City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 30, 1997

Robert B. Ryals, P.E.
Ryals Engineering
5301 Central NE, #913
Albuquerque, New Mexico 87108

RE: Design Analysis Report for Sunset Gardens/Unser Blvd. Storm Drain, (L9/D20)
Engineer's Stamp Dated 12/5/97.

Dear Mr. Ryals:

It appears that the above referenced design analysis report was submitted for DRC approval. Based on the information provided in the submittal of December 8, 1997, the above referenced report is approved for DRC.

Prior to sign-off of the DRC plans, however, any required additional right-of-way must be obtained such that it is satisfactory to the City.

Please be advised that this storm drain system must be built and accepted by the City prior to release of the financial guarantees for any of the projects which depend on this system.

If you should have any questions, please call me at 924-3982.

Sincerely,

Susan Calongne

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

c: File

DRAINAGE INFORMATION SHEET

NEW L-9/DEQ 20

PROJECT TITLE: Sunset Gardens/Unser Storm Drain ZONE ATLAS/DRNG. FILE #: L-9-Z

DRB #: N/A EPC #: N/A WORK ORDER #: N/A

LEGAL DESCRIPTION: Unser Blvd - From Bridge Blvd to Sunset Gardens Rd

~~CITY ADDRESS~~: Sunset Gardens - From Unser Blvd to 86th St.

ENGINEERING FIRM: Rygals Engineering CONTACT: Bob Rygals

ADDRESS: 5301 Central Ave NE PHONE: 256-4701

OWNER: City of Albuquerque CONTACT: Fred Aguire

ADDRESS: Plaza Del Sol PHONE: 924-3980

ARCHITECT: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

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 Approval of Report (SPECIFY)

RECEIVED
DEC 0 8 1997
HYDROLOGY SECTION

DATE SUBMITTED: 12-5-97

BY: _____

ok for DRC

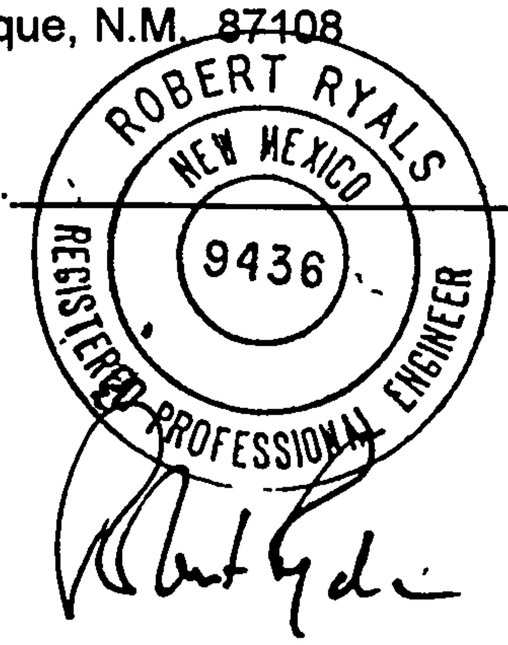
need acceptance of this construct.
before release of fin. guar. of all
projects that depend on this SA

DESIGN ANALYSIS REPORT
FOR

SUNSET GARDENS/ UNSER BLVD.
STORM DRAIN

Prepared by:
Ryals Engineering & Construction Services
5301 Central N.E., Suite 913
Albuquerque, N.M. 87108

Robert B. Ryals, P.E.



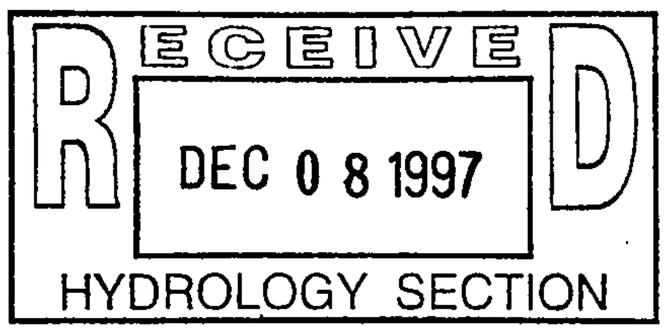


TABLE OF CONTENTS

Design Analysis Report
for Proposed Sunset Gardens/Unser Storm Drain

PROJECT DESCRIPTION: The project is located in the southwest region of Albuquerque as shown on exhibit #1: "The Vicinity Map". The project consists of constructing a storm drain, varying in size from 72" to 54" from the existing Amole Channel (located south of Bridge Blvd at Unser) south, within the Unser ROW, to Sunset Gardens Road, then west to 86th Street.

The proposed storm drain system will provide a drainage outfall for proposed and existing developments located north and south of Sunset Gardens Road between Unser and 94th streets (see exhibit #2: "Existing Drainage Basin Boundaries" and exhibit #3: "Future Drainage Basin Boundaries"). The planned developments include the Valle del Canto Subdivision, Valhalla Estates , Pointe West Subdivision and a proposed unnamed single family subdivision located south of Sunset Gardens between Unser and 82nd street. The existing Bridge Point Apartments located north of Sunset Gardens between 82nd and 86th street was designed to drain north to Bridge and therefore does not contribute flow to this system. Other existing developments to be served by this system include some single family residences located between 90th and 94th to the south of Sunset Gardens and some IP development located between 90th and 94th to the north of Sunset Gardens Road. Vacant unplanned areas served by the system is an O-1 parcel located north of Sunset Gardens between Unser and 82nd, and an IP parcel located west of 90th and north of Sunset Gardens.

The drainage basin served by this system is bounded on the north by the Tierra Bayita storm drainage basin and the south by the SAD 222 drainage basin. Both of these storm drain systems are presently in final design should go to construction within the next year or two. As such, delineation of basin boundaries shown in this report (see exhibit #3:" Developed Basin Boundaries") has been scrutinized and approved by the other system consultants and by City of Albuquerque staff.

RIGHT OF WAY: There is existing public right of way for the entire length of this project, however, only part of it is in the final form necessary to construct the project. In particular, the Long Range Major Street Plan calls for Unser to be a limited access roadway with a 156 foot right of way. Additionally, there is some indication of a right of way alignment problem on Sunset Gardens at the 82nd St. intersection. Part of this project will be identifying and resolving right of way issues.

HYDROLOGY: Flow rates were developed using the AHYMO computer program to implement standard City of Albuquerque methods for the 100-year 6-hour design storm. It was assumed that the drainage basin is fully developed. One result is that the basin and sub-basins are defined more by development tracts and streets than by existing contours. Some of the work was originally prepared by Ryals Engineering in conjunction with the Valle del Canto subdivisions at the upstream end of the project.

It is to be emphasized that final drainage basin boundaries were established only after several meetings with the City, its consultants for SAD 222 and the Tierra Bayita Storm Drain, and agents for nearby landowners. These meetings resulted in several changes to previous versions of the drainage basin, particularly the removal of areas west of 94th street, and the addition of one lot-width (approximately 200 feet) along Eucariz from Unser to 86th in conjunction with current and future development indicated above.

The Appendix contains several items related to the hydrologic analysis. It includes: AHYMO summary files for the 100-year and 10-year design storms; a drainage basin map with 100-year peak flows shown at selected points; a routing schematic relating the basin map to the AHYMO analysis; calculations for time of concentration Tc (Tc=Tc,min except for basin W); and a table of land treatment percentages for both existing and future conditions.

In the land treatment table, those areas that are currently developed - or have development plans well under way - have treatments assigned according to that development. Other areas have treatments appropriate to proposed zoning. Engineering judgment was also used in preparing the table, particularly as to treatment percents for right of way areas and in recognizing that some areas zoned for 1 DU (dwelling unit) per acre may have more than that in the future (or, occasionally, the present).

HYDRAULICS: Preliminary hydraulic calculations are presented in a spreadsheet in the appendix. It is to be emphasized that these are preliminary calculations that are expected to change somewhat during the course of the project.

The analysis extends to the upstream manholes in Valhalla Estates, south and west of the end of this project at 86th and Sunset Gardens, because of the effect of downstream conditions on upstream conditions. Within Valhalla Estates, the small segments upstream of the manholes (shown dashed on the preliminary plan and profile) were not modeled because of the sufficiently steeper street slopes there.

The HGL was established using a hydraulic analysis assuming full-pipe, slight-pressure flow in concrete pipe. This puts the HGL (hydraulic grade line) between the ground and the crown of the pipe, in accord with City policy. The actual pipe is then set such that its crown is somewhere below the HGL. This provides considerable flexibility at final design for clearing other utilities, such as sanitary sewer lines.

Combining the estimated pipe flow rates, geometry, ground conditions, and preliminary hydraulic analysis yielded an HGL whose minimum distance below ground was about 3.2 ft. This occurred at 4 manhole locations, 3 along Sunset Gardens between Unser and 82nd, and 1 within Valhalla Estates, at the second manhole from the upstream end.

The hydraulic analysis is based on Manning's equation for pipe full flow. A key calculation is the solution for Sf, the so-called friction slope, which (not the pipe slope) essentially powers the flow. This is just a re-arrangement of Manning's equation given flow rate, pipe size, and roughness. The analysis also includes a number of minor losses, including junction, manhole, bend, and expansion losses, all of which are based on preliminary assumptions and will be refined during design.

One may note that the storm drain capacities entered into the spreadsheet are less than the peak flows derived from the AHYMO analysis. Pipe flows in the mains for the 100-yr storm are expected to be less than the flows calculated by AHYMO because the streets convey part of the flow. Estimated street flow is typically limited to less than the street's capacity, however, by the City's requirement that, in the 10-year storm, one traffic lane each direction be kept clear for streets of classification of collector (86th) and higher (Unser). Inlet arrays that accomplish this usually don't leave a lot of flow in the street for the 100-year storm either. Junction flows shown in the spreadsheet are typically the difference in the main line flow just above and below the junction inflow, rather than (and less than) the peak flow in the junction.

Exhibit #4: "Sunset Gardens Storm Drain Preliminary Design" shows important results from the spread sheet in graphical form. It includes preliminary estimates of flow rates, pipe grades, manhole locations, HGL (hydraulic grade line), and ground elevations. It also includes a first estimate of pipe sizes, which is used in the cost estimate.

COST ESTIMATE: A preliminary cost estimate is included in the Appendix. It is based on items shown on the Plan & Profile, engineering judgment, and 1997 City Engineer's Estimated Unit Prices. The estimate includes some allowance for uncertainties. One area of uncertainly is the pavement and utility locations in the affected part of Unser Blvd.

It is anticipated that costs for this project will be shared by adjacent benefitting property owners and, hopefully, the City. The estimate has been divided into block-long segments in order to facilitate allocating project costs.

EXHIBITS

SU-2 IP

TOWN OF ATRISCO GRANT (UNIT 4)

MH 7.5 DU/A

SUNRISE

HEIGHTS

CENTRAL AV

C-2

WESTLAND

OF

CAMPING FAC

ORIGINAL TOWNSITE OF WESTLAND

BRIDGE BLVD

SU-2 IP

SU-1 C-2/O-1 & PRD 20 DU/A

C-1

TOWNSITE OF VALLE DEL CANYO

PRD 20 DU/A

BRIDGE POINT APARTMENTS

SU-1

O-1

BARRETT--V E

WESTLAND

SUNSET GARDENS ROAD

TOWER / UNSER SECTOR DEVELOPMENT PLAN BOUNDARY

A-1 SU-PERMIT WRECKING YD & ...

VALHALLA ESTATES

A-1

TOWN OF

SITE

R-D/9DU PER AC

POINT WEST

ATRISCO GRANT

A-1

R-D/R-1

(UNIT 2)

EUCARIZ

TOWN OF

ATRISCO GRANT

A-1

(UNIT 2)

N

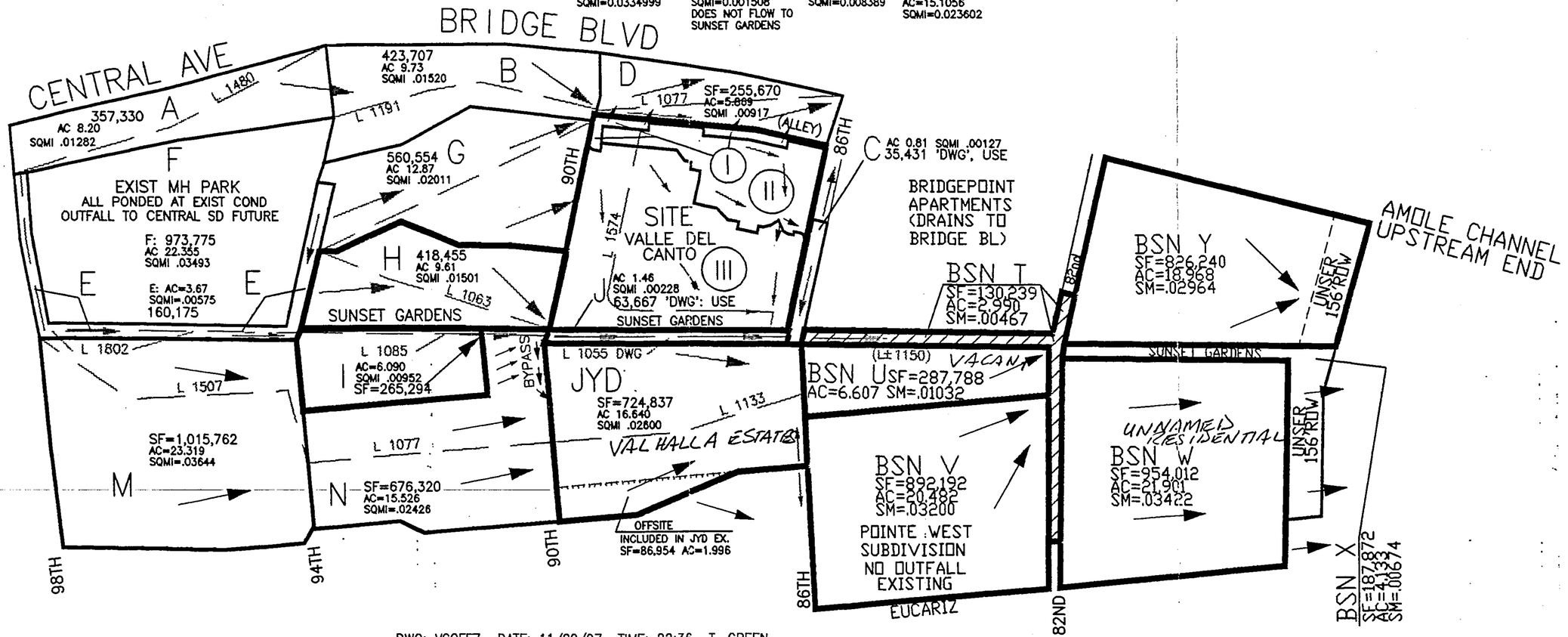
NTS

VICINTIY MAP

EXHIBIT #1

VALLE DEL CANTO SITE (PH'S I & II)

ENTIRE (ALL) SITE	BASIN SITE-1	BASIN SITE-2	BASIN SITE-3
SF=933,903 AC=21.4395 SQMI=0.0334999	SF=42,044 AC=0.9652 SQMI=0.001508 DOES NOT FLOW TO SUNSET GARDENS	SF=233,858 AC=5.3686 SQMI=0.008389	(ALL SITE – (1&2)) SF=658,001± AC=15.1056 SQMI=0.023602



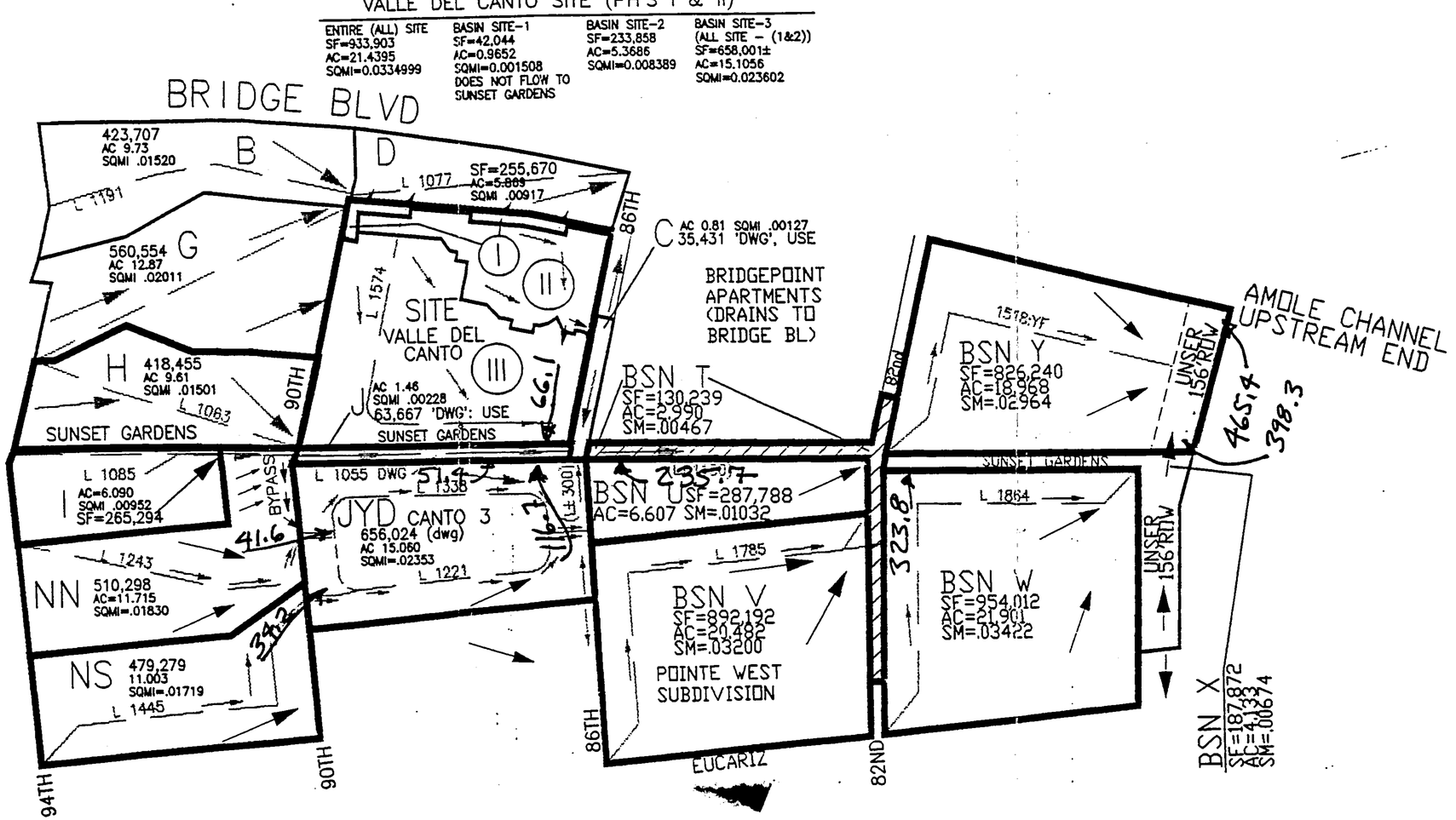
DWG: VCOFF7 DATE: 11/20/97 TIME: 22:36 T. GREEN

0 500 1000 1500

"EXISTING TODAY" BASINS NEAR CANTO III

CONSTRUCTION PLANS ARE UNDERWAY (ANDREWS, ASBURY) TO CONSTRUCT 94TH ST IN ACCORD WITH S.A.D. 222 AND DIVERT FLOW FROM WEST OF 94TH ST TO THE SOUTH. THE CONTRIBUTING AREA BETWEEN 94TH AND 90TH IS LESS THAN UNDER FUTURE CONDTIONS; FLOW WILL BE DIRECTED TO CANTO III BY EXISTING AND PROPOSED GRADES IN 90TH. EAST OF 90TH, APPROXIMATELY 2 UNDEVELOPED ACRES SOUTH OF THE CANTO III BOUNDARY CONTRIBUTE TO CANTO III UNDER "TODAY" CONDITIONS. THIS AREA WILL FLOW SOUTH UNDER FUTURE CONDITIONS. THE HIGH POINT IN 86TH AT SOUTH END OF CANTO WAS SET BY DEVELOPMENT PLANS (CANTO I & II, CANTO III, AND POINTE WEST), HAS BEEN CO-ORDINATED WITH THE S.A.D. 222 ENGINEERS AND THE CITY, AND WILL BE CREATED BY UPCOMING CONSTRUCTION OF CANTO III AND POINTE WEST.

