ISAACSON & ARFMAN, P.A.

Consulting Engineering Associates

Albuquerque, NM

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

May 20, 1999

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

RE: Grading and Drainage Certification Plan for Desert Flower Subdivision, Unit Five, (M10/D12E) Submitted for Release of Financial Guarantees, Engineer's Stamp Dated 5/3/99.

Dear Mr. Arfman:

The above referenced plan is adequate to satisfy the Grading and Drainage Certification requirement for the release of the Subdivision Improvements Agreement per the Infrastructure List dated January 12, 1999 for Desert Flower Subdivision Unit Five.

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 # 607481
Bo Johnson, P.E., Curb Inc.
File

Logged 5/14

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Desert Flower Subdivision Unit 5 ZONE ATLAS/DRNG. FILE#: M-10 012 E

1-12-99

DRB # 98-391 EPC # City proj # WORK ~~ORDER~~ # 607481

LEGAL DESCRIPTION: Lands of Mesa Enterprises Limited (A portion of)

CITY ADDRESS:

ENGINEERING FIRM: Isaacson & Arfman, P.A. CONTACT:

ADDRESS: 128 Monroe Street NE PHONE: 268-8828

CITY, STATE: Albuquerque, NM ZIP CODE: 87108

OWNER: Curb Inc CONTACT: PD Johnson

ADDRESS: 6301 Indian Sch Rd Ste 680 PHONE: 899-9656

CITY, STATE: ABQ, NM ZIP CODE: 87110

ARCHITECT: N/A CONTACT:

ADDRESS: PHONE:

CITY, STATE: ZIP CODE:

SURVEYOR: Aldrich Land Surveying CONTACT: Tim Aldrich

ADDRESS: PHONE: 884-1990

CITY, STATE: ZIP CODE:

CONTRACTOR: N/A 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

RECEIVED
MAY 7 1999
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: 5-7-99

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

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

July 26, 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 Six, (M10/D12E), Submitted for Release of Financial Guarantees, Engineer's Certification Stamp Dated 7/20/99.

Dear Mr. Arfman:

The above referenced Engineer's Certification for Desert Flower Subdivision Unit Six is adequate to satisfy the Grading and Drainage certification requirement for the release of the Subdivision Improvements Agreement per the Infrastructure List dated March 16, 1999.

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 # 612881
Bo Johnson, P.E., Curb Inc.
File

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

DRAINAGE INFORMATION SHEET

PROJECT: Desert Flower 6 ZONE ATLAS/DRNG. M-10
FILE#: M10/D12E

DRB # 98-391 EPC # _____ WORK ORDER # 612881

LEGAL DESCRIPTION: Desert Flower Subdivision Unit 6

CITY ADDRESS: _____

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

OWNER: Curb Inc CONTACT: BO Johnson
ADDRESS: 6301 Indian Sch. Rd Ste 680 PHONE: 881-9190
CITY, STATE: ABQ, NM ZIP CODE: 87110

ARCHITECT: N/A CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

SURVEYOR: Walker Surveying CONTACT: Steve Walker
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

CONTRACTOR: N/A CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

TYPE OF SUBMITTAL:

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

PRE-DESIGN MEETING:

_____ YES
X NO
_____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

_____ SKETCH PLAT APPROVAL
_____ PRELIMINARY PLAT APPROVAL
_____ S.DEV. PLAN FOR SUB'D. APPROVAL
_____ S.DEV. PLAN FOR BLDG. PERMIT APPROVAL
_____ SECTOR PLAN APPROVAL
_____ FINAL PLAT APPROVAL
_____ FOUNDATION PERMIT APPROVAL
_____ BUILDING PERMIT APPROVAL
_____ CERTIFICATE OF OCCUPANCY APPROVAL
_____ GRADING PERMIT APPROVAL
_____ PAVING PERMIT APPROVAL
_____ S.A.D. DRAINAGE REPORT
_____ DRAINAGE REQUIREMENTS
X OTHER (SPECIFY) Grading & Drainage Certification

RECEIVED
JUL 20 1999
HYDROLOGY SECTION

DATE SUBMITTED: 7-20-99

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

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

April 13, 1999

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

RE: Supplemental Information and Grading and Drainage Plan for Desert Flower Subdivision, Unit Five, (M10/D12E) Submitted for Final Plat and Change Order Approval, Engineer's Stamp Dated 3/26/99.

Dear Mr. Arfman:

Based on the information provided in the submittal of March 26, 1999, the above referenced supplemental information is acceptable for the changes proposed to the Work Order Drawings.

The grades shown on the above referenced Grading and Drainage plan match those provided on the plan dated December 3, 1998, which was approved by the DRB. As you are aware, the Grading and Drainage Certification is required prior to release of the Subdivision Improvements Agreement for this Unit. Since the grading has not changed, either this plan, or the previously approved plan, must be certified.

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: Bo K. Johnson, P.E., Curb Inc.
File

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

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Desert Flower Subdivision Unit 5 ZONE ATLAS/DRNG. FILE#: M-10/Z E

DRB #_____ EPC #_____ WORK ORDER #_____

LEGAL DESCRIPTION: Lands of Mesa Enterprises Limited (A portion of)

CITY ADDRESS: _____

ENGINEERING FIRM: Isaacson & Arfman, P.A. CONTACT: _____

ADDRESS: 128 Monroe Street NE PHONE: 268-8828

CITY, STATE: Albuquerque, NM ZIP CODE: 87108

OWNER: Curb Inc CONTACT: PO Johnson

ADDRESS: 6301 Indian Sch Rd Ste 680 PHONE: 899-9656

CITY, STATE: ABQ, NM ZIP CODE: 87110

ARCHITECT: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

CITY, STATE: _____ ZIP CODE: _____

SURVEYOR: Aldrich Land Surveying CONTACT: Tim Aldrich

ADDRESS: _____ PHONE: 884-1990

CITY, STATE: _____ ZIP CODE: _____

CONTRACTOR: N/A 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

RECEIVED
MAR 26 1999
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) Change Order Revised Infrastructure List

PRE-DESIGN MEETING:

_____ YES

✓ NO

_____ COPY PROVIDED

RECEIVED
MAR 15 1999
HYDROLOGY SECTION

DATE SUBMITTED: 3-12-99

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

Isaacson &
Arfman, P.A.

Consulting Engineering
Associates

Letter of Transmittal

To Susan Calongne, PE
Hydrology

Date 3/12/99

Job No.

Attn:

Reference Desert Flower 5 Subdivision

Gentlemen:

We transmit to you 1 copy(ies) of the following

RECEIVED
MAR 26 1999
HYDROLOGY SECTION

- ☐ _____ Plats
- ☐ _____ Plans
- ☐ Specifications
- ☐ _____ Report
- ☑ Drainage Report Revision
- ☐ _____

- ☐ Shop Drawings
- ☐ Submittals
- ☐ Material Specifications
- ☐ Copy of Letter

RECEIVED
MAR 15 1999
HYDROLOGY SECTION

This information is transmitted:

- ☐ As per your request
- ☑ For your review & approval
- ☐ For your information
- ☐ For your attention
- ☐ For your signature
- ☐ _____
- ☐ _____

- ☐ For your files
- ☐ For your use
- ☐ Please review & return
- ☐ For return to your files
- ☐ Please advise

Remarks: Please call after you have had a chance to review this submittal if you would like us to come pick up your book and bind in the changes.

By: Melissa Combs

Copies To

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

ISAACSON & ARFMAN, P.A.

Consulting Engineering Associates

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

March 8, 1999

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

RE: Desert Flower Subdivision Unit Five
(Approved January 4, 1999 -- M10/D12E)

Dear Ms. Calongne:

Please find attached a revision to the storm drain layout for this unit, as well as a revised grading detail sheet. The grading detail sheet includes a new detail for the front yard grading along Purple Fringe Road.

The changes to the proposed storm drain system were made at the request of the Owner in order to provide a drainage solution which required less storm drain along Purple Fringe Road. Since Purple Fringe Road has the capacity to carry the flows but did not have the capacity to contain the flows within the right-of-way if a hydraulic jump occurred, the elevation difference between the TC grade and R/W grade was increased from 0.18 feet to 0.33 feet. This revision provides adequate capacity for the runoff in the case of a hydraulic jump, and therefore, eliminates the need for the storm drain along Purple Fringe Road.

If you have any questions, please call me at 268-8828.

Respectfully yours,
ISAACSON & ARFMAN, P.A.

Melissa Combs

RECEIVED
MAR 26 1999
HYDROLOGY SECTION

Melissa Combs
MC/rtl
Attachments

RECEIVED
MAR 25 1999
HYDROLOGY SECTION

FRED C. ARFMAN
STATE OF NEW MEXICO
7322
REGISTERED PROFESSIONAL ENGINEER
3-26-99

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

DESERT BREEZE TO AMOLE; CONC CHANNEL
Worksheet for Rectangular Channel

Project Description	
Project File	c:\haestad\fmw\dtfwmrev.fm2
Worksheet	DESERT BREEZE TO AMOLE RE-DO
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.043	ft/ft
Bottom Width	10.00	ft
Discharge	112.10	cfs

Results		
Depth	0.67	ft
Flow Area	6.71	ft²
Wetted Perimeter	11.34	ft
Top Width	10.00	ft
Critical Depth	1.57	ft
Critical Slope	0.003049	ft/ft
Velocity	16.70	ft/s
Velocity Head	4.34	ft
Specific Energy	5.01	ft
Froude Number	3.59	
Flow is supercritical.		

Concrete rundown now rectangular channel - w/ 10' Bottom width detail in DRC plans?

