *PROF 5

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 3720 CRITICAL DEPTH ASSUMED
     1.000       .48   1679.48   1679.48   1679.40   1679.65       .16       .00       .00   1679.40
      30.0        .2      29.8        .0        .4       9.3        .1        .0        .0   1679.40
       .00       .39      3.22       .03      .050      .024      .050      .000   1679.00   1049.80
   .011915        0.        0.        0.         0        11         0       .00     39.47   1089.27

 *SECNO 1.100
     1.100       .49   1679.49   1679.49       .00   1679.65       .16       .00       .00   1679.40
      30.0        .2      29.8        .0        .5       9.3        .1        .0        .0   1679.40
       .00       .40      3.20       .03      .050      .024      .050      .000   1679.00   1049.58
   .011691        0.        0.        0.         0         5         0       .00     39.72   1089.30

 *SECNO 1.200
     1.200       .49   1679.49   1679.49       .00   1679.65       .16       .00       .00   1679.40
      30.0        .2      29.8        .0        .5       9.4        .1        .0        .0   1679.40
       .00       .40      3.18       .03      .050      .024      .050      .000   1679.00   1049.28
   .011387        0.        0.        0.         0         5         0       .00     40.06   1089.34

1
   04NOV93      12:03:45                                                                                                PAGE   11

 T1  Flow split at C545 right channel (Tamarack Lane)
 T2  Fountain Hills North FIS
 T3  Q= 35 C545R.IH2.  04 Nov 93 trl

 J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                  7                             .020                                         1679.4

 J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

       6

1
   04NOV93      12:03:45                                                                                                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
```

```
*PROF 6

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .53   1679.53   1679.53   1679.40   1679.69       .17       .00       .00   1679.40
      35.0        .5      34.5       .1        .9      10.4        .1        .0        .0   1679.40
       .00       .49      3.32       .49      .050      .024      .050      .000   1679.00   1044.93
   .010819        0.        0.        0.         0        11         0       .00     44.96   1089.88


*SECNO 1.100
     1.100       .53   1679.53   1679.53       .00   1679.70       .16       .00       .00   1679.40
      35.0        .5      34.4       .1       1.0      10.5        .1        .0        .0   1679.40
       .00       .49      3.28       .49      .050      .024      .050      .000   1679.00   1044.43
   .010403        0.        0.        0.         0         5         0       .00     45.52   1089.95


*SECNO 1.200
     1.200       .54   1679.54   1679.53       .00   1679.70       .16       .00       .00   1679.40
      35.0        .5      34.4       .1       1.1      10.6        .1        .0        .0   1679.40
       .00       .49      3.25       .49      .050      .024      .050      .000   1679.00   1044.11
   .010145        0.        0.        0.         0         5         0       .00     45.88   1089.99


1
   04NOV93      12:03:45                                                                          PAGE   13

T1  Flow split at C545 right channel (Tamarack Lane)
T2  Fountain Hills North FIS
T3  Q= 40 C545R.IH2.  04 Nov 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 8                           .020                                    1679.4

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     7

1
   04NOV93      12:03:45                                                                          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

*PROF 7

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .56   1679.56   1679.56   1679.40   1679.74       .17       .00       .00   1679.40
      40.0        .9      39.0       .1       1.6      11.5        .2        .0        .0   1679.40
       .00       .56      3.40       .56      .050      .024      .050      .000   1679.00   1040.30
   .009947        0.        0.        0.         0        11         0       .00     50.16   1090.46


*SECNO 1.100
     1.100       .57   1679.57   1679.56       .00   1679.74       .17       .00       .00   1679.40
      40.0        .9      39.0       .1       1.6      11.5        .2        .0        .0   1679.40
       .00       .56      3.39       .56      .050      .024      .050      .000   1679.00   1040.18
   .009862        0.        0.        0.         0         5         0       .00     50.30   1090.48


*SECNO 1.200
     1.200       .57   1679.57   1679.56       .00   1679.74       .17       .00       .00   1679.40
      40.0        .9      38.9       .1       1.7      11.6        .2        .0        .0   1679.40
       .00       .56      3.37       .56      .050      .024      .050      .000   1679.00   1039.93
   .009685        0.        0.        0.         0         5         0       .00     50.58   1090.51


1
   04NOV93      12:03:45                                                                          PAGE   15

T1  Flow split at C545 right channel (Tamarack Lane)
T2  Fountain Hills North FIS
T3  Q= 45 C545R.IH2.  04 Nov 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 9                           .020                                    1679.4

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     8

1
   04NOV93      12:03:45                                                                          PAGE   16

    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 8

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .60   1679.60   1679.60   1679.40   1679.78       .18       .00       .00   1679.40
      45.0       1.5      43.3       .2       2.4      12.5        .3        .0        .0   1679.40
```

```
      .00       .62       3.47       .62       .050       .024       .050       .000   1679.00   1035.95
   .009264       0.         0.        0.         0         11          0        .00     55.06   1091.01

*SECNO 1.100
     1.100       .60   1679.60   1679.60       .00   1679.78       .18       .00       .00   1679.40
      45.0       1.5      43.3        .2       2.4      12.5        .3        .0        .0   1679.40
       .00       .62      3.46       .62      .050      .024      .050      .000   1679.00   1035.83
   .009190       0.         0.        0.         0         5         0        .00     55.19   1091.02

*SECNO 1.200
     1.200       .61   1679.61   1679.60       .00   1679.78       .18       .00       .00   1679.40
      45.0       1.5      43.3        .2       2.5      12.6        .3        .0        .0   1679.40
       .00       .62      3.44       .61      .050      .024      .050      .000   1679.00   1035.60
   .009045       0.         0.        0.         0         5         0        .00     55.45   1091.05

1
   04NOV93      12:03:45                                                                          PAGE   17

T1  Flow split at C545 right channel (Tamarack Lane)
T2  Fountain Hills North FIS
T3  Q= 50 C545R.IH2.  04 Nov 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              10                            .020                                    1679.4

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    15

1
   04NOV93      12:03:45                                                                          PAGE   18

    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 9

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .63   1679.63   1679.63   1679.40   1679.82       .19       .00       .00   1679.40
      50.0       2.1      47.6        .3       3.2      13.3        .4        .0        .0   1679.40
       .00       .67      3.58       .67      .050      .024      .050      .000   1679.00   1032.49
   .009087       0.         0.        0.         0         14        0        .00     58.95   1091.44

*SECNO 1.100
     1.100       .63   1679.63   1679.63       .00   1679.82       .19       .00       .00   1679.40
      50.0       2.1      47.6        .3       3.2      13.4        .4        .0        .0   1679.40
       .00       .67      3.56       .67      .050      .024      .050      .000   1679.00   1032.24
   .008942       0.         0.        0.         0         5         0        .00     59.23   1091.47

*SECNO 1.200
     1.200       .64   1679.64   1679.63       .00   1679.82       .19       .00       .00   1679.40
      50.0       2.2      47.6        .3       3.3      13.4        .4        .0        .0   1679.40
       .00       .67      3.55       .66      .050      .024      .050      .000   1679.00   1032.01
   .008808       0.         0.        0.         0         5         0        .00     59.49   1091.50

1
   04NOV93      12:03:45                                                                          PAGE   19


                                                                    THIS RUN EXECUTED 04NOV93    12:03:50
*************************************
 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

50  C545R.IH2.  04 Nov 9

SUMMARY PRINTOUT

      SECNO       Q       CWSEL     CRIWS      EG       TOPWID     DEPTH     10*KS      VCH

*      1.000     10.00   1679.32   1679.32   1679.39    27.50       .32     139.79     2.20
*      1.000     15.00   1679.36   1679.36   1679.47    27.74       .36     150.53     2.63
*      1.000     20.00   1679.40   1679.40   1679.53    28.66       .40     135.00     2.85
*      1.000     25.00   1679.45   1679.45   1679.59    34.43       .45     124.44     3.04
*      1.000     30.00   1679.48   1679.48   1679.65    39.47       .48     119.15     3.22
*      1.000     35.00   1679.53   1679.53   1679.69    44.96       .53     108.19     3.32
*      1.000     40.00   1679.56   1679.56   1679.74    50.16       .56      99.47     3.40
*      1.000     45.00   1679.60   1679.60   1679.78    55.06       .60      92.64     3.47
*      1.000     50.00   1679.63   1679.63   1679.82    58.95       .63      90.87     3.58