EXHIBIT #2



"FUTURE" BASINS FOR SUNSET/UNSER STORM SEWER

ALL BASINS IN FUTURE DEVELOPMENT CONDITION, INCLUDING Y. SG (SUNSET GARDENS) SD (STORM DRAIN) COMPLETE TO UNSER THEN NORTH TO AMOLE. NO FLOW FROM WEST OF 94th ST: SOUTH OF SG, 94th DRAINS SOUTH PER DESIGN BY ANDREWS, ASBURY, AND ROBERT. NORTH OF SG, 94TH DRAINS TO CENTRAL/BRIDGE (TIERRA BAYITA) SD PER GRADES APPROVED WITH MOBILE HOME PARK. SG SD COMPLETE TO UNSER THEN TO AMOLE. HIGH POINT IN 90th 1 LOT N OF EUCARIZ ASSUMED PER SAD 222 & TOWER/UNSER DMP. FLOW INTO WEST END OF ALLEY AT 90th TO BE HELD TO EXISTING CONDITIONS OR LESS. PROBABLY BY STORM DRAIN TO BRIDGE BLVD. FLOW FROM BASINS B, G, & D SHOWN FOR INFO ONLY: NO FLOW TO SG SD.

SELECTED 100 yr 6 hr PEAK FLOWS SHOWN THUS XX.Y

EXHIBIT #3

SUNSET GARDENS STORM DRAIN PRELIMINARY DESIGN

ALBUQUERQUE, NEW MEXICO

PRELIMINARY DESIGN FOR STORM DRAIN SYSTEM IMPROVEMENTS

INDEX OF DRAWINGS

VICINITY MAP
N.T.S.

ZONE ATLAS PAGE NO. L-9-Z

GENERAL NOTES

1. All work detailed on these plans to be performed under contract shall, except as otherwise stated or provided for herson, be constructed in accordance with the City of Albuquerque Standard Specifications for Public Works Construction 1986 Edition as amended with Update No. 6.
2. Prior to construction, the Contractor shall excavate & verify the horizontal and vertical locations of all obstructions. Should a conflict exist, the Contractor shall notify the Engineer so that the conflict can be resolved with minimum delay.
3. Two (2) working days prior to any excavation, Contractor must contact Line Locating Service @ 260 – 1990 for location of existing utilities.
4. Warning – EXISTING UTILITY LINE LOCATIONS are shown in an approximate manner only, and such lines may exist where none are shown. The location of any such existing lines is based upon information provided by the utility company, the owner, or by others, and the information may be incomplete or may be obsolete by the time construction commences.

   The engineer has undertaken no field verification of the location, depth, size, or type of existing underground utility lines, makes no representation pertaining therefor. The contractor shall inform itself of the location of any utility line in or near the area of the work in advance of and during excavation work. The contractor is fully responsible for any and all damage caused by its failure to locate, identify, and preserve any and all existing utilities. The contractor shall comply with State statutes, municipal and local ordinances, rules and regulations pertaining to the location of these lines and facilities, in planning and conducting excavation, whether by calling or notifying the utilities, complying with "Blue Stakes" procedures, or otherwise.
5. TRAFFIC CONTROL: Five (5) working days prior to beginning construction the contractor shall submit to the Construction Coordination Division a detailed construction schedule. Two (2) working days prior to construction the contractor shall obtain a barricading permit from the Construction Coordination Division. Contractor shall notify Barricade Engineer (768–2551) prior to occupying an intersection. See section 19 of the specifications. All street striping altered or destroyed shall be replaced by contractor to location and in kind as existing at no additional cost to the owner.
6. The contractor shall promptly clean up any material excavated within the public right–of–way so that the excavated material is not susceptible to being washed down the street.
7. The contractor is responsible for protecting and maintaining all existing monumentation controls. In the event of in–advertent destruction or alteration the contractor must immediately notify the City Chief Surveyor.
8. Any work effecting an arterial roadway requires twenty–four hour completion of construction.

REV.	SHEETS	CITY ENGINEER	DATE	USER DEPARTMENT	DATE	USER DEPARTMENT	DATE

ENGINEERS STAMP & SIGNATURE	APPROVALS	ENGINEER	DATE
	DRC Chairman		
	Transportation		
	Water/Wastewater		
	Hydrology		
	Parks		
	Constr. Mngmt.		

* * * * * * * * * * *
APPROVED FOR CONSTRUCTION

City Engineer Date

CITY PROJECT No. XXXXXX

Sheet 1 Of 4

EXHIBIT #4

MATCHLINE STORM DRAIN STA 8+87.76

Qahymo=323.76
Qpipe=283.76

8+00

MH-3

Qahymo=81.13±
Qside=77.25

UNSER BLVD

SUNSET GARDENS

MH-2

Qahymo=399.01
Qpipe=359.01

5+00

Qahymo=78.24
Qside=66.35

MH-1

Qahymo=465.36
Qpipe=425.36

UNSER

EXIST 90°SD

EXIST 96"SD

1+00

SD STA 0+87.00
BEGIN STORM DRAIN

0+00

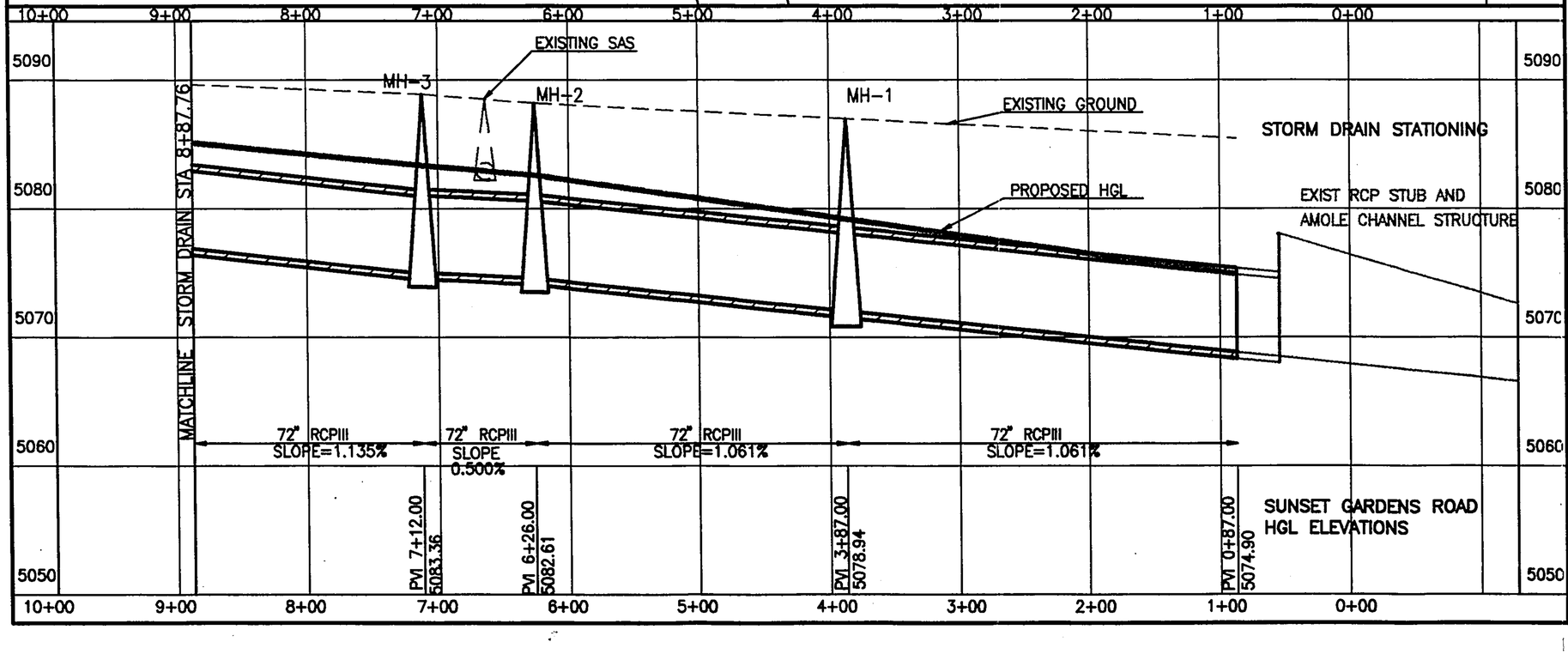
EXISTING CHANNEL
& 72" RCP STUB

BRIDGE BLVD.

N

0 20 60 100

SCALES:
HORIZ. 1"=100'
VERT. 1"=10'



AS BUILT INFORMATION
CONTRACTOR — DATE
WORK STARTED — DATE
WORK FINISHED — DATE
AS BUILT CHANGES BY — DATE
VERIFICATION BY — DATE
CORRECTIONS BY — DATE
MICRO-FILM INFORMATION
RECORDED BY — DATE
NO.

BENCH MARKS

SURVEY INFORMATION
FIELD NOTES
NO. BY DATE

ENGINEER'S SEAL

REMARKS
REVISIONS
NO. DATE BY
DESIGN — DESIGNED BY RBR, HFB, MJC — DATE
DRAWN BY HFB — DATE
CHECKED BY — DATE

RYALS engineering & construction services
5301 Central, N.E. Albuquerque, NM 87108
(505) 256-4701 239-4726 mobile telephone

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

TITLE: SUNSET GARDENS STORM DRAIN
PRELIM. STORM DRAIN PLAN AND PROFILE
STA. 0+87.00–8+87.66 SUNSET GARDENS ROAD, SW

Design Review Committee | City Engineer Approval | Last Design Update | Revisions | Revisions

City Project No. | Zone Map No. L-9/L-10 | Sheet 2 Of 4

MATCHLINE
STORM DRAIN STA 20+84.53

82nd st

MATCHLINE STORM DRAIN STA 8+87.76

Qahymo=235.70
Qpipe=205.70

MH-6

20+00

Qahymo=103.47±
Qside=88.06

Qahymo=323.76
Qpipe=283.76

MH-5

15+00

SUNSET GARDENS

MH-4

Qahymo=323.76
Qpipe=283.76

10+00

82nd ST

N

0 20 60 100

SCALES:
HORIZ. 1"=100'
VERT. 1"=10'

RECEIVED
DEC 08 1997
HYDROLOGY SECTION

20+00 19+00 18+00 17+00 16+00 15+00 14+00 13+00 12+00 11+00 10+00 9+00

5100
5090
5080
5070
5060

EXISTING SAS

MH-6

MH-5

MH-4

EXISTING GROUND

PROPOSED HGL

STORM DRAIN STATIONING

MATCHLINE STORM DRAIN STA 8+87.76

60" RCPIII
SLOPE=1.000%

72" RCPIII
SLOPE=0.500%

72" RCPIII
SLOPE=0.500%

PVI 17+80.00
5090.58

PVI 14+80.00
5089.06

PVI 10+80.00
5087.09

SUNSET GARDENS ROAD
HGL ELEVATIONS

20+00 19+00 18+00 17+00 16+00 15+00 14+00 13+00 12+00 11+00 10+00 9+00

AS BUILT INFORMATION
CONTRACTOR DATE
INSP. BY DATE
SURV. BY DATE
INSPECTED BY DATE
FIELD VERIFICATION BY DATE
ENGINEER DIRECTED BY DATE
MICRO-FILM INFORMATION
RECORDED BY DATE
NO.

BENCH MARKS

SURVEY INFORMATION
FIELD NOTES BY DATE
NO.

ENGINEER'S SEAL

NO. DATE REMARKS BY
REVISIONS
DESIGNED BY RSR, HFB, MJC DATE
DRAWN BY HFB DATE
CHECKED BY DATE

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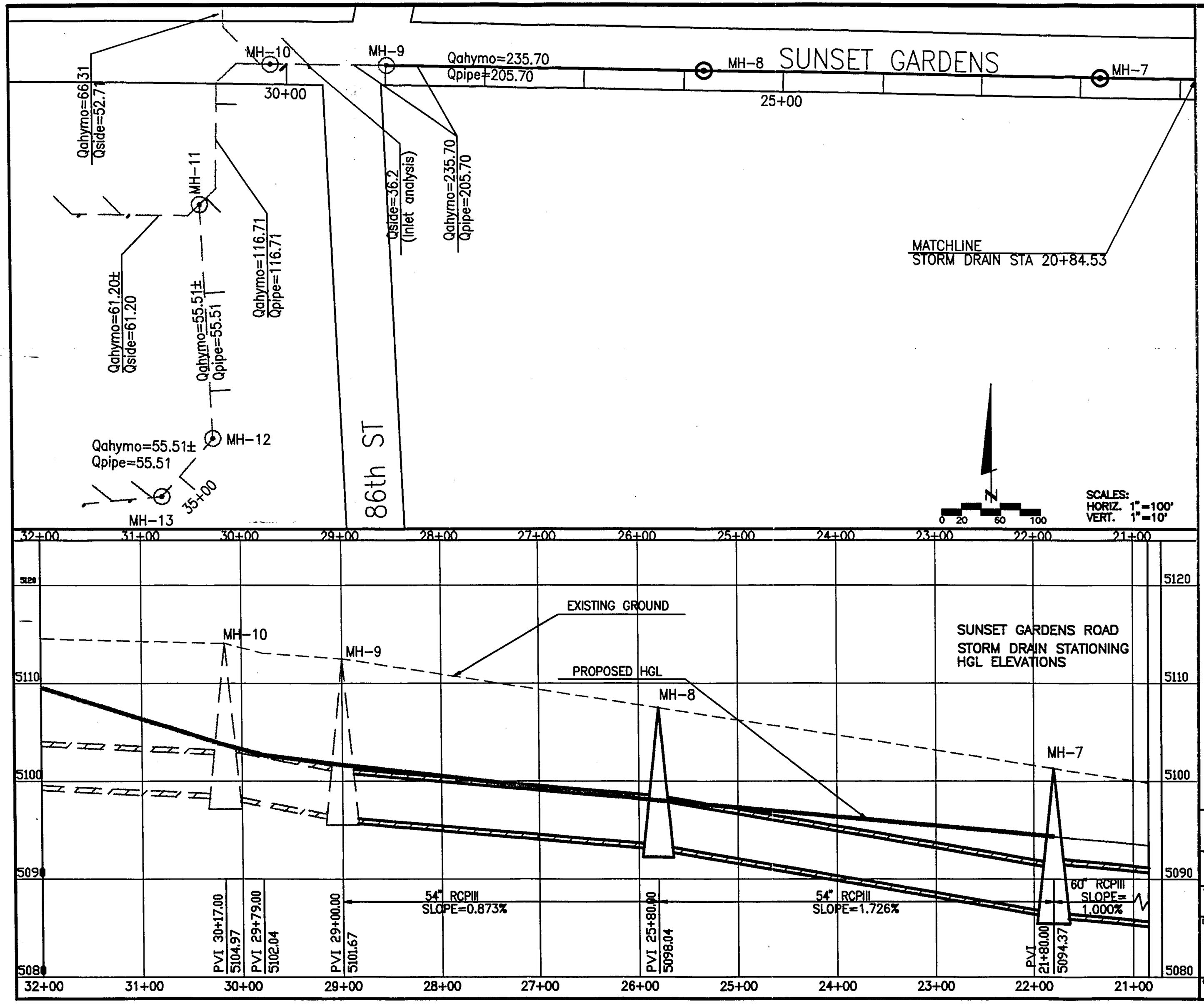
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

TITLE: SUNSET GARDENS STORM DRAIN
PRELIM. STORM DRAIN PLAN AND PROFILE
STA. 8+87.76-20+84.53 SUNSET GARDENS ROAD, SW

Design Review Committee | City Engineer Approval | Last Design Update | No./Date | No./Date

City Project No. | Zone Map No. L-9/L-10 | Sheet 3 Of 4



RECEIVED
DEC 0 8 1997
HYDROLOGY SECTION

AS BUILT INFORMATION
CONTRACTOR DATE
WORK STARTED BY DATE
WORK COMPLETED BY DATE
FIELD VERIFICATION BY DATE
CORRECTIONS BY DATE
MICRO-FILM INFORMATION
RECORDED BY DATE
MGL

BENCH MARKS

SURVEY INFORMATION
FIELD NOTES
NO. BY DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	
		DESIGNED BY BBR, HFB, MJC	DATE
		DRAWN BY HFB	DATE
		CHECKED BY	DATE

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239-4726 mobile telephone

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

TITLE: SUNSET GARDENS STORM DRAIN
STORM DRAIN PLAN AND PROFILE
STA.20+84.53-35+27.00 SUNSET GARDENS ROAD, SW

Design Review Committee	City Engineer Approval	Last Design Update	Initials	Initials