RECEIVED
MAR 15 1999
HYDROLOGY SECTION

DF5: AMOLE TO SUMP INLETS
Worksheet for Pressure Pipe

Project Description	
Project File	c:\haestad\fmw\dtfwmrev.fm2
Worksheet	DF5: Amole to INLET
Flow Element	Pressure Pipe
Method	Hazen-Williams Formula
Solve For	Pressure at 1

Input Data	
Pressure at 2	3.00 feet H20
Elevation at 1	4,997.46 ft
Elevation at 2	4,995.33 ft
Length	177.40 ft
C Coefficient	105.0
Diameter	36.00 in
Discharge	59.70 cfs

Results		
Pressure at 1	2.27	feet H20
Headloss	1.40	ft
Energy Grade at 1	5,000.84	ft
Energy Grade at 2	4,999.44	ft
Hydraulic Grade at 1	4,999.73	ft
Hydraulic Grade at 2	4,998.33	ft
Flow Area	7.07	ft^2
Wetted Perimeter	9.42	ft
Velocity	8.45	ft/s
Velocity Head	1.11	ft
Friction Slope	0.007884	ft/ft

Notes:

FUTURE DESERT FLOWER FLOWS INCLUDED IN FLOWRATE

DF5: SUMP INLET TO INLET @ PURPLE FRINGE
Worksheet for Pressure Pipe

Project Description	
Project File	c:\haestad\fmw\dtfwmrev.fm2
Worksheet	DF5: SUMP INLET TO INLETS
Flow Element	Pressure Pipe
Method	Hazen-Williams Formula
Solve For	Pressure at 1

Input Data	
Pressure at 2	1.50 feet H20
Elevation at 1	4,998.97 ft
Elevation at 2	4,998.46 ft
Length	63.65 ft
C Coefficient	105.0
Diameter	18.00 in
Discharge	16.00 cfs

Results		
Pressure at 1	2.27	feet H20
Headloss	1.28	ft
Energy Grade at 1	5,002.52	ft
Energy Grade at 2	5,001.23	ft
Hydraulic Grade at 1	5,001.24	ft
Hydraulic Grade at 2	4,999.96	ft
Flow Area	1.77	ft^2
Wetted Perimeter	4.71	ft
Velocity	9.05	ft/s
Velocity Head	1.27	ft
Friction Slope	0.020132	ft/ft

Notes:

FUTURE DESERT FLOWER FLOWS INCLUDED IN FLOWRATE

ANALYZE SUMP INLETS

DATA:

Q = 59.7
H = 0.57
GRATE OPEN AREA:

GROSS AREA FOR ONE GRATE = 2' - 1 1/2" * 2' - 11 3/8 " =	6.28 SF
LESS BEARING BARS = (0.5")(1/12) * 2.95 * 13 =	1.60 SF
LESS CROSS BARS = (0.5")(1/12) * 2.13 * 7 =	0.62 SF
PLUS THE INTERSECTION COUNTED 2X = (0.5")(1/12) * (0.5")(1/12) *77 =	0.13 SF
TOTAL =	**4.2**

CALCULATIONS:

FLOW THROUGH EACH GRATE = CA(2gH)^.5 =	8.524609
ASSUME 4 GRATES =	34.09844
FLOW THROUGH DOUBLE THROAT = CA(2gH)^.5 =	27.19756

TOTAL CAPACITY= 61.296

RECOMMENDATION:

USE "MOD" TYPE A INLET WITH FOUR GRATES & DOUBLE THROAT

TABLE 3
INLETS CAPACITY @ KEY LOCATIONS

INLET NO	INLET TYPE	LOCATION	STREET WIDTH & CURB TYPE	% SLOPE	Q 100 (CFS)	Dn (FT)	Q intercepted (CFS)	Q by-pass (cfs)
CB1 (2 inlets)	A	Purple Fringe & Desert Breeze Dr	32' FF, STD	1.00%	59.7	0.64	8 ea = 16 cfs	43.7
CB3 (1 sump)	A, Mod Throat	End of Purple Fringe	28' FF, STD		43.7	0.57	43.7 cfs**	0

*Q per inlet are calculated using DPM Plate 22.3, D-5
** See attached sump calculation sheet

Table 2
Flow Depths @ Key Locations

Street	Location	Street Width	Curb Type	Slope (ft/ft)	Q100(cfs)	Depth (ft)	EG (ft)
Purple Fringe Rd***	@ Desert Breeze Dr	32	STD	0.01	59.7	0.64	0.97
Saltbrush Rd	@ Desert Breeze Dr	28	STD	0.0075	37.97	0.56	0.76
Spring Flower Rd **	@Desert Breeze Dr	32	STD	0.0144	75.1	0.66	1.12
Scarlet Bloom Drive	@Spring Flower Rd	32	MTBL	0.006	4.65	0.30	0.35
Arizona Rose Drive	@Saltbrush Rd	28	MTBL	0.006	6.03	0.33	0.38

* All Q's are full street flows
** See attached cross section @ Lot 27
***This street will be constructed with a rise of 0.33' between the curb & R.O.W. line. See detail sheet

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 4, 1999

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

RE: Drainage Report and Grading and Drainage Plan for Desert Flower Subdivision, Unit Five, (M10/D12E) Submitted for Preliminary and Final Plat and Grading Permit Approval, Engineer's Stamp Dated 12/3/98.

Dear Mr. Arfman:

Based on the information provided in the submittal of December 4, 1998, the above referenced Plan for Desert Flower Unit Five is approved for Preliminary Plat action.

The above referenced plan is also approved for Grading Permit release, however, no grading may occur within the Amole Del Norte Diversion Channel right-of-way until concurrence from City Storm Drain Maintenance is obtained. City Storm Drain Maintenance must also approve the proposed connections to this channel.

It appears that a temporary desiltation pond is required within the Future Units (Unit 6) to keep the runoff from the temporary earthen channel from entering Desert Breeze Drive. An easement and an Agreement and Covenant will be required for this temporary pond prior to Work Order release. The easement may be included on the Final Plat.

As you are aware, the SIA is required prior to Final Plat sign-off and the Grading and Drainage Certification is required prior to release of the 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 M. Calongne, P.E.
City/County Floodplain Administrator

c: Fred Aguirre, DRB-98-391
Bo K. Johnson, P.E., Curb Inc.
File

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

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Desert Flower Subdivision Unit 5 ZONE ATLAS/DRNG. FILE#: M-10/D12E

DRB # 98-391 EPC # _____ WORK ORDER # _____

LEGAL DESCRIPTION: Lands of Mesa Enterprises Limited (A portion of)

CITY ADDRESS: _____

ENGINEERING FIRM: Isaacson & Arfman, P.A.	CONTACT: _____
ADDRESS: 128 Monroe Street NE	PHONE: 268-8828
CITY, STATE: Albuquerque, NM	ZIP CODE: 87108
OWNER: Curb Inc	CONTACT: BO Johnson
ADDRESS: 6301 Indian Sch Rd Ste 1080	PHONE: 899-9656
CITY, STATE: ABQ, NM	ZIP CODE: 87110
ARCHITECT: N/A	CONTACT: _____
ADDRESS: _____	PHONE: _____
CITY, STATE: _____	ZIP CODE: _____
SURVEYOR: Aldrich Land Surveying	CONTACT: Tim Aldrich
ADDRESS: _____	PHONE: 884-1990
CITY, STATE: _____	ZIP CODE: _____
CONTRACTOR: N/A	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

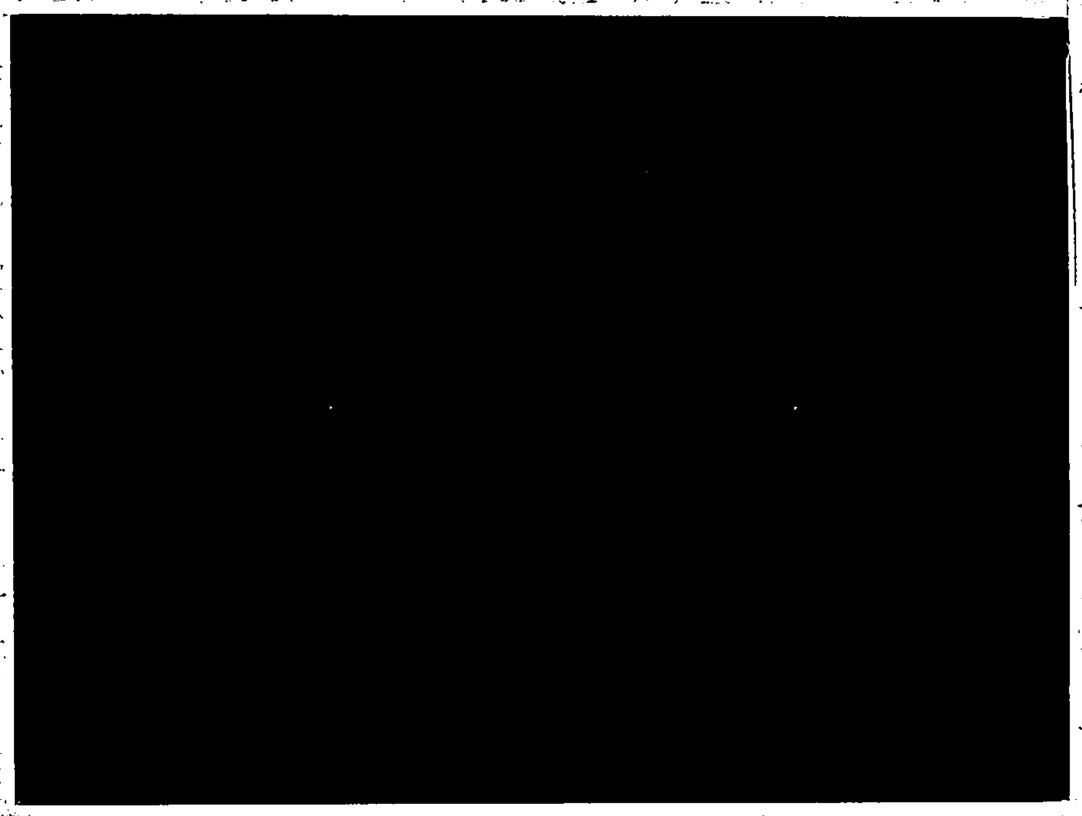
CHECK TYPE OF APPROVAL SOUGHT:

