DRAINAGE REPORT

FOR

LOS PRADOS DEL NORTE SUBDIVISION

VISTA DEL NORTE MASTER PLAN COMMUNITY

MARCH 1999

TABLE OF CONTENTS

PROJECT DESCRIPTION

The proposed Los Prados del Norte subdivision, comprised of approximately 18.5 acres is a single family residential home project consisting of 106 detached homes. This project is part of the Vista Del Norte Unit 1 Master Planned Community located adjacent to the north side of Osuna Road and west of the AMAFCA North Diversion Channel. The site is identified as Tract I on the Bulk Land Plat.

A master grading and drainage plan (D16/D1) and construction plans (Project No. 597081) have been approved for Vista Del Norte Unit 1 of which this site is part of and will tie into their offsite infrastructure which includes a storm drain system in Vista Monte Drive.

DRAINAGE CRITERIA

The design criteria used in this report was in accordance with Section 22.2 Hydrology of the Development Process Manual, Volume 2, Design Criteria, January 1993 edition. The AHYMO model was used to analyze the 100-year 6-hour storm event for developed conditions using a Type 1 rainfall distribution to determine street capacities ans sizing the internal storm drain system using the following precipitation depths: P60 = 2.05" and P360 = 2.30" and P1440 = 2.60"

The Land Treatment values used for the site was Treatment D = 55 with the remaining split between Treatment B and C (22.5 each).

EXISTING DRAINAGE CONDITIONS

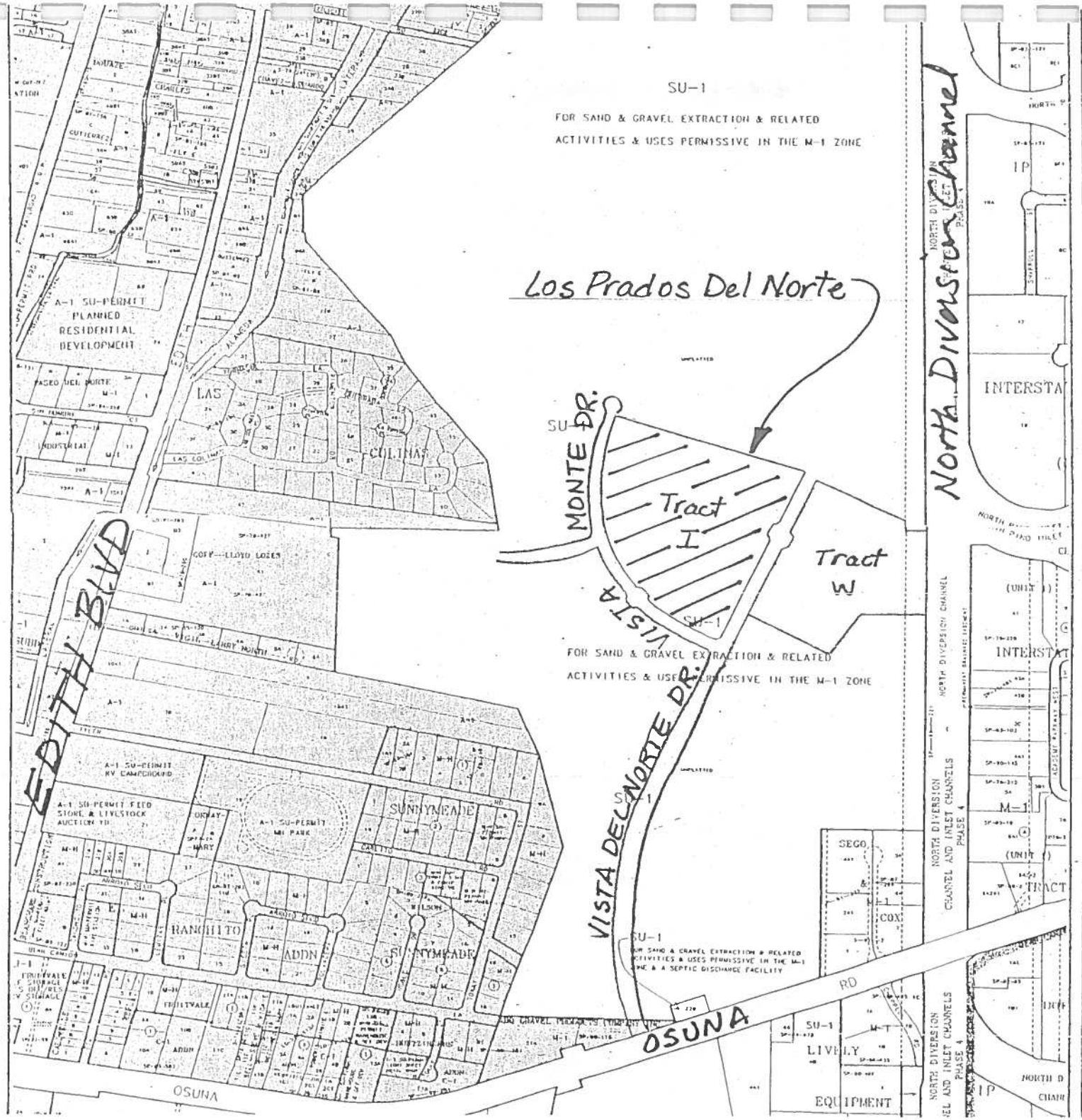
In accordance with the approved master Grading and Drainage Plan for Vista Del Norte Unit 1, this project site, Los Prados Del Norte has been rough graded to an approximate slope of 1.0 percent toward the northwest corner of the site.

