ABQ WEST

BULK LAND DRAINAGE STUDY

DRB # 95-440
ZONE ATLAS PAGE N-8
T9N, R2E, SECTION 5

MARCH 7, 1996

4/2/96

PREPARED BY
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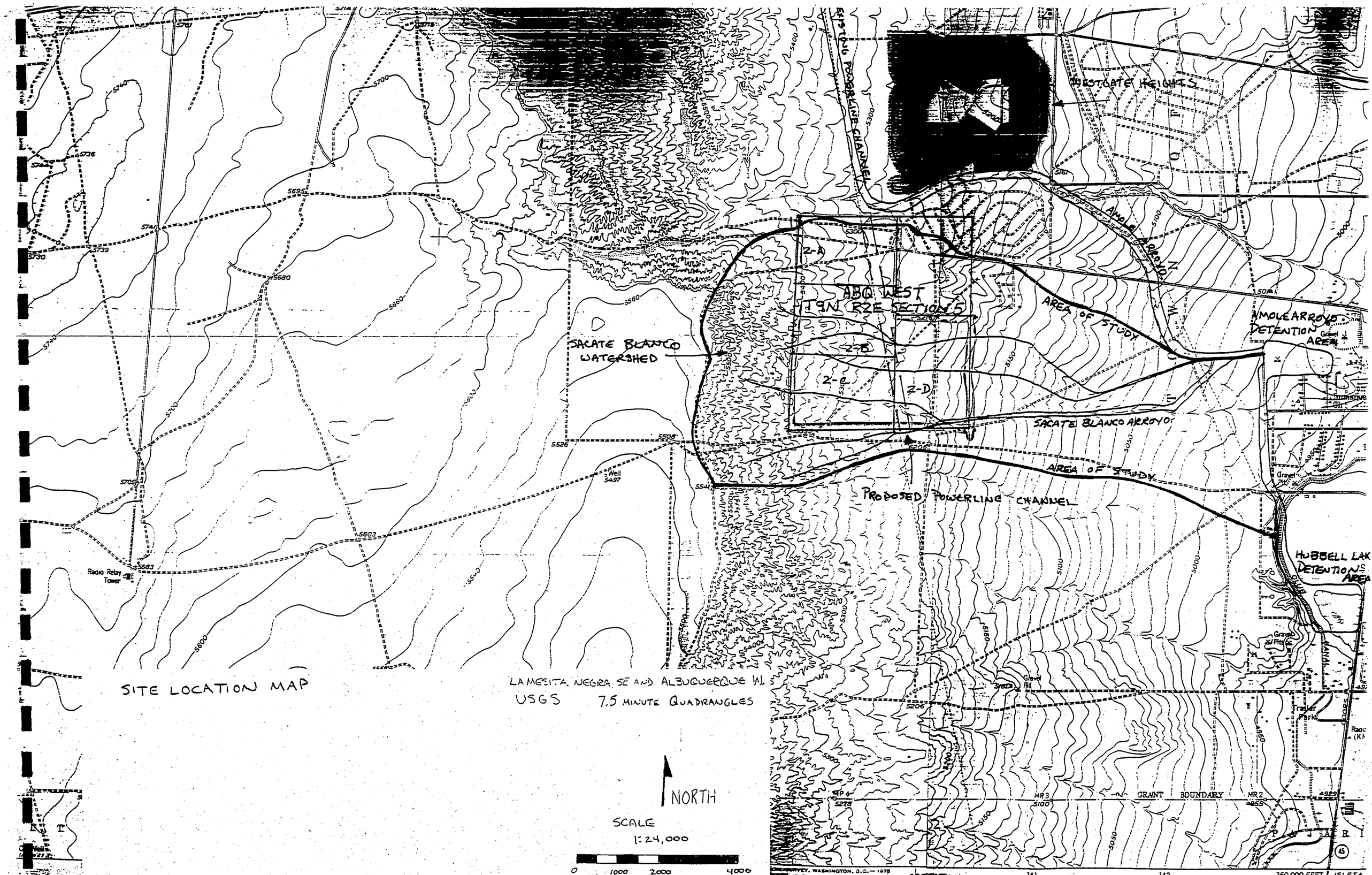


SITE LOCATION MAP

LAMESITA NEGRA SE AND ALBUQUERQUE W.
USGS 7.5 MINUTE QUADRANGLES

NATIONAL FLOOD INSURANCE PROGRAM

FLOODWAY

FLOOD BOUNDARY AND FLOODWAY MAP

CITY OF

ALBUQUERQUE, NEW MEXICO

BERNALILLO COUNTY

PANEL 38 OF 50

KEY TO MAP

500-Year Flood Boundary
100-Year Flood Boundary
FLOODWAY FRINGE
FLOODWAY
100-Year Flood Boundary
500-Year Flood Boundary
Approximate 100-Year Flood Boundary
Cross Section Line (A — A)
Elevation Reference Mark RM7 ×
River Mile • M1.5

SCALE 1"=500'
500 0 500

LEGEND

INDEX CONTOUR -4350-
INTERMEDIATE CONTOUR
DEPRESSION CONTOUR
SPOT ELEVATION x 43.5
HORIZONTAL CONTROL POINT △
VERTICAL CONTROL POINT ⊙
HORIZONTAL – VERTICAL CONTROL POINT ⊿
PHOTOCENTER
MATCH LINE TO ADJOINING MAPS

LIMIT OF DETAILED STUDY

Site Description

In accordance with the City of Albuquerque drainage requirements, a bulk land hydrology study has been completed for Tracts 2-A, 2-B, 2-C and 2-D of the Lands of Rio Bravo Partners, Atlas Page N-8, T9N, R2E Section 5, DRB # 95-440. This property will be referred to as ABQ WEST for this study. The property covers 420.5158 acres primarily located in the Sacate Blanco Watershed. The soil at the site is predominantly Bluepoint loamy fine sand and Bluepoint-Kokan association, hilly; the site slopes 2-3% to the east.

Discussion

The runoff from the area south of I-40 and west of Coors Boulevard is collected into two detention areas, the Amole Arroyo Detention area and the Hubbell Lake Detention Area. AMAFCA is concerned the capacity of these two detention areas may be insufficient if the area is developed. Consequently, the area is being studied in detail by Leedshill Herkenhoff for AMAFCA. The study is to be completed in 12-18 months and will determine the feasibility of expanding one or both of the detention areas while outlining a plan for the area. Following a series of discussions with Kurt Browning of AMAFCA and Fred Aguirre of the City of Albuquerque, City Hydrology, it was determined that two easements as outlined in Diagram 2 would be sufficient to control the developed runoff from Tracts 2-A, 2-B, 2-C and 2-D of ABQ WEST and the runoff from the upstream areas. These easements would allow runoff for most of ABQ WEST to be routed to either detention area in the future; this flexibility can be utilized when Leedshill Herkenhoff completes their study. As development occurs on the individual tracts and drainage improvements are completed to accomodate the developed runoff, the easements for the individual arroyos may be vacated leaving only the proposed easements for ABQ WEST as outlined in this study. This report addresses the easements and channel improvements required for ABQ WEST, however additional easements will need to be granted on adjacent properties to connect ABQ WEST to the existing drainage facilities.

Hydrology

This study routes all runoff from ABQ WEST to the Amole Arroyo Detention Area. Runoff is routed through a proposed Powerline Channel and Sacate Blanco Channel. The runoff from the eastern portion of Tract 2-A will not naturally flow to the Powerline Channel because of the existing topography. As part of the development of the area, the runoff from the eastern portion of Tract 2-A can be ponded or routed through the easement for the future extension of Gibson Boulevard. The existing drainage easements for ABQ WEST are shown on the Sketch Plat. The required easements and channel locations to complete this alternative plan are shown on the Topography and Easments for Channel Improvements Map and Diagram 2. A second alternative for ABQ WEST is to lengthen the Powerline Channel to an intersection with an

arroyo in the Borrega Watershed to the south. This alternative would route a large portion of the runoff from the Sacate Blanco Watershed directly to the Hubbell Lake Detention Area. The easement to maintain this alternative is the extension of the Powerline Channel easement to the south boundary of ABQ WEST.

Computational Procedures

Hydrologic computations were performed by the AHYMO Computer Program developed by AMAFCA (January 1994 Version). Hydrology is based on the 100 year 24 hour storm. ABQ WEST and all the surrounding area was modeled as single family residential with a density of four lots per acre. Time of concentration and time to peak was calculated for each sub basin, a summary is Appendix C. The sub-basins are outlined on Diagram 1.

Pre-Developed Conditions

Runoff flows east through a series of arroyos, including the Sacate Blanco Arroyo, to the Amole Arroyo Detention Area. Runoff from a portion of the watershed flows to the Hubbell Lake Diversion Channel and into the Hubbell Lake Detention Area. Input and output AHYMO data for Pre-Development runoff is in Appendix B. A Pre-Development runoff summary is in Appendix A.

Channel Improvements

To reduce the possibility of flooding on adjacent properties, channel improvements for the Sacate Blanco Arroyo are proposed in conjunction with a Powerline Channel. This method of controlling runoff resembles the improvements completed in the Amole Watershed to the north. The input and output AHYMO data for the proposed channel improvements is in Appendix B and a runoff summary is in Appendix A.

Powerline Channel

The Powerline Channel would resemble the existing Powerline Channel to the north, it would be designed parallel to contours at the base of the alluvial fan and be concrete lined when the area is fully developed. The channel would vary in width from 50 to 65 feet with 3:1 side slopes and a trapezoidal cross section. A drainage easement of 150 feet directly to the east of the existing 200 foot electric easement would be required. If the easements for the Powerline Channel were extended to the southern property boundary of ABQ WEST, as shown on Diagram 2, the flexibility to route runoff directly to the Hubbell Lake Detention Area through the Borrega Watershed would be maintained. The extension of the Powerline Channel to the ABQ WEST south boundary would also allow the flexibility to route future runoff from the Borrega Watershed to the Sacate Blanco Channel and into the Amole Arroyo Detention Area.

Sacate Blanco Arroyo

AMAFCA was granted a drainage easement across a portion of the Salazar-Davis Tracts,

T9N, R2E, Section 4, Atlas Page N-9. The channel in this easement has a bottom width of 30 feet with 4:1 interior slopes and 3:1 exterior slopes. This study suggests a 150 foot drainage easement to extend from a Powerline Channel to the existing Sacate Blanco Channel on the Salazar-Davis Tract along the present Sacate Blanco Arroyo. The required easement for the Sacate Blanco Channel across ABQ WEST is shown on the Topography and Easements for Channel Improvements Map and Diagram 2. The easement across a portion of the Salazar Davis Tract for the Sacate Blanco Channel was granted to AMAFCA when the Salazar Davis Plat was completed in May 1986, the remaining easements to complete the Sacate Blanco Arroyo Channel across the Salazar Davis Tract can be granted when further development occurs in the area. These easements are outlined on Diagram 2.

Channel Analysis

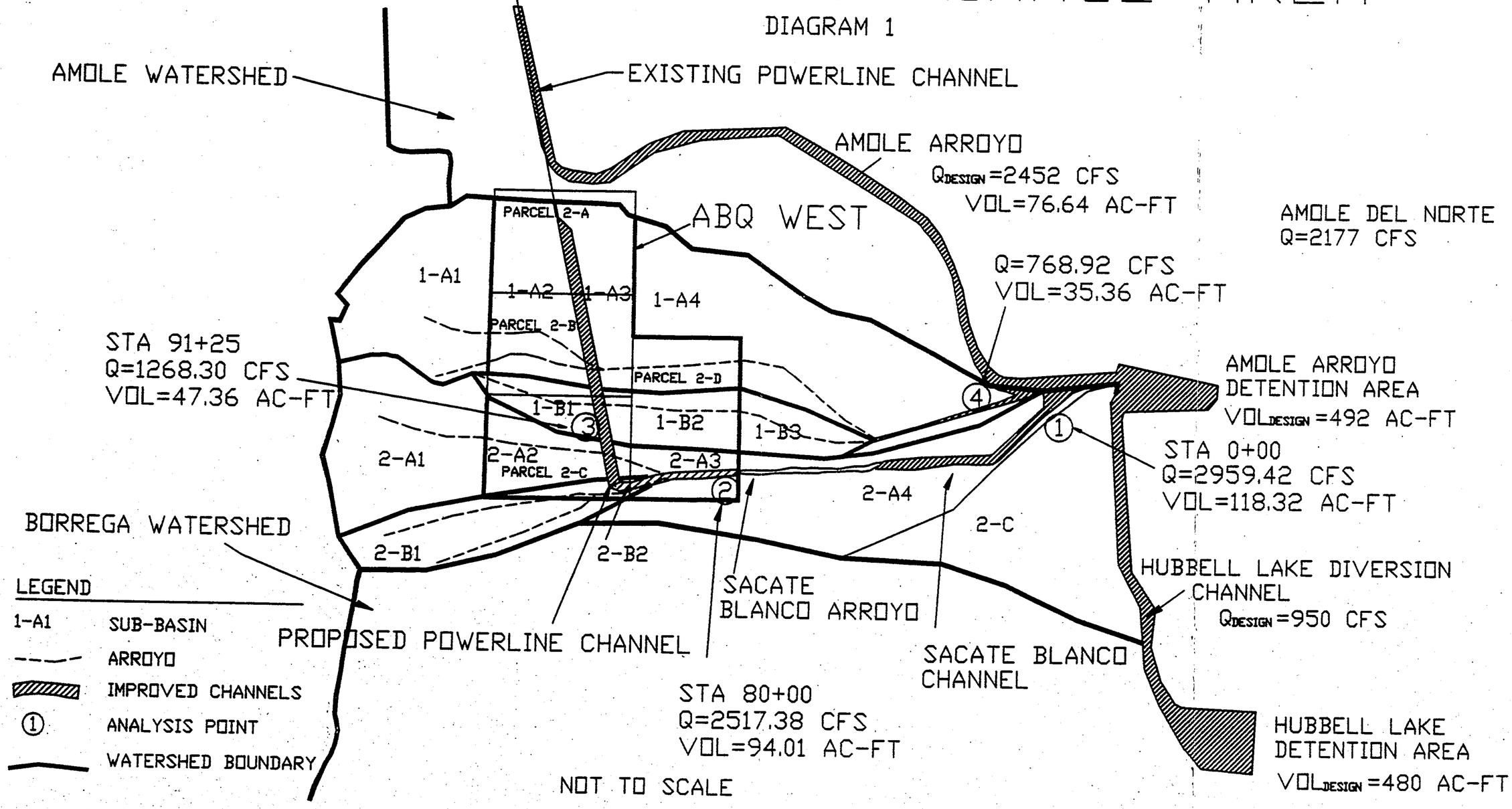
The proposed channel improvements were modeled with the Water Surface Profiling Software by Eagle Point. Design flows from AHYMO were used at Analysis Points 1, 2 and 3. The channels were assumed to be concrete-lined and a mannings value of n=0.015 was used. A Channel hydraulics summary table is in Appendix A, and an output summary is in Appendix C.

Conclusion

This drainage study outlines one alternative for routing runoff to the existing Amole Arroyo Detention Area. The required drainage easements to complete this alternative are shown on the Topography and Easements for Channel Improvements Map and Diagram 2. Other options for controlling the runoff in this area exist. These options should be considered, following the completion of the regional Hydrology Study.

SACATE BLANCO DRAINAGE AREA

DIAGRAM 1

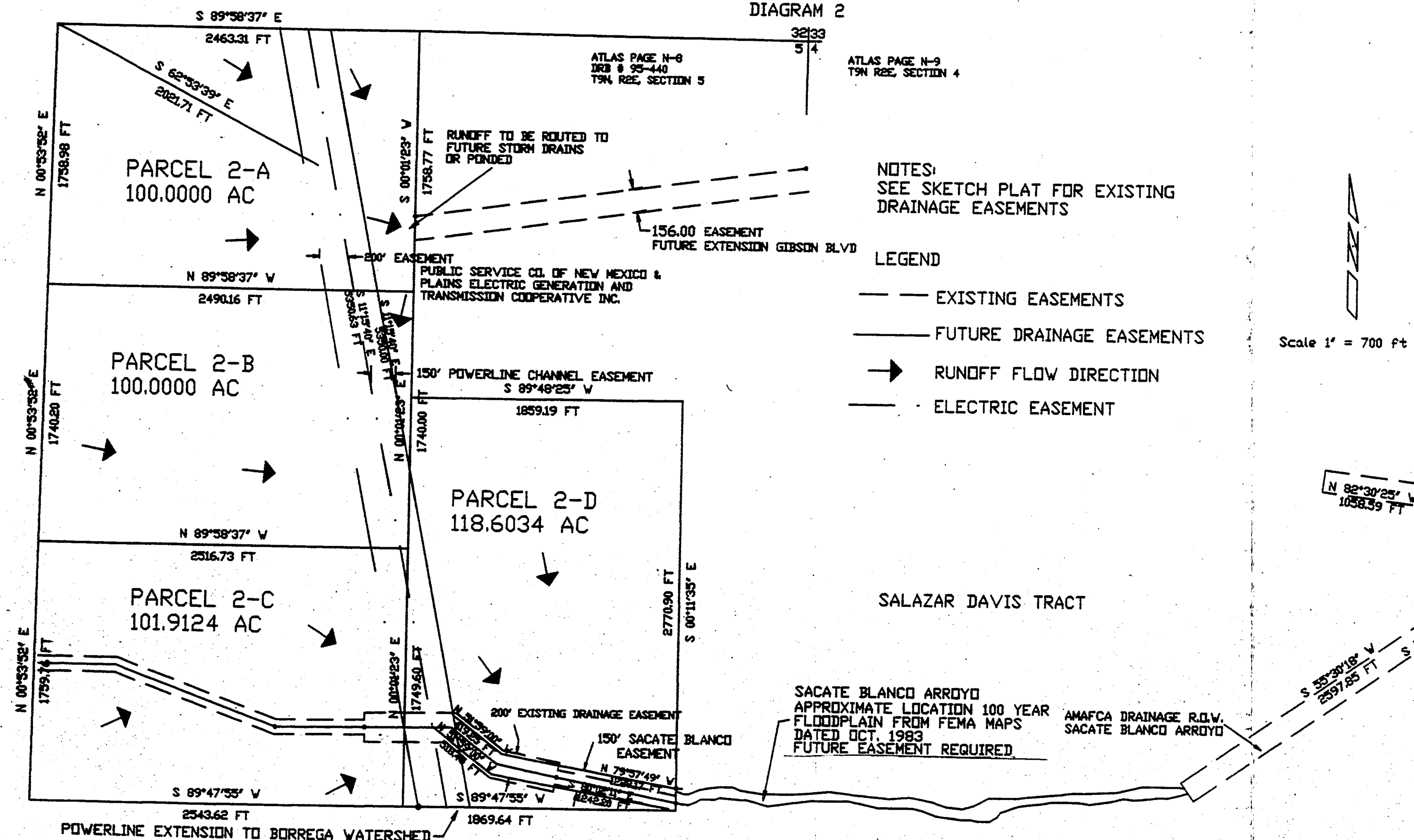


NOT TO SCALE

NOTE : ALL VOLUMES AND FLOWS ARE BASED ON THE 100 YEAR 24 HOUR STORM

PROPOSED EASEMENTS FOR CHANNEL IMPROVEMENTS

DIAGRAM 2



NOTES:
SEE SKETCH PLAT FOR EXISTING DRAINAGE EASEMENTS

LEGEND

- EXISTING EASEMENTS
- FUTURE DRAINAGE EASEMENTS
- RUNOFF FLOW DIRECTION
- ELECTRIC EASEMENT

N

Scale 1" = 700 ft

4|3
9|10

APPENDIX A
PRE-DEVELOPED CONDITIONS

SUB-BASIN	AREA	Q100	VOLUME
1-A	0.9608	916.75	22.51
1-B	0.1902	169.03	4.46
2-A	0.6924	660.66	16.22
2-B	0.1449	125.63	3.39
2-C	0.3272	312.2	7.67

CHANNEL IMPROVEMENTS

SUB BASIN	LAND TYPE	AREA SQ. MI.	Q100	VOLUME
1-A1	B=29.0 C=29.0 D=42.0	0.23	479.34	17.8849
1-A2	B=29.0 C=29.0 D=42.0	0.154	320.59	11.9752
1-A3	B=29.0 C=29.0 D=42.0	0.173	360.24	13.4526
1-A4	B=29.0 C=29.0 D=42.0	0.399	652.47	31.0059
1-B1	B=29.0 C=29.0 D=42.0	0.052	108.14	4.0436
1-B2	B=29.0 C=29.0 D=42.0	0.082	170.56	6.3765
1-B3	B=29.0 C=29.0 D=42.0	0.056	116.45	4.3547
2-A1	B=29.0 C=29.0 D=42.0	0.236	491.89	18.3514
2-A2	B=29.0 C=29.0 D=42.0	0.08	166.4	6.2209
2-A3	B=29.0 C=29.0 D=42.0	0.064	133.09	4.9768
2-A4	B=29.0 C=29.0 D=42.0	0.313	442.04	24.3106
2-B1	B=29.0 C=29.0 D=42.0	0.12	249.7	9.3314
2-B2	B=29.0 C=29.0 D=42.0	0.018	37.44	1.3997
2-C	B=29.0 C=29.0 D=42.0	0.3272	552.99	25.4286

SACATE BLANCO ARROYO AND POWERLINE CHANNEL

ANALYSIS POINT	REACH			FLOW	VELOCITY	CHANNEL	CHANNEL BOTTOM	FREEBOARD	
	FM STA	TO STA	Q100	DEPTH (FT)	(FPS)	DEPTH (FT)	WIDTH (FT)	(FT)	SLOPE (%)
POINT 1	0+00	80+00	2959.42	3.78	10.26	7	65	3.22	2.62
POINT 2	80+00	92+50	2517.38	3.72	10.22	7	55	3.28	2.62
POINT 3	92+50	620+00	1268.3	2.58	8.53	7	50	4.42	0.8

APPENDIX B
AHYMO INPUT AND OUTPUT
100 YEAR 24 HOUR STORM

```
*                    BULK LAND DRAINAGE STUDY
*                    SACATE BLANCO WATERSHED
*                        PRE-DEVELOPMENT
*                   THURSDAY, DECEMBER 7, 1995
*                    100 YEAR, 24 HOUR STORM
START               TIME=0.0 HR  PUNCH CODE=0
RAINFALL            TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.87 IN
                    RAIN SIX=2.20 IN  RAIN DAY=2.66 IN  DT=0.03333 HRS
*S                  SUB-BASIN 1-A (UNDEVELOPED RANGE LAND)
COMPUTE NM HYD      ID=1  HYD NO=1-A  DA=0.9608 SQ MI
                    PER A=100.0  PER B=0.0  PER C=0.0  PER D=0.0
                    TP=-0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=1  CODE=20
*S                  SUB-BASIN 1-B (UNDEVELOPED RANGE LAND)
COMPUTE NM HYD      ID=2  HYD NO=1-B  DA=0.1902 SQ MI
                    PER A=100.0  PER B=0.0  PER C=0.0  PER D=0.0
                    TP=-0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=2  CODE=20
*S                  SUB-BASINS 1-A AND 1-B COMBINED FLOWS
ADD HYD             ID=1  HYD NO=1-AB  ID I=1  ID II=2
PRINT HYD           ID=1  CODE=20
*S                  SUB-BASIN 2-A (UNDEVELOPED RANGE LAND)
COMPUTE NM HYD      ID=3  HYD NO=2-A  DA=0.6924 SQ MI
                    PER A=100.0  PER B=0.0  PER C=0.0  PER D=0.0
                    TP=-0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=3  CODE=20
*S                  SUB-BASIN 2-B (UNDEVELOPED RANGE LAND)
COMPUTE NM HYD      ID=4  HYD NO=2-B  DA=0.1449 SQ MI
                    PER A=100.0  PER B=0.0  PER C=0.0  PER D=0.0
                    TP=-0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=4  HYD NO=2-B
*S                  SUB-BASINS 2-A AND 2-B COMBINED FLOWS
ADD HYD             ID=4  HYD NO=2-AB  ID I=3  ID II=4
PRINT HYD           ID=4  CODE=20
*S                  SUB-BASIN 2-C (UNDEVELOPED RANGE LAND)
COMPUTE NM HYD      ID=5  HYD NO=2-C  DA=0.3272 SQ MI
                    PER A=100.0  PER B=0.0  PER C=0.0  PER D=0.0
                    TP=-0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=5  HYD NO=2-C
FINISH
```

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 12/07/1995
         START TIME (HR:MIN:SEC) = 13:27:26      USER NO.= B_JOHNSN.S94
         INPUT FILE = 951032.DAT

*                    BULK LAND DRAINAGE STUDY
*                    SACATE BLANCO WATERSHED
*                        PRE-DEVELOPMENT
*                   THURSDAY, DECEMBER 7, 1995
*                    100 YEAR, 24 HOUR STORM
START              TIME=0.0 HR  PUNCH CODE=0
RAINFALL           TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.87 IN
                   RAIN SIX=2.20 IN  RAIN DAY=2.66 IN  DT=0.03333 HRS

                COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                DT =     .033330 HOURS        END TIME =     19.964670 HOURS
                   .0000   .0016   .0033   .0050   .0067   .0085   .0103
                   .0122   .0141   .0160   .0180   .0201   .0222   .0243
                   .0266   .0289   .0312   .0337   .0362   .0388   .0415
                   .0443   .0472   .0502   .0534   .0567   .0601   .0637
                   .0675   .0715   .0758   .0809   .0865   .0924   .1050
                   .1334   .1771   .2398   .3254   .4379   .5814   .7600
                   .9780  1.1804  1.2649  1.3363  1.3997  1.4575  1.5106
                 1.5600  1.6061  1.6493  1.6900  1.7284  1.7646  1.7989
                 1.8314  1.8623  1.8915  1.9193  1.9456  1.9518  1.9576
                 1.9630  1.9682  1.9732  1.9780  1.9825  1.9869  1.9912
                 1.9953  1.9993  2.0031  2.0068  2.0104  2.0140  2.0174
                 2.0207  2.0240  2.0272  2.0303  2.0333  2.0363  2.0392
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                 2.4836  2.4844  2.4852  2.4860  2.4868  2.4876  2.4884
                 2.4892  2.4899  2.4907  2.4915  2.4923  2.4931  2.4939
                 2.4946  2.4954  2.4962  2.4970  2.4978  2.4985  2.4993
                 2.5001  2.5008  2.5016  2.5024  2.5032  2.5039  2.5047
                 2.5055  2.5062  2.5070  2.5078  2.5085  2.5093  2.5100
                 2.5108  2.5116  2.5123  2.5131  2.5138  2.5146  2.5153
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2.5368	2.5375	2.5382	2.5390	2.5397	2.5404	2.5411
2.5418	2.5426	2.5433	2.5440	2.5447	2.5454	2.5462
2.5469	2.5476	2.5483	2.5490	2.5497	2.5504	2.5511
2.5518	2.5526	2.5533	2.5540	2.5547	2.5554	2.5561
2.5568	2.5575	2.5582	2.5589	2.5596	2.5603	2.5610
2.5617	2.5624	2.5631	2.5638	2.5645	2.5652	2.5659
2.5665	2.5672	2.5679	2.5686	2.5693	2.5700	2.5707
2.5714	2.5721	2.5727	2.5734	2.5741	2.5748	2.5755
2.5761	2.5768	2.5775	2.5782	2.5789	2.5795	2.5802
2.5809	2.5816	2.5822	2.5829	2.5836		

```
*S                      SUB-BASIN 1-A (UNDEVELOPED RANGE LAND)
COMPUTE NM HYD          ID=1  HYD NO=1-A  DA=0.9608 SQ MI
                        PER A=100.0  PER B=0.0  PER C=0.0  PER D=0.0
                        TP=-0.1333 HR  MASS RAIN=-1

    K =   .133772HR    TP =   .133300HR    K/TP RATIO =  1.003541     SHAPE CONSTANT, N =  3.517728
    UNIT PEAK =   2318.2    CFS   UNIT VOLUME =    1.000        B =   321.62      P60 = 1.8700
    AREA =      .960800 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD               ID=1  CODE=20

                                    HYDROGRAPH FROM AREA 1-A

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS
     .000       .0          1.333        .0          2.666      13.2         4.000        .5         5.333
     .667       .0          2.000       69.8          3.333       2.5         4.666        .1

    RUNOFF VOLUME =      .43925 INCHES      =      22.5083 ACRE-FEET
    PEAK DISCHARGE RATE =     916.75 CFS  AT   1.533 HOURS   BASIN AREA =   .9608 SQ. MI.


*S                      SUB-BASIN 1-B (UNDEVELOPED RANGE LAND)
COMPUTE NM HYD          ID=2  HYD NO=1-B  DA=0.1902 SQ MI
                        PER A=100.0  PER B=0.0  PER C=0.0  PER D=0.0
                        TP=-0.1333 HR  MASS RAIN=-1

    K =   .148405HR    TP =   .133300HR    K/TP RATIO =  1.113315     SHAPE CONSTANT, N =  3.176634
    UNIT PEAK =   422.24    CFS   UNIT VOLUME =    1.000        B =   295.92      P60 = 1.8700
    AREA =      .190200 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD               ID=2  CODE=20

                                    HYDROGRAPH FROM AREA 1-B

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS
     .000       .0          1.333        .0          2.666       3.2         4.000        .2         5.333
     .667       .0          2.000       14.4          3.333        .7         4.666        .0

    RUNOFF VOLUME =      .43925 INCHES      =      4.4557 ACRE-FEET
    PEAK DISCHARGE RATE =     169.03 CFS  AT   1.533 HOURS   BASIN AREA =   .1902 SQ. MI.


*S                                  SUB-BASINS 1-A AND 1-B COMBINED FLOWS
ADD HYD                 ID=1  HYD NO=1-AB  ID I=1  ID II=2
PRINT HYD               ID=1  CODE=20

                                    HYDROGRAPH FROM AREA 1-AB

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS
     .000       .0          1.333        .0          2.666      16.5         4.000        .6         5.333
     .667       .0          2.000       84.2          3.333       3.2         4.666        .1

    RUNOFF VOLUME =      .43925 INCHES      =      26.9640 ACRE-FEET
    PEAK DISCHARGE RATE =    1085.78 CFS  AT   1.533 HOURS   BASIN AREA =  1.1510 SQ. MI.


*S                      SUB-BASIN 2-A (UNDEVELOPED RANGE LAND)
COMPUTE NM HYD          ID=3  HYD NO=2-A  DA=0.6924 SQ MI
                        PER A=100.0  PER B=0.0  PER C=0.0  PER D=0.0
                        TP=-0.1333 HR  MASS RAIN=-1

    K =   .133772HR    TP =   .133300HR    K/TP RATIO =  1.003541     SHAPE CONSTANT, N =  3.517728
    UNIT PEAK =   1670.6    CFS   UNIT VOLUME =    1.000        B =   321.62      P60 = 1.8700
    AREA =      .692400 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD               ID=3  CODE=20
```

HYDROGRAPH FROM AREA 2-A

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	1.333	.0	2.666	9.5	4.000	.3	5.333
.667	.0	2.000	50.3	3.333	1.8	4.666	.1	

RUNOFF VOLUME = .43925 INCHES = 16.2206 ACRE-FEET
PEAK DISCHARGE RATE = 660.66 CFS AT 1.533 HOURS BASIN AREA = .6924 SQ. MI.

```
*S                  SUB-BASIN 2-B (UNDEVELOPED RANGE LAND)
COMPUTE NM HYD      ID=4  HYD NO=2-B  DA=0.1449 SQ MI
                    PER A=100.0  PER B=0.0  PER C=0.0  PER D=0.0
                    TP=-0.1333 HR  MASS RAIN=-1
```

K = .153825HR TP = .133300HR K/TP RATIO = 1.153975 SHAPE CONSTANT, N = 3.070564
UNIT PEAK = 312.55 CFS UNIT VOLUME = .9997 B = 287.53 P60 = 1.8700
AREA = .144900 SQ MI IA = .65000 INCHES INF = 1.67000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

```
PRINT HYD           ID=4  HYD NO=2-B
```

HYDROGRAPH FROM AREA 2-B

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	1.333	.0	2.666	2.6	4.000	.1	5.333
.667	.0	2.000	11.1	3.333	.6	4.666	.0	

RUNOFF VOLUME = .43925 INCHES = 3.3945 ACRE-FEET
PEAK DISCHARGE RATE = 125.63 CFS AT 1.533 HOURS BASIN AREA = .1449 SQ. MI.

```
*S                  SUB-BASINS 2-A AND 2-B COMBINED FLOWS
ADD HYD             ID=4  HYD NO=2-AB  ID I=3  ID II=4
PRINT HYD           ID=4  CODE=20
```

HYDROGRAPH FROM AREA 2-AB

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	1.333	.0	2.666	12.1	4.000	.5	5.333
.667	.0	2.000	61.4	3.333	2.4	4.666	.1	

RUNOFF VOLUME = .43925 INCHES = 19.6151 ACRE-FEET
PEAK DISCHARGE RATE = 786.29 CFS AT 1.533 HOURS BASIN AREA = .8373 SQ. MI.

```
*S                  SUB-BASIN 2-C (UNDEVELOPED RANGE LAND)
COMPUTE NM HYD      ID=5  HYD NO=2-C  DA=0.3272 SQ MI
                    PER A=100.0  PER B=0.0  PER C=0.0  PER D=0.0
                    TP=-0.1333 HR  MASS RAIN=-1
```

K = .133772HR TP = .133300HR K/TP RATIO = 1.003541 SHAPE CONSTANT, N = 3.517728
UNIT PEAK = 789.45 CFS UNIT VOLUME = 1.000 B = 321.62 P60 = 1.8700
AREA = .327200 SQ MI IA = .65000 INCHES INF = 1.67000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

```
PRINT HYD           ID=5  HYD NO=2-C
```

HYDROGRAPH FROM AREA 2-C

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	1.333	.0	2.666	4.5	4.000	.2	5.333
.667	.0	2.000	23.8	3.333	.9	4.666	.0	

RUNOFF VOLUME = .43925 INCHES = 7.6652 ACRE-FEET
PEAK DISCHARGE RATE = 312.20 CFS AT 1.533 HOURS BASIN AREA = .3272 SQ. MI.

```
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 13:27:39
```

```
*                    BULK LAND DRAINAGE STUDY
*                    SACATE BLANCO WATERSHED
*                    ALBUQUERQUE, NEW MEXICO
*                  CONSTRUCTED POWERLINE CHANNEL
*                         MARCH 7, 1996
*                      100 YEAR, 24 HOUR STORM
START               TIME=0.0 HR  PUNCH CODE=0
RAINFALL            TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.87 IN
                    RAIN SIX=2.20 IN  RAIN DAY=2.66 IN  DT=0.03333 HRS
*S                  SUB-BASIN 1-A1 (UNDEVELOPED RANGE LAND)
COMPUTE NM HYD      ID=1  HYD NO=1-A1  DA=0.230 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                    TP=-0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=1  CODE=20
*S                  SUB-BASIN 1-A2 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD      ID=2  HYD NO=1-A2  DA=0.154 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                    TP=-0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=2  CODE=20
*S                  SUB-BASIN 1-A3 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD      ID=3  HYD NO=1-A3  DA=0.173 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                    TP=-0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=3  CODE=20
*S                  SUB-BASIN 1-A4 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD      ID=4  HYD NO=1-A4  DA=0.399 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                    TP=-0.2022 HR  MASS RAIN=-1
PRINT HYD           ID=4  CODE=20
*S                  SUB-BASIN 1-B1 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD      ID=5  HYD NO=1-B1  DA=0.052 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                    TP=-0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=5  CODE=20
*S                  SUB-BASIN 1-B2 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD      ID=6  HYD NO=1-B2  DA=0.082 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                    TP=-0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=6  CODE=20
*S                  SUB-BASIN 1-B3 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD      ID=7  HYD NO=1-B3  DA=0.056 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                    TP=-0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=7  CODE=20
*S                  SUB-BASIN 2-A1 (UNDEVELOPED RANGE LAND)
COMPUTE NM HYD      ID=8  HYD NO=2-A1  DA=0.236 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                    TP=-0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=8  CODE=20
*S                  SUB-BASIN 2-A2 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD      ID=9  HYD NO=2-A2  DA=0.080 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                    TP=-0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=9  CODE=20
*S                  SUB-BASIN 2-A3 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD      ID=10  HYD NO=2-A3  DA=0.064 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                    TP=-0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=10  CODE=20
*S                  SUB-BASIN 2-A4 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD      ID=11  HYD NO=2-A4  DA=0.313 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
```

```
*S
COMPUTE NM HYD      SUB-BASIN 2-B1 (UNDEVELOPED RANGE LAND)
                    ID=12  HYD NO=2-B1  DA=0.120 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                    TP=-0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=12  HYD NO=2-B1
*S                  SUB-BASIN 2-B2 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD      ID=13  HYD NO=2-B2  DA=0.018 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                    TP=-0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=13  CODE=20
*S                  SUB-BASIN 2-C (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD      ID=14  HYD NO=2-C  DA=0.3272 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                    TP=-0.1930 HR  MASS RAIN=-1
PRINT HYD           ID=14  HYD NO=2-C
*S                  SUB-BASIN 1-A12 COMBINED FLOWS
ADD HYD             ID=1  HYD NO=1-A12  ID I=1  ID II=2
PRINT HYD           ID=1  CODE=20
*S                  SUB-BASIN 1-A123 COMBINED FLOWS
ADD HYD             ID=1  HYD NO=1-A123  ID I=1  ID II=3
PRINT HYD           ID=1  CODE=20
*S                  SUB-BASIN 1-A12B1 ANALYSIS POINT 3
ADD HYD             ID=1  HYD NO=1-A12B1  ID I=1  ID II=5
PRINT HYD           ID=1  CODE=20
*S                  SUB-BASIN 2-A12 COMBINED FLOWS
ADD HYD             ID=8  HYD NO=2-A12  ID I=8  ID II=9
PRINT HYD           ID=8  CODE=20
*S                  SUB-BASIN 2-B12 COMBINED FLOWS
ADD HYD             ID=12  HYD NO=2-B12  ID I=12  ID II=13
PRINT HYD           ID=12  CODE=20
*S                  SUB-BASIN 2-A123 COMBINED FLOWS
ADD HYD             ID=8  HYD NO=2-A123  ID I=8  ID II=10
PRINT HYD           ID=8  CODE=20
*S                  SUB-BASIN 2-AB12 COMBINED FLOWS
ADD HYD             ID=8  HYD NO=2-AB12  ID I=8  ID II=12
PRINT HYD           ID=8  CODE=20
*S                  SUB-BASIN 12-AB12 ANALYSIS POINT 2
ADD HYD             ID=8  HYD NO=12-AB12  ID I=6  ID II=8
PRINT HYD           ID=8  CODE=20
FINISH
```

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 03/07/1996
         START TIME (HR:MIN:SEC) = 16:13:10      USER NO.= B_JOHNSN.894
         INPUT FILE = 951033.DAT

*                    BULK LAND DRAINAGE STUDY
*                    SACATE BLANCO WATERSHED
*                    ALBUQUERQUE, NEW MEXICO
*                  CONSTRUCTED POWERLINE CHANNEL
*                        MARCH 7, 1996
*                     100 YEAR, 24 HOUR STORM
START              TIME=0.0 HR  PUNCH CODE=0
RAINFALL           TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.87 IN
                   RAIN SIX=2.20 IN  RAIN DAY=2.66 IN  DT=0.03333 HRS

                  COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                  DT =     .033330 HOURS        END TIME =     19.964670 HOURS
                     .0000    .0016    .0033    .0050    .0067    .0085    .0103
                     .0122    .0141    .0160    .0180    .0201    .0222    .0243
                     .0266    .0289    .0312    .0337    .0362    .0388    .0415
                     .0443    .0472    .0502    .0534    .0567    .0601    .0637
                     .0675    .0715    .0758    .0809    .0865    .0924    .1050
                     .1334    .1771    .2398    .3254    .4379    .5814    .7600
                     .9780   1.1804   1.2649   1.3363   1.3997   1.4575   1.5106
                    1.5600   1.6061   1.6493   1.6900   1.7284   1.7646   1.7989
                    1.8314   1.8623   1.8915   1.9193   1.9456   1.9518   1.9576
                    1.9630   1.9682   1.9732   1.9780   1.9825   1.9869   1.9912
                    1.9953   1.9993   2.0031   2.0068   2.0104   2.0140   2.0174
                    2.0207   2.0240   2.0272   2.0303   2.0333   2.0363   2.0392
                    2.0420   2.0448   2.0475   2.0502   2.0528   2.0554   2.0580
                    2.0605   2.0629   2.0653   2.0677   2.0700   2.0723   2.0746
                    2.0768   2.0790   2.0812   2.0833   2.0855   2.0875   2.0896
                    2.0916   2.0936   2.0956   2.0976   2.0995   2.1014   2.1033
                    2.1051   2.1070   2.1088   2.1106   2.1124   2.1141   2.1159
                    2.1176   2.1193   2.1210   2.1227   2.1244   2.1260   2.1276
                    2.1292   2.1308   2.1324   2.1340   2.1355   2.1371   2.1386
                    2.1401   2.1416   2.1431   2.1446   2.1460   2.1475   2.1489
                    2.1504   2.1518   2.1532   2.1546   2.1560   2.1573   2.1587
                    2.1600   2.1614   2.1627   2.1640   2.1654   2.1667   2.1680
                    2.1692   2.1705   2.1718   2.1731   2.1743   2.1756   2.1768
                    2.1780   2.1792   2.1804   2.1817   2.1829   2.1840   2.1852
                    2.1864   2.1876   2.1887   2.1899   2.1910   2.1922   2.1933
                    2.1944   2.1956   2.1967   2.1978   2.1989   2.2000   2.2013
                    2.2026   2.2039   2.2052   2.2065   2.2078   2.2091   2.2103
                    2.2116   2.2129   2.2142   2.2155   2.2167   2.2180   2.2193
                    2.2205   2.2218   2.2230   2.2243   2.2255   2.2268   2.2280
                    2.2293   2.2305   2.2318   2.2330   2.2342   2.2354   2.2367
                    2.2379   2.2391   2.2403   2.2415   2.2428   2.2440   2.2452
                    2.2464   2.2476   2.2488   2.2500   2.2512   2.2524   2.2536
                    2.2547   2.2559   2.2571   2.2583   2.2595   2.2606   2.2618
                    2.2630   2.2641   2.2653   2.2665   2.2676   2.2688   2.2699
                    2.2711   2.2722   2.2734   2.2745   2.2757   2.2768   2.2779
                    2.2791   2.2802   2.2813   2.2825   2.2836   2.2847   2.2858
                    2.2870   2.2881   2.2892   2.2903   2.2914   2.2925   2.2936
                    2.2947   2.2958   2.2969   2.2980   2.2991   2.3002   2.3013
                    2.3024   2.3035   2.3046   2.3057   2.3067   2.3078   2.3089
                    2.3100   2.3110   2.3121   2.3132   2.3142   2.3153   2.3164
                    2.3174   2.3185   2.3195   2.3206   2.3216   2.3227   2.3237
                    2.3248   2.3258   2.3269   2.3279   2.3290   2.3300   2.3310
                    2.3321   2.3331   2.3341   2.3352   2.3362   2.3372   2.3382
                    2.3392   2.3403   2.3413   2.3423   2.3433   2.3443   2.3453
                    2.3463   2.3473   2.3483   2.3493   2.3503   2.3513   2.3523
                    2.3533   2.3543   2.3553   2.3563   2.3573   2.3583   2.3593
                    2.3603   2.3612   2.3622   2.3632   2.3642   2.3651   2.3661
                    2.3671   2.3681   2.3690   2.3700   2.3710   2.3719   2.3729
                    2.3738   2.3748   2.3758   2.3767   2.3777   2.3786   2.3796
                    2.3805   2.3815   2.3824   2.3834   2.3843   2.3852   2.3862
                    2.3871   2.3881   2.3890   2.3899   2.3909   2.3918   2.3927
                    2.3936   2.3946   2.3955   2.3964   2.3973   2.3983   2.3992
                    2.4001   2.4010   2.4019   2.4028   2.4038   2.4047   2.4056
                    2.4065   2.4074   2.4083   2.4092   2.4101   2.4110   2.4119
                    2.4128   2.4137   2.4146   2.4155   2.4164   2.4173   2.4181
                    2.4190   2.4199   2.4208   2.4217   2.4226   2.4234   2.4243
                    2.4252   2.4261   2.4270   2.4278   2.4287   2.4296   2.4304
                    2.4313   2.4322   2.4331   2.4339   2.4348   2.4356   2.4365
                    2.4374   2.4382   2.4391   2.4399   2.4408   2.4416   2.4425
                    2.4434   2.4442   2.4450   2.4459   2.4467   2.4476   2.4484
                    2.4493   2.4501   2.4510   2.4518   2.4526   2.4535   2.4543
                    2.4551   2.4560   2.4568   2.4576   2.4585   2.4593   2.4601
                    2.4609   2.4618   2.4626   2.4634   2.4642   2.4651   2.4659
                    2.4667   2.4675   2.4683   2.4691   2.4700   2.4708   2.4716
                    2.4724   2.4732   2.4740   2.4748   2.4756   2.4764   2.4772
                    2.4780   2.4788   2.4796   2.4804   2.4812   2.4820   2.4828
                    2.4836   2.4844   2.4852   2.4860   2.4868   2.4876   2.4884
                    2.4892   2.4899   2.4907   2.4915   2.4923   2.4931   2.4939
                    2.4946   2.4954   2.4962   2.4970   2.4978   2.4985   2.4993
                    2.5001   2.5008   2.5016   2.5024   2.5032   2.5039   2.5047
                    2.5055   2.5062   2.5070   2.5078   2.5085   2.5093   2.5100
```

2.5108	2.5116	2.5123	2.5131	2.5138	2.5146	2.5153
2.5161	2.5168	2.5176	2.5183	2.5191	2.5198	2.5206
2.5213	2.5221	2.5228	2.5236	2.5243	2.5250	2.5258
2.5265	2.5273	2.5280	2.5287	2.5295	2.5302	2.5309
2.5317	2.5324	2.5331	2.5339	2.5346	2.5353	2.5361
2.5368	2.5375	2.5382	2.5390	2.5397	2.5404	2.5411
2.5418	2.5426	2.5433	2.5440	2.5447	2.5454	2.5462
2.5469	2.5476	2.5483	2.5490	2.5497	2.5504	2.5511
2.5518	2.5526	2.5533	2.5540	2.5547	2.5554	2.5561
2.5568	2.5575	2.5582	2.5589	2.5596	2.5603	2.5610
2.5617	2.5624	2.5631	2.5638	2.5645	2.5652	2.5659
2.5665	2.5672	2.5679	2.5686	2.5693	2.5700	2.5707
2.5714	2.5721	2.5727	2.5734	2.5741	2.5748	2.5755
2.5761	2.5768	2.5775	2.5782	2.5789	2.5795	2.5802
2.5809	2.5816	2.5822	2.5829	2.5836		

```
*S                  SUB-BASIN 1-A1 (UNDEVELOPED RANGE LAND)
COMPUTE NM HYD      ID=1  HYD NO=1-A1  DA=0.230 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                    TP=-0.1333 HR  MASS RAIN=-1

    K =   .075490HR    TP =   .133300HR    K/TP RATIO =   .566317     SHAPE CONSTANT, N =  6.767341
    UNIT PEAK =   369.68    CFS   UNIT VOLUME =    .9997       B =   510.12      P60 = 1.8700
    AREA =      .096600 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .113979HR    TP =   .133300HR    K/TP RATIO =   .855055     SHAPE CONSTANT, N =  4.160850
    UNIT PEAK =   366.03    CFS   UNIT VOLUME =    1.000       B =   365.76      P60 = 1.8700
    AREA =      .133400 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=1  CODE=20
```

HYDROGRAPH FROM AREA 1-A1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	1.6	7.999	2.2	11.999	1.7	15.998
.667	.0	4.666	1.5	8.666	2.1	12.665	1.7	16.665
1.333	89.6	5.333	1.7	9.332	2.0	13.332	1.6	17.332
2.000	87.1	5.999	2.0	9.999	1.9	13.999	1.6	17.998
2.666	8.6	6.666	2.3	10.666	1.9	14.665	1.5	18.665
3.333	2.5	7.333	2.3	11.332	1.8	15.332	1.5	19.331

```
    RUNOFF VOLUME =     1.45801 INCHES      =      17.8849 ACRE-FEET
    PEAK DISCHARGE RATE =     479.34 CFS  AT   1.500 HOURS   BASIN AREA =   .2300 SQ. MI.

*S                  SUB-BASIN 1-A2 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD      ID=2  HYD NO=1-A2  DA=0.154 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                    TP=-0.1333 HR  MASS RAIN=-1

    K =   .074201HR    TP =   .133300HR    K/TP RATIO =   .556645     SHAPE CONSTANT, N =  6.917080
    UNIT PEAK =   251.01    CFS   UNIT VOLUME =    .9995       B =   517.31      P60 = 1.8700
    AREA =      .064680 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .115998HR    TP =   .133300HR    K/TP RATIO =   .870204     SHAPE CONSTANT, N =  4.082432
    UNIT PEAK =   241.65    CFS   UNIT VOLUME =    1.000       B =   360.63      P60 = 1.8700
    AREA =      .089320 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=2  CODE=20
```

HYDROGRAPH FROM AREA 1-A2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	1.1	7.999	1.4	11.999	1.2	15.998
.667	.0	4.666	1.0	8.666	1.4	12.665	1.1	16.665
1.333	60.4	5.333	1.1	9.332	1.3	13.332	1.1	17.332
2.000	58.3	5.999	1.3	9.999	1.3	13.999	1.1	17.998
2.666	5.8	6.666	1.6	10.666	1.3	14.665	1.0	18.665
3.333	1.7	7.333	1.5	11.332	1.2	15.332	1.0	19.331

```
    RUNOFF VOLUME =     1.45803 INCHES      =      11.9752 ACRE-FEET
    PEAK DISCHARGE RATE =     320.59 CFS  AT   1.500 HOURS   BASIN AREA =   .1540 SQ. MI.


*S                  SUB-BASIN 1-A3 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD      ID=3  HYD NO=1-A3  DA=0.173 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                    TP=-0.1333 HR  MASS RAIN=-1
```

K = .074523HR TP = .133300HR K/TP RATIO = .559063 SHAPE CONSTANT, N = 6.879020
UNIT PEAK = 280.99 CFS UNIT VOLUME = .9995 B = 515.49 P60 = 1.8700
AREA = .072660 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .115493HR TP = .133300HR K/TP RATIO = .866417 SHAPE CONSTANT, N = 4.101708
UNIT PEAK = 272.41 CFS UNIT VOLUME = 1.000 B = 361.89 P60 = 1.8700
AREA = .100340 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=3 CODE=20

HYDROGRAPH FROM AREA 1-A3

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	1.2	7.999	1.6	11.999	1.3	15.998
.667	.0	4.666	1.2	8.666	1.6	12.665	1.3	16.665
1.333	67.7	5.333	1.3	9.332	1.5	13.332	1.2	17.332
2.000	65.5	5.999	1.5	9.999	1.5	13.999	1.2	17.998
2.666	6.5	6.666	1.8	10.666	1.4	14.665	1.2	18.665
3.333	1.9	7.333	1.7	11.332	1.4	15.332	1.1	19.331

RUNOFF VOLUME = 1.45802 INCHES = 13.4526 ACRE-FEET
PEAK DISCHARGE RATE = 360.24 CFS AT 1.500 HOURS BASIN AREA = .1730 SQ. MI.

*S SUB-BASIN 1-A4 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD ID=4 HYD NO=1-A4 DA=0.399 SQ MI
PER A=0.0 PER B=29.0 PER C=29.0 PER D=42.0
TP=-0.2022 HR MASS RAIN=-1

K = .116632HR TP = .202200HR K/TP RATIO = .576817 SHAPE CONSTANT, N = 6.612116
UNIT PEAK = 416.53 CFS UNIT VOLUME = 1.000 B = 502.58 P60 = 1.8700
AREA = .167580 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .169567HR TP = .202200HR K/TP RATIO = .838611 SHAPE CONSTANT, N = 4.250046
UNIT PEAK = 425.20 CFS UNIT VOLUME = 1.000 B = 371.51 P60 = 1.8700
AREA = .231420 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=4 CODE=20

HYDROGRAPH FROM AREA 1-A4

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	3.8	7.999	3.8	11.999	3.0	15.998
.667	.0	4.666	2.9	8.666	3.6	12.665	2.9	16.665
1.333	64.3	5.333	3.0	9.332	3.5	13.332	2.8	17.332
2.000	188.3	5.999	3.4	9.999	3.4	13.999	2.8	17.998
2.666	28.5	6.666	4.1	10.666	3.3	14.665	2.7	18.665
3.333	8.3	7.333	4.0	11.332	3.1	15.332	2.6	19.331

RUNOFF VOLUME = 1.45705 INCHES = 31.0059 ACRE-FEET
PEAK DISCHARGE RATE = 652.47 CFS AT 1.567 HOURS BASIN AREA = .3990 SQ. MI.

*S SUB-BASIN 1-B1 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD ID=5 HYD NO=1-B1 DA=0.052 SQ MI
PER A=0.0 PER B=29.0 PER C=29.0 PER D=42.0
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 86.225 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 1.8700
AREA = .021840 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118429HR TP = .133300HR K/TP RATIO = .888442 SHAPE CONSTANT, N = 3.992480
UNIT PEAK = 80.246 CFS UNIT VOLUME = 1.000 B = 354.67 P60 = 1.8700
AREA = .030160 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=5 CODE=20

HYDROGRAPH FROM AREA 1-B1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	.4	7.999	.5	11.999	.4	15.998
.667	.0	4.666	.3	8.666	.5	12.665	.4	16.665

1.333	20.5	5.333	.4	9.332	.5	13.332	.4	17.332
2.000	19.7	5.999	.4	9.999	.4	13.999	.4	17.998
2.666	1.9	6.666	.5	10.666	.4	14.665	.3	18.665
3.333	.6	7.333	.5	11.332	.4	15.332	.3	19.331

RUNOFF VOLUME = 1.45805 INCHES = 4.0436 ACRE-FEET
PEAK DISCHARGE RATE = 108.14 CFS AT 1.500 HOURS BASIN AREA = .0520 SQ. MI.

```
*S                    SUB-BASIN 1-B2 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD        ID=6  HYD NO=1-B2  DA=0.082 SQ MI
                      PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                      TP=-0.1333 HR  MASS RAIN=-1
```

K = .072979HR TP = .133300HR K/TP RATIO = .547482 SHAPE CONSTANT, N = 7.065204
UNIT PEAK = 135.47 CFS UNIT VOLUME = .9992 B = 524.34 P60 = 1.8700
AREA = .034440 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .117911HR TP = .133300HR K/TP RATIO = .884555 SHAPE CONSTANT, N = 4.011263
UNIT PEAK = 126.99 CFS UNIT VOLUME = 1.000 B = 355.92 P60 = 1.8700
AREA = .047560 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

```
PRINT HYD             ID=6  CODE=20
```

HYDROGRAPH FROM AREA 1-B2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	.6	7.999	.8	11.999	.6	15.998
.667	.0	4.666	.5	8.666	.7	12.665	.6	16.665
1.333	32.3	5.333	.6	9.332	.7	13.332	.6	17.332
2.000	31.1	5.999	.7	9.999	.7	13.999	.6	17.998
2.666	3.1	6.666	.8	10.666	.7	14.665	.5	18.665
3.333	.9	7.333	.8	11.332	.6	15.332	.5	19.331

RUNOFF VOLUME = 1.45804 INCHES = 6.3765 ACRE-FEET
PEAK DISCHARGE RATE = 170.56 CFS AT 1.500 HOURS BASIN AREA = .0820 SQ. MI.

```
*S                    SUB-BASIN 1-B3 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD        ID=7  HYD NO=1-B3  DA=0.056 SQ MI
                      PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                      TP=-0.1333 HR  MASS RAIN=-1
```

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 92.858 CFS UNIT VOLUME = .9993 B = 526.28 P60 = 1.8700
AREA = .023520 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118429HR TP = .133300HR K/TP RATIO = .888442 SHAPE CONSTANT, N = 3.992480
UNIT PEAK = 86.419 CFS UNIT VOLUME = 1.000 B = 354.67 P60 = 1.8700
AREA = .032480 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

```
PRINT HYD             ID=7  CODE=20
```

HYDROGRAPH FROM AREA 1-B3

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	.4	7.999	.5	11.999	.4	15.998
.667	.0	4.666	.4	8.666	.5	12.665	.4	16.665
1.333	22.1	5.333	.4	9.332	.5	13.332	.4	17.332
2.000	21.2	5.999	.5	9.999	.5	13.999	.4	17.998
2.666	2.1	6.666	.6	10.666	.5	14.665	.4	18.665
3.333	.6	7.333	.6	11.332	.4	15.332	.4	19.331

RUNOFF VOLUME = 1.45805 INCHES = 4.3547 ACRE-FEET
PEAK DISCHARGE RATE = 116.45 CFS AT 1.500 HOURS BASIN AREA = .0560 SQ. MI.

```
*S                    SUB-BASIN 2-A1 (UNDEVELOPED RANGE LAND)
COMPUTE NM HYD        ID=8  HYD NO=2-A1  DA=0.236 SQ MI
                      PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                      TP=-0.1333 HR  MASS RAIN=-1
```

K = .075592HR TP = .133300HR K/TP RATIO = .567081 SHAPE CONSTANT, N = 6.755806
UNIT PEAK = 378.91 CFS UNIT VOLUME = .9997 B = 509.57 P60 = 1.8700
AREA = .099120 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .113819HR TP = .133300HR K/TP RATIO = .853859 SHAPE CONSTANT, N = 4.167200
UNIT PEAK = 376.00 CFS UNIT VOLUME = 1.000 B = 366.17 P60 = 1.8700
AREA = .136880 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=8 CODE=20

HYDROGRAPH FROM AREA 2-A1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	1.7	7.999	2.2	11.999	1.8	15.998
.667	.0	4.666	1.6	8.666	2.1	12.665	1.7	16.665
1.333	91.9	5.333	1.8	9.332	2.1	13.332	1.7	17.332
2.000	89.4	5.999	2.0	9.999	2.0	13.999	1.6	17.998
2.666	8.8	6.666	2.4	10.666	1.9	14.665	1.6	18.665
3.333	2.6	7.333	2.3	11.332	1.9	15.332	1.5	19.331

RUNOFF VOLUME = 1.45801 INCHES = 18.3514 ACRE-FEET
PEAK DISCHARGE RATE = 491.89 CFS AT 1.500 HOURS BASIN AREA = .2360 SQ. MI.

*8 SUB-BASIN 2-A2 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD ID=9 HYD NO=2-A2 DA=0.080 SQ MI
PER A=0.0 PER B=29.0 PER C=29.0 PER D=42.0
TP=-0.1333 HR MASS RAIN=-1

K = .072945HR TP = .133300HR K/TP RATIO = .547227 SHAPE CONSTANT, N = 7.069418
UNIT PEAK = 132.22 CFS UNIT VOLUME = .9992 B = 524.53 P60 = 1.8700
AREA = .033600 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .117964HR TP = .133300HR K/TP RATIO = .884954 SHAPE CONSTANT, N = 4.009322
UNIT PEAK = 123.85 CFS UNIT VOLUME = 1.000 B = 355.79 P60 = 1.8700
AREA = .046400 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=9 CODE=20

HYDROGRAPH FROM AREA 2-A2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	.6	7.999	.8	11.999	.6	15.998
.667	.0	4.666	.5	8.666	.7	12.665	.6	16.665
1.333	31.6	5.333	.6	9.332	.7	13.332	.6	17.332
2.000	30.3	5.999	.7	9.999	.7	13.999	.6	17.998
2.666	3.0	6.666	.8	10.666	.7	14.665	.5	18.665
3.333	.9	7.333	.8	11.332	.6	15.332	.5	19.331

RUNOFF VOLUME = 1.45804 INCHES = 6.2209 ACRE-FEET
PEAK DISCHARGE RATE = 166.40 CFS AT 1.500 HOURS BASIN AREA = .0800 SQ. MI.

*8 SUB-BASIN 2-A3 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD ID=10 HYD NO=2-A3 DA=0.064 SQ MI
PER A=0.0 PER B=29.0 PER C=29.0 PER D=42.0
TP=-0.1333 HR MASS RAIN=-1

K = .072674HR TP = .133300HR K/TP RATIO = .545191 SHAPE CONSTANT, N = 7.103237
UNIT PEAK = 106.09 CFS UNIT VOLUME = .9993 B = 526.13 P60 = 1.8700
AREA = .026880 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118390HR TP = .133300HR K/TP RATIO = .888143 SHAPE CONSTANT, N = 3.993920
UNIT PEAK = 98.791 CFS UNIT VOLUME = 1.000 B = 354.76 P60 = 1.8700
AREA = .037120 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=10 CODE=20

HYDROGRAPH FROM AREA 2-A3

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	.5	7.999	.6	11.999	.5	15.998
.667	.0	4.666	.4	8.666	.6	12.665	.5	16.665
1.333	25.3	5.333	.5	9.332	.6	13.332	.5	17.332
2.000	24.3	5.999	.6	9.999	.5	13.999	.4	17.998
2.666	2.4	6.666	.7	10.666	.5	14.665	.4	18.665
3.333	.7	7.333	.6	11.332	.5	15.332	.4	19.331

RUNOFF VOLUME = 1.45805 INCHES = 4.9768 ACRE-FEET

PEAK DISCHARGE RATE = 133.09 CFS AT 1.500 HOURS BASIN AREA = .0640 SQ. MI.

```
*S                    SUB-BASIN 2-A4 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD        ID=11  HYD NO=2-A4  DA=0.313 SQ MI
                      PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                      TP=-0.2560 HR  MASS RAIN=-1

    K =   .147665HR    TP =   .256000HR    K/TP RATIO =   .576817    SHAPE CONSTANT, N =  6.612116
    UNIT PEAK =   258.08    CFS   UNIT VOLUME =    1.000      B =   502.58     P60 = 1.8700
    AREA =      .131460 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .214684HR    TP =   .256000HR    K/TP RATIO =   .838611    SHAPE CONSTANT, N =  4.250046
    UNIT PEAK =   263.45    CFS   UNIT VOLUME =    1.000      B =   371.51     P60 = 1.8700
    AREA =      .161540 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD             ID=11  CODE=20

                                HYDROGRAPH FROM AREA 2-A4

   TIME      FLOW        TIME      FLOW        TIME      FLOW        TIME      FLOW        TIME
    HRS       CFS         HRS       CFS         HRS       CFS         HRS       CFS         HRS
   .000       .0        4.000       4.3       7.999       3.0      11.999       2.4      15.998
   .667       .0        4.666       2.7       8.666       2.9      12.665       2.3      16.665
  1.333      25.4        5.333       2.4       9.332       2.8      13.332       2.2      17.332
  2.000     178.7        5.999       2.6       9.999       2.7      13.999       2.2      17.998
  2.666      29.7        6.666       3.2      10.666       2.6      14.665       2.1      18.665
  3.333       9.9        7.333       3.1      11.332       2.5      15.332       2.0      19.331

    RUNOFF VOLUME =      1.45631 INCHES      =      24.3106 ACRE-FEET
    PEAK DISCHARGE RATE =      442.04 CFS  AT    1.633 HOURS    BASIN AREA =    .3130 SQ. MI.


*S                    SUB-BASIN 2-B1 (UNDEVELOPED RANGE LAND)
COMPUTE NM HYD        ID=12  HYD NO=2-B1  DA=0.120 SQ MI
                      PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                      TP=-0.1333 HR  MASS RAIN=-1

    K =   .073624HR    TP =   .133300HR    K/TP RATIO =   .552318    SHAPE CONSTANT, N =  6.986225
    UNIT PEAK =   196.84    CFS   UNIT VOLUME =    .9994      B =   520.60     P60 = 1.8700
    AREA =      .050400 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .116902HR    TP =   .133300HR    K/TP RATIO =   .876981    SHAPE CONSTANT, N =  4.048450
    UNIT PEAK =   187.12    CFS   UNIT VOLUME =    1.000      B =   358.39     P60 = 1.8700
    AREA =      .069600 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD             ID=12  HYD NO=2-B1

                                HYDROGRAPH FROM AREA 2-B1

   TIME      FLOW        TIME      FLOW        TIME      FLOW        TIME      FLOW        TIME
    HRS       CFS         HRS       CFS         HRS       CFS         HRS       CFS         HRS
   .000       .0        4.000       .9       7.999       1.1      11.999       .9      15.998
   .667       .0        4.666       .8       8.666       1.1      12.665       .9      16.665
  1.333      47.2        5.333       .9       9.332       1.0      13.332       .8      17.332
  2.000      45.5        5.999      1.0       9.999       1.0      13.999       .8      17.998
  2.666       4.5        6.666      1.2      10.666       1.0      14.665       .8      18.665
  3.333       1.3        7.333      1.2      11.332        .9      15.332       .8      19.331

    RUNOFF VOLUME =      1.45803 INCHES      =      9.3314 ACRE-FEET
    PEAK DISCHARGE RATE =      249.70 CFS  AT    1.500 HOURS    BASIN AREA =    .1200 SQ. MI.


*S                    SUB-BASIN 2-B2 (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD        ID=13  HYD NO=2-B2  DA=0.018 SQ MI
                      PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                      TP=-0.1333 HR  MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000    SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   29.847    CFS   UNIT VOLUME =    .9990      B =   526.28     P60 = 1.8700
    AREA =      .007560 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .118429HR    TP =   .133300HR    K/TP RATIO =   .888442    SHAPE CONSTANT, N =  3.992480
    UNIT PEAK =   27.777    CFS   UNIT VOLUME =    1.000      B =   354.67     P60 = 1.8700
    AREA =      .010440 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

                                      -64-

PRINT HYD             ID=13  CODE=20

                                HYDROGRAPH FROM AREA 2-B2
```

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	.1	7.999	.2	11.999	.1	15.998
.667	.0	4.666	.1	8.666	.2	12.665	.1	16.665
1.333	7.1	5.333	.1	9.332	.2	13.332	.1	17.332
2.000	6.8	5.999	.2	9.999	.2	13.999	.1	17.998
2.666	.7	6.666	.2	10.666	.1	14.665	.1	18.665
3.333	.2	7.333	.2	11.332	.1	15.332	.1	19.331

RUNOFF VOLUME = 1.45805 INCHES = 1.3997 ACRE-FEET
PEAK DISCHARGE RATE = 37.44 CFS AT 1.500 HOURS BASIN AREA = .0180 SQ. MI.

```
*S                  SUB-BASIN 2-C (SINGLE FAMILY RESIDENTIAL)
COMPUTE NM HYD      ID=14  HYD NO=2-C  DA=0.3272 SQ MI
                    PER A=0.0  PER B=29.0  PER C=29.0  PER D=42.0
                    TP=0.1930 HR  MASS RAIN=-1
```

K = .111326HR TP = .193000HR K/TP RATIO = .576817 SHAPE CONSTANT, N = 6.612116
UNIT PEAK = 357.85 CFS UNIT VOLUME = .9999 B = 502.58 P60 = 1.8700
AREA = .137424 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .161852HR TP = .193000HR K/TP RATIO = .838611 SHAPE CONSTANT, N = 4.250046
UNIT PEAK = 365.30 CFS UNIT VOLUME = 1.000 B = 371.51 P60 = 1.8700
AREA = .189776 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

```
PRINT HYD           ID=14  HYD NO=2-C
```

HYDROGRAPH FROM AREA 2-C

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	3.0	7.999	3.1	11.999	2.5	15.998
.667	.0	4.666	2.3	8.666	3.0	12.665	2.4	16.665
1.333	59.4	5.333	2.4	9.332	2.9	13.332	2.3	17.332
2.000	149.7	5.999	2.8	9.999	2.8	13.999	2.3	17.998
2.666	21.9	6.666	3.3	10.666	2.7	14.665	2.2	18.665
3.333	6.2	7.333	3.2	11.332	2.6	15.332	2.1	19.331

RUNOFF VOLUME = 1.45718 INCHES = 25.4286 ACRE-FEET
PEAK DISCHARGE RATE = 552.99 CFS AT 1.567 HOURS BASIN AREA = .3272 SQ. MI.

```
*S                  SUB-BASIN 1-A12   COMBINED FLOWS
ADD HYD             ID=1  HYD NO=1-A12  ID I=1  ID II=2
PRINT HYD           ID=1  CODE=20
```

HYDROGRAPH FROM AREA 1-A12

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	2.7	7.999	3.6	11.999	2.9	15.998
.667	.0	4.666	2.6	8.666	3.5	12.665	2.8	16.665
1.333	149.9	5.333	2.9	9.332	3.3	13.332	2.7	17.332
2.000	145.5	5.999	3.3	9.999	3.2	13.999	2.6	17.998
2.666	14.4	6.666	3.9	10.666	3.1	14.665	2.6	18.665
3.333	4.3	7.333	3.8	11.332	3.0	15.332	2.5	19.331

RUNOFF VOLUME = 1.45802 INCHES = 29.8600 ACRE-FEET
PEAK DISCHARGE RATE = 799.93 CFS AT 1.500 HOURS BASIN AREA = .3840 SQ. MI.

```
*S                  SUB-BASIN 1-A123 COMBINED FLOWS
ADD HYD             ID=1  HYD NO=1-A123  ID I=1  ID II=3
PRINT HYD           ID=1  CODE=20
```

HYDROGRAPH FROM AREA 1-A123

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	4.0	7.999	5.2	11.999	4.2	15.998
.667	.0	4.666	3.7	8.666	5.0	12.665	4.1	16.665
1.333	217.6	5.333	4.1	9.332	4.8	13.332	3.9	17.332
2.000	211.0	5.999	4.8	9.999	4.7	13.999	3.8	17.998
2.666	20.8	6.666	5.7	10.666	4.5	14.665	3.7	18.665
3.333	6.2	7.333	5.5	11.332	4.4	15.332	3.6	19.331

RUNOFF VOLUME = 1.45802 INCHES = 43.3127 ACRE-FEET

PEAK DISCHARGE RATE = 1160.17 CFS AT 1.500 HOURS BASIN AREA = .5570 SQ. MI.

```
*8                SUB-BASIN 1-A12B1 ANALYSIS POINT 3
ADD HYD           ID=1  HYD NO=1-A12B1  ID I=1  ID II=5
PRINT HYD         ID=1  CODE=20
```

HYDROGRAPH FROM AREA 1-A12B1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	4.3	7.999	5.7	11.999	4.6	15.998
.667	.0	4.666	4.1	8.666	5.5	12.665	4.5	16.665
1.333	238.2	5.333	4.5	9.332	5.3	13.332	4.3	17.332
2.000	230.7	5.999	5.2	9.999	5.1	13.999	4.2	17.998
2.666	22.8	6.666	6.2	10.666	5.0	14.665	4.1	18.665
3.333	6.8	7.333	6.0	11.332	4.8	15.332	4.0	19.331

RUNOFF VOLUME = 1.45802 INCHES = 47.3562 ACRE-FEET
PEAK DISCHARGE RATE = 1268.30 CFS AT 1.500 HOURS BASIN AREA = .6090 SQ. MI.

```
*8                SUB-BASIN 2-A12 COMBINED FLOWS
ADD HYD           ID=8  HYD NO=2-A12  ID I=8  ID II=9
PRINT HYD         ID=8  CODE=20
```

HYDROGRAPH FROM AREA 2-A12

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	2.3	7.999	3.0	11.999	2.4	15.998
.667	.0	4.666	2.1	8.666	2.8	12.665	2.3	16.665
1.333	123.4	5.333	2.3	9.332	2.7	13.332	2.2	17.332
2.000	119.7	5.999	2.7	9.999	2.7	13.999	2.2	17.998
2.666	11.8	6.666	3.2	10.666	2.6	14.665	2.1	18.665
3.333	3.5	7.333	3.1	11.332	2.5	15.332	2.1	19.331

RUNOFF VOLUME = 1.45802 INCHES = 24.5723 ACRE-FEET
PEAK DISCHARGE RATE = 658.29 CFS AT 1.500 HOURS BASIN AREA = .3160 SQ. MI.

```
*8                SUB-BASIN 2-B12 COMBINED FLOWS
ADD HYD           ID=12  HYD NO=2-B12  ID I=12  ID II=13
PRINT HYD         ID=12  CODE=20
```

HYDROGRAPH FROM AREA 2-B12

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	1.0	7.999	1.3	11.999	1.0	15.998
.667	.0	4.666	.9	8.666	1.2	12.665	1.0	16.665
1.333	54.3	5.333	1.0	9.332	1.2	13.332	1.0	17.332
2.000	52.3	5.999	1.2	9.999	1.2	13.999	1.0	17.998
2.666	5.2	6.666	1.4	10.666	1.1	14.665	.9	18.665
3.333	1.5	7.333	1.4	11.332	1.1	15.332	.9	19.331

RUNOFF VOLUME = 1.45804 INCHES = 10.7311 ACRE-FEET
PEAK DISCHARGE RATE = 287.15 CFS AT 1.500 HOURS BASIN AREA = .1380 SQ. MI.

```
*8                SUB-BASIN 2-A123 COMBINED FLOWS
ADD HYD           ID=8  HYD NO=2-A123  ID I=8  ID II=10
PRINT HYD         ID=8  CODE=20
```

HYDROGRAPH FROM AREA 2-A123

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	2.7	7.999	3.6	11.999	2.9	15.998
.667	.0	4.666	2.5	8.666	3.4	12.665	2.8	16.665
1.333	148.7	5.333	2.8	9.332	3.3	13.332	2.7	17.332
2.000	143.9	5.999	3.3	9.999	3.2	13.999	2.6	17.998
2.666	14.2	6.666	3.9	10.666	3.1	14.665	2.5	18.665
3.333	4.2	7.333	3.7	11.332	3.0	15.332	2.5	19.331

RUNOFF VOLUME = 1.45802 INCHES = 29.5491 ACRE-FEET
PEAK DISCHARGE RATE = 791.38 CFS AT 1.500 HOURS BASIN AREA = .3800 SQ. MI.

```
*8                SUB-BASIN 2-AB12 COMBINED FLOWS
ADD HYD           ID=8  HYD NO=2-AB12  ID I=8  ID II=12
PRINT HYD         ID=8  CODE=20
```


HYDROGRAPH FROM AREA 2-AB12

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	3.7	7.999	4.9	11.999	3.9	15.998

.667	.0	4.666	3.5	8.666	4.7	12.665	3.8	16.66
1.333	203.0	5.333	3.8	9.332	4.5	13.332	3.7	17.33
2.000	196.2	5.999	4.5	9.999	4.4	13.999	3.6	17.99
2.666	19.4	6.666	5.3	10.666	4.2	14.665	3.5	18.66
3.333	5.8	7.333	5.1	11.332	4.1	15.332	3.4	19.33

RUNOFF VOLUME = 1.45803 INCHES = 40.2802 ACRE-FEET
PEAK DISCHARGE RATE = 1078.52 CFS AT 1.500 HOURS BASIN AREA = .5180 SQ. MI.

*8 SUB-BASIN 12-AB12 ANALYSIS POINT 2
ADD HYD ID=8 HYD NO=12-AB12 ID I=6 ID II=8
PRINT HYD ID=8 CODE=20

HYDROGRAPH FROM AREA 12-AB12

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS
.000	.0	4.000	4.3	7.999	5.6	11.999	4.5	15.99
.667	.0	4.666	4.0	8.666	5.4	12.665	4.4	16.66
1.333	235.3	5.333	4.5	9.332	5.2	13.332	4.2	17.33
2.000	227.3	5.999	5.2	9.999	5.0	13.999	4.1	17.99
2.666	22.5	6.666	6.1	10.666	4.9	14.665	4.0	18.66
3.333	6.7	7.333	5.9	11.332	4.7	15.332	3.9	19.33

RUNOFF VOLUME = 1.45803 INCHES = 46.6567 ACRE-FEET
PEAK DISCHARGE RATE = 1249.08 CFS AT 1.500 HOURS BASIN AREA = .6000 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 16:13:36

DPM CHAPTER 22.2
CITY OF ALBUQUERQUE
TIME OF CONCENTRATION AND TIME TO PEAK
APPENDIX C

0-4000 FEET

SUB BASIN	SLOPE(FT/FT)	CONVEYANCE FACTOR	VELOCITY(FT/SEC)	REACH LENGTH(FT)	TIME OF CONCENTRATION(HR)	TIME TO PEAK(HR)
1-A1	0.0491	3.0000	6.6476	2,850.0000	0.1191	0.1333
1-A2	0.0427	3.0000	6.1992	3,281.0000	0.1470	0.1333
1-B1	0.0538	3.0000	6.9584	2,972.0000	0.1186	0.1333
1-B2	0.0354	3.0000	5.6445	2,399.0000	0.1181	0.1333
1-B3	0.0399	3.0000	5.9925	2,382.0000	0.1104	0.1333
2-A1	0.0641	3.0000	7.5954	2,810.0000	0.1028	0.1333
2-A2	0.0616	3.0000	7.4458	2,599.0000	0.0970	0.1333
2-A3	0.0295	3.0000	5.1527	2,372.0000	0.1279	0.1333
2-B2	0.0415	3.0000	6.1115	2,892.0000	0.1314	0.1333

4000-12000 FEET

SUB BASIN	SLOPE(FT/FT)	CONVEYANCE FACTOR	BASIN FACTOR	REACH LENGTH(FT)	CENTROID DISTANCE(FT)	TIME OF CONCENTRATION(HR)	TIME TO PEAK(HR)
1-A3	0.0269	3.0000	0.0210	4,455.0000	2,230.0000	0.2380	0.1587
1-A4	0.0334	3.0000	0.0210	7,633.0000	3,820.0000	0.3033	0.2022
2-A4	0.0217	3.0000	0.0210	9,198.0000	4,600.0000	0.3840	0.2560
2-B1	0.0615	3.0000	0.0210	4,876.0000	2,450.0000	0.1751	0.1333
2-C	0.0208	3.0000	0.0210	5,293.0000	2,650.0000	0.2894	0.1930

APPENDIX D
POWERLINE CHANNEL
AND
SACATE BLANCO CHANNEL
WATER SURFACE PROFILING

1ENGINEERING DATA SYSTEMS CORPORATION
Water Surface Profiling Detailed Report

Section 1 Channel Station 0 + 00 Discharge 2959.42 cfs

	Q cfs	AREA ft^2	VEL ft/s	CONVEYANCE	n	RCH LGTH ft	WET PERM ft
Lft Ob	0.00	0.00	0.00	0.00	0.0150	8000.00	0.00
Channel	2959.42	288.55	10.26	62661.58	0.0150	8000.00	88.91
Rgt Ob	0.00	0.00	0.00	0.00	0.0150	8000.00	0.00

Water Elevation	zas	5021.78 ft	Critical Water	zc	5021.78 ft	
Depth	Dep	3.78 ft	Normal water	zn	5019.83 ft	
Energy Grade Line-EG	Las	5023.41 ft	Flow CRITICAL FLOW			
Energy Loss	ht	0.00 ft	METHOD Average Conveyance			
Min of Elev Shot	zmin	5018.00 ft	Velocity Head	Hv	1.63 ft/s	
Channel Slope	Sch	2.62 %	Velocity Coeff	alpha	1.00	
Energy Loss Fr	hf	17.84 ft	Offs Lft Water Line	xlw	19.66 ft	
Energy Loss Eddy	ho	0.00 ft	Offs Rgt Water Line	xrw	107.34 ft	
Wetted Width	Wwet	87.68 ft	Jump Loss	hjump	N / A	
Ave Reach Lgth	Lave	87.68 ft	Jump Elevation	zjump	N / A	
			Station of Jump	Ljump	N / A	

Cross Section Groundshots <ft>

1	0.0 5025.00	2	10.0 5025.00	3	31.0 5018.00	4	96.0 5018.00
5	117.0 5025.00	6	127.0 5025.00				

Section 2 Channel Station 80 + 00 Discharge 2517.38 cfs

	Q	AREA	VEL	CONVEYANCE	n	RCH LGTH	WET PERM
	cfs	ft^2	ft/s			ft	ft
Lft Ob	0.00	0.00	0.00	0.00	0.0150	8000.00	0.00
Channel	2517.38	246.43	10.22	52318.06	0.0150	8000.00	78.55
Rgt Ob	0.00	0.00	0.00	0.00	0.0150	8000.00	0.00

Water Elevation	zas	5231.72 ft	Critical Water	zc	5231.72 ft	
Depth	Dep	3.72 ft	Normal water	zn	5229.83 ft	
Energy Grade Line-EG	Las	5233.34 ft	Flow CRITICAL FLOW			
Energy Loss	ht	209.93 ft	METHOD Average Conveyance			
Min of Elev Shot	zmin	5228.00 ft	Velocity Head	Hv	1.62	ft/s
Channel Slope	Sch	2.62 %	Velocity Coeff	alpha	1.00	
Energy Loss Fr	hf	18.52 ft	Offs Lft Water Line	xlw	19.83	ft
Energy Loss Eddy	ho	0.00 ft	Offs Rgt Water Line	xrw	97.17	ft
Wetted Width	Wwet	77.34 ft	Jump Loss	hjump	N / A	
Ave Reach Lgth	Lave	77.34 ft	Jump Elevation	zjump	N / A	
			Station of Jump	Ljump	N / A	

Cross Section Groundshots <ft>

1	0.0 5235.00	2	10.0 5235.00	3	31.0 5228.00	4	86.0 5228.00
5	107.0 5235.00	6	117.0 5235.00				

Section 3 Channel Station 92 + 50 Discharge 1268.30 cfs

	Q cfs	AREA ft^2	VEL ft/s	CONVEYANCE	n	RCH LGTH ft	WET PERM ft
Lft Ob	0.00	0.00	0.00	0.00	0.0150	1250.00	0.00
Channel	1268.30	148.72	8.53	25247.81	0.0150	1250.00	66.29
Rgt Ob	0.00	0.00	0.00	0.00	0.0150	1250.00	0.00

Water Elevation	zas	5240.58 ft	Critical Water	zc	5240.58 ft
Depth	Dep	2.58 ft	Normal water	zn	5239.83 ft
Energy Grade Line-EGL	as	5241.71 ft	Flow CRITICAL FLOW		
Energy Loss	ht	8.36 ft	METHOD Average Conveyance		
Min of Elev Shot	zmin	5238.00 ft	Velocity Head	Hv	1.13 ft/s
Channel Slope	Sch	0.80 %	Velocity Coeff	alpha	1.00
Energy Loss Fr	hf	3.15 ft	Offs Lft Water Line	xlw	23.27 ft
Energy Loss Eddy	ho	0.00 ft	Offs Rgt Water Line	xrw	88.73 ft
Wetted Width	Wwet	65.46 ft	Jump Loss	hjump	N / A
Ave Reach Lgth	Lave	65.46 ft	Jump Elevation	zjump	N / A
			Station of Jump	Ljump	N / A

Cross Section Groundshots (ft)

1	0.0 5245.00	2	10.0 5245.00	3	31.0 5238.00	4	81.0 5238.00
5	102.0 5245.00	6	112.0 5245.00				

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 25, 1996

Andrew Riemen-Schneider
Gordan & Assoc
PO Box 2467
Santa Fe, NM 87504

RE: DRAINAGE REPORT FOR ABQ WEST (N-8/D1)
RECEIVED MARCH 12, 1996 FOR BULK LAND PLAT
ENGINEER'S STAMP DATED 3/7/96

Dear Mr. Riemen-Schneider:

Based on the information included in the submittal referenced above, City Hydrology accepts the Report for Bulk Land Plat.

Vacation of AMAFCA Easements requires AMAFCA Board approval. A LOMR must be approved by FEMA to remove a flood hazard zone from the FIRM panels.

A site specific drainage report is required for the development of the individual parcels. Downstream capacity will be dependent on the downstream development at that time.

If I can be of further assistance, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer, Hydrology

c: Andrew Garcia
Fred Aguirre, DRB 95-440
Kurt Browning, AMAFCA

DRAINAGE INFORMATION SHEET

N 8/A1

PROJECT TITLE: ABQ West ZONE ATLAS/DRNG. FILE #: N-8-Z

DRB #: 95-440 EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: T9N, R2E Section 5 Bernalillo County

CITY ADDRESS: _____

ENGINEERING FIRM: Gordon and Assoc. CONTACT: Andrew Remen Schwerdt

ADDRESS: P.O. Box 2467, Santa Fe PHONE: (505) 982-2587

OWNER: Bokay Constr. CONTACT: Bo Johnson

ADDRESS: _____ PHONE: 899-9656 (863-3177

ARCHITECT: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

X DRAINAGE REPORT

____ DRAINAGE PLAN

____ CONCEPTUAL GRADING & DRAINAGE PLAN

____ GRADING PLAN

____ EROSION CONTROL PLAN

____ ENGINEER'S CERTIFICATION

____ OTHER _____

PRE-DESIGN MEETING:

____ YES

X NO

____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL

____ PRELIMINARY PLAT APPROVAL

____ S. DEV. PLAN FOR SUB'D. APPROVAL

____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL

____ SECTOR PLAN APPROVAL

____ FINAL PLAT APPROVAL

____ FOUNDATION PERMIT APPROVAL

____ BUILDING PERMIT APPROVAL

____ CERTIFICATE OF OCCUPANCY APPROVAL

____ GRADING PERMIT APPROVAL

__ PAVING PERMIT APPROVAL

___ S.A.D. DRAINAGE REPORT

____ DRAINAGE REQUIREMENTS

____ SUBDIVISION CERTIFICATION

X OTHER Bulk Land Plat (SPECIFY)

DATE SUBMITTED: ~~3/8/96~~ 3/11/96

BY: _____

DRB-95-440 Albuquerque Surveying Co., Inc., agents for Mr. Ray B. Pacioni, requests Preliminary and Final Plat approval and a Bulk Land Variance for Parcel 2, Lands of Rio Bravo Partners, zoned R-1 (City) and located on Future Gibson Boulevard Extension, containing approximately 414.8565 acres. (N-8)

COG The Long Range Major Street Plan designates several facilities on or near these parcels. Provision should be made to preserve rights-of-way for these major streets. Rio Bravo is designated as a limited access principal arterial with 200 feet of right-of-way width which will have at-grade intersections and median openings at Unser, 98th Street, and 118th Street. The Gibson west Location study Corridor is proposed to containing an east-west principal arterial which will require 156 feet of right-of-way. The 98th Street Location Study Corridor is proposed to contain a principal arterial which will require 156 feet of right-of-way. The 118th Street Location Study Corridor is proposed to contain a minor arterial which will require 86 feet of right-of-way.

Jones Intercable "No adverse comment."

APS "No adverse comment."

Police Department "No adverse comment."

Neighborhood Coordin. No registered Neighborhood Association.

Real Estate "No adverse comment."

PNM Gas Approves

PNM Electric "No adverse comment."

AMAFCA AMAFCA would have preferred blanket drainage easements over all the tracts that comprise these 414 acres. Due to the number of existing arroyo easements crossing the site, the appropriate bulk land plat language is sufficient in addressing future drainage issues. Please note, the new 150 foot drainage easement shown as an extension of the Powerline channel is only a concept prepared by the developer's engineer. AMAFCA has hired an engineering consultant to prepare a Drainage Management Plan (DMP) for the areas draining to the Amole/Hubbel facilities. The Powerline Channel extension is only a concept at this time, and other alternatives may be selected at the completion of the study, making the 150 foot easement unnecessary. The bulk land language appears to address AMAFCA's concerns until completion of the DMP.

U.S. West Communications "No adverse comment."

Environmental Health

This parcel is bisected by a utility easement containing two powerful electrical transmission lines. One line is 345kV and the other is 115kV. These lines produce a substantial electromagnetic field (EMF). There are potential health effects related to the exposure to EMFs. The recently adopted Amendments to the (Electric) Facility Plan (1995-2005) contains guidelines on the location of land uses next to 60 Hz (60 cycles per second) electrical transmission lines. It recommends that low cost or no cost mitigation alternatives be employed by government, public utilities, and developers in regard to land use issues. The applicant is encouraged to review these guidelines.

Parks and General Services

Further division of these lands will be subject to the Park Dedication Ordinance. We request a meeting with the developer to discuss siting options for neighborhood parks. This area falls within the Southwest area Plan which was adopted on August 23, 1988. Policy 34, on page 51 states that "...archaeological clearance surveys of areas greater than 10 acres scheduled for development must be performed prior to receiving subdivision approval or starting construction. The cost of the surveys shall be borne by the developer. The results of the survey shall be included in the application submitted to the City or County for development approval. 118th Street is identified as a trail on the Trails and Bikeways Facility Plan.

Utilities Development	"No adverse comment."
City Engineer	See DRB minutes/speed memo dated December 3, 1995 for comments.
Transportation Develop.	1. A Bulk Land Variance for one paved access does not appear to be appropriate. See previous comments.
Planning Department	No comments concerning the bulk land variance; refer to appropriate Public Works Division agencies for comments.

IT IS REQUESTED THAT THE APPLICANT AND/OR AGENT BE PRESENT AT THE HEARING

cc:Mr. Ray B. Pacioni, 4216 N. Brown Avenue, Scottsdale, AZ 85251
Albuquerque Surveying Co., Inc., 2119 Menaul Blvd NE, 87107

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 26, 1996

T.R. Gordan ,PE
Gordan & Assoc
PO Box 2467
Santa Fe, NM 87504

RE: DRAINAGE REPORT FOR ABQ WEST (N-8/D1)
RECEIVED FEBRUARY 9, 1996 FOR BULK LAND PLAT
ENGINEER'S STAMP DATED 2/9/96

Dear Mr. Gordan:

Based on the information included in the submittal referenced above, City Hydrology has the following comments:

The Report must address whether there are FEMA floodplains on the site. Reference the FIRM panel that shows the site. Indicate the drainage easement on the Salazar Davis tract that is required to connect the site to the AMAFCA Drainage R.O.W. No development is possible until this easement is granted.

Calculate the time to peak for each sub-basin using the methods described in Part B of DPM section 22.2. Each sub-basin will have a different time to peak based on the length, slope and conveyance factor. Developed sub-basins will have a shorter time to peak than undeveloped sub-basins.

If the developed density is 4 lots per acre, then land treatment D will be 42%. The pervious portion of a developed sub-basin is conservatively analyzed as half (29%) land treatment B and half (29%) land treatment C. What is the zoning for the upslope area? The land treatment will not be 100%A. Bernalillo County uses land treatments 43%A, 20%B, 20%C and 17%D for rural development.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin

John P. Curtin, P.E.
Civil Engineer, Hydrology

c: Andrew Garcia
Fred Aguirre, DRB 95-440
Kurt Browning, AMAFCA

DRAINAGE INFORMATION SHEET

N 8/A1

PROJECT TITLE: ABQ West ZONE ATLAS/DRNG. FILE #: N-8-Z

DRB #: 95-440 EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: T9N, R2E Section 5 Bernalillo County

CITY ADDRESS: _____

ENGINEERING FIRM: Gordon and Assoc. CONTACT: Andrew Remes Schneider

ADDRESS: P.O. Box 2467, Santa Fe PHONE: (505) 982-2587

OWNER: Bokay Constr. CONTACT: Bo Johnson

ADDRESS: _____ PHONE: 899-9656 (863-3177)

ARCHITECT: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

- X DRAINAGE REPORT
- ____ DRAINAGE PLAN
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- ____ GRADING PLAN
- ____ EROSION CONTROL PLAN
- ____ ENGINEER'S CERTIFICATION
- ____ OTHER _____

PRE-DESIGN MEETING:

- ____ YES
- X NO
- ____ COPY PROVIDED

FEB - 9 1996
HYDROLOGY DIVISION

CHECK TYPE OF APPROVAL SOUGHT:

- ____ SKETCH PLAT APPROVAL
- ____ PRELIMINARY PLAT APPROVAL
- ____ S. DEV. PLAN FOR SUB'D. APPROVAL
- ____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ FOUNDATION PERMIT APPROVAL
- ____ BUILDING PERMIT APPROVAL
- ____ CERTIFICATE OF OCCUPANCY APPROVAL
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ S.A.D. DRAINAGE REPORT
- ____ DRAINAGE REQUIREMENTS
- ____ SUBDIVISION CERTIFICATION
- X OTHER Bulk Land Plat (SPECIFY)

DATE SUBMITTED: 2/9/96

BY: [signature]

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 11, 1996

T.R. Gordan ,PE
Gordan & Assoc
PO Box 2467
Santa Fe, NM 87504

RE: DRAINAGE REPORT FOR ABQ WEST (N-8/D1)
RECEIVED DECEMBER 20, 1995 FOR BULK LAND PLAT
ENGINEER'S STAMP DATED 12/15/95

Dear Mr. Gordan:

Based on the information included in the submittal referenced above, City Hydrology has the following comments:

What is the current legal description of the site? The vicinity map does not clearly indicate what area is covered. The drainage analysis does not calculate the off-site flows nor does it determine the improvements necessary to deal with the off-site flows. All improvements required must be designed for the ultimate developed condition. It is not clear which drainage easement AMAFCA was granted across the entire Salazar-Davis Tract. Does the Easement for the extension of Gibson grant drainage rights? Besides the Easement is a dead end. It only exists on Parcel 1.

Considering the lack of information currently, it seems best to grant a blanket drainage easement to the City or AMAFCA which will cover each of the Parcels (2-A, 2-B, 2-C & 2-D). A Drainage Report could be completed when the parcels are ready to develop and the required infrastructure improvements can be determined.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin

John P. Curtin, P.E.
Civil Engineer, Hydrology

c: Andrew Garcia
Fred Aguirre, DRB 95-440

DRAINAGE INFORMATION SHEET

PROJECT TITLE: ABQ-WEST ZONE ATLAS/DRNG. FILE #: N-8 / M1

DRB #: 95-440 EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: LANDS OF RIO BRAVO PARTNERS

CITY ADDRESS: ↳ T9N, R2E. SECTION 5

ENGINEERING FIRM: GORDON & ASSOC. CONTACT: BO JOHNSON, P.E.

ADDRESS: 1300 LUISA ST. SUITE 21 PHONE: 8999656

OWNER: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

ARCHITECT: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

- X DRAINAGE REPORT
- ____ DRAINAGE PLAN
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- ____ GRADING PLAN
- ____ EROSION CONTROL PLAN
- ____ ENGINEER'S CERTIFICATION
- ____ OTHER BULK LAND DRAINAGE REPORT

PRE-DESIGN MEETING:

- ____ YES
- X NO
- ____ COPY PROVIDED

DEC 20

CHECK TYPE OF APPROVAL SOUGHT:

- ____ SKETCH PLAT APPROVAL
- ____ PRELIMINARY PLAT APPROVAL
- ____ S. DEV. PLAN FOR SUB'D. APPROVAL
- ____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
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- ____ FOUNDATION PERMIT APPROVAL
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- ____ CERTIFICATE OF OCCUPANCY APPROVAL
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ S.A.D. DRAINAGE REPORT
- ____ DRAINAGE REQUIREMENTS
- ____ SUBDIVISION CERTIFICATION
- X OTHER BULK LAND PLAT (SPECIFY)

DATE SUBMITTED: 12/18/95

BY: Bo K Johnson, P.E.