- ____ 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
DEC 04 1998
HYDROLOGY SECTION

DATE SUBMITTED: 12-04-98

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



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DEC 04 1998
HYDROLOGY SECTION

DRAINAGE REPORT

FOR

DESERT FLOWER SUBDIVISION
UNIT FIVE

AN 84 LOT SINGLE FAMILY
RESIDENTIAL SUBDIVISION

ALBUQUERQUE NEW MEXICO
DECEMBER 1998

Prepared by:

ISAACSON & ARFMAN, P.A.
128 Monroe Street NE
Albuquerque, NM 87108
(505) 268-8828

FRED C. ARFMAN
STATE OF NEW MEXICO
7322
REGISTERED PROFESSIONAL ENGINEER

RECEIVED
DEC 04 1998
HYDROLOGY SECTION

Fred C. Arfman, PE — 12.02.98 Date

TABLE OF CONTENTS

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Vicinity Map
I. Project Information
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CONCLUSIONS & RECOMMENDATIONS

TABLES & CALCULATIONS

Table 1 – Onsite Basin Summary

Table 2 – Flow Depth at Key Locations

Table 3 – Inlet Capacities

FlowMaster Calculation Sheets

APPENDICES

Appendix A: Onsite AHYMO Summary & Detailed Output
100-Year Storm

POCKETS

Figure 1: Master Drainage Plan

Figure 2: Unit Five Grading Plan

INTRODUCTION

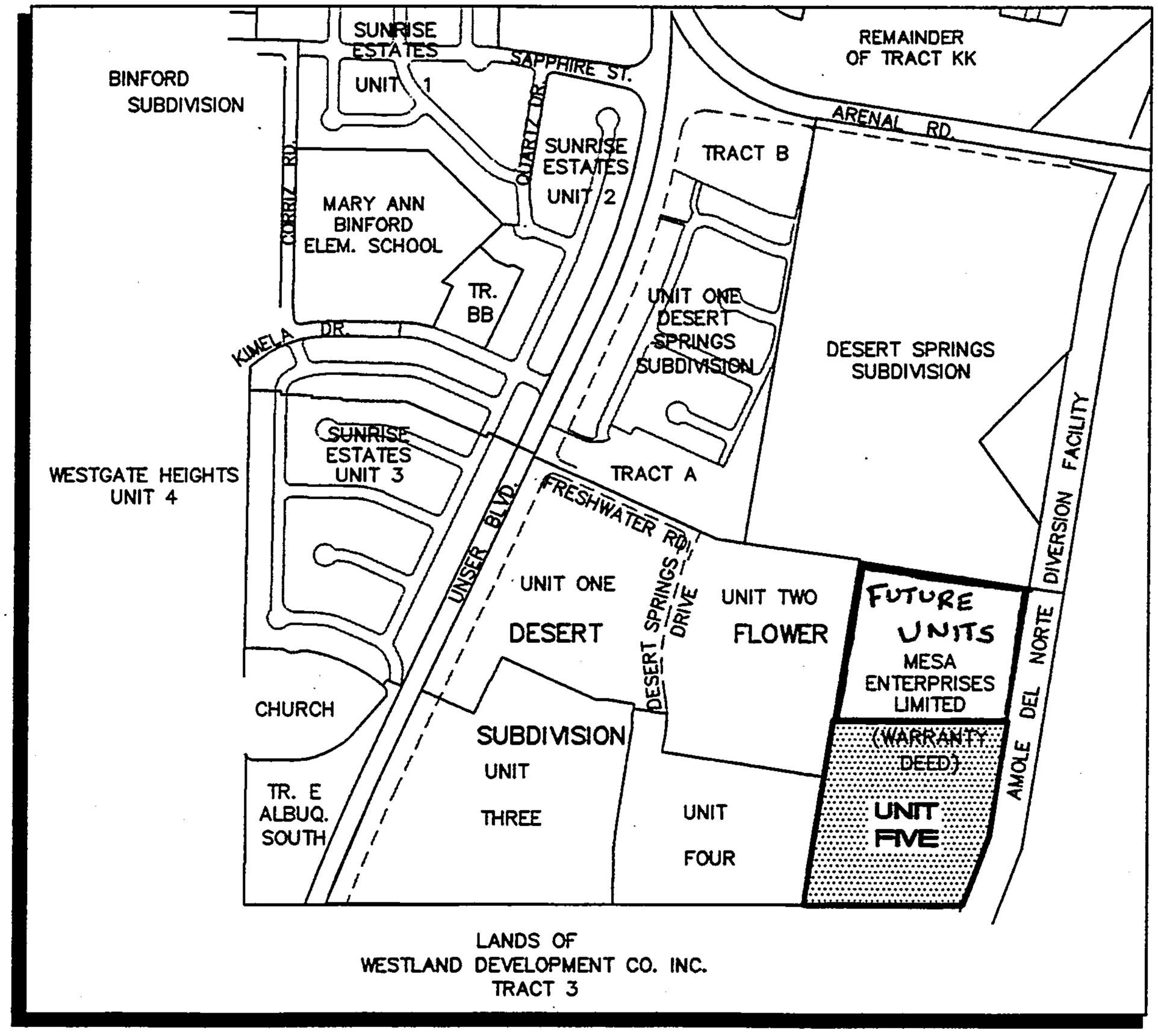
Desert Flower Unit Five is the fifth phase of a multiple phase subdivision. It is located to the east of Desert Flower Units Two and Four and west of the Amole del Norte Diversion Channel. It will have 84 single family lots, and will be constructed with utilities and paving improvements according to the City of Albuquerque Development Standards and Guidelines.

The area defined as Desert Flower Unit Five in this report has been modified slightly from what was shown in previous submittals. This change was necessary because of delays encountered during the annexation process of the Mesa Enterprises Limited land. The new Unit Five includes the area previously defined as Unit 4-B and some additional land to the north. Both the approved Desert Flower Revised Master Drainage Report (M10/D12), and the approved Desert Flower Subdivision Unit Four Drainage Report (M10/D12D) have already addressed this area. Following construction of this phase, approximately 55 lots will remain in the Desert Flower Subdivision.

I. PROJECT INFORMATION

LEGAL DESCRIPTION: A portion of Mesa Enterprises Limited (Warranty Deed) filed April 23, 1980, Book D118A, Page 945.

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



1"=750'±

(M-10)

VICINITY MAP

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: Existing: City A-1
Proposed: City RLT

NUMBER OF EXISTING TRACTS: 1

NUMBER OF PROPOSED LOTS: 87

TOTAL AREA: 13.8424 Ac.
602,975 Sq. Ft.

II. SITE CHARACTERISTICS

FLOOD HAZARD: No part of this development is affected or contributes to a flood hazard as determined by Panel 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 toward the east at slopes ranging from 1 to 2 percent. It abuts Desert Flower Units Two and Three to the west, Vista del Sol Mobile Home Subdivision to the south, the Amole del Norte Diversion Channel to the east, and a future unit of the Desert Flower Subdivision to the north.

No storm waters except the developed flows from the existing Desert Flower Subdivision Units (One-Four) cross the site. The developed flows from Units One-Four are conveyed by temporary rundowns to the Amole del Norte Diversion Channel. These rundowns follow the street alignments which will be developed with Units Five and Six of Desert Flower.

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 to the north of this unit flow overland to the Amole del Norte Diversion Channel and are covered under a blanket drainage easement.

PROPOSED CONDITIONS: Unit Five will be developed with 84 lots and will require construction of a storm drain connection and an overland channel connection to the Amole del Norte Diversion Channel. The existing temporary rundowns connecting Spring Flower Road, Saltbrush Road, and Purple Fringe Road to the Amole del Norte Diversion Channel will be removed so the runoff can continue to the east along each respective street.

Runoff generated along Arizona Rose Drive and Scarlet Bloom Drive will flow north or south to either Spring Flower Road or Saltbrush Road. These flows will combine with existing flows and be conveyed east to the Amole del Norte Diversion Channel via street flow (see Table 2, Flow Depths at Key Locations). All runoff

in Spring Flower Road and Saltbrush Road will combine at Desert Breeze Drive and enter the channel via a concrete rundown (see attached FlowMaster sheet).

The runoff in Purple Fringe Road will be collected by inlets and be conveyed to the Amole del Norte Diversion Channel via storm drain (see FlowMaster Sheets & Table 3). The system will contain two sump inlets at the intersection of Purple Fringe Road and Desert Springs Drive. If the inlets become blocked runoff would overflow to the south along Desert Breeze Drive.

This drainage solution is outlined as the second option in the Master Report for this phase of the subdivision. The future Purple Cone Road in Unit Six will also have a hard line connection to the Amole del Norte Diversion Channel. The use of this option eliminates the need for a storm drain connection at the terminus of Saltbrush Road, and also provides a better grading solution for the subdivision lots which border the Amole del Norte Diversion Channel.