City Project No. | Zone Map No. L-9/L-10 | Sheet 4 of 4

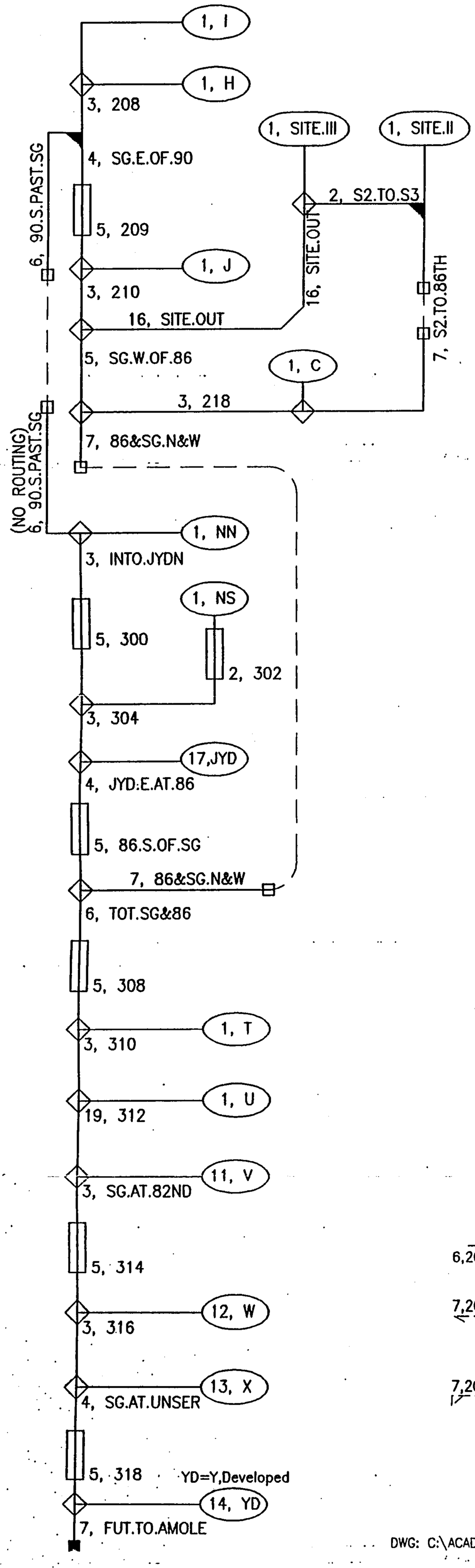
APPENDIX

		RYALS ENGINEERING AND CONSTRUCTION SERVICES, CO.											
		ENGINEERS ESTIMATE - AS OF	12/08/97										
		SUNSET GARDENS STORM DRAIN											
					86th Str. to 82nd Str.		82nd Str. to Unser		Unser				
		Stations			29+00-17+8		17+80-7+12		7+12-0+87				
	STORM	DESCRIPTION	UNIT	UNIT	EST QTY	EST. AMT	EST QTY	EST. AMT	EST QTY	EST. AMT	TOTAL	TOTAL	
	DRAIN			PRICE							QTY	AMT	
	0910.029	72" RCP III	LF	115.12	0	0.00	1,068	122,948.16	625	71,950	1,693.00	194,898.16	
	0910.025	60" RCP III	LF	100.84	400	40,336.00	0	0.00	0	0	400.00	40,336.00	
	0910.023	54" RCP III	LF	82.82	720	59,630.40	0	0.00	0	0	720.00	59,630.40	
	0915.010	CTH BSN, A, DG	EA	2,800.00	2	5,600.00	2	5,600.00	2	5,600	6.00	16,800.00	
	XXXXX	WYE, 72"X42" RCP	EA	563.53	0	0.00	0	0.00	1	564	1.00	563.53	
	XXXXX	CONN, 72" SD	EA	500.00	0	0.00	0	0.00	1	500	1.00	500.00	
	XXXXX	T - MH	EA	1,200.00	2	2,400.00	3	3,600.00	3	3,600	8.00	9,600.00	
	0701.210	TRCH, BF, > 60" SWR, 12' - 16'	LF	53.96	0	0.00	1,068	57,629.28	625	33,725	1,693.00	91,354.28	
	0701.170	TRCH, BF, 32" - 60" SWR, 12' - 16'	LF	39.88	1,120	44,665.60	0	0.00	0	0	1,120.00	44,665.60	
		SUBTOTAL STORM DRAIN COSTS				152,632.00		189,777.44		115,938.53		458,347.97	
					86th Str. to 82nd Str.		82nd Str. to Unser		Unser				
					29+00-17+8		17+80-7+12		7+12-0+87				
		OFFSITE SUNSET GARDENS STREET											
	PAVING	DESCRIPTION	UNIT	UNIT	EST QTY	EST. AMT	EST QTY	EST. AMT	EST QTY	EST. AMT	TOTAL	TOTAL	
				PRICE							QTY	AMT	
	0204.01	EXCAV. BF COMP <2'	CY	1.50	0.00	0.00							
	0301.03	SUBGRADE PREP,RES. 12"	SY	0.85	2,738.00	2,327.30							
	0336.09	2-1/2" AC BS, 1800 M	SY	5.00	2,738.00	13,690.00							
	0336.12	TK CT	SY	0.19	2,738.00	520.22							
	0336.17	1-1/2" AC SFC, 1800 M	SY	3.05	2,738.00	8,350.90							
	0340.01	SDWK, 4",PCC	SY	19.80	498.00	9,860.40							
	0340.01	WCR	SY	19.80	17.00	336.60							
	0340.03	VALLEY GUTTER & FILLET	SY	36.00	32.00	1,152.00							
	0340.05	C & G ,STD, PCC	LF	8.70	1,120.00	9,744.00							
	0343.02	AC PVMT < 4", SAW, REM & DISP	SY	2.95	0.00	0.00							
	0510.10	CUT OFF WALL, PCC	CY	250.00	2.00	500.00							

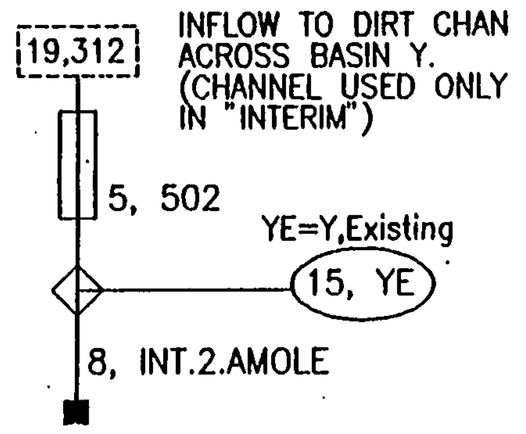
		SUBTOTAL PAVING COSTS				46,481.42						
		TOTAL DIRECT CONSTRUCTION COSTS				199,113.42		189,777.44		115,938.53		504,829.39
		10% CONTINGENCY				19,911.34		18,977.74		11,593.85		50,482.94
		SUBTOTAL				219,024.76		208,755.18		127,532.38		555,312.33
		GROSS RECEIPTS TAX				12,730.81		12,133.90		7,412.82		32,277.53
		SUBTOTAL				231,755.58		220,889.08		134,945.20		587,589.86
		TESTING (2%)				4,635.11		4,417.78		2,698.90		11,751.80
		SURVEYING (2%)				4,635.11		4,417.78		2,698.90		11,751.80
		ENGINEERING (4.5%)				10,429.00		9,940.01		6,072.53		26,441.54
		CITY DESIGN REVIEW FEE (3.25%)				7,532.06		7,178.90		4,385.72		19,096.67
		CONST. INSPECTION (3.35%)				7,763.81		7,399.78		4,520.66		19,684.26
		GRAND TOTAL CONST. COSTS				266,750.67		254,243.33		155,321.93		676,315.93

AHYMO: INTERIM & FUTURE CONDITIONS

FULL DEVELOPMENT (TYP) & NO FLOW FROM WEST OF 94th
FUTURE: PIPE COMPLETE TO AMOLE; Yfuture & V, W, X HAVE OUTFALL

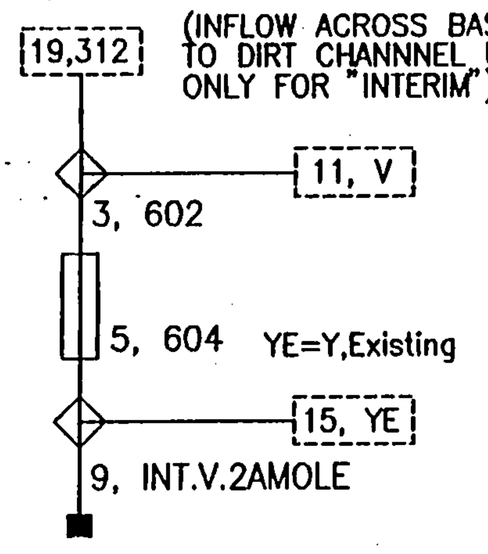


INTERIM OUTFALL

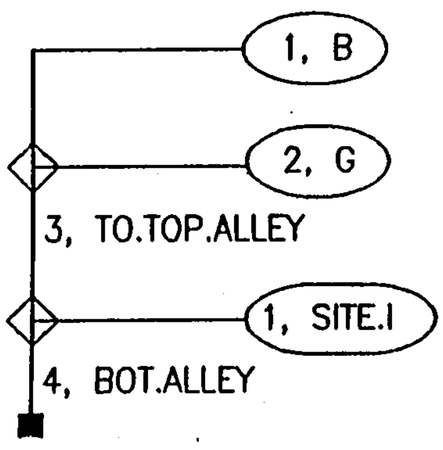


INTERIM OUTFALL W/ V

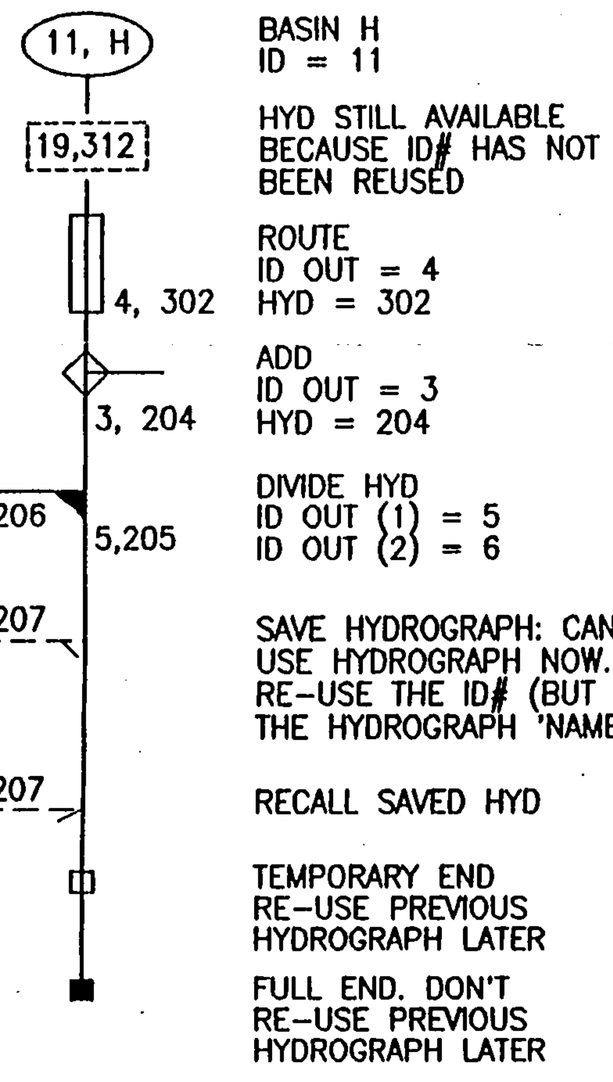
(SHOWN FOR INFORMATION ONLY)



ALLEY N OF CANTO



LEGEND



DWG: C:\ACAD\VC\VCAHYSD2 DATE: 10/15/97 TIME: 15:14 T. GREEN

INTERIM CONDITIONS — PERCENTAGES FOR LAND TREATMENT CLASSES ARE ESTIMATED BY INSPECTION FROM 1994 PHOTO-TOPO & SITE INSPECTION. SITE INSPECTION SHOWS SIGNIFICANT ADD'L DEVELOPMENT BTW 86th & 82nd (BRIDGE POINT APTS, POINTE WEST SUBDIV) BUT NO SIGNIFICANT ADD'L DEVELOPMENT UPSTREAM (WEST) OR ADJACENT NORTH OR SOUTH

LAND TREATMENTS: A=UNDISTURBED, B=LAWNS, C=UNPAVED ROADS, D=ROOFS,PAVEMENT: SEE DPM 22.2 P A-5

BASINS A, B, ----------
LABELS K & L NOT USED
LABELS M, N, & O NOT USED WRT EXISTING CONDITIONS

BASIN	EXISTING CONDITONS EX ZONING	%BASIN	DESIGN LAND TREATMENT PERCENTS % A	% B	% C	% D	SUM %	SQ FT	ACRES	SQ MI
A - EXIST	C-2		35.0	5.0	30.0	30.0	100.0	357,330	8.20	0.01282
B - EXIST	C-2	40.0	95.0	0.0	0.0	5.0	100.0	---	---	---
---	SU-2, IP	60.0	10.0	10.0	30.0	50.0	100.0	---	---	---
---	---------- AREA-ADJUSTED %		44.0	6.0	18.0	32.0	100.0	423,707	9.73	0.01520
C - EXIST	N/A, ROW, INFO ONLY		15.0	0.0	50.0	35.0	100.0	35,431	0.81	0.00127
D - EXIST	C-2, NOT CONTRIBUTE		15.0	0.0	70.0	15.0	100.0	255,670	5.87	0.00917
E - EXIST	N/A, R.O.W		30.0	0.0	70.0	0.0	100.0	160,175	3.68	0.00575
F - EXIST	M/H; NOT CONTRIBUTE									
G - EXIST	SU-2, IP		40.0	5.0	43.0	12.0	100.0	560,554	12.87	0.02011
H - EXIST	SU-2, IP		45.0	5.0	40.0	10.0	100.0	418,455	9.61	0.01501
I - EXIST	A-1, SU-M/H		25.0	10.0	40.0	25.0	100.0	265,294	6.09	0.00952
J - SITE DEV'D	N/A, R.O.W.		25.0	0.0	25.0	50.0	100.0	63,667	1.46	0.00228
M - EXIST	R-D		97.0	0.0	3.0	0.0	100.0	1,015,762	23.32	0.03644
N - EXIST	A-1, UNDEV'D	40.0	97.0	0.0	3.0	0.0	100.0	---	---	---
---	A-1 / MH; PART DEV'D	60.0	30.0	15.0	35.0	20.0	100.0	---	---	---
---	---------- AREA-ADJUSTED %		56.8	9.0	22.2	12.0	100.0	675,320	15.50	0.02422
JYD - EXIST	SU, WRECK YD & M/H	25.0	7.0	5.0	80.0	8.0	100.0	---	---	---
---	A-1	75.0	97.0	0.0	3.0	0.0	100.0	---	---	---
---	---------- AREA-ADJUSTED %		74.5	1.3	22.3	2.0	100.0	724,837	16.64	0.02600
SITE-I DEV'D	SU-1, %'S PER DESIGN		0.0	35.0	0.0	65.0	100.0	42,044	0.97	0.00151
SITE-II DEV'D	SU-1, %'S PER DESIGN		0.0	35.0	0.0	65.0	100.0	233,858	5.37	0.00839
SITE-III DEV'D	SU-1, %'S PER DESIGN		0.0	35.0	0.0	65.0	100.0	658,001	15.11	0.02360
T - EXIST	R.O.W., MOSTLY DEV'D		5.0	0.0	35.0	60.0	100.0	130,329	2.99	0.00467
U - EXIST	A-1		97.0	0.0	3.0	0.0	100.0	287,788	6.61	0.01032
V - EXIST	%'S PER DESIGN, NO Qout		0.0	50.0	0.0	50.0	100.0	592,192	13.59	0.02124
W - EXIST	A-1		97.0	0.0	3.0	0.0	100.0	954,012	21.90	0.03422
X - EXIST	A-1		97.0	0.0	3.0	0.0	100.0	187,872	4.31	0.00674
Y - EXIST	O-1, UN-DEV'D		97.0	0.0	3.0	0.0	100.0	826,240	18.97	0.02964

3 dec
0.02600 Z. 02353 OK

FUTURE & INTERIM - FULL DEVELOP: PERCENTAGES FOR LAND TREATMENT CLASSES ARE BASED ON ESTIMATED PERCENT AREAS IN CURRENT ZONINGS AND ON ENGINEERING JUDGMENT AS TO DEVELOPMENT, ESPECIALLY OF UNDEVELOPED AREAS CURRENTLY ZONED A-1.