       1.100     10.00   1679.32       .00   1679.39    27.50       .32     136.12     2.18
       1.100     15.00   1679.36   1679.36   1679.47    27.76       .36     143.16     2.59
       1.100     20.00   1679.41   1679.40   1679.53    28.84       .41     132.62     2.83
       1.100     25.00   1679.45   1679.45   1679.59    34.59       .45     122.71     3.03
       1.100     30.00   1679.49   1679.49   1679.65    39.72       .49     116.91     3.20
       1.100     35.00   1679.53   1679.53   1679.70    45.52       .53     104.03     3.28
       1.100     40.00   1679.57   1679.56   1679.74    50.30       .57      98.62     3.39
```

1.100	45.00	1679.60	1679.60	1679.78	55.19	.60	91.90	3.46
1.100	50.00	1679.63	1679.63	1679.82	59.23	.63	89.42	3.56
1.200	10.00	1679.32	.00	1679.39	27.52	.32	129.16	2.15
1.200	15.00	1679.37	1679.36	1679.47	27.78	.37	135.74	2.55
1.200	20.00	1679.41	1679.40	1679.53	29.22	.41	127.81	2.80
1.200	25.00	1679.45	1679.45	1679.59	34.94	.45	119.16	3.00
1.200	30.00	1679.49	1679.49	1679.65	40.06	.49	113.87	3.18
1.200	35.00	1679.54	1679.53	1679.70	45.88	.54	101.45	3.25
1.200	40.00	1679.57	1679.56	1679.74	50.58	.57	96.85	3.37
1.200	45.00	1679.61	1679.60	1679.78	55.45	.61	90.45	3.44
1.200	50.00	1679.64	1679.63	1679.82	59.49	.64	88.08	3.55

1

04NOV93 12:03:45 PAGE 20

SUMMARY OF ERRORS AND SPECIAL NOTES

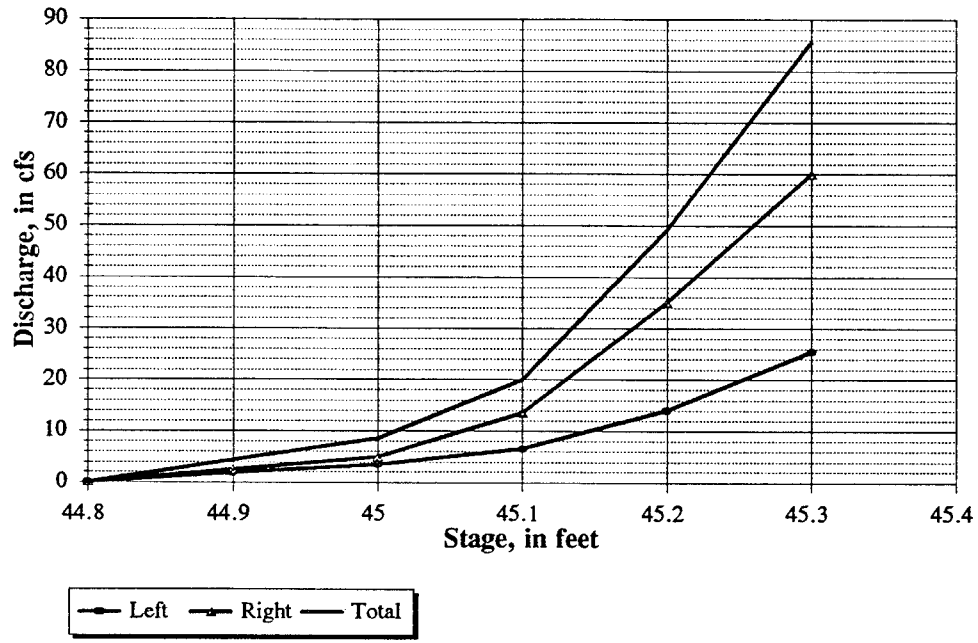
```
CAUTION SECNO=      1.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  6  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  7  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  8  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  9  CRITICAL DEPTH ASSUMED
```

C614 Flow Split Table

Stage (ft)	Discharge, in cfs		
	Left Channel	Right Channel	Total
44.80	0.0	0.0	0.0
44.90	1.8	2.5	4.3
45.00	3.5	5.0	8.5
45.10	6.5	13.5	20.0
45.20	14.0	35.0	49.0
45.30	25.5	60.0	85.5

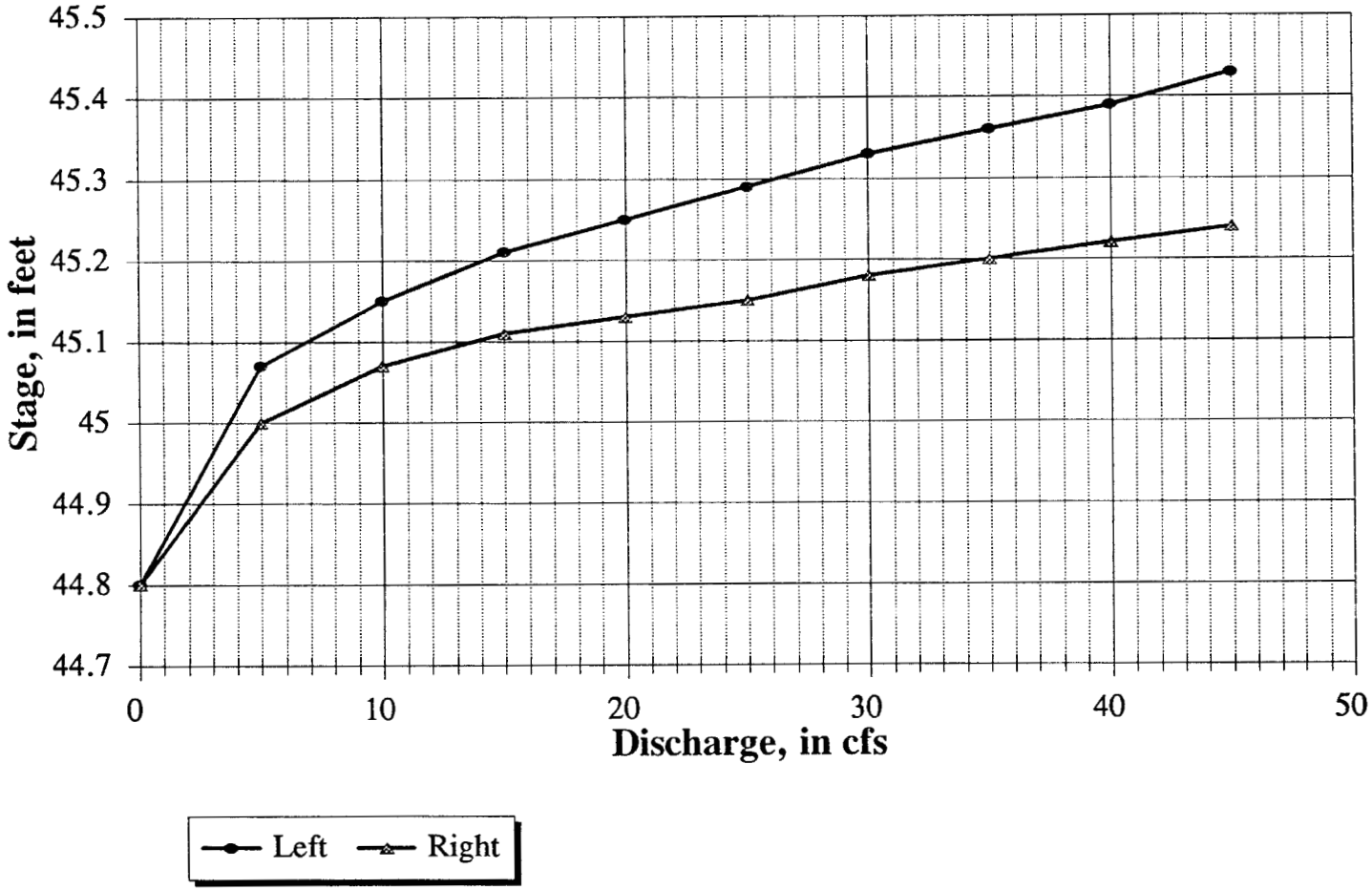
Figure D-10

Discharge vs Stage Curve for Flow Split at C614



C614 HEC-2 Results

Discharge vs Stage Curve for Flow Split at C614



flowsplt.wb1

17-Nov-93

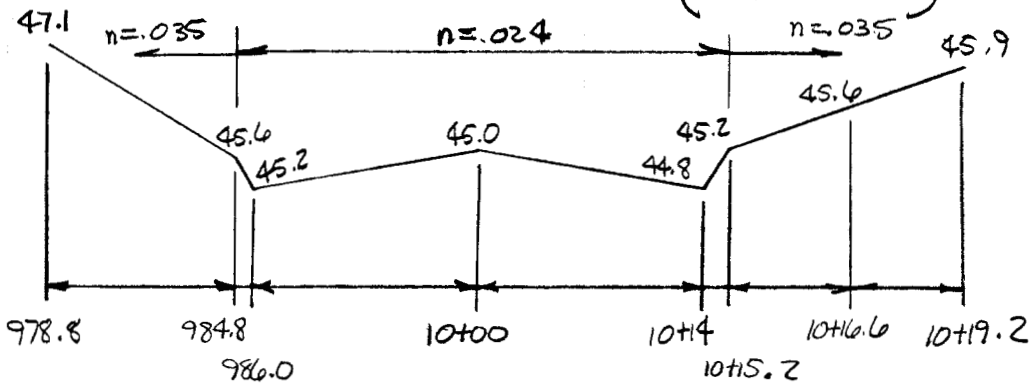
GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 1 OF 1
DATE 10/28/93
BY TRL
PROJECT NO. 35

CLIENT FCDMC
PROJECT Fountain Hills North FIS
SUBJECT C614 Flow Split

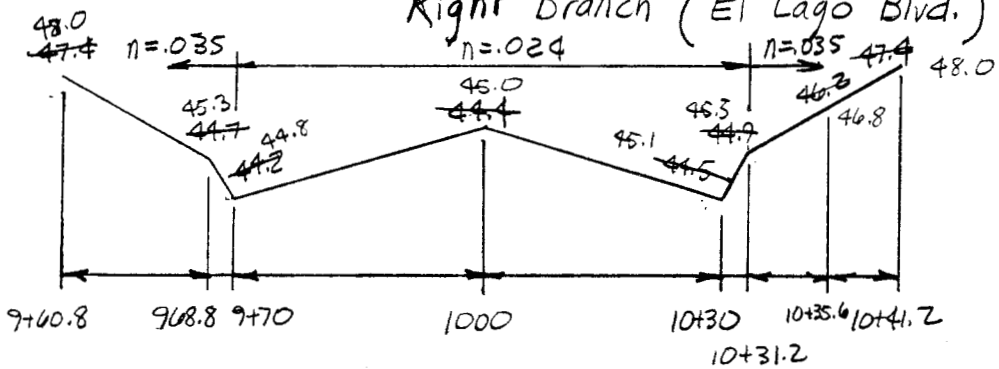
C614

Left Branch (Cavern Drive)



$S = (45.0 - 43.4)/50 = 3.2\%$

Right Branch (El Lago Blvd.)



Adjust ℄ Elev to match C614

$S = (46.5 - 44.4)/75 = 2.8\%$

Summary

Q	Stage Left	Stage Right
0	44.8	44.8
5	45.07	45.00
10	45.15	45.07
15	45.21	45.11
20	45.25	45.13
25	45.29	45.15
30	45.33	45.18
35	45.36	45.20
40	45.39	45.22
45	45.43	45.24

Stage	Discharge Left	Discharge Right	Discharge Total
44.80	0	0	0
44.90	1.8	2.5	4.3
45.00	3.5	5.0	8.5
45.10	6.5	13.5	20.0
45.20	14.0	35.0	49.0
45.30	25.5	60.0	85.5

```
1*****************************************
*************************************
 *  HEC-2 WATER SURFACE PROFILES          *                                    *  U.S. ARMY CORPS OF ENGINEERS
 *                                        *                                    *  HYDROLOGIC ENGINEERING CENTER
 *                                        *                                    *  609 SECOND STREET, SUITE D
 *  Version   4.6.2;  May 1991            *                                    *  DAVIS, CALIFORNIA 95616-4687
 *                                        *                                    *          (916) 756-1104
 *  RUN DATE    04NOV93    TIME   11:59:30 *
 *****************************************
*************************************

                                    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
1
   04NOV93      11:59:30                                                                                    PAGE    1


                                                                                THIS RUN EXECUTED 04NOV93    11:59:30
 *************************************
  HEC-2 WATER SURFACE PROFILES

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


 T1Flow split at C614 left channel (Cavern Drive)
 T2Fountain Hills North FIS
 T3Q = 5  C614L.IH2.  28 Oct 93 trl

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           .032                                    45.6

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1


 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        43         1         2         3         4         8         5        26

 QT        9         5        10        15        20        25        30        35        40        45
 NC     .035      .035      .024        .1        .3
 X1      1.0       8.0     984.8    1015.2
 GR     47.1     978.8      45.6     984.8      45.2     986.0      45.0    1000.0      44.8    1014.0
 GR     45.2    1015.2      45.6    1016.6      45.9    1019.2

 X1      1.1                                    0.1       0.1       0.1

 X1      1.2                                    0.1       0.1       0.1
1
   04NOV93      11:59:30                                                                                    PAGE    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

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 3720 CRITICAL DEPTH ASSUMED
      1.000      .26     45.06     45.06     45.60     45.12       .07       .00       .00     45.60
        5.0       .0       5.0       .0        .0       2.4        .0        .0        .0     45.20
        .00      .00      2.06       .00      .000      .024      .000      .000     44.80    995.96
    .017082       0.        0.        0.         0        17         0       .00     18.82   1014.77


 *SECNO 1.100
      1.100      .26     45.06     45.06       .00     45.13       .06       .00       .00     45.60
        5.0       .0       5.0       .0        .0       2.5        .0        .0        .0     45.20
        .00      .00      2.03       .00      .000      .024      .000      .000     44.80    995.84
    .016491       0.        0.        0.         0         5         0       .00     18.94   1014.78


 *SECNO 1.200
      1.200      .27     45.07       .00       .00     45.13       .06       .00       .00     45.60
        5.0       .0       5.0       .0        .0       2.5        .0        .0        .0     45.20
        .00      .00      1.98       .00      .000      .024      .000      .000     44.80    995.59
    .015341       0.        0.        0.         0         0         0       .00     19.20   1014.79

1
   04NOV93      11:59:30                                                                                    PAGE    3

 T1Flow split at C614 left channel (Cavern Drive)
 T2Fountain Hills North FIS
 T3  Q=10 C614L.IH2.  28 Oct 93 trl
```

```
J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           .032                                    45.6

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2

1
   04NOV93      11:59:30                                                                                PAGE    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 2

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000      .34     45.14     45.14     45.60     45.23       .09       .00       .00     45.60
      10.0       .0      10.0        .0        .0       4.2        .0        .0        .0     45.20
       .00      .00      2.37       .00      .000      .024      .000      .000     44.80    990.22
   .015681       0.        0.        0.         0        18         0       .00     24.80   1015.02

*SECNO 1.100
     1.100      .34     45.14     45.14       .00     45.23       .09       .00       .00     45.60
      10.0       .0      10.0        .0        .0       4.3        .0        .0        .0     45.20
       .00      .00      2.35       .00      .000      .024      .000      .000     44.80    990.11
   .015301       0.        0.        0.         0         5         0       .00     24.91   1015.02

*SECNO 1.200
     1.200      .35     45.15     45.14       .00     45.23       .08       .00       .00     45.60
      10.0       .0      10.0        .0        .0       4.3        .0        .0        .0     45.20
       .00      .00      2.31       .00      .000      .024      .000      .000     44.80    989.88
   .014538       0.        0.        0.         0         5         0       .00     25.15   1015.03

1
   04NOV93      11:59:30                                                                                PAGE    5

T1Flow split at C614 left channel (Cavern Drive)
T2Fountain Hills North FIS
T3  Q=15 C614L.IH2.  28 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                           .032                                    45.6

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3

1
   04NOV93      11:59:30                                                                                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

*PROF 3

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000      .40     45.20     45.20     45.60     45.30       .10       .00       .00     45.60
      15.0       .0      15.0        .0        .0       5.8        .0        .0        .0     45.20
       .00      .00      2.57       .00      .000      .024      .000      .000     44.80    986.03
   .014847       0.        0.        0.         0         8         0       .00     29.17   1015.20

*SECNO 1.100
     1.100      .40     45.20     45.20       .00     45.30       .10       .00       .00     45.60
      15.0       .0      15.0        .0        .0       5.9        .0        .0        .0     45.20
       .00      .00      2.56       .00      .000      .024      .000      .000     44.80    986.00
   .014509       0.        0.        0.         0         5         0       .00     29.21   1015.20

*SECNO 1.200
     1.200      .41     45.21     45.20       .00     45.31       .10       .00       .00     45.60
      15.0       .0      15.0        .0        .0       6.0        .0        .0        .0     45.20
       .00      .00      2.52       .00      .000      .024      .000      .000     44.80    985.99
   .013790       0.        0.        0.         0         5         0       .00     29.23   1015.21

1
   04NOV93      11:59:30                                                                                PAGE    7

T1Flow split at C614 left channel (Cavern Drive)
T2Fountain Hills North FIS
T3  Q=20 C614L.IH2.  28 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                5                           .032                                    45.6

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     4
```

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1
   04NOV93      11:59:30                                                                                                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

 *PROF 4

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 3720 CRITICAL DEPTH ASSUMED
     1.000       .44      45.24      45.24      45.60      45.37       .12        .00        .00      45.60
      20.0        .0       20.0        .0         .0        7.1        .0         .0         .0       45.20
       .00       .00       2.82        .05       .000       .024       .035       .000      44.80     985.87
   .013762        0.         0.         0.         0         11         0        .00      29.48    1015.35

 *SECNO 1.100
     1.100       .45      45.25      45.24        .00      45.37       .12        .00        .00      45.60
      20.0        .0       20.0        .0         .0        7.1        .0         .0         .0       45.20
       .00       .00       2.80        .05       .000       .024       .035       .000      44.80     985.87
   .013507        0.         0.         0.         0          5         0        .00      29.49    1015.36

 *SECNO 1.200
     1.200       .45      45.25      45.24        .00      45.37       .12        .00        .00      45.60
      20.0        .0       20.0        .0         .0        7.2        .0         .0         .0       45.20
       .00       .00       2.77        .05       .000       .024       .035       .000      44.80     985.86
   .012993        0.         0.         0.         0          5         0        .00      29.51    1015.37

1
   04NOV93      11:59:30                                                                                                PAGE    9

 T1Flow split at C614 left channel (Cavern Drive)
 T2Fountain Hills North FIS
 T3  Q=25 C614L.IH2.  28 Oct 93 trl

 J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                  6                             .032                                          45.6

 J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

       5

1
   04NOV93      11:59:30                                                                                                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

 *PROF 5

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 3720 CRITICAL DEPTH ASSUMED
     1.000       .48      45.28      45.28      45.60      45.42       .14        .00        .00      45.60
      25.0        .0       25.0        .0         .0        8.2        .0         .0         .0       45.20
       .00       .00       3.05        .05       .000       .024       .035       .000      44.80     985.76
   .013361        0.         0.         0.         0         14         0        .00      29.72    1015.48

 *SECNO 1.100
     1.100       .48      45.28      45.28        .00      45.43       .14        .00        .00      45.60
      25.0        .0       25.0        .0         .0        8.3        .0         .0         .0       45.20
       .00       .00       3.02        .05       .000       .024       .035       .000      44.80     985.75
   .013038        0.         0.         0.         0          5         0        .00      29.74    1015.49

 *SECNO 1.200
     1.200       .49      45.29      45.28        .00      45.43       .14        .00        .00      45.60
      25.0        .0       25.0        .0         .0        8.3        .0         .0         .0       45.20
       .00       .00       2.99        .05       .000       .024       .035       .000      44.80     985.74
   .012603        0.         0.         0.         0          5         0        .00      29.76    1015.50

1
   04NOV93      11:59:30                                                                                                PAGE   11

 T1Flow split at C614 left channel (Cavern Drive)
 T2Fountain Hills North FIS
 T3  Q=30 C614L.IH2.  28 Oct 93 trl

 J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                  7                             .032                                          45.6

 J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

       6

1
   04NOV93      11:59:30                                                                                                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
```

```
*PROF 6

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .52     45.32     45.32     45.60     45.48       .16       .00       .00     45.60
      30.0        .0      30.0        .0        .0       9.3        .0        .0        .0     45.20
       .00       .00      3.22       .05      .000      .024      .035      .000     44.80    985.64
   .012595        0.        0.        0.         0        14         0       .00     29.97   1015.62

*SECNO 1.100
     1.100       .52     45.32     45.32       .00     45.48       .16       .00       .00     45.60
      30.0        .0      30.0        .0        .0       9.4        .0        .0        .0     45.20
       .00       .00      3.20       .05      .000      .024      .035      .000     44.80    985.64
   .012431        0.        0.        0.         0         5         0       .00     29.98   1015.62

*SECNO 1.200
     1.200       .53     45.33     45.32       .00     45.48       .16       .00       .00     45.60
      30.0        .0      30.0        .0        .0       9.4        .0        .0        .0     45.20
       .00       .00      3.18       .05      .000      .024      .035      .000     44.80    985.63
   .012097        0.        0.        0.         0         5         0       .00     30.00   1015.63

1
   04NOV93      11:59:30                                                                          PAGE   13

T1Flow split at C614 left channel (Cavern Drive)
T2Fountain Hills North FIS
T3  Q=35 C614L.IH2.  28 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                8                           .032                                    45.6

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      7

1
   04NOV93      11:59:30                                                                          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

*PROF 7

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .55     45.35     45.35     45.60     45.53       .18       .00       .00     45.60
      35.0        .0      35.0        .0        .0      10.4        .0        .0        .0     45.20
       .00       .00      3.37       .05      .000      .024      .035      .000     44.80    985.54
   .012032        0.        0.        0.         0        20         0       .00     30.21   1015.74

*SECNO 1.100
     1.100       .56     45.36     45.35       .00     45.53       .17       .00       .00     45.60
      35.0        .0      35.0        .0        .0      10.4        .0        .0        .0     45.20
       .00       .00      3.36       .05      .000      .024      .035      .000     44.80    985.53
   .011898        0.        0.        0.         0         5         0       .00     30.21   1015.75

*SECNO 1.200
     1.200       .56     45.36     45.35       .00     45.53       .17       .00       .00     45.60
      35.0        .0      35.0        .0        .0      10.5        .0        .0        .0     45.20
       .00       .00      3.33       .05      .000      .024      .035      .000     44.80    985.52
   .011622        0.        0.        0.         0         5         0       .00     30.23   1015.75

1
   04NOV93      11:59:30                                                                          PAGE   15

T1Flow split at C614 left channel (Cavern Drive)
T2Fountain Hills North FIS
T3  Q=40 C614L.IH2.  28 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                9                           .032                                    45.6

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      8

1
   04NOV93      11:59:30                                                                          PAGE   16

    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 8

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .58     45.38     45.38     45.60     45.58       .20       .00       .00     45.60
      40.0        .0      40.0        .0        .0      11.3        .1        .0        .0     45.20
```

```
      .00       .00      3.55       .05      .000      .024      .035      .000     44.80    985.45
   .012079       0.        0.        0.         0        16         0       .00     30.39   1015.84

*SECNO 1.100
     1.100       .59     45.39     45.38       .00     45.58       .19       .00       .00     45.60
      40.0        .0      40.0        .0        .0      11.3        .1        .0        .0     45.20
      .00       .00      3.54       .05      .000      .024      .035      .000     44.80    985.44
   .011953       0.        0.        0.         0         5         0       .00     30.40   1015.85

*SECNO 1.200
     1.200       .59     45.39     45.38       .00     45.58       .19       .00       .00     45.60
      40.0        .0      40.0        .0        .0      11.4        .1        .0        .0     45.20
      .00       .00      3.52       .05      .000      .024      .035      .000     44.80    985.44
   .011692       0.        0.        0.         0         5         0       .00     30.42   1015.86

1
   04NOV93      11:59:30                                                                          PAGE   17

T1Flow split at C614 left channel (Cavern Drive)
T2Fountain Hills North FIS
T3  Q=45 C614L.IH2.  28 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              10                            .032                                    45.6

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15

1
   04NOV93      11:59:30                                                                          PAGE   18

    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 9

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .63     45.43     45.43     45.60     45.63       .20       .00       .00     45.60
      45.0        .0      45.0        .0        .0      12.5        .1        .0        .0     45.20
      .00       .00      3.59       .04      .000      .024      .035      .000     44.80    985.32
   .010806       0.        0.        0.         0        15         0       .00     30.67   1015.99

*SECNO 1.100
     1.100       .63     45.43     45.43       .00     45.63       .20       .00       .00     45.60
      45.0        .0      45.0        .0        .0      12.5        .1        .0        .0     45.20
      .00       .00      3.59       .04      .000      .024      .035      .000     44.80    985.32
   .010716       0.        0.        0.         0         5         0       .00     30.68   1015.99

*SECNO 1.200
     1.200       .63     45.43     45.43       .00     45.63       .20       .00       .00     45.60
      45.0        .0      45.0        .0        .0      12.6        .1        .0        .0     45.20
      .00       .00      3.57       .04      .000      .024      .035      .000     44.80    985.31
   .010533       0.        0.        0.         0         5         0       .00     30.69   1016.00

1
   04NOV93      11:59:30                                                                          PAGE   19


                                                                   THIS RUN EXECUTED 04NOV93     11:59:33
************************************
 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

 C614L.IH2.  28 Oct 93 t

SUMMARY PRINTOUT

      SECNO       Q       CWSEL     CRIWS     EG        TOPWID    DEPTH     10*KS     VCH

*     1.000     5.00      45.06     45.06     45.12     18.82       .26    170.82      2.06
*     1.000    10.00      45.14     45.14     45.23     24.80       .34    156.81      2.37
*     1.000    15.00      45.20     45.20     45.30     29.17       .40    148.47      2.57
*     1.000    20.00      45.24     45.24     45.37     29.48       .44    137.62      2.82
*     1.000    25.00      45.28     45.28     45.42     29.72       .48    133.61      3.05
*     1.000    30.00      45.32     45.32     45.48     29.97       .52    125.95      3.22
*     1.000    35.00      45.35     45.35     45.53     30.21       .55    120.32      3.37
*     1.000    40.00      45.38     45.38     45.58     30.39       .58    120.79      3.55
*     1.000    45.00      45.43     45.43     45.63     30.67       .63    108.06      3.59

      1.100     5.00      45.06     45.06     45.13     18.94       .26    164.91      2.03
      1.100    10.00      45.14     45.14     45.23     24.91       .34    153.01      2.35
      1.100    15.00      45.20     45.20     45.30     29.21       .40    145.09      2.56
      1.100    20.00      45.25     45.24     45.37     29.49       .45    135.07      2.80
      1.100    25.00      45.28     45.28     45.43     29.74       .48    130.38      3.02
      1.100    30.00      45.32     45.32     45.48     29.98       .52    124.31      3.20
      1.100    35.00      45.36     45.35     45.53     30.21       .56    118.98      3.36
```

1.100	40.00	45.39	45.38	45.58	30.40	.59	119.53	3.54
1.100	45.00	45.43	45.43	45.63	30.68	.63	107.16	3.59
1.200	5.00	45.07	.00	45.13	19.20	.27	153.41	1.98
1.200	10.00	45.15	45.14	45.23	25.15	.35	145.38	2.31
1.200	15.00	45.21	45.20	45.31	29.23	.41	137.90	2.52
1.200	20.00	45.25	45.24	45.37	29.51	.45	129.93	2.77
1.200	25.00	45.29	45.28	45.43	29.76	.49	126.03	2.99
1.200	30.00	45.33	45.32	45.48	30.00	.53	120.97	3.18
1.200	35.00	45.36	45.35	45.53	30.23	.56	116.22	3.33
1.200	40.00	45.39	45.38	45.58	30.42	.59	116.92	3.52
1.200	45.00	45.43	45.43	45.63	30.69	.63	105.33	3.57

1

04NOV93 11:59:30 PAGE 20

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      1.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  6  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  7  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  8  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  9  CRITICAL DEPTH ASSUMED
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1*****************************************
*************************************
 *  HEC-2 WATER SURFACE PROFILES          *                                    *  U.S. ARMY CORPS OF ENGINEERS
*
 *                                        *                                    *  HYDROLOGIC ENGINEERING CENTER
*
 *  Version   4.6.2;  May 1991            *                                    *  609 SECOND STREET, SUITE D
*
 *                                        *                                    *  DAVIS, CALIFORNIA 95616-4687
*
 *  RUN DATE    04NOV93    TIME   11:59:44 *                                    *          (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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1
   04NOV93      11:59:44                                                                                    PAGE    1


                                                                                THIS RUN EXECUTED 04NOV93    11:59:44
 *************************************
  HEC-2 WATER SURFACE PROFILES

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


 T1 Flow split at C614 right channel (El Lago Blvd.)
 T2 Fountain Hills North FIS
 T3 Q = 5 cfs. C614R.IH2.  28 Oct 93 trl

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           .028                                    45.0

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        43         1         2         3         4         8         5        26

 QT        9         5        10        15        20        25        30        35        40        45
 NC     .035      .035      .024        .1        .3
 X1      1.0       8.0     968.8    1031.2
 GR     48.0     960.8      45.3     968.8      44.8     970.0      45.0    1000.0      45.1    1030.0
 GR     45.5    1031.2      46.8    1035.6      48.0    1041.2

 X1      1.1                                     0.1       0.1       0.1

 X1      1.2                                     0.1       0.1       0.1
1
   04NOV93      11:59:44                                                                                    PAGE    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

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 3720 CRITICAL DEPTH ASSUMED
      1.000      .19     44.99     44.99     45.00     45.04       .05       .00       .00     45.30
        5.0       .0       5.0        .0        .0       2.8        .0        .0        .0     45.50
        .00      .00      1.79       .00      .000      .024      .000      .000     44.80    969.54
    .019259       0.        0.        0.         0        11         0       .00     29.14    998.68

 *SECNO 1.100
      1.100      .20     45.00     44.99       .00     45.04       .05       .00       .00     45.30
        5.0       .0       5.0        .0        .0       2.8        .0        .0        .0     45.50
        .00      .00      1.76       .00      .000      .024      .000      .000     44.80    969.54
    .018257       0.        0.        0.         0         5         0       .00     29.43    998.97

 *SECNO 1.200
      1.200      .20     45.00       .00       .00     45.05       .04       .00       .00     45.30
        5.0       .0       5.0        .0        .0       3.0        .0        .0        .0     45.50
        .00      .00      1.69       .00      .000      .024      .000      .000     44.80    969.53
    .016372       0.        0.        0.         0         0         0       .00     30.04    999.56

1
   04NOV93      11:59:44                                                                                    PAGE    3

 T1 Flow split at C614 right channel (El Lago Blvd.)
 T2 Fountain Hills North FIS
 T3  Q=10 C614R.IH2.  28 Oct 93 trl
```

```
J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           .032                                    45.6

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2

1
   04NOV93      11:59:44                                                                                    PAGE    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 2

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .26     45.06     45.06     45.60     45.11       .06       .00       .00     45.30
      10.0        .0      10.0        .0        .0       5.2        .0        .0        .0     45.50
       .00       .00      1.91       .00      .000      .024      .000      .000     44.80    969.39
   .018074        0.        0.        0.         0        17         0       .00     47.41   1016.79

*SECNO 1.100
     1.100       .26     45.06     45.06       .00     45.11       .05       .00       .00     45.30
      10.0        .0      10.0        .0        .0       5.3        .0        .0        .0     45.50
       .00       .00      1.88       .00      .000      .024      .000      .000     44.80    969.38
   .017379        0.        0.        0.         0         5         0       .00     47.95   1017.33

*SECNO 1.200
     1.200       .27     45.07       .00       .00     45.12       .05       .00       .00     45.30
      10.0        .0      10.0        .0        .0       5.5        .0        .0        .0     45.50
       .00       .00      1.82       .00      .000      .024      .000      .000     44.80    969.37
   .016027        0.        0.        0.         0         0         0       .00     49.09   1018.46

1
   04NOV93      11:59:44                                                                                    PAGE    5

T1 Flow split at C614 right channel (El Lago Blvd.)
T2 Fountain Hills North FIS
T3  Q=15 C614R.IH2.  28 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                           .032                                    45.6

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3

1
   04NOV93      11:59:44                                                                                    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

*PROF 3

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .30     45.10     45.10     45.60     45.16       .06       .00       .00     45.30
      15.0        .0      15.0        .0        .0       7.5        .0        .0        .0     45.50
       .00       .00      2.00       .00      .000      .024      .000      .000     44.80    969.28
   .016852        0.        0.        0.         0        19         0       .00     60.12   1029.40

*SECNO 1.100
     1.100       .30     45.10     45.10       .00     45.16       .06       .00       .00     45.30
      15.0        .0      15.0        .0        .0       7.6        .0        .0        .0     45.50
       .00       .00      1.98       .00      .000      .024      .000      .000     44.80    969.28
   .016293        0.        0.        0.         0         5         0       .00     60.63   1029.91

*SECNO 1.200
     1.200       .31     45.11       .00       .00     45.16       .06       .00       .00     45.30
      15.0        .0      15.0        .0        .0       7.8        .0        .0        .0     45.50
       .00       .00      1.92       .00      .000      .024      .000      .000     44.80    969.27
   .014915        0.        0.        0.         0         0         0       .00     60.74   1030.01

1
   04NOV93      11:59:44                                                                                    PAGE    7

T1 Flow split at C614 right channel (El Lago Blvd.)
T2 Fountain Hills North FIS
T3  Q=20 C614R.IH2.  28 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                5                           .032                                    45.6

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     4
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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

*PROF 4

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .33     45.13      45.13      45.60      45.20       .07        .00        .00      45.30
      20.0        .0      20.0         .0         .0        9.3        .0         .0         .0      45.50
       .00       .00      2.16        .00       .000       .024      .000       .000      44.80     969.21
   .014951        0.        0.         0.          0         17         0        .00      60.87    1030.08

*SECNO 1.100
     1.100       .33     45.13        .00        .00      45.20       .07        .00        .00      45.30
      20.0        .0      20.0         .0         .0        9.4        .0         .0         .0      45.50
       .00       .00      2.14        .00       .000       .024      .000       .000      44.80     969.21
   .014474        0.        0.         0.          0          0         0        .00      60.88    1030.09

*SECNO 1.200
     1.200       .33     45.13        .00        .00      45.20       .07        .00        .00      45.30
      20.0        .0      20.0         .0         .0        9.5        .0         .0         .0      45.50
       .00       .00      2.10        .00       .000       .024      .000       .000      44.80     969.20
   .013580        0.        0.         0.          0          0         0        .00      60.89    1030.10
```



```
T1 Flow split at C614 right channel (El Lago Blvd.)
T2 Fountain Hills North FIS
T3  Q=25 C614R.IH2.  28 Oct 93 trl

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                 6                             .032                                         45.6

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     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 5

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .35     45.15      45.15      45.60      45.24       .09        .00        .00      45.30
      25.0        .0      25.0         .0         .0       10.4        .0         .0         .0      45.50
       .00       .00      2.40        .00       .000       .024      .000       .000      44.80     969.17
   .015907        0.        0.         0.          0         18         0        .00      60.97    1030.14

*SECNO 1.100
     1.100       .35     45.15      45.15        .00      45.24       .09        .00        .00      45.30
      25.0        .0      25.0         .0         .0       10.5        .0         .0         .0      45.50
       .00       .00      2.38        .00       .000       .024      .000       .000      44.80     969.17
   .015426        0.        0.         0.          0          5         0        .00      60.98    1030.14

*SECNO 1.200
     1.200       .35     45.15      45.15        .00      45.24       .08        .00        .00      45.30
      25.0        .0      25.0         .0         .0       10.7        .0         .0         .0      45.50
       .00       .00      2.33        .00       .000       .024      .000       .000      44.80     969.16
   .014472        0.        0.         0.          0          5         0        .00      61.00    1030.15
```



```
T1 Flow split at C614 right channel (El Lago Blvd.)
T2 Fountain Hills North FIS
T3  Q=30 C614R.IH2.  28 Oct 93 trl

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                 7                             .032                                         45.6

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     6
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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
```

```
*PROF 6

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .37     45.17     45.17     45.60     45.27       .10       .00       .00     45.30
      30.0        .0      30.0       .0        .0      11.8        .0        .0        .0     45.50
       .00       .00      2.54       .00      .000      .024      .000      .000     44.80    969.12
   .015155        0.        0.        0.         0        18         0       .00     61.09   1030.21

*SECNO 1.100
     1.100       .37     45.17     45.17       .00     45.27       .10       .00       .00     45.30
      30.0        .0      30.0       .0        .0      11.9        .0        .0        .0     45.50
       .00       .00      2.52       .00      .000      .024      .000      .000     44.80    969.11
   .014768        0.        0.        0.         0         5         0       .00     61.10   1030.21

*SECNO 1.200
     1.200       .38     45.18     45.17       .00     45.27       .10       .00       .00     45.30
      30.0        .0      30.0       .0        .0      12.1        .0        .0        .0     45.50
       .00       .00      2.48       .00      .000      .024      .000      .000     44.80    969.10
   .013995        0.        0.        0.         0         5         0       .00     61.12   1030.22

1
   04NOV93      11:59:44                                                                          PAGE   13

T1 Flow split at C614 right channel (El Lago Blvd.)
T2 Fountain Hills North FIS
T3  Q=35 C614R.IH2.  28 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                8                           .032                                    45.6

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      7

1
   04NOV93      11:59:44                                                                          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

*PROF 7

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .39     45.19     45.19     45.60     45.30       .11       .00       .00     45.30
      35.0        .0      35.0       .0        .0      13.2        .0        .0        .0     45.50
       .00       .00      2.65       .00      .000      .024      .000      .000     44.80    969.06
   .014112        0.        0.        0.         0        11         0       .00     61.22   1030.28

*SECNO 1.100
     1.100       .40     45.20     45.19       .00     45.30       .11       .00       .00     45.30
      35.0        .0      35.0       .0        .0      13.3        .0        .0        .0     45.50
       .00       .00      2.63       .00      .000      .024      .000      .000     44.80    969.06
   .013812        0.        0.        0.         0         5         0       .00     61.23   1030.28

*SECNO 1.200
     1.200       .40     45.20     45.19       .00     45.30       .10       .00       .00     45.30
      35.0        .0      35.0       .0        .0      13.5        .0        .0        .0     45.50
       .00       .00      2.59       .00      .000      .024      .000      .000     44.80    969.05
   .013215        0.        0.        0.         0         5         0       .00     61.24   1030.29

1
   04NOV93      11:59:44                                                                          PAGE   15

T1 Flow split at C614 right channel (El Lago Blvd.)
T2 Fountain Hills North FIS
T3  Q=40 C614R.IH2.  28 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                9                           .032                                    45.6

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      8

1
   04NOV93      11:59:44                                                                          PAGE   16

    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 8

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .41     45.21     45.21     45.60     45.33       .12       .00       .00     45.30
      40.0        .0      40.0       .0        .0      14.3        .0        .0        .0     45.50
```

```
      .00        .00       2.79       .00      .000      .024      .000      .000     44.80    969.02
   .014151        0.         0.        0.         0        11         0       .00     61.31   1030.33

*SECNO 1.100
     1.100        .41     45.21     45.21       .00     45.33       .12       .00       .00     45.30
      40.0         .0      40.0        .0        .0      14.4        .0        .0        .0     45.50
       .00        .00      2.77       .00      .000      .024      .000      .000     44.80    969.01
   .013872        0.         0.        0.         0         5         0       .00     61.32   1030.33

*SECNO 1.200
     1.200        .42     45.22     45.21       .00     45.33       .12       .00       .00     45.30
      40.0         .0      40.0        .0        .0      14.6        .0        .0        .0     45.50
       .00        .00      2.74       .00      .000      .024      .000      .000     44.80    969.01
   .013306        0.         0.        0.         0         5         0       .00     61.34   1030.34
```



```
T1 Flow split at C614 right channel (El Lago Blvd.)
T2 Fountain Hills North FIS
T3  Q=45 C614R.IH2.  28 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              10                            .032                                    45.6

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15
```



```
    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 9

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000        .43     45.23     45.23     45.60     45.36       .13       .00       .00     45.30
      45.0         .0      45.0        .0        .0      15.5        .0        .0        .0     45.50
       .00        .00      2.90       .00      .000      .024      .000      .000     44.80    968.97
   .013693        0.         0.        0.         0        11         0       .00     61.42   1030.39

*SECNO 1.100
     1.100        .43     45.23     45.23       .00     45.36       .13       .00       .00     45.30
      45.0         .0      45.0        .0        .0      15.6        .0        .0        .0     45.50
       .00        .00      2.88       .00      .000      .024      .000      .000     44.80    968.96
   .013451        0.         0.        0.         0         5         0       .00     61.43   1030.39

*SECNO 1.200
     1.200        .44     45.24     45.23       .00     45.36       .13       .00       .00     45.30
      45.0         .0      45.0        .0        .0      15.8        .0        .0        .0     45.50
       .00        .00      2.85       .00      .000      .024      .000      .000     44.80    968.96
   .012960        0.         0.        0.         0         5         0       .00     61.44   1030.40
```



```
                                                                    THIS RUN EXECUTED 04NOV93    11:59:48
************************************
 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

 cfs. C614R.IH2.  28 Oct

SUMMARY PRINTOUT

      SECNO       Q       CWSEL     CRIWS      EG      TOPWID     DEPTH     10*KS      VCH

*     1.000     5.00      44.99     44.99     45.04     29.14       .19    192.59      1.79
*     1.000    10.00      45.06     45.06     45.11     47.41       .26    180.74      1.91
*     1.000    15.00      45.10     45.10     45.16     60.12       .30    168.52      2.00
*     1.000    20.00      45.13     45.13     45.20     60.87       .33    149.51      2.16
*     1.000    25.00      45.15     45.15     45.24     60.97       .35    159.07      2.40
*     1.000    30.00      45.17     45.17     45.27     61.09       .37    151.55      2.54
*     1.000    35.00      45.19     45.19     45.30     61.22       .39    141.12      2.65
*     1.000    40.00      45.21     45.21     45.33     61.31       .41    141.51      2.79
*     1.000    45.00      45.23     45.23     45.36     61.42       .43    136.93      2.90

      1.100     5.00      45.00     44.99     45.04     29.43       .20    182.57      1.76
      1.100    10.00      45.06     45.06     45.11     47.95       .26    173.79      1.88
      1.100    15.00      45.10     45.10     45.16     60.63       .30    162.93      1.98
      1.100    20.00      45.13       .00     45.20     60.88       .33    144.74      2.14
      1.100    25.00      45.15     45.15     45.24     60.98       .35    154.26      2.38
      1.100    30.00      45.17     45.17     45.27     61.10       .37    147.68      2.52
      1.100    35.00      45.20     45.19     45.30     61.23       .40    138.12      2.63
```

1.100	40.00	45.21	45.21	45.33	61.32	.41	138.72	2.77
1.100	45.00	45.23	45.23	45.36	61.43	.43	134.51	2.88
1.200	5.00	45.00	.00	45.05	30.04	.20	163.72	1.69
1.200	10.00	45.07	.00	45.12	49.09	.27	160.27	1.82
1.200	15.00	45.11	.00	45.16	60.74	.31	149.15	1.92
1.200	20.00	45.13	.00	45.20	60.89	.33	135.80	2.10
1.200	25.00	45.15	45.15	45.24	61.00	.35	144.72	2.33
1.200	30.00	45.18	45.17	45.27	61.12	.38	139.95	2.48
1.200	35.00	45.20	45.19	45.30	61.24	.40	132.15	2.59
1.200	40.00	45.22	45.21	45.33	61.34	.42	133.06	2.74
1.200	45.00	45.24	45.23	45.36	61.44	.44	129.60	2.85

1

04NOV93 11:59:44 PAGE 20

SUMMARY OF ERRORS AND SPECIAL NOTES

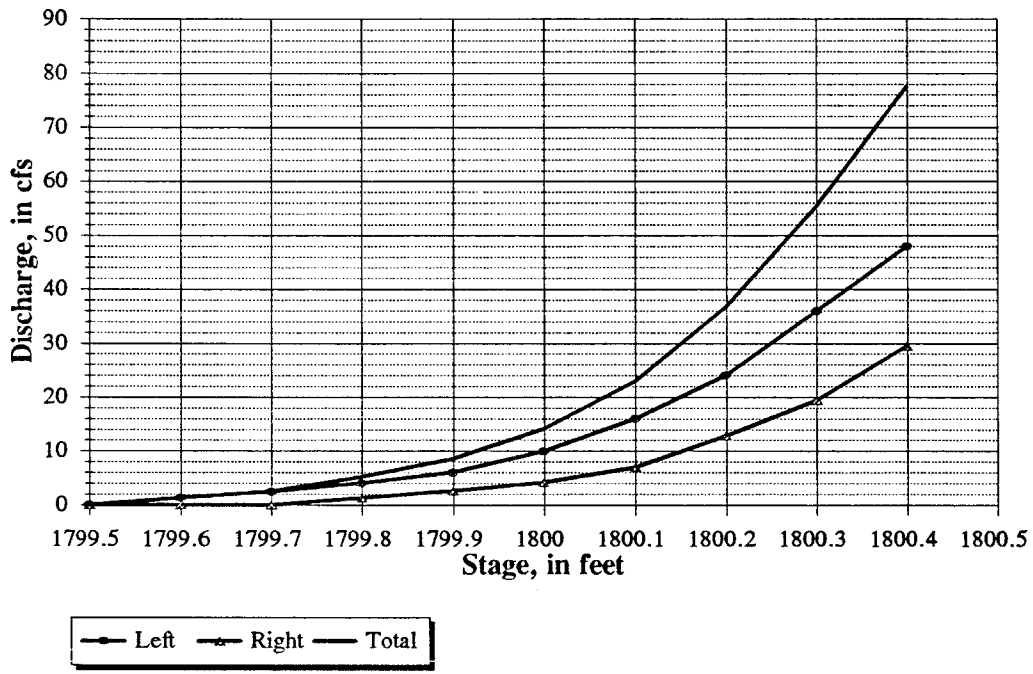
```
CAUTION SECNO=      1.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  6  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  7  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  8  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  9  CRITICAL DEPTH ASSUMED
```

C615 Flow Split Table

Stage (ft)	Discharge, in cfs		
	Left Channel	Right Channel	Total
1799.50	0.0	0.0	0.0
1799.60	1.3	0.0	1.3
1799.70	2.5	0.0	2.5
1799.80	4.0	1.3	5.3
1799.90	6.0	2.6	8.6
1800.00	10.0	4.2	14.2
1800.10	16.0	7.0	23.0
1800.20	24.0	12.8	36.8
1800.30	36.0	19.5	55.5
1800.40	48.0	29.5	77.5

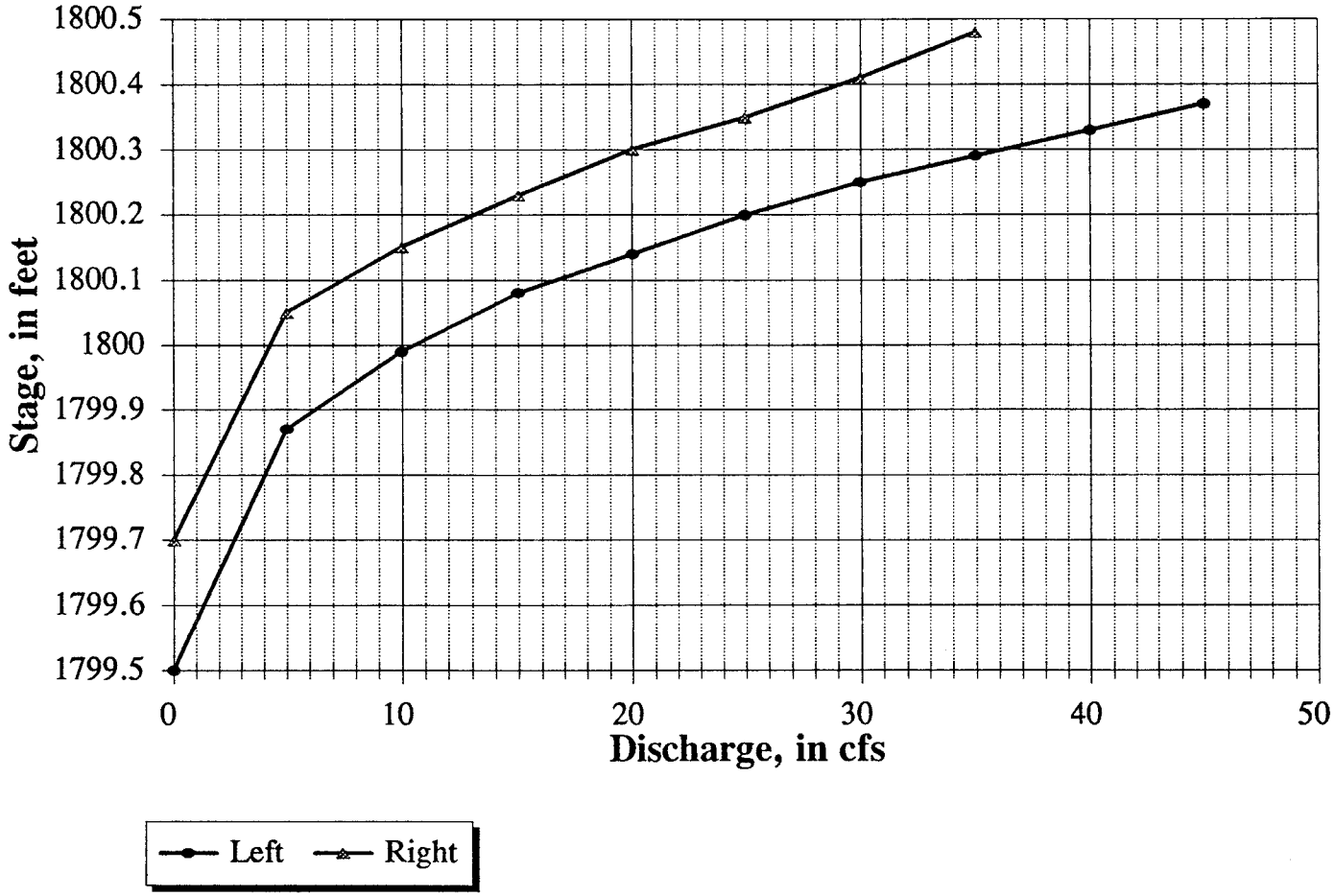
Figure D-11

Discharge vs Stage Curve for Flow Split at C615



C615 HEC-2 Results

Discharge vs Stage Curve for Flow Split at C615

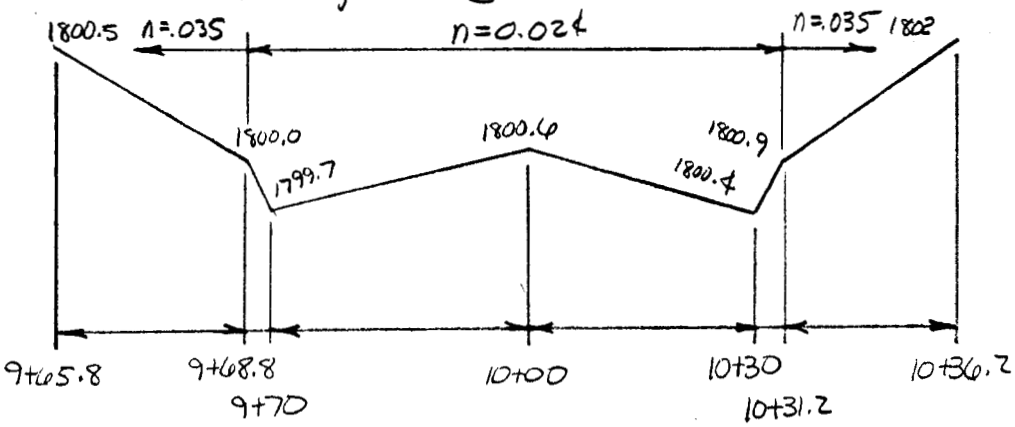


GEORGE V. SABOL CONSULTING ENGINEERS, INC.

SHEET 1 OF 1
DATE 10/29/93
BY TRL
PROJECT NO. 35

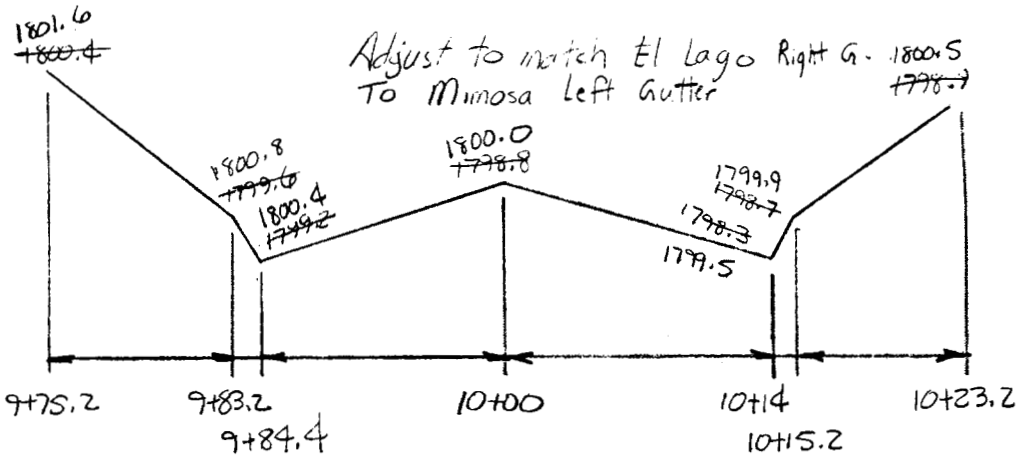
CLIENT FCDMC
PROJECT Fountain Hills North (FIS)
SUBJECT C615 Flow Split

C615R El Lago Blvd @ East Return



$S = (1800.6 - 1798.1)/50 = 0.05\%$

C615L Mimosa Dr.



$S = 0.056\%$

Summary

Q	Stage Left	Stage Right
0	1799.5	1799.7
5	1799.87	1800.05
10	1799.99	1800.15
15	1800.08	1800.23
20	1800.14	1800.30
25	1800.20	1800.35
30	1800.25	1800.41
35	1800.29	1800.48
40	1800.33	
45	1800.37	

Stage	Discharge Left	Discharge Right	Discharge Total
1799.5	0	0	0
1799.6	1.3		1.3
1799.7	2.5	0	2.5
1799.8	4.0	1.3	5.3
1799.9	6.0	2.6	8.6
1800.0	10.0	4.2	14.2
1800.1	16.0	7.0	23.0
1800.2	24.0	12.8	36.8
1800.3	36.0	19.5	55.5
1800.4	48.8	29.5	77.5

```
1*****************************************
*************************************
 *  HEC-2 WATER SURFACE PROFILES          *                                    *  U.S. ARMY CORPS OF ENGINEERS
 *                                        *                                    *  HYDROLOGIC ENGINEERING CENTER
 *  Version   4.6.2;  May 1991            *                                    *  609 SECOND STREET, SUITE D
 *                                        *                                    *  DAVIS, CALIFORNIA 95616-4687
 *  RUN DATE    04NOV93    TIME   11:59:58 *                                    *          (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
1
   04NOV93      11:59:58                                                                                    PAGE    1


                                                                                THIS RUN EXECUTED 04NOV93    11:59:58
 *************************************
  HEC-2 WATER SURFACE PROFILES

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


 T1 Flow split at C615 left channel (Mimosa Drive)
 T2 Fountain Hills North FIS
 T3 Q = 5 cfs. C615L.IH2.  29 Oct 93 trl

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           .056                                    1800.0

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        43         1         2         3         4         8         5        26

 QT        9         5        10        15        20        25        30        35        40        45
 NC     .035      .035      .024        .1        .3
 X1      1.0       7.0     983.2    1015.2
 GR   1801.6     975.2    1800.8     983.2    1800.4     984.4    1800.0    1000.0    1799.5    1014.0
 GR   1799.9    1015.2    1800.5    1023.2

 X1      1.1                                    0.1       0.1       0.1

 X1      1.2                                    0.1       0.1       0.1
1
   04NOV93      11:59:58                                                                                    PAGE    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

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 3720 CRITICAL DEPTH ASSUMED
      1.000       .36   1799.86   1799.86   1800.00   1799.96       .09       .00       .00   1800.80
        5.0        .0       5.0        .0        .0       2.0        .0        .0        .0   1799.90
        .00       .00      2.46       .00      .000      .024      .000      .000   1799.50   1003.87
    .015594        0.        0.        0.         0        19         0       .00     11.22   1015.09


 *SECNO 1.100
      1.100       .37   1799.87   1799.86       .00   1799.96       .09       .00       .00   1800.80
        5.0        .0       5.0        .0        .0       2.1        .0        .0        .0   1799.90
        .00       .00      2.43       .00      .000      .024      .000      .000   1799.50   1003.80
    .015018        0.        0.        0.         0         5         0       .00     11.30   1015.09


 *SECNO 1.200
      1.200       .37   1799.87   1799.86       .00   1799.96       .09       .00       .00   1800.80
        5.0        .0       5.0        .0        .0       2.1        .0        .0        .0   1799.90
        .00       .00      2.38       .00      .000      .024      .000      .000   1799.50   1003.70
    .014263        0.        0.        0.         0         5         0       .00     11.41   1015.10


1
   04NOV93      11:59:58                                                                                    PAGE    3

 T1 Flow split at C615 left channel (Mimosa Drive)
 T2 Fountain Hills North FIS
 T3  Q=10 C615L.IH2.  29 Oct 93 trl
```

```
J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           .056                                    1800.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2

1
   04NOV93      11:59:58                                                                                PAGE    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 2

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .48   1799.98   1799.98   1800.00   1800.10       .12       .00       .00   1800.80
      10.0        .0      10.0        .0        .0       3.5        .0        .0        .0   1799.90
       .00       .00      2.82       .05      .000      .024      .035      .000   1799.50   1000.60
   .013851        0.        0.        0.         0         9         0       .00     15.65   1016.25

*SECNO 1.100
     1.100       .48   1799.98   1799.97       .00   1800.10       .12       .00       .00   1800.80
      10.0        .0      10.0        .0        .0       3.6        .0        .0        .0   1799.90
       .00       .00      2.81       .05      .000      .024      .035      .000   1799.50   1000.56
   .013645        0.        0.        0.         0         5         0       .00     15.70   1016.26

*SECNO 1.200
     1.200       .49   1799.99   1799.97       .00   1800.11       .12       .00       .00   1800.80
      10.0        .0      10.0        .0        .0       3.6        .0        .0        .0   1799.90
       .00       .00      2.78       .05      .000      .024      .035      .000   1799.50   1000.49
   .013225        0.        0.        0.         0         5         0       .00     15.82   1016.30

1
   04NOV93      11:59:58                                                                                PAGE    5

T1 Flow split at C615 left channel (Mimosa Drive)
T2 Fountain Hills North FIS
T3  Q=15 C615L.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                           .056                                    1800.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3

1
   04NOV93      11:59:58                                                                                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

*PROF 3

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .57   1800.07   1800.07   1800.00   1800.20       .13       .00       .00   1800.80
      15.0        .0      14.8        .2        .0       5.0        .2        .0        .0   1799.90
       .00       .00      2.94       .91      .000      .024      .035      .000   1799.50    997.22
   .012356        0.        0.        0.         0         8         0       .00     20.26   1017.48

*SECNO 1.100
     1.100       .57   1800.07   1800.07       .00   1800.21       .13       .00       .00   1800.80
      15.0        .0      14.8        .2        .0       5.1        .2        .0        .0   1799.90
       .00       .00      2.93       .91      .000      .024      .035      .000   1799.50    997.18
   .012217        0.        0.        0.         0         5         0       .00     20.32   1017.50

*SECNO 1.200
     1.200       .58   1800.08   1800.07       .00   1800.21       .13       .00       .00   1800.80
      15.0        .0      14.8        .2        .0       5.1        .2        .0        .0   1799.90
       .00       .00      2.90       .91      .000      .024      .035      .000   1799.50    997.08
   .011931        0.        0.        0.         0         5         0       .00     20.46   1017.53

1
   04NOV93      11:59:58                                                                                PAGE    7

T1 Flow split at C615 left channel (Mimosa Drive)
T2 Fountain Hills North FIS
T3  Q=20 C615L.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                5                           .056                                    1800.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     4
```

```
1
   04NOV93      11:59:58                                                                                                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

 *PROF 4

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 3720 CRITICAL DEPTH ASSUMED
     1.000       .64   1800.14   1800.14   1800.00   1800.28       .15       .00       .00   1800.80
      20.0        .0      19.6       .4        .0       6.3        .4        .0        .0   1799.90
       .00       .00      3.10      1.13      .000      .024      .035      .000   1799.50    994.66
   .012189        0.        0.        0.         0        11         0       .00     23.70   1018.36

 *SECNO 1.100
     1.100       .64   1800.14   1800.14       .00   1800.29       .15       .00       .00   1800.80
      20.0        .0      19.6       .4        .0       6.3        .4        .0        .0   1799.90
       .00       .00      3.09      1.13      .000      .024      .035      .000   1799.50    994.61
   .012061        0.        0.        0.         0         5         0       .00     23.76   1018.38

 *SECNO 1.200
     1.200       .64   1800.14   1800.14       .00   1800.29       .14       .00       .00   1800.80
      20.0        .0      19.6       .4        .0       6.4        .4        .0        .0   1799.90
       .00       .00      3.06      1.12      .000      .024      .035      .000   1799.50    994.51
   .011798        0.        0.        0.         0         5         0       .00     23.90   1018.41

1
   04NOV93      11:59:58                                                                                                PAGE    9

 T1 Flow split at C615 left channel (Mimosa Drive)
 T2 Fountain Hills North FIS
 T3  Q=25 C615L.IH2.  29 Oct 93 trl

 J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                  6                             .056                                         1800.0

 J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

       5

1
   04NOV93      11:59:58                                                                                                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

 *PROF 5

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 3720 CRITICAL DEPTH ASSUMED
     1.000       .69   1800.19   1800.19   1800.00   1800.35       .16       .00       .00   1800.80
      25.0        .0      24.3       .7        .0       7.5        .6        .0        .0   1799.90
       .00       .00      3.24      1.29      .000      .024      .035      .000   1799.50    992.53
   .012063        0.        0.        0.         0        14         0       .00     26.56   1019.09

 *SECNO 1.100
     1.100       .70   1800.20   1800.19       .00   1800.35       .16       .00       .00   1800.80
      25.0        .0      24.3       .7        .0       7.6        .6        .0        .0   1799.90
       .00       .00      3.21      1.28      .000      .024      .035      .000   1799.50    992.42
   .011791        0.        0.        0.         0         5         0       .00     26.70   1019.12

 *SECNO 1.200
     1.200       .70   1800.20   1800.19       .00   1800.35       .15       .00       .00   1800.80
      25.0        .0      24.2       .8        .0       7.6        .6        .0        .0   1799.90
       .00       .00      3.18      1.28      .000      .024      .035      .000   1799.50    992.31
   .011527        0.        0.        0.         0         5         0       .00     26.85   1019.16

1
   04NOV93      11:59:58                                                                                                PAGE   11

 T1 Flow split at C615 left channel (Mimosa Drive)
 T2 Fountain Hills North FIS
 T3  Q=30 C615L.IH2.  29 Oct 93 trl

 J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                  7                             .056                                         1800.0

 J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

       6

1
   04NOV93      11:59:58                                                                                                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
```

```
*PROF 6

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .74   1800.24   1800.24   1800.00   1800.41       .17       .00       .00   1800.80
      30.0        .0      28.9       1.1        .0       8.6        .8        .0        .0   1799.90
       .00       .00      3.35      1.42      .000      .024      .035      .000   1799.50    990.65
   .011872        0.        0.        0.         0        14         0       .00     29.08   1019.73


*SECNO 1.100
3720 CRITICAL DEPTH ASSUMED
     1.100       .74   1800.24   1800.24       .00   1800.41       .17       .00       .00   1800.80
      30.0        .0      28.9       1.1        .0       8.7        .8        .0        .0   1799.90
       .00       .00      3.34      1.41      .000      .024      .035      .000   1799.50    990.60
   .011761        0.        0.        0.         0         5         0       .00     29.14   1019.75


*SECNO 1.200
     1.200       .75   1800.25   1800.24       .00   1800.41       .17       .00       .00   1800.80
      30.0        .0      28.9       1.1        .0       8.7        .8        .0        .0   1799.90
       .00       .00      3.31      1.41      .000      .024      .035      .000   1799.50    990.50
   .011532        0.        0.        0.         0         5         0       .00     29.28   1019.78


1
   04NOV93      11:59:58                                                                          PAGE   13

T1 Flow split at C615 left channel (Mimosa Drive)
T2 Fountain Hills North FIS
T3  Q=35 C615L.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                8                           .056                                    1800.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      7

1
   04NOV93      11:59:58                                                                          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

*PROF 7

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .78   1800.28   1800.28   1800.00   1800.46       .18       .00       .00   1800.80
      35.0        .0      33.5       1.5        .0       9.8       1.0        .0        .0   1799.90
       .00       .00      3.43      1.52      .000      .024      .035      .000   1799.50    988.91
   .011565        0.        0.        0.         0        14         0       .00     31.42   1020.33


*SECNO 1.100
     1.100       .79   1800.29   1800.28       .00   1800.46       .18       .00       .00   1800.80
      35.0        .0      33.5       1.5        .0       9.8       1.0        .0        .0   1799.90
       .00       .00      3.42      1.51      .000      .024      .035      .000   1799.50    988.87
   .011473        0.        0.        0.         0         5         0       .00     31.47   1020.34


*SECNO 1.200
     1.200       .79   1800.29   1800.28       .00   1800.46       .17       .00       .00   1800.80
      35.0        .0      33.5       1.5        .0       9.9       1.0        .0        .0   1799.90
       .00       .00      3.40      1.51      .000      .024      .035      .000   1799.50    988.77
   .011280        0.        0.        0.         0         5         0       .00     31.60   1020.37

1
   04NOV93      11:59:58                                                                          PAGE   15

T1 Flow split at C615 left channel (Mimosa Drive)
T2 Fountain Hills North FIS
T3  Q=30 C615L.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                9                           .056                                    1800.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      8

1
   04NOV93      11:59:58                                                                          PAGE   16

    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 8

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .82   1800.32   1800.32   1800.00   1800.51       .18       .00       .00   1800.80
```

```
      40.0        .0      38.1       1.9        .0      10.9       1.2       .0        .0   1799.90
       .00       .00      3.51      1.60      .000      .024      .035      .000   1799.50    987.33
   .011311        0.        0.        0.         0        14         0       .00     33.54   1020.87

*SECNO 1.100
     1.100       .83   1800.33   1800.32       .00   1800.51       .18       .00       .00   1800.80
      40.0        .0      38.1       1.9        .0      10.9       1.2        .0        .0   1799.90
       .00       .00      3.50      1.60      .000      .024      .035      .000   1799.50    987.28
   .011225        0.        0.        0.         0         5         0       .00     33.60   1020.88

*SECNO 1.200
     1.200       .83   1800.33   1800.32       .00   1800.51       .18       .00       .00   1800.80
      40.0        .0      38.0       2.0        .0      11.0       1.2        .0        .0   1799.90
       .00       .00      3.47      1.59      .000      .024      .035      .000   1799.50    987.19
   .011045        0.        0.        0.         0         5         0       .00     33.72   1020.91

1
   04NOV93      11:59:58                                                                          PAGE   17

T1 Flow split at C615 left channel (Mimosa Drive)
T2 Fountain Hills North FIS
T3  Q=35 C615L.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              10                            .056                                    1800.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15

1
   04NOV93      11:59:58                                                                          PAGE   18

    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 9

CCHV=     .100 CEHV=     .300
*SECNO 1.000
3720 CRITICAL DEPTH ASSUMED
     1.000       .86   1800.36   1800.36   1800.00   1800.55       .19       .00       .00   1800.80
      45.0        .0      42.6       2.4        .0      11.9       1.4        .0        .0   1799.90
       .00       .00      3.59      1.69      .000      .024      .035      .000   1799.50    985.95
   .011235        0.        0.        0.         0        17         0       .00     35.39   1021.34

*SECNO 1.100
     1.100       .86   1800.36   1800.36       .00   1800.55       .19       .00       .00   1800.80
      45.0        .0      42.6       2.4        .0      11.9       1.4        .0        .0   1799.90
       .00       .00      3.58      1.68      .000      .024      .035      .000   1799.50    985.90
   .011153        0.        0.        0.         0         5         0       .00     35.45   1021.35

*SECNO 1.200
     1.200       .87   1800.37   1800.36       .00   1800.55       .19       .00       .00   1800.80
      45.0        .0      42.6       2.4        .0      12.0       1.4        .0        .0   1799.90
       .00       .00      3.56      1.68      .000      .024      .035      .000   1799.50    985.81
   .010981        0.        0.        0.         0         5         0       .00     35.57   1021.38

1
   04NOV93      11:59:58                                                                          PAGE   19


                                                                   THIS RUN EXECUTED 04NOV93    12:00:03
*************************************
 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

 cfs. C615L.IH2.  29 Oct

SUMMARY PRINTOUT

      SECNO       Q       CWSEL     CRIWS      EG       TOPWID     DEPTH     10*KS      VCH

*     1.000      5.00   1799.86   1799.86   1799.96     11.22       .36    155.94      2.46
*     1.000     10.00   1799.98   1799.98   1800.10     15.65       .48    138.51      2.82
*     1.000     15.00   1800.07   1800.07   1800.20     20.26       .57    123.56      2.94
*     1.000     20.00   1800.14   1800.14   1800.28     23.70       .64    121.89      3.10
*     1.000     25.00   1800.19   1800.19   1800.35     26.56       .69    120.63      3.24
*     1.000     30.00   1800.24   1800.24   1800.41     29.08       .74    118.72      3.35
*     1.000     35.00   1800.28   1800.28   1800.46     31.42       .78    115.65      3.43
*     1.000     40.00   1800.32   1800.32   1800.51     33.54       .82    113.11      3.51
*     1.000     45.00   1800.36   1800.36   1800.55     35.39       .86    112.35      3.59

      1.100      5.00   1799.87   1799.86   1799.96     11.30       .37    150.18      2.43
      1.100     10.00   1799.98   1799.97   1800.10     15.70       .48    136.45      2.81
      1.100     15.00   1800.07   1800.07   1800.21     20.32       .57    122.17      2.93
      1.100     20.00   1800.14   1800.14   1800.29     23.76       .64    120.61      3.09
      1.100     25.00   1800.20   1800.19   1800.35     26.70       .70    117.91      3.21
*     1.100     30.00   1800.24   1800.24   1800.41     29.14       .74    117.61      3.34
```

1.100	35.00	1800.29	1800.28	1800.46	31.47	.79	114.73	3.42
1.100	40.00	1800.33	1800.32	1800.51	33.60	.83	112.25	3.50
1.100	45.00	1800.36	1800.36	1800.55	35.45	.86	111.53	3.58
1.200	5.00	1799.87	1799.86	1799.96	11.41	.37	142.63	2.38
1.200	10.00	1799.99	1799.97	1800.11	15.82	.49	132.25	2.78
1.200	15.00	1800.08	1800.07	1800.21	20.46	.58	119.31	2.90
1.200	20.00	1800.14	1800.14	1800.29	23.90	.64	117.98	3.06
1.200	25.00	1800.20	1800.19	1800.35	26.85	.70	115.27	3.18
1.200	30.00	1800.25	1800.24	1800.41	29.28	.75	115.32	3.31
1.200	35.00	1800.29	1800.28	1800.46	31.60	.79	112.80	3.40
1.200	40.00	1800.33	1800.32	1800.51	33.72	.83	110.45	3.47
1.200	45.00	1800.37	1800.36	1800.55	35.57	.87	109.81	3.56

1

04NOV93 11:59:58 PAGE 20

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      1.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  6  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  7  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  8  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  9  CRITICAL DEPTH ASSUMED

CAUTION SECNO=      1.100  PROFILE=  6  CRITICAL DEPTH ASSUMED
```

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1*****************************************
*************************************
 *  HEC-2 WATER SURFACE PROFILES          *                                    *  U.S. ARMY CORPS OF ENGINEERS
 *                                        *                                    *  HYDROLOGIC ENGINEERING CENTER
 *  Version   4.6.2;  May 1991            *                                    *  609 SECOND STREET, SUITE D
 *                                        *                                    *  DAVIS, CALIFORNIA 95616-4687
 *  RUN DATE    04NOV93    TIME   12:00:11 *                                    *          (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
1
   04NOV93      12:00:11                                                                                    PAGE    1


                                                                                THIS RUN EXECUTED 04NOV93    12:00:11
 *************************************
  HEC-2 WATER SURFACE PROFILES

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


 T1 Flow split at C615 right channel (El Lago Blvd.)
 T2 Fountain Hills North FIS
 T3 Q = 5 cfs. C615R.IH2.  29 Oct 93 trl

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           .050                                    1800.0

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        43         1         2         3         4         8         5        26

 QT        9         5        10        15        20        25        30        35
 NC     .035      .035      .024        .1        .3
 X1      1.0       7.0     968.8    1031.2
 GR   1800.5     965.8    1800.0     968.8    1799.7     970.0    1800.6    1000.0    1800.4    1030.0
 GR   1800.9    1031.2    1802.0    1036.2

 X1      1.1                                   0.1       0.1       0.1

 X1      1.2                                   0.1       0.1       0.1
1
   04NOV93      12:00:11                                                                                    PAGE    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

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 3720 CRITICAL DEPTH ASSUMED
      1.000       .34   1800.04   1800.04   1800.00   1800.12       .09       .00       .00   1800.00
        5.0        .0       5.0        .0        .0       2.1        .0        .0        .0   1800.90
        .00       .05      2.37       .00      .035      .024      .000      .000   1799.70    968.58
    .015559        0.        0.        0.         0         8         0       .00     12.64    981.22

 *SECNO 1.100
      1.100       .34   1800.04   1800.04       .00   1800.13       .09       .00       .00   1800.00
        5.0        .0       5.0        .0        .0       2.1        .0        .0        .0   1800.90
        .00       .05      2.34       .00      .035      .024      .000      .000   1799.70    968.57
    .015169        0.        0.        0.         0         5         0       .00     12.70    981.27

 *SECNO 1.200
      1.200       .35   1800.05   1800.04       .00   1800.13       .08       .00       .00   1800.00
        5.0        .0       5.0        .0        .0       2.2        .0        .0        .0   1800.90
        .00       .05      2.30       .00      .035      .024      .000      .000   1799.70    968.55
    .014397        0.        0.        0.         0         5         0       .00     12.83    981.38

1
   04NOV93      12:00:11                                                                                    PAGE    3

 T1 Flow split at C615 right channel (El Lago Blvd.)
 T2 Fountain Hills North FIS
 T3  Q=10 C615R.IH2.  29 Oct 93 trl
```

```
J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           .050                                    1800.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2

1
   04NOV93      12:00:11                                                                                    PAGE    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 2

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 3720 CRITICAL DEPTH ASSUMED
     1.000       .44   1800.14   1800.14   1800.00   1800.26       .12       .00       .00   1800.00
      10.0        .0      10.0        .0        .1       3.6        .0        .0        .0   1800.90
       .00       .05      2.75       .00      .035      .024      .000      .000   1799.70    967.94
   .014326        0.        0.        0.         0        15         0       .00     16.84    984.78

 *SECNO 1.100
     1.100       .45   1800.15   1800.14       .00   1800.26       .12       .00       .00   1800.00
      10.0        .0      10.0        .0        .1       3.7        .0        .0        .0   1800.90
       .00       .05      2.74       .00      .035      .024      .000      .000   1799.70    967.93
   .014079        0.        0.        0.         0         5         0       .00     16.90    984.83

 *SECNO 1.200
     1.200       .45   1800.15   1800.14       .00   1800.26       .11       .00       .00   1800.00
      10.0        .0      10.0        .0        .1       3.7        .0        .0        .0   1800.90
       .00       .05      2.70       .00      .035      .024      .000      .000   1799.70    967.91
   .013580        0.        0.        0.         0         6         0       .00     17.02    984.93

1
   04NOV93      12:00:11                                                                                    PAGE    5

 T1 Flow split at C615 right channel (El Lago Blvd.)
 T2 Fountain Hills North FIS
 T3  Q=15 C615R.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                           .050                                    1800.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3

1
   04NOV93      12:00:11                                                                                    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

 *PROF 3

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 3720 CRITICAL DEPTH ASSUMED
     1.000       .52   1800.22   1800.22   1800.00   1800.36       .13       .00       .00   1800.00
      15.0        .2      14.8        .0        .2       5.0        .0        .0        .0   1800.90
       .00      1.12      2.95       .00      .035      .024      .000      .000   1799.70    967.46
   .013092        0.        0.        0.         0        20         0       .00     20.02    987.47

 *SECNO 1.100
     1.100       .53   1800.23   1800.22       .00   1800.36       .13       .00       .00   1800.00
      15.0        .2      14.8        .0        .2       5.1        .0        .0        .0   1800.90
       .00      1.12      2.93       .00      .035      .024      .000      .000   1799.70    967.45
   .012915        0.        0.        0.         0         5         0       .00     20.07    987.52

 *SECNO 1.200
     1.200       .53   1800.23   1800.22       .00   1800.36       .13       .00       .00   1800.00
      15.0        .2      14.8        .0        .2       5.1        .0        .0        .0   1800.90
       .00      1.11      2.90       .00      .035      .024      .000      .000   1799.70    967.43
   .012554        0.        0.        0.         0         5         0       .00     20.18    987.61

1
   04NOV93      12:00:11                                                                                    PAGE    7

 T1 Flow split at C615 right channel (El Lago Blvd.)
 T2 Fountain Hills North FIS
 T3  Q=20 C615R.IH2.  29 Oct 93 trl

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                5                           .050                                    1800.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     4
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1
   04NOV93      12:00:11                                                                                                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

 *PROF 4

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 3720 CRITICAL DEPTH ASSUMED
     1.000       .59   1800.29   1800.29   1800.00   1800.44       .15       .00       .00   1800.00
      20.0        .3      19.7        .0        .3       6.3        .0        .0        .0   1800.90
       .00      1.30      3.12       .00      .035      .024      .000      .000   1799.70    967.07
   .012501        0.        0.        0.         0        17         0       .00     22.57    989.64

 *SECNO 1.100
     1.100       .59   1800.29   1800.29       .00   1800.44       .15       .00       .00   1800.00
      20.0        .3      19.7        .0        .3       6.3        .0        .0        .0   1800.90
       .00      1.29      3.10       .00      .035      .024      .000      .000   1799.70    967.06
   .012364        0.        0.        0.         0         5         0       .00     22.62    989.68

 *SECNO 1.200
     1.200       .60   1800.30   1800.29       .00   1800.44       .14       .00       .00   1800.00
      20.0        .3      19.7        .0        .3       6.4        .0        .0        .0   1800.90
       .00      1.28      3.08       .00      .035      .024      .000      .000   1799.70    967.04
   .012069        0.        0.        0.         0         5         0       .00     22.72    989.77

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   04NOV93      12:00:11                                                                                                PAGE    9

 T1 Flow split at C615 right channel (El Lago Blvd.)
 T2 Fountain Hills North FIS
 T3  Q=25 C615R.IH2.  29 Oct 93 trl

 J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                 6                               .050                                         1800.0

 J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

      5

1
   04NOV93      12:00:11                                                                                                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

 *PROF 5

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 3720 CRITICAL DEPTH ASSUMED
     1.000       .64   1800.34   1800.34   1800.00   1800.51       .17       .00       .00   1800.00
      25.0        .5      24.5        .0        .3       7.4        .0        .0        .0   1800.90
       .00      1.45      3.30       .00      .035      .024      .000      .000   1799.70    966.76
   .012543        0.        0.        0.         0        20         0       .00     24.58    991.34

 *SECNO 1.100
     1.100       .65   1800.35   1800.34       .00   1800.51       .16       .00       .00   1800.00
      25.0        .5      24.5        .0        .4       7.5        .0        .0        .0   1800.90
       .00      1.43      3.25       .00      .035      .024      .000      .000   1799.70    966.73
   .012070        0.        0.        0.         0         5         0       .00     24.77    991.50

 *SECNO 1.200
     1.200       .65   1800.35   1800.34       .00   1800.51       .16       .00       .00   1800.00
      25.0        .5      24.5        .0        .4       7.6        .0        .0        .0   1800.90
       .00      1.42      3.22       .00      .035      .024      .000      .000   1799.70    966.71
   .011771        0.        0.        0.         0         5         0       .00     24.89    991.60

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   04NOV93      12:00:11                                                                                                PAGE   11

 T1 Flow split at C615 right channel (El Lago Blvd.)
 T2 Fountain Hills North FIS
 T3  Q=30 C615R.IH2.  29 Oct 93 trl

 J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                 7                               .050                                         1800.0

 J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

      6

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   04NOV93      12:00:11                                                                                                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
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