CONCLUSIONS & RECOMMENDATIONS

The Drainage Study for Desert Flower Unit Five is consistent with the Desert Flower Subdivision Revised Master Drainage Report (MDR) and the Desert Flower Subdivision Unit Four Drainage Report previously approved by the Hydrology Division, P.W.D., City of Albuquerque. Desert Flower

Subdivision Unit One construction has been completed. Units Two and Three are currently under construction and conform to the approved Desert Flower Subdivision MDR. Desert Flower Subdivision Unit Four is also in the work order process and conforms to the Desert Flower Subdivision MDR. The individual recommendations for Unit Five are presented below:

UNIT FOUR:

1. The earthen rundowns which convey flows from Saltbrush Road, Purple Fringe Road, and Spring Flower Road to the Amole del Norte Diversion Channel will be removed. Flows from previous units will enter Unit Five via the continuation of the above referenced streets.

2. A concrete rundown will be constructed from the southeastern property line to the Amole del Norte Diversion Channel. The final design of the channel will be determined at DRC. The rundown will be included in the Unit Five required infrastructure list.

3. A storm drain connection to the Amole del Norte Diversion Channel from Purple Fringe Road will be constructed with this unit. The storm drain system will be included in the Unit Five required infrastructure list.

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

5. No offsite storm water flows from the north, or south shall enter onto this subdivision phase.

SUMMARY TABLES

TABLE 1
ONSITE BASIN SUMMARY

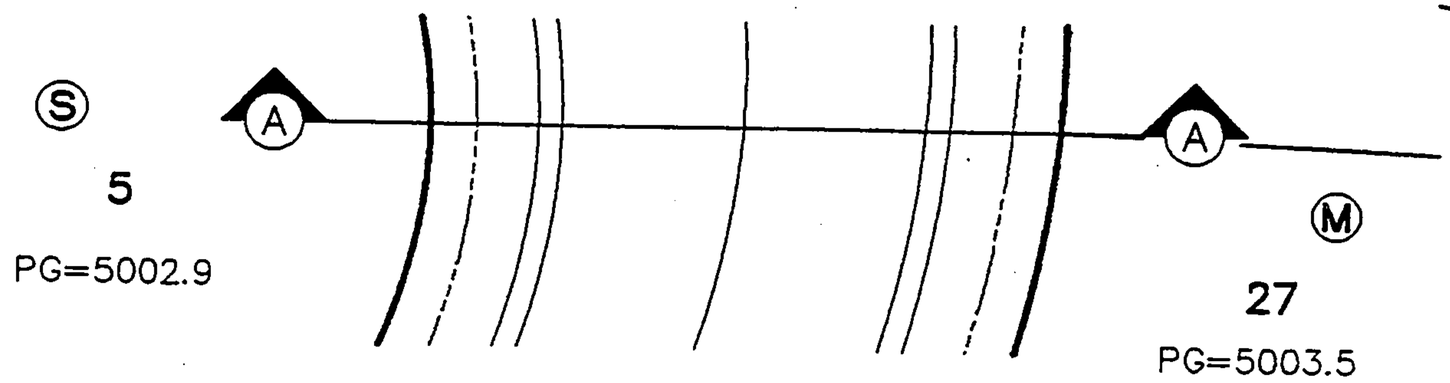
Basin ID	Area (Sq. Mi.)	Contributing Basins	Cummulative Area (Sq. Mi.)	% A	% B	% C	% D	Basin Q (cfs)	Cummulative Q (cfs)
100	0.00608	100	0.00608	0	29	29	42	12.7	12.7
101	0.00432	100,101	0.0104	0	29	29	42	9.0	20.9
102	0.00728	101*,102	0.01768	0	29	29	42	15.2	35.6
103	0.00347	102*,103	0.02116	0	29	29	42	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*,121*	0.05550	0	29	29	42	16.3	112.19

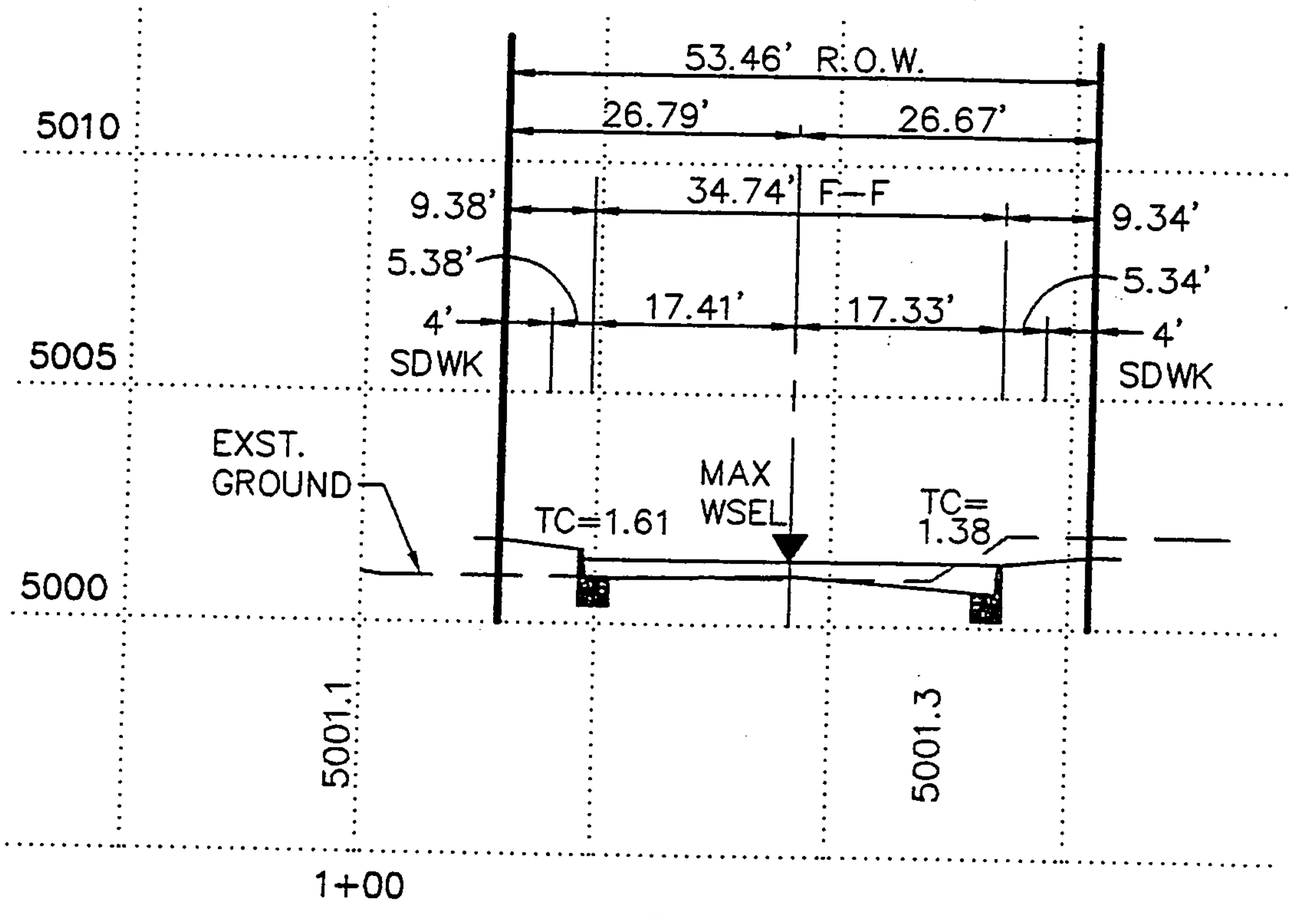
*Cumulative Q of basin

Table 2
Flow Depths @ Key Locations

Street	Location	Street Width	Curb Type	Slope (ft/ft)	Q100(cfs)	Depth (ft)	EG (ft)
Purple Fringe Rd	@ Desert Breeze Dr	32	STD	0.01	43.7	0.57	0.83
Purple Fringe Rd	@ Inlets 1 & 2	32	STD	0.01	49.14	0.60	0.88
Saltbrush Rd	@ Desert Breeze Dr	28	STD	0.0075	37.97	0.56	0.76
Spring Flower Rd **	@Desert Breeze Dr	32	STD	0.0144	75.1	0.66	1.12
Scarlet Bloom Drive	@Spring Flower Rd	32	MTBL	0.006	4.65	0.30	0.35
Arizona Rose Drive	@Saltbrush Rd	28	MTBL	0.006	6.03	0.33	0.38

* All Q's are full street flows
** See attached cross section @ Lot 27





SECTION A-A
SCALE: HORIZONTAL: 1"=20'
VERTICAL: 1"=5'

A = 15.19
WP = 35.85
R = 0.423
d = 0.67

$$Q=\frac{1.486}{0.017}(15.19)(0.0144)^{0.5}(0.423)^{0.67}$$

= 88.4 CFS > 75.1 CFS ✓OK

LOT #27

ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates
128 Monroe Street N.E.
Albuquerque *New Mexico*

023EXH4.DWGems 09/21/98

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TABLE 3
INLETS CAPACITY @ KEY LOCATIONS

INLET NO	INLET TYPE	LOCATION	STREET WIDTH & CURB TYPE	% SLOPE	Q 100 (CFS)	Dn (FT)	Q intercepted (CFS)	Q by-pass (cfs)
CB1 (2 inlets)	A	Purple Fringe Rd, 350' W. of Desert Breeze	32' FF, STD	1.00%	49.14	0.6	2 inlets 8 ea = 16 cfs	33.14
CB3 (2 sumps)	A, Mod Throat	End of Purple Fringe	28' FF, STD		43.7	0.57	43.7 cfs**	0

*Q per inlet are calculated using DPM Plate 22.3, D-5
** See attached sump calculation sheet

Revised

Analyze Sump Inlets

revised

$Q_{Required} = 43.7$ CFS

Try Modified Type "A" with Single Grate & Double Throat

Grate Open Area:

Gross Area for One Grate: 2'-1½" x 2'-11 3/8" = 6.28 SQ Ft

Less Bearing Bars: (0.5")1/12 * 2.95 * 13 = -1.60 SQ Ft

Less Cross Bars: (0.5")1/12 * 2.13 * 7 = -0.62 SQ Ft

Plus Intersections (Counted Twice):

(0.5")1/12 x (0.5")1/12 * 77 = +0.13 SQ FT

Total = 4.2 SQ FT

Clogging Factor = 50%

H = 0.57 ft

Flow thru the Grate = $CA\sqrt{2gh}$ = $.67\left(\frac{4.19}{2}\right)\sqrt{64.4(.57)}$

= 8.5 CFS

Flow thru double throat = $CA\sqrt{2gh}$

$=.67(.5)(13.4)\sqrt{64.4(.57)}$

= 27.2 CFS

Total Inlet Capacity = 8.5 + 27.2 = 35.7 CFS

2 * 35.7 = 71.4 CFS > 43.7 CFS ✓ OK

Rundown: Desert Breeze to Amole Channel
Worksheet for Trapezoidal Channel

Revised

Project Description	
Project File	c:\haestad\fmw\dtfwmrev.fm2
Worksheet	Desert Breeze to Amole del Norte
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	4.10	%
Left Side Slope	3.00	H : V
Right Side Slope	3.00	H : V
Bottom Width	12.00	ft
Discharge	112.10	cfs

Concrete - ok

Results		
Depth	0.56	ft
Flow Area	7.73	ft²
Wetted Perimeter	15.57	ft
Top Width	15.39	ft
Critical Depth	1.25	ft
Critical Slope	0.002524	ft/ft
Velocity	14.51	ft/s
Velocity Head	3.27	ft
Specific Energy	3.84	ft
Froude Number	3.61	
Flow is supercritical.		

Notes:

* Preliminary Channel Sizing
* Assume Concrete Channel

Desert Flower 5: Amole Channel to MH 3
Worksheet for Circular Channel

Revised

Project Description	
Project File	c:\haestad\fmw\dtfwmrev.fm2
Worksheet	DF5: Amole Channel to MH3
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.012	ft/ft
Diameter	3.00	ft
Discharge	59.70	cfs

Results		
Depth	2.06	ft
Flow Area	5.18	ft^2
Wetted Perimeter	5.86	ft
Top Width	2.78	ft
Critical Depth	2.50	ft
Percent Full	68.73	
Critical Slope	0.007804	ft/ft
Velocity	11.53	ft/s
Velocity Head	2.06	ft
Specific Energy	4.13	ft
Froude Number	1.49	
Maximum Discharge	78.59	cfs
Full Flow Capacity	73.06	cfs
Full Flow Slope	0.008012	ft/ft
Flow is supercritical.		

Notes:

MH 3 Rim = 5005.00
Amole Channel Bottom = 4993.00+/-
MH 3 INV (E) = 4997.28
INV @ Amole = 4995.00
Length between MH 3 & Amole = 190 ft

Desert Flower 5: MH 3 to MH 2
Worksheet for Circular Channel

revised

Project Description	
Project File	c:\haestad\fmw\dtfwmrev.fm2
Worksheet	DF5: MH 3 to MH 2
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.005	ft/ft
Diameter	2.00	ft
Discharge	16.00	cfs

Results		
Depth	1.64	ft
Flow Area	2.76	ft^2
Wetted Perimeter	4.53	ft
Top Width	1.54	ft
Critical Depth	1.44	ft
Percent Full	81.99	
Critical Slope	0.006614	ft/ft
Velocity	5.80	ft/s
Velocity Head	0.52	ft
Specific Energy	2.16	ft
Froude Number	0.76	
Maximum Discharge	17.21	cfs
Full Flow Capacity	16.00	cfs
Full Flow Slope	0.005003	ft/ft
Flow is subcritical.		

Notes:

MH 2 Rim = 5004.15
MH 3 Rim = 5005.00
MH 2 INV (E) = 4998.55
MH 3 INV (W) = 4998.28
Length between MH2 & MH3 = 53 ft

Desert Flower 5: MH 1 to MH 2
Worksheet for Pressure Pipe

Project Description	
Project File	c:\haestad\fmw\dtfwmrev.fm2
Worksheet	DF5: MH2 to MH1
Flow Element	Pressure Pipe
Method	Hazen-Williams Formula
Solve For	Pressure at 1

Input Data	
Pressure at 2	1.50 feet H20
Elevation at 1	5,002.06 ft
Elevation at 2	4,999.05 ft
Length	301.00 ft
C Coefficient	105.0
Diameter	18.00 in
Discharge	16.00 cfs

Results		
Pressure at 1	4.55	feet H20
Headloss	6.06	ft
Energy Grade at 1	5,007.88	ft
Energy Grade at 2	5,001.82	ft
Hydraulic Grade at 1	5,006.61	ft
Hydraulic Grade at 2	5,000.55	ft
Flow Area	1.77	ft^2
Wetted Perimeter	4.71	ft
Velocity	9.05	ft/s
Velocity Head	1.27	ft
Friction Slope	0.020132	ft/ft

Notes:

MH 2 Rim = 5004.15
MH 1 Rim = 5007.24
MH 1 Inv (E) = Elevation 1 = 5002.06
MH 2 Inv (W) = Elevation 2 = 4999.05

APPENDIX A

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =11/30/1998
INPUT FILE = DSTMESA3.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	NOTATION	
*S	DESERT FLOWER SUBDIVISION - 100 YR POST DEVELOPMENT										
*S	DSTmesa3.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 122.3 AND 104.2 TOGETHER										
ADD HYD	122.40	17&23	20	.05550	112.19	3.843	1.29855	1.533	3.159	
*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) = 11/30/1998
         START TIME (HR:MIN:SEC) = 14:26:00     USER NO.= ISCARFNM.I01
         INPUT FILE = DSTMESA2.DAT

*S                  DESERT FLOWER SUBDIVISION - 100 YR POST DEVELOPMENT
*S                  DSTmesa3.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       AVERAGE      FLOW         TRAVEL
                          DEPTH       AREA         RATE         TIME
                          FEET        SQ.FT.       CFS          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.


*S ** 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        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         7.02
                        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       AVERAGE      FLOW         TRAVEL
                    DEPTH       AREA         RATE         TIME
                    FEET        SQ.FT.       CFS          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       AVERAGE      FLOW        TRAVEL
                     DEPTH       AREA         RATE        TIME
                     FEET        SQ.FT.       CFS         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        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=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 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=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        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=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 =  3.992480
    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        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=23 REACH NO=1 NO VS=1 L=480 FT
                     SLP=.0184

                          TRAVEL TIME TABLE
                                        REACH=  1.0

                          WATER         AVERAGE       FLOW          TRAVEL
                          DEPTH         AREA          RATE          TIME
                          FEET          SQ.FT.        CFS           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 122.3 AND 104.2 TOGETHER
ADD HYD             ID=20  HYD NO=122.4  ID=17  ID=23
PRINT HYD           ID=20  CODE=1

                                PARTIAL HYDROGRAPH   122.40

    RUNOFF VOLUME =     1.29855 INCHES      =        3.8434 ACRE-FEET
    PEAK DISCHARGE RATE =     112.19 CFS  AT   1.533 HOURS   BASIN AREA =    .0555 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) = 14:26:02
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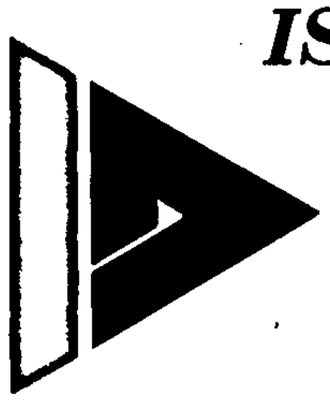


ISAACSON & ARFMAN, P.A.

Consulting Engineering Associates

Albuquerque, NM

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 2, 1999

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

RE: Grading and Drainage Plan for Desert Flower Subdivision, Unit Six, (M10/D12E) Submitted for Preliminary and Final Plat, Grading Permit and Work Order Approval, Engineer's Stamp Dated 2/16/99.

Dear Mr. Arfman:

Based on the information provided in the submittal of February 19, 1999, the above referenced Plan for Desert Flower Subdivision Unit Six is approved for Preliminary Plat action.

The above referenced plan is also approved for Grading Permit release, however, no grading may occur within the Amole Del Norte Diversion Channel right-of-way until concurrence from City Storm Drain Maintenance is obtained. City Storm Drain Maintenance must also approve the proposed connections to this channel.

As you are aware, the Grading and Drainage Certification is required prior to the release of the Subdivision Improvements Agreement for this Unit. The SIA must be in place prior to Final plat sign-off.

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: Bo Johnson, P.E., Bokay Construction
File

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

28' F-F	Res. Paving	April Flower Pl.	Spring Flower Dr.	Desert Breeze Dr.
STD	Curb & Gutter	"	"	"
4'	* PCC Sidewalk	"	"	"
8"	Waterline	"	"	"
8"	SAS	"	"	"

DRB Case No. 98-391
DRC Project No.
Date Submitted: 2/19/99
Prelim. Plat Approved:
Prelim. Plat Expires:

EXHIBIT "A"
TO SUBDIVISION IMPROVEMENTS AGREEMENT
DEVELOPMENT REVIEW BOARD (DRB)
REQUIRED INFRASTRUCTURE LIST
DRB 98-391
A PORTION OF MESA ENTERPRISES LIMITED (WARRANTY DEED)
BEING REPLATTED AS

DESERT FLOWER SUBDIVISION UNIT SIX

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

SIZE	IMPROVEMENT	LOCATION	FROM	TO
28' F-F	Res. Paving	Desert Breeze Dr.	So Property Line Lot 22/Blk T	April Flower Pl.
STD	Curb & Gutter	"	"	"
4'	*PCC Sidewalk.	"	"	"
6"	Waterline	"	"	"
8"	SAS	"	"	"
24' F-F	Res. Paving	Desert Breeze Dr.	April Flower Pl.	Lot 13/Blk T
MTBL	Curb & Gutter	"	"	"
4'	*PCC Sdwk (east only)	"	"	"
8"	Waterline	"	"	No. Property Line
8"	SAS	"	"	"
32' F-F	Res. Paving	Purple Cone Rd.	Spring Flower Dr.	Desert Breeze Dr.
STD	Curb & Gutter	"	"	"
4'	*PCC Sidewalk	"	"	"
6"	Waterline	"	"	"
8"	SAS	"	Lot 1/Blk V	"
28' F-F	Res. Paving	April Flower Pl.	Spring Flower Dr.	Desert Breeze Dr.
STD	Curb & Gutter	"	"	"
4'	* PCC Sidewalk	"	"	"
8"	Waterline	"	"	"
8"	SAS	"	"	"

SIZE	IMPROVEMENT	LOCATION	FROM	TO
~~36"-42"-DIA~~	RCP Storm Drain	Between Lot 20 & 21/Blk T	Desert Breeze Dr.	Amole del Norte Diversion Channel
6'	Asphalt Trail	"	"	"

MISCELLANEOUS

Street lighting per DPM.

Grading & Drainage: Certification per DPM (prior to release of financial guarantees). To include private retaining walls as required on the approved Grading Plan

All storm drains to include catch basins, manholes, connector pipes, and other appurtenances per DPM and final DRC approved plans.

All water to include fire hydrants, valves, and appurtenances per DPM.

*To be deferred under Sidewalk Deferral Agreement.

Prepared By: Fred C. Arfman 02·17·99

Fred C. Arfman, PE
Isaacson & Arfman, P.A.

Date

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

Development Review Board Member Approvals

Transportation Development Division — Date

Utility Development Division — Date

Parks Design & Development/CIP — Date

City Engineer/AMAFCA — Date

DRB Chair — Date

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Desert Flower Unit 6 ZONE ATLAS/DRNG. FILE#: M-10/D12E

DRB # 98-391 EPC # _____ WORK ORDER # _____

LEGAL DESCRIPTION: A portion of Lands of Mesa Enterprises Limited (Warranty Deed)

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 Sch. 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: _____ PHONE: 884-1990

CITY, STATE: _____ ZIP CODE: _____

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

RECEIVED
FEB 19 1999
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: _____

BY: _____
FOR ISAACSON & ARFMAN, P.A.

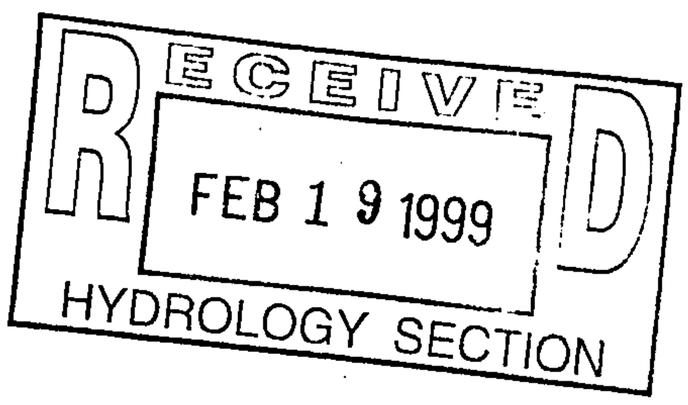
DRAINAGE REPORT

FOR

DESERT FLOWER SUBDIVISION
UNIT SIX

A 55 LOT SINGLE FAMILY
RESIDENTIAL SUBDIVISION

ALBUQUERQUE NEW MEXICO
FEBRUARY 1999



Prepared by:

ISAACSON & ARFMAN, P.A.
128 Monroe Street NE
Albuquerque, NM 87108
(505) 268-8828

02-18-99

Fred C. Arfman, PE **Date**

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Table 3 – Inlet Capacities

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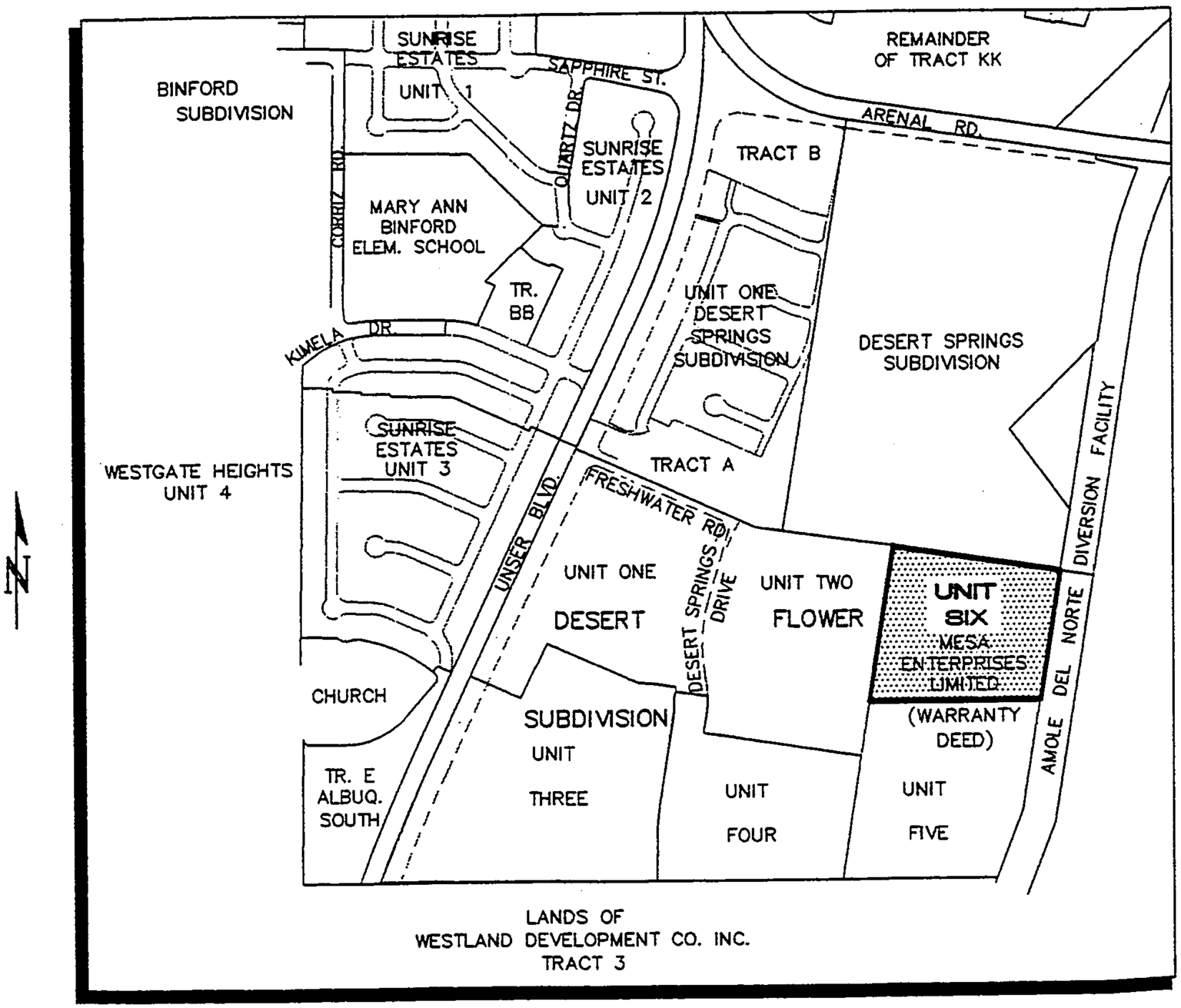
Appendix A: Onsite AHYMO Summary & Detailed Output
100-Year Storm

POCKETS

Figure 1: Master Drainage Plan

Figure 2: Unit Six Grading Plan



1"=750'±

(M-10)

VICINITY MAP

INTRODUCTION

Desert Flower Unit Six is the final phase of the Desert Flower subdivision. It is located to the east of Desert Flower Unit Two and west of the Amole del Norte Diversion Channel. It will have 55 single family lots, and will be constructed with utilities and paving improvements according to the City of Albuquerque Development Standards and Guidelines.

The area defined as Desert Flower Unit Six is the remaining area of the land which was previously defined as Unit Five. The change in unit boundaries was necessary because of delays encountered during the annexation process of the Mesa Enterprises Limited land. This area was addressed in the approved Desert Flower Revised Master Drainage Report (M10/D12).

I. PROJECT INFORMATION

LEGAL DESCRIPTION: A portion of Mesa Enterprises Limited (Warranty Deed) filed April 23, 1980, Book D118A, Page 945.

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

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: 55

TOTAL AREA: 8.227 Ac.
358,368 Sq. Ft.

II. SITE CHARACTERISTICS

FLOOD HAZARD: No part of this development is affected or contributes to a flood hazard as determined by Panel 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 toward the east at slopes ranging from 1 to 2 percent. It abuts Desert Flower Unit Two to the west, Desert Flower Unit Five to the south, the Amole del Norte Diversion Channel to the east, and undeveloped land to the north.

No storm waters except the developed flows from the existing Desert Flower Subdivision Unit Two cross the site. The developed flows from Unit Two are conveyed by a temporary rundown to the Amole del Norte Diversion Channel. The rundown follows the street alignment which will be developed with Unit Six of Desert Flower.

All offsite undeveloped flows generated to the north of this unit flow overland to the Amole del Norte Diversion Channel and are covered under a blanket drainage easement.

PROPOSED CONDITIONS: Unit Six will be developed with 55 lots and will require construction of a storm drain connection to the Amole del Norte Diversion Channel. The existing temporary rundown connecting Purple Cone Road to the Amole del Norte Diversion Channel will be removed so the runoff can continue to the east along the new street.

Runoff along Purple Cone Road will be carried by street flow to the Desert Breeze Drive. There the flows will combine with the discharge from April Flower Place and be collected by sump inlets. The storm drain will run due east from the inlets to the Amole del Norte Diversion Channel through a pedestrian access. This paved access will also function as an emergency overflow for the inlets.

This drainage solution is outlined as the second option in the Master Report for this phase of the subdivision. The use of this option eliminates the need for a storm drain connection at the terminus of Saltbrush Road, and also provides a better grading solution for the subdivision lots which border the Amole del Norte Diversion Channel.

CONCLUSIONS & RECOMMENDATIONS

The Drainage Study for Desert Flower Unit Six is consistent with the Desert Flower Subdivision Revised Master Drainage Report (MDR) previously approved by the Hydrology Division, P.W.D., City of Albuquerque. Desert Flower Subdivision Units One and Two have been completed. Units Three and Four are currently under construction, and Desert Flower Subdivision Unit Five is also in the work order process. All of the above Units conform to the Desert Flower Subdivision MDR. The individual recommendations for Unit Six are presented below:

UNIT FOUR:

1. The earthen rundown which conveys the flows from Purple Cone Road to the Amole del Norte Diversion Channel will be removed. Flows from Unit Two will enter Unit Six via the continuation of the above referenced street.

2. An asphalt pedestrian access will be constructed along the storm drain alignment and will function as the sump inlet emergency spillway.

3. A storm drain connection to the Amole del Norte Diversion Channel from Purple Cone Road will be constructed with this unit. The storm drain system will be included in the Unit Six required infrastructure list.

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

5. No offsite storm water flows from the north onto this subdivision phase.

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*,121*	0.05550	0	29	29	42	16.3	112.19

*Cumulative Q of basin

Table 2
Flow Depths @ Key Locations

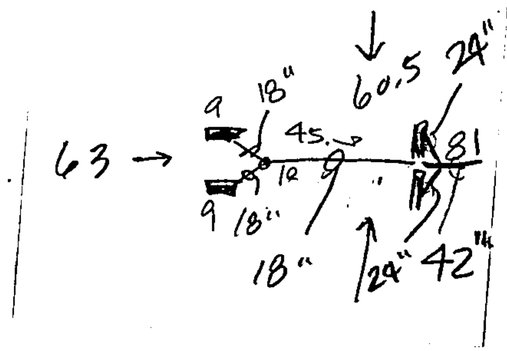
Street	Location	Street Width	Curb Type	Slope (ft/ft)	Q100(cfs)	Depth (ft)	EG (ft)
Desert Breeze Dr	@ Sump Inlets	28	STD	NA	60.78	0.65	NA
April Flower Pl	@ Desert Breeze Dr	28	STD	0.005	13.2	0.44	0.51
Purple Cone Rd	@ Desert Breeze Dr	32	STD	0.0106	63.45	0.65	**1.0

* All Q's are full street flows
**This street will be constructed with a rise of 0.33' between the curb & R.O.W. line. See detail sheet

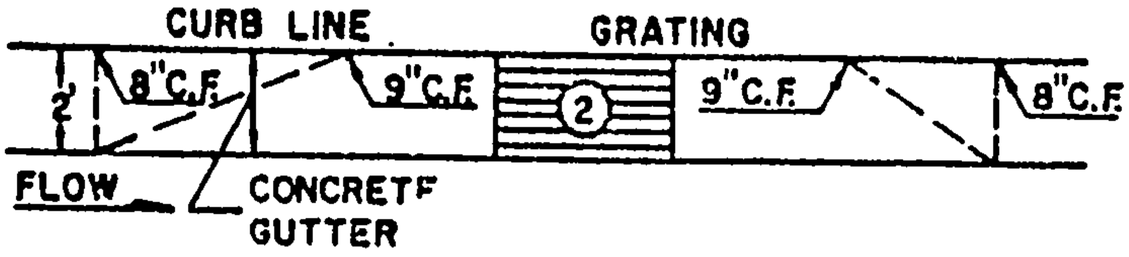
TABLE 3
INLETS CAPACITY @ KEY LOCATIONS

INLET NO	INLET TYPE	LOCATION	STREET WIDTH & CURB TYPE	% SLOPE	Q 100 (CFS)	Dn (FT)	Q intercepted (CFS)	Q by-pass (cfs)
CB1 (2 inlets)	A A, Mod	Purple Cone Rd End of Purple	32' FF, STD	1.06%	63.45	0.65	9 ea = 18 cfs	45.45
CB3 (2 sumps)	Throat	Cone	28' FF, STD	NA	60.78	0.65	60.78 **	0

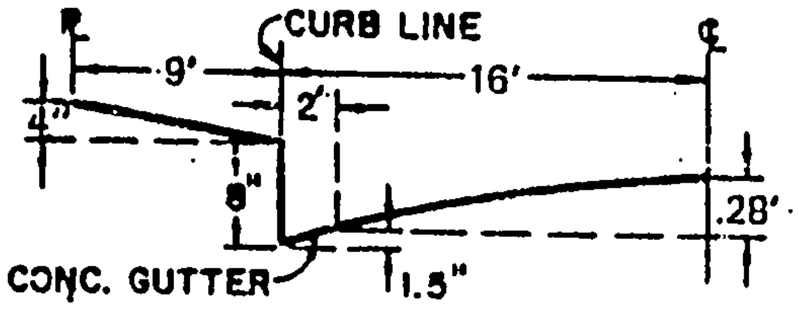
*Q per inlet are calculated using DPM Plate 22.3, D-5
** See attached sump calculation sheet



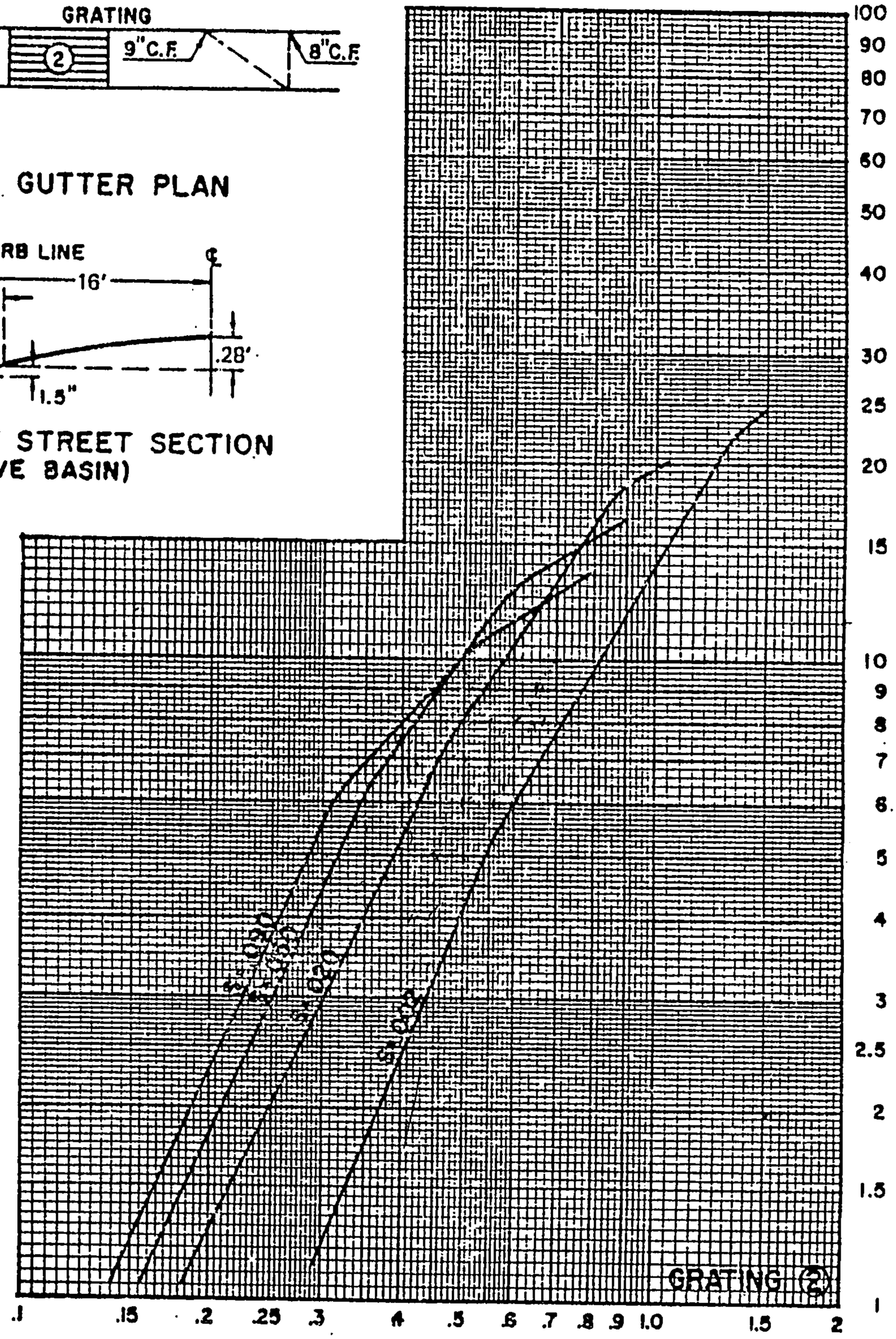
GRATING CAPACITIES FOR TYPE "A" , "C" and "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



D = DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

ANALYZE SUMP INLETS

DATA:

Q = 60.78
H = 0.65
GRATE OPEN AREA:

GROSS AREA FOR ONE GRATE = 2' - 1 1/2" * 2' - 11 3/8 " =	6.28 SF
LESS BEARING BARS = (0.5")(1/12) * 2.95 * 13 =	1.60 SF
LESS CROSS BARS = (0.5")(1/12) * 2.13 * 7 =	0.62 SF
PLUS THE INTERSECTION COUNTED 2X = (0.5")(1/12) * (0.5")(1/12) *77 =	0.13 SF
TOTAL =	**4.2**

CALCULATIONS:

FLOW THROUGH THE GRATE = CA(2gH)^.5 =	9.103192
FLOW THROUGH DOUBLE THROAT = CA(2gH)^.5 =	29.04352

TOTAL CAPACITY= 38.14671

RECOMMENDATION:

USE TWO "MOD" TYPE A INLETS WITH SINGLE GRATE & DOUBLE THROAT

ISAACSON & ARFMAN, P.A.

Consulting Engineering Associates

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

March 8, 1999

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

RE: Desert Flower Subdivision Unit Six (M10/D12E)

Dear Ms. Calongne:

Upon further review of the storm drain required for Unit Six, it was determined that a 36" diameter pipe would provide adequate capacity to convey the flows to the Amole del Norte Diversion Channel (see attached hydraflow sheet). This line would replace the proposed 42" diameter storm drain which connects Desert Breeze Drive to the Channel.

Attached is a copy of the revised infrastructure list for your use. Please call if you have any questions.

Respectfully yours,
ISAACSON & ARFMAN, P.A.

Melissa Combs

Melissa Combs
MC/rtl
Attachments

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MAR 0 9 1999
HYDROLOGY SECTION

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

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Desert Flower Unit 6 ZONE ATLAS/DRNG. FILE#: M-10

DRB # 98-391 EPC # WORK ORDER #

LEGAL DESCRIPTION: A portion of Lands of Mesa Enterprises Limited (Warranty Deed)

CITY ADDRESS:

ENGINEERING FIRM: Isaacson & Arfman, P.A. CONTACT: Melissa Combs

ADDRESS: 128 Monroe Street NE PHONE: 268-0828

CITY, STATE: Albuquerque, NM ZIP CODE: 87108

OWNER: Curb Inc CONTACT: Bo Johnson

ADDRESS: 6301 Indian Sch. 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: PHONE: 884-1990

CITY, STATE: ZIP CODE:

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 Info

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

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MAR 09 1999
HYDROLOGY SECTION

DATE SUBMITTED: 3/9/99

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

Hydraflow Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	36	78.78	4995.50	4998.50	3.00	7.07	11.15	1.93	5000.43	1.396	201	4997.51	5001.30	3.00	7.07	11.15	1.93	5003.24	1.395	1.396	2.804	0.10	0.19
2	18	18.00	4999.01	5001.50	1.50	1.77	10.19	1.61	5003.11	2.939	51.8	5000.05	5003.02	1.50	1.77	10.19	1.61	5004.63	2.938	2.939	1.522	0.10	0.16
3	18	9.00	5000.15	5003.18	1.50	1.77	5.09	0.40	5003.59	0.735	8.4	5000.59	5003.24	1.50	1.77	5.09	0.40	5003.65	0.735	0.735	0.062	0.15	0.06
4	18	9.00	5000.15	5003.18	1.50	1.77	5.09	0.40	5003.59	0.735	22.5	5000.72	5003.35	1.50	1.77	5.09	0.40	5003.75	0.735	0.735	0.165	0.15	0.06

Project File: DFU6R.stm	I-D-F File: SAMPLE.IDF	Total number of lines: 4	Run Date: 03-09-1999

NOTES: Initial tailwater elevation = 4998.5 (ft) , * Crown depth assumed., ** Critical depth assumed.

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1	1	78.78	36 c	200.9	4995.50	4997.51	1.000	4998.50*	5001.30*	0.19	End
2	2	18.00	18 c	51.8	4999.01	5000.05	2.003	5001.50*	5003.02*	0.16	1
3	5	9.00	18 c	8.4	5000.15	5000.59	5.249	5003.18*	5003.24*	0.06	2
4	6	9.00	18 c	22.5	5000.15	5000.72	2.550	5003.18*	5003.35*	0.06	2

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MAR 09 1999
HYDROLOGY SECTION

Project File: DFU6R.stm	I-D-F File: SAMPLE.IDF	Total No. Lines: 4	Run Date: 03-09-1999

NOTES: c = circular; e = elliptical; b = box; Return period = 100 Yrs.; * Indicates surcharge condition.

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1	1	78.78	42 c	213.5	4995.50	4996.45	0.445	4999.00*	5000.31*	0.10	End
2	2	18.00	18 c	50.0	4998.45	4998.95	1.000	5000.41*	5001.88*	0.16	1
3	3	30.39	24 c	9.0	4996.60	4996.92	3.554	5000.41*	5000.58*	0.22	1
4	4	30.39	24 c	9.0	4996.60	4996.92	3.554	5000.41*	5000.58*	0.22	1
5	5	9.00	18 c	24.0	4999.10	4999.58	2.000	5002.04*	5002.22*	0.06	2
6	6	9.00	18 c	11.0	4999.10	4999.32	1.998	5002.04*	5002.13*	0.06	2

Project File: New.STM	I-D-F File: SAMPLE.IDF	Total No. Lines: 6	Run Date: 02-09-1999

NOTES: c = circular; e = elliptical; b = box; Return period = 100 Yrs.; * Indicates surcharge condition.

Hydraflow Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
1	42	78.78	4995.50	4999.00	3.50	9.62	8.19	1.04	5000.04	0.613	214	4996.45	5000.31	3.50	9.62	8.19	1.04	5001.35	0.613	0.613	1.309	0.10	0.10
2	18	18.00	4998.45	5000.41	1.50	1.77	10.19	1.61	5002.03	2.939	50.0	4998.95	5001.88	1.50	1.77	10.19	1.61	5003.50	2.938	2.939	1.469	0.10	0.16
3	24	30.39	4996.60	5000.41	2.00	3.14	9.68	1.46	5001.87	1.806	9.0	4996.92	5000.58	2.00	3.14	9.67	1.45	5002.03	1.805	1.806	0.163	0.15	0.22
4	24	30.39	4996.60	5000.41	2.00	3.14	9.68	1.46	5001.87	1.806	9.0	4996.92	5000.58	2.00	3.14	9.67	1.45	5002.03	1.805	1.806	0.163	0.15	0.22
5	18	9.00	4999.10	5002.04	1.50	1.77	5.09	0.40	5002.45	0.735	24.0	4999.58	5002.22	1.50	1.77	5.09	0.40	5002.62	0.735	0.735	0.176	0.15	0.06
6	18	9.00	4999.10	5002.04	1.50	1.77	5.09	0.40	5002.45	0.735	11.0	4999.32	5002.13	1.50	1.77	5.09	0.40	5002.53	0.735	0.735	0.081	0.15	0.06

Project File: New.STM	I-D-F File: SAMPLE.IDF	Total number of lines: 6	Run Date: 02-09-1999

NOTES: Initial tailwater elevation = 4999 (ft) , * Crown depth assumed., ** Critical depth assumed.

EMERGENCY OVERFLOW TO AMOLE CHANNEL
Worksheet for Trapezoidal Channel

Project Description	
Project File	c:\haestad\fmw\dtfwmrev.fm2
Worksheet	EMERGENCY OVERFLOW CHANNEL TO THE AMOLE
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.017	
Channel Slope	0.02	ft/ft
Left Side Slope	3.00	H : V
Right Side Slope	3.00	H : V
Bottom Width	6.00	ft
Discharge	60.78	cfs

Results		
Depth	0.81	ft
Flow Area	6.81	ft^2
Wetted Perimeter	11.11	ft
Top Width	10.85	ft
Critical Depth	1.20	ft
Critical Slope	0.004584	ft/ft
Velocity	8.92	ft/s
Velocity Head	1.24	ft
Specific Energy	2.05	ft
Froude Number	1.98	
Flow is supercritical.		

APPENDIX A

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	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 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=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.
```

*S ** 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        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=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 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=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        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=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          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=13 REACH NO=1 NO VS=1 L=325 FT
                     SLP=.005

                              TRAVEL TIME TABLE
                                          REACH=  1.0

                     WATER          AVERAGE        FLOW          TRAVEL
                     DEPTH          AREA           RATE          TIME
                     FEET           SQ.FT.         CFS           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 = 3.992480
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
```