**City of Albuquerque**
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

July 16, 1999

Fred C. Arfman, P.E.
Isaacson & Arfman
128 Monroe Street NE
Albuquerque, New Mexico 87108

***RE: Grading and Drainage Certification for Desert Flower Subdivision Unit Three, (M10/D12C), Engineer's Certification Stamp Dated 7/6/99.***

Dear Mr. Arfman:

The above referenced Engineer's Certification for Desert Flower Subdivision Unit Three is adequate to satisfy the Grading and Drainage certification requirement for the release of the Subdivision Improvements Agreement per the Infrastructure List dated September 1, 1998.

If you have any questions, or if I may be of further assistance to you, please call me at 924-3982.

Sincerely,

Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Terri Martin, City Project # 5739.83
Bo Johnson, P.E., Curb Inc.
File

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

# DRAINAGE INFORMATION SHEET

PROJECT #: DESERT FLOWER UNIT 3 — ZONE ATLAS/DRNG. M10
FILE#: M10/D12 C

DRB # 98-5 9-1-98 — EPC # — WORK ORDER # 57-39-84

LEGAL DESCRIPTION: DESERT FLOWER SUBDIVISION - UNIT 3

CITY ADDRESS:

ENGINEERING FIRM: Isaacson & Arfman, P.A. — CONTACT: MELISSA COMBS
ADDRESS: 128 Monroe Street NE — PHONE: 268-8828
CITY, STATE: Albuquerque, NM — ZIP CODE: 87108

OWNER: CURB, INC — CONTACT: BO JOHNSON
ADDRESS: 6301 INDIAN SCHOOL RD STE #680 — PHONE: 881-9190
CITY, STATE: ALBUQUERQUE, NM 87110 — ZIP CODE: 87110

ARCHITECT: NA — CONTACT:
ADDRESS: — PHONE:
CITY, STATE: — ZIP CODE:

SURVEYOR: ALDRICH LAND SURVEYING — CONTACT: TIM ALDRICH
ADDRESS: P.O. BOX 30701 — PHONE: 884-1990
CITY, STATE: ALBUQUERQUE, NM — ZIP CODE: 87190

CONTRACTOR: — CONTACT:
ADDRESS: — PHONE:
CITY, STATE: — ZIP CODE:

TYPE OF SUBMITTAL:

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

PRE-DESIGN MEETING:

- ____ YES
- ✓ NO
- ____ COPY PROVIDED

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HYDROLOGY SECTION

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
- ✓ OTHER (SPECIFY) GRADING CERTIFICATION

DATE SUBMITTED: 7-2-99
BY: Genevieve Donald
FOR ISAACSON & ARFMAN, P.A.

CITY OF
Albuquerque

August 27, 1998

Fred C. Arfman, P.E.
Isaacson & Arfman
128 Monroe Street NE
Albuquerque, New Mexico 87108

*RE: Supplemental Information for Desert Flower Subdivision, Unit Three, Dated 7/21/98 and 8/19/98, (M10/D12C) Submitted for Final Plat and Work Order Approval.*

Dear Mr. Arfman:

Based on the information provided in the submittals of July 21, 1998 and August 19, 1998, the above referenced Supplemental information is approved for Final Plat of Unit Three. The SIA must be in place prior to Final plat sign-off.

Prior to sign-off of the DRC plans, however, concurrence must be obtained from Public Works for the use of the Unser right-of-way property as a drainage facility.

As you are aware, the Grading and Drainage Certification is required prior to release of Financial Guarantees for this Unit.

If you have any questions, or if I may be of further assistance to you, please call me at 924-3982.

Sincerely,

Susan Calongne

Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Fred Aguirre, DRB 98-5
Bo Johnson, Curb Inc.
File

**ISAACSON & ARFMAN, P.A.**

*Consulting Engineering Associates*

*Thomas O. Isaacson, PE & LS • Fred C. Arfman, PE*
*Scott M. McGee, PE*

August 18, 1998

Pond sized ok
is location approved?

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AUG 19 1998
HYDROLOGY SECTION

Ms. Susan Calongne, PE
Hydrology Division
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

**RE: Desert Flower Subdivision Unit 3 (M10/D12C)**

Dear Ms. Calongne:

As per our discussion concerning the supplemental package submitted for Desert Flower Unit 3, a hydraulic analysis on the outfall pipe for the temporary detention pond was completed. The size of the outfall pipe was field verified to be a 48" diameter at the future pond entrance. It downsizes to a 42" diameter once it reaches the Vista del Sol Mobile Home Park property line. Currently an 18" diameter stub is being used to drain the undeveloped area to the west, and the 48" stub is plugged and buried. A note will be added to the Desert Flower Unit 3 work order plans calling out the removal and plugging of this 18" diameter line.

The assumption that the developed mobile home park runoff will pass through the storm drain system prior to the pond discharge was made, since the time to peak of the pond (Tp = 1.7 hrs) is much later than that of the mobile home park. The attached FlowMaster calculation sheets show that the downstream system has the capacity to handle the proposed flow rate of 141.76 cfs in the temporary configuration. The design of the ultimate pond configuration should address the following issues:

- If the current slope of Unser Blvd. (S = 0.5%) is continued from Desert Flower Unit 3 to the south, the proposed top of curb elevation at the pond outfall will equal approximately 5044.1. This street elevation will not provide adequate cover for the 48" diameter storm drain as it exists. Adequate coverage for the storm drain could be provided by either designing Unser Blvd. to have a sump condition near the Gibson Blvd. intersection, or by replacing the existing pipe with an arch pipe. The additional height that would be gained by adding the sump to Unser Blvd. would also provide additional freeboard for the pond.

*128 Monroe St. NE • Albuquerque, NM 87108 • (505) 268-8828 • FAX (505) 268-2632*

- The hydraulic analysis of the downstream pipe system should be re-visited to account for water storage in the pipes. Also verification of the allowable discharge rate in relation to the maximum water surface elevation and the elevation of Unser Blvd. should be checked.

Also, we have contacted Dave Harmon with COA Transportation and have received a verbal approval of the surplus right-of-way being used for the pond. He will be sending a letter to Fred Aguirre confirming Hydrology's use of this land.

Sincerely,

**ISAACSON & ARFMAN, P.A.**

Melissa Combs

Melissa Combs
MC/rtl
Attachments

# Vista del Sol PL to Future Pond
## Worksheet for Pressure Pipe

| Project Description | |
|---|---|
| Project File | c:\haestad\fmw\dsrtflwr.fm2 |
| Worksheet | EOP to POND |
| Flow Element | Pressure Pipe |
| Method | Hazen-Williams Formula |
| Solve For | Pressure at 1 |

| Input Data | |
|---|---|
| Pressure at 2 | 4.88 feet H20 |
| Elevation at 1 | 5,038.90 ft |
| Elevation at 2 | 5,037.97 ft |
| Length | 126.00 ft |
| C Coefficient | 101.0 |
| Diameter | 48.00 in |
| Discharge | 141.70 cfs |

| Results | | |
|---|---|---|
| Pressure at 1 | 5.25 | feet H20 |
| Headloss | 1.30 | ft |
| Energy Grade at 1 | 5,046.13 | ft |
| Energy Grade at 2 | 5,044.83 | ft |
| Hydraulic Grade at 1 | 5,044.15 | ft |
| Hydraulic Grade at 2 | 5,042.85 | ft |
| Flow Area | 12.57 | $ft^2$ |
| Wetted Perimeter | 12.57 | ft |
| Velocity | 11.28 | ft/s |
| Velocity Head | 1.98 | ft |
| Friction Slope | 0.010344 | ft/ft |

Notes:

Hydraulic Analysis ends at Existing MH

Max WSEL = 44.1

# MH7 to Vista del Sol Property Line
## Worksheet for Pressure Pipe

| Project Description | |
|---|---|
| Project File | c:\haestad\fmw\dsrtflwr.fm2 |
| Worksheet | mh7 to End of 42" pipe |
| Flow Element | Pressure Pipe |
| Method | Hazen-Williams Formula |
| Solve For | Pressure at 1 |

| Input Data | |
|---|---|
| Pressure at 2 | 5.00 feet H20 |
| Elevation at 1 | 5,037.97 ft |
| Elevation at 2 | 5,030.24 ft |
| Length | 378.95 ft |
| C Coefficient | 101.0 |
| Diameter | 42.00 in |
| Discharge | 141.70 cfs |

| Results | | |
|---|---|---|
| Pressure at 1 | 4.78 | feet H20 |
| Headloss | 7.51 | ft |
| Energy Grade at 1 | 5,046.12 | ft |
| Energy Grade at 2 | 5,038.61 | ft |
| Hydraulic Grade at 1 | 5,042.75 | ft |
| Hydraulic Grade at 2 | 5,035.24 | ft |
| Flow Area | 9.62 | $ft^2$ |
| Wetted Perimeter | 11.00 | ft |
| Velocity | 14.73 | ft/s |
| Velocity Head | 3.37 | ft |
| Friction Slope | 0.019821 | ft/ft |

# MH6 to MH7; Vista del Sol
## Worksheet for Pressure Pipe

| Project Description | |
|---|---|
| Project File | c:\haestad\fmw\dsrtflwr.fm2 |
| Worksheet | mh6 to mh7 |
| Flow Element | Pressure Pipe |
| Method | Hazen-Williams Formula |
| Solve For | Pressure at 1 |

| Input Data | |
|---|---|
| Pressure at 2 | 3.81 feet H20 |
| Elevation at 1 | 5,030.24 ft |
| Elevation at 2 | 5,023.10 ft |
| Length | 415.34 ft |
| C Coefficient | 101.0 |
| Diameter | 42.00 in |
| Discharge | 141.70 cfs |

| Results | | |
|---|---|---|
| Pressure at 1 | 4.90 | feet H20 |
| Headloss | 8.23 | ft |
| Energy Grade at 1 | 5,038.51 | ft |
| Energy Grade at 2 | 5,030.28 | ft |
| Hydraulic Grade at 1 | 5,035.14 | ft |
| Hydraulic Grade at 2 | 5,026.91 | ft |
| Flow Area | 9.62 | $ft^2$ |
| Wetted Perimeter | 11.00 | ft |
| Velocity | 14.73 | ft/s |
| Velocity Head | 3.37 | ft |
| Friction Slope | 0.019821 | ft/ft |

Notes:

Rim elev @ MH7 = 5036.8 > 5035.14 = HGL

# MH5 to MH6; Vista del Sol
## Worksheet for Pressure Pipe

| Project Description | |
|---|---|
| Project File | c:\haestad\fmw\dsrtflwr.fm2 |
| Worksheet | mh5 to mh6 |
| Flow Element | Pressure Pipe |
| Method | Hazen-Williams Formula |
| Solve For | Pressure at 1 |

| Input Data | |
|---|---|
| Pressure at 2 | 4.92 feet H20 |
| Elevation at 1 | 5,023.10 ft |
| Elevation at 2 | 5,018.02 ft |
| Length | 195.11 ft |
| C Coefficient | 101.0 |
| Diameter | 42.00 in |
| Discharge | 141.70 cfs |

| Results | | |
|---|---|---|
| Pressure at 1 | 3.71 | feet H20 |
| Headloss | 3.87 | ft |
| Energy Grade at 1 | 5,030.18 | ft |
| Energy Grade at 2 | 5,026.31 | ft |
| Hydraulic Grade at 1 | 5,026.81 | ft |
| Hydraulic Grade at 2 | 5,022.94 | ft |
| Flow Area | 9.62 | $ft^2$ |
| Wetted Perimeter | 11.00 | ft |
| Velocity | 14.73 | ft/s |
| Velocity Head | 3.37 | ft |
| Friction Slope | 0.019821 | ft/ft |

Notes:

Rim elev @ MH6 = 5030 > 5026.81 = HGL

# MH4 to MH5; Vista del Sol
## Worksheet for Pressure Pipe

| Project Description | |
|---|---|
| Project File | c:\haestad\fmw\dsrtflwr.fm2 |
| Worksheet | mh4 to mh5 |
| Flow Element | Pressure Pipe |
| Method | Hazen-Williams Formula |
| Solve For | Pressure at 1 |

| Input Data | |
|---|---|
| Pressure at 2 | 5.74 feet H20 |
| Elevation at 1 | 5,018.03 ft |
| Elevation at 2 | 5,008.79 ft |
| Length | 420.00 ft |
| C Coefficient | 101.0 |
| Diameter | 42.00 in |
| Discharge | 141.70 cfs |

| Results | | |
|---|---|---|
| Pressure at 1 | 4.82 | feet H20 |
| Headloss | 8.32 | ft |
| Energy Grade at 1 | 5,026.23 | ft |
| Energy Grade at 2 | 5,017.90 | ft |
| Hydraulic Grade at 1 | 5,022.85 | ft |
| Hydraulic Grade at 2 | 5,014.53 | ft |
| Flow Area | 9.62 | $ft^2$ |
| Wetted Perimeter | 11.00 | ft |
| Velocity | 14.73 | ft/s |
| Velocity Head | 3.37 | ft |
| Friction Slope | 0.019821 | ft/ft |

Notes:

Rim elev @ MH5 = 5027.8 > 5022.85 = HGL

# MH3 to MH4; Vista del Sol
## Worksheet for Pressure Pipe

| Project Description | |
|---|---|
| Project File | c:\haestad\fmw\dsrtflwr.fm2 |
| Worksheet | mh3 to mh4 |
| Flow Element | Pressure Pipe |
| Method | Hazen-Williams Formula |
| Solve For | Pressure at 1 |

| Input Data | |
|---|---|
| Pressure at 2 | 4.20 feet H20 |
| Elevation at 1 | 5,008.79 ft |
| Elevation at 2 | 5,002.60 ft |
| Length | 385.00 ft |
| C Coefficient | 101.0 |
| Diameter | 42.00 in |
| Discharge | 141.70 cfs |

| Results | | |
|---|---|---|
| Pressure at 1 | 5.64 | feet H20 |
| Headloss | 7.63 | ft |
| Energy Grade at 1 | 5,017.80 | ft |
| Energy Grade at 2 | 5,010.17 | ft |
| Hydraulic Grade at 1 | 5,014.43 | ft |
| Hydraulic Grade at 2 | 5,006.80 | ft |
| Flow Area | 9.62 | $ft^2$ |
| Wetted Perimeter | 11.00 | ft |
| Velocity | 14.73 | ft/s |
| Velocity Head | 3.37 | ft |
| Friction Slope | 0.019821 | ft/ft |

Notes:

Rim Elev @ MH4 = 5015.5 > 5014.43 = HGL

# MH 2 to MH3; Vista del Sol
## Worksheet for Pressure Pipe

| Project Description | |
|---|---|
| Project File | c:\haestad\fmw\dsrtflwr.fm2 |
| Worksheet | mh2 to mh3 |
| Flow Element | Pressure Pipe |
| Method | Hazen-Williams Formula |
| Solve For | Pressure at 1 |

| Input Data | |
|---|---|
| Pressure at 2 | 3.50 feet H20 |
| Elevation at 1 | 5,002.60 ft |
| Elevation at 2 | 4,994.78 ft |
| Length | 425.00 ft |
| C Coefficient | 101.0 |
| Diameter | 42.00 in |
| Discharge | 141.70 cfs |

| Results | | |
|---|---|---|
| Pressure at 1 | 4.10 | feet H20 |
| Headloss | 8.42 | ft |
| Energy Grade at 1 | 5,010.07 | ft |
| Energy Grade at 2 | 5,001.65 | ft |
| Hydraulic Grade at 1 | 5,006.70 | ft |
| Hydraulic Grade at 2 | 4,998.28 | ft |
| Flow Area | 9.62 | $ft^2$ |
| Wetted Perimeter | 11.00 | ft |
| Velocity | 14.73 | ft/s |
| Velocity Head | 3.37 | ft |
| Friction Slope | 0.019821 | ft/ft |

Notes:

Start of the 42" pipe

Rim elev at MH 3 = 5010.5 > 5006.70 = HGL

**ISAACSON & ARFMAN, P.A.**

*Consulting Engineering Associates*

*Thomas O. Isaacson, PE & LS • Fred C. Arfman, PE*
*Scott M. McGee, PE*

July 21, 1998

Ms. Susan Calongne, PE
Hydrology Division
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

**RE: Desert Flower Unit 3 Subdivision (M10/D12C)**
**Supplemental Submittal**

Dear Ms. Calongne:

Attached is a supplemental package of items to be reviewed and added to the Desert Flower Unit 3 Drainage Report. This submittal includes the design of an offsite temporary detention pond which will capture and detain the offsite runoff which currently flows east to the Amole del Norte Diversion Channel through a temporary drainage easement crossing Desert Flower Unit 3. Once Desert Flower Unit 3 is developed, the offsite runoff will flow east and then south along Unser Blvd. to an existing 42" storm drain which connects to the Amole. The developer for Desert Flower is willing to construct the preliminary detention pond to help keep the flows from entering onto Unser Blvd. (previously approved) and to utilize the cut material for the grading of future phases of the subdivision.

The pond is sized to contain the contributing developed portions of the West Gates Heights Subdivision, the portion of Unser that drains to the south and the undeveloped flows from Basin 37D (refer to attached Basin Map). The existing 42" storm drain which runs through the Vista del Sol Mobile Home Park will be the outfall line. The developer of Basin 37D, a portion of which will be the Silverado Subdivision, will be required to enlarge the pond to account for the developed flows and to provide some way of conveying the flows along the eastern basin boundary to the pond. Basin 408A will be allowed discharge into Unser Blvd. as previously discussed in the approved Arenal/Unser Drainage Management Plan.

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HYDROLOGY SECTION

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If you have any questions concerning this plan, please feel free to contact me at 268-8828.

Sincerely,
**ISAACSON & ARFMAN, P.A.**

Melissa Combs

Melissa Combs
MC/rtl

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =07/21/1998
INPUT FILE = DESERT~1.DAT USER NO.= ISCARFNM.I01

| COMMAND | HYDROGRAPH IDENTIFICATION | FROM ID NO. | TO ID NO. | AREA (SQ MI) | PEAK DISCHARGE (CFS) | RUNOFF VOLUME (AC-FT) | RUNOFF (INCHES) | TIME TO PEAK (HOURS) | CFS PER ACRE | PAGE = 1 NOTATION |
|---|---|---|---|---|---|---|---|---|---|---|
| *S | desertflower3a.DAT | | | | | | | | | |
| *S | REVISED BY: MJC 7/21/98 | | | | | | | | | |
| START | | | | | | | | | | TIME= .00 |
| RAINFALL TYPE= 1 | | | | | | | | | | RAIN6= 2.200 |
| *S 30 % of BASIN 101 (FULLY DEVELOPED) | | | | | | | | | | |
| COMPUTE NM HYD | 101.00 | - | 20 | .01110 | 18.28 | .596 | 1.00753 | 1.500 | 2.573 | PER IMP= 29.00 |
| *S **90 % OF AREA 102; A MIDDLE SCHOOL (ONSITE DETENTION TO REDUCE RUNOFF) | | | | | | | | | | |
| COMPUTE NM HYD | 102.00 | - | 1 | .03600 | 29.89 | .843 | .43925 | 1.533 | 1.297 | PER IMP= .00 |
| *S ROUTE THE RUNOFF IN A 28' F-F RESIDENTIAL STREET, S=2% | | | | | | | | | | |
| ROUTE | 102.10 | 1 | 2 | .03600 | 30.27 | .843 | .43928 | 1.533 | 1.314 | |
| *S **60 % OF AREA 103 (FULLY DEVELOPED) | | | | | | | | | | |
| COMPUTE NM HYD | 103.00 | - | 3 | .02640 | 43.46 | 1.419 | 1.00753 | 1.500 | 2.572 | PER IMP= 29.00 |
| *S ADD BASIN 103 AND HYDROGRAPH NO. 102 TOGETHER | | | | | | | | | | |
| ADD HYD | 103.10 | 2& 3 | 4 | .06240 | 72.88 | 2.262 | .67968 | 1.533 | 1.825 | |
| *S ADD BASIN 103.1 AND 101 TOGETHER | | | | | | | | | | |
| ADD HYD | 103.20 | 4&20 | 21 | .07350 | 90.80 | 2.858 | .72919 | 1.533 | 1.930 | |
| *S ROUTE THE FLOW IN AN EXISTING RESIDENTIAL STREET (ASSUME 28'F-F) | | | | | | | | | | |
| ROUTE | 103.10 | 4 | 5 | .06240 | 66.64 | 2.262 | .67969 | 1.567 | 1.669 | |
| *S ** 60% OF BASIN 200 (FULLY DEVELOPED) | | | | | | | | | | |
| COMPUTE NM HYD | 200.00 | - | 6 | .03180 | 52.35 | 1.709 | 1.00753 | 1.500 | 2.572 | PER IMP= 29.00 |
| *S ADD HYDROGRAPHS NO. 200 AND 103.2 TOGETHER | | | | | | | | | | |
| ADD HYD | 201.10 | 6&21 | 7 | .10530 | 142.12 | 4.567 | .81324 | 1.533 | 2.109 | |
| *S **ROUTE FLOW THROUGH A 48' STREET | | | | | | | | | | |
| ROUTE | 200.10 | 7 | 8 | .10530 | 135.06 | 4.567 | .81325 | 1.567 | 2.004 | |
| *S **BASIN 505 FULLY DEVELOPED | | | | | | | | | | |
| COMPUTE NM HYD | 505.00 | - | 9 | .02618 | 43.10 | 1.407 | 1.00753 | 1.500 | 2.572 | PER IMP= 29.00 |
| *S ADD HYDROGRAPHS NO. 200.1 AND 505 TOGETHER | | | | | | | | | | |
| ADD HYD | 505.10 | 9& 8 | 10 | .13148 | 176.66 | 5.974 | .85193 | 1.533 | 2.099 | |
| *S **ROUTE FLOWS TO POND VIA AN EARTHEN CHANNEL | | | | | | | | | | |
| *S **COMPUTE TRAVEL TIME THRU CHANNEL | | | | | | | | | | |
| ROUTE | 505.20 | 10 | 11 | .13148 | 176.33 | 5.974 | .85193 | 1.533 | 2.095 | |
| *S **BASIN 37D IS UNDEVELOPED | | | | | | | | | | |
| COMPUTE NM HYD | 506.00 | - | 12 | .13590 | 117.25 | 3.184 | .43925 | 1.533 | 1.348 | PER IMP= .00 |
| *S ADD HYDROGRAPHS NO. 505.2 AND 37D TOGETHER | | | | | | | | | | |
| ADD HYD | 505.30 | 12&11 | 13 | .26738 | 293.58 | 9.158 | .64218 | 1.533 | 1.716 | |
| *S********** | | | | | | | | | | |
| *S********** | | | | | | | | | | |
| *S DESIGN A RETENTION FACILITY TO REDUCE TO FLOW TO THAT WHICH WILL | | | | | | | | | | |
| *S FIT IN A 48" RCP @ S=1.5% | | | | | | | | | | |
| ROUTE RESERVOIR | 400.10 | 13 | 14 | .26738 | 141.76 | 9.155 | .64197 | 1.700 | .828 | AC-FT= 3.615 |
| FINISH | | | | | | | | | | |

OK

off-site from Westgate
+ Unser
+ exist offsite

+ Portion of 403A ?
102 cfs into
42" thru
mobile homes

```
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
     RUN DATE (MON/DAY/YR) = 07/21/1998
     START TIME (HR:MIN:SEC) = 08:45:30     USER NO.= ISCARFNM.I01
     INPUT FILE = DESERT~1.DAT

*S                  desertflower3a.DAT
*S                  REVISED BY: MJC 7/21/98
START               RAINFALL BEGINS AT 0.0 HRS
RAINFALL            TYPE=1 RAIN QUARTER=0 RAIN ONE=1.87
                    RAIN SIX=2.20 RAIN DAY=2.66 DT=0.03333HR

               COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
               DT =    .033330 HOURS       END TIME =     5.999400 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

*S 30 % of BASIN 101 (FULLY DEVELOPED)
COMPUTE NM HYD      ID=20 HYD NO=101.00 AREA=0.0111 SQ MI
                    PER A=33 PER B=19 PER C=19 PER D=29
                    TP=-0.1333 HR   MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   12.709    CFS   UNIT VOLUME =    .9985       B =   526.28      P60 = 1.8700
    AREA =      .003219 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .139463HR    TP =   .133300HR    K/TP RATIO =  1.046235     SHAPE CONSTANT, N =  3.374403
    UNIT PEAK =   18.390    CFS   UNIT VOLUME =    .9993       B =   311.05      P60 = 1.8700
    AREA =      .007881 SQ MI    IA =    .52958 INCHES    INF =   1.33282 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330
```

```
PRINT HYD            ID=20   CODE=1

                                   PARTIAL HYDROGRAPH   101.00

    RUNOFF VOLUME =     1.00753 INCHES     =        .5965 ACRE-FEET
    PEAK DISCHARGE RATE =      18.28 CFS  AT   1.500 HOURS   BASIN AREA =   .0111 SQ. MI.


*S **90 % OF AREA 102; A MIDDLE SCHOOL (ONSITE DETENTION TO REDUCE RUNOFF)
COMPUTE NM HYD       ID=1 HYD NO=102.00 AREA=0.036 SQ MI
                     PER A=100 PER B=0 PER C=0 PER D=0
                     TP=-0.1333 HR   MASS RAIN=-1

    K =   .163684HR    TP =   .133300HR    K/TP RATIO =  1.227936     SHAPE CONSTANT, N =  2.899764
    UNIT PEAK =   73.876    CFS   UNIT VOLUME =    .9994       B =   273.54      P60 = 1.8700
    AREA =      .036000 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=1

                                   PARTIAL HYDROGRAPH   102.00

    RUNOFF VOLUME =      .43925 INCHES     =        .8434 ACRE-FEET
    PEAK DISCHARGE RATE =      29.89 CFS  AT   1.533 HOURS   BASIN AREA =   .0360 SQ. MI.


*S ROUTE THE RUNOFF IN A 28' F-F RESIDENTIAL STREET, S=2%
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEG=1 MIN EL=100.00 MAX EL=101.00
                     CH SLOPE=0.02 FP SLOPE=0.02 N=0.017 DIST=48.0
                     DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
                      0   101.00 10.0 100.67 10.1 100.00 24.0 100.28
                     38.0 100.00 38.1 100.67 48.0 101.00
```

RATING CURVE VALLEY SECTION 1.0

| WATER SURFACE ELEV | FLOW AREA SQ FT | FLOW RATE CFS | TOP WIDTH FT |
|---|---|---|---|
| 100.00 | .00 | .00 | .00 |
| 100.05 | .14 | .15 | 5.26 |
| 100.11 | .55 | .95 | 10.52 |
| 100.16 | 1.25 | 2.80 | 15.78 |
| 100.21 | 2.22 | 6.03 | 21.04 |
| 100.26 | 3.46 | 10.94 | 26.30 |
| 100.32 | 4.92 | 18.84 | 27.99 |
| 100.37 | 6.39 | 29.08 | 28.01 |
| 100.42 | 7.87 | 41.00 | 28.03 |
| 100.47 | 9.34 | 54.46 | 28.04 |
| 100.53 | 10.82 | 69.37 | 28.06 |
| 100.58 | 12.30 | 85.66 | 28.07 |
| 100.63 | 13.78 | 103.24 | 28.09 |
| 100.68 | 15.26 | 119.89 | 28.96 |

```
                                        100.74       16.87       132.52       32.13
                                        100.79       18.64       147.34       35.31
                                        100.84       20.59       164.39       38.48
                                        100.89       22.69       183.72       41.66
                                        100.95       24.97       205.41       44.83
                                        101.00       27.41       229.56       48.00
COMPUTE TRAVEL TIME  ID=2 REACH NO=1 NO VS=1 L=400 FT SLP=0.02

                          TRAVEL TIME TABLE
                                        REACH=  1.0

                          WATER       AVERAGE     FLOW        TRAVEL
                          DEPTH       AREA        RATE        TIME
                          FEET        SQ.FT.      CFS         HRS
                             .053        .138         .15       .1028
                             .105        .554         .95       .0647
                             .158       1.246        2.80       .0494
                             .211       2.215        6.03       .0408
                             .263       3.461       10.94       .0351
                             .316       4.920       18.84       .0290
                             .368       6.394       29.08       .0244
                             .421       7.869       41.00       .0213
                             .474       9.344       54.46       .0191
                             .526      10.821       69.37       .0173
                             .579      12.298       85.66       .0160
                             .632      13.776      103.24       .0148
                             .684      15.261      119.89       .0141
                             .737      16.869      132.52       .0141
                             .790      18.644      147.34       .0141
                             .842      20.586      164.39       .0139
                             .895      22.695      183.72       .0137
                             .947      24.971      205.41       .0135
                            1.000      27.414      229.56       .0133
ROUTE                 ID=2 HYD NO=102.1 INFLOW ID=1 DT=0.0
PRINT HYD             ID=2 CODE=1

                                   PARTIAL HYDROGRAPH   102.10

    RUNOFF VOLUME =       .43928 INCHES     =        .8434 ACRE-FEET
    PEAK DISCHARGE RATE =      30.27 CFS  AT   1.533 HOURS   BASIN AREA =   .0360 SQ. MI.


*S **60 % OF AREA 103 (FULLY DEVELOPED)
COMPUTE NM HYD        ID=3 HYD NO=103.00 AREA=0.0264 SQ MI
                      PER A=33 PER B=19 PER C=19 PER D=29
                      TP=-0.1333 HR   MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   30.226    CFS   UNIT VOLUME =    .9990       B =   526.28      P60 = 1.8700
    AREA =      .007656 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330
```

```
K =    .139463HR    TP =    .133300HR    K/TP RATIO =  1.046235     SHAPE CONSTANT, N =  3.374403
UNIT PEAK =    43.738    CFS   UNIT VOLUME =     .9997        B =   311.05       P60 = 1.8700
AREA =       .018744 SQ MI    IA =     .52958 INCHES    INF =   1.33282 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD            ID=3   CODE=1

                                   PARTIAL HYDROGRAPH   103.00

RUNOFF VOLUME =     1.00753 INCHES     =       1.4186 ACRE-FEET
PEAK DISCHARGE RATE =      43.46 CFS  AT   1.500 HOURS   BASIN AREA =   .0264 SQ. MI.


*S ADD BASIN 103 AND HYDROGRAPH NO. 102 TOGETHER
ADD HYD              ID=4 HYD NO=103.1 ID=2 ID=3
PRINT HYD            ID=4 CODE=1

                                   PARTIAL HYDROGRAPH   103.10

RUNOFF VOLUME =      .67968 INCHES     =       2.2620 ACRE-FEET
PEAK DISCHARGE RATE =      72.88 CFS  AT   1.533 HOURS   BASIN AREA =   .0624 SQ. MI.


*S ADD BASIN 103.1 AND 101 TOGETHER
ADD HYD              ID=21 HYD NO=103.2 ID=4 ID=20
PRINT HYD            ID=21 CODE=1

                                   PARTIAL HYDROGRAPH   103.20

RUNOFF VOLUME =      .72919 INCHES     =       2.8584 ACRE-FEET
PEAK DISCHARGE RATE =      90.80 CFS  AT   1.533 HOURS   BASIN AREA =   .0735 SQ. MI.


*S ROUTE THE FLOW IN AN EXISTING RESIDENTIAL STREET (ASSUME 28'F-F)
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEG=1 MIN EL=100.00 MAX EL=101.00
                     CH SLOPE=0.02 FP SLOPE=0.02 N=0.017 DIST=48.0
                     DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
                      0   101.00 10.0 100.67 10.1 100.00 24.0 100.28
                     38.0 100.00 38.1 100.67 48.0 101.00

                                   RATING CURVE VALLEY SECTION  1.0
                                      WATER       FLOW        FLOW        TOP
                                     SURFACE      AREA        RATE        WIDTH
                                      ELEV        SQ FT       CFS         FT
                                     100.00         .00         .00         .00
                                     100.05         .14         .15        5.26
                                     100.11         .55         .95       10.52
                                     100.16        1.25        2.80       15.78
                                     100.21        2.22        6.03       21.04
```

| | | | |
|---|---|---|---|
| 100.26 | 3.46 | 10.94 | 26.30 |
| 100.32 | 4.92 | 18.84 | 27.99 |
| 100.37 | 6.39 | 29.08 | 28.01 |
| 100.42 | 7.87 | 41.00 | 28.03 |
| 100.47 | 9.34 | 54.46 | 28.04 |
| 100.53 | 10.82 | 69.37 | 28.06 |
| 100.58 | 12.30 | 85.66 | 28.07 |
| 100.63 | 13.78 | 103.24 | 28.09 |
| 100.68 | 15.26 | 119.89 | 28.96 |
| 100.74 | 16.87 | 132.52 | 32.13 |
| 100.79 | 18.64 | 147.34 | 35.31 |
| 100.84 | 20.59 | 164.39 | 38.48 |
| 100.89 | 22.69 | 183.72 | 41.66 |
| 100.95 | 24.97 | 205.41 | 44.83 |
| 101.00 | 27.41 | 229.56 | 48.00 |

COMPUTE TRAVEL TIME ID=5 REACH NO=1 NO VS=1 L=1400 FT SLP=0.02

TRAVEL TIME TABLE

REACH= 1.0

| WATER DEPTH FEET | AVERAGE AREA SQ.FT. | FLOW RATE CFS | TRAVEL TIME HRS |
|---|---|---|---|
| .053 | .138 | .15 | .3597 |
| .105 | .554 | .95 | .2266 |
| .158 | 1.246 | 2.80 | .1729 |
| .211 | 2.215 | 6.03 | .1427 |
| .263 | 3.461 | 10.94 | .1230 |
| .316 | 4.920 | 18.84 | .1016 |
| .368 | 6.394 | 29.08 | .0855 |
| .421 | 7.869 | 41.00 | .0746 |
| .474 | 9.344 | 54.46 | .0667 |
| .526 | 10.821 | 69.37 | .0607 |
| .579 | 12.298 | 85.66 | .0558 |
| .632 | 13.776 | 103.24 | .0519 |
| .684 | 15.261 | 119.89 | .0495 |
| .737 | 16.869 | 132.52 | .0495 |
| .790 | 18.644 | 147.34 | .0492 |
| .842 | 20.586 | 164.39 | .0487 |
| .895 | 22.695 | 183.72 | .0480 |
| .947 | 24.971 | 205.41 | .0473 |
| 1.000 | 27.414 | 229.56 | .0464 |

ROUTE ID=5 HYD NO=103.1 INFLOW ID=4 DT=0.0
PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 103.10

RUNOFF VOLUME = .67969 INCHES = 2.2620 ACRE-FEET
PEAK DISCHARGE RATE = 66.64 CFS AT 1.567 HOURS BASIN AREA = .0624 SQ. MI.

```
*S ** 60% OF BASIN 200 (FULLY DEVELOPED)
COMPUTE NM HYD       ID=6 HYD NO=200.00 AREA=0.0318 SQ MI
                     PER A=33 PER B=19 PER C=19 PER D=29
                     TP=-0.1333 HR   MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   36.409    CFS   UNIT VOLUME =    .9990       B =   526.28      P60 = 1.8700
    AREA =      .009222 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .139463HR    TP =   .133300HR    K/TP RATIO =  1.046235     SHAPE CONSTANT, N =  3.374403
    UNIT PEAK =   52.684    CFS   UNIT VOLUME =    .9998       B =   311.05      P60 = 1.8700
    AREA =      .022578 SQ MI    IA =    .52958 INCHES    INF =   1.33282 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD            ID=6   CODE=1

                                  PARTIAL HYDROGRAPH   200.00


    RUNOFF VOLUME =     1.00753 INCHES     =       1.7088 ACRE-FEET
    PEAK DISCHARGE RATE =      52.35 CFS  AT   1.500 HOURS   BASIN AREA =   .0318 SQ. MI.


*S ADD HYDROGRAPHS NO. 200 AND 103.2 TOGETHER
ADD HYD              ID=7 HYD NO=201.1 ID=6 ID=21
PRINT HYD            ID=7 CODE=1

                                  PARTIAL HYDROGRAPH   201.10


    RUNOFF VOLUME =      .81324 INCHES     =       4.5671 ACRE-FEET
    PEAK DISCHARGE RATE =     142.12 CFS  AT   1.533 HOURS   BASIN AREA =   .1053 SQ. MI.


*S **ROUTE FLOW  THROUGH A 48' STREET
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEG=1 MIN EL=100.00 MAX EL=101.00
                     CH SLOPE=0.02 FP SLOPE=0.02 N=0.017 DIST=48.0
                     DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
                      0   101.00 10.0 100.67 10.1 100.00 24.0 100.28
                     38.0 100.00 38.1 100.67 48.0 101.00

                                  RATING CURVE VALLEY SECTION  1.0
                                     WATER       FLOW        FLOW        TOP
                                    SURFACE      AREA        RATE        WIDTH
                                     ELEV        SQ FT       CFS         FT
                                    100.00         .00         .00         .00
                                    100.05         .14         .15        5.26
                                    100.11         .55         .95       10.52
                                    100.16        1.25        2.80       15.78
                                    100.21        2.22        6.03       21.04
                                    100.26        3.46       10.94       26.30
```

| | | | |
|---|---|---|---|
| 100.32 | 4.92 | 18.84 | 27.99 |
| 100.37 | 6.39 | 29.08 | 28.01 |
| 100.42 | 7.87 | 41.00 | 28.03 |
| 100.47 | 9.34 | 54.46 | 28.04 |
| 100.53 | 10.82 | 69.37 | 28.06 |
| 100.58 | 12.30 | 85.66 | 28.07 |
| 100.63 | 13.78 | 103.24 | 28.09 |
| 100.68 | 15.26 | 119.89 | 28.96 |
| 100.74 | 16.87 | 132.52 | 32.13 |
| 100.79 | 18.64 | 147.34 | 35.31 |
| 100.84 | 20.59 | 164.39 | 38.48 |
| 100.89 | 22.69 | 183.72 | 41.66 |
| 100.95 | 24.97 | 205.41 | 44.83 |
| 101.00 | 27.41 | 229.56 | 48.00 |

COMPUTE TRAVEL TIME ID=8 REACH NO=1 NO VS=1 L=1200 FT SLP=0.02

TRAVEL TIME TABLE

REACH= 1.0

| WATER DEPTH FEET | AVERAGE AREA SQ.FT. | FLOW RATE CFS | TRAVEL TIME HRS |
|---|---|---|---|
| .053 | .138 | .15 | .3083 |
| .105 | .554 | .95 | .1942 |
| .158 | 1.246 | 2.80 | .1482 |
| .211 | 2.215 | 6.03 | .1223 |
| .263 | 3.461 | 10.94 | .1054 |
| .316 | 4.920 | 18.84 | .0871 |
| .368 | 6.394 | 29.08 | .0733 |
| .421 | 7.869 | 41.00 | .0640 |
| .474 | 9.344 | 54.46 | .0572 |
| .526 | 10.821 | 69.37 | .0520 |
| .579 | 12.298 | 85.66 | .0479 |
| .632 | 13.776 | 103.24 | .0445 |
| .684 | 15.261 | 119.89 | .0424 |
| .737 | 16.869 | 132.52 | .0424 |
| .790 | 18.644 | 147.34 | .0422 |
| .842 | 20.586 | 164.39 | .0417 |
| .895 | 22.695 | 183.72 | .0412 |
| .947 | 24.971 | 205.41 | .0405 |
| 1.000 | 27.414 | 229.56 | .0398 |

ROUTE ID=8 HYD NO=200.1 INFLOW ID=7 DT=0.0
PRINT HYD ID=8 CODE=1

PARTIAL HYDROGRAPH 200.10

RUNOFF VOLUME = .81325 INCHES = 4.5672 ACRE-FEET
PEAK DISCHARGE RATE = 135.06 CFS AT 1.567 HOURS BASIN AREA = .1053 SQ. MI.

```
*S **BASIN 505 FULLY DEVELOPED
COMPUTE NM HYD       ID=9 HYD NO=505.00 AREA=0.02618 SQ MI
                     PER A=33 PER B=19 PER C=19 PER D=29
                     TP=-0.1333 HR   MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   29.974    CFS   UNIT VOLUME =    .9990       B =   526.28      P60 = 1.8700
    AREA =      .007592 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .139463HR    TP =   .133300HR    K/TP RATIO =  1.046235     SHAPE CONSTANT, N =  3.374403
    UNIT PEAK =   43.373    CFS   UNIT VOLUME =    .9997       B =   311.05      P60 = 1.8700
    AREA =      .018588 SQ MI    IA =    .52958 INCHES    INF =   1.33282 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD            ID=9   CODE=1

                                 OUTFLOW HYDROGRAPH RESERVOIR   505.00


    RUNOFF VOLUME =     1.00753 INCHES     =       1.4068 ACRE-FEET
    PEAK DISCHARGE RATE =      43.10 CFS  AT   1.500 HOURS   BASIN AREA =   .0262 SQ. MI.


*S ADD HYDROGRAPHS NO. 200.1 AND 505 TOGETHER
ADD HYD              ID=10 HYD NO=505.1 ID=9 ID=8
PRINT HYD            ID=10 CODE=1

                                 OUTFLOW HYDROGRAPH RESERVOIR   505.10


    RUNOFF VOLUME =      .85193 INCHES     =       5.9739 ACRE-FEET
    PEAK DISCHARGE RATE =     176.66 CFS  AT   1.533 HOURS   BASIN AREA =   .1315 SQ. MI.


*S **ROUTE FLOWS TO POND VIA AN EARTHEN CHANNEL
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
                     MIN ELEV=100.00 FT MAX ELEV=103.00 FT
                     CH SLP=.01 FT FP SLP=.01 FT N=-.025
                     DIST=680 FT
                     DIST ELEV    DIST ELEV    DIST ELEV
                     0    103.00  6    100.00  18   100.00
                     24   103.00

                                 RATING CURVE VALLEY SECTION  1.0
                                     WATER       FLOW        FLOW        TOP
                                    SURFACE      AREA        RATE        WIDTH
                                     ELEV        SQ FT       CFS         FT
                                    100.00         .00         .00         .00
                                    100.16   310674.10 25879360.00     3279.71
                                    100.32   311196.00 25798000.00     3330.65
                                    100.47   311721.90 25861480.00     3331.67
```

| | | | |
|---|---|---|---|
| 100.63 | 312248.10 | 25925030.00 | 3332.69 |
| 100.79 | 312774.40 | 25988630.00 | 3333.71 |
| 100.95 | 313300.90 | 26052300.00 | 3334.73 |
| 101.11 | 313827.50 | 26116770.00 | 3335.64 |
| 101.26 | 314354.30 | 26181670.00 | 3336.50 |
| 101.42 | 314881.20 | 26246630.00 | 3337.36 |
| 101.58 | 315408.20 | 26311650.00 | 3338.22 |
| 101.74 | 315935.30 | 26376740.00 | 3339.08 |
| 101.89 | 316462.70 | 26441890.00 | 3339.93 |
| 102.05 | 316990.10 | 26507090.00 | 3340.79 |
| 102.21 | 317517.70 | 26572360.00 | 3341.65 |
| 102.37 | 318045.30 | 26637690.00 | 3342.51 |
| 102.53 | 318573.20 | 26703070.00 | 3343.37 |
| 102.68 | 319101.20 | 26768530.00 | 3344.23 |
| 102.84 | 319629.30 | 26834040.00 | 3345.09 |
| 103.00 | 320157.50 | 26900740.00 | 3345.79 |

```
*S **COMPUTE TRAVEL TIME THRU CHANNEL
COMPUTE TRAVEL TIME ID=11 REACH NO=1 NO VS=1 L=850
                    SLP=.01
```

TRAVEL TIME TABLE

REACH= 1.0

| WATER DEPTH FEET | AVERAGE AREA SQ.FT. | FLOW RATE CFS | TRAVEL TIME HRS |
|---|---|---|---|
| .158 | 310674.100 | 25879360.00 | .0028 |
| .157 | 309697.400 | 25798000.00 | .0028 |
| .158 | 310459.500 | 25861480.00 | .0028 |
| .632 | 312248.100 | 25925030.00 | .0028 |
| .789 | 312774.400 | 25988630.00 | .0028 |
| .947 | 313300.900 | 26052300.00 | .0028 |
| 1.105 | 313827.500 | 26116770.00 | .0028 |
| 1.263 | 314354.300 | 26181670.00 | .0028 |
| 1.421 | 314881.200 | 26246630.00 | .0028 |
| 1.579 | 315408.200 | 26311650.00 | .0028 |
| 1.737 | 315935.300 | 26376740.00 | .0028 |
| 1.895 | 316462.700 | 26441890.00 | .0028 |
| 2.053 | 316990.100 | 26507090.00 | .0028 |
| 2.211 | 317517.700 | 26572360.00 | .0028 |
| 2.368 | 318045.300 | 26637690.00 | .0028 |
| 2.526 | 318573.200 | 26703070.00 | .0028 |
| 2.684 | 319101.200 | 26768530.00 | .0028 |
| 2.842 | 319629.300 | 26834040.00 | .0028 |
| 3.000 | 320157.500 | 26900740.00 | .0028 |

```
ROUTE               ID=11 HYD NO=505.2 INFLOW ID=10 DT=0.0
PRINT HYD           ID=11 CODE=1
```

OUTFLOW HYDROGRAPH RESERVOIR 505.20

RUNOFF VOLUME = .85193 INCHES = 5.9739 ACRE-FEET
PEAK DISCHARGE RATE = 176.33 CFS AT 1.533 HOURS BASIN AREA = .1315 SQ. MI.

```
*S **BASIN 37D IS UNDEVELOPED
COMPUTE NM HYD       ID=12 HYD NO=506 AREA=0.1359 SQ MI
                     PER A=100 PER B=0 PER C=0 PER D=0
                     TP=-0.1333 HR   MASS RAIN=-1

    K =   .154902HR    TP =   .133300HR    K/TP RATIO =  1.162053     SHAPE CONSTANT, N =  3.050591
    UNIT PEAK =   291.50    CFS   UNIT VOLUME =    .9997       B =   285.92      P60 = 1.8700
    AREA =      .135900 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD            ID=12   CODE=1

                                 OUTFLOW HYDROGRAPH RESERVOIR   506.00


    RUNOFF VOLUME =      .43925 INCHES     =       3.1837 ACRE-FEET
    PEAK DISCHARGE RATE =     117.25 CFS  AT   1.533 HOURS   BASIN AREA =   .1359 SQ. MI.


*S ADD HYDROGRAPHS NO. 505.2 AND 37D TOGETHER
ADD HYD              ID=13 HYD NO=505.3 ID=12 ID=11
PRINT HYD            ID=13 CODE=1

                                 OUTFLOW HYDROGRAPH RESERVOIR   505.30

    RUNOFF VOLUME =      .64218 INCHES     =       9.1576 ACRE-FEET
    PEAK DISCHARGE RATE =     293.58 CFS  AT   1.533 HOURS   BASIN AREA =   .2674 SQ. MI.


*S*************************************************************************
*S*************************************************************************
*S DESIGN A RETENTION FACILITY TO REDUCE TO FLOW TO THAT WHICH WILL
*S FIT IN A 48" RCP @ S=1.5%
ROUTE RESERVOIR      ID=14 HYD NO=400.1 INFLOW ID=13  CODE=1
                     OUTFLOW(CFS)  STORAGE(AF)  ELEV(FT)
                         0              0          0
                         2.89         .685         1
                         39.90        1.44         2
                         98.68        2.26         3
                         131.85       3.17         4
                         142.75       3.66         4.5

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

    TIME       INFLOW     ELEV       VOLUME     OUTFLOW
    (HRS)      (CFS)      (FEET)     (AC-FT)    (CFS)

      .00        .00        .00        .000       .00
      .03        .00        .00        .000       .00
      .07        .00        .00        .000       .00
      .10        .00        .00        .000       .00
      .13        .00        .00        .000       .00
```

| | | | | |
|---|---|---|---|---|
| .17 | .00 | .00 | .000 | .00 |
| .20 | .00 | .00 | .000 | .00 |
| .23 | .00 | .00 | .000 | .00 |
| .27 | .00 | .00 | .000 | .00 |
| .30 | .00 | .00 | .000 | .00 |
| .33 | .00 | .00 | .000 | .00 |
| .37 | .00 | .00 | .000 | .00 |
| .40 | .00 | .00 | .000 | .00 |
| .43 | .00 | .00 | .000 | .00 |
| .47 | .00 | .00 | .000 | .00 |
| .50 | .00 | .00 | .000 | .00 |
| .53 | .00 | .00 | .000 | .00 |
| .57 | .00 | .00 | .000 | .00 |
| .60 | .00 | .00 | .000 | .00 |
| .63 | .00 | .00 | .000 | .00 |
| .67 | .00 | .00 | .000 | .00 |
| .70 | .00 | .00 | .000 | .00 |
| .73 | .00 | .00 | .000 | .00 |
| .77 | .00 | .00 | .000 | .00 |
| .80 | .00 | .00 | .000 | .00 |
| .83 | .00 | .00 | .000 | .00 |
| .87 | .00 | .00 | .000 | .00 |
| .90 | .00 | .00 | .000 | .00 |
| .93 | .00 | .00 | .000 | .00 |
| .97 | .00 | .00 | .000 | .00 |
| 1.00 | .00 | .00 | .000 | .00 |
| 1.03 | .00 | .00 | .000 | .00 |
| 1.07 | .00 | .00 | .000 | .00 |
| 1.10 | .00 | .00 | .000 | .00 |
| 1.13 | .00 | .00 | .000 | .00 |
| 1.17 | .06 | .00 | .000 | .00 |
| 1.20 | .41 | .00 | .001 | .00 |
| 1.23 | 1.44 | .00 | .003 | .01 |
| 1.27 | 3.55 | .01 | .010 | .04 |
| 1.30 | 7.22 | .04 | .025 | .10 |
| 1.33 | 13.13 | .08 | .052 | .22 |
| 1.37 | 29.57 | .16 | .110 | .46 |
| 1.40 | 70.65 | .36 | .246 | 1.04 |
| 1.43 | 139.68 | .78 | .531 | 2.24 |
| 1.47 | 216.84 | 1.41 | .994 | 18.05 |
| 1.50 | 273.73 | 2.17 | 1.577 | 49.70 |
| 1.53 | 293.58 | 2.88 | 2.163 | 91.74 |
| 1.57 | 282.41 | 3.45 | 2.673 | 113.75 |
| 1.60 | 254.37 | 3.90 | 3.079 | 128.54 |
| 1.63 | 218.84 | 4.20 | 3.366 | 136.21 |
| 1.67 | 183.59 | 4.38 | 3.540 | 140.08 |
| 1.70 | 153.08 | 4.45 | 3.615 | 141.76 |
| 1.73 | 128.12 | 4.45 | 3.612 | 141.69 |
| 1.77 | 107.83 | 4.39 | 3.549 | 140.28 |
| 1.80 | 91.32 | 4.28 | 3.440 | 137.86 |
| 1.83 | 77.78 | 4.13 | 3.298 | 134.69 |

| TIME (HRS) | INFLOW (CFS) | ELEV (FEET) | VOLUME (AC-FT) | OUTFLOW (CFS) |
|---|---|---|---|---|
| 1.87 | 66.77 | 3.96 | 3.132 | 130.45 |
| 1.90 | 58.20 | 3.76 | 2.953 | 123.95 |
| 1.93 | 51.85 | 3.56 | 2.773 | 117.36 |
| 1.97 | 47.11 | 3.37 | 2.595 | 110.87 |
| 2.00 | 43.27 | 3.18 | 2.422 | 104.59 |
| 2.03 | 40.07 | 3.00 | 2.257 | 98.49 |
| 2.07 | 37.09 | 2.81 | 2.107 | 87.72 |
| 2.10 | 33.77 | 2.65 | 1.976 | 78.32 |
| 2.13 | 30.10 | 2.51 | 1.860 | 69.99 |
| 2.17 | 26.62 | 2.38 | 1.755 | 62.51 |
| 2.20 | 23.66 | 2.27 | 1.662 | 55.79 |
| 2.23 | 21.22 | 2.17 | 1.578 | 49.80 |
| 2.27 | 19.20 | 2.08 | 1.504 | 44.48 |
| 2.30 | 17.49 | 2.00 | 1.438 | 39.82 |
| 2.33 | 16.01 | 1.92 | 1.379 | 36.90 |
| 2.37 | 14.72 | 1.85 | 1.323 | 34.18 |
| 2.40 | 13.57 | 1.78 | 1.272 | 31.64 |
| 2.43 | 12.50 | 1.71 | 1.224 | 29.29 |
| 2.47 | 11.53 | 1.65 | 1.179 | 27.10 |
| 2.50 | 10.66 | 1.60 | 1.138 | 25.08 |
| 2.53 | 9.86 | 1.55 | 1.099 | 23.20 |
| 2.57 | 9.12 | 1.50 | 1.064 | 21.47 |
| 2.60 | 8.46 | 1.46 | 1.031 | 19.87 |
| 2.63 | 7.86 | 1.42 | 1.001 | 18.39 |
| 2.67 | 7.32 | 1.38 | .973 | 17.02 |
| 2.70 | 6.81 | 1.35 | .948 | 15.76 |
| 2.73 | 6.34 | 1.32 | .924 | 14.60 |
| 2.77 | 5.89 | 1.29 | .902 | 13.53 |
| 2.80 | 5.48 | 1.26 | .882 | 12.53 |
| 2.83 | 5.11 | 1.24 | .863 | 11.62 |
| 2.87 | 4.76 | 1.21 | .846 | 10.77 |
| 2.90 | 4.43 | 1.19 | .830 | 9.99 |
| 2.93 | 4.13 | 1.17 | .815 | 9.27 |
| 2.97 | 3.86 | 1.15 | .802 | 8.60 |
| 3.00 | 3.62 | 1.14 | .789 | 7.99 |
| 3.03 | 3.40 | 1.12 | .777 | 7.42 |
| 3.07 | 3.19 | 1.11 | .767 | 6.90 |
| 3.10 | 3.00 | 1.10 | .757 | 6.42 |
| 3.13 | 2.82 | 1.08 | .748 | 5.97 |
| 3.17 | 2.66 | 1.07 | .740 | 5.57 |
| 3.20 | 2.51 | 1.06 | .732 | 5.19 |
| 3.23 | 2.36 | 1.05 | .725 | 4.84 |
| 3.27 | 2.23 | 1.04 | .718 | 4.52 |
| 3.30 | 2.11 | 1.04 | .712 | 4.22 |
| 3.33 | 1.98 | 1.03 | .707 | 3.95 |
| 3.37 | 1.86 | 1.02 | .701 | 3.69 |
| 3.40 | 1.76 | 1.02 | .696 | 3.45 |
| 3.43 | 1.66 | 1.01 | .692 | 3.23 |
| 3.47 | 1.58 | 1.00 | .688 | 3.03 |
| 3.50 | 1.49 | 1.00 | .684 | 2.89 |
| 3.53 | 1.40 | .99 | .680 | 2.87 |
| 3.57 | 1.33 | .99 | .676 | 2.85 |

| | | | | |
|---|---|---|---|---|
| 3.60 | 1.27 | .98 | .672 | 2.83 |
| 3.63 | 1.21 | .97 | .667 | 2.81 |
| 3.67 | 1.16 | .97 | .663 | 2.80 |
| 3.70 | 1.11 | .96 | .658 | 2.78 |

| TIME (HRS) | INFLOW (CFS) | ELEV (FEET) | VOLUME (AC-FT) | OUTFLOW (CFS) |
|---|---|---|---|---|
| 3.73 | 1.06 | .95 | .654 | 2.76 |
| 3.77 | 1.02 | .95 | .649 | 2.74 |
| 3.80 | .98 | .94 | .644 | 2.72 |
| 3.83 | .94 | .93 | .639 | 2.70 |
| 3.87 | .91 | .93 | .634 | 2.68 |
| 3.90 | .87 | .92 | .629 | 2.66 |
| 3.93 | .84 | .91 | .625 | 2.64 |
| 3.97 | .82 | .90 | .620 | 2.61 |
| 4.00 | .79 | .90 | .615 | 2.59 |
| 4.03 | .76 | .89 | .610 | 2.57 |
| 4.07 | .74 | .88 | .605 | 2.55 |
| 4.10 | .72 | .88 | .600 | 2.53 |
| 4.13 | .70 | .87 | .595 | 2.51 |
| 4.17 | .68 | .86 | .590 | 2.49 |
| 4.20 | .67 | .85 | .585 | 2.47 |
| 4.23 | .65 | .85 | .580 | 2.45 |
| 4.27 | .63 | .84 | .575 | 2.43 |
| 4.30 | .62 | .83 | .570 | 2.40 |
| 4.33 | .61 | .82 | .565 | 2.38 |
| 4.37 | .59 | .82 | .560 | 2.36 |
| 4.40 | .58 | .81 | .555 | 2.34 |
| 4.43 | .57 | .80 | .550 | 2.32 |
| 4.47 | .56 | .80 | .546 | 2.30 |
| 4.50 | .55 | .79 | .541 | 2.28 |
| 4.53 | .54 | .78 | .536 | 2.26 |
| 4.57 | .53 | .78 | .531 | 2.24 |
| 4.60 | .53 | .77 | .527 | 2.22 |
| 4.63 | .52 | .76 | .522 | 2.20 |
| 4.67 | .51 | .76 | .517 | 2.18 |
| 4.70 | .51 | .75 | .513 | 2.16 |
| 4.73 | .51 | .74 | .508 | 2.14 |
| 4.77 | .50 | .74 | .504 | 2.13 |
| 4.80 | .50 | .73 | .499 | 2.11 |
| 4.83 | .50 | .72 | .495 | 2.09 |
| 4.87 | .49 | .72 | .491 | 2.07 |
| 4.90 | .49 | .71 | .486 | 2.05 |
| 4.93 | .49 | .70 | .482 | 2.03 |
| 4.97 | .48 | .70 | .478 | 2.02 |
| 5.00 | .48 | .69 | .474 | 2.00 |
| 5.03 | .48 | .69 | .469 | 1.98 |
| 5.07 | .48 | .68 | .465 | 1.96 |
| 5.10 | .49 | .67 | .461 | 1.95 |
| 5.13 | .49 | .67 | .457 | 1.93 |
| 5.17 | .49 | .66 | .453 | 1.91 |
| 5.20 | .49 | .66 | .449 | 1.90 |
| 5.23 | .49 | .65 | .446 | 1.88 |
| 5.27 | .49 | .64 | .442 | 1.86 |

| | | | | |
|---|---|---|---|---|
| 5.30 | .49 | .64 | .438 | 1.85 |
| 5.33 | .49 | .63 | .434 | 1.83 |
| 5.37 | .49 | .63 | .431 | 1.82 |
| 5.40 | .49 | .62 | .427 | 1.80 |
| 5.43 | .49 | .62 | .423 | 1.79 |
| 5.47 | .49 | .61 | .420 | 1.77 |
| 5.50 | .50 | .61 | .416 | 1.76 |
| 5.53 | .50 | .60 | .413 | 1.74 |
| 5.57 | .50 | .60 | .410 | 1.73 |

| TIME (HRS) | INFLOW (CFS) | ELEV (FEET) | VOLUME (AC-FT) | OUTFLOW (CFS) |
|---|---|---|---|---|
| 5.60 | .51 | .59 | .406 | 1.71 |
| 5.63 | .51 | .59 | .403 | 1.70 |
| 5.67 | .51 | .58 | .400 | 1.69 |
| 5.70 | .51 | .58 | .396 | 1.67 |
| 5.73 | .51 | .57 | .393 | 1.66 |
| 5.77 | .52 | .57 | .390 | 1.65 |
| 5.80 | .52 | .56 | .387 | 1.63 |
| 5.83 | .53 | .56 | .384 | 1.62 |
| 5.87 | .53 | .56 | .381 | 1.61 |
| 5.90 | .53 | .55 | .378 | 1.59 |
| 5.93 | .54 | .55 | .375 | 1.58 |
| 5.97 | .54 | .54 | .372 | 1.57 |
| 6.00 | .55 | .54 | .369 | 1.56 |
| 6.03 | .55 | .54 | .367 | 1.55 |
| 6.07 | .54 | .53 | .364 | 1.54 |
| 6.10 | .51 | .53 | .361 | 1.52 |
| 6.13 | .46 | .52 | .358 | 1.51 |
| 6.17 | .40 | .52 | .355 | 1.50 |
| 6.20 | .36 | .51 | .352 | 1.49 |
| 6.23 | .32 | .51 | .349 | 1.47 |
| 6.27 | .29 | .51 | .346 | 1.46 |
| 6.30 | .26 | .50 | .343 | 1.45 |
| 6.33 | .24 | .50 | .339 | 1.43 |
| 6.37 | .22 | .49 | .336 | 1.42 |
| 6.40 | .20 | .49 | .333 | 1.40 |
| 6.43 | .18 | .48 | .330 | 1.39 |
| 6.47 | .16 | .48 | .326 | 1.38 |
| 6.50 | .15 | .47 | .323 | 1.36 |
| 6.53 | .13 | .47 | .319 | 1.35 |
| 6.57 | .12 | .46 | .316 | 1.33 |
| 6.60 | .11 | .46 | .313 | 1.32 |
| 6.63 | .10 | .45 | .309 | 1.31 |
| 6.67 | .09 | .45 | .306 | 1.29 |
| 6.70 | .08 | .44 | .303 | 1.28 |
| 6.73 | .07 | .44 | .300 | 1.26 |
| 6.77 | .07 | .43 | .296 | 1.25 |
| 6.80 | .06 | .43 | .293 | 1.24 |
| 6.83 | .05 | .42 | .290 | 1.22 |
| 6.87 | .05 | .42 | .287 | 1.21 |
| 6.90 | .04 | .41 | .283 | 1.20 |
| 6.93 | .04 | .41 | .280 | 1.18 |
| 6.97 | .04 | .40 | .277 | 1.17 |

| | | | | |
|---|---|---|---|---|
| 7.00 | .03 | .40 | .274 | 1.16 |
| 7.03 | .03 | .40 | .271 | 1.14 |
| 7.07 | .03 | .39 | .268 | 1.13 |
| 7.10 | .02 | .39 | .265 | 1.12 |
| 7.13 | .02 | .38 | .262 | 1.10 |
| 7.17 | .02 | .38 | .259 | 1.09 |
| 7.20 | .02 | .37 | .256 | 1.08 |
| 7.23 | .02 | .37 | .253 | 1.07 |
| 7.27 | .01 | .37 | .250 | 1.06 |
| 7.30 | .01 | .36 | .247 | 1.04 |
| 7.33 | .01 | .36 | .244 | 1.03 |
| 7.37 | .01 | .35 | .242 | 1.02 |
| 7.40 | .01 | .35 | .239 | 1.01 |
| 7.43 | .01 | .34 | .236 | 1.00 |

| TIME (HRS) | INFLOW (CFS) | ELEV (FEET) | VOLUME (AC-FT) | OUTFLOW (CFS) |
|---|---|---|---|---|
| 7.47 | .01 | .34 | .233 | .99 |
| 7.50 | .01 | .34 | .231 | .97 |
| 7.53 | .01 | .33 | .228 | .96 |
| 7.57 | .01 | .33 | .226 | .95 |
| 7.60 | .00 | .33 | .223 | .94 |
| 7.63 | .00 | .32 | .220 | .93 |
| 7.67 | .00 | .32 | .218 | .92 |
| 7.70 | .00 | .31 | .215 | .91 |
| 7.73 | .00 | .31 | .213 | .90 |
| 7.77 | .00 | .31 | .210 | .89 |
| 7.80 | .00 | .30 | .208 | .88 |
| 7.83 | .00 | .30 | .206 | .87 |
| 7.87 | .00 | .30 | .203 | .86 |
| 7.90 | .00 | .29 | .201 | .85 |
| 7.93 | .00 | .29 | .199 | .84 |
| 7.97 | .00 | .29 | .196 | .83 |
| 8.00 | .00 | .28 | .194 | .82 |
| 8.03 | .00 | .28 | .192 | .81 |
| 8.07 | .00 | .28 | .190 | .80 |
| 8.10 | .00 | .27 | .187 | .79 |
| 8.13 | .00 | .27 | .185 | .78 |
| 8.17 | .00 | .27 | .183 | .77 |
| 8.20 | .00 | .26 | .181 | .76 |
| 8.23 | .00 | .26 | .179 | .75 |
| 8.27 | .00 | .26 | .177 | .75 |
| 8.30 | .00 | .26 | .175 | .74 |
| 8.33 | .00 | .25 | .173 | .73 |
| 8.37 | .00 | .25 | .171 | .72 |
| 8.40 | .00 | .25 | .169 | .71 |
| 8.43 | .00 | .24 | .167 | .70 |
| 8.47 | .00 | .24 | .165 | .70 |
| 8.50 | .00 | .24 | .163 | .69 |
| 8.53 | .00 | .24 | .161 | .68 |
| 8.57 | .00 | .23 | .159 | .67 |
| 8.60 | .00 | .23 | .157 | .66 |
| 8.63 | .00 | .23 | .156 | .66 |
| 8.67 | .00 | .22 | .154 | .65 |

| | | | | |
|---|---|---|---|---|
| 8.70 | .00 | .22 | .152 | .64 |
| 8.73 | .00 | .22 | .150 | .63 |
| 8.77 | .00 | .22 | .149 | .63 |
| 8.80 | .00 | .21 | .147 | .62 |
| 8.83 | .00 | .21 | .145 | .61 |
| 8.87 | .00 | .21 | .143 | .61 |
| 8.90 | .00 | .21 | .142 | .60 |
| 8.93 | .00 | .20 | .140 | .59 |
| 8.97 | .00 | .20 | .138 | .58 |
| 9.00 | .00 | .20 | .137 | .58 |
| 9.03 | .00 | .20 | .135 | .57 |
| 9.07 | .00 | .20 | .134 | .56 |
| 9.10 | .00 | .19 | .132 | .56 |
| 9.13 | .00 | .19 | .131 | .55 |
| 9.17 | .00 | .19 | .129 | .54 |
| 9.20 | .00 | .19 | .128 | .54 |
| 9.23 | .00 | .18 | .126 | .53 |
| 9.27 | .00 | .18 | .125 | .53 |
| 9.30 | .00 | .18 | .123 | .52 |

| TIME (HRS) | INFLOW (CFS) | ELEV (FEET) | VOLUME (AC-FT) | OUTFLOW (CFS) |
|---|---|---|---|---|
| 9.33 | .00 | .18 | .122 | .51 |
| 9.37 | .00 | .18 | .120 | .51 |
| 9.40 | .00 | .17 | .119 | .50 |
| 9.43 | .00 | .17 | .118 | .50 |
| 9.47 | .00 | .17 | .116 | .49 |
| 9.50 | .00 | .17 | .115 | .49 |
| 9.53 | .00 | .17 | .114 | .48 |
| 9.57 | .00 | .16 | .112 | .47 |
| 9.60 | .00 | .16 | .111 | .47 |
| 9.63 | .00 | .16 | .110 | .46 |
| 9.67 | .00 | .16 | .109 | .46 |
| 9.70 | .00 | .16 | .107 | .45 |
| 9.73 | .00 | .15 | .106 | .45 |
| 9.77 | .00 | .15 | .105 | .44 |
| 9.80 | .00 | .15 | .104 | .44 |
| 9.83 | .00 | .15 | .102 | .43 |
| 9.87 | .00 | .15 | .101 | .43 |
| 9.90 | .00 | .15 | .100 | .42 |
| 9.93 | .00 | .14 | .099 | .42 |
| 9.97 | .00 | .14 | .098 | .41 |
| 10.00 | .00 | .14 | .097 | .41 |
| 10.03 | .00 | .14 | .095 | .40 |
| 10.07 | .00 | .14 | .094 | .40 |
| 10.10 | .00 | .14 | .093 | .39 |
| 10.13 | .00 | .13 | .092 | .39 |
| 10.17 | .00 | .13 | .091 | .38 |
| 10.20 | .00 | .13 | .090 | .38 |
| 10.23 | .00 | .13 | .089 | .38 |
| 10.27 | .00 | .13 | .088 | .37 |
| 10.30 | .00 | .13 | .087 | .37 |
| 10.33 | .00 | .13 | .086 | .36 |
| 10.37 | .00 | .12 | .085 | .36 |

| | | | | |
|---|---|---|---|---|
| 10.40 | .00 | .12 | .084 | .35 |
| 10.43 | .00 | .12 | .083 | .35 |
| 10.47 | .00 | .12 | .082 | .35 |
| 10.50 | .00 | .12 | .081 | .34 |
| 10.53 | .00 | .12 | .080 | .34 |
| 10.57 | .00 | .12 | .079 | .33 |
| 10.60 | .00 | .11 | .078 | .33 |
| 10.63 | .00 | .11 | .077 | .33 |
| 10.67 | .00 | .11 | .077 | .32 |
| 10.70 | .00 | .11 | .076 | .32 |
| 10.73 | .00 | .11 | .075 | .32 |
| 10.77 | .00 | .11 | .074 | .31 |
| 10.80 | .00 | .11 | .073 | .31 |
| 10.83 | .00 | .11 | .072 | .30 |
| 10.87 | .00 | .10 | .071 | .30 |
| 10.90 | .00 | .10 | .071 | .30 |
| 10.93 | .00 | .10 | .070 | .29 |
| 10.97 | .00 | .10 | .069 | .29 |
| 11.00 | .00 | .10 | .068 | .29 |
| 11.03 | .00 | .10 | .067 | .28 |
| 11.07 | .00 | .10 | .067 | .28 |
| 11.10 | .00 | .10 | .066 | .28 |
| 11.13 | .00 | .09 | .065 | .27 |
| 11.17 | .00 | .09 | .064 | .27 |

| TIME (HRS) | INFLOW (CFS) | ELEV (FEET) | VOLUME (AC-FT) | OUTFLOW (CFS) |
|---|---|---|---|---|
| 11.20 | .00 | .09 | .064 | .27 |
| 11.23 | .00 | .09 | .063 | .27 |
| 11.27 | .00 | .09 | .062 | .26 |
| 11.30 | .00 | .09 | .061 | .26 |
| 11.33 | .00 | .09 | .061 | .26 |
| 11.37 | .00 | .09 | .060 | .25 |
| 11.40 | .00 | .09 | .059 | .25 |
| 11.43 | .00 | .09 | .059 | .25 |
| 11.47 | .00 | .08 | .058 | .24 |
| 11.50 | .00 | .08 | .057 | .24 |
| 11.53 | .00 | .08 | .057 | .24 |
| 11.57 | .00 | .08 | .056 | .24 |
| 11.60 | .00 | .08 | .055 | .23 |
| 11.63 | .00 | .08 | .055 | .23 |
| 11.67 | .00 | .08 | .054 | .23 |
| 11.70 | .00 | .08 | .053 | .23 |
| 11.73 | .00 | .08 | .053 | .22 |
| 11.77 | .00 | .08 | .052 | .22 |
| 11.80 | .00 | .08 | .052 | .22 |
| 11.83 | .00 | .07 | .051 | .22 |
| 11.87 | .00 | .07 | .050 | .21 |
| 11.90 | .00 | .07 | .050 | .21 |
| 11.93 | .00 | .07 | .049 | .21 |
| 11.97 | .00 | .07 | .049 | .21 |
| 12.00 | .00 | .07 | .048 | .20 |
| 12.03 | .00 | .07 | .048 | .20 |
| 12.07 | .00 | .07 | .047 | .20 |

| | | | | |
|---|---|---|---|---|
| 12.10 | .00 | .07 | .046 | .20 |
| 12.13 | .00 | .07 | .046 | .19 |
| 12.17 | .00 | .07 | .045 | .19 |
| 12.20 | .00 | .07 | .045 | .19 |
| 12.23 | .00 | .06 | .044 | .19 |
| 12.27 | .00 | .06 | .044 | .18 |
| 12.30 | .00 | .06 | .043 | .18 |
| 12.33 | .00 | .06 | .043 | .18 |
| 12.37 | .00 | .06 | .042 | .18 |
| 12.40 | .00 | .06 | .042 | .18 |
| 12.43 | .00 | .06 | .041 | .17 |
| 12.47 | .00 | .06 | .041 | .17 |
| 12.50 | .00 | .06 | .040 | .17 |
| 12.53 | .00 | .06 | .040 | .17 |
| 12.57 | .00 | .06 | .039 | .17 |
| 12.60 | .00 | .06 | .039 | .16 |
| 12.63 | .00 | .06 | .039 | .16 |
| 12.67 | .00 | .06 | .038 | .16 |
| 12.70 | .00 | .06 | .038 | .16 |
| 12.73 | .00 | .05 | .037 | .16 |
| 12.77 | .00 | .05 | .037 | .16 |
| 12.80 | .00 | .05 | .036 | .15 |
| 12.83 | .00 | .05 | .036 | .15 |
| 12.87 | .00 | .05 | .036 | .15 |
| 12.90 | .00 | .05 | .035 | .15 |
| 12.93 | .00 | .05 | .035 | .15 |
| 12.97 | .00 | .05 | .034 | .14 |
| 13.00 | .00 | .05 | .034 | .14 |
| 13.03 | .00 | .05 | .034 | .14 |

| TIME (HRS) | INFLOW (CFS) | ELEV (FEET) | VOLUME (AC-FT) | OUTFLOW (CFS) |
|---|---|---|---|---|
| 13.07 | .00 | .05 | .033 | .14 |
| 13.10 | .00 | .05 | .033 | .14 |
| 13.13 | .00 | .05 | .032 | .14 |
| 13.17 | .00 | .05 | .032 | .14 |
| 13.20 | .00 | .05 | .032 | .13 |
| 13.23 | .00 | .05 | .031 | .13 |
| 13.27 | .00 | .05 | .031 | .13 |
| 13.30 | .00 | .04 | .031 | .13 |
| 13.33 | .00 | .04 | .030 | .13 |
| 13.37 | .00 | .04 | .030 | .13 |
| 13.40 | .00 | .04 | .030 | .12 |
| 13.43 | .00 | .04 | .029 | .12 |
| 13.47 | .00 | .04 | .029 | .12 |
| 13.50 | .00 | .04 | .029 | .12 |
| 13.53 | .00 | .04 | .028 | .12 |
| 13.57 | .00 | .04 | .028 | .12 |
| 13.60 | .00 | .04 | .028 | .12 |
| 13.63 | .00 | .04 | .027 | .11 |
| 13.67 | .00 | .04 | .027 | .11 |
| 13.70 | .00 | .04 | .027 | .11 |
| 13.73 | .00 | .04 | .026 | .11 |
| 13.77 | .00 | .04 | .026 | .11 |

| | | | | |
|---|---|---|---|---|
| 13.80 | .00 | .04 | .026 | .11 |
| 13.83 | .00 | .04 | .025 | .11 |
| 13.87 | .00 | .04 | .025 | .11 |
| 13.90 | .00 | .04 | .025 | .10 |
| 13.93 | .00 | .04 | .025 | .10 |
| 13.97 | .00 | .04 | .024 | .10 |
| 14.00 | .00 | .03 | .024 | .10 |
| 14.03 | .00 | .03 | .024 | .10 |
| 14.07 | .00 | .03 | .023 | .10 |
| 14.10 | .00 | .03 | .023 | .10 |
| 14.13 | .00 | .03 | .023 | .10 |
| 14.17 | .00 | .03 | .023 | .10 |
| 14.20 | .00 | .03 | .022 | .09 |
| 14.23 | .00 | .03 | .022 | .09 |
| 14.27 | .00 | .03 | .022 | .09 |
| 14.30 | .00 | .03 | .022 | .09 |
| 14.33 | .00 | .03 | .021 | .09 |
| 14.37 | .00 | .03 | .021 | .09 |
| 14.40 | .00 | .03 | .021 | .09 |
| 14.43 | .00 | .03 | .021 | .09 |
| 14.47 | .00 | .03 | .020 | .09 |
| 14.50 | .00 | .03 | .020 | .08 |
| 14.53 | .00 | .03 | .020 | .08 |
| 14.57 | .00 | .03 | .020 | .08 |
| 14.60 | .00 | .03 | .019 | .08 |
| 14.63 | .00 | .03 | .019 | .08 |
| 14.67 | .00 | .03 | .019 | .08 |
| 14.70 | .00 | .03 | .019 | .08 |
| 14.73 | .00 | .03 | .019 | .08 |
| 14.77 | .00 | .03 | .018 | .08 |
| 14.80 | .00 | .03 | .018 | .08 |
| 14.83 | .00 | .03 | .018 | .08 |
| 14.87 | .00 | .03 | .018 | .07 |
| 14.90 | .00 | .03 | .018 | .07 |

| TIME (HRS) | INFLOW (CFS) | ELEV (FEET) | VOLUME (AC-FT) | OUTFLOW (CFS) |
|---|---|---|---|---|
| 14.93 | .00 | .03 | .017 | .07 |
| 14.97 | .00 | .02 | .017 | .07 |
| 15.00 | .00 | .02 | .017 | .07 |
| 15.03 | .00 | .02 | .017 | .07 |
| 15.07 | .00 | .02 | .017 | .07 |
| 15.10 | .00 | .02 | .016 | .07 |
| 15.13 | .00 | .02 | .016 | .07 |
| 15.17 | .00 | .02 | .016 | .07 |
| 15.20 | .00 | .02 | .016 | .07 |
| 15.23 | .00 | .02 | .016 | .07 |
| 15.27 | .00 | .02 | .015 | .06 |
| 15.30 | .00 | .02 | .015 | .06 |
| 15.33 | .00 | .02 | .015 | .06 |
| 15.37 | .00 | .02 | .015 | .06 |
| 15.40 | .00 | .02 | .015 | .06 |
| 15.43 | .00 | .02 | .015 | .06 |
| 15.47 | .00 | .02 | .014 | .06 |

| | | | | |
|---|---|---|---|---|
| 15.50 | .00 | .02 | .014 | .06 |
| 15.53 | .00 | .02 | .014 | .06 |
| 15.57 | .00 | .02 | .014 | .06 |
| 15.60 | .00 | .02 | .014 | .06 |
| 15.63 | .00 | .02 | .014 | .06 |
| 15.67 | .00 | .02 | .013 | .06 |
| 15.70 | .00 | .02 | .013 | .06 |
| 15.73 | .00 | .02 | .013 | .06 |
| 15.77 | .00 | .02 | .013 | .05 |
| 15.80 | .00 | .02 | .013 | .05 |
| 15.83 | .00 | .02 | .013 | .05 |
| 15.87 | .00 | .02 | .012 | .05 |
| 15.90 | .00 | .02 | .012 | .05 |
| 15.93 | .00 | .02 | .012 | .05 |
| 15.97 | .00 | .02 | .012 | .05 |
| 16.00 | .00 | .02 | .012 | .05 |
| 16.03 | .00 | .02 | .012 | .05 |
| 16.07 | .00 | .02 | .012 | .05 |
| 16.10 | .00 | .02 | .012 | .05 |
| 16.13 | .00 | .02 | .011 | .05 |
| 16.17 | .00 | .02 | .011 | .05 |
| 16.20 | .00 | .02 | .011 | .05 |
| 16.23 | .00 | .02 | .011 | .05 |
| 16.27 | .00 | .02 | .011 | .05 |
| 16.30 | .00 | .02 | .011 | .05 |
| 16.33 | .00 | .02 | .011 | .04 |
| 16.37 | .00 | .02 | .010 | .04 |
| 16.40 | .00 | .02 | .010 | .04 |
| 16.43 | .00 | .01 | .010 | .04 |
| 16.47 | .00 | .01 | .010 | .04 |
| 16.50 | .00 | .01 | .010 | .04 |
| 16.53 | .00 | .01 | .010 | .04 |
| 16.57 | .00 | .01 | .010 | .04 |
| 16.60 | .00 | .01 | .010 | .04 |
| 16.63 | .00 | .01 | .010 | .04 |
| 16.67 | .00 | .01 | .009 | .04 |
| 16.70 | .00 | .01 | .009 | .04 |
| 16.73 | .00 | .01 | .009 | .04 |
| 16.76 | .00 | .01 | .009 | .04 |

| TIME (HRS) | INFLOW (CFS) | ELEV (FEET) | VOLUME (AC-FT) | OUTFLOW (CFS) |
|---|---|---|---|---|
| 16.80 | .00 | .01 | .009 | .04 |
| 16.83 | .00 | .01 | .009 | .04 |
| 16.86 | .00 | .01 | .009 | .04 |
| 16.90 | .00 | .01 | .009 | .04 |
| 16.93 | .00 | .01 | .009 | .04 |
| 16.96 | .00 | .01 | .009 | .04 |
| 17.00 | .00 | .01 | .008 | .04 |
| 17.03 | .00 | .01 | .008 | .04 |
| 17.06 | .00 | .01 | .008 | .03 |
| 17.10 | .00 | .01 | .008 | .03 |
| 17.13 | .00 | .01 | .008 | .03 |
| 17.16 | .00 | .01 | .008 | .03 |

| | | | | |
|---|---|---|---|---|
| 17.20 | .00 | .01 | .008 | .03 |
| 17.23 | .00 | .01 | .008 | .03 |
| 17.26 | .00 | .01 | .008 | .03 |
| 17.30 | .00 | .01 | .008 | .03 |
| 17.33 | .00 | .01 | .007 | .03 |
| 17.36 | .00 | .01 | .007 | .03 |
| 17.40 | .00 | .01 | .007 | .03 |
| 17.43 | .00 | .01 | .007 | .03 |
| 17.46 | .00 | .01 | .007 | .03 |
| 17.50 | .00 | .01 | .007 | .03 |
| 17.53 | .00 | .01 | .007 | .03 |
| 17.56 | .00 | .01 | .007 | .03 |
| 17.60 | .00 | .01 | .007 | .03 |
| 17.63 | .00 | .01 | .007 | .03 |
| 17.66 | .00 | .01 | .007 | .03 |
| 17.70 | .00 | .01 | .007 | .03 |
| 17.73 | .00 | .01 | .007 | .03 |
| 17.76 | .00 | .01 | .006 | .03 |
| 17.80 | .00 | .01 | .006 | .03 |
| 17.83 | .00 | .01 | .006 | .03 |
| 17.86 | .00 | .01 | .006 | .03 |
| 17.90 | .00 | .01 | .006 | .03 |
| 17.93 | .00 | .01 | .006 | .03 |
| 17.96 | .00 | .01 | .006 | .03 |
| 18.00 | .00 | .01 | .006 | .03 |
| 18.03 | .00 | .01 | .006 | .02 |
| 18.06 | .00 | .01 | .006 | .02 |
| 18.10 | .00 | .01 | .006 | .02 |
| 18.13 | .00 | .01 | .006 | .02 |
| 18.16 | .00 | .01 | .006 | .02 |
| 18.20 | .00 | .01 | .006 | .02 |
| 18.23 | .00 | .01 | .005 | .02 |
| 18.26 | .00 | .01 | .005 | .02 |
| 18.30 | .00 | .01 | .005 | .02 |
| 18.33 | .00 | .01 | .005 | .02 |
| 18.36 | .00 | .01 | .005 | .02 |
| 18.40 | .00 | .01 | .005 | .02 |
| 18.43 | .00 | .01 | .005 | .02 |
| 18.46 | .00 | .01 | .005 | .02 |
| 18.50 | .00 | .01 | .005 | .02 |
| 18.53 | .00 | .01 | .005 | .02 |
| 18.56 | .00 | .01 | .005 | .02 |
| 18.60 | .00 | .01 | .005 | .02 |
| 18.63 | .00 | .01 | .005 | .02 |

| TIME (HRS) | INFLOW (CFS) | ELEV (FEET) | VOLUME (AC-FT) | OUTFLOW (CFS) |
|---|---|---|---|---|
| 18.66 | .00 | .01 | .005 | .02 |
| 18.70 | .00 | .01 | .005 | .02 |
| 18.73 | .00 | .01 | .005 | .02 |
| 18.76 | .00 | .01 | .005 | .02 |
| 18.80 | .00 | .01 | .004 | .02 |
| 18.83 | .00 | .01 | .004 | .02 |
| 18.86 | .00 | .01 | .004 | .02 |

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    18.90        .00        .01        .004        .02
    18.93        .00        .01        .004        .02
    18.96        .00        .01        .004        .02
    19.00        .00        .01        .004        .02
    19.03        .00        .01        .004        .02
    19.06        .00        .01        .004        .02
    19.10        .00        .01        .004        .02
    19.13        .00        .01        .004        .02
    19.16        .00        .01        .004        .02
    19.20        .00        .01        .004        .02
    19.23        .00        .01        .004        .02
    19.26        .00        .01        .004        .02
    19.30        .00        .01        .004        .02
    19.33        .00        .01        .004        .02
    19.36        .00        .01        .004        .02
    19.40        .00        .01        .004        .02
    19.43        .00        .01        .004        .02
    19.46        .00        .01        .004        .02
    19.50        .00        .01        .004        .01
    19.53        .00        .01        .003        .01
    19.56        .00        .01        .003        .01
    19.60        .00        .00        .003        .01
    19.63        .00        .00        .003        .01
    19.66        .00        .00        .003        .01
    19.70        .00        .00        .003        .01
    19.73        .00        .00        .003        .01
    19.76        .00        .00        .003        .01
    19.80        .00        .00        .003        .01
    19.83        .00        .00        .003        .01
    19.86        .00        .00        .003        .01
    19.90        .00        .00        .003        .01
    19.93        .00        .00        .003        .01
    19.96        .00        .00        .003        .01
 PEAK DISCHARGE =      141.759 CFS - PEAK OCCURS AT HOUR    1.70
 MAXIMUM WATER SURFACE ELEVATION =        4.455
 MAXIMUM STORAGE =        3.6154 AC-FT      INCREMENTAL TIME=     .033330HRS

PRINT HYD            ID=14  CODE=1

                                    HYDROGRAPH FROM AREA   400.10


    RUNOFF VOLUME =      .64197 INCHES     =       9.1546 ACRE-FEET
    PEAK DISCHARGE RATE =     141.76 CFS  AT   1.700 HOURS   BASIN AREA =   .2674 SQ. MI.


FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 08:45:32
```

SUNRISE
ESTATES
DESERT
SPRINGS
SUBD
DESERT
FLOWER
SUBD.
BLVD
SUNSET
APACHE
RD
SUNSET RD
NEXT
ST. R2.
AMOLE DEL NORTE DIV. CHANNEL

Isaacson & Arfman, P.A.

Consulting Engineering Associates

# Letter of Transmittal

To Susan Calongne — Date 7/21/98

COA Hydrology — Job No. 1009

Attn:

Reference Desert Flower 3

Gentlemen:

We transmit to you _____ copy(ies) of the following

- [ ] _____ Plats
- [ ] _____ Plans
- [ ] Specifications
- [ ] _____ Report
- [x] ~~Sub~~ Supplemental Drainage Information
- [ ] _____
- [ ] Shop Drawings
- [ ] Submittals
- [ ] Material Specifications
- [ ] Copy of Letter

This information is transmitted:

- [ ] As per your request
- [x] For your review & approval
- [ ] For your information
- [ ] For your attention
- [ ] For your signature
- [ ] _____
- [ ] _____
- [x] For your files
- [x] For your use
- [ ] Please review & return
- [ ] For return to your files
- [ ] Please advise

Remarks:

RECEIVED JUL 22 1998 HYDROLOGY SECTION

By: Melissa Cornejo

Copies To

128 Monroe, NE • Albuquerque, NM 87108 • (505) 268-8828

GRANT OF EASEMENT
FOR TEMPORARY DRAINAGE
RIGHT-OF-WAY

THIS INDENTURE made and executed this 17th day of July, 1980, by and between PROPERTY MANAGEMENT COMPANY OF NEW MEXICO, hereinafter called the Grantor and THE CITY OF ALBUQUERQUE NEW MEXICO, a municipal corporation, hereinafter called the Grantee.

Witnesseth, that for good and valuable consideration the receipt of which is hereby acknowledged the Grantors have this day bargained and sold by these presents do sell, convey and deliver unto the City of Albuquerque a temporary easement as right-of-way including the temporary easement as right-of-way including the temporary right to enter upon the real estate hereinafter described at any time it may see fit and construct, maintain and repair, drainage ditches across, through, and under the lands hereinafter described and the further right to remove trees, bushes, undergrowth and obstructions interfering with the location, construction and maintenance of said drainage ditches.

The land affected by the grant of this easement and right-of-way is situate in Section 34, Township 10 North, Range 9 East, New Mexico Principal Meridian, within the Town of Atrisco Grant, Bernalillo County, New Mexico, and being tied to the northeast corner of WESTGATE HEIGHTS, Unit 3, a subdivision of the City of Albuquerque, County of Bernalillo, State of New Mexico, as the same is shown and designated on the said plat filed in the office of the County Clerk of Bernalillo County, New Mexico, on April 22, 1977 (D7-167).

Right-of-way #1 - a 75 foot wide easement, the centerline of which being herein more particularly described as follows:

Beginning at the intersection of Sapphire Street S.W. and the west line of said Section 34 from whence the northeast corner of said WESTGATE HEIGHTS, Unit 3, bears North 00°28'10" East a distance of 400.64 feet, being also the westerly end and point of beginning of the drainage right-of-way centerline herein described; thence South 89°31'50" East a distance of 495.00 feet along said centerline to a point; thence South 73°00'00" East a distance of 375.00 feet along said centerline; thence South 83°20'00" East a distance of 590.00 feet along said centerline to a point; thence South 52°00'00" East a distance of 931.14 feet along said centerline to the easterly end of the drainage right-of-way herein set forth.

Right-of-way #2 - a 75 foot wide easement, the centerline of which being herein more particularly described as follows:

Beginning at the intersection of Kimela Drive S.W., and the west line of said Section 34 from whence the northeast corner of said WESTGATE HEIGHTS, Unit 3, bears North 00°28'10" East a distance of 1,679.58 feet, being also the westerly end and point of beginning of the drainage right-of-way centerline herein described; thence North 51°23'00" East a distance of 196.71 feet along said centerline to a point; thence South 89°31'50" East a distance of 1966.56 feet along said centerline to the easterly end of the drainage right-of-way centerline herein set forth.

Right-of-way #3 - A 50 foot wide easement, the centerline of which being herein more particularly described as follows:

Beginning at a point on the west line of said Section 34 from whence the northeast corner of said WESTGATE HEIGHTS, Unit 3, bears North 00°28'10" East a distance of 3,170.32 feet; thence North 89°31'50" West a distance of 25.00 feet to the centerline of the proposed Ladrones Road S.W., being also the westerly end and point of beginning of the drainage right-of-way centerline herein described; thence South 00°28'10" West a distance of 535.17 feet along said drainage centerline to a point; thence East a distance of 2289.92 feet along said centerline to the easterly end of the drainage right-of-way centerline herein set forth.

TO HAVE AND TO HOLD the said right and easement for the uses and purposes aforesaid, unto Grantee its successors and assigns for so long as said easement shall not be abandoned for use as a right-of-way for aforesaid drainage.

The Grantors do hereby covenant with the Grantee that they are lawfully seized and possessed of the real estate above described and that they have a good and lawful right to convey it or any part thereof, that it is free from all encumbrances except those of record and taxes due and owing the Treasurer of Bernalillo County and that they will warrant and defend the title thereto against the lawful claims of all persons whomsoever.

As part of the consideration for this grant, the Grantors do hereby release any and all claims for damages for whatsoever cause incidental to the exercise of the rights herein granted provided, however, that the Grantee agrees to save the Grantors harmless from any and all liability that may arise as a result of the construction and use of the easement for the purposes set forth.

Said easement is subject to, and in conjunction with, other grants of easements heretofore granted over the above described real estate.

IN WITNESS WHEREOF, the parties have set their hands and seals this 17th day of July, 1980

PROPERTY MANAGEMENT COMPANY OF NEW MEXICO

By: J.D. Fulmer, Vice President

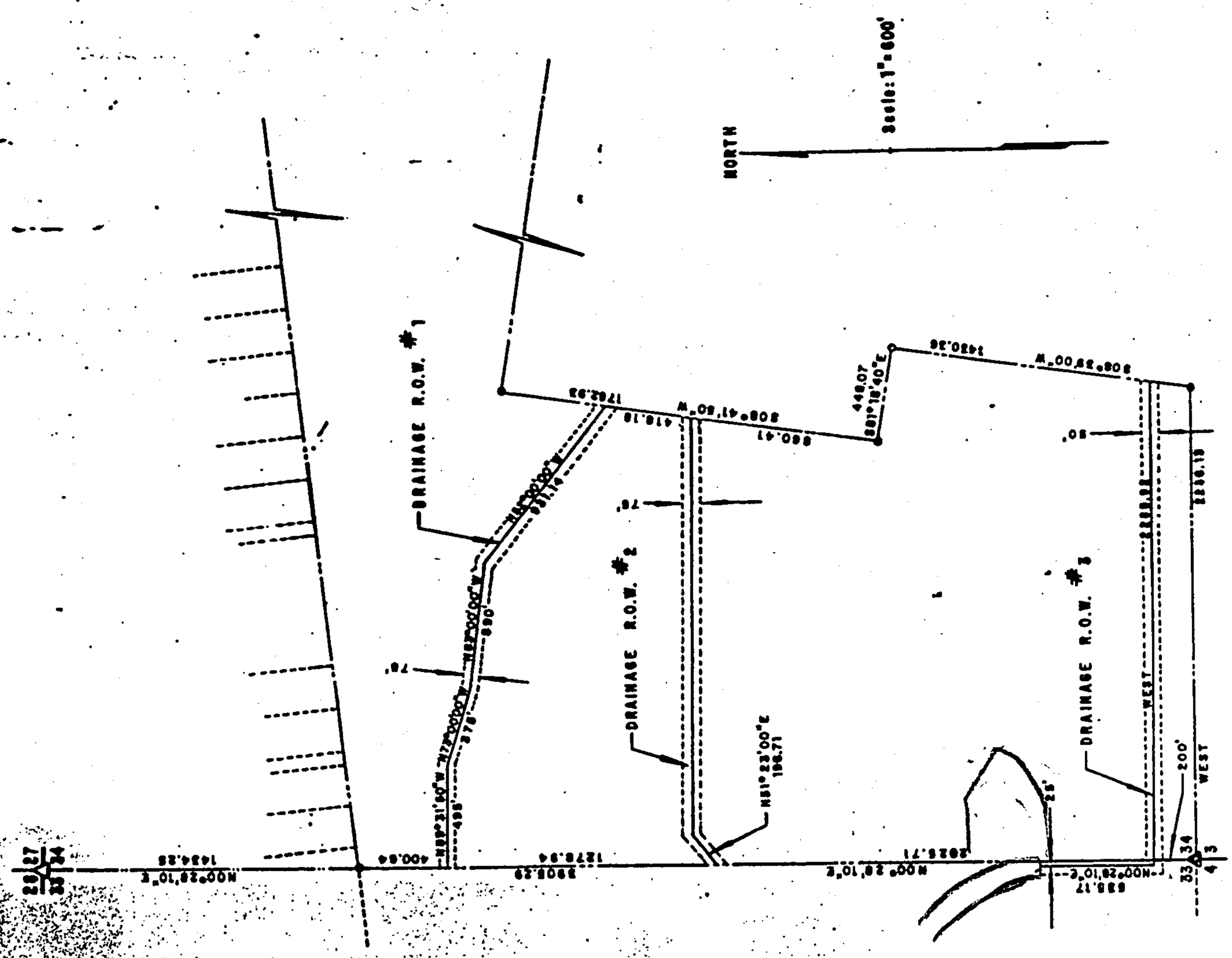
Attest: Joe Wilson
Joe Wilson
Asst. Vice President

STATE OF NEW MEXICO )
) ss.
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me this 17th day of July, 1980, by J. D. Fulmer and Joe Wilson, Vice President and Assistant Vice President respectively.

My Commission Expires:

OFFICAL SEAL
Signature
Notary Public
NOTARY PUBLIC - NEW MEXICO
Notary Bond Filed with Secretary of State
My Commission Expires 2-13-82


NORTH
Scale: 1" = 600'
DRAINAGE R.O.W. #1
DRAINAGE R.O.W. #2
DRAINAGE R.O.W. #3
WEST
200'
WEST
50'
25'
76'
76'
N00°28'10"E
1424.25
400.64
1278.94
3905.29
N00°28'10"E
2025.71
N00°28'10"E
688.17
33
34
4
3
28
27
22
34

CITY OF
Albuquerque

June 22, 1998

Fred C. Arfman, P.E.
Isaacson & Arfman
128 Monroe Street NE
Albuquerque, New Mexico 87108

*RE: Drainage Report for Desert Flower Subdivision, Unit Three, Dated 5/29/98, and Grading and Drainage Plan, Dated 5/28/98, (M10/D12C) Submitted for Preliminary and Final Plat and Work Order Approval.*

Dear Mr. Arfman:

Based on the information provided in the submittal of May 29, 1998, the above referenced Report and Grading and Drainage Plan are approved for Preliminary Plat of Unit Three.

Prior to approval of the DRC plans, however, you must demonstrate the downstream capacity for the Unser Boulevard runoff that goes to the south, and provide a solution for that runoff. The SIA must be in place prior to Final plat sign-off.

As you are aware, the Grading and Drainage Certification of the plan approved by the DRB is required prior to release of Financial Guarantees for this Unit.

If you have any questions, or if I may be of further assistance to you, please call me at 924-3982.

Sincerely,

Susan Calongne

Susan M. Calongne, P.E.
City/County Floodplain Administrator

- prelim info.
- report to address.
- will not be able to accept ~~address~~ until offsite flows are addressed

c: Fred Aguirre, DRB 98-5
Bo Johnson, Curb Inc.
File

# DRAINAGE INFORMATION SHEET

JECT LE: Desert Flower Unit 3 ZONE ATLAS/DRNG. FILE#: M-10 -6012C

DRB # _____ EPC # _____ WORK ORDER # _____

LEGAL DESCRIPTION: Tract B2, Desert Flower Subdivision

CITY ADDRESS: _____

ENGINEERING FIRM: Isaacson & Arfman, P.A. CONTACT: Melissa Combs
ADDRESS: 128 Monroe Street NE PHONE: 268-8828
CITY, STATE: Albuquerque, NM ZIP CODE: 87108

OWNER: Curb Inc CONTACT: Bo Johnson
ADDRESS: 6301 Indian School Rd Ste 680 PHONE: 881-9190
CITY, STATE: Albuquerque NM 87110 ZIP CODE: _____

ARCHITECT: NA CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

SURVEYOR: Aldrich Land Surveying CONTACT: Tim Aldrich
ADDRESS: PO Box 30701 PHONE: 884-1990
CITY, STATE: Albuquerque NM ZIP CODE: 87190

CONTRACTOR: NA CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

TYPE OF SUBMITTAL:

- ____ DRAINAGE REPORT
- ____ DRAINAGE PLAN
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- ____ GRADING PLAN
- ____ EROSION CONTROL PLAN
- ____ ENGINEER'S CERTIFICATION
- ✓ OTHER Supplemental Information

PRE-DESIGN MEETING:

- ____ YES
- ✓ NO
- ____ COPY PROVIDED

RECEIVED
JUL 22 1998
HYDROLOGY SECTION

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
- ✓ OTHER (SPECIFY) Work Order

DATE SUBMITTED: 7-22-98
BY: Melissa Combs
FOR ISAACSON & ARFMAN, P.A.

**ISAACSON & ARFMAN, P.A.**

*Consulting Engineering Associates*

*Albuquerque, NM*

# DRAINAGE INFORMATION SHEET

NW
D(H)

PROJECT TITLE: Desert Flower Unit Three

ZONE ATLAS/DRNG. FILE#: M-10

DRB #

EPC #

WORK ORDER #

LEGAL DESCRIPTION: Tract B2, Desert Flower Subdivision

CITY ADDRESS:

ENGINEERING FIRM: Isaacson & Arfman, P.A. — CONTACT: Melissa Combs
ADDRESS: 128 Monroe Street NE — PHONE: 268-8828
CITY, STATE: Albuquerque, NM — ZIP CODE: 87108

OWNER: Curb Inc — CONTACT: Bo Johnson
ADDRESS: 6301 Indian School Rd Ste 680 — PHONE: 881-9190
CITY, STATE: Albuquerque NM 87110 — ZIP CODE:

ARCHITECT: NA — CONTACT:
ADDRESS: — PHONE:
CITY, STATE: — ZIP CODE:

SURVEYOR: Aldrich Land Surveying — CONTACT: Tim Aldrich
ADDRESS: PO Box 30701 — PHONE: 884-1990
CITY, STATE: Albuquerque NM — ZIP CODE: 87190

CONTRACTOR: NA — CONTACT:
ADDRESS: — PHONE:
CITY, STATE: — ZIP CODE:

TYPE OF SUBMITTAL:

✓ DRAINAGE REPORT
___ DRAINAGE PLAN
✓ ~~CONCEPTUAL~~ GRADING & DRAINAGE PLAN
___ GRADING PLAN
___ EROSION CONTROL PLAN
___ ENGINEER'S CERTIFICATION
___ OTHER

PRE-DESIGN MEETING:

___ YES
✓ 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
✓ OTHER (SPECIFY) Work Order

RECEIVED
MAY 29 1998
HYDROLOGY SECTION

DATE SUBMITTED: 5-29-98

BY: Melissa Combs
FOR ISAACSON & ARFMAN, P.A.

# DRAINAGE REPORT

## FOR

# DESERT FLOWER SUBDIVISION
# UNIT THREE

## A 115 LOT SINGLE FAMILY
## RESIDENTIAL SUBDIVISION

**ALBUQUERQUE NEW MEXICO**
**MAY 1998**

RECEIVED
MAY 29 1998
HYDROLOGY SECTION

**Prepared by:**

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**128 Monroe Street, NE**
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FRED C. ARFMAN STATE OF NEW MEXICO 7337 REGISTERED PROFESSIONAL ENGINEER

05-29-98

**Fred C. Arfman, P.E.** **Date**

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## INTRODUCTION

Desert Flower Unit Three is the third phase of a multiple phase subdivision. It is located to the south of Desert Flower Unit One and adjacent to Unser Blvd. It will have 115 single family lots, and will be constructed with utilities and paving improvements according to the City of Albuquerque Development Standards and Guidelines. Desert Flower Unit Three was addressed previously in the Desert Flower Revised Master Drainage Report. This report will provide a more in-depth drainage and grading solution for the area.

## I. PROJECT INFORMATION

LEGAL DESCRIPTION: Tract B2, Desert Flower Subdivision filed March 11, 1998, Volume 98C, Page 66

ENGINEER: Isaacson & Arfman, P.A.
128 Monroe Street NE
Albuquerque, NM 87108
Attn: Fred C. Arfman, P.E.
(505) 268-8828

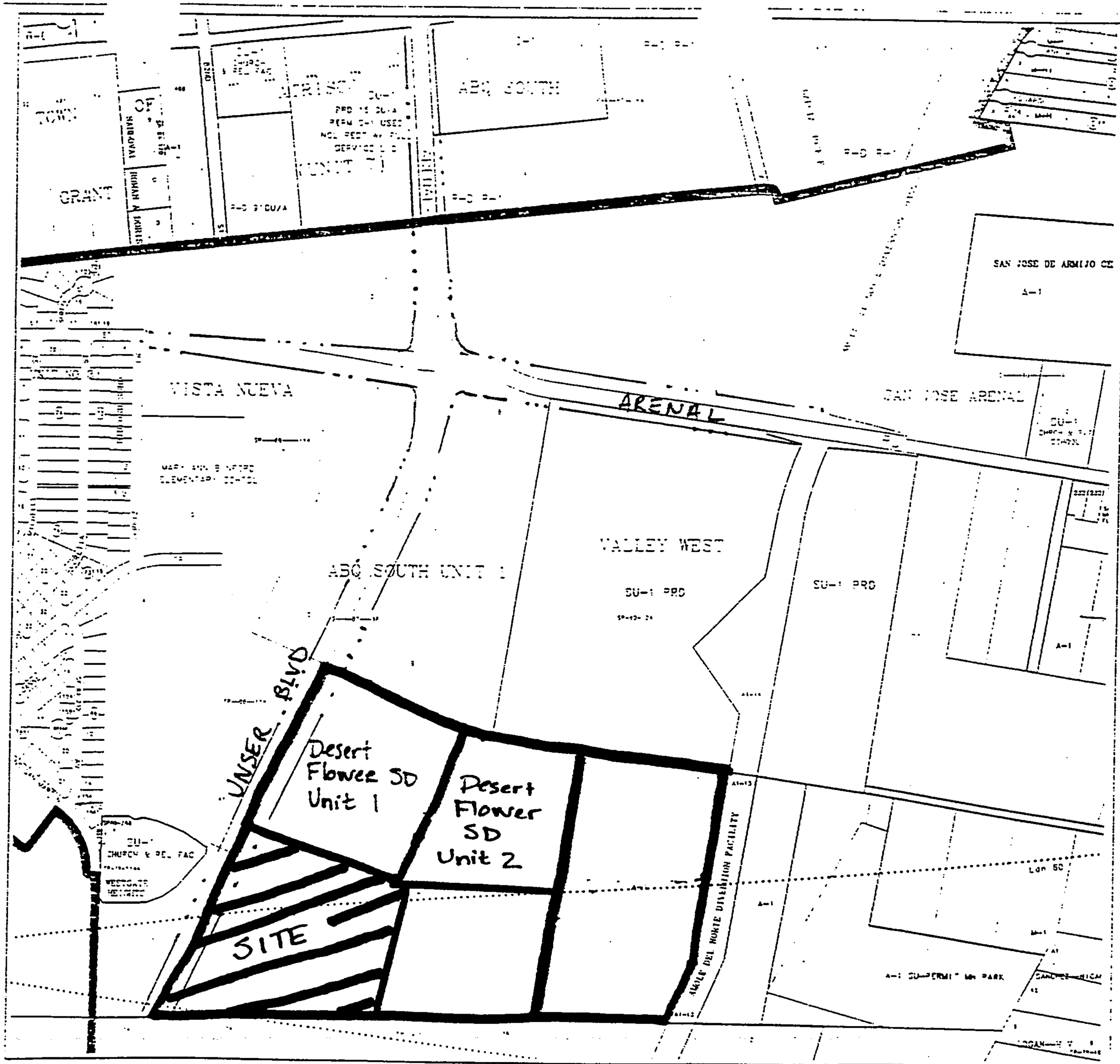
SURVEYOR: Aldrich Land Surveying, Inc.
Attn: Tim Aldrich, NMPLS No. 7719
(505) 884-1990

BENCHMARK: ACS Monument "1-M10" located at the southeast quadrant of Sage Road and Unser Blvd. SW.
Elevation: 5079.88

ZONING: RLT

NUMBER OF EXISTING TRACTS: 1

NUMBER OF PROPOSED LOTS:
Unit One: 115




SCALE IN FEET

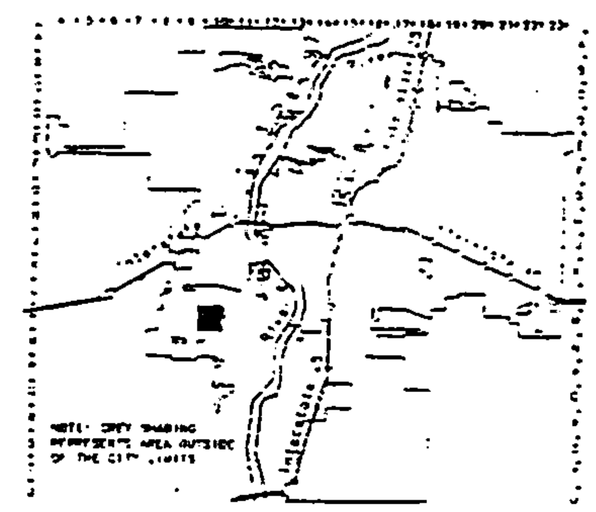
250 0 500 1000

PHOTOCOPY--NOT TO SCALE

NORTH

A G I S

© Planning Department
Map Amended through June 15, 1994



LEGAL DESCRIPTION

T10N

R5E

SEC 34

UNIFORM PROPERTY CODE

1-010-055

# M-10-Z

TOTAL AREA: 20.01 AC
871,636 Sq. Ft.

## II. SITE CHARACTERISTICS

FLOOD HAZARD: No part of this development is affected nor contributes to a flood hazard area as determined by Map No. 35001C0336D and 35001C0337D of the September 20, 1996 Edition of the F.E.M.A. Maps.

EXISTING CONDITIONS: This site is currently undeveloped and mostly undisturbed with native ground cover, typical of the City's west side. The site slopes downward toward the east ranging from 1 to 2 percent. It abuts Desert Flower Unit One to the north, Unser Blvd. to the west, Vista del Sol Mobile Home Subdivision to the south, and future Desert Flower Unit Four to the east. No offsite storm waters cross the site. Offsite runoff generated to the west of Unit Three is conveyed to the north and east by Unser Blvd. and a storm drain system along Arenal Road. Offsite flows to the south of this phase are conveyed to the Amole del Norte Diversion Channel by an existing storm drain system. All undeveloped flows generated within the site flow overland to the Amole del Norte Diversion Channel and are covered under a blanket drainage easement.

PROPOSED CONDITIONS: Unit Three will be developed with 115 lots and will not require construction of a storm drain system. Most of the runoff generated along Native Flower Place, Spring Flower Place, Purple Rock Place and Desertwood will flow south to Spring Flower Road (see Table 2, Flow Depths at Key Locations). The flows will then be conveyed east along Spring Flower Road and will be collected by a temporary retention pond located in the future Unit Four (see attached pond calculation sheet). Upon construction of Unit Four, the pond will be removed and the discharge will continue to the east along Spring Flower Road.

A portion of the runoff generated along Desertwood Drive and all of the runoff generated along Saltbrush Road will flow to the north and combine with the developed Unit One and Two flows. The storm water will then be conveyed to the Amole del Norte Diversion Channel by the earthen rundowns previously approved in the Desert Flower Unit Two Drainage Report.

The southern portion of Unser Blvd. adjacent to this phase has a southerly surface drainage pattern. Street flows from this area shall enter into a temporary retention pond situated at the southerly terminus of Unser Blvd.

## CONCLUSIONS & RECOMMENDATIONS

The Drainage Study for Desert Flower Unit Three is consistent with the Desert Flower Subdivision Revised Master Drainage Report (MDR) previously submitted to the Hydrology Division, P.W.D., City of Albuquerque. Desert Flower Subdivision Unit One is currently under construction and conforms to the previously approved Desert Flower Subdivision MDR. Desert Flower Subdivision Unit Two also is in the work order process, and conforms to the Desert Flower Subdivision MDR. The individual recommendations for Unit Three are presented below:

**UNIT TWO:**

1. A temporary retention pond will be required adjacent to the east property boundary. The pond shall be covered by a City of Albuquerque Covenant and Maintenance Agreement signed by the underlying land owner.

2. Adjacent lots may share a common lot line drainage swale (see Typical Lot Grading Detail).

3. No overland storm water flows from the north, west, or south shall enter onto this subdivision phase.

# SUMMARY TABLES

## TABLE 1
## ONSITE BASIN SUMMARY

| Basin ID | Area (Sq. Mi.) | Contributing Basins | Cummulative Area (Sq. Mi.) | % A | % B | % C | % D | Basin Q (cfs) | Cummulative Q (cfs) |
|---|---|---|---|---|---|---|---|---|---|
| 100 | 0.00608 | 100 | 0.00608 | 0 | 29 | 29 | 42 | 12.7 | 12.7 |
| 101 | 0.00432 | 100,101 | 0.0104 | 0 | 29 | 29 | 42 | 9.0 | 20.9 |
| 102 | 0.00728 | 101*,102 | 0.01768 | 0 | 29 | 29 | 42 | 15.2 | 35.6 |
| 103 | 0.00347 | 102*,103 | 0.02116 | 0 | 29 | 29 | 42 | 7.2 | 42.7 |
| 104 | 0.00470 | 103*,104 | 0.00779 | 0 | 29 | 29 | 42 | 16.2 | 58.8 |
| 105 | 0.00400 | 105 | 0.00400 | 0 | 29 | 29 | 42 | 8.33 | 8.33 |
| 106 | 0.00390 | 105*,106 | 0.00790 | 0 | 29 | 29 | 42 | 8.1 | 16.1 |
| 107 | 0.00417 | 106*,107 | 0.01207 | 0 | 29 | 29 | 42 | 8.69 | 24.7 |
| 108 | 0.00738 | 108 | 0.00738 | 0 | 29 | 29 | 42 | 15.4 | 15.4 |
| 109 | 0.00672 | 108,109 | 0.0141 | 0 | 29 | 29 | 42 | 14.0 | 29.4 |
| 110 | 0.01450 | 110 | 0.01450 | 0 | 29 | 29 | 42 | 30.2 | 30.2 |
| 111 | 0.00315 | 111 | 0.00315 | 33 | 19 | 19 | 29 | 5.2 | 5.2 |
| 112 | 0.00292 | 111*,112 | 0.00606 | 0 | 29 | 29 | 42 | 6.1 | 11.0 |
| 113 | 0.00627 | 109*,112*,113 | 0.02643 | 0 | 29 | 29 | 42 | 13.0 | 52.7 |
| 114 | 0.00737 | 110*,114 | 0.02187 | 0 | 29 | 29 | 42 | 15.3 | 45.2 |
| 115 | 0.0063 | 115 | 0.0063 | 0 | 29 | 29 | 42 | 13.2 | 13.2 |
| 116 | 0.0052 | 113*,115,116,117 | 0.03929 | 0 | 29 | 29 | 42 | 10.95 | 78.8 |
| 117 | 0.00127 | 117 | 0.00127 | 0 | 29 | 29 | 42 | 2.7 | 2.7 |
| 118 | 0.0052 | 114*,119 | 0.02899 | 0 | 29 | 29 | 42 | 10.95 | 59.7 |
| 119 | 0.00186 | 119 | 0.00186 | 0 | 29 | 29 | 42 | 3.9 | 3.9 |
| 120 | 0.0044 | 107* | 0.01651 | 0 | 29 | 29 | 42 | 9.3 | 33.8 |
| 121 | 0.00220 | 120* | 0.01871 | 0 | 29 | 29 | 42 | 4.6 | 38.0 |
| 122 | 0.00784 | 104*,118*,121* | 0.12378 | 0 | 29 | 29 | 42 | 16.3 | 250.6 |

*Cumulative Q of basin

| TABLE 2<br>Flow Depth at Key Locations | | | | | | |
|---|---|---|---|---|---|---|
| **Street** | **Location** | **Street Width** | **Curb Type** | **Slope (ft/ft)** | **Q100(cfs)** | **Depth (ft)** |
| **Unit 3** | | | | | | |
| Spring Flower Pl | @Desertwood Dr | 32 | STD | 0.0168 | 42.7 | 0.52 |
| Desertwood Dr | @Spring Flower Rd | 28 | STD | 0.006 | 7.2 | 0.35 |
| Purple Rock Pl | @Spring Flower Rd | 28 | STD | 0.007 | 15.2 | 0.43 |
| Spring Flower Pl | @Spring Flower Rd | 28 | STD | 0.006 | 12.7 | 0.42 |
| Saltbrush Rd | @Desertwood Dr | 28 | MTB | 0.02 | 10.98 | 0.32 |

* Flowrates listed are full street flows

DESERT FLOWER UNIT THREE TEMPORARY RETENTION POND

Pond @ Spring Flower Rd

· BASINS: 100-103

AREA: 13.54 AC

Wt E: 1.30 IN (BAS ON 42% D, 29% C, 29% B)

$$V_{360} = \frac{13.54 * 1.3 \text{ IN}}{12} = 1.47 \text{ Ac·Ft}$$

$$V_{10\ DAY} = 1.47 + \frac{5.69\ (3.67-2.2)}{12} = 2.17 \text{ Ac·Ft} = 94{,}378 \text{ Cu Ft}$$

Unser Blvd South Pond

Basin: 201.1
Area = .448 Ac

Wt E = 1.51 IN (BASED ON 60% D, 20% B, 20% C)

$$V_{360} = \frac{.448 * 1.51}{12} = .057 \text{ Ac·Ft}$$

$$V_{10\ DAY} = 0.057 + \frac{.2688\ (3.67-2.2)}{12} = .09 \text{ Ac·Ft}$$

# APPENDIX A

## ONSITE AHYMO SUMMARY & DETAILED OUTPUT
### 100-YEAR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =05/06/1998
INPUT FILE = dstmesa2.dat USER NO.= ISCARFNM.I01

| COMMAND | HYDROGRAPH IDENTIFICATION | FROM ID NO. | TO ID NO. | AREA (SQ MI) | PEAK DISCHARGE (CFS) | RUNOFF VOLUME (AC-FT) | RUNOFF (INCHES) | TIME TO PEAK (HOURS) | CFS PER ACRE | PAGE = 1 NOTATION |
|---|---|---|---|---|---|---|---|---|---|---|
| *S | DESERT FLOWER SUBDIVISION - 100 YR POST DEVELOPMENT | | | | | | | | | |
| *S | DSTmesa2.DAT | | | | | | | | | |
| *S | REVISED BY: mjc 5/05/98 | | | | | | | | | |
| START | | | | | | | | | | TIME= .00 |
| RAINFALL TYPE= 1 | | | | | | | | | | RAIN6= 2.200 |
| *S BASIN 100: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 100.00 | - | 1 | .00608 | 12.66 | .421 | 1.29860 | 1.500 | 3.253 | PER IMP= 42.00 |
| *S ** ROUTE BASIN 100 THROUGH 101 | | | | | | | | | | |
| ROUTE | 100.10 | 1 | 2 | .00608 | 12.22 | .421 | 1.29863 | 1.533 | 3.141 | |
| *S BASIN 101: POSTDEVELOPMENT CONDITIONS WITH SIMGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 101.00 | - | 3 | .00432 | 9.00 | .299 | 1.29860 | 1.500 | 3.255 | PER IMP= 42.00 |
| *S COMBINE BASINS 100 AND 101 TOGETHER | | | | | | | | | | |
| ADD HYD | 101.10 | 2& 3 | 4 | .01040 | 20.93 | .720 | 1.29854 | 1.533 | 3.144 | |
| *S BASIN 102: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 102.00 | - | 5 | .00728 | 15.16 | .504 | 1.29860 | 1.500 | 3.252 | PER IMP= 42.00 |
| *S COMBINE BASIN 102 TO HYDROGRAPH NO 101.1 | | | | | | | | | | |
| ADD HYD | 102.10 | 4& 5 | 6 | .01769 | 35.60 | 1.225 | 1.29855 | 1.533 | 3.146 | |
| *S BASIN 103: POSTDEVELOPMENT CONDITIONS WITH SIMGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 103.00 | - | 7 | .00347 | 7.23 | .240 | 1.29860 | 1.500 | 3.256 | PER IMP= 42.00 |
| *S COMBINE BASINS 103 AND HYDROGRAPH NO. 102.1 TOGETHER | | | | | | | | | | |
| ADD HYD | 103.10 | 6& 7 | 8 | .02116 | 42.71 | 1.465 | 1.29854 | 1.500 | 3.155 | |
| *S ** ROUTE BASIN 103.1 THROUGH 104 | | | | | | | | | | |
| ROUTE | 103.20 | 8 | 9 | .02116 | 43.08 | 1.465 | 1.29857 | 1.533 | 3.182 | |
| *S BASIN 104: POSTDEVELOPMENT CONDITIONS WITH SIMGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 140.00 | - | 10 | .00779 | 16.21 | .540 | 1.29860 | 1.500 | 3.252 | PER IMP= 42.00 |
| *S COMBINE BASIN 104 AND HYDROGRAPH 103.2 TOGETHER | | | | | | | | | | |
| ADD HYD | 104.10 | 9&10 | 30 | .02895 | 58.77 | 2.005 | 1.29855 | 1.533 | 3.172 | |
| *S BASIN 105: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 105.00 | - | 13 | .00400 | 8.33 | .277 | 1.29860 | 1.500 | 3.255 | PER IMP= 42.00 |
| *S ** ROUTE BASIN 105 THROUGH 106 | | | | | | | | | | |
| ROUTE | 105.10 | 13 | 14 | .00400 | 8.22 | .277 | 1.29865 | 1.533 | 3.210 | |
| *S BASIN 106: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 106.10 | - | 15 | .00390 | 8.13 | .270 | 1.29860 | 1.500 | 3.255 | PER IMP= 42.00 |
| *S COMBINE BASINS 106 AND 105.1 TOGETHER | | | | | | | | | | |
| ADD HYD | 106.10 | 15&14 | 16 | .00790 | 16.08 | .547 | 1.29853 | 1.533 | 3.181 | |
| *S ** ROUTE BASIN 106.1 THROUGH 107 | | | | | | | | | | |
| ROUTE | 106.20 | 16 | 17 | .00790 | 16.26 | .547 | 1.29859 | 1.533 | 3.217 | |
| *S BASIN 107: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 107.00 | - | 18 | .00417 | 8.69 | .289 | 1.29860 | 1.500 | 3.255 | PER IMP= 42.00 |
| *S COMBINE HYDROGRAPH NO 106.2 AND 107 TOGETHER | | | | | | | | | | |
| ADD HYD | 107.10 | 18&17 | 20 | .01207 | 24.67 | .836 | 1.29853 | 1.533 | 3.193 | |
| *S BASIN 108: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 108.00 | - | 1 | .00738 | 15.37 | .511 | 1.29860 | 1.500 | 3.252 | PER IMP= 42.00 |
| *S BASIN 109: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 109.00 | - | 2 | .00672 | 13.99 | .465 | 1.29860 | 1.500 | 3.252 | PER IMP= 42.00 |
| *S COMBINE BASINS 108 AND 109 TOGETHER | | | | | | | | | | |
| ADD HYD | 109.10 | 1& 2 | 3 | .01410 | 29.36 | .977 | 1.29855 | 1.500 | 3.252 | |
| *S ** ROUTE BASIN 109.1 THROUGH 113 | | | | | | | | | | |
| ROUTE | 109.20 | 3 | 4 | .01410 | 29.20 | .977 | 1.29859 | 1.533 | 3.235 | |
| *S BASIN 110: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |

| COMMAND | HYDROGRAPH IDENTIFICATION | FROM ID NO. | TO ID NO. | AREA (SQ MI) | PEAK DISCHARGE (CFS) | RUNOFF VOLUME (AC-FT) | RUNOFF (INCHES) | TIME TO PEAK (HOURS) | CFS PER ACRE | NOTATION |
|---|---|---|---|---|---|---|---|---|---|---|
| COMPUTE NM HYD | 110.00 | - | 5 | .01450 | 30.16 | 1.004 | 1.29860 | 1.500 | 3.250 | PER IMP= 42.00 |
| *S ** ROUTE BASIN 110 THROUGH 114 | | | | | | | | | | |
| ROUTE | 110.10 | 5 | 6 | .01450 | 30.00 | 1.004 | 1.29861 | 1.533 | 3.232 | |
| *S BASIN 111: PARK | | | | | | | | | | |
| COMPUTE NM HYD | 111.00 | - | 7 | .00315 | 5.20 | .169 | 1.00753 | 1.500 | 2.579 | PER IMP= 29.00 |
| *S ** ROUTE BASIN 111 THROUGH 112 | | | | | | | | | | |
| ROUTE | 111.10 | 7 | 8 | .00315 | 5.08 | .169 | 1.00760 | 1.533 | 2.519 | |
| *S BASIN 112: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 112.00 | - | 9 | .00292 | 6.08 | .202 | 1.29860 | 1.500 | 3.257 | PER IMP= 42.00 |
| *S COMBINE BASINS 111.1 AND 112 TOGETHER | | | | | | | | | | |
| ADD HYD | 112.10 | 8& 9 | 10 | .00606 | 10.96 | .371 | 1.14736 | 1.533 | 2.823 | |
| *S ** ROUTE BASIN 112.1 THROUGH 113 | | | | | | | | | | |
| ROUTE | 112.20 | 10 | 21 | .00606 | 10.87 | .371 | 1.14745 | 1.533 | 2.802 | |
| *S BASIN 113: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 113.00 | - | 12 | .00627 | 13.04 | .434 | 1.29860 | 1.500 | 3.253 | PER IMP= 42.00 |
| *S COMBINE BASINS 113 AND 112.2 TOGETHER | | | | | | | | | | |
| ADD HYD | 113.10 | 21&12 | 13 | .01233 | 23.49 | .805 | 1.22419 | 1.533 | 2.978 | |
| *S COMBINE BASINS 113 AND 109.2 TOGETHER | | | | | | | | | | |
| ADD HYD | 113.20 | 13& 4 | 14 | .02643 | 52.69 | 1.782 | 1.26387 | 1.533 | 3.115 | |
| *S BASIN 114: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 114.00 | - | 16 | .00737 | 15.34 | .510 | 1.29860 | 1.500 | 3.252 | PER IMP= 42.00 |
| *S COMBINE BASINS 110.1 AND 114 TOGETHER | | | | | | | | | | |
| ADD HYD | 114.10 | 16& 6 | 17 | .02187 | 45.17 | 1.515 | 1.29857 | 1.500 | 3.227 | |
| *S BASIN 115: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 115.00 | - | 18 | .00633 | 13.18 | .438 | 1.29860 | 1.500 | 3.253 | PER IMP= 42.00 |
| *S ** ROUTE BASIN 113.2 THROUGH 116 | | | | | | | | | | |
| ROUTE | 113.30 | 14 | 19 | .02643 | 52.85 | 1.782 | 1.26391 | 1.533 | 3.124 | |
| *S BASIN 116: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 116.00 | - | 22 | .00526 | 10.95 | .364 | 1.29860 | 1.500 | 3.254 | PER IMP= 42.00 |
| *S COMBINE BASINS 116 AND 113.3 TOGETHER | | | | | | | | | | |
| ADD HYD | 116.10 | 19&22 | 1 | .03169 | 63.45 | 2.146 | 1.26965 | 1.533 | 3.128 | |
| *S COMBINE BASINS 116.1 AND 115 TOGETHER | | | | | | | | | | |
| ADD HYD | 116.20 | 1&18 | 2 | .03802 | 76.21 | 2.584 | 1.27446 | 1.533 | 3.132 | |
| *S BASIN 117: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 117.00 | - | 3 | .00127 | 2.66 | .088 | 1.29860 | 1.500 | 3.268 | PER IMP= 42.00 |
| *S COMBINE BASINS 116.2 AND 117 TOGETHER | | | | | | | | | | |
| ADD HYD | 117.10 | 2& 3 | 4 | .03929 | 78.78 | 2.672 | 1.27523 | 1.533 | 3.133 | |
| *S ** ROUTE BASIN 114.1 THROUGH 118 | | | | | | | | | | |
| ROUTE | 114.20 | 17 | 5 | .02187 | 45.29 | 1.515 | 1.29859 | 1.533 | 3.236 | |
| *S BASIN 118: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 118.00 | - | 6 | .00526 | 10.95 | .364 | 1.29860 | 1.500 | 3.254 | PER IMP= 42.00 |
| *S COMBINE BASINS 118 AND 114.2 TOGETHER | | | | | | | | | | |
| ADD HYD | 118.10 | 6& 5 | 7 | .02713 | 55.89 | 1.879 | 1.29857 | 1.533 | 3.219 | |
| *S BASIN 119: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 119.00 | - | 8 | .00186 | 3.88 | .129 | 1.29860 | 1.500 | 3.263 | PER IMP= 42.00 |
| *S COMBINE BASINS 118.1 AND 119 TOGETHER | | | | | | | | | | |
| ADD HYD | 118.20 | 8& 7 | 9 | .02899 | 59.65 | 2.008 | 1.29856 | 1.533 | 3.215 | |
| *S ** ROUTE BASIN 107.2 THROUGH 120 | | | | | | | | | | |
| ROUTE | 107.30 | 20 | 10 | .01207 | 24.80 | .836 | 1.29858 | 1.533 | 3.211 | |
| *S BASIN 120: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 120.00 | - | 11 | .00444 | 9.25 | .308 | 1.29860 | 1.500 | 3.255 | PER IMP= 42.00 |
| *S COMBINE BASINS 120 AND 107.2 TOGETHER | | | | | | | | | | |

| COMMAND | HYDROGRAPH IDENTIFICATION | FROM ID NO. | TO ID NO. | AREA (SQ MI) | PEAK DISCHARGE (CFS) | RUNOFF VOLUME (AC-FT) | RUNOFF (INCHES) | TIME TO PEAK (HOURS) | CFS PER ACRE | NOTATION |
|---|---|---|---|---|---|---|---|---|---|---|
| ADD HYD | 120.10 | 11&10 | 12 | .01651 | 33.75 | 1.143 | 1.29854 | 1.533 | 3.194 | |
| *S ** ROUTE BASIN 120.1 THROUGH 121 | | | | | | | | | | |
| ROUTE | 120.20 | 12 | 13 | .01651 | 33.52 | 1.144 | 1.29857 | 1.533 | 3.173 | |
| *S BASIN 121: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 121.00 | - | 14 | .00220 | 4.59 | .152 | 1.29860 | 1.500 | 3.260 | PER IMP= 42.00 |
| *S COMBINE BASINS 121 AND 120.2 TOGETHER | | | | | | | | | | |
| ADD HYD | 121.10 | 14&13 | 15 | .01871 | 37.97 | 1.296 | 1.29853 | 1.533 | 3.171 | |
| *S ** ROUTE BASIN 104.1 THROUGH 122 | | | | | | | | | | |
| ROUTE | 104.20 | 30 | 23 | .02895 | 58.43 | 2.005 | 1.29857 | 1.533 | 3.154 | |
| *S BASIN 122: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES | | | | | | | | | | |
| COMPUTE NM HYD | 122.00 | - | 16 | .00784 | 16.32 | .543 | 1.29860 | 1.500 | 3.252 | PER IMP= 42.00 |
| *S COMBINE BASINS 122 AND 121.1 TOGETHER | | | | | | | | | | |
| ADD HYD | 122.10 | 16&15 | 17 | .02655 | 53.76 | 1.839 | 1.29854 | 1.533 | 3.164 | |
| *S COMBINE BASINS 122.1 AND 118.2 TOGETHER | | | | | | | | | | |
| ADD HYD | 122.20 | 17& 9 | 18 | .05554 | 113.41 | 3.847 | 1.29855 | 1.533 | 3.190 | |
| *S COMBINE BASINS 122.2 AND 117.1 TOGETHER | | | | | | | | | | |
| ADD HYD | 122.30 | 18& 4 | 19 | .09483 | 192.18 | 6.519 | 1.28889 | 1.533 | 3.166 | |
| *S COMBINE BASINS 122.3 AND 104.2 TOGETHER | | | | | | | | | | |
| ADD HYD | 122.40 | 19&23 | 20 | .12378 | 250.61 | 8.524 | 1.29115 | 1.533 | 3.164 | |
| *S OFFSITE BASINS: UNSER BLVD | | | | | | | | | | |
| *S BASIN 201.1: OFFSITE: UNSER BLVD. (FROM MEDIAN CURB TO R/W) | | | | | | | | | | |
| COMPUTE NM HYD | 201.10 | - | 1 | .00073 | 1.70 | .059 | 1.50556 | 1.500 | 3.630 | PER IMP= 60.00 |
| *S BASIN 201.2: OFFSITE: UNSER BLVD. (FROM MEDIAN CURB TO R/W) | | | | | | | | | | |
| COMPUTE NM HYD | 201.20 | - | 2 | .00281 | 6.49 | .226 | 1.50556 | 1.500 | 3.606 | PER IMP= 60.00 |
| *S BASIN 201.3: OFFSITE: UNSER BLVD. MEDIAN AREA | | | | | | | | | | |
| COMPUTE NM HYD | 201.30 | - | 3 | .00215 | 4.96 | .172 | 1.50556 | 1.500 | 3.608 | PER IMP= 60.00 |
| FINISH | | | | | | | | | | |

```
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
     RUN DATE (MON/DAY/YR) = 05/07/1998
     START TIME (HR:MIN:SEC) = 10:37:32      USER NO.= ISCARFNM.I01
     INPUT FILE = dstmesa2.dat

*S                DESERT FLOWER SUBDIVISION - 100 YR POST DEVELOPMENT
*S                DSRTmesa.DAT
*S                REVISED BY: mjc 5/05/98
*
START             RAINFALL BEGINS AT 0.0 HRS
RAINFALL          TYPE=1 RAIN QUARTER=0 RAIN ONE=1.87
                  RAIN SIX=2.20 RAIN DAY=2.66 DT=0.03333HR

            COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
            DT =    .033330 HOURS        END TIME =     5.999400 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

*S BASIN 100: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD       ID=1 HYD NO=100.00 AREA=0.00608 SQ MI
                     PER A=0 PER B=29 PER C=29 PER D=42
                     TP=-0.1333 HR   MASS RAIN=-1

   K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   10.082    CFS   UNIT VOLUME =     .9982        B =   526.28      P60 = 1.8700
   AREA =       .002554 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 =    9.3826     CFS   UNIT VOLUME =     .9991        B =    354.67       P60 = 1.8700
AREA =       .003526 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=1

                                   PARTIAL HYDROGRAPH    100.00

RUNOFF VOLUME =      1.29860 INCHES      =         .4211 ACRE-FEET
PEAK DISCHARGE RATE =       12.66 CFS  AT    1.500 HOURS    BASIN AREA =    .0061 SQ. MI.


*S ** ROUTE BASIN 100 THROUGH 101
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
                     MIN ELEV=100.00 FT MAX ELEV=100.67 FT
                     CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
                     DIST  ELEV  DIST  ELEV  DIST  ELEV
                       0  100.67 0.1  100.00   16   100.32
                     31.9 100.00 32.0 100.67

                                   RATING CURVE VALLEY SECTION  1.0
                                       WATER        FLOW         FLOW         TOP
                                      SURFACE       AREA         RATE        WIDTH
                                       ELEV        SQ FT        CFS          FT
                                      100.00         .00          .00         .00
                                      100.04         .06          .05        3.51
                                      100.07         .25          .33        7.03
                                      100.11         .56          .96       10.54
                                      100.14         .99         2.07       14.06
                                      100.18        1.55         3.75       17.57
                                      100.21        2.23         6.10       21.09
                                      100.25        3.04         9.20       24.60
                                      100.28        3.97        13.13       28.12
                                      100.32        5.02        17.98       31.63
                                      100.35        6.14        25.01       31.91
                                      100.39        7.27        33.05       31.92
                                      100.42        8.40        41.95       31.93
                                      100.46        9.52        51.67       31.94
                                      100.49       10.65        62.16       31.95
                                      100.53       11.77        73.40       31.96
                                      100.56       12.90        85.36       31.97
                                      100.60       14.03        98.01       31.98
                                      100.63       15.16       111.33       31.99
                                      100.67       16.28       125.31       32.00
COMPUTE TRAVEL TIME  ID=2 REACH NO=1 NO VS=1 L=410 FT
                     SLP=.016

                                   TRAVEL TIME TABLE
                                                   REACH=  1.0
```

| WATER DEPTH FEET | AVERAGE AREA SQ.FT. | FLOW RATE CFS | TRAVEL TIME HRS |
|---|---|---|---|
| .035 | .062 | .05 | .1376 |
| .071 | .248 | .33 | .0867 |
| .106 | .558 | .96 | .0661 |
| .141 | .992 | 2.07 | .0546 |
| .176 | 1.549 | 3.75 | .0471 |
| .212 | 2.231 | 6.10 | .0417 |
| .247 | 3.037 | 9.20 | .0376 |
| .282 | 3.966 | 13.13 | .0344 |
| .317 | 5.020 | 17.98 | .0318 |
| .353 | 6.144 | 25.01 | .0280 |
| .388 | 7.269 | 33.05 | .0250 |
| .423 | 8.395 | 41.95 | .0228 |
| .458 | 9.521 | 51.67 | .0210 |
| .494 | 10.647 | 62.16 | .0195 |
| .529 | 11.774 | 73.40 | .0183 |
| .564 | 12.901 | 85.36 | .0172 |
| .599 | 14.029 | 98.01 | .0163 |
| .635 | 15.157 | 111.33 | .0155 |
| .670 | 16.285 | 125.31 | .0148 |

```
ROUTE          ID=2 HYD NO=100.1 INFLOW ID=1 DT=0.0 HR
PRINT HYD      ID=2 CODE=1

                    PARTIAL HYDROGRAPH   100.10

    RUNOFF VOLUME =     1.29863 INCHES     =        .4211 ACRE-FEET
    PEAK DISCHARGE RATE =      12.22 CFS  AT   1.533 HOURS   BASIN AREA =   .0061 SQ. MI.


*S BASIN 101: POSTDEVELOPMENT CONDITIONS WITH SIMGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD      ID=3 HYD NO=101.00 AREA=0.004321 SQ MI
                    PER A=0 PER B=29 PER C=29 PER D=42
                    TP=-0.1333 HR   MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   7.1650    CFS   UNIT VOLUME =    .9978        B =   526.28      P60 = 1.8700
    AREA =      .001815 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 =   6.6681    CFS   UNIT VOLUME =    .9984        B =   354.67      P60 = 1.8700
    AREA =      .002506 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=1
```

```
                                PARTIAL HYDROGRAPH   101.00

    RUNOFF VOLUME =      1.29860 INCHES      =          .2993 ACRE-FEET
    PEAK DISCHARGE RATE =        9.00 CFS  AT   1.500 HOURS   BASIN AREA =   .0043 SQ. MI.


*S COMBINE BASINS 100 AND 101 TOGETHER
ADD HYD              ID=4  HYD NO=101.1  ID=2  ID=3
PRINT HYD            ID=4  CODE=1

                                PARTIAL HYDROGRAPH   101.10

    RUNOFF VOLUME =      1.29854 INCHES      =          .7203 ACRE-FEET
    PEAK DISCHARGE RATE =       20.93 CFS  AT   1.533 HOURS   BASIN AREA =   .0104 SQ. MI.


*S BASIN 102: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD       ID=5 HYD NO=102.00 AREA=0.007284 SQ MI
                     PER A=0 PER B=29 PER C=29 PER D=42
                     TP=-0.1333 HR   MASS RAIN=-1

    K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   12.078    CFS   UNIT VOLUME =    .9984        B =   526.28      P60 = 1.8700
    AREA =       .003059 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 =   11.241    CFS   UNIT VOLUME =    .9993        B =   354.67      P60 = 1.8700
    AREA =       .004225 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=1

                                PARTIAL HYDROGRAPH   102.00

    RUNOFF VOLUME =      1.29860 INCHES      =          .5045 ACRE-FEET
    PEAK DISCHARGE RATE =       15.16 CFS  AT   1.500 HOURS   BASIN AREA =   .0073 SQ. MI.


*S COMBINE BASIN 102 TO HYDROGRAPH NO 101.1
ADD HYD              ID=6  HYD NO=102.1  ID=4  ID=5
PRINT HYD            ID=6  CODE=1
```

```
                                PARTIAL HYDROGRAPH   102.10

    RUNOFF VOLUME =      1.29855 INCHES      =        1.2248 ACRE-FEET
    PEAK DISCHARGE RATE =       35.60 CFS  AT   1.533 HOURS   BASIN AREA =   .0177 SQ. MI.


*S BASIN 103: POSTDEVELOPMENT CONDITIONS WITH SIMGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD       ID=7 HYD NO=103.00 AREA=0.00347 SQ MI
                     PER A=0 PER B=29 PER C=29 PER D=42
                     TP=-0.1333 HR   MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   5.7539    CFS   UNIT VOLUME =    .9973        B =   526.28      P60 = 1.8700
    AREA =       .001457 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 =   5.3549    CFS   UNIT VOLUME =    .9980        B =   354.67      P60 = 1.8700
    AREA =       .002013 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=1

                                PARTIAL HYDROGRAPH   103.00

    RUNOFF VOLUME =      1.29860 INCHES      =         .2403 ACRE-FEET
    PEAK DISCHARGE RATE =        7.23 CFS  AT   1.500 HOURS   BASIN AREA =   .0035 SQ. MI.


*S COMBINE BASINS 103 AND HYDROGRAPH NO. 102.1 TOGETHER
ADD HYD              ID=8  HYD NO=103.1 ID=6  ID=7
PRINT HYD            ID=8  CODE=1

                                PARTIAL HYDROGRAPH   103.10

    RUNOFF VOLUME =      1.29854 INCHES      =        1.4651 ACRE-FEET
    PEAK DISCHARGE RATE =       42.71 CFS  AT   1.500 HOURS   BASIN AREA =   .0212 SQ. MI.


*S ** ROUTE BASIN 103.1 THROUGH 104
COMPUTE TRAVEL TIME  ID=9 REACH NO=1 NO VS=1 L=520 FT
                     SLP=.0171
```

TRAVEL TIME TABLE

REACH= 1.0

| WATER DEPTH FEET | AVERAGE AREA SQ.FT. | FLOW RATE CFS | TRAVEL TIME HRS |
|---|---|---|---|
| .035 | .062 | .05 | .1745 |
| .071 | .248 | .33 | .1099 |
| .106 | .558 | .96 | .0839 |
| .141 | .992 | 2.07 | .0692 |
| .176 | 1.549 | 3.75 | .0597 |
| .212 | 2.231 | 6.10 | .0528 |
| .247 | 3.037 | 9.20 | .0477 |
| .282 | 3.966 | 13.13 | .0436 |
| .317 | 5.020 | 17.98 | .0403 |
| .353 | 6.144 | 25.01 | .0355 |
| .388 | 7.269 | 33.05 | .0318 |
| .423 | 8.395 | 41.95 | .0289 |
| .458 | 9.521 | 51.67 | .0266 |
| .494 | 10.647 | 62.16 | .0247 |
| .529 | 11.774 | 73.40 | .0232 |
| .564 | 12.901 | 85.36 | .0218 |
| .599 | 14.029 | 98.01 | .0207 |
| .635 | 15.157 | 111.33 | .0197 |
| .670 | 16.285 | 125.31 | .0188 |

```
ROUTE          ID=9 HYD NO=103.2 INFLOW ID=8 DT=0.0 HR
PRINT HYD      ID=9 CODE=1

                    PARTIAL HYDROGRAPH   103.20

    RUNOFF VOLUME =      1.29857 INCHES      =        1.4651 ACRE-FEET
    PEAK DISCHARGE RATE =       43.08 CFS  AT   1.533 HOURS   BASIN AREA =   .0212 SQ. MI.


*S BASIN 104: POSTDEVELOPMENT CONDITIONS WITH SIMGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD      ID=10 HYD NO=140.00 AREA=0.00779 SQ MI
                    PER A=0 PER B=29 PER C=29 PER D=42
                    TP=-0.1333 HR   MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   12.917    CFS   UNIT VOLUME =    .9985        B =   526.28      P60 = 1.8700
    AREA =      .003272 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 =   12.021    CFS   UNIT VOLUME =    .9993        B =   354.67      P60 = 1.8700
    AREA =      .004518 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=1

                                   PARTIAL HYDROGRAPH   140.00

    RUNOFF VOLUME =      1.29860 INCHES      =         .5395 ACRE-FEET
    PEAK DISCHARGE RATE =      16.21 CFS  AT   1.500 HOURS   BASIN AREA =   .0078 SQ. MI.


*S COMBINE BASIN 104 AND HYDROGRAPH 103.2 TOGETHER
ADD HYD              ID=30  HYD NO=104.1  ID=9  ID=10
PRINT HYD            ID=30  CODE=1

                                   PARTIAL HYDROGRAPH   104.10

    RUNOFF VOLUME =      1.29855 INCHES      =        2.0046 ACRE-FEET
    PEAK DISCHARGE RATE =      58.77 CFS  AT   1.533 HOURS   BASIN AREA =   .0289 SQ. MI.


*S BASIN 105: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD       ID=13  HYD NO=105.00 AREA=0.004 SQ MI
                     PER A=0 PER B=29 PER C=29 PER D=42
                     TP=-0.1333 HR   MASS RAIN=-1

    K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   6.6327    CFS   UNIT VOLUME =    .9976        B =   526.28      P60 = 1.8700
    AREA =       .001680 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 =   6.1728    CFS   UNIT VOLUME =    .9982        B =   354.67      P60 = 1.8700
    AREA =       .002320 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD            ID=13  CODE=1

                                   PARTIAL HYDROGRAPH   105.00

    RUNOFF VOLUME =      1.29860 INCHES      =         .2770 ACRE-FEET
    PEAK DISCHARGE RATE =       8.33 CFS  AT   1.500 HOURS   BASIN AREA =   .0040 SQ. MI.
```

```
*3 ** ROUTE BASIN 105 THROUGH 106
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
                    MIN ELEV=100.00 FT MAX ELEV=100.67 FT
                    CH SLP=.02 FP SLP=.02 N=.017 DIST=28 FT
                    DIST  ELEV  DIST  ELEV  DIST  ELEV
                      0  100.67 0.1  100.00   14   100.28
                    27.9 100.00 28.0 100.67
```

RATING CURVE VALLEY SECTION 1.0

| WATER SURFACE ELEV | FLOW AREA SQ FT | FLOW RATE CFS | TOP WIDTH FT |
|---|---|---|---|
| 100.00 | .00 | .00 | .00 |
| 100.04 | .06 | .05 | 3.51 |
| 100.07 | .25 | .33 | 7.02 |
| 100.11 | .56 | .96 | 10.53 |
| 100.14 | .99 | 2.07 | 14.05 |
| 100.18 | 1.55 | 3.75 | 17.56 |
| 100.21 | 2.23 | 6.09 | 21.07 |
| 100.25 | 3.03 | 9.19 | 24.58 |
| 100.28 | 3.96 | 13.18 | 27.88 |
| 100.32 | 4.95 | 19.05 | 27.89 |
| 100.35 | 5.93 | 25.73 | 27.91 |
| 100.39 | 6.91 | 33.18 | 27.92 |
| 100.42 | 7.90 | 41.35 | 27.93 |
| 100.46 | 8.88 | 50.21 | 27.94 |
| 100.49 | 9.87 | 59.73 | 27.95 |
| 100.53 | 10.85 | 69.89 | 27.96 |
| 100.56 | 11.84 | 80.66 | 27.97 |
| 100.60 | 12.83 | 92.01 | 27.98 |
| 100.63 | 13.81 | 103.94 | 27.99 |
| 100.67 | 14.80 | 116.42 | 28.00 |

```
COMPUTE TRAVEL TIME  ID=14 REACH NO=1 NO VS=1 L=260 FT
                     SLP=.019
```

TRAVEL TIME TABLE

REACH= 1.0

| WATER DEPTH FEET | AVERAGE AREA SQ.FT. | FLOW RATE CFS | TRAVEL TIME HRS |
|---|---|---|---|
| .035 | .062 | .05 | .0872 |
| .071 | .248 | .33 | .0550 |
| .106 | .557 | .96 | .0419 |
| .141 | .991 | 2.07 | .0346 |
| .176 | 1.548 | 3.75 | .0298 |
| .212 | 2.229 | 6.09 | .0264 |
| .247 | 3.034 | 9.19 | .0238 |
| .282 | 3.962 | 13.18 | .0217 |
| .317 | 4.946 | 19.05 | .0188 |
| .353 | 5.930 | 25.73 | .0166 |
| .388 | 6.914 | 33.18 | .0151 |

```
                    .423        7.898        41.35        .0138
                    .458        8.883        50.21        .0128
                    .494        9.869        59.73        .0119
                    .529       10.854        69.89        .0112
                    .564       11.841        80.66        .0106
                    .599       12.827        92.01        .0101
                    .635       13.814       103.94        .0096
                    .670       14.801       116.42        .0092
ROUTE          ID=14 HYD NO=105.1 INFLOW ID=13 DT=0.0 HR
PRINT HYD      ID=14 CODE=1

                         PARTIAL HYDROGRAPH   105.10

    RUNOFF VOLUME =      1.29865 INCHES      =        .2770 ACRE-FEET
    PEAK DISCHARGE RATE =        8.22 CFS  AT   1.533 HOURS   BASIN AREA =   .0040 SQ. MI.


*S BASIN 106: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD      ID=15  HYD NO=106.10 AREA=0.0039 SQ MI
                    PER A=0 PER B=29 PER C=29 PER D=42
                    TP=-0.1333 HR   MASS RAIN=-1

    K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   6.4669    CFS   UNIT VOLUME =    .9976        B =   526.28       P60 = 1.8700
    AREA =       .001638 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 =   6.0185    CFS   UNIT VOLUME =    .9982        B =   354.67       P60 = 1.8700
    AREA =       .002262 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD           ID=15   CODE=1

                         PARTIAL HYDROGRAPH   106.10

    RUNOFF VOLUME =      1.29860 INCHES      =        .2701 ACRE-FEET
    PEAK DISCHARGE RATE =        8.13 CFS  AT   1.500 HOURS   BASIN AREA =   .0039 SQ. MI.


*S COMBINE BASINS 106 AND 105.1 TOGETHER
ADD HYD             ID=16  HYD NO=106.1  ID=15  ID=14
PRINT HYD           ID=16  CODE=1
```

PARTIAL HYDROGRAPH 106.10

RUNOFF VOLUME = 1.29853 INCHES = .5471 ACRE-FEET
PEAK DISCHARGE RATE = 16.08 CFS AT 1.533 HOURS BASIN AREA = .0079 SQ. MI.

*S ** ROUTE BASIN 106.1 THROUGH 107
COMPUTE TRAVEL TIME ID=17 REACH NO=1 NO VS=1 L=260 FT
SLP=.017

TRAVEL TIME TABLE
REACH= 1.0

| WATER DEPTH FEET | AVERAGE AREA SQ.FT. | FLOW RATE CFS | TRAVEL TIME HRS |
|---|---|---|---|
| .035 | .062 | .05 | .0872 |
| .071 | .248 | .33 | .0550 |
| .106 | .557 | .96 | .0419 |
| .141 | .991 | 2.07 | .0346 |
| .176 | 1.548 | 3.75 | .0298 |
| .212 | 2.229 | 6.09 | .0264 |
| .247 | 3.034 | 9.19 | .0238 |
| .282 | 3.962 | 13.18 | .0217 |
| .317 | 4.946 | 19.05 | .0188 |
| .353 | 5.930 | 25.73 | .0166 |
| .388 | 6.914 | 33.18 | .0151 |
| .423 | 7.898 | 41.35 | .0138 |
| .458 | 8.883 | 50.21 | .0128 |
| .494 | 9.869 | 59.73 | .0119 |
| .529 | 10.854 | 69.89 | .0112 |
| .564 | 11.841 | 80.66 | .0106 |
| .599 | 12.827 | 92.01 | .0101 |
| .635 | 13.814 | 103.94 | .0096 |
| .670 | 14.801 | 116.42 | .0092 |

ROUTE ID=17 HYD NO=106.2 INFLOW ID=16 DT=0.0 HR
PRINT HYD ID=17 CODE=1

PARTIAL HYDROGRAPH 106.20

RUNOFF VOLUME = 1.29859 INCHES = .5471 ACRE-FEET
PEAK DISCHARGE RATE = 16.26 CFS AT 1.533 HOURS BASIN AREA = .0079 SQ. MI.

*S BASIN 107: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD ID=18 HYD NO=107.0 AREA=0.004171 SQ MI
PER A=0 PER B=29 PER C=29 PER D=42
TP=-0.1333 HR MASS RAIN=-1

```
K =    .072649HR     TP =    .133300HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
UNIT PEAK =    6.9163     CFS    UNIT VOLUME =     .9978        B =    526.28       P60 = 1.8700
AREA =       .001752 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 =    6.4367     CFS    UNIT VOLUME =     .9984        B =    354.67       P60 = 1.8700
AREA =       .002419 SQ MI     IA =     .42500 INCHES     INF =    1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD            ID=18  CODE=1

                                PARTIAL HYDROGRAPH    107.00

RUNOFF VOLUME =      1.29860 INCHES      =         .2889 ACRE-FEET
PEAK DISCHARGE RATE =        8.69 CFS  AT    1.500 HOURS    BASIN AREA =    .0042 SQ. MI.


*S COMBINE HYDROGRAPH NO 106.2 AND 107 TOGETHER
ADD HYD              ID=20  HYD NO=107.1  ID=18  ID=17
PRINT HYD            ID=20  CODE=1

                                PARTIAL HYDROGRAPH    107.10

RUNOFF VOLUME =      1.29853 INCHES      =         .8360 ACRE-FEET
PEAK DISCHARGE RATE =       24.67 CFS  AT    1.533 HOURS    BASIN AREA =    .0121 SQ. MI.


*S BASIN 108: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD       ID=1  HYD NO=108.0  AREA=0.007383 SQ MI
                     PER A=0  PER B=29  PER C=29  PER D=42
                     TP=-0.1333 HR  MASS RAIN=-1

K =    .072649HR     TP =    .133300HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   12.242     CFS    UNIT VOLUME =     .9984        B =    526.28       P60 = 1.8700
AREA =       .003101 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 =   11.393     CFS    UNIT VOLUME =     .9993        B =    354.67       P60 = 1.8700
AREA =       .004282 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=1
```

PARTIAL HYDROGRAPH 108.00

```
RUNOFF VOLUME =      1.29860 INCHES      =          .5113 ACRE-FEET
PEAK DISCHARGE RATE =       15.37 CFS  AT   1.500 HOURS   BASIN AREA =   .0074 SQ. MI.


*S BASIN 109: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD       ID=2  HYD NO=109.0  AREA=0.00672 SQ MI
                     PER A=0  PER B=29  PER C=29  PER D=42
                     TP=-0.1333 HR  MASS RAIN=-1

K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   11.143    CFS   UNIT VOLUME =    .9984       B =   526.28      P60 = 1.8700
AREA =       .002822 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 =   10.370    CFS   UNIT VOLUME =    .9992       B =   354.67      P60 = 1.8700
AREA =       .003898 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=1
```

PARTIAL HYDROGRAPH 109.00

```
RUNOFF VOLUME =      1.29860 INCHES      =          .4654 ACRE-FEET
PEAK DISCHARGE RATE =       13.99 CFS  AT   1.500 HOURS   BASIN AREA =   .0067 SQ. MI.


*S COMBINE BASINS 108 AND 109 TOGETHER
ADD HYD              ID=3  HYD NO=109.1  ID=1  ID=2
PRINT HYD            ID=3  CODE=1
```

PARTIAL HYDROGRAPH 109.10

```
RUNOFF VOLUME =      1.29855 INCHES      =          .9767 ACRE-FEET
PEAK DISCHARGE RATE =       29.36 CFS  AT   1.500 HOURS   BASIN AREA =   .0141 SQ. MI.


*S ** ROUTE BASIN 109.1 THROUGH 113
COMPUTE TRAVEL TIME  ID=4 REACH NO=1 NO VS=1 L=260 FT
                     SLP=.014
```

TRAVEL TIME TABLE

REACH= 1.0

| WATER DEPTH FEET | AVERAGE AREA SQ.FT. | FLOW RATE CFS | TRAVEL TIME HRS |
|---|---|---|---|
| .035 | .062 | .05 | .0872 |
| .071 | .248 | .33 | .0550 |
| .106 | .557 | .96 | .0419 |
| .141 | .991 | 2.07 | .0346 |
| .176 | 1.548 | 3.75 | .0298 |
| .212 | 2.229 | 6.09 | .0264 |
| .247 | 3.034 | 9.19 | .0238 |
| .282 | 3.962 | 13.18 | .0217 |
| .317 | 4.946 | 19.05 | .0188 |
| .353 | 5.930 | 25.73 | .0166 |
| .388 | 6.914 | 33.18 | .0151 |
| .423 | 7.898 | 41.35 | .0138 |
| .458 | 8.883 | 50.21 | .0128 |
| .494 | 9.869 | 59.73 | .0119 |
| .529 | 10.854 | 69.89 | .0112 |
| .564 | 11.841 | 80.66 | .0106 |
| .599 | 12.827 | 92.01 | .0101 |
| .635 | 13.814 | 103.94 | .0096 |
| .670 | 14.801 | 116.42 | .0092 |

```
ROUTE                ID=4 HYD NO=109.2 INFLOW ID=3 DT=0.0 HR
PRINT HYD            ID=4 CODE=1

                    PARTIAL HYDROGRAPH   109.20

    RUNOFF VOLUME =      1.29859 INCHES      =         .9767 ACRE-FEET
    PEAK DISCHARGE RATE =      29.20 CFS  AT   1.533 HOURS   BASIN AREA =   .0141 SQ. MI.


*S BASIN 110: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD       ID=5  HYD NO=110.0  AREA=0.0145 SQ MI
                     PER A=0  PER B=29  PER C=29  PER D=42
                     TP=-0.1333 HR  MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   24.044    CFS   UNIT VOLUME =    .9989        B =   526.28      P60 = 1.8700
    AREA =      .006090 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 =   22.376    CFS   UNIT VOLUME =    .9999        B =   354.67      P60 = 1.8700
    AREA =      .008410 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=1

PARTIAL HYDROGRAPH 110.00

RUNOFF VOLUME = 1.29860 INCHES = 1.0042 ACRE-FEET
PEAK DISCHARGE RATE = 30.16 CFS AT 1.500 HOURS BASIN AREA = .0145 SQ. MI.

*S ** ROUTE BASIN 110 THROUGH 114
COMPUTE TRAVEL TIME ID=6 REACH NO=1 NO VS=1 L=260 FT
SLP=.0155

TRAVEL TIME TABLE
REACH= 1.0

| WATER DEPTH FEET | AVERAGE AREA SQ.FT. | FLOW RATE CFS | TRAVEL TIME HRS |
|---|---|---|---|
| .035 | .062 | .05 | .0872 |
| .071 | .248 | .33 | .0550 |
| .106 | .557 | .96 | .0419 |
| .141 | .991 | 2.07 | .0346 |
| .176 | 1.548 | 3.75 | .0298 |
| .212 | 2.229 | 6.09 | .0264 |
| .247 | 3.034 | 9.19 | .0238 |
| .282 | 3.962 | 13.18 | .0217 |
| .317 | 4.946 | 19.05 | .0188 |
| .353 | 5.930 | 25.73 | .0166 |
| .388 | 6.914 | 33.18 | .0151 |
| .423 | 7.898 | 41.35 | .0138 |
| .458 | 8.883 | 50.21 | .0128 |
| .494 | 9.869 | 59.73 | .0119 |
| .529 | 10.854 | 69.89 | .0112 |
| .564 | 11.841 | 80.66 | .0106 |
| .599 | 12.827 | 92.01 | .0101 |
| .635 | 13.814 | 103.94 | .0096 |
| .670 | 14.801 | 116.42 | .0092 |

ROUTE ID=6 HYD NO=110.1 INFLOW ID=5 DT=0.0 HR
PRINT HYD ID=6 CODE=1

PARTIAL HYDROGRAPH 110.10

RUNOFF VOLUME = 1.29861 INCHES = 1.0043 ACRE-FEET
PEAK DISCHARGE RATE = 30.00 CFS AT 1.533 HOURS BASIN AREA = .0145 SQ. MI.

*****

```
*S BASIN 111: PARK
COMPUTE NM HYD        ID=7  HYD NO=111.0  AREA=0.003149 SQ MI
                      PER A=33  PER B=19  PER C=19  PER D=29
                      TP=-0.1333 HR  MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000    SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   3.6054    CFS   UNIT VOLUME =    .9961       B =   526.28      P60 = 1.8700
    AREA =      .000913 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .139463HR    TP =   .133300HR    K/TP RATIO =  1.046235    SHAPE CONSTANT, N =  3.374403
    UNIT PEAK =   5.2171    CFS   UNIT VOLUME =    .9973       B =   311.05      P60 = 1.8700
    AREA =      .002236 SQ MI    IA =    .52958 INCHES    INF =   1.33282 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD             ID=7  CODE=1

                                  PARTIAL HYDROGRAPH   111.00


    RUNOFF VOLUME =     1.00753 INCHES      =        .1692 ACRE-FEET
    PEAK DISCHARGE RATE =       5.20 CFS  AT   1.500 HOURS   BASIN AREA =   .0031 SQ. MI.


*S ** ROUTE BASIN 111 THROUGH 112
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
                     MIN ELEV=100.00 FT MAX ELEV=100.33 FT
                     CH SLP=.02 FP SLP=.02 N=.017 DIST=28 FT
                     DIST  ELEV  DIST  ELEV  DIST  ELEV
                       0  100.33 0.1  100.00   14   100.28
                     27.9 100.00 28.0 100.33
```

RATING CURVE VALLEY SECTION 1.0

| WATER SURFACE ELEV | FLOW AREA SQ FT | FLOW RATE CFS | TOP WIDTH FT |
|---|---|---|---|
| 100.00 | .00 | .00 | .00 |
| 100.02 | .02 | .01 | 1.74 |
| 100.03 | .06 | .05 | 3.47 |
| 100.05 | .14 | .15 | 5.21 |
| 100.07 | .24 | .31 | 6.94 |
| 100.09 | .38 | .57 | 8.68 |
| 100.10 | .54 | .93 | 10.41 |
| 100.12 | .74 | 1.40 | 12.15 |
| 100.14 | .96 | 2.00 | 13.88 |
| 100.16 | 1.22 | 2.73 | 15.62 |
| 100.17 | 1.51 | 3.62 | 17.35 |
| 100.19 | 1.82 | 4.67 | 19.09 |
| 100.21 | 2.17 | 5.88 | 20.82 |
| 100.23 | 2.55 | 7.28 | 22.56 |

| | | | |
|---|---|---|---|
| 100.24 | 2.95 | 8.88 | 24.29 |
| 100.26 | 3.39 | 10.67 | 26.03 |
| 100.28 | 3.86 | 12.67 | 27.77 |
| 100.30 | 4.34 | 15.35 | 27.98 |
| 100.31 | 4.83 | 18.31 | 27.99 |
| 100.33 | 5.32 | 21.46 | 28.00 |

```
COMPUTE TRAVEL TIME  ID=8 REACH NO=1 NO VS=1 L=300 FT
                     SLP=.018
```

TRAVEL TIME TABLE

REACH= 1.0

| WATER DEPTH FEET | AVERAGE AREA SQ.FT. | FLOW RATE CFS | TRAVEL TIME HRS |
|---|---|---|---|
| .017 | .015 | .01 | .1611 |
| .035 | .060 | .05 | .1015 |
| .052 | .136 | .15 | .0775 |
| .069 | .241 | .31 | .0639 |
| .087 | .377 | .57 | .0551 |
| .104 | .543 | .93 | .0488 |
| .122 | .739 | 1.40 | .0440 |
| .139 | .965 | 2.00 | .0403 |
| .156 | 1.221 | 2.73 | .0372 |
| .174 | 1.507 | 3.62 | .0347 |
| .191 | 1.824 | 4.67 | .0326 |
| .208 | 2.171 | 5.88 | .0307 |
| .226 | 2.547 | 7.28 | .0291 |
| .243 | 2.954 | 8.88 | .0277 |
| .261 | 3.391 | 10.67 | .0265 |
| .278 | 3.859 | 12.67 | .0254 |
| .295 | 4.345 | 15.35 | .0236 |
| .313 | 4.831 | 18.31 | .0220 |
| .330 | 5.317 | 21.46 | .0206 |

```
ROUTE                ID=8 HYD NO=111.1 INFLOW ID=7 DT=0.0 HR
PRINT HYD            ID=8 CODE=1
```

PARTIAL HYDROGRAPH 111.10

```
RUNOFF VOLUME =      1.00760 INCHES     =        .1692 ACRE-FEET
PEAK DISCHARGE RATE =       5.08 CFS  AT   1.533 HOURS   BASIN AREA =   .0031 SQ. MI.
```

```
*S BASIN 112: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD       ID=9  HYD NO=112.0  AREA=0.002915 SQ MI
                     PER A=0  PER B=29  PER C=29  PER D=42
                     TP=-0.1333 HR  MASS RAIN=-1
```

*****

```
K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =    4.8336    CFS   UNIT VOLUME =    .9969       B =   526.28      P60 = 1.8700
AREA =       .001224 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 =    4.4984    CFS   UNIT VOLUME =    .9975       B =   354.67      P60 = 1.8700
AREA =       .001691 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=1

                                PARTIAL HYDROGRAPH   112.00


RUNOFF VOLUME =     1.29860 INCHES      =        .2019 ACRE-FEET
PEAK DISCHARGE RATE =       6.08 CFS  AT   1.500 HOURS   BASIN AREA =    .0029 SQ. MI.


*S COMBINE BASINS 111.1 AND 112 TOGETHER
ADD HYD              ID=10  HYD NO=112.1  ID=8  ID=9
PRINT HYD            ID=10  CODE=1

                                PARTIAL HYDROGRAPH   112.10


RUNOFF VOLUME =     1.14736 INCHES      =        .3711 ACRE-FEET
PEAK DISCHARGE RATE =      10.96 CFS  AT   1.533 HOURS   BASIN AREA =    .0061 SQ. MI.


*S ** ROUTE BASIN 112.1 THROUGH 113
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
                     MIN ELEV=100.00 FT MAX ELEV=100.67 FT
                     CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
                     DIST  ELEV  DIST  ELEV  DIST  ELEV
                     0  100.67 0.1  100.00   16   100.32
                     31.9 100.00 32.0 100.67
```

RATING CURVE VALLEY SECTION 1.0

| WATER SURFACE ELEV | FLOW AREA SQ FT | FLOW RATE CFS | TOP WIDTH FT |
|---|---|---|---|
| 100.00 | .00 | .00 | .00 |
| 100.04 | .06 | .05 | 3.51 |
| 100.07 | .25 | .33 | 7.03 |
| 100.11 | .56 | .96 | 10.54 |
| 100.14 | .99 | 2.07 | 14.06 |
| 100.18 | 1.55 | 3.75 | 17.57 |
| 100.21 | 2.23 | 6.10 | 21.09 |

| | | | |
|---|---|---|---|
| 100.25 | 3.04 | 9.20 | 24.60 |
| 100.28 | 3.97 | 13.13 | 28.12 |
| 100.32 | 5.02 | 17.98 | 31.63 |
| 100.35 | 6.14 | 25.01 | 31.91 |
| 100.39 | 7.27 | 33.05 | 31.92 |
| 100.42 | 8.40 | 41.95 | 31.93 |
| 100.46 | 9.52 | 51.67 | 31.94 |
| 100.49 | 10.65 | 62.16 | 31.95 |
| 100.53 | 11.77 | 73.40 | 31.96 |
| 100.56 | 12.90 | 85.36 | 31.97 |
| 100.60 | 14.03 | 98.01 | 31.98 |
| 100.63 | 15.16 | 111.33 | 31.99 |
| 100.67 | 16.28 | 125.31 | 32.00 |

COMPUTE TRAVEL TIME ID=21 REACH NO=1 NO VS=1 L=260 FT
SLP=.006

TRAVEL TIME TABLE

REACH= 1.0

| WATER DEPTH FEET | AVERAGE AREA SQ.FT. | FLOW RATE CFS | TRAVEL TIME HRS |
|---|---|---|---|
| .035 | .062 | .05 | .0872 |
| .071 | .248 | .33 | .0550 |
| .106 | .558 | .96 | .0419 |
| .141 | .992 | 2.07 | .0346 |
| .176 | 1.549 | 3.75 | .0298 |
| .212 | 2.231 | 6.10 | .0264 |
| .247 | 3.037 | 9.20 | .0238 |
| .282 | 3.966 | 13.13 | .0218 |
| .317 | 5.020 | 17.98 | .0202 |
| .353 | 6.144 | 25.01 | .0177 |
| .388 | 7.269 | 33.05 | .0159 |
| .423 | 8.395 | 41.95 | .0145 |
| .458 | 9.521 | 51.67 | .0133 |
| .494 | 10.647 | 62.16 | .0124 |
| .529 | 11.774 | 73.40 | .0116 |
| .564 | 12.901 | 85.36 | .0109 |
| .599 | 14.029 | 98.01 | .0103 |
| .635 | 15.157 | 111.33 | .0098 |
| .670 | 16.285 | 125.31 | .0094 |

ROUTE ID=21 HYD NO=112.2 INFLOW ID=10 DT=0.0 HR
PRINT HYD ID=21 CODE=1

PARTIAL HYDROGRAPH 112.20

RUNOFF VOLUME = 1.14745 INCHES = .3711 ACRE-FEET
PEAK DISCHARGE RATE = 10.87 CFS AT 1.533 HOURS BASIN AREA = .0061 SQ. MI.

*****

```
*S BASIN 113: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD       ID=12  HYD NO=113.0  AREA=0.006265 SQ MI
                     PER A=0  PER B=29  PER C=29  PER D=42
                     TP=-0.1333 HR  MASS RAIN=-1

    K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =    10.389    CFS   UNIT VOLUME =     .9982        B =   526.28       P60 = 1.8700
    AREA =       .002631 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 =    9.6681    CFS   UNIT VOLUME =     .9991        B =   354.67       P60 = 1.8700
    AREA =       .003634 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  CODE=1

                                PARTIAL HYDROGRAPH   113.00


    RUNOFF VOLUME =      1.29860 INCHES      =          .4339 ACRE-FEET
    PEAK DISCHARGE RATE =       13.04 CFS  AT   1.500 HOURS   BASIN AREA =    .0063 SQ. MI.


*S COMBINE BASINS 113 AND 112.2 TOGETHER
ADD HYD              ID=13  HYD NO=113.1  ID=21  ID=12
PRINT HYD            ID=13  CODE=1

                                PARTIAL HYDROGRAPH   113.10


    RUNOFF VOLUME =      1.22419 INCHES      =          .8050 ACRE-FEET
    PEAK DISCHARGE RATE =       23.49 CFS  AT   1.533 HOURS   BASIN AREA =    .0123 SQ. MI.


*S COMBINE BASINS 113 AND 109.2 TOGETHER
ADD HYD              ID=14  HYD NO=113.2  ID=13  ID=4
PRINT HYD            ID=14  CODE=1

                                PARTIAL HYDROGRAPH   113.20


    RUNOFF VOLUME =      1.26387 INCHES      =         1.7817 ACRE-FEET
    PEAK DISCHARGE RATE =       52.69 CFS  AT   1.533 HOURS   BASIN AREA =    .0264 SQ. MI.
```

```
*S BASIN 114: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD       ID=16  HYD NO=114.0  AREA=0.00737 SQ MI
                     PER A=0  PER B=29  PER C=29  PER D=42
                     TP=-0.1333 HR  MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   12.221    CFS   UNIT VOLUME =    .9984       B =   526.28      P60 = 1.8700
    AREA =      .003095 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 =   11.373    CFS   UNIT VOLUME =    .9993       B =   354.67      P60 = 1.8700
    AREA =      .004275 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD            ID=16  CODE=1

                                PARTIAL HYDROGRAPH   114.00


    RUNOFF VOLUME =     1.29860 INCHES     =        .5104 ACRE-FEET
    PEAK DISCHARGE RATE =      15.34 CFS  AT   1.500 HOURS   BASIN AREA =   .0074 SQ. MI.


*S COMBINE BASINS 110.1 AND 114 TOGETHER
ADD HYD              ID=17  HYD NO=114.1  ID=16  ID=6
PRINT HYD            ID=17  CODE=1

                                PARTIAL HYDROGRAPH   114.10


    RUNOFF VOLUME =     1.29857 INCHES     =       1.5146 ACRE-FEET
    PEAK DISCHARGE RATE =      45.17 CFS  AT   1.500 HOURS   BASIN AREA =   .0219 SQ. MI.


*S BASIN 115: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD       ID=18  HYD NO=115.0  AREA=0.00633 SQ MI
                     PER A=0  PER B=29  PER C=29  PER D=42
                     TP=-0.1333 HR  MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   10.496    CFS   UNIT VOLUME =    .9982       B =   526.28      P60 = 1.8700
    AREA =      .002659 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 =   9.7684    CFS   UNIT VOLUME =    .9991       B =   354.67      P60 = 1.8700
    AREA =      .003671 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
```

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=18 CODE=1

PARTIAL HYDROGRAPH 115.00

RUNOFF VOLUME = 1.29860 INCHES = .4384 ACRE-FEET
PEAK DISCHARGE RATE = 13.18 CFS AT 1.500 HOURS BASIN AREA = .0063 SQ. MI.

*S ** ROUTE BASIN 113.2 THROUGH 116
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
MIN ELEV=100.00 FT MAX ELEV=100.67 FT
CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
DIST ELEV DIST ELEV DIST ELEV
0 100.67 0.1 100.00 16 100.32
31.9 100.00 32.0 100.67

RATING CURVE VALLEY SECTION 1.0

| WATER SURFACE ELEV | FLOW AREA SQ FT | FLOW RATE CFS | TOP WIDTH FT |
|---|---|---|---|
| 100.00 | .00 | .00 | .00 |
| 100.04 | .06 | .05 | 3.51 |
| 100.07 | .25 | .33 | 7.03 |
| 100.11 | .56 | .96 | 10.54 |
| 100.14 | .99 | 2.07 | 14.06 |
| 100.18 | 1.55 | 3.75 | 17.57 |
| 100.21 | 2.23 | 6.10 | 21.09 |
| 100.25 | 3.04 | 9.20 | 24.60 |
| 100.28 | 3.97 | 13.13 | 28.12 |
| 100.32 | 5.02 | 17.98 | 31.63 |
| 100.35 | 6.14 | 25.01 | 31.91 |
| 100.39 | 7.27 | 33.05 | 31.92 |
| 100.42 | 8.40 | 41.95 | 31.93 |
| 100.46 | 9.52 | 51.67 | 31.94 |
| 100.49 | 10.65 | 62.16 | 31.95 |
| 100.53 | 11.77 | 73.40 | 31.96 |
| 100.56 | 12.90 | 85.36 | 31.97 |
| 100.60 | 14.03 | 98.01 | 31.98 |
| 100.63 | 15.16 | 111.33 | 31.99 |
| 100.67 | 16.28 | 125.31 | 32.00 |

COMPUTE TRAVEL TIME ID=19 REACH NO=1 NO VS=1 L=550 FT
SLP=.0125

TRAVEL TIME TABLE

REACH= 1.0

| WATER DEPTH FEET | AVERAGE AREA SQ.FT. | FLOW RATE CFS | TRAVEL TIME HRS |
|---|---|---|---|
| .035 | .062 | .05 | .1846 |
| .071 | .248 | .33 | .1163 |
| .106 | .558 | .96 | .0887 |
| .141 | .992 | 2.07 | .0732 |
| .176 | 1.549 | 3.75 | .0631 |
| .212 | 2.231 | 6.10 | .0559 |
| .247 | 3.037 | 9.20 | .0504 |
| .282 | 3.966 | 13.13 | .0461 |
| .317 | 5.020 | 17.98 | .0427 |
| .353 | 6.144 | 25.01 | .0375 |
| .388 | 7.269 | 33.05 | .0336 |
| .423 | 8.395 | 41.95 | .0306 |
| .458 | 9.521 | 51.67 | .0282 |
| .494 | 10.647 | 62.16 | .0262 |
| .529 | 11.774 | 73.40 | .0245 |
| .564 | 12.901 | 85.36 | .0231 |
| .599 | 14.029 | 98.01 | .0219 |
| .635 | 15.157 | 111.33 | .0208 |
| .670 | 16.285 | 125.31 | .0199 |

```
ROUTE                ID=19 HYD NO=113.3 INFLOW ID=14 DT=0.0 HR
PRINT HYD            ID=19 CODE=1
```

PARTIAL HYDROGRAPH 113.30

```
RUNOFF VOLUME =      1.26391 INCHES      =       1.7817 ACRE-FEET
PEAK DISCHARGE RATE =      52.85 CFS  AT   1.533 HOURS   BASIN AREA =   .0264 SQ. MI.


*S BASIN 116: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD       ID=22  HYD NO=116.0  AREA=0.00526 SQ MI
                     PER A=0  PER B=29  PER C=29  PER D=42
                     TP=-0.1333 HR  MASS RAIN=-1

K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   8.7220    CFS   UNIT VOLUME =    .9981        B =   526.28      P60 = 1.8700
AREA =       .002209 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 =   8.1172    CFS   UNIT VOLUME =    .9988        B =   354.67      P60 = 1.8700
AREA =       .003051 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330
```

*****

```
PRINT HYD              ID=22  CODE=1

                                   PARTIAL HYDROGRAPH   116.00

    RUNOFF VOLUME =      1.29860 INCHES      =         .3643 ACRE-FEET
    PEAK DISCHARGE RATE =       10.95 CFS  AT   1.500 HOURS   BASIN AREA =   .0053 SQ. MI.


*S COMBINE BASINS 116 AND 113.3 TOGETHER
ADD HYD                ID=1  HYD NO=116.1  ID=19  ID=22
PRINT HYD              ID=1  CODE=1

                                   PARTIAL HYDROGRAPH   116.10

    RUNOFF VOLUME =      1.26965 INCHES      =        2.1460 ACRE-FEET
    PEAK DISCHARGE RATE =       63.45 CFS  AT   1.533 HOURS   BASIN AREA =   .0317 SQ. MI.


*S COMBINE BASINS 116.1 AND 115 TOGETHER
ADD HYD                ID=2  HYD NO=116.2  ID=1  ID=18
PRINT HYD              ID=2  CODE=1

                                   PARTIAL HYDROGRAPH   116.20

    RUNOFF VOLUME =      1.27446 INCHES      =        2.5844 ACRE-FEET
    PEAK DISCHARGE RATE =       76.21 CFS  AT   1.533 HOURS   BASIN AREA =   .0380 SQ. MI.


*S BASIN 117: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD         ID=3  HYD NO=117.0  AREA=0.00127 SQ MI
                       PER A=0  PER B=29  PER C=29  PER D=42
                       TP=-0.1333 HR  MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000    SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   2.1059    CFS   UNIT VOLUME =    .9941       B =   526.28      P60 = 1.8700
    AREA =      .000533 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 =   1.9599    CFS   UNIT VOLUME =    .9937       B =   354.67      P60 = 1.8700
    AREA =      .000737 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=1
```

PARTIAL HYDROGRAPH 117.00

RUNOFF VOLUME = 1.29860 INCHES = .0880 ACRE-FEET
PEAK DISCHARGE RATE = 2.66 CFS AT 1.500 HOURS BASIN AREA = .0013 SQ. MI.

```
*S COMBINE BASINS 116.2 AND 117 TOGETHER
ADD HYD          ID=4  HYD NO=117.1  ID=2  ID=3
PRINT HYD        ID=4  CODE=1
```

PARTIAL HYDROGRAPH 117.10

RUNOFF VOLUME = 1.27523 INCHES = 2.6723 ACRE-FEET
PEAK DISCHARGE RATE = 78.78 CFS AT 1.533 HOURS BASIN AREA = .0393 SQ. MI.

```
*S ** ROUTE BASIN 114.1 THROUGH 118
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
                     MIN ELEV=100.00 FT MAX ELEV=100.67 FT
                     CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
                     DIST  ELEV  DIST  ELEV  DIST  ELEV
                     0  100.67 0.1  100.00   16   100.32
                     31.9 100.00 32.0 100.67
```

RATING CURVE VALLEY SECTION 1.0

| WATER SURFACE ELEV | FLOW AREA SQ FT | FLOW RATE CFS | TOP WIDTH FT |
|---|---|---|---|
| 100.00 | .00 | .00 | .00 |
| 100.04 | .06 | .05 | 3.51 |
| 100.07 | .25 | .33 | 7.03 |
| 100.11 | .56 | .96 | 10.54 |
| 100.14 | .99 | 2.07 | 14.06 |
| 100.18 | 1.55 | 3.75 | 17.57 |
| 100.21 | 2.23 | 6.10 | 21.09 |
| 100.25 | 3.04 | 9.20 | 24.60 |
| 100.28 | 3.97 | 13.13 | 28.12 |
| 100.32 | 5.02 | 17.98 | 31.63 |
| 100.35 | 6.14 | 25.01 | 31.91 |
| 100.39 | 7.27 | 33.05 | 31.92 |
| 100.42 | 8.40 | 41.95 | 31.93 |
| 100.46 | 9.52 | 51.67 | 31.94 |
| 100.49 | 10.65 | 62.16 | 31.95 |
| 100.53 | 11.77 | 73.40 | 31.96 |
| 100.56 | 12.90 | 85.36 | 31.97 |
| 100.60 | 14.03 | 98.01 | 31.98 |
| 100.63 | 15.16 | 111.33 | 31.99 |
| 100.67 | 16.28 | 125.31 | 32.00 |

```
COMPUTE TRAVEL TIME  ID=5 REACH NO=1 NO VS=1 L=550 FT
                     SLP=.0052

                          TRAVEL TIME TABLE
                                       REACH=  1.0

                          WATER       AVERAGE     FLOW        TRAVEL
                          DEPTH       AREA        RATE        TIME
                          FEET        SQ.FT.      CFS         HRS
                             .035        .062         .05       .1846
                             .071        .248         .33       .1163
                             .106        .558         .96       .0887
                             .141        .992        2.07       .0732
                             .176       1.549        3.75       .0631
                             .212       2.231        6.10       .0559
                             .247       3.037        9.20       .0504
                             .282       3.966       13.13       .0461
                             .317       5.020       17.98       .0427
                             .353       6.144       25.01       .0375
                             .388       7.269       33.05       .0336
                             .423       8.395       41.95       .0306
                             .458       9.521       51.67       .0282
                             .494      10.647       62.16       .0262
                             .529      11.774       73.40       .0245
                             .564      12.901       85.36       .0231
                             .599      14.029       98.01       .0219
                             .635      15.157      111.33       .0208
                             .670      16.285      125.31       .0199
ROUTE                ID=5 HYD NO=114.2 INFLOW ID=17 DT=0.0 HR
PRINT HYD            ID=5 CODE=1

                                  PARTIAL HYDROGRAPH   114.20


    RUNOFF VOLUME =     1.29859 INCHES     =       1.5147 ACRE-FEET
    PEAK DISCHARGE RATE =      45.29 CFS  AT   1.533 HOURS   BASIN AREA =   .0219 SQ. MI.


*S BASIN 118: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD       ID=6  HYD NO=118.0  AREA=0.00526 SQ MI
                     PER A=0  PER B=29  PER C=29  PER D=42
                     TP=-0.1333 HR  MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   8.7220    CFS   UNIT VOLUME =    .9981       B =   526.28      P60 = 1.8700
    AREA =      .002209 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 =    8.1172     CFS   UNIT VOLUME =     .9988        B =    354.67       P60 = 1.8700
AREA =       .003051 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=1

                                PARTIAL HYDROGRAPH   118.00

RUNOFF VOLUME =      1.29860 INCHES      =         .3643 ACRE-FEET
PEAK DISCHARGE RATE =       10.95 CFS  AT   1.500 HOURS   BASIN AREA =   .0053 SQ. MI.


*S COMBINE BASINS 118 AND 114.2 TOGETHER
ADD HYD              ID=7  HYD NO=118.1  ID=6  ID=5
PRINT HYD            ID=7  CODE=1

                                PARTIAL HYDROGRAPH   118.10

RUNOFF VOLUME =      1.29857 INCHES      =        1.8789 ACRE-FEET
PEAK DISCHARGE RATE =       55.89 CFS  AT   1.533 HOURS   BASIN AREA =   .0271 SQ. MI.


*S BASIN 119: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD       ID=8  HYD NO=119.0  AREA=0.00186 SQ MI
                     PER A=0  PER B=29  PER C=29  PER D=42
                     TP=-0.1333 HR  MASS RAIN=-1

K =    .072649HR     TP =    .133300HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
UNIT PEAK =    3.0842     CFS   UNIT VOLUME =     .9955        B =    526.28       P60 = 1.8700
AREA =       .000781 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 =    2.8703     CFS   UNIT VOLUME =     .9958        B =    354.67       P60 = 1.8700
AREA =       .001079 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=1

                                PARTIAL HYDROGRAPH   119.00

RUNOFF VOLUME =      1.29860 INCHES      =         .1288 ACRE-FEET
PEAK DISCHARGE RATE =        3.88 CFS  AT   1.500 HOURS   BASIN AREA =   .0019 SQ. MI.
```

```
*S COMBINE BASINS 118.1 AND 119 TOGETHER
ADD HYD              ID=9  HYD NO=118.2  ID=8  ID=7
PRINT HYD            ID=9  CODE=1

                                PARTIAL HYDROGRAPH   118.20

    RUNOFF VOLUME =      1.29856 INCHES      =       2.0077 ACRE-FEET
    PEAK DISCHARGE RATE =      59.65 CFS  AT   1.533 HOURS   BASIN AREA =   .0290 SQ. MI.


*S ** ROUTE BASIN 107.2 THROUGH 120
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
                     MIN ELEV=100.00 FT MAX ELEV=100.67 FT
                     CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
                     DIST  ELEV  DIST  ELEV  DIST  ELEV
                     0  100.67 0.1  100.00   16   100.32
                     31.9 100.00 32.0 100.67
```

RATING CURVE VALLEY SECTION 1.0

| WATER SURFACE ELEV | FLOW AREA SQ FT | FLOW RATE CFS | TOP WIDTH FT |
|---|---|---|---|
| 100.00 | .00 | .00 | .00 |
| 100.04 | .06 | .05 | 3.51 |
| 100.07 | .25 | .33 | 7.03 |
| 100.11 | .56 | .96 | 10.54 |
| 100.14 | .99 | 2.07 | 14.06 |
| 100.18 | 1.55 | 3.75 | 17.57 |
| 100.21 | 2.23 | 6.10 | 21.09 |
| 100.25 | 3.04 | 9.20 | 24.60 |
| 100.28 | 3.97 | 13.13 | 28.12 |
| 100.32 | 5.02 | 17.98 | 31.63 |
| 100.35 | 6.14 | 25.01 | 31.91 |
| 100.39 | 7.27 | 33.05 | 31.92 |
| 100.42 | 8.40 | 41.95 | 31.93 |
| 100.46 | 9.52 | 51.67 | 31.94 |
| 100.49 | 10.65 | 62.16 | 31.95 |
| 100.53 | 11.77 | 73.40 | 31.96 |
| 100.56 | 12.90 | 85.36 | 31.97 |
| 100.60 | 14.03 | 98.01 | 31.98 |
| 100.63 | 15.16 | 111.33 | 31.99 |
| 100.67 | 16.28 | 125.31 | 32.00 |

```
COMPUTE TRAVEL TIME  ID=10 REACH NO=1 NO VS=1 L=250 FT
                     SLP=.005
```

TRAVEL TIME TABLE

REACH= 1.0

| WATER DEPTH FEET | AVERAGE AREA SQ.FT. | FLOW RATE CFS | TRAVEL TIME HRS |
|---|---|---|---|
| .035 | .062 | .05 | .0839 |
| .071 | .248 | .33 | .0528 |
| .106 | .558 | .96 | .0403 |
| .141 | .992 | 2.07 | .0333 |
| .176 | 1.549 | 3.75 | .0287 |
| .212 | 2.231 | 6.10 | .0254 |
| .247 | 3.037 | 9.20 | .0229 |
| .282 | 3.966 | 13.13 | .0210 |
| .317 | 5.020 | 17.98 | .0194 |
| .353 | 6.144 | 25.01 | .0171 |
| .388 | 7.269 | 33.05 | .0153 |
| .423 | 8.395 | 41.95 | .0139 |
| .458 | 9.521 | 51.67 | .0128 |
| .494 | 10.647 | 62.16 | .0119 |
| .529 | 11.774 | 73.40 | .0111 |
| .564 | 12.901 | 85.36 | .0105 |
| .599 | 14.029 | 98.01 | .0099 |
| .635 | 15.157 | 111.33 | .0095 |
| .670 | 16.285 | 125.31 | .0090 |

```
ROUTE                ID=10 HYD NO=107.3 INFLOW ID=20 DT=0.0 HR
PRINT HYD            ID=10 CODE=1
```

PARTIAL HYDROGRAPH 107.30

```
RUNOFF VOLUME =      1.29858 INCHES      =        .8360 ACRE-FEET
PEAK DISCHARGE RATE =      24.80 CFS  AT   1.533 HOURS   BASIN AREA =   .0121 SQ. MI.


*S BASIN 120: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD       ID=11  HYD NO=120.0  AREA=0.00444 SQ MI
                     PER A=0  PER B=29  PER C=29  PER D=42
                     TP=-0.1333 HR  MASS RAIN=-1

K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   7.3623    CFS   UNIT VOLUME =    .9978        B =   526.28       P60 = 1.8700
AREA =      .001865 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 =   6.8518    CFS   UNIT VOLUME =    .9984        B =   354.67       P60 = 1.8700
AREA =      .002575 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=1

                                   PARTIAL HYDROGRAPH   120.00

    RUNOFF VOLUME =     1.29860 INCHES      =        .3075 ACRE-FEET
    PEAK DISCHARGE RATE =       9.25 CFS  AT   1.500 HOURS   BASIN AREA =   .0044 SQ. MI.


*S COMBINE BASINS 120 AND 107.2 TOGETHER
ADD HYD              ID=12  HYD NO=120.1  ID=11  ID=10
PRINT HYD            ID=12  CODE=1

                                   PARTIAL HYDROGRAPH   120.10

    RUNOFF VOLUME =     1.29854 INCHES      =       1.1435 ACRE-FEET
    PEAK DISCHARGE RATE =      33.75 CFS  AT   1.533 HOURS   BASIN AREA =   .0165 SQ. MI.


*S ** ROUTE BASIN 120.1 THROUGH 121
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
                     MIN ELEV=100.00 FT MAX ELEV=100.67 FT
                     CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
                     DIST  ELEV  DIST  ELEV  DIST  ELEV
                     0  100.67 0.1  100.00   16   100.32
                     31.9 100.00 32.0 100.67
```

RATING CURVE VALLEY SECTION 1.0

| WATER SURFACE ELEV | FLOW AREA SQ FT | FLOW RATE CFS | TOP WIDTH FT |
|---|---|---|---|
| 100.00 | .00 | .00 | .00 |
| 100.04 | .06 | .05 | 3.51 |
| 100.07 | .25 | .33 | 7.03 |
| 100.11 | .56 | .96 | 10.54 |
| 100.14 | .99 | 2.07 | 14.06 |
| 100.18 | 1.55 | 3.75 | 17.57 |
| 100.21 | 2.23 | 6.10 | 21.09 |
| 100.25 | 3.04 | 9.20 | 24.60 |
| 100.28 | 3.97 | 13.13 | 28.12 |
| 100.32 | 5.02 | 17.98 | 31.63 |
| 100.35 | 6.14 | 25.01 | 31.91 |
| 100.39 | 7.27 | 33.05 | 31.92 |
| 100.42 | 8.40 | 41.95 | 31.93 |
| 100.46 | 9.52 | 51.67 | 31.94 |
| 100.49 | 10.65 | 62.16 | 31.95 |
| 100.53 | 11.77 | 73.40 | 31.96 |
| 100.56 | 12.90 | 85.36 | 31.97 |
| 100.60 | 14.03 | 98.01 | 31.98 |

```
                                    100.63        15.16        111.33        31.99
                                    100.67        16.28        125.31        32.00
COMPUTE TRAVEL TIME  ID=13 REACH NO=1 NO VS=1 L=325 FT
                     SLP=.005
```

TRAVEL TIME TABLE

REACH= 1.0

| WATER DEPTH FEET | AVERAGE AREA SQ.FT. | FLOW RATE CFS | TRAVEL TIME HRS |
|---|---|---|---|
| .035 | .062 | .05 | .1091 |
| .071 | .248 | .33 | .0687 |
| .106 | .558 | .96 | .0524 |
| .141 | .992 | 2.07 | .0433 |
| .176 | 1.549 | 3.75 | .0373 |
| .212 | 2.231 | 6.10 | .0330 |
| .247 | 3.037 | 9.20 | .0298 |
| .282 | 3.966 | 13.13 | .0273 |
| .317 | 5.020 | 17.98 | .0252 |
| .353 | 6.144 | 25.01 | .0222 |
| .388 | 7.269 | 33.05 | .0199 |
| .423 | 8.395 | 41.95 | .0181 |
| .458 | 9.521 | 51.67 | .0166 |
| .494 | 10.647 | 62.16 | .0155 |
| .529 | 11.774 | 73.40 | .0145 |
| .564 | 12.901 | 85.36 | .0136 |
| .599 | 14.029 | 98.01 | .0129 |
| .635 | 15.157 | 111.33 | .0123 |
| .670 | 16.285 | 125.31 | .0117 |

```
ROUTE                ID=13 HYD NO=120.2 INFLOW ID=12 DT=0.0 HR
PRINT HYD            ID=13 CODE=1
```

PARTIAL HYDROGRAPH 120.20

```
RUNOFF VOLUME =      1.29857 INCHES      =       1.1435 ACRE-FEET
PEAK DISCHARGE RATE =      33.52 CFS  AT   1.533 HOURS   BASIN AREA =   .0165 SQ. MI.


*S BASIN 121: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD       ID=14  HYD NO=121.0  AREA=0.0022 SQ MI
                     PER A=0  PER B=29  PER C=29  PER D=42
                     TP=-0.1333 HR  MASS RAIN=-1

K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   3.6480    CFS   UNIT VOLUME =    .9961        B =   526.28      P60 = 1.8700
AREA =      .000924 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 =  3.992430
UNIT PEAK =    3.3950     CFS    UNIT VOLUME =     .9966        B =    354.67       P60 = 1.8700
AREA =       .001276 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  CODE=1

                                   PARTIAL HYDROGRAPH    121.00

RUNOFF VOLUME =      1.29860 INCHES      =         .1524 ACRE-FEET
PEAK DISCHARGE RATE =        4.59 CFS  AT    1.500 HOURS    BASIN AREA =    .0022 SQ. MI.


*S COMBINE BASINS 121 AND 120.2 TOGETHER
ADD HYD              ID=15  HYD NO=121.1  ID=14  ID=13
PRINT HYD            ID=15  CODE=1

                                   PARTIAL HYDROGRAPH    121.10

RUNOFF VOLUME =      1.29853 INCHES      =        1.2958 ACRE-FEET
PEAK DISCHARGE RATE =       37.97 CFS  AT    1.533 HOURS    BASIN AREA =    .0187 SQ. MI.


*S ** ROUTE BASIN 104.1 THROUGH 122
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
                     MIN ELEV=100.00 FT MAX ELEV=100.67 FT
                     CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
                     DIST  ELEV  DIST  ELEV  DIST  ELEV
                     0  100.67 0.1  100.00   16   100.32
                     31.9 100.00 32.0 100.67
```

RATING CURVE VALLEY SECTION 1.0

| WATER SURFACE ELEV | FLOW AREA SQ FT | FLOW RATE CFS | TOP WIDTH FT |
|---|---|---|---|
| 100.00 | .00 | .00 | .00 |
| 100.04 | .06 | .05 | 3.51 |
| 100.07 | .25 | .33 | 7.03 |
| 100.11 | .56 | .96 | 10.54 |
| 100.14 | .99 | 2.07 | 14.06 |
| 100.18 | 1.55 | 3.75 | 17.57 |
| 100.21 | 2.23 | 6.10 | 21.09 |
| 100.25 | 3.04 | 9.20 | 24.60 |
| 100.28 | 3.97 | 13.13 | 28.12 |
| 100.32 | 5.02 | 17.98 | 31.63 |
| 100.35 | 6.14 | 25.01 | 31.91 |
| 100.39 | 7.27 | 33.05 | 31.92 |
| 100.42 | 8.40 | 41.95 | 31.93 |

*****

| | | | |
|---|---|---|---|
| 100.46 | 9.52 | 51.67 | 31.94 |
| 100.49 | 10.65 | 62.16 | 31.95 |
| 100.53 | 11.77 | 73.40 | 31.96 |
| 100.56 | 12.90 | 85.36 | 31.97 |
| 100.60 | 14.03 | 98.01 | 31.98 |
| 100.63 | 15.16 | 111.33 | 31.99 |
| 100.67 | 16.28 | 125.31 | 32.00 |

```
COMPUTE TRAVEL TIME   ID=23 REACH NO=1 NO VS=1 L=480 FT
                      SLP=.0184
```

TRAVEL TIME TABLE

REACH= 1.0

| WATER DEPTH FEET | AVERAGE AREA SQ.FT. | FLOW RATE CFS | TRAVEL TIME HRS |
|---|---|---|---|
| .035 | .062 | .05 | .1611 |
| .071 | .248 | .33 | .1015 |
| .106 | .558 | .96 | .0774 |
| .141 | .992 | 2.07 | .0639 |
| .176 | 1.549 | 3.75 | .0551 |
| .212 | 2.231 | 6.10 | .0488 |
| .247 | 3.037 | 9.20 | .0440 |
| .282 | 3.966 | 13.13 | .0403 |
| .317 | 5.020 | 17.98 | .0372 |
| .353 | 6.144 | 25.01 | .0328 |
| .388 | 7.269 | 33.05 | .0293 |
| .423 | 8.395 | 41.95 | .0267 |
| .458 | 9.521 | 51.67 | .0246 |
| .494 | 10.647 | 62.16 | .0228 |
| .529 | 11.774 | 73.40 | .0214 |
| .564 | 12.901 | 85.36 | .0202 |
| .599 | 14.029 | 98.01 | .0191 |
| .635 | 15.157 | 111.33 | .0182 |
| .670 | 16.285 | 125.31 | .0173 |

```
ROUTE                 ID=23 HYD NO=104.2 INFLOW ID=30 DT=0.0 HR
PRINT HYD             ID=23 CODE=1
```

PARTIAL HYDROGRAPH 104.20

RUNOFF VOLUME = 1.29857 INCHES = 2.0046 ACRE-FEET
PEAK DISCHARGE RATE = 58.43 CFS AT 1.533 HOURS BASIN AREA = .0289 SQ. MI.

```
*S BASIN 122: POSTDEVELOPMENT CONDITIONS WITH SINGLE FAMILY RESIDENTIAL HOMES
COMPUTE NM HYD        ID=16  HYD NO=122.0  AREA=0.00784 SQ MI
                      PER A=0  PER B=29  PER C=29  PER D=42
                      TP=-0.1333 HR  MASS RAIN=-1
```

*****

```
K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000    SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   13.000    CFS   UNIT VOLUME =    .9985       B =   526.28      P60 = 1.8700
AREA =       .003293 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 =   12.099    CFS   UNIT VOLUME =    .9993       B =   354.67      P60 = 1.8700
AREA =       .004547 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD            ID=16  CODE=1

                                PARTIAL HYDROGRAPH   122.00


RUNOFF VOLUME =     1.29860 INCHES      =        .5430 ACRE-FEET
PEAK DISCHARGE RATE =      16.32 CFS  AT   1.500 HOURS   BASIN AREA =   .0078 SQ. MI.


*S COMBINE BASINS 122 AND 121.1 TOGETHER
ADD HYD              ID=17  HYD NO=122.1  ID=16  ID=15
PRINT HYD            ID=17  CODE=1

                                PARTIAL HYDROGRAPH   122.10


RUNOFF VOLUME =     1.29854 INCHES      =       1.8388 ACRE-FEET
PEAK DISCHARGE RATE =      53.76 CFS  AT   1.533 HOURS   BASIN AREA =   .0266 SQ. MI.


*S COMBINE BASINS 122.1 AND 118.2 TOGETHER
ADD HYD              ID=18  HYD NO=122.2  ID=17  ID=9
PRINT HYD            ID=18  CODE=1

                                PARTIAL HYDROGRAPH   122.20


RUNOFF VOLUME =     1.29855 INCHES      =       3.8465 ACRE-FEET
PEAK DISCHARGE RATE =     113.41 CFS  AT   1.533 HOURS   BASIN AREA =   .0555 SQ. MI.


*S COMBINE BASINS 122.2 AND 117.1 TOGETHER
ADD HYD              ID=19  HYD NO=122.3  ID=18  ID=4
PRINT HYD            ID=19  CODE=1

                                PARTIAL HYDROGRAPH   122.30
```

```
    RUNOFF VOLUME =      1.28889 INCHES      =        6.5188 ACRE-FEET
    PEAK DISCHARGE RATE =      192.18 CFS  AT   1.533 HOURS   BASIN AREA =   .0948 SQ. MI.


*S COMBINE BASINS 122.3 AND 104.2 TOGETHER
ADD HYD              ID=20  HYD NO=122.4  ID=19  ID=23
PRINT HYD            ID=20  CODE=1

                                PARTIAL HYDROGRAPH   122.40


    RUNOFF VOLUME =      1.29115 INCHES      =        8.5235 ACRE-FEET
    PEAK DISCHARGE RATE =      250.61 CFS  AT   1.533 HOURS   BASIN AREA =   .1238 SQ. MI.


*S OFFSITE BASINS:  UNSER BLVD
*S BASIN 201.1: OFFSITE: UNSER BLVD. (FROM MEDIAN CURB TO R/W)
COMPUTE NM HYD       ID=1  HYD NO=201.1  AREA=0.00073 SQ MI
                     PER A=0  PER B=20 PER C=20 PER D=60
                     TP=-0.1333 HR  MASS RAIN=-1

    K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   1.7292    CFS   UNIT VOLUME =     .9933        B =   526.28      P60 = 1.8700
    AREA =       .000438 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 =    .77692    CFS   UNIT VOLUME =     .9831        B =   354.67      P60 = 1.8700
    AREA =       .000292 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=1

                                PARTIAL HYDROGRAPH   201.10


    RUNOFF VOLUME =      1.50556 INCHES      =         .0586 ACRE-FEET
    PEAK DISCHARGE RATE =        1.70 CFS  AT   1.500 HOURS   BASIN AREA =   .0007 SQ. MI.


*S BASIN 201.2: OFFSITE: UNSER BLVD. (FROM MEDIAN CURB TO R/W)
COMPUTE NM HYD       ID=2  HYD NO=201.2  AREA=0.002814 SQ MI
                     PER A=0  PER B=20  PER C=20  PER D=60
                     TP=-0.1333 HR  MASS RAIN=-1
```

```
K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =    6.6659    CFS   UNIT VOLUME =    .9976       B =   526.28      P60 = 1.8700
AREA =       .001688 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 =    2.9949    CFS   UNIT VOLUME =    .9958       B =   354.67      P60 = 1.8700
AREA =       .001126 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=1

                                PARTIAL HYDROGRAPH   201.20

RUNOFF VOLUME =     1.50556 INCHES     =         .2260 ACRE-FEET
PEAK DISCHARGE RATE =       6.49 CFS  AT   1.500 HOURS   BASIN AREA =    .0028 SQ. MI.


*S BASIN 201.3: OFFSITE: UNSER BLVD. MEDIAN AREA
COMPUTE NM HYD       ID=3  HYD NO=201.3  AREA=0.002147 SQ MI
                     PER A=0  PER B=20  PER C=20  PER D=60
                     TP=-0.1333 HR  MASS RAIN=-1

K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =    5.0859    CFS   UNIT VOLUME =    .9973       B =   526.28      P60 = 1.8700
AREA =       .001288 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 =    2.2850    CFS   UNIT VOLUME =    .9948       B =   354.67      P60 = 1.8700
AREA =       .000859 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=1

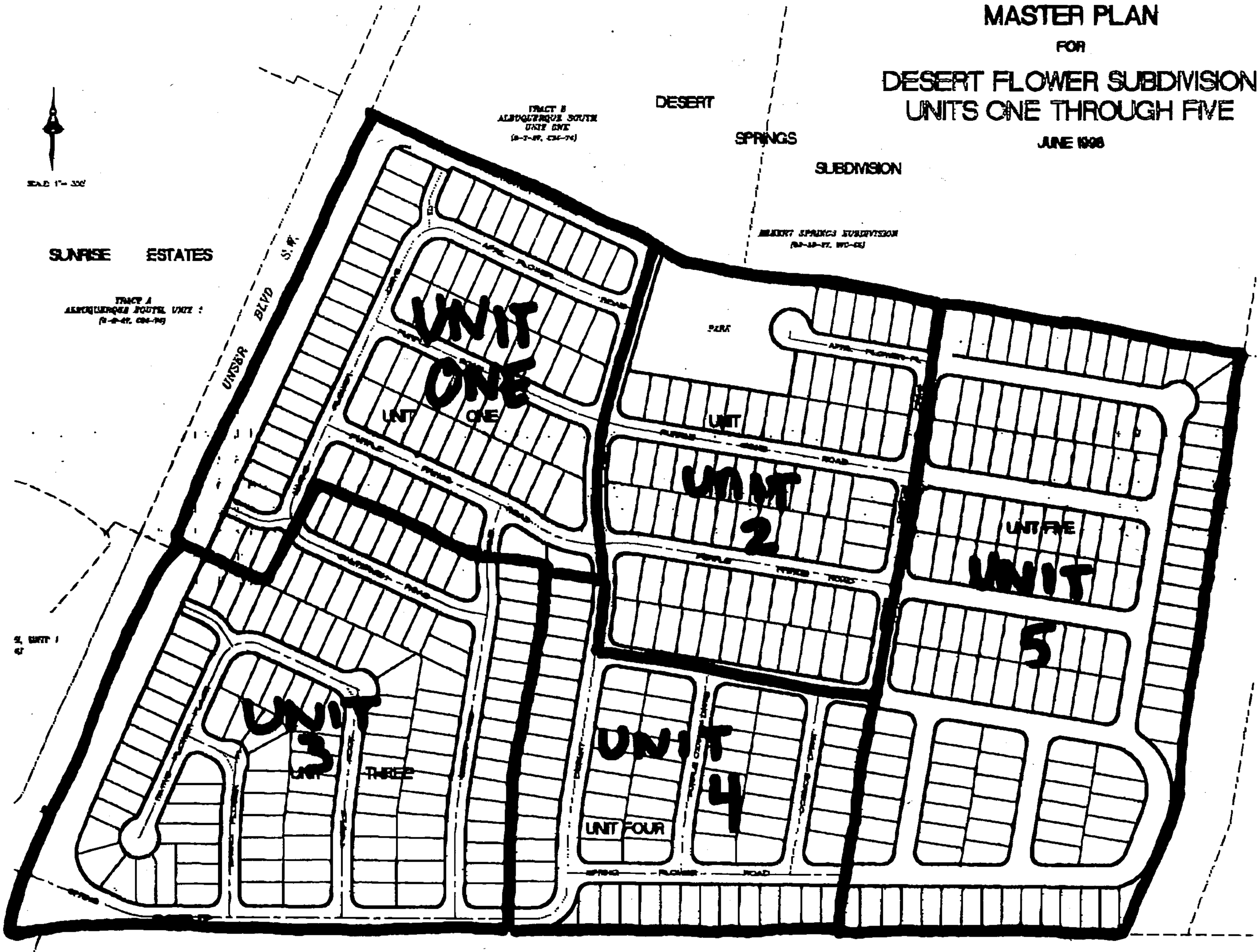
                                PARTIAL HYDROGRAPH   201.30

RUNOFF VOLUME =     1.50556 INCHES     =         .1724 ACRE-FEET
PEAK DISCHARGE RATE =       4.96 CFS  AT   1.500 HOURS   BASIN AREA =    .0021 SQ. MI.


FINISH

NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 10:37:34
```

# MASTER PLAN
FOR
# DESERT FLOWER SUBDIVISION
# UNITS ONE THROUGH FIVE
JUNE 1998




0098EN-02.DWGsnw 6/3/98

**ISAACSON & ARFMAN, P.A.**

*Consulting Engineering Associates*

*Thomas O. Isaacson, PE & LS • Fred C. Arfman, PE*
*Scott M. McGee, PE*

**FAX NO. (505) 268-2632**

# *** FAX COVER SHEET ***

TO: Susan Calangne
COA Hydrology

DATE: 6/3/98

FAX #: 924-3864

REFERENCE: Desert Flower Master Drainage Report

TOTAL NUMBER OF PAGES, INCLUDING THIS PAGE: 2

☐ Hard copy to follow via mail.

If you do not receive any of these pages, please call (505) 268-8828.

MESSAGE:

As per your request

FROM: Melissa Combs

*128 Monroe St. NE • Albuquerque, NM 87108 • (505) 268-8828 • FAX (505) 268-2632*

SURVEYOR: Aldrich Land Surveying, Inc.
Attn: Tim Aldrich, NMPLS No. 7719
(505) 884-1990

BENCHMARK: ACS Monument "1-M10" located at the southeast quadrant of Sage Road and Unser Blvd. SW.
Elevation: 5079.88

ZONING: RLT

NUMBER OF PROPOSED LOTS:

| | | |
|---|---|---|
| Unit One: | 84 | 85 |
| Unit Two: | 76 | 77 |
| Unit Three: | 115 | ✓ |
| Unit Four: | 63 | 70 |
| Unit Five: | 141 | 142 |
| | 479 | 489 ? |

TOTAL AREA: 82.35 Ac.
3,587,166 Sq. Ft.

## II. SITE CHARACTERISTICS

FLOOD HAZARD: No part of this development is affected nor contributes to a flood hazard area as determined by Map No. 35001C0336D and 35001C0337D of the September 20, 1996 Edition of the F.E.M.A. Maps.

EXISTING CONDITIONS: This site is currently undeveloped and mostly undisturbed with native ground cover, typical of the City's west side (Land Treatment B). The site has a slope downward toward the east at slopes ranging from 1 to 2 percent. It abuts future Desert Springs Subdivision to the north, Unser Blvd. to the west, the Amole del Norte Diversion Channel to the east, and Vista del Sol Mobile Home Park to the south. Storm water generated from the site flows east

Unit Two: The second phase will be Tract B1 (located east of Unit One), and will consist of 76 lots. The temporary retention pond used to capture Unit One runoff will be removed. Flows from Unit One will be allowed to enter Unit Two with the continuation of Purple Cone Road and Purple Fringe Road. The flows on these streets, comprised of the runoffs from Unit One and most of the runoffs from Unit Two, will continue east to the Amole del Norte Diversion Channel via earthen channels constructed along the future street alignments. The runoff generated along April Flower Place will combine with the runoff in Purple Cone Road prior to the rundown entrance. Saltbrush Road runoff will also be conveyed to the east via an earthen channel. This channel will be offset from the future street alignment to keep the existing sanitary sewer line from being compromised. All three rundowns will deposit the runoff into a desiltation pond prior to discharging into the Amole del Norte Diversion Channel. Storm drain construction will not be required with this phase of the project.

public drn easements - who maintains? Capacity calcs? stability? Outfall structure required w/ Unit 2

Unit Three: The third phase of Desert Flower may either be the west half of Tract B2 (south of Unit One and adjacent to Unser Blvd.) or the Mesa Enterprises land located just west of the Amole del Norte Diversion Channel. For the purpose of this report the west half of Tract B2 will be Unit Three. ? figures doesn't match

The development of the 115 lots of this phase will not require storm drain construction. Runoff at the upper end on Native Flower Place will flow onto Spring Flower Place and combine with the runoff on Spring Flower Road. Runoff from Purple Rock Place and Desertwood Drive will also be added to the flows in Spring Flower Road. The total runoff along this road will then enter a temporary retention pond in the future Unit Four.

The southern portion of Unser Blvd. adjacent to this phase, has a southerly surface drainage pattern. Street flows from this area shall enter into a temporary retention pond situated at the southerly terminus of Unser Blvd.

Unit Four: The fourth phase will be located in the east half of Tract B2. It will have 63 lots and will not require the construction of a storm drain. Temporary retention ponds used to capture runoffs from Unit Three will be removed and the runoff along Spring Flower Road will be allowed to enter Unit Four. A portion of the flows from Desert Springs Drive, Purple Canyon Drive, and Cosmos Drive will be added to the flows along Spring Flower Road, and the remaining discharge from these streets will be collected by Saltbrush Road. Temporary retention ponds situated to the east of Unit Four will collect the runoff from this phase.

Figure 1 – Units don't match
(~~units~~ # Lots/unit)
Basin boundaries?
need hyd. jump calcs.
need spillway cap. calcs
need temp channel
cap. calcs

**TABLE 2**
**Flow Depth at Key Locations**

| Street | Location | Street Width | Curb Type | Slope (ft/ft) | Q100(cfs) | Depth (ft) |
|---|---|---|---|---|---|---|
| **Unit 2** | | | | | | |
| April Flower Pl | @Spring Canyon | 28 | MTB | 0.018 | 10.96 | 0.33 |
| Purple Cone Rd | @Spring Canyon | 28 | STD | 0.014 | 52.7 | 0.59 |
| Purple Fringe Rd | @Spring Canyon | 28 | STD | 0.016 | 45.2 | 0.54 |
| Saltbrush Rd | @Spring Canyon | 28 | STD | 0.0156 | 24.7 | 0.44 |
| **Unit 3** | | | | | | |
| Spring Flower Pl | @Desertwood Dr | 32 | STD | 0.0182 | 42.7 | 0.61 |
| Desertwood Dr | @Spring Flower Rd | 28 | STD | 0.006 | 7.2 | 0.35 |
| Purple Rock Pl | @Spring Flower Rd | 28 | STD | 0.007 | 15.2 | 0.43 |
| Spring Flower Pl | @Spring Flower Rd | 28 | STD | 0.006 | 12.7 | 0.42 |
| **Unit 4** | | | | | | |
| Spring Flower Pl | @Saltbrush Rd | 28 | MTB | 0.012 | 8.1 | 0.32 |
| Cosmos Dr | @Saltbrush Rd | 28 | STD | 0.01 | 8.7 | 0.34 |
| Saltbrush Rd | @Cosmos Dr | 28 | STD | 0.0156 | 24.7 | 0.44 |
| Spring Flower Rd | @Cosmos Dr | 32 | STD | 0.0184 | 58.8 | 0.58 |
| **Unit 5** | | | | | | |
| Spring Flower Rd | @Amole Del Norte | 36 | STD | 0.013 | 74.75 | 0.67 |
| Most Easternly N/S | @Saltbrush Rd | 28 | STD | 0.005 | 29.7 | 0.58 |
| Saltbrush Rd | @Most Easternly N/S | 28 | STD | 0.005 | 38 | 0.64 |
| Purple Fringe Rd | @Most Easternly N/S | 32 | STD | 0.005 | 25.89 | 0.54 |
| Purple Cone Rd | @Most Easternly N/S | 32 | STD | 0.0125 | 63.45 | 0.64 |
| April Flower Pl | @Most Easternly N/S | 28 | STD | 0.005 | 13.2 | 0.44 |

* UNIT ONE has been previously approved (WO # 5739.81) and is currently under construction
* Flowrates listed are full street flows

Hyd. Jumps ?