BASIN	EST FUTURE ZONING	%BASIN	DESIGN LAND TREATMENT PERCENTS % A	% B	% C	% D	SUM %	SQ FT	ACRES	SQ MI
A - INT.FUT	C-2, NOT CONTRIB		0.0	10.0	5.0	85.0	100.0	357,330	8.203	0.01282
B - INT.FUT	C-2	40.0	0.0	10.0	5.0	85.0	100.0	---	---	---
---	SU-2, IP	60.0	0.0	20.0	10.0	70.0	100.0	---	---	---
---	---------- AREA-ADJUSTED %		0.0	16.0	8.0	76.0	100.0	423,707	9.727	0.01520
C - INT.FUT	N/A, ROW, INFO ONLY		0.0	10.0	0.0	90.0	100.0	35,431	0.813	0.00127
D - INT.FUT	C-2, NOT CONTRIBUTE		0.0	10.0	5.0	85.0	100.0	268,300	6.159	0.00962
E - INT.FUT	N/A, R.O.W		0.0	15.0	0.0	85.0	100.0	160,175	3.677	0.00575
F - INT.FUT	M/H; NOT CONTRIBUTE									
G - INT.FUT	SU-2, IP		0.0	20.0	10.0	70.0	100.0	560,554	12.869	0.02011
H - INT.FUT	SU-2, IP		0.0	20.0	10.0	70.0	100.0	418,455	9.606	0.01501
I - INT.FUT	APX 2 DU/AC (EXIST+)	80.0	15.0	25.0	30.0	30.0	100.0	---	---	---
---	RD, 9 DU/AC, R1	20.0	0.0	30.0	0.0	70.0	100.0	---	---	---
---	---------- AREA-ADJUSTED %		12.0	26.0	24.0	38.0	100.0	265,294	6.090	0.00952
J - SITE DEV'D	N/A, R.O.W.		0.0	15.0	0.0	85.0	100.0	63,667	1.462	0.00228
JYD--JYD DEV'D	RD-9, %'S PER DESIGN		0.0	35.0	0.0	65.0	100.0	656,024	15.060	0.02353
M - INT.FUT	NO CONTRIB: R-D, 20 DU/AC		0.0	30.0	0.0	70.0	100.0	913,549	20.972	0.03277
NN - INT.FUT	APX 2 DU/AC (EXIST+)	70.0	15.0	25.0	30.0	30.0	100.0	---	---	---
---	RD, 9 DU/AC, R1	30.0	0.0	30.0	0.0	70.0	100.0	---	---	---
---	---------- AREA-ADJUSTED %		10.5	26.5	21.0	42.0	100.0	510,298	11.715	0.01830
NS - INT.FUT	APX 2 DU/AC (EXIST+)	40.0	15.0	25.0	30.0	30.0	100.0	---	---	---
---	RD / R1	60.0	0.0	37.0	0.0	63.0	100.0	---	---	---
---	---------- AREA-ADJUSTED %		6.0	32.2	12.0	49.8	100.0	479,279	11.003	0.01719
SITE-I DEV'D	SU-1, %'S PER DESIGN		0.0	35.0	0.0	65.0	100.0	42,044	0.965	0.00151
SITE-II DEV'D	SU-1, %'S PER DESIGN		0.0	35.0	0.0	65.0	100.0	233,858	5.369	0.00839
SITE-III DEV'D	SU-1, %'S PER DESIGN		0.0	35.0	0.0	65.0	100.0	658,001	15.106	0.02360
T - INT.FUT	R.O.W.		5.0	0.0	35.0	60.0	100.0	130,329	2.992	0.00467
U - INT.FUT	R-D 9 DU		0.0	30.0	0.0	70.0	100.0	287,788	6.607	0.01032
V - INT.FUT	%'S PER DESIGN		0.0	50.0	0.0	50.0	100.0	892,192	20.482	0.03200
W - INT.FUT	R-D 9 DU, %'S PER DESIGN		0.0	50.0	50.0	0.0	100.0	954,012	21.901	0.03422
X - INT.FUT	R.O.W, PART LIMITED ACCESS		0.0	20.0	0.0	80.0	100.0	187,872	4.313	0.00674
Y - INT.FUT	O-1		0.0	10.0	5.0	85.0	100.0	826,240	18.968	0.02964

NOTE:: BASIN W: Tpeak = 0.16325 HR: ALL OTHERS USE Tp = Tp,min = 0.13333 HR

THE COPY

* MISTAKE: ACTUALLY / CORRECTLY USED 95% IMPERVIOUS "D"

FILE=VCTCONC.WQ1 = Valle del Canto Time of CONCentration (Tc).WQ1
10/14/97 07:10 AM = PRINT TIME

VALLE DE CANTO / SUNSET GARDENS CONTRIBUTING BASINS
CHECK LONGEST ONES: IF Tc <= Tc,min THEN ALL OTHERS USE Tc,min ALSO

SUBBASIN: M: LARGE, UNDEVELOPED: ONLY CONTRIB EXISTING COND

	RCH 1	RCH 2	RCH 3	RCH 4	RCH 5	RCH 6		
# Ltot, ft	1507						Lsum (C->H)	1507
# Li, ft	300	907	300				Ltot-Lsum	0
# Ki	0.7	2	2				CALC'D Tc:	
# Si, ft/ft	0.025	0.025	0.01				Tot sec	707.9
Vi	1.11	3.16	2.00				Tot min	11.80
Tc,i: sec	271.1	286.8	150.0				Tot hr	0.19663
USE Tpeak (2/3*Tc USE)		0.13333	hours	8.00 minutes			USE (min=0.2)	0.20000

SUBBASIN: W: LARGEST FUTURE, FAIRLY FLAT: === ONLY BASIN W/ Tc > Tc,min ===

	RCH 1	RCH 2	RCH 3	RCH 4	RCH 5	RCH 6		
# Ltot, ft	1864						Lsum (C->H)	1864
# Li, ft	100	864	900				Ltot-Lsum	0
# Ki	2	3	3				CALC'D Tc:	
# Si, ft/ft	0.01	0.005	0.005				Tot sec	881.6
Vi	2.00	2.12	2.12				Tot min	14.69
Tc,i: sec	50.0	407.3	424.3				Tot hr	0.24488
USE Tpeak (2/3*Tc USE)		0.16325	hours	9.80 minutes			USE (min=0.2)	0.24488

SUBBASIN: V: POINTE WEST, ESTIMATED SLOPES, MODERATELY FLAT, UNDER CONST, PARTLY BUILT

	RCH 1	RCH 2	RCH 3	RCH 4	RCH 5	RCH 6		
# Ltot, ft	1785						Lsum (C->H)	1785
# Li, ft	100	685	1000				Ltot-Lsum	0
# Ki	2	3	3				CALC'D Tc:	
# Si, ft/ft	0.01	0.005	0.02				Tot sec	608.6
Vi	2.00	2.12	4.24				Tot min	10.14
Tc,i: sec	50.0	322.9	235.7				Tot hr	0.16906
USE Tpeak (2/3*Tc USE)		0.13333	hours	8.00 minutes			USE (min=0.2)	0.20000

===> SINCE SLOWEST EXIST & FUTURE BASINS HAVE Tc <= Tc<min, USE Tc,min ALL BASINS EXCEPT W

Reference: City of Albuquerque DPM (Development Process Manual) Sec 22.2, Jan 1993
Basin lengths < 4000 ft. I.E. (L1+L2+ ... + Lx) < 4000 ft
Tc(seconds) = (L1/V1 + L2/V2 + ... + Lx/Vx)
==> USE Tc,min = 0.2 hrs = 12 min = 720 sec <==
Li is subreach length
Vi is velocity (in ft/sec) in reach i, given by V = K * sqrt(S*100)
S is the slope in ft/ft, & K is given in following table (B-1 in the DPM)

K	CONVEYANCE CONDITION
0.7	Sheetflow* on turf, landscape areas, or undistrubed natural areas
1	Sheetflow* on bare or disturbed soil areas, or on paved areas
2	Shallow concentrated flow - paved or not
3	Street flow, storm sewers, and natural channels, and that portion of subbasins (w/o constructed channels) below the upper 2000 ft for subbasins longer than 2000 ft
4	Constructed channels (e.g. riprap, soil cement, concrete-lined)

*Sheetflow is flow over plane surfaces, w/ depths up to 0.1ft, and applies only to the upper 400 ft (max) of a subbasin.

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 FILE CSGIF00A.DAT: Canto / Sunset Gardens, Interim & Future conditions,											
*S (1)00-yr 6-hr storm, version A											
*S											
*S FOR INTERIM CONDITIONS, THE SUNSET GARDENS STORM DRAIN STOPS AT 82nd ST											
*S AND FLOW IS ROUTED IN AN EARTH CHANNEL THROUGH AN UNDEVELOPED BASIN Y											
*S TO THE HEAD OF THE AMOLE CHANNEL. SEE RECALLED HYD 314 AND HYD ____											
*S FOR FUTURE, THE SUNSET GARDENS STORM DRAIN CONTINUES TO UNSER THEH											
*S NORTH TO THE HEAD OF THE AMOLE CHANNEL. A FULLY DEVELOPED BASIN Y											
*S CONTRIBUTES TO THIS FLOW, AS DO BASINS V (POINTE WEST), W, & X.											
*S											
*S ALL BASINS --EXCEPT BASIN Y AS NOTED ABOVE-- ARE IN FUTURE FULLY-DEVELOPED											
*S CONDITONS BASED ON CURRENT ZONING & DEVELOPMENT, CURRENT DEVELOPMENT PLANS,											
*S AND ON ENGINEERING JUDGMENT.											
*S											
RAINFALL TYPE= 1											
COMPUTE NM HYD	I	-	1	.00952	18.64	.617	1.21467	1.500	3.059	RAIN6= PER IMP=	2.220 38.00
COMPUTE NM HYD	H	-	2	.01501	36.62	1.301	1.62555	1.500	3.812	PER IMP=	70.00
*S E PLUS H PLUS I AT SUNSET GARDENS & 90TH FOLLOWS											
ADD HYD	208.00	1& 2	3	.02453	55.25	1.918	1.46607	1.500	3.519		
*S DIVIDE SO 1ST 8.6 CFS (ID=6) S ON 90TH (ON HOLD): ID=4 E ON SUNSET GARDENS											
DIVIDE HYD	90.S.PAST.SG		3	6	.01052	8.60	.822	1.46607	1.333	1.278	
	SG.E.OF.90	AND		4	.01401	46.65	1.096	1.46607	1.500	5.202	
*S ROUTE MAIN FLOW EAST DOWN SG FROM 90TH, FOLLOW IT TO 86TH ST											
ROUTE MCUNGE	209.00	4	5	.01401	46.50	1.093	1.46262	1.567	5.185	CCODE =	.2
COMPUTE NM HYD	J	-	1	.00228	5.97	.218	1.79112	1.500	4.093	PER IMP=	85.00
ADD HYD SG ABOVE CANTO	210.00	1& 5	3	.01629	51.44	1.311	1.50855	1.567	4.934		
*S CALC CONTRIBUTING PART OF CANTO SITE; THEN ADD TO HYD 210											
COMPUTE NM HYD	SITE.II	-	1	.00839	19.39	.685	1.53130	1.500	3.611	PER IMP=	65.00
*S PARTIAL WATERBLOCK ==> FLOW > 11.6cfs TO 86TH (ID=7, HOLD FOR LATER)											
DIVIDE HYD	S2.TO.S3		1	2	.00738	11.60	.602	1.53126	1.433	2.457	
	S2.TO.86TH	AND		7	.00101	7.79	.083	1.53126	1.500	12.008	
COMPUTE NM HYD	SITE.III	-	1	.02360	54.51	1.927	1.53130	1.500	3.609	PER IMP=	65.00
*S TOTAL FLOW LEAVING CANTO NORTH OF SUNSET GARDENS											
ADD HYD	SITE.OUT	1& 2	16	.03098	66.11	2.530	1.53128	1.500	3.335		
*S TOTAL FLOW SUNSET GARDENS WEST OF 86TH											
ADD HYD	SG.W.OF.86	3&16	5	.04727	115.19	3.841	1.52344	1.533	3.808		
COMPUTE NM HYD	C	-	1	.00127	3.43	.126	1.85607	1.500	4.219	PER IMP=	90.00
ADD HYD	218.00	1& 7	3	.00228	11.22	.208	1.71179	1.500	7.676		
*S COMBINED FLOW TO 86TH & SUNSET GARDENS FROM NORTH & WEST; HOLD FOR LATER											
ADD HYD	86&SG.N&W	3& 5	7	.04955	125.49	4.049	1.53212	1.533	3.957		
*S											
COMPUTE NM HYD	NN	-	1	.01830	32.97	1.099	1.12653	1.500	2.815	PER IMP=	36.40
*S ADD IN HYD 90.S.PAST.SG, ('HELD' SPILL SOUTH OF SUNSET GDNS INTERSECTION)											
ADD HYD	INTO.JYDN	1& 6	3	.02882	41.57	1.922	1.25044	1.500	2.254		
*S ROUTE NORTH PART OF OFFSITE THROUGH NORTH STREET IN JYD											
ROUTE MCUNGE	300.00	3	5	.02882	39.88	1.911	1.24326	1.600	2.162	CCODE =	.1
COMPUTE NM HYD	NS	-	1	.01719	34.17	1.167	1.27301	1.500	3.106	PER IMP=	46.60
*S ROUTE SOUTH PART OF OFFSITE THROUGH SOUTH STREET IN JYD											
ROUTE MCUNGE	302.00	1	2	.01719	33.65	1.167	1.27335	1.567	3.059	CCODE =	.2

100-YR 11-5-97
revised %'s ONLY

(1)

BTR INTO SUDE 90TH = 41.57 + 34.17 = 75.74 comp to 73.58 7/23/97:
A = 103549 NN+NS
%D = 41.34
(%D = 400, A = 103277)
N AS AWARDED.

(1) Dry ap 10 yr = 25.41 ± (See CSGIF10B.SUM)
100 yr SPILL OVER THEN → 51.44 - 25.41 = 26.03

INFILE = CSG1F00B.DAT

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	304.00	2& 5	3	.04601	72.69	3.078	1.25449	1.600	2.469	
COMPUTE NM HYD	JYD	-	17	.02353	54.35	1.922	1.53130	1.500	3.609	PER IMP= 65.00
*S TOTAL FLOW LEAVING JYD (CANTO III), INCLUDING 86TH ST ROW EAST OF JYD										
ADD HYD	JYD.E.AT.86	3&17	4	.06954	116.71	5.000	1.34815	1.533	2.622	
*S ROUTE TO 86TH & SG INTERSECTION, ASSUME 48" PIPE W/ 1% FRICTION SLOPE										
ROUTE MCUNGE	86.S.OF.SG	4	5	.06954	116.55	4.998	1.34764	1.567	2.619	CCODE = .1
*S *AS IF* COMBINED FLOWS AT 86TH & SUNSET GARDENS: RETRIEVE 'ON-HOLD' ID=7										
ADD HYD	TOT.SG&86	5& 7	6	.11909	235.70	9.047	1.42440	1.533	3.092	
*S										
*S FUTURE/FULL DEVELOPMENT			FUTURE/FULL DEVELOPMENT							
*S ROUTE 86TH TO 82ND IN SUNSET GARDENS: CONC PIPE; Sf=.01 APX										
ROUTE	308.00	6	5	.11909	234.12	9.047	1.42440	1.567	3.072	
COMPUTE NM HYD	T	-	1	.00467	12.22	.446	1.79111	1.500	4.087	PER IMP= 85.00
ADD HYD	310.00	1& 5	3	.12376	244.23	9.493	1.43823	1.567	3.083	
COMPUTE NM HYD	U	-	1	.01032	24.63	.879	1.59625	1.500	3.729	PER IMP= 70.00
ADD HYD	312.00	1& 3	19	.13408	264.83	10.372	1.45039	1.567	3.086	
COMPUTE NM HYD	V	-	11	.03200	66.62	2.281	1.33643	1.500	3.253	PER IMP= 50.00
ADD HYD	SG.AT.82ND	11&19	3	.16608	323.76	12.653	1.42843	1.533	3.046	
ROUTE	314.00	3	5	.16608	322.21	12.653	1.42844	1.567	3.031	
COMPUTE NM HYD	W	-	12	.03422	64.02	2.439	1.33643	1.533	2.923	PER IMP= 50.00
ADD HYD	316.00	12& 5	3	.20030	384.09	15.092	1.41271	1.567	2.996	
COMPUTE NM HYD	X	-	13	.00674	17.11	.620	1.72616	1.500	3.967	PER IMP= 80.00
ADD HYD	SG.AT.UNSER	13& 3	4	.20704	398.29	15.712	1.42292	1.567	3.006	
ROUTE	318.00	4	5	.20704	399.01	15.712	1.42292	1.567	3.011	
COMPUTE NM HYD	YD	-	14	.02964	78.24	2.855	1.80576	1.500	4.125	PER IMP= 85.00
*S TOTAL UNSER APX 300' S OF AMOLE CHANNEL AT BRIDGE: FUTURE/FULLY DEVELOPED										
ADD HYD	FUT.TO.AMOLE	14& 5	7	.23668	465.36	18.567	1.47086	1.533	3.072	
*S										
*S										
*S INTERIM		INTERIM				INTERIM				
*S INTERIM: RE-USE HYD 312 W/ ID=19, ROUTE IN DIRT CHAN ACROSS BASIN Y EXIST										
ROUTE MCUNGE	502.00	19	5	.13408	260.04	10.374	1.45076	1.600	3.030	CCODE = .2
COMPUTE NM HYD	YE	-	15	.02964	26.19	.738	.46670	1.533	1.380	PER IMP= .00
*S										
ADD HYD	INT.2.AMOLE	15& 5	8	.16372	281.49	11.112	1.27260	1.600	2.686	
*S										
*S INTERIM W/ V (POINTE WEST)			INTERIM W/ V (POINTE WEST)							
*S RE-USE HYD 312 W/ ID=19, HYD V W/ ID=11, & HYD YE W/ ID=15										
*S ROUTE IN DIRT CHAN ACROSS BASIN Y EXIST										
ADD HYD	602.00	19&11	3	.16608	323.76	12.653	1.42843	1.533	3.046	
ROUTE MCUNGE	604.00	3	5	.16608	320.37	12.643	1.42737	1.600	3.014	CCODE = .2
ADD HYD	INT.V.2AMOLE	15& 3	98	.19572	349.94	13.390	1.28279	1.533	2.794	
*S										
*S										
*S ALLEY		ALLEY				ALLEY				
*S BASINS B, G, & SITE-I TO ALLEY. BASIN A NOT CONTRIBUTE INTERIM/FUTURE										
*S FUTURE/INTERIM ALLEY FLOWS FOR INFO ONLY; HOLD TO EXISTING CONDITIONS										
COMPUTE NM HYD	B	-	1	.01520	38.30	1.376	1.69764	1.500	3.937	PER IMP= 76.00
COMPUTE NM HYD	G	-	2	.01501	36.62	1.301	1.62555	1.500	3.812	PER IMP= 70.00
ADD HYD	TO.TOP.ALLEY	1& 2	3	.03021	74.92	2.677	1.66180	1.500	3.875	
COMPUTE NM HYD	SITE.I	-	1	.00151	3.50	.123	1.53130	1.500	3.624	PER IMP= 65.00
ADD HYD	BOT.ALLEY	1& 3	4	.03172	78.42	2.801	1.65558	1.500	3.863	
FINISH										

JULY 23'97 271.23 Δ = 35.53

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =11/05/1997
INPUT FILE = CSGIF10B.DAT USER NO.= PERSEENG.194

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

PAGE = 1

10 yr 11-5-97
REVISED 9's LAND TRTMTS @ NN, NS

*S FILE CSGIF10A.DAT: Canto / Sunset Gardens, Interim & Future conditions,
*S 10-yr 6-hr storm, version A
*S
*S FOR INTERIM CONDITIONS, THE SUNSET GARDENS STORM DRAIN STOPS AT 82nd ST
*S AND FLOW IS ROUTED IN AN EARTH CHANNEL THROUGH AN UNDEVELOPED BASIN Y
*S TO THE HEAD OF THE AMOLE CHANNEL. SEE RECALLED HYD 314 AND HYD ____
*S FOR FUTURE, THE SUNSET GARDENS STORM DRAIN CONTINUES TO UNSER THEN
*S NORTH TO THE HEAD OF THE AMOLE CHANNEL. A FULLY DEVELOPED BASIN Y
*S CONTRIBUTES TO THIS FLOW, AS DO BASINS V (POINTE WEST), W, & X.
*S
*S ALL BASINS --EXCEPT BASIN Y AS NOTED ABOVE-- ARE IN FUTURE FULLY-DEVELOPED
*S CONDITONS BASED ON CURRENT ZONING & DEVELOPMENT, CURRENT DEVELOPMENT PLANS,
*S AND ON ENGINEERING JUDGMENT.
*S