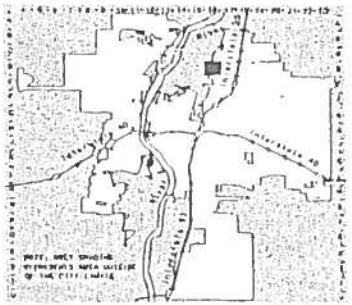
DEVELOPED DRAINAGE CONDITIONS

The maximum "developed conditions" 100 year discharge from the site was determined to be 70.16 cfs. Runoff from the site flows in a general northwest direction as street flow toward three storm drain sump inlets located in the knuckle intersecting Casa Maria and Casa Tomas Drive. An internal storm drain sized for two times the 100 year discharge conveys the runoff to the storm drain in Vista Monte Drive being built as part of the Vista Del Norte Unit 1 Infrastructure Construction (Project No. 597081). Three Double "C" sump inlet in the knuckle and one Double "C" located on the interior radius of Casa Maria and Casa Tomas Drive together have capacity for 86.23 cfs.

The two culdesacs located in the center of the site discharge through a private 6 foot wide channel which discharges into Casa Maria. This channel is to be privately maintained by the homeowners associations.

Refer to Appendix C Storm Drain for calculations. Refer to Exhibit 2 for sub basin boundaries and summary of the hydrology results.





LEGAL DESCRIPTION

T11N

R3E

SEC 32

UNIFORM PROPERTY CODE

1018 083

E/D-16-Z

GRAPHIC SCALE IN FEET

250 0 500 1000

CITY OF Albuquerque

PLANNING DEPARTMENT

Map Amended through February 13, 1997

VICINITY MAP

SUB BASIN ID	AREA (SF)	AREA (ACRES)	AREA (%)	PEAK DISCHARGE (cfs)
1	139719.7	3.208	17.31	12.14
2	91631.8	2.104	11.35	7.97
3	264347.0	6.068	32.74	22.97
4	144479.4	3.317	17.90	12.56
5	105368.7	2.419	13.05	9.16
6	61729.2	1.417	7.65	5.36
TOTAL	807,275.7	18.533	100.00	70.16

PEAK DISCHARGE ENTIRE SITE = 70.16 cfs

TOTAL AREA = .02883 SQ. MI.
LAND TR. D = 55.0
LAND TR. C = 22.5
LAND TR. B = 22.5

LOS PRADOS DEL NORTE
SUB BASIN BOUNDARIES
EXHIBIT 2

Los Prados Del Norte Subdivision

TABLE 2: SUMMARY OF STREET CAPACITY AND INLET CALCULATIONS

LOCATION	CURB	WIDTH ft.	CROWN/ CROSS SLOPE	SLOPE %	Q cfs	DEPTH ft	EG ft	Q INLET cfs	#/TYPE of INLETS	REMAIN Q (cfs)
SANTA ELENA DRIVE	MBL	28	CRN	0.50	8.0	0.33	0.38			
CASA MARIA	MBL	28	CRN	1.227	12.14	0.33	0.45			
SANTA ELENA	STD	28	CRN	0.50	12.54	0.43	0.50			
CASA TOMAS	STD	28	CRN	1.01	30.94	0.51	0.73			
CASA MARIA	STD	28	CRN	1.227	13.22	0.38	0.51			
CASA MARIA	STD	28	CRN	1.00	21.30	0.45	0.62			
NW KNUCKLE	STD	28	CRN	1.00	33.86	0.53	0.76			
SANTA MARTHA	MBL	26	CRN	0.92	10.00	0.33	0.42			
SANTA MARTHA	STD	26	CRN	1.00	12.56	.39	.50			
SANTA MARTHA	STD	26	CRN	0.60	12.56	.42	.50			

MTB = Mountable Curb
STD = Standard Curb

APPENDIX A
HYDROLOGY

```
START               TIME=0.0
*****    LOS PRADOS DEL NORTE - SINGLE FAMILY HOMES
*****  PART OF IN VISTA DEL NORTE MASTER PLANNED COMMUNITY
*****    100-YEAR 6-HOUR STORM EVENT
*****    FILE: NORTE.DAT  FEB 1999 BY:DLH
RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=2.05 IN RAIN SIX=2.30 IN
                    RAIN DAY=2.60 IN DT=0.05 HR
***** DEVELOPED CONDITIONS
*****
***** TOTAL SITE
*****
COMPUTE NM HYD      ID=1 HYD NO=100.0 AREA=0.02883 SQ MI
                    PER A=0 PER B=22.5 PER C=22.5 PER D=55
                    TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
FINISH
```

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 02/15/1999
         START TIME (HR:MIN:SEC) = 14:39:18      USER NO.= M_GOODWN.I01
         INPUT FILE = prados.dat

START                TIME=0.0
*****    LOS PRADOS DEL NORTE - SINGLE FAMILY HOMES
*****  PART OF IN VISTA DEL NORTE MASTER PLANNED COMMUNITY
*****    100-YEAR 6-HOUR STORM EVENT
*****    FILE: NORTE.DAT  FEB 1999 BY:DLH
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=2.05 IN RAIN SIX=2.30 IN
                     RAIN DAY=2.60 IN DT=0.05 HR

                  COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                  DT =    .050000 HOURS       END TIME =     6.000000 HOURS
                     .0000   .0013   .0026   .0040   .0055   .0070   .0085
                     .0101   .0118   .0136   .0154   .0173   .0193   .0215
                     .0237   .0261   .0286   .0313   .0342   .0374   .0408
                     .0494   .0590   .0867   .1521   .2645   .4383   .6887
                    1.0310  1.3010  1.4229  1.5248  1.6140  1.6938  1.7660
                    1.8319  1.8924  1.9481  1.9994  2.0469  2.0908  2.0990
                    2.1064  2.1133  2.1197  2.1257  2.1314  2.1367  2.1417
                    2.1465  2.1510  2.1554  2.1596  2.1636  2.1675  2.1712
                    2.1748  2.1783  2.1816  2.1849  2.1880  2.1911  2.1941
                    2.1970  2.1999  2.2026  2.2053  2.2080  2.2105  2.2131
                    2.2155  2.2179  2.2203  2.2226  2.2249  2.2271  2.2293
                    2.2315  2.2336  2.2356  2.2377  2.2397  2.2416  2.2436
                    2.2455  2.2474  2.2492  2.2510  2.2528  2.2546  2.2564
                    2.2581  2.2598  2.2615  2.2631  2.2647  2.2663  2.2679
                    2.2695  2.2711  2.2726  2.2741  2.2756  2.2771  2.2786
                    2.2800  2.2814  2.2829  2.2843  2.2856  2.2870  2.2884
                    2.2897  2.2910  2.2924  2.2937  2.2950  2.2962  2.2975
                    2.2988  2.3000

***** DEVELOPED CONDITIONS
*****
***** TOTAL SITE
*****
COMPUTE NM HYD       ID=1 HYD NO=100.0 AREA=0.02883 SQ MI
```

PER A=0 PER B=22.5 PER C=22.5 PER D=55
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 62.602 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 2.0500
AREA = .015857 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .120234HR TP = .133300HR K/TP RATIO = .901978 SHAPE CONSTANT, N = 3.928677
UNIT PEAK = 34.102 CFS UNIT VOLUME = 1.001 B = 350.39 P60 = 2.0500
AREA = .012974 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 100.00

RUNOFF VOLUME = 1.56438 INCHES = 2.4054 ACRE-FEET
PEAK DISCHARGE RATE = 70.16 CFS AT 1.500 HOURS BASIN AREA = .0288 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 14:39:18

APPENDIX B

HYDRAULICS

```
1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF SEPTEMBER 1988                        *
 *  ERROR: 01,02                                     *
 *  UPDATED:  4 APRIL    1989                        *
 *  RUN DATE     3/ 5/99   TIME   10:10:47           *
 *****************************************************
```

```
*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*  (916) 756-1104, (916) 551-1748       *
*****************************************
```

```
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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 END OF BANNER
1
     3/ 5/99      10:10:47                                                    PAGE    1

                                                    THIS RUN EXECUTED  3/ 5/99    10:10:47

 ************************************************
   HEC2 RELEASE DATED SEP 88 UPDATED APR  1989
   ERROR CORR -  01,02
   MODIFICATION -
 ************************************************

 T1          LOS PRADOS DEL NORTE CONCRETE CHANNEL
 T2          RECTANGULAR 6' WIDE 8" DEEP
 T3          100-YEAR / 6-HOUR DESIGN STORM

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0         2         0         1      .010         0         0         0         0         0

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      43         1         2        26         4        68         3

 NC     .017      .017      .017       .1        .3
 QT        1    12.56
 X1        1         4         0      6.1         0         0         0         0         0         0
 GR      .67         0         0      .10        0.       6.0       .67       6.1
1
     3/ 5/99      10:10:47                                                    PAGE    2
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
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
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

1.00	.45	.45	.52	.00	.79	.34	.00	.00	.67
13.	0.	13.	0.	0.	3.	0.	0.	0.	.67
.00	.00	4.68	.00	.000	.017	.000	.000	.00	.03
.009930	0.	0.	0.	0	14	5	.00	6.03	6.07

0
1

****
HEC2 RELEASE DATED SEP 88 UPDATED APR 1989
ERROR CORR - 01,02
MODIFICATION -
****

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

100-YEAR / 6-HOUR DE

SUMMARY PRINTOUT

Q	CWSEL	CRIWS	VCH	TOPWID	FRCH	EG
12.560	.45	.52	4.68	6.03	1.24	.79

1

SUMMARY OF ERRORS AND SPECIAL NOTES

```
1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF SEPTEMBER 1988                        *
 *  ERROR: 01,02                                     *
 *  UPDATED:  4 APRIL    1989                        *
 *  RUN DATE     3/ 4/99   TIME   16:34: 9           *
 *****************************************************
```

```
*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*  (916) 756-1104, (916) 551-1748       *
*****************************************
```

```
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
```

```
 END OF BANNER
1
     3/ 4/99      16:34: 9                                                    PAGE     1
```

```
                                                    THIS RUN EXECUTED  3/ 4/99    16:34: 9

 ************************************************
   HEC2 RELEASE DATED SEP 88 UPDATED APR  1989

   ERROR CORR -  01,02
   MODIFICATION -
 ************************************************

T1          LOS PRADOS DEL NORTE STREET CAPACITY (44' ROW)
T2          26'FF W/ MOUNTABLE CURB SUB-CRITICAL FLOW
T3          SANTA MARTHA

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0         2         0         1     .0108         0         0         0         0         0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        43         1         2        26         4        68         3

NC     .017      .017      .017       .1        .3
```

```
QT        2      10.00      10.00
X1        1          9          0         44          0          0          0          0          0          0
GR      .51          0        .33        8.9          0          9       .083         11       .303         22
GR      .083        33          0         35        .33       35.1        .51         44
1
     3/ 4/99      16:34: 9                                                                          PAGE     2

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    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
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
      1.00       .32       .32       .34       .00       .42       .10       .00       .00       .51
       10.        0.       10.        0.        0.        4.        0.        0.        0.       .51
       .00       .00      2.54       .00      .000      .017      .000      .000       .00      8.90
   .010772        0.        0.        0.         0        11         7       .00     26.19     35.10
0
1
     3/ 4/99      16:34: 9                                                                          PAGE     3


 T1 26' FF
 T2 100YR 6HR
 T3 SANTA MARTHA

 J1   ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

        0         3         0         1      .0092

 J2   NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
        2         0        -1         0         0         0         0         0         0         0

1
     3/ 4/99      16:34: 9                                                                          PAGE     4

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    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
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

1.00	.33	.33	.34	.00	.42	.09	.00	.00	.51
10.	0.	10.	0.	0.	4.	0.	0.	0.	.51
.00	.00	2.42	.00	.000	.017	.000	.000	.00	8.90
.009166	0.	0.	0.	0	11	7	.00	26.20	35.10

0
1

****
HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01,02
MODIFICATION -
****

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

SANTA MARTHA

SUMMARY PRINTOUT

SECNO	Q	CWSEL	CRIWS	VCH	TOPWID	FRCH	EG
1.000	10.00	.32	.34	2.54	26.19	1.15	.42
1.000	10.00	.33	.34	2.42	26.20	1.07	.42

1

SUMMARY OF ERRORS AND SPECIAL NOTES

```
1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF SEPTEMBER 1988                        *
 *  ERROR: 01,02                                     *
 *  UPDATED:  4 APRIL    1989                        *
 *  RUN DATE     3/ 4/99   TIME   16:41: 3           *
 *****************************************************
```

```
*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*  (916) 756-1104, (916) 551-1748       *
*****************************************
```

```
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  XXXXXXXX  XXXXX             XXXXXXX
```

END OF BANNER

1

3/ 4/99 16:41: 3

THIS RUN EXECUTED 3/ 4/99 16:41: 3

```
*************************************************
  HEC2 RELEASE DATED SEP 88 UPDATED APR  1989

  ERROR CORR -  01,02
  MODIFICATION -
*************************************************
```

```
T1          LOS PRADOS DEL NORTE STREET CAPACITY (44' ROW)
T2          26'FF W/ STANDARD CURB SUB-CRITICAL FLOW - 8" CURB
T3          SANTA MARTHA

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
        0         2         0         1     .0100         0         0         0         0         0
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
       38        43         1         2        26         4        68         3
NC    .017      .017      .017        .1        .3
```

```
 QT        2      12.56      12.56
 X1        1          9          0         44          0          0          0          0          0
 GR      .85          0        .67        8.9          0          9       .125         11       .345         23
 GR     .125         33          0         35        .67       35.1        .85         44
1
     3/ 4/99      16:41: 3                                                                          PAGE     2

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    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
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
      1.00       .39       .39       .40       .00       .50       .11       .00       .00       .85
       13.        0.       13.        0.        0.        5.        0.        0.        0.       .85
       .00       .00      2.71       .00      .000      .017      .000      .000       .00      8.94
    .009956        0.        0.        0.         0        12         5       .00     26.12     35.06
0
1
     3/ 4/99      16:41: 3                                                                          PAGE     3

 T1 28' FF
 T2 100YR 6HR
 T3 SANTA MARTHA

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0         3         0         0      .006

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      2          0        -1         0         0         0         0         0         0         0

1
     3/ 4/99      16:41: 3                                                                          PAGE     4

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    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
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
      1.00      .42      .42      .00      .00      .50      .08      .00      .00      .85
       13.       0.      13.       0.       0.       5.       0.       0.       0.      .85
       .00      .00     2.32      .00     .000     .017     .000     .000      .00     8.94
   .005999       0.       0.       0.        0        0        5      .00    26.12    35.06
0
1
     3/ 4/99      16:41: 3                                                              PAGE     5


                                                                  THIS RUN EXECUTED  3/ 4/99    16:41: 3
 ************************************************
   HEC2 RELEASE DATED SEP 88 UPDATED APR  1989


   ERROR CORR -  01,02
   MODIFICATION -
 ************************************************

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

     SANTA MARTHA

 SUMMARY PRINTOUT

       SECNO        Q        CWSEL      CRIWS       VCH      TOPWID      FRCH        EG

       1.000     12.56         .39        .40       2.71     26.12       1.13        .50
       1.000     12.56         .42        .00       2.32     26.12        .90        .50
1
     3/ 4/99      16:41: 3                                                              PAGE     6


   SUMMARY OF ERRORS AND SPECIAL NOTES
```

```
1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF SEPTEMBER 1988                        *
 *  ERROR: 01,02                                     *
 *  UPDATED:  4 APRIL    1989                        *
 *  RUN DATE     3/ 4/99   TIME   14:30:55           *
 *****************************************************

                                                      ****************************************
                                                      *  U.S. ARMY CORPS OF ENGINEERS        *
                                                      *  THE HYDROLOGIC ENGINEERING CENTER   *
                                                      *  609 SECOND STREET, SUITE D          *
                                                      *  DAVIS, CALIFORNIA 95616-4687        *
                                                      *  (916) 756-1104, (916) 551-1748      *
                                                      ****************************************

                                  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

 END OF BANNER
1
     3/ 4/99      14:30:55                                                          PAGE    1

                                                                THIS RUN EXECUTED  3/ 4/99    14:30:55

 ************************************************
   HEC2 RELEASE DATED SEP 88 UPDATED APR  1989

   ERROR CORR -  01,02
   MODIFICATION -
 ************************************************

T1          LOS PRADOS DEL NORTE STREET CAPACITY (46' ROW)
T2          28'FF W/ MOUNTABLE CURB SUPER/SUB-CRITICAL FLOW
T3          SANTA ELENA

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0        2         0         0      .005         0         0         0         0         0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        43         1         2        26         4        68         3

NC     .017      .017      .017       .1        .3
```

```
 QT         2        8.00      12.14
 X1         1           9          0          46           0           0           0           0           0           0
 GR       .51           0        .33         8.9           0           9       .0625        10.3        .317          23
 GR     .0625        35.7           0          37         .33        37.1         .51          46
1
     3/ 4/99       14:30:55                                                                                  PAGE     2

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    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
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
      1.00       .33       .33       .00       .00       .38       .05       .00       .00       .51
        8.        0.        8.        0.        0.        4.        0.        0.        0.       .51
       .00       .00      1.78       .00      .000      .017      .000      .000       .00      8.69
    .005009        0.        0.        0.         0         0         7       .00     28.63     37.31
0
1
     3/ 4/99       14:30:55                                                                                  PAGE     3


 T1 28' MTBL FF
 T2 100YR 6HR
 T3 CASA MARIA

 J1   ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

        0          3         0         1     .01227

 J2   NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

        2          0        -1         0         0         0         0         0         0         0

1
     3/ 4/99       14:30:55                                                                                  PAGE     4

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    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
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
      1.00       .33       .33       .36       .00       .45       .12       .00       .00       .51
       12.        0.       12.        0.        0.        4.        0.        0.        0.       .51
       .00       .00      2.76       .00      .000      .017      .000      .000       .00      8.86
    .012233        0.        0.        0.         0        14         7       .00     28.28     37.14
0
1
     3/ 4/99      14:30:55                                                                    PAGE     5


                                                                          THIS RUN EXECUTED  3/ 4/99    14:30:55
 ************************************************
   HEC2 RELEASE DATED SEP 88 UPDATED APR  1989


   ERROR CORR -  01,02
   MODIFICATION -
 ************************************************

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

     SANTA ELENA

 SUMMARY PRINTOUT

       SECNO         Q        CWSEL      CRIWS       VCH      TOPWID      FRCH        EG

       1.000      8.00          .33        .00       1.78      28.63        .79        .38
       1.000     12.14          .33        .36       2.76      28.28       1.23        .45

1
     3/ 4/99      14:30:55                                                                    PAGE     6

 SUMMARY OF ERRORS AND SPECIAL NOTES
```

1**
 * WATER SURFACE PROFILES   *
 * VERSION OF SEPTEMBER 1988   *
 * ERROR: 01,02   *
 * UPDATED: 4 APRIL   1989   *
 * RUN DATE   3/ 4/99   TIME   16:29:43   *
 ****

 ****
 * U.S. ARMY CORPS OF ENGINEERS   *
 * THE HYDROLOGIC ENGINEERING CENTER   *
 * 609 SECOND STREET, SUITE D   *
 * DAVIS, CALIFORNIA 95616-4687   *
 * (916) 756-1104, (916) 551-1748   *
 ****

```
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
```

 END OF BANNER
1

 THIS RUN EXECUTED 3/ 4/99   16:29:43

 ****
   HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

   ERROR CORR - 01,02
   MODIFICATION -
 ****

```
T1          LOS PRADOS DEL NORTE STREET CAPACITY (46' ROW)
T2          28'FF W/ 8" STANDARD CURB SUPER/SUB-CRITICAL FLOW
T3          SANTA ELENA

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0         2         0         0      .005         0         0         0         0         0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        43         1         2        26         4        68         3

NC     .017      .017      .017       .1        .3
```

```
 QT         5      12.54      30.94      13.22      21.30      33.86
 X1         1          9          0         46          0          0          0          0          0          0
 GR       .85          0        .67        8.9          0          9       .125         11       .365         23
 GR      .125         35          0         37        .67       37.1        .85         46
1
     3/ 4/99      16:29:43                                                                          PAGE    2

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    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
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
      1.00       .43       .43       .00       .00       .50       .07       .00       .00       .85
       13.        0.       13.        0.        0.        6.        0.        0.        0.       .85
       .00       .00      2.14       .00      .000      .017      .000      .000       .00      8.94
    .005000        0.        0.        0.         0         0         5       .00     28.13     37.06
0
1
     3/ 4/99      16:29:43                                                                          PAGE    3

 T1 28' STD FF
 T2 100YR 6HR
 T3 CASA TOMAS

 J1   ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

        0          3         0         1      .0101

 J2   NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       2          0        -1         0         0         0         0         0         0         0

1
     3/ 4/99      16:29:43                                                                          PAGE    4

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    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
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
      1.00       .51       .51       .55       .00       .73       .22       .00       .00       .85
       31.        0.       31.        0.        0.        8.        0.        0.        0.       .85
       .00       .00      3.78       .00      .000      .017      .000      .000       .00      8.92
    .010125        0.        0.        0.         0        11         6       .00     28.15     37.08
0
1
     3/ 4/99       16:29:43                                                                    PAGE     5


 T1 28' FF
 T2 100YR 6HR
 T3 CASA MARIA

 J1   ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0          4         0         1      .01227

 J2   NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      3          0        -1         0         0         0         0         0         0         0

1
     3/ 4/99       16:29:43                                                                    PAGE     6

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     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
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
      1.00       .38       .38       .42       .00       .51       .13       .00       .00       .85
       13.        0.       13.        0.        0.        5.        0.        0.        0.       .85
       .00       .00      2.85       .00      .000      .017      .000      .000       .00      8.94
    .012192        0.        0.        0.         0         6         5       .00     28.11     37.06
0
1
     3/ 4/99       16:29:43                                                                    PAGE     7


 T1 28' FF
 T2 100YR 6HR
```

T3 CASA MARIA

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	5	0	1	.010					

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	4	0	-1	0	0	0	0	0	0	0

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
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
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

1.00	.45	.45	.48	.00	.62	.16	.00	.00	.85
21.	0.	21.	0.	0.	7.	0.	0.	0.	.85
.00	.00	3.24	.00	.000	.017	.000	.000	.00	8.93
.009933	0.	0.	0.	0	8	5	.00	28.14	37.07

0
1

T1 28' FF
T2 100YR 6HR
T3 NW KNUCKLE

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	6	0	1	.010					

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	5	0	-1	0	0	0	0	0	0	0

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV

Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
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
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

1.00	.53	.53	.57	.00	.76	.24	.00	.00	.85
34.	0.	34.	0.	0.	9.	0.	0.	0.	.85
.00	.00	3.91	.00	.000	.017	.000	.000	.00	8.92
.010035	0.	0.	0.	0	11	6	.00	28.16	37.08

0
1

****
HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01,02
MODIFICATION -
****

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

SANTA ELENA

SUMMARY PRINTOUT

SECNO	Q	CWSEL	CRIWS	VCH	TOPWID	FRCH	EG
1.000	12.54	.43	.00	2.14	28.13	.82	.50
1.000	30.94	.51	.55	3.78	28.15	1.24	.73
1.000	13.22	.38	.42	2.85	28.11	1.24	.51
1.000	21.30	.45	.48	3.24	28.14	1.18	.62
1.000	33.86	.53	.57	3.91	28.16	1.24	.76

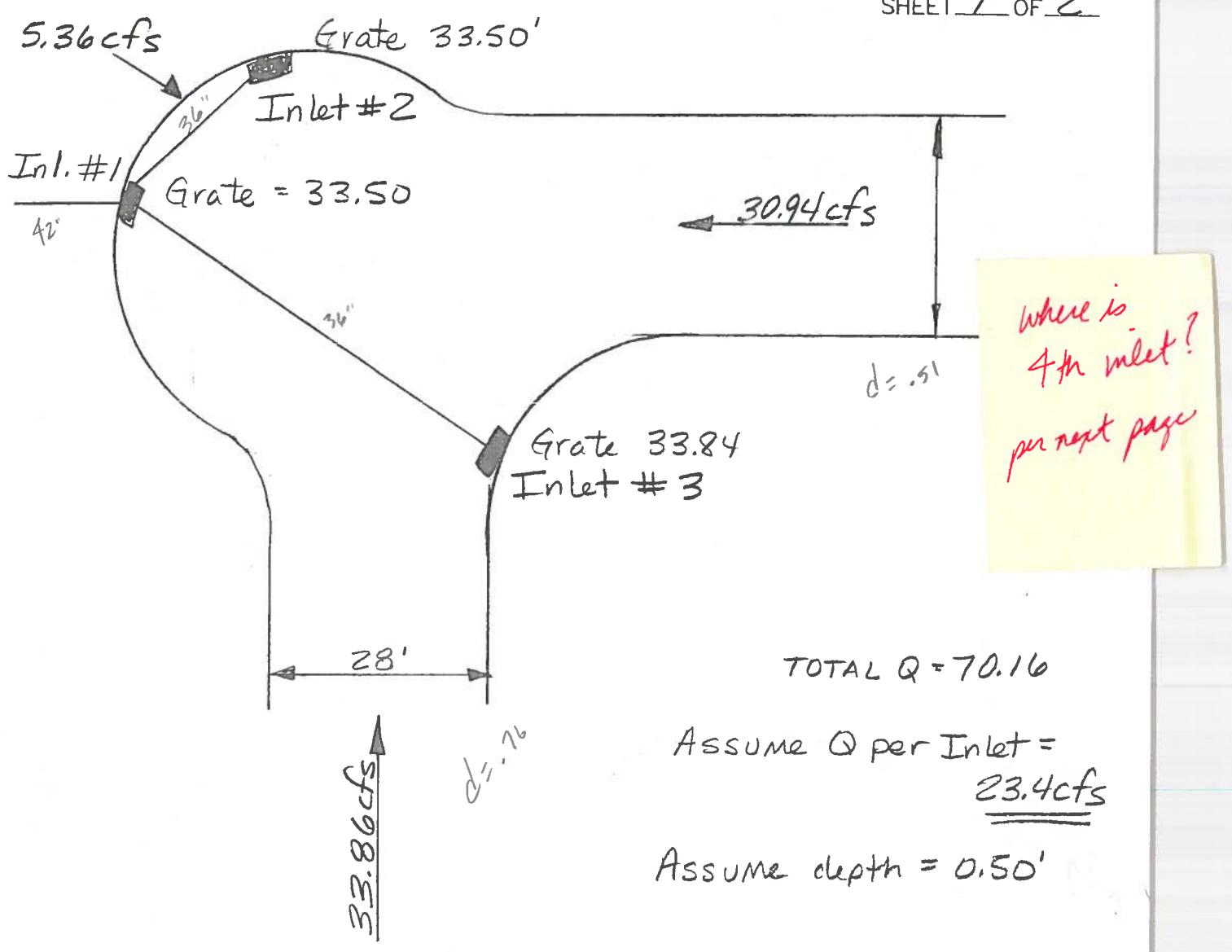
1

APPENDIX C

STORM DRAIN

D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Los Prados del Norte
SUBJECT Sump Inlet Calcs
BY DLH DATE 3-5-99
CHECKED _____ DATE _____
SHEET 1 OF 2



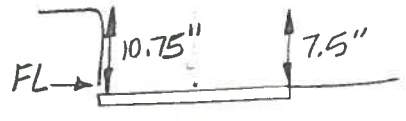
where is 4th inlet? per next page

TOTAL Q = 70.16

Assume Q per Inlet = 23.4cfs

Assume depth = 0.50'

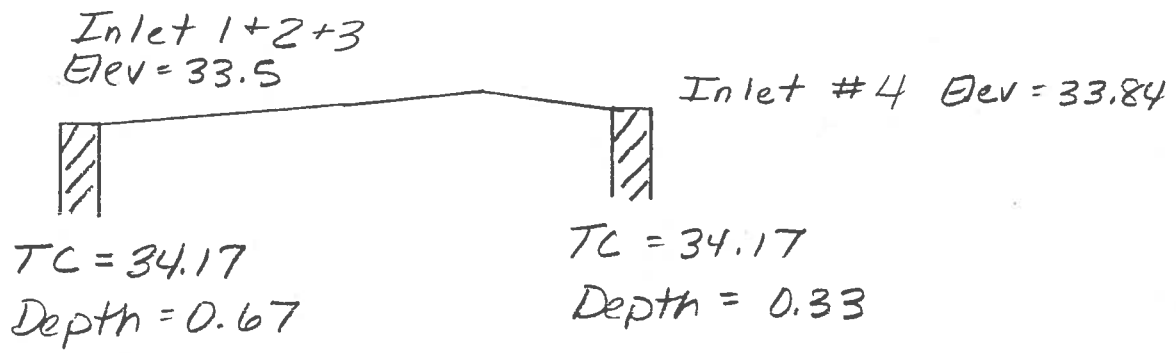
Capacity is measured by the weir Eqn. at the lip of the gutter assuming an allowable ponding elevation equal to the lowest adjacent right-of-way elevation.



Avg Depth = 0.76' (SIDE)
Avg Depth = 0.625' (FRONT)

D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Los Pradosdel Norte
SUBJECT Sump Inlet Calcs
BY DLH DATE 3-5-99
CHECKED _____ DATE _____
SHEET 2 OF 2



Capacity Inlet 1+2+3 $Q = 3.0(L)H^{1.5}$ (WEIR EQN)

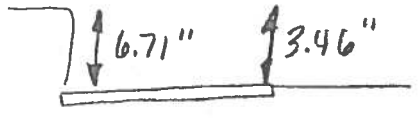
Q (FRONT) $= 3(6.5)(.625)^{1.5} = 9.63$ cfs

Q (SIDE) $= 3(2ea)(4.0)(0.76)^{1.5} = 15.90$ cfs

25.53 cfs (each inlet)

76.59 cfs (Three Inlets)

Capacity Inlet 4 (Depth = 0.33' = 3.96")



Avg Depth = 5.085" = .424' (SIDE)
Avg Depth = 3.46" = .288' (FRONT)

Q (FRONT) $= 3(6.5)(.288')^{1.5} = 3.01$ cfs

Q (SIDE) $= 3(2ea)(4.0)(.424)^{1.5} = 6.63$ cfs

9.64 cfs

TOTAL CAPACITY = 86.23 cfs (76.59+9.64)

REQ'D CAPACITY = 70.16 cfs

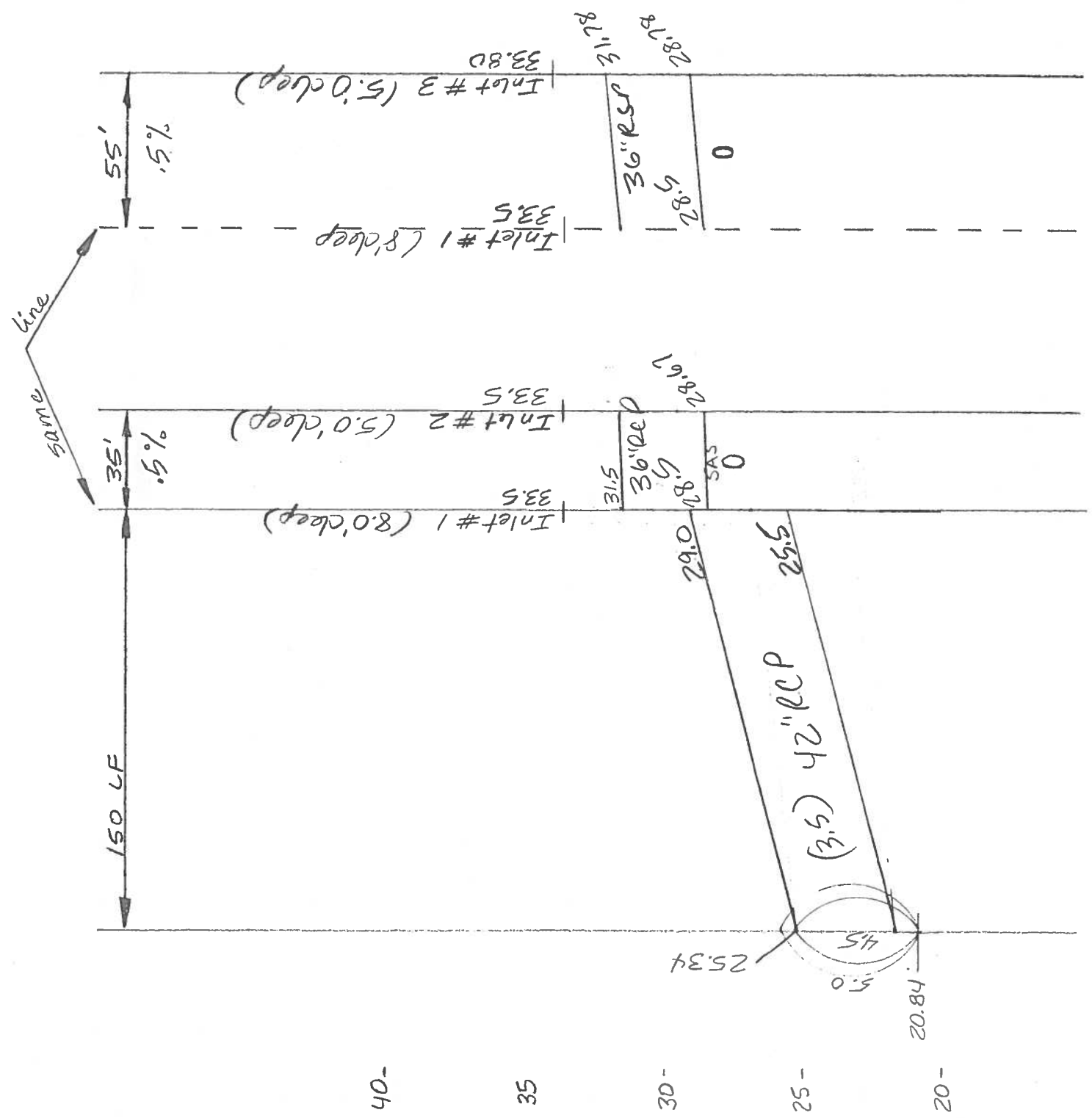
23% CLOGGING FACTOR.

NOTE: NO EMERGENCY OVERFLOW. STORM DRAIN SIZE HAS BEEN DESIGNED TO HANDLE 2 TIMES THE 100 YR. Q.

D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Los Prados del Norte
SUBJECT Prel. Storm Drain Design
BY DLH DATE 3-5-99
CHECKED _____ DATE _____
SHEET ____ OF ____

Storm Drain Schematic
Casa Maria / Casa Tomas Knuckle



HYDRAULIC REPORT FOR

LOS PRADOS DEL NORTE

STORM DRAIN ANAYSIS

FOR 2X Q CAPACITY

MARK GOODWIN & ASSOCIATES

DLH

MARCH 5, 1999

LINE 1 / Q = 140.5 / HT = 42 / WID = 42 / N = .013 / L = 150 / JLC = .1

EX MH - SUMP 1 / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	30.00	42.00	21.84	14.61	33.31	0.00	9.65	9.62
UPSTRM	32.93	42.00	25.50	14.60	36.24	0.00	4.5	9.62

Drainage area (ac)	= 0	Slope of invert (%)	= 2.440
Runoff coefficient	= 0	Slope energy grade line (%)	= 1.951
Time of conc (min)	= 0	Critical depth (in)	= 40.79
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 140.5	Confluence angle (deg)	= 90
Default Q (cfs)	= 140.5	Natural ground elev (ft)	= 33.5
Line capac. (cfs)	= 157.2	Line storage (cuft)	= 1443

2yr100yr

LINE 2 / Q = 47.0 / HT = 36 / WID = 36 / N = .013 / L = 35 / JLC = .05

SUMP1- SUMP2 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	33.26	36.00	28.50	6.65	33.95	0.00	2	7.07
UPSTRM	33.47	36.00	28.67	6.65	34.15	0.00	1.82	7.07

Drainage area (ac)	= 0	Slope of invert (%)	= 0.486
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.595
Time of conc (min)	= 0	Critical depth (in)	= 26.21
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 47	Confluence angle (deg)	= 30
Default Q (cfs)	= 47	Natural ground elev (ft)	= 33.5
Line capac. (cfs)	= 46.5	Line storage (cuft)	= 247

2H00yr

LINE 3 / Q = 47.0 / HT = 36 / WID = 36 / N = .013 / L = 55 / JLC = .05

SUMP 1-SUMP 3 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	33.26	36.00	28.50	6.65	33.95	0.00	2	7.07
UPSTRM	33.57	36.00	28.78	6.65	34.25	0.00	2.05	7.07

Drainage area (ac)	= 0	Slope of invert (%)	= 0.509
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.497
Time of conc (min)	= 0	Critical depth (in)	= 26.21
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 47	Confluence angle (deg)	= 45
Default Q (cfs)	= 47	Natural ground elev (ft)	= 33.84
Line capac. (cfs)	= 47.6	Line storage (cuft)	= 389

HYDRAULIC REPORT FOR

LOS PRADOS DEL NORTE

STORM DRAIN ANALYSIS

MARK GOODWIN & ASSICIATES

DLH

MARCH 5, 1999

LINE 1 / Q = 70.2 / HT = 42 / WID = 42 / N = .013 / L = 150 / JLC = .1

EX MH - SUMP 1 / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	30.00	42.00	20.84	7.29	30.83	0.00	10.65	9.62
UPSTRM	30.73	42.00	22.34	7.29	31.56	0.00	7.65	9.62

Drainage area (ac)	= 0	Slope of invert (%)	= 1.000
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.486
Time of conc (min)	= 0	Critical depth (in)	= 30.77
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 70.1	Confluence angle (deg)	= 90
Default Q (cfs)	= 70.16	Natural ground elev (ft)	= 33.5
Line capac. (cfs)	= 100.6	Line storage (cuft)	= 1443

LINE 2 / Q = 23.5 / HT = 36 / WID = 36 / N = .013 / L = 35 / JLC = .05

SUMP1- SUMP2 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	30.81	21.75	29.00	5.17	31.23	35.06	1.5	4.55
UPSTRM	30.93	18.62	29.35	6.37	31.56	35.98	1.14	3.69

Drainage area (ac)	= 0	Slope of invert (%)	= 1.000
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.960
Time of conc (min)	= 0	Critical depth (in)	= 18.54
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 23.5	Confluence angle (deg)	= 30
Default Q (cfs)	= 23.5	Natural ground elev (ft)	= 33.5
Line capac. (cfs)	= 66.7	Line storage (cuft)	= 144

LINE 3 / Q = 23.5 / HT = 36 / WID = 36 / N = .013 / L = 55 / JLC = .05

SUMP 1-SUMP 3 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	30.81	21.75	29.00	5.17	31.23	35.06	1.5	4.55
UPSTRM	31.13	18.62	29.55	6.37	31.76	35.98	1.29	3.69

Drainage area (ac)	= 0	Slope of invert (%)	= 1.000
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.917
Time of conc (min)	= 0	Critical depth (in)	= 18.54
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 23.5	Confluence angle (deg)	= 45
Default Q (cfs)	= 23.5	Natural ground elev (ft)	= 33.84
Line capac. (cfs)	= 66.7	Line storage (cuft)	= 226