RAINFALL TYPE= 1									RAIN6=	1.480
COMPUTE NM HYD	I	-	1	.00952	9.84	.321	.63243	1.500	1.615 PER IMP=	38.00
COMPUTE NM HYD	H	-	2	.01501	21.94	.766	.95742	1.500	2.284 PER IMP=	70.00
*S E PLUS H PLUS I AT SUNSET GARDENS & 90TH FOLLOWS										
ADD HYD	208.00	1& 2	3	.02453	31.78	1.088	.83127	1.500	2.024	
*S DIVIDE SO 1ST 8.6 CFS (ID=6) S ON 90TH (ON HOLD): ID=4 E ON SUNSET GARDENS										
DIVIDE HYD	90.S.PAST.SG		3	6	.01508	8.60	.669	.83127	1.367	.891
	SG.E.OF.90	AND	4		.00945	23.18	.419	.83127	1.500	3.835
*S ROUTE MAIN FLOW EAST DOWN SG FROM 90TH, FOLLOW IT TO 86TH ST										
ROUTE MCUNGE	209.00		4	5	.00945	22.36	.419	.83156	1.567	3.698 CCODE = .2
COMPUTE NM HYD	J	-	1		.00228	3.71	.133	1.09340	1.500	2.541 PER IMP= 85.00
① ADD HYD SG ABOVE CANTO	210.00	1& 5	3		.01173	25.41	.552	.88241	1.567	3.386
*S CALC CONTRIBUTING PART OF CANTO SITE; THEN ADD TO HYD 210										
COMPUTE NM HYD	SITE.II	-	1		.00839	11.35	.398	.88845	1.500	2.113 PER IMP= 65.00
*S PARTIAL WATERBLOCK ==> FLOW > 11.6cfs TO 86TH (ID=7, HOLD FOR LATER)										
DIVIDE HYD	S2.TO.S3		1	2	.00839	11.35	.398	.88841	1.500	2.113
	S2.TO.86TH	AND	7		.00000	.00	.000	.00000	-.033	.000
COMPUTE NM HYD	SITE.III	-	1		.02360	31.91	1.118	.88845	1.500	2.112 PER IMP= 65.00
*S TOTAL FLOW LEAVING CANTO NORTH OF SUNSET GARDENS										
ADD HYD	SITE.OUT	1& 2	16		.03199	43.26	1.516	.88843	1.500	2.113
*S TOTAL FLOW SUNSET GARDENS WEST OF 86TH										
ADD HYD	SG.W.OF.86	3&16	5		.04372	66.30	2.068	.88681	1.533	2.370
COMPUTE NM HYD	C	-	1		.00127	2.15	.078	1.14463	1.500	2.651 PER IMP= 90.00
ADD HYD	218.00	1& 7	3		.00127	2.15	.078	1.14442	1.500	2.651
*S COMBINED FLOW TO 86TH & SUNSET GARDENS FROM NORTH & WEST; HOLD FOR LATER										
ADD HYD	86&SG.N&W	3& 5	7		.04499	68.35	2.145	.89409	1.533	2.374
*S										
COMPUTE NM HYD	NN	-	1		.01830	19.79	.655	.67082	1.500	1.690 PER IMP= 42.00
*S ADD IN HYD 90.S.PAST.SG, ('HELD' SPILL SOUTH OF SUNSET GDNS INTERSECTION)										
ADD HYD	INTO.JYDN	1& 6	3		.03338	28.39	1.323	.74331	1.500	1.329
*S ROUTE NORTH PART OF OFFSITE THROUGH NORTH STREET IN JYD										
ROUTE MCUNGE	300.00		3	5	.03338	27.42	1.315	.73832	1.600	1.284 CCODE = .1
COMPUTE NM HYD	NS	-	1		.01719	20.10	.681	.74294	1.500	1.827 PER IMP= 49.80
*S ROUTE SOUTH PART OF OFFSITE THROUGH SOUTH STREET IN JYD										
ROUTE MCUNGE	302.00		1	2	.01719	19.12	.675	.73590	1.600	1.738 CCODE = .1

① APX DRK UP 10-YR * ANY SPILLOVER FROM JYD

INFILE = CSG IF10B.DAT

11-5-97 10-YR

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	304.00	2& 5	3	.05057	46.55	1.989	.73748	1.600	1.438		
COMPUTE NM HYD	JYD	-	17	.02353	31.81	1.115	.88845	1.500	2.112	PER IMP=	65.00
*S TOTAL FLOW LEAVING JYD (CANTO III), INCLUDING 86TH ST ROW EAST OF JYD											
ADD HYD	JYD.E.AT.86	3&17	4	.07410	69.68	3.104	.78541	1.567	1.469		
*S ROUTE TO 86TH & SG INTERSECTION, ASSUME 48" PIPE W/ 1% FRICTION SLOPE											
ROUTE MCUNGE	86.S.OF.SG	4	5	.07410	69.40	3.104	.78533	1.600	1.463	CCODE =	.2
*S *AS IF* COMBINED FLOWS AT 86TH & SUNSET GARDENS: RETRIEVE 'ON-HOLD' ID=7											
ADD HYD	TOT.SG&86	5& 7	6	.11909	135.38	5.249	.82641	1.533	1.776		
*S											
*S FUTURE/FULL DEVELOPMENT			FUTURE/FULL DEVELOPMENT								
*S ROUTE 86TH TO 82ND IN SUNSET GARDENS: CONC PIPE; Sf=.01 APX											
ROUTE	308.00	6	5	.11909	134.17	5.249	.82641	1.567	1.760		
COMPUTE NM HYD	T	-	1	.00467	7.59	.272	1.09340	1.500	2.538	PER IMP=	85.00
ADD HYD	310.00	1& 5	3	.12376	140.42	5.521	.83648	1.567	1.773		
COMPUTE NM HYD	U	-	1	.01032	14.66	.517	.93969	1.500	2.219	PER IMP=	70.00
ADD HYD	312.00	1& 3	19	.13408	152.60	6.038	.84442	1.567	1.778		
COMPUTE NM HYD	V	-	11	.03200	36.76	1.254	.73474	1.500	1.795	PER IMP=	50.00
ADD HYD	SG.AT.82ND	11&19	3	.16608	187.38	7.292	.82329	1.533	1.763		
ROUTE	314.00	3	5	.16608	186.17	7.292	.82329	1.567	1.752		
COMPUTE NM HYD	W	-	12	.03422	35.41	1.341	.73474	1.533	1.617	PER IMP=	50.00
ADD HYD	316.00	12& 5	3	.20030	220.23	8.633	.80816	1.567	1.718		
COMPUTE NM HYD	X	-	13	.00674	10.49	.375	1.04216	1.500	2.431	PER IMP=	80.00
ADD HYD	SG.AT.UNSER	13& 3	4	.20704	228.90	9.008	.81577	1.567	1.727		
ROUTE	318.00	4	5	.20704	230.04	9.008	.81577	1.567	1.736		
COMPUTE NM HYD	YD	-	14	.02964	48.72	1.742	1.10226	1.500	2.569	PER IMP=	85.00
*S TOTAL UNSER APX 300' S OF AMOLE CHANNEL AT BRIDGE: FUTURE/FULLY DEVELOPED											
ADD HYD	FUT.TO.AMOLE	14& 5	7	.23668	270.23	10.750	.85165	1.567	1.784		
*S											
*S											
*S INTERIM			INTERIM						INTERIM		
*S INTERIM: RE-USE HYD 312 W/ ID=19, ROUTE IN DIRT CHAN ACROSS BASIN Y EXIST											
ROUTE MCUNGE	502.00	19	5	.13408	150.48	6.033	.84373	1.600	1.754	CCODE =	.2
COMPUTE NM HYD	YE	-	15	.02964	5.10	.142	.08996	1.533	.269	PER IMP=	.00
*S											
ADD HYD	INT.2.AMOLE	15& 5	8	.16372	154.77	6.176	.70726	1.600	1.477		
*S											
*S INTERIM W/ V (POINTE WEST)			INTERIM W/ V (POINTE WEST)								
*S RE-USE HYD 312 W/ ID=19, HYD V W/ ID=11, & HYD YE W/ ID=15											
*S ROUTE IN DIRT CHAN ACROSS BASIN Y EXIST											
ADD HYD	602.00	19&11	3	.16608	187.38	7.292	.82329	1.533	1.763		
ROUTE MCUNGE	604.00	3	5	.16608	183.87	7.282	.82214	1.600	1.730	CCODE =	.2
ADD HYD	INT.V.2AMOLE	15& 3	98	.19572	192.48	7.435	.71223	1.533	1.537		
*S											
*S											
*S ALLEY			ALLEY						ALLEY		
*S BASINS B, G, & SITE-I TO ALLEY. BASIN A NOT CONTRIBUTE INTERIM/FUTURE											
*S FUTURE/INTERIM ALLEY FLOWS FOR INFO ONLY; HOLD TO EXISTING CONDITIONS											
COMPUTE NM HYD	B	-	1	.01520	23.33	.823	1.01536	1.500	2.398	PER IMP=	76.00
COMPUTE NM HYD	G	-	2	.01501	21.94	.766	.95742	1.500	2.284	PER IMP=	70.00
ADD HYD	TO.TOP.ALLEY	1& 2	3	.03021	45.27	1.590	.98656	1.500	2.341		
COMPUTE NM HYD	SITE.I	-	1	.00151	2.05	.072	.88845	1.500	2.120	PER IMP=	65.00
ADD HYD	BOT.ALLEY	1& 3	4	.03172	47.32	1.661	.98188	1.500	2.331		
FINISH											

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     AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
          RUN DATE (MON/DAY/YR) = 11/05/1997
          START TIME (HR:MIN:SEC) = 12:36:46     USER NO.= PERSEENG.194
          INPUT FILE = CSGIF00B.DAT

* file (tg386) csgif00a.dat   10-15-96
*                  FINISH CODES AT START = 027 038 107 050 083
*                  0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
*                  CONTROL CODES AT END = 0 0 0 0 0
*                  0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
* CONTROL CODES ABOVE FOR HP DESKJET 540 INKJET PRINTER, START IN COL 21
*
*C PRINT CODES: 0=ALL; 1=TOTALS ONLY; 2=EVERY 2ND + TOTALS; 3,5,10,20 SIMILAR
*C RATING CURVE ID NEGATIVE => COMPUTE BUT NOT PRINT RATING CURVE
*C RATING CURVE n NEGATIVE => FLOODPLAIN SLOPE, n POSITIVE => CHANNEL SLOPE
*S FILE CSGIF00A.DAT: Canto / Sunset Gardens, Interim & Future conditions,
*S (1)00-yr 6-hr storm, version A
*S
*S FOR INTERIM CONDITIONS, THE SUNSET GARDENS STORM DRAIN STOPS AT 82nd ST
*S AND FLOW IS ROUTED IN AN EARTH CHANNEL THROUGH AN UNDEVELOPED BASIN Y
*S TO THE HEAD OF THE AMOLE CHANNEL. SEE RECALLED HYD 314 AND HYD ____
*C
*C FOR INTERIM, FLOW AT 82nd & SUNSET GARDENS --PRIOR TO THE ADDITION OF FLOW
*C BASIN V (POINTE WEST SUBDV)-- IS SAVED FOR LATER RECALL AND ROUTING.
*C THE HYDS DIRECTLY FOLLOWING THE UNSAVED HYD 314 DON'T APPLY TO INTERIM
*C
*S FOR FUTURE, THE SUNSET GARDENS STORM DRAIN CONTINUES TO UNSER THEH
*S NORTH TO THE HEAD OF THE AMOLE CHANNEL. A FULLY DEVELOPED BASIN Y
*S CONTRIBUTES TO THIS FLOW, AS DO BASINS V (POINTE WEST), W, & X.
*S
*S ALL BASINS --EXCEPT BASIN Y AS NOTED ABOVE-- ARE IN FUTURE FULLY-DEVELOPED
*S CONDITONS BASED ON CURRENT ZONING & DEVELOPMENT, CURRENT DEVELOPMENT PLANS,
*S AND ON ENGINEERING JUDGMENT.
*S
*C BASIN & CHANNEL ROUTING PARAMETERS REFLECT THE JUDGMENT OF THE ENGINEER,
*C AND MAY DIFFER FROM OTHER STUDIES IN THE AREA.
*C
*C REVISION NOTES: BASED ON FILES VCF4100 & SGU100.DAT BY TUCKER GREEN P.E.
*C                 REVISED 10-15-97 TO REFLECT NEW BASIN BOUNDARIES BASED ON
*C                 DISCUSSION WITH THE CITY, THE ENGINEERS FOR SAD 222, AND
*C                 DEVELOPERS OF NEARBY PROPERTIES, ESPECIALLY BASINS V & W.
*C                 IN PARTICULAR: (1) BASIN M (S OF SUNSET GARDENS, BETWEEN
*C                 94TH & 98TH) IS REMOVED FROM INTERIM & FUTURE CONDTION CASES
*C                 BY PROPOSED CONSTRUCTION OF 94TH ST; AND (2) THE HIGH POINT
*C                 IN 86 ST IS MOVED NORTH TO THE SOUTH PROPERTY LINE OF THE
*C                 CANTO III SITE (BASIN JYD).
*C
**********************************************************************************
* RAINFALLS PER ALBUQUERQUE NM DPM - COMMENT OUT THOSE THAT DON'T APPLY
* TYPE 1 IS 6-HR STORM PER NOAA ATLAS 2 W PEAK INTENSITY @ 1.4 HRS (EQ C1-C5)
*    FOR 6-HR USE DT = 0.033333 HR = 2 MINUTES
* TYPE 2 IS 24-HR STORM PER NOAA ATLAS 2 W PEAK INTENSITY @ 1.4 HRS (EQ C1-C6)
*    FOR 24-HR USE DT = 0.0500 HR = 5 MINUTES
* RAIN QUARTER = 0.0 EXCEPT FOR TYPE 3 (6-HR PMP: SEE AHYMO MANUAL)
*
**********************************************************************************
*                        RAINFALL AMOUNTS, INCHES
* RAINFALL              HUNDRED  TYPE= 2  RAIN QUARTER= 0.0   RAIN ONE= 2.23
*                       RAIN SIX= 2.95   RAIN DAY= 3.76   DT= .033333 HR
RAINFALL              HUNDRED  TYPE= 1    0.0   1.90   2.22   2.67   0.033333

               COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
               DT =    .033333 HOURS       END TIME =     5.999940 HOURS
                  .0000   .0015   .0030   .0046   .0062   .0079   .0096
                  .0113   .0130   .0149   .0167   .0186   .0206   .0226
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 .0246   .0268   .0290   .0312   .0336   .0360   .0385
 .0411   .0438   .0466   .0496   .0526   .0558   .0592
 .0627   .0665   .0704   .0757   .0813   .0873   .1002
 .1291   .1735   .2373   .3244   .4388   .5847   .7664
 .9881  1.1931  1.2789  1.3514  1.4159  1.4745  1.5285
1.5786  1.6255  1.6694  1.7107  1.7497  1.7865  1.8214
1.8544  1.8857  1.9154  1.9436  1.9704  1.9765  1.9822
1.9876  1.9928  1.9977  2.0025  2.0070  2.0114  2.0156
2.0196  2.0235  2.0273  2.0310  2.0346  2.0381  2.0415
2.0448  2.0480  2.0511  2.0542  2.0571  2.0601  2.0629
2.0657  2.0685  2.0712  2.0738  2.0764  2.0789  2.0814
2.0839  2.0863  2.0887  2.0910  2.0933  2.0955  2.0978
2.0999  2.1021  2.1042  2.1063  2.1084  2.1104  2.1124
2.1144  2.1164  2.1183  2.1202  2.1221  2.1240  2.1258
2.1277  2.1295  2.1312  2.1330  2.1347  2.1365  2.1382
2.1399  2.1415  2.1432  2.1448  2.1464  2.1480  2.1496
2.1512  2.1527  2.1543  2.1558  2.1573  2.1588  2.1603
2.1618  2.1633  2.1647  2.1661  2.1676  2.1690  2.1704
2.1718  2.1732  2.1745  2.1759  2.1772  2.1786  2.1799
2.1812  2.1825  2.1838  2.1851  2.1864  2.1876  2.1889
2.1902  2.1914  2.1926  2.1939  2.1951  2.1963  2.1975
2.1987  2.1999  2.2010  2.2022  2.2034  2.2045  2.2057
2.2068  2.2080  2.2091  2.2102  2.2113  2.2124  2.2135
2.2146  2.2157  2.2168  2.2179  2.2189  2.2200

* RAINFALL           TENYEAR  TYPE= 1   0.0   1.23   1.48   1.78   0.033333
*
**********************************************************************************
**********************************************************************************
COMPUTE NM HYD       ID= 1    HYD= I              DA=0.00952  SQ MI
                     PER A= 12     B= 26      C= 24      D= 38
                     TP= -0.13333 HRS   RAIN= -1

   K =   .072665HR    TP =   .133330HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   14.279    CFS   UNIT VOLUME =    .9985       B =   526.28      P60 = 1.9000
   AREA =      .003618 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


   K =   .127510HR    TP =   .133330HR    K/TP RATIO =   .956348     SHAPE CONSTANT, N =  3.695043
   UNIT PEAK =   14.799    CFS   UNIT VOLUME =    .9993       B =   334.30      P60 = 1.9000
   AREA =      .005902 SQ MI    IA =    .47097 INCHES    INF =   1.16871 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID= 1   CODE= 1

                    HYDROGRAPH FROM AREA I

   RUNOFF VOLUME =     1.21467 INCHES     =        .6167 ACRE-FEET
   PEAK DISCHARGE RATE =      18.64 CFS  AT   1.500 HOURS   BASIN AREA =   .0095 SQ. MI.


*
**********************************************************************************
COMPUTE NM HYD       ID= 2    HYD= H              DA=0.01501  SQ MI
                     PER A= 0      B= 20      C= 10      D= 70
                     TP= -0.13333 HRS   RAIN= -1

   K =   .072665HR    TP =   .133330HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   41.473    CFS   UNIT VOLUME =    .9991       B =   526.28      P60 = 1.9000
   AREA =      .010507 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333
```

```
    K =   .122603HR    TP =   .133330HR    K/TP RATIO =   .919546     SHAPE CONSTANT, N =  3.849372
    UNIT PEAK =   11.652    CFS   UNIT VOLUME =    .9992       B =   345.00      P60 = 1.9000
    AREA =      .004503 SQ MI    IA =    .45000 INCHES    INF =   1.11000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID= 2   CODE= 1

                                        HYDROGRAPH FROM AREA H


    RUNOFF VOLUME =     1.62555 INCHES     =       1.3013 ACRE-FEET
    PEAK DISCHARGE RATE =      36.62 CFS  AT   1.500 HOURS   BASIN AREA =   .0150 SQ. MI.



*
*********************************************************************************
*S E PLUS H PLUS I AT SUNSET GARDENS & 90TH FOLLOWS
ADD HYD             ID OUT= 3   HYD= 208         IDIN I= 1   IDIN II= 2
PRINT HYD           ID= 3   CODE= 1

                                     PARTIAL HYDROGRAPH   208.00


    RUNOFF VOLUME =     1.46607 INCHES     =       1.9180 ACRE-FEET
    PEAK DISCHARGE RATE =      55.25 CFS  AT   1.500 HOURS   BASIN AREA =   .0245 SQ. MI.



*
*********************************************************************************
*S DIVIDE SO 1ST 8.6 CFS (ID=6) S ON 90TH (ON HOLD): ID=4 E ON SUNSET GARDENS
DIVIDE HYD          ID=3  Q=8.6 ID=6 HYD= 90.S.PAST.SG  ID=4 HYD= SG.E.OF.90
PRINT HYD           ID= 4   CODE= 1

                                     HYDROGRAPH FROM AREA SG.E.OF.90


    RUNOFF VOLUME =     1.46607 INCHES     =       1.0956 ACRE-FEET
    PEAK DISCHARGE RATE =      46.65 CFS  AT   1.500 HOURS   BASIN AREA =   .0140 SQ. MI.



PRINT HYD           ID= 6   CODE= 1

                                     HYDROGRAPH FROM AREA 90.S.PAST.SG


    RUNOFF VOLUME =     1.46607 INCHES     =        .8224 ACRE-FEET
    PEAK DISCHARGE RATE =      8.60 CFS  AT   1.333 HOURS   BASIN AREA =   .0105 SQ. MI.



*
*********************************************************************************
*S ROUTE MAIN FLOW EAST DOWN SG FROM 90TH, FOLLOW IT TO 86TH ST
*C APPROX AS 40' F-F STREET, ASSUME APX 2.35% SLOPE
*C ASSUME AS IF BOTH SIDES PAVED, EST n AS .017
COMPUTE RATING CURVE CID= -1   VS NO= 1    NO SEGS FOR MANNING n= 1
                    ELMIN= 0 ELMAX= 4  FT  CHSLP= .0235  FPSLP= .0235  FT/FT
                    n .017  DIST 40
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0      4      .01    0      20     .40    39.99    0
                    40     4
ROUTE MCUNGE        ID= 5   HYD= 209          INFLOW HYD ID= 4   DT= 0.0 HR
                    LENGTH= 1055     NSUBRCH= 0     SLOPE= .0235
```

```
                MATCODE= 0      REGCODE= 0      CCODE= 0
Inflow ID end= 63   Max Number=600

dt = .0333 hr   q0 =    23.33 cfs   ck0 =  5.46 fps
nlen =  4   dlen =  263.75
```

Depth ft	Area sf	Q cfs	Qbar cfs	ck fps	b ft	C	D	c1	c2	vel fps	fr	tt hr
.00	.0	.0	3.3	2.95	10.5	1.34	.02	.99	.15	2.95	1.60	.099
.21	2.2	6.5	24.6	5.46	30.5	2.48	.02	.99	.43	4.45	1.84	.066
.42	8.8	42.7	86.0	10.29	40.0	4.68	.03	.99	.65	6.59	2.03	.044
.63	17.3	129.3	189.2	14.23	40.0	6.47	.05	.99	.73	8.81	2.12	.033
.84	25.7	249.1	323.0	17.56	40.0	7.99	.07	.98	.78	10.81	2.20	.027
1.05	34.1	396.9	483.2	20.51	40.0	9.33	.10	.98	.81	12.62	2.27	.023
1.26	42.5	569.6	667.1	23.18	40.0	10.54	.12	.98	.83	14.28	2.33	.021
1.47	50.9	764.7	872.5	25.62	40.0	11.66	.14	.98	.84	15.82	2.37	.019
1.68	59.3	980.4	1097.7	27.88	40.0	12.69	.16	.98	.86	17.27	2.41	.017
1.89	67.8	1215.1	1341.3	29.99	40.0	13.64	.18	.98	.87	18.64	2.45	.016
2.11	76.2	1467.6	1602.1	31.97	40.0	14.54	.20	.97	.87	19.93	2.48	.015
2.32	84.6	1736.7	1879.1	33.83	40.0	15.39	.22	.97	.88	21.16	2.50	.014
2.53	93.0	2021.5	2171.3	35.59	40.0	16.19	.25	.97	.89	22.33	2.52	.013
2.74	101.4	2321.1	2478.0	37.25	40.0	16.95	.27	.97	.89	23.45	2.54	.012
2.95	109.9	2634.8	2798.3	38.84	40.0	17.67	.29	.97	.89	24.53	2.56	.012
3.16	118.3	2961.8	3131.6	40.34	40.0	18.36	.31	.97	.90	25.57	2.57	.011
3.37	126.7	3301.5	3477.4	41.78	40.0	19.01	.34	.97	.90	26.56	2.59	.011
3.58	135.1	3653.3	3835.0	43.16	40.0	19.63	.36	.97	.90	27.52	2.60	.011
3.79	143.5	4016.7	4204.0	44.47	40.0	20.23	.38	.96	.91	28.45	2.61	.010
4.00	152.0	4391.2	.0	.00	.0	.00	.00	.00	.00	.00	.00	.000

```
     nlen= 4   Outflow ID end=  0
   Route using Ponce procedure:  C1 > 0
PRINT HYD           ID= 5   CODE= 1

                          PARTIAL HYDROGRAPH   209.00

   RUNOFF VOLUME =     1.46262 INCHES     =       1.0931 ACRE-FEET
   PEAK DISCHARGE RATE =      46.50 CFS  AT   1.567 HOURS   BASIN AREA =   .0140 SQ. MI.

*
*******************************************************************************
COMPUTE NM HYD      ID= 1    HYD= J             DA=0.00228 SQ MI
                    PER A= 0      B= 15      C= 0       D= 85
                    TP= -0.13333 HRS   RAIN= -1

     K =   .072665HR    TP =   .133330HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   7.6496    CFS   UNIT VOLUME =    .9978       B =   526.28      P60 = 1.9000
     AREA =      .001938 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


     K =   .130790HR    TP =   .133330HR    K/TP RATIO =   .980950     SHAPE CONSTANT, N =  3.599935
     UNIT PEAK =   .84019    CFS   UNIT VOLUME =    .9837       B =   327.55      P60 = 1.9000
     AREA =      .000342 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID= 1   CODE= 1

                          HYDROGRAPH FROM AREA J

   RUNOFF VOLUME =     1.79112 INCHES     =        .2178 ACRE-FEET
   PEAK DISCHARGE RATE =       5.97 CFS  AT   1.500 HOURS   BASIN AREA =   .0023 SQ. MI.
```

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*
*******************************************************************************
ADD HYD              ID OUT= 3  HYD= 210          IDIN I= 1   IDIN II= 5
PRINT HYD            ID= 3   CODE= 1

                                  PARTIAL HYDROGRAPH   210.00


   RUNOFF VOLUME =     1.50855 INCHES     =       1.3108 ACRE-FEET
   PEAK DISCHARGE RATE =      51.44 CFS  AT   1.567 HOURS   BASIN AREA =   .0163 SQ. MI.


*
*******************************************************************************
*S CALC CONTRIBUTING PART OF CANTO SITE; THEN ADD TO HYD 210
COMPUTE NM HYD       ID= 1   HYD=SITE.II        DA=0.00839 SQ MI
                     PER A= 0      B= 35      C= 0       D= 65
                     TP= -0.13333 HRS   RAIN= -1
     K =   .072665HR    TP =   .133330HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   21.526    CFS   UNIT VOLUME =    .9988       B =   526.28      P60 = 1.9000
     AREA =      .005454 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


     K =   .130790HR    TP =   .133330HR    K/TP RATIO =   .980950     SHAPE CONSTANT, N =  3.599935
     UNIT PEAK =   7.2141    CFS   UNIT VOLUME =    .9985       B =   327.55      P60 = 1.9000
     AREA =      .002937 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID= 1   CODE= 5

                                  HYDROGRAPH FROM AREA SITE.II

 TIME     FLOW        TIME     FLOW        TIME     FLOW        TIME     FLOW        TIME     FLOW
  HRS      CFS         HRS      CFS         HRS      CFS         HRS      CFS         HRS      CFS
 .000      .0        1.500     19.4       3.000      .2       4.500      .1       6.000      .1
 .167      .0        1.667     10.0       3.167      .2       4.667      .1       6.167      .0
 .333      .0        1.833      5.9       3.333      .1       4.833      .1       6.333      .0
 .500      .0        2.000      4.2       3.500      .1       5.000      .1       6.500      .0
 .667      .0        2.167      2.0       3.667      .1       5.167      .1       6.667      .0
 .833      .0        2.333       .9       3.833      .1       5.333      .1       6.833      .0
1.000      .0        2.500       .6       4.000      .1       5.500      .1
1.167      .0        2.667       .4       4.167      .1       5.667      .1
1.333     4.8        2.833       .3       4.333      .1       5.833      .1

     RUNOFF VOLUME =     1.53130 INCHES     =        .6852 ACRE-FEET
     PEAK DISCHARGE RATE =      19.39 CFS  AT   1.500 HOURS   BASIN AREA =   .0084 SQ. MI.


*
*******************************************************************************
*S PARTIAL WATERBLOCK ==> FLOW > 11.6cfs TO 86TH (ID=7, HOLD FOR LATER)
DIVIDE HYD           ID=1  Q=11.6  ID=2 HYD=S2.TO.S3   ID=7 HYD=S2.TO.86TH
PRINT HYD            ID= 2   CODE= 5

                                  HYDROGRAPH FROM AREA S2.TO.S3

 TIME     FLOW        TIME     FLOW        TIME     FLOW        TIME     FLOW        TIME     FLOW
  HRS      CFS         HRS      CFS         HRS      CFS         HRS      CFS         HRS      CFS
 .000      .0        1.500     11.6       3.000      .2       4.500      .1       6.000      .1
 .167      .0        1.667     10.0       3.167      .2       4.667      .1       6.167      .0
 .333      .0        1.833      5.9       3.333      .1       4.833      .1       6.333      .0
```

.500	.0	2.000	4.2	3.500	.1	5.000	.1	6.500	.0
.667	.0	2.167	2.0	3.667	.1	5.167	.1	6.667	.0
.833	.0	2.333	.9	3.833	.1	5.333	.1	6.833	.0
1.000	.0	2.500	.6	4.000	.1	5.500	.1		
1.167	.0	2.667	.4	4.167	.1	5.667	.1		
1.333	4.8	2.833	.3	4.333	.1	5.833	.1		

RUNOFF VOLUME = 1.53126 INCHES = .6024 ACRE-FEET
PEAK DISCHARGE RATE = 11.60 CFS AT 1.433 HOURS BASIN AREA = .0074 SQ. MI.

PRINT HYD ID= 7 CODE= 5

HYDROGRAPH FROM AREA S2.TO.86TH

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	.333	.0	.667	.0	1.000	.0	1.333	.0
.167	.0	.500	.0	.833	.0	1.167	.0	1.500	7.8

RUNOFF VOLUME = 1.53126 INCHES = .0828 ACRE-FEET
PEAK DISCHARGE RATE = 7.79 CFS AT 1.500 HOURS BASIN AREA = .0010 SQ. MI.

*

****

COMPUTE NM HYD ID= 1 HYD=SITE.III DA=0.02360 SQ MI
PER A= 0 B= 35 C= 0 D= 65
TP= -0.13333 HRS RAIN= -1

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 60.549 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 1.9000
AREA = .015340 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .130790HR TP = .133330HR K/TP RATIO = .980950 SHAPE CONSTANT, N = 3.599935
UNIT PEAK = 20.292 CFS UNIT VOLUME = .9997 B = 327.55 P60 = 1.9000
AREA = .008260 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID= 1 CODE= 2

HYDROGRAPH FROM AREA SITE.III

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.467	49.5	2.933	.6	4.400	.2	5.867	.3
.067	.0	1.533	52.4	3.000	.6	4.467	.2	5.933	.3
.133	.0	1.600	38.6	3.067	.5	4.533	.2	6.000	.3
.200	.0	1.667	28.1	3.133	.5	4.600	.2	6.067	.3
.267	.0	1.733	22.1	3.200	.4	4.667	.2	6.133	.2
.333	.0	1.800	18.2	3.267	.4	4.733	.2	6.200	.1
.400	.0	1.867	15.5	3.333	.4	4.800	.2	6.267	.0
.467	.0	1.933	13.4	3.400	.3	4.867	.2	6.333	.0
.533	.0	2.000	11.8	3.467	.3	4.933	.2	6.400	.0
.600	.0	2.067	10.1	3.533	.3	5.000	.2	6.467	.0
.667	.0	2.133	6.9	3.600	.3	5.067	.2	6.533	.0
.733	.0	2.200	4.5	3.667	.3	5.133	.2	6.600	.0
.800	.0	2.267	3.3	3.733	.3	5.200	.3	6.667	.0
.867	.0	2.333	2.7	3.800	.3	5.267	.3	6.733	.0
.933	.0	2.400	2.2	3.867	.3	5.333	.3	6.800	.0
1.000	.0	2.467	1.8	3.933	.2	5.400	.3	6.867	.0
1.067	.0	2.533	1.5	4.000	.2	5.467	.3	6.933	.0

1.133	.0	2.600	1.3	4.067	.2	5.533	.3	7.000	.0
1.200	.6	2.667	1.1	4.133	.2	5.600	.3	7.067	.0
1.267	5.0	2.733	.9	4.200	.2	5.667	.3		
1.333	13.6	2.800	.8	4.267	.2	5.733	.3		
1.400	28.8	2.867	.7	4.333	.2	5.800	.3		

RUNOFF VOLUME = 1.53130 INCHES = 1.9274 ACRE-FEET
PEAK DISCHARGE RATE = 54.51 CFS AT 1.500 HOURS BASIN AREA = .0236 SQ. MI.

*
****
*S TOTAL FLOW LEAVING CANTO NORTH OF SUNSET GARDENS
ADD HYD ID OUT= 16 HYD=SITE.OUT IDIN I= 1 IDIN II= 2
PRINT HYD ID= 16 CODE= 1

HYDROGRAPH FROM AREA SITE.OUT

RUNOFF VOLUME = 1.53128 INCHES = 2.5298 ACRE-FEET
PEAK DISCHARGE RATE = 66.11 CFS AT 1.500 HOURS BASIN AREA = .0310 SQ. MI.

*
****
*S TOTAL FLOW SUNSET GARDENS WEST OF 86TH
ADD HYD ID OUT= 5 HYD= SG.W.OF.86 IDIN I= 3 IDIN II= 16
PRINT HYD ID= 5 CODE= 1

HYDROGRAPH FROM AREA SG.W.OF.86

RUNOFF VOLUME = 1.52344 INCHES = 3.8406 ACRE-FEET
PEAK DISCHARGE RATE = 115.19 CFS AT 1.533 HOURS BASIN AREA = .0473 SQ. MI.

*
****
COMPUTE NM HYD ID= 1 HYD= C DA=0.00127 SQ MI
PER A= 0 B= 10 C= 0 D= 90
TP= -0.13333 HRS RAIN= -1

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 4.5116 CFS UNIT VOLUME = .9969 B = 526.28 P60 = 1.9000
AREA = .001143 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333.

K = .130790HR TP = .133330HR K/TP RATIO = .980950 SHAPE CONSTANT, N = 3.599935
UNIT PEAK = .31200 CFS UNIT VOLUME = .9579 B = 327.55 P60 = 1.9000
AREA = .000127 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID= 1 CODE= 1

HYDROGRAPH FROM AREA C

RUNOFF VOLUME = 1.85607 INCHES = .1257 ACRE-FEET
PEAK DISCHARGE RATE = 3.43 CFS AT 1.500 HOURS BASIN AREA = .0013 SQ. MI.

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*
**********************************************************************************
*C ADD SPILL FROM S2 TO ROAD FLOW IN 86TH N OF SUNSET GARDENS
ADD HYD             ID OUT= 3  HYD=   218          IDIN I= 1   IDIN II= 7
PRINT HYD           ID= 3   CODE= 1

                                PARTIAL HYDROGRAPH   218.00


    RUNOFF VOLUME =     1.71179 INCHES     =        .2085 ACRE-FEET
    PEAK DISCHARGE RATE =     11.22 CFS  AT   1.500 HOURS   BASIN AREA =   .0023 SQ. MI.


*
**********************************************************************************
*S COMBINED FLOW TO 86TH & SUNSET GARDENS FROM NORTH & WEST; HOLD FOR LATER
ADD HYD             ID OUT= 7  HYD= 86&SG.N&W       IDIN I= 3   IDIN II= 5
PRINT HYD           ID= 7   CODE= 1

                                HYDROGRAPH FROM AREA 86&SG.N&W

    RUNOFF VOLUME =     1.53212 INCHES     =        4.0491 ACRE-FEET
    PEAK DISCHARGE RATE =     125.49 CFS  AT   1.533 HOURS   BASIN AREA =   .0496 SQ. MI.


**********************************************************************************
**********************************************************************************
*S
*C BASIN NN (N North): CURRENTLY PARTLY DEVELOPED
COMPUTE NM HYD      ID= 1    HYD= NN              DA=0.01830  SQ MI
                    PER A= 28.0   B= 20.2    C= 15.4    D= 36.4
                    TP= -0.13333 HRS   RAIN= -1

    K =   .072665HR    TP =   .133330HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   26.293    CFS   UNIT VOLUME =    .9989       B =   526.28      P60 = 1.9000
    AREA =      .006661 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .139008HR    TP =   .133330HR    K/TP RATIO =  1.042583     SHAPE CONSTANT, N =  3.386093
    UNIT PEAK =   27.229    CFS   UNIT VOLUME =    .9996       B =   311.92      P60 = 1.9000
    AREA =      .011639 SQ MI    IA =    .52972 INCHES    INF =   1.33321 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


PRINT HYD           ID= 1   CODE= 0

                                HYDROGRAPH FROM AREA NN

     TIME    FLOW        TIME    FLOW        TIME    FLOW        TIME    FLOW        TIME    FLOW
     HRS     CFS         HRS     CFS         HRS     CFS         HRS     CFS         HRS     CFS
     .000      .0        1.400    15.4       2.800      .5       4.200      .1       5.600      .1
     .033      .0        1.433    22.7       2.833      .5       4.233      .1       5.633      .1
     .067      .0        1.467    29.5       2.867      .4       4.267      .1       5.667      .1
     .100      .0        1.500    33.0       2.900      .4       4.300      .1       5.700      .1
     .133      .0        1.533    32.2       2.933      .4       4.333      .1       5.733      .1
     .167      .0        1.567    28.6       2.967      .3       4.367      .1       5.767      .1
     .200      .0        1.600    24.4       3.000      .3       4.400      .1       5.800      .1
     .233      .0        1.633    20.7       3.033      .3       4.433      .1       5.833      .1
     .267      .0        1.667    17.6       3.067      .3       4.467      .1       5.867      .1
     .300      .0        1.700    15.1       3.100      .3       4.500      .1       5.900      .1
     .333      .0        1.733    13.1       3.133      .3       4.533      .1       5.933      .1
     .367      .0        1.767    11.5       3.167      .2       4.567      .1       5.967      .1
     .400      .0        1.800    10.2       3.200      .2       4.600      .1       6.000      .1
```

.433	.0	1.833	9.0	3.233	.2	4.633	.1	6.033	.1
.467	.0	1.867	8.2	3.267	.2	4.667	.1	6.067	.1
.500	.0	1.900	7.5	3.300	.2	4.700	.1	6.100	.1
.533	.0	1.933	6.9	3.333	.2	4.733	.1	6.133	.1
.567	.0	1.967	6.4	3.367	.2	4.767	.1	6.167	.1
.600	.0	2.000	6.0	3.400	.2	4.800	.1	6.200	.0
.633	.0	2.033	5.6	3.433	.2	4.833	.1	6.233	.0
.667	.0	2.067	5.1	3.467	.2	4.867	.1	6.267	.0
.700	.0	2.100	4.4	3.500	.2	4.900	.1	6.300	.0
.733	.0	2.133	3.6	3.533	.2	4.933	.1	6.333	.0
.767	.0	2.167	3.0	3.567	.1	4.967	.1	6.367	.0
.800	.0	2.200	2.5	3.600	.1	5.000	.1	6.400	.0
.833	.0	2.233	2.1	3.633	.1	5.033	.1	6.433	.0
.867	.0	2.267	1.9	3.667	.1	5.067	.1	6.467	.0
.900	.0	2.300	1.7	3.700	.1	5.100	.1	6.500	.0
.933	.0	2.333	1.5	3.733	.1	5.133	.1	6.533	.0
.967	.0	2.367	1.4	3.767	.1	5.167	.1	6.567	.0
1.000	.0	2.400	1.3	3.800	.1	5.200	.1	6.600	.0
1.033	.0	2.433	1.2	3.833	.1	5.233	.1	6.633	.0
1.067	.0	2.467	1.1	3.867	.1	5.267	.1	6.667	.0
1.100	.0	2.500	1.0	3.900	.1	5.300	.1	6.700	.0
1.133	.0	2.533	.9	3.933	.1	5.333	.1	6.733	.0
1.167	.0	2.567	.8	3.967	.1	5.367	.1	6.767	.0
1.200	.3	2.600	.8	4.000	.1	5.400	.1	6.800	.0
1.233	1.0	2.633	.7	4.033	.1	5.433	.1	6.833	.0
1.267	2.2	2.667	.7	4.067	.1	5.467	.1	6.867	.0
1.300	3.8	2.700	.6	4.100	.1	5.500	.1	6.900	.0
1.333	6.0	2.733	.6	4.133	.1	5.533	.1		
1.367	9.7	2.767	.5	4.167	.1	5.567	.1		

RUNOFF VOLUME = 1.12653 INCHES = 1.0995 ACRE-FEET
PEAK DISCHARGE RATE = 32.97 CFS AT 1.500 HOURS BASIN AREA = .0183 SQ. MI.

*
****
*S ADD IN HYD 90.S.PAST.SG, ('HELD' SPILL SOUTH OF SUNSET GDNS INTERSECTION)
ADD HYD ID OUT= 3 HYD= INTO.JYDN IDIN I= 1 IDIN II= 6
PRINT HYD ID= 3 CODE= 1

HYDROGRAPH FROM AREA INTO.JYDN

RUNOFF VOLUME = 1.25044 INCHES = 1.9218 ACRE-FEET
PEAK DISCHARGE RATE = 41.57 CFS AT 1.500 HOURS BASIN AREA = .0288 SQ. MI.

*
****
*S ROUTE NORTH PART OF OFFSITE THROUGH NORTH STREET IN JYD
*C APPROX AS 28' F-F STREET, ASSUME APX 1.8% SLOPE
*C ASSUME PAVED ROAD, EST n AS .017
COMPUTE RATING CURVE CID= -1 VS NO= 1 NO SEGS FOR MANNING n= 1
ELMIN= 0 ELMAX= 4 FT CHSLP= .018 FPSLP= .018 FT/FT
n .017 DIST 28
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
0 4 .01 0 14 .28 27.99 0
28 4
ROUTE MCUNGE ID= 5 HYD= 300 INFLOW HYD ID= 3 DT= 0.0 HR
LENGTH= 1338 NSUBRCH= 0 SLOPE= .018
MATCODE= 0 REGCODE= 0 CCODE= 0
Inflow ID end=211 Max Number=600

dt = .0333 hr q0 = 20.78 cfs ck0 = 5.86 fps

nlen = 4 dlen = 334.50

Depth ft	Area sf	Q cfs	Qbar cfs	ck fps	b ft	C	D	c1	c2	vel fps	fr	tt hr
.00	.0	.0	2.9	2.58	10.5	.93	.02	.98	-.03	2.58	1.40	.144
.21	2.2	5.7	22.3	5.86	24.5	2.10	.03	.98	.36	4.42	1.72	.084
.42	7.9	38.8	68.2	9.97	28.0	3.58	.04	.98	.57	6.31	1.79	.059
.63	13.8	97.6	136.3	13.15	28.0	4.72	.06	.98	.65	8.16	1.86	.046
.84	19.6	175.0	221.8	15.86	28.0	5.69	.08	.98	.70	9.82	1.93	.038
1.05	25.5	268.5	322.2	18.24	28.0	6.54	.10	.97	.74	11.31	1.98	.033
1.26	31.4	376.0	436.0	20.38	28.0	7.31	.13	.97	.76	12.68	2.02	.029
1.47	37.3	496.1	561.9	22.33	28.0	8.01	.15	.97	.78	13.95	2.05	.027
1.68	43.2	627.7	698.7	24.12	28.0	8.65	.17	.97	.80	15.14	2.08	.025
1.89	49.1	769.8	845.8	25.78	28.0	9.25	.19	.96	.81	16.25	2.10	.023
2.11	55.0	921.7	1002.2	27.32	28.0	9.80	.22	.96	.82	17.30	2.12	.021
2.32	60.9	1082.7	1167.4	28.76	28.0	10.32	.24	.96	.83	18.29	2.13	.020
2.53	66.8	1252.2	1340.9	30.10	28.0	10.80	.26	.96	.83	19.23	2.15	.019
2.74	72.7	1429.6	1522.0	31.37	28.0	11.25	.29	.95	.84	20.13	2.16	.018
2.95	78.6	1614.4	1710.4	32.56	28.0	11.68	.31	.95	.85	20.98	2.17	.018
3.16	84.5	1806.3	1905.6	33.69	28.0	12.09	.34	.95	.85	21.80	2.17	.017
3.37	90.4	2004.9	2107.3	34.75	28.0	12.47	.36	.95	.86	22.58	2.18	.016
3.58	96.3	2209.7	2315.1	35.76	28.0	12.83	.38	.95	.86	23.34	2.18	.016
3.79	102.1	2420.5	2528.8	36.73	28.0	13.17	.41	.94	.86	24.06	2.19	.015
4.00	108.0	2637.0	.0	.00	.0	.00	.00	.00	.00	.00	.00	.000

nlen= 4 Outflow ID end=213
Route using Ponce procedure: C1 > 0
nlen= 4 Outflow ID end=215
Route using Maidment procedure: C0, C1 & C2 > 0
PRINT HYD ID= 5 CODE= 1

HYDROGRAPH FROM AREA 300.00

RUNOFF VOLUME = 1.24326 INCHES = 1.9108 ACRE-FEET
PEAK DISCHARGE RATE = 39.88 CFS AT 1.600 HOURS BASIN AREA = .0288 SQ. MI.

*
****
*C BASIN NS (N South): CURRENTLY PARTLY DEVELOPED
COMPUTE NM HYD ID= 1 HYD= NS DA=0.01719 SQ MI
PER A= 16.0 B= 28.6 C= 8.8 D= 46.6
TP= -0.13333 HRS RAIN= -1

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 31.619 CFS UNIT VOLUME = .9990 B = 526.28 P60 = 1.9000
AREA = .008011 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .136383HR TP = .133330HR K/TP RATIO = 1.022896 SHAPE CONSTANT, N = 3.450895
UNIT PEAK = 21.806 CFS UNIT VOLUME = .9996 B = 316.73 P60 = 1.9000
AREA = .009179 SQ MI IA = .52022 INCHES INF = 1.30663 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID= 1 CODE= 1

HYDROGRAPH FROM AREA NS

RUNOFF VOLUME = 1.27301 INCHES = 1.1671 ACRE-FEET
PEAK DISCHARGE RATE = 34.17 CFS AT 1.500 HOURS BASIN AREA = .0172 SQ. MI.

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*
**********************************************************************************
*S ROUTE SOUTH PART OF OFFSITE THROUGH SOUTH STREET IN JYD
*C APPROX AS 28' F-F STREET, ASSUME APX 2.0% SLOPE (STEEPER THAN NORTH)
*C ASSUME PAVED ROAD, EST n AS .017
COMPUTE RATING CURVE CID= -1   VS NO= 1    NO SEGS FOR MANNING n= 1
                     ELMIN= 0 ELMAX= 4  FT   CHSLP= .020   FPSLP= .020  FT/FT
                     n .017  DIST 28
                     DIST  ELEV     DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0       4       .01    0      14    .28    27.99    0
                     28      4
ROUTE MCUNGE         ID= 2   HYD= 302          INFLOW HYD ID= 1   DT= 0.0 HR
                     LENGTH= 1221     NSUBRCH= 0     SLOPE= .020
                     MATCODE= 0       REGCODE= 0     CCODE= 0
      Inflow ID end=209   Max Number=600

      dt = .0333 hr   q0 =    17.08 cfs   ck0 =  6.17 fps
      nlen =  4   dlen =  305.25

      Depth  Area      Q      Qbar   ck     h      C    D     c1    c2   vel   fr    tt
        ft    sf      cfs     cfs    fps    ft                              fps         hr
        .00     .0      .0     3.0  2.72  10.5 1.07  .02   .98   .04  2.72 1.48  .125
        .21    2.2     6.0    23.5  6.17  24.5 2.43  .03   .99   .42  4.65 1.81  .073
        .42    7.9    40.9    71.9 10.51  28.0 4.13  .04   .98   .61  6.65 1.88  .051
        .63   13.8   102.8   143.7 13.86  28.0 5.45  .06   .98   .69  8.60 1.96  .039
        .84   19.6   184.5   233.8 16.72  28.0 6.57  .08   .98   .74 10.35 2.03  .033
       1.05   25.5   283.0   339.6 19.23  28.0 7.56  .10   .98   .77 11.92 2.08  .028
       1.26   31.4   396.3   459.6 21.49  28.0 8.45  .13   .97   .79 13.37 2.13  .025
       1.47   37.3   522.9   592.2 23.54  28.0 9.25  .15   .97   .81 14.71 2.16  .023
       1.68   43.2   661.6   736.5 25.43  28.010.00  .17   .97   .82 15.96 2.19  .021
       1.89   49.1   811.4   891.5 27.17  28.010.68  .19   .97   .83 17.13 2.21  .020
       2.11   55.0   971.6  1056.4 28.80  28.011.32  .21   .97   .84 18.23 2.23  .019
       2.32   60.9  1141.3  1230.6 30.31  28.011.92  .24   .96   .85 19.28 2.25  .018
       2.53   66.8  1319.9  1413.4 31.73  28.012.47  .26   .96   .85 20.27 2.26  .017
       2.74   72.7  1506.9  1604.3 33.06  28.013.00  .28   .96   .86 21.21 2.27  .016
       2.95   78.6  1701.8  1802.9 34.32  28.013.49  .31   .96   .86 22.12 2.28  .015
       3.16   84.5  1904.0  2008.7 35.51  28.013.96  .33   .96   .87 22.98 2.29  .015
       3.37   90.4  2113.3  2221.3 36.63  28.014.40  .35   .95   .87 23.81 2.30  .014
       3.58   96.3  2329.3  2440.4 37.70  28.014.82  .38   .95   .88 24.60 2.30  .014
       3.79  102.1  2551.5  2665.6 38.71  28.015.22  .40   .95   .88 25.36 2.31  .013
       4.00  108.0  2779.7     .0   .00     .0  .00   .00   .00   .00   .00  .00  .000
     nlen= 4   Outflow ID end=206
   Route using Ponce procedure:  C1 > 0
PRINT HYD            ID= 2 CODE= 1

                                HYDROGRAPH FROM AREA   302.00

   RUNOFF VOLUME =     1.27335 INCHES     =       1.1674 ACRE-FEET
   PEAK DISCHARGE RATE =      33.65 CFS  AT   1.567 HOURS   BASIN AREA =    .0172 SQ. MI.


*
**********************************************************************************
*C ADD NORTH & SOUTH ROUTED OFFSITE, THEN COMPUTE & ADD JYD
ADD HYD              ID OUT= 3  HYD= 304          IDIN I= 2   IDIN II= 5
PRINT HYD            ID= 3   CODE= 1

                                      HYDROGRAPH FROM AREA   304.00

   RUNOFF VOLUME =     1.25449 INCHES     =       3.0782 ACRE-FEET
   PEAK DISCHARGE RATE =      72.69 CFS  AT   1.600 HOURS   BASIN AREA =    .0460 SQ. MI.
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*
**********************************************************************************
COMPUTE NM HYD       ID= 17    HYD= JYD           DA=0.02353 SQ MI
                     PER A= 0      B= 35      C= 0       D= 65
                     TP= -0.13333 HRS   RAIN= -1

   K =   .072665HR    TP =   .133330HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   60.370    CFS   UNIT VOLUME =    .9992       B =   526.28      P60 = 1.9000
   AREA =      .015295 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


   K =   .130790HR    TP =   .133330HR    K/TP RATIO =   .980950     SHAPE CONSTANT, N =  3.599935
   UNIT PEAK =   20.232    CFS   UNIT VOLUME =    .9997       B =   327.55      P60 = 1.9000
   AREA =      .008236 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID= 17   CODE= 2
```

HYDROGRAPH FROM AREA JYD

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.467	49.3	2.933	.6	4.400	.2	5.867	.3
.067	.0	1.533	52.2	3.000	.6	4.467	.2	5.933	.3
.133	.0	1.600	38.5	3.067	.5	4.533	.2	6.000	.3
.200	.0	1.667	28.0	3.133	.5	4.600	.2	6.067	.3
.267	.0	1.733	22.0	3.200	.4	4.667	.2	6.133	.2
.333	.0	1.800	18.2	3.267	.4	4.733	.2	6.200	.1
.400	.0	1.867	15.4	3.333	.4	4.800	.2	6.267	.0
.467	.0	1.933	13.4	3.400	.3	4.867	.2	6.333	.0
.533	.0	2.000	11.8	3.467	.3	4.933	.2	6.400	.0
.600	.0	2.067	10.1	3.533	.3	5.000	.2	6.467	.0
.667	.0	2.133	6.9	3.600	.3	5.067	.2	6.533	.0
.733	.0	2.200	4.5	3.667	.3	5.133	.2	6.600	.0
.800	.0	2.267	3.3	3.733	.3	5.200	.3	6.667	.0
.867	.0	2.333	2.6	3.800	.3	5.267	.3	6.733	.0
.933	.0	2.400	2.2	3.867	.3	5.333	.3	6.800	.0
1.000	.0	2.467	1.8	3.933	.2	5.400	.3	6.867	.0
1.067	.0	2.533	1.5	4.000	.2	5.467	.3	6.933	.0
1.133	.0	2.600	1.3	4.067	.2	5.533	.3	7.000	.0
1.200	.6	2.667	1.1	4.133	.2	5.600	.3	7.067	.0
1.267	5.0	2.733	.9	4.200	.2	5.667	.3		
1.333	13.6	2.800	.8	4.267	.2	5.733	.3		
1.400	28.8	2.867	.7	4.333	.2	5.800	.3		

```
   RUNOFF VOLUME =     1.53130 INCHES     =       1.9217 ACRE-FEET
   PEAK DISCHARGE RATE =      54.35 CFS  AT   1.500 HOURS   BASIN AREA =   .0235 SQ. MI.


*
**********************************************************************************
*S TOTAL FLOW LEAVING JYD (CANTO III), INCLUDING 86TH ST ROW EAST OF JYD
ADD HYD              ID OUT= 4  HYD= JYD.E.AT.86   IDIN I= 3   IDIN II= 17
PRINT HYD            ID= 4   CODE= 1
```

HYDROGRAPH FROM AREA JYD.E.AT.86

```
   RUNOFF VOLUME =     1.34815 INCHES     =       4.9998 ACRE-FEET
   PEAK DISCHARGE RATE =     116.71 CFS  AT   1.533 HOURS   BASIN AREA =   .0695 SQ. MI.
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**********************************************************************************
*S ROUTE TO 86TH & SG INTERSECTION, ASSUME 48" PIPE W/ 1% FRICTION SLOPE
COMPUTE RATING CURVE CID= -1 VSN= 1  CODE= -1  S= .010   D= 4 FT   n= 0.013
ROUTE MCUNGE         ID= 5   HYD= 86.S.OF.SG   INFLOW HYD ID= 4   DT= 0.0 HR
                     LENGTH= 300      NSUBRCH= 0     SLOPE= .010
                     MATCODE= 0       REGCODE= 0     CCODE= 0
      Inflow ID end=215   Max Number=600

      dt = .0333 hr   q0 =    58.35 cfs   ck0 = 14.67 fps
      nlen =  1   dlen =  300.00

      Depth  Area      Q     Qbar   ck    b     C    D     c1    c2   vel   fr    tt
        ft    sf      cfs    cfs    fps   ft                          fps         hr
        .00     .0      .0     .4  3.02    .9 1.21  .05   .96   .11  3.02 1.42  .028
        .21     .2      .8    2.0  5.66   2.1 2.26  .06   .97   .40  4.26 1.59  .020
        .42     .7     3.3    5.4  7.74   2.7 3.09  .09   .96   .52  5.58 1.63  .015
        .63    1.3     7.6   10.6  9.44   3.1 3.78  .12   .95   .59  6.75 1.66  .012
        .83    1.9    13.7   17.5 10.88   3.4 4.35  .16   .94   .64  7.78 1.68  .011
       1.04    2.6    21.4   25.9 12.09   3.6 4.84  .20   .93   .67  8.69 1.69  .010
       1.25    3.4    30.5   35.6 13.12   3.8 5.25  .24   .93   .69  9.50 1.68  .009
       1.46    4.1    40.8   46.5 13.98   3.9 5.59  .28   .92   .71 10.21 1.67  .008
       1.67    5.0    52.2   58.3 14.67   4.0 5.87  .33   .91   .72 10.84 1.64  .008
       1.88    5.8    64.3   70.7 15.19   4.0 6.08  .39   .90   .73 11.39 1.61  .007
       2.08    6.6    77.0   83.4 15.54   4.0 6.22  .45   .88   .74 11.86 1.58  .007
       2.29    7.5    89.9   96.3 15.69   4.0 6.28  .51   .87   .74 12.25 1.54  .007
       2.50    8.3   102.7  108.9 15.62   4.0 6.25  .58   .85   .74 12.57 1.51  .007
       2.71    9.1   115.1  120.9 15.27   4.0 6.11  .66   .83   .74 12.81 1.47  .007
       2.92    9.8   126.7  131.9 14.52   4.0 5.81  .76   .80   .74 12.96 1.43  .006
       3.13   10.5   137.1  141.5 13.18   4.0 5.27  .89   .75   .72 13.02 1.39  .006
       3.34   11.2   145.8  148.9 10.71   4.0 4.29 1.16   .64   .69 12.96 1.35  .006
       3.54   11.8   152.0  153.2  5.41   4.0 2.16 2.36   .14   .64 12.76 1.30  .007
       3.75   12.2   154.5  154.5   .00   4.0  .00***** -1.00  1.00 12.46 1.25  .007
       4.00   12.6   154.5     .0   .00    .0  .00  .00   .00   .00   .00  .00  .000
      nlen= 1   Outflow ID end=215
    Route using Ponce procedure:  C1 > 0
      nlen= 1   Outflow ID end=216
    Route using Maidment procedure:  C0, C1 & C2 > 0
PRINT HYD            ID= 5 CODE= 1

                                        HYDROGRAPH FROM AREA 86.S.OF.SG


    RUNOFF VOLUME =     1.34764 INCHES     =       4.9979 ACRE-FEET
    PEAK DISCHARGE RATE =     116.55 CFS  AT   1.567 HOURS   BASIN AREA =   .0695 SQ. MI.

*
**********************************************************************************
*S *AS IF* COMBINED FLOWS AT 86TH & SUNSET GARDENS: RETRIEVE 'ON-HOLD' ID=7
ADD HYD              ID OUT= 6  HYD= TOT.SG&86     IDIN I= 5   IDIN II= 7
PRINT HYD            ID= 6   CODE= 2

                                        HYDROGRAPH FROM AREA TOT.SG&86

   TIME     FLOW          TIME     FLOW          TIME     FLOW          TIME     FLOW          TIME     FLOW
    HRS      CFS           HRS      CFS           HRS      CFS           HRS      CFS           HRS      CFS
   .000       .0         1.467    180.7         2.933      3.5         4.400      1.0         5.867      1.3
   .067       .0         1.533    235.7         3.000      3.1         4.467      1.0         5.933      1.3
   .133       .0         1.600    211.8         3.067      2.7         4.533      1.0         6.000      1.3
   .200       .0         1.667    165.8         3.133      2.4         4.600      1.0         6.067      1.3
   .267       .0         1.733    125.4         3.200      2.2         4.667      1.0         6.133      1.1
   .333       .0         1.800     98.8         3.267      2.0         4.733      1.0         6.200       .8
   .400       .0         1.867     80.9         3.333      1.8         4.800      1.0         6.267       .6
   .467       .0         1.933     68.5         3.400      1.7         4.867      1.0         6.333       .3
```

.533	.0	2.000	60.5	3.467	1.6	4.933	1.1	6.400	.2
.600	.0	2.067	51.9	3.533	1.5	5.000	1.1	6.467	.1
.667	.0	2.133	40.9	3.600	1.4	5.067	1.1	6.533	.1
.733	.0	2.200	30.8	3.667	1.3	5.133	1.1	6.600	.1
.800	.0	2.267	22.5	3.733	1.3	5.200	1.1	6.667	.0
.867	.0	2.333	16.4	3.800	1.2	5.267	1.1	6.733	.0
.933	.0	2.400	13.2	3.867	1.2	5.333	1.1	6.800	.0
1.000	.0	2.467	10.9	3.933	1.1	5.400	1.1	6.867	.0
1.067	.0	2.533	9.0	4.000	1.1	5.467	1.2	6.933	.0
1.133	.0	2.600	7.5	4.067	1.1	5.533	1.2	7.000	.0
1.200	1.0	2.667	6.4	4.133	1.1	5.600	1.2	7.067	.0
1.267	10.8	2.733	5.4	4.200	1.1	5.667	1.2	7.133	.0
1.333	32.2	2.800	4.6	4.267	1.0	5.733	1.2		
1.400	77.4	2.867	4.0	4.333	1.0	5.800	1.3		

RUNOFF VOLUME = 1.42440 INCHES = 9.0470 ACRE-FEET
PEAK DISCHARGE RATE = 235.70 CFS AT 1.533 HOURS BASIN AREA = .1191 SQ. MI.

```
*
**********************************************************************************
**********************************************************************************
*S
*S FUTURE/FULL DEVELOPMENT          FUTURE/FULL DEVELOPMENT
*S ROUTE 86TH TO 82ND IN SUNSET GARDENS: CONC PIPE; Sf=.01 APX
*C IF EST DIAM SMALL => TRAVEL FASTER => DNSTR PEAK HIGHER => CONSERVATIVE
*C VALLEY SEGMENT & REACH NUMBERS ARE USER ID'S NOT USED BY PROG; DUMMIES HERE
COMPUTE RATING CURVE CID= -1   VS NO= 11   NO SEGS FOR MANNING n= -1
                     SLOPE= .01   DIAM= 5.0 FT   n= .013
COMPUTE TRAVEL TIME  ID= 5   REACH= 11   NO VS= 1   L= 1100 FT   S= .01
```

TRAVEL TIME TABLE

REACH= 11.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.261	.390	1.37	.0873
.521	1.086	5.93	.0559
.782	1.961	13.79	.0435
1.042	2.966	24.80	.0365
1.303	4.069	38.72	.0321
1.563	5.246	55.24	.0290
1.824	6.479	74.01	.0267
2.084	7.749	94.62	.0250
2.345	9.043	116.65	.0237
2.606	10.345	139.60	.0226
2.866	11.641	162.98	.0218
3.127	12.918	186.22	.0212
3.387	14.159	208.72	.0207
3.648	15.348	229.78	.0204
3.908	16.467	248.64	.0202
4.169	17.492	264.32	.0202
4.429	18.395	275.55	.0204
4.690	19.130	280.16	.0209
5.000	19.635	280.16	.0214

```
ROUTE                ID= 5   HYD= 308    IN ID= 6   DT= 0.0
PRINT HYD            ID= 5   CODE= 1
```

HYDROGRAPH FROM AREA 308.00

RUNOFF VOLUME = 1.42440 INCHES = 9.0470 ACRE-FEET
PEAK DISCHARGE RATE = 234.12 CFS AT 1.567 HOURS BASIN AREA = .1191 SQ. MI.

```
**********************************************************************************
* BASIN T
COMPUTE NM HYD       ID= 1    HYD= T              DA= .00467 SQ MI
                     PER A= 0      B= 15      C=  0      D= 85
                     TP= -0.13333 HRS   RAIN= -1

    K =   .072665HR    TP =   .133330HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   15.668    CFS   UNIT VOLUME =    .9987       B =   526.28      P60 = 1.9000
    AREA =      .003970 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130790HR    TP =   .133330HR    K/TP RATIO =   .980950     SHAPE CONSTANT, N =  3.599935
    UNIT PEAK =   1.7209    CFS   UNIT VOLUME =    .9926       B =   327.55      P60 = 1.9000
    AREA =      .000701 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID= 1   CODE= 1

                                        HYDROGRAPH FROM AREA T

    RUNOFF VOLUME =     1.79111 INCHES     =        .4461 ACRE-FEET
    PEAK DISCHARGE RATE =     12.22 CFS  AT   1.500 HOURS   BASIN AREA =   .0047 SQ. MI.


*
**********************************************************************************
ADD HYD              ID OUT= 3  HYD= 310     IDIN I= 1   IDIN II= 5
PRINT HYD            ID= 3   CODE= 1

                                      HYDROGRAPH FROM AREA   310.00


    RUNOFF VOLUME =     1.43823 INCHES     =       9.4931 ACRE-FEET
    PEAK DISCHARGE RATE =    244.23 CFS  AT   1.567 HOURS   BASIN AREA =   .1238 SQ. MI.


*
**********************************************************************************
* BASIN U
COMPUTE NM HYD       ID= 1    HYD= U              DA= .01032 SQ MI
                     PER A= 0      B= 30      C=  0      D= 70
                     TP= -0.13333 HRS   RAIN= -1

    K =   .072665HR    TP =   .133330HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   28.514    CFS   UNIT VOLUME =    .9990       B =   526.28      P60 = 1.9000
    AREA =      .007224 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130790HR    TP =   .133330HR    K/TP RATIO =   .980950     SHAPE CONSTANT, N =  3.599935
    UNIT PEAK =   7.6059    CFS   UNIT VOLUME =    .9985       B =   327.55      P60 = 1.9000
    AREA =      .003096 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID= 1   CODE= 1

                                        HYDROGRAPH FROM AREA U


    RUNOFF VOLUME =     1.59625 INCHES     =        .8786 ACRE-FEET
```

```
    PEAK DISCHARGE RATE =      24.63 CFS  AT   1.500 HOURS   BASIN AREA =   .0103 SQ. MI.


*
*******************************************************************************
*C NOTE LARGE ID# - WILL RE-USE THIS HYD LATER
ADD HYD             ID OUT= 19   HYD= 312     IDIN I= 1   IDIN II= 3
PRINT HYD           ID= 19  CODE= 1

                                        HYDROGRAPH FROM AREA   312.00


    RUNOFF VOLUME =     1.45039 INCHES     =      10.3716 ACRE-FEET
    PEAK DISCHARGE RATE =     264.83 CFS  AT   1.567 HOURS   BASIN AREA =   .1341 SQ. MI.



*
*******************************************************************************
* BASIN V: % IMPERV A LA POINTE WEST DESIGN & DENSITY
COMPUTE NM HYD      ID= 11    HYD= V             DA= .03200 SQ MI
                    PER A= 0      B= 50      C=  0      D= 50
                    TP= -0.13333 HRS ' RAIN= -1

    K =   .072665HR    TP =   .133330HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   63.155    CFS   UNIT VOLUME =    .9992       B =   526.28      P60 = 1.9000
    AREA =      .016000 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130790HR    TP =   .133330HR    K/TP RATIO =   .980950     SHAPE CONSTANT, N =  3.599935
    UNIT PEAK =   39.307    CFS   UNIT VOLUME =    1.000       B =   327.55      P60 = 1.9000
    AREA =      .016000 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID= 11   CODE= 1

                                        HYDROGRAPH FROM AREA V


    RUNOFF VOLUME =     1.33643 INCHES     =       2.2808 ACRE-FEET
    PEAK DISCHARGE RATE =      66.62 CFS  AT   1.500 HOURS   BASIN AREA =   .0320 SQ. MI.



*
*******************************************************************************
ADD HYD             ID OUT= 3  HYD= SG.AT.82ND    IDIN I= 11   IDIN II= 19
PRINT HYD           ID= 3   CODE= 1

                                        HYDROGRAPH FROM AREA SG.AT.82ND


    RUNOFF VOLUME =     1.42843 INCHES     =      12.6524 ACRE-FEET
    PEAK DISCHARGE RATE =     323.76 CFS  AT   1.533 HOURS   BASIN AREA =   .1661 SQ. MI.



*
*******************************************************************************
*C ROUTE TO UNSER IN CONC PIPE; Sf=.01 APX AVG
*C IF EST DIAM SMALL => TRAVEL FASTER => DNSTR PEAK HIGHER => CONSERVATIVE
*C VALLEY SEGMENT & REACH NUMBERS ARE USER ID'S ONLY; DUMMIES HERE
*C AVAIL SLOPE BTW UNSER/AMOLE & SG/82 APX .01 AVG.
COMPUTE RATING CURVE CID= -1   VS NO= 11   NO SEGS FOR MANNING n= -1
```

SLOPE= .01 DIAM= 5.5 FT n= .013

COMPUTE TRAVEL TIME ID= 5 REACH= 11 NO VS= 1 L= 1100 FT S= .01

TRAVEL TIME TABLE

REACH= 11.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.287	.472	1.76	.0819
.573	1.314	7.65	.0525
.860	2.373	17.78	.0408
1.146	3.589	31.97	.0343
1.433	4.923	49.92	.0301
1.720	6.348	71.23	.0272
2.006	7.839	95.43	.0251
2.293	9.377	122.00	.0235
2.579	10.942	150.40	.0222
2.866	12.518	180.00	.0212
3.153	14.086	210.14	.0205
3.439	15.630	240.11	.0199
3.726	17.132	269.11	.0195
4.013	18.571	296.28	.0192
4.299	19.925	320.59	.0190
4.586	21.166	340.81	.0190
4.872	22.258	355.29	.0191
5.159	23.147	361.23	.0196
5.500	23.758	361.23	.0201

ROUTE ID= 5 HYD= 314 IN ID= 3 DT= 0.0

PRINT HYD ID= 5 CODE= 1

HYDROGRAPH FROM AREA 314.00

RUNOFF VOLUME = 1.42844 INCHES = 12.6524 ACRE-FEET
PEAK DISCHARGE RATE = 322.21 CFS AT 1.567 HOURS BASIN AREA = .1661 SQ. MI.

****

*C BASIN W: % IMPERV A LA POINTE WEST DESIGN & DENSITY: SAME OWNER & ENGR
*C BASIN W IS ONLY BASIN W Tp (&Tc) > REGULATORY MINIMUM

COMPUTE NM HYD ID= 12 HYD= W DA= .03422 SQ MI
PER A= 0 B= 50 C= 0 D= 50
TP= -0.16325 HRS RAIN= -1

K = .088971HR TP = .163250HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 55.158 CFS UNIT VOLUME = .9997 B = 526.28 P60 = 1.9000
AREA = .017110 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .160140HR TP = .163250HR K/TP RATIO = .980950 SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 34.330 CFS UNIT VOLUME = .9998 B = 327.55 P60 = 1.9000
AREA = .017110 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID= 12 CODE= 1

HYDROGRAPH FROM AREA W

RUNOFF VOLUME = 1.33643 INCHES = 2.4391 ACRE-FEET
PEAK DISCHARGE RATE = 64.02 CFS AT 1.533 HOURS BASIN AREA = .0342 SQ. MI.

```
*
*******************************************************************************
ADD HYD             ID OUT= 3  HYD= 316     IDIN I= 12   IDIN II= 5
PRINT HYD           ID= 3   CODE= 1

                                    HYDROGRAPH FROM AREA   316.00


    RUNOFF VOLUME =     1.41271 INCHES     =      15.0915 ACRE-FEET
    PEAK DISCHARGE RATE =     384.09 CFS  AT   1.567 HOURS   BASIN AREA =   .2003 SQ. MI.



*
*******************************************************************************
* BASIN X: R.O.W. FOR SUNSET GARDENS AND (LIMITED ACCESS) UNSER
COMPUTE NM HYD      ID= 13    HYD= X              DA= .00674 SQ MI
                    PER A= 0      B= 20      C=  0      D= 80
                    TP= -0.13333 HRS   RAIN= -1

    K =   .072665HR    TP =   .133330HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   21.283    CFS   UNIT VOLUME =    .9988       B =   526.28      P60 = 1.9000
    AREA =      .005392 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

    K =   .130790HR    TP =   .133330HR    K/TP RATIO =   .980950     SHAPE CONSTANT, N =  3.599935
    UNIT PEAK =   3.3116    CFS   UNIT VOLUME =    .9961       B =   327.55      P60 = 1.9000
    AREA =      .001348 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID= 13   CODE= 1

                                    HYDROGRAPH FROM AREA X


    RUNOFF VOLUME =     1.72616 INCHES     =        .6205 ACRE-FEET
    PEAK DISCHARGE RATE =      17.11 CFS  AT   1.500 HOURS   BASIN AREA =   .0067 SQ. MI.



*
*******************************************************************************
ADD HYD             ID OUT= 4  HYD= SG.AT.UNSER   IDIN I= 13   IDIN II= 3
PRINT HYD           ID= 4   CODE= 1

                                HYDROGRAPH FROM AREA SG.AT.UNSER


    RUNOFF VOLUME =     1.42292 INCHES     =      15.7120 ACRE-FEET
    PEAK DISCHARGE RATE =     398.29 CFS  AT   1.567 HOURS   BASIN AREA =   .2070 SQ. MI.



*
*******************************************************************************
*C ROUTE TO UNSER 340 FT N OF SG (APX HALF DIST TO AMOLE CHAN); Sf=.01 APX
*C EST DIAM SMALL => TRAVEL FASTER => DNSTR PEAK HIGHER => CONSERVATIVE
*C VALLEY SEGMENT & REACH NUMBERS ARE USER ID'S ONLY; DUMMIES HERE
COMPUTE RATING CURVE CID= -1   VS NO= 11   NO SEGS FOR MANNING n= -1
                    SLOPE= .01   DIAM= 6.0 FT   n= .013
COMPUTE TRAVEL TIME  ID= 5   REACH= 11   NO VS= 1   L= 340  FT   S= .01

                            TRAVEL TIME TABLE
                                        REACH= 11.0
```

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.313	.562	2.22	.0239
.625	1.564	9.64	.0153
.938	2.824	22.42	.0119
1.251	4.271	40.32	.0100
1.563	5.859	62.96	.0088
1.876	7.554	89.83	.0079
2.189	9.329	120.35	.0073
2.501	11.159	153.87	.0068
2.814	13.022	189.68	.0065
3.127	14.897	227.01	.0062
3.439	16.764	265.02	.0060
3.752	18.601	302.81	.0058
4.065	20.388	339.39	.0057
4.377	22.101	373.65	.0056
4.690	23.712	404.31	.0055
5.003	25.189	429.82	.0055
5.315	26.489	448.07	.0056
5.628	27.547	455.57	.0057
6.000	28.274	455.57	.0059

ROUTE ID= 5 HYD= 318 IN ID= 4 DT= 0.0
PRINT HYD ID= 5 CODE= 1

HYDROGRAPH FROM AREA 318.00

RUNOFF VOLUME = 1.42292 INCHES = 15.7120 ACRE-FEET
PEAK DISCHARGE RATE = 399.01 CFS AT 1.567 HOURS BASIN AREA = .2070 SQ. MI.

****
* BASIN Y DEVELOPED: EST ENTIRE SITE; ZONING = O-1; USE % IMPERV AS FOR C-2
* WHEN BUILT, N APX 200' POSS DRAIN TO BRIDGE PER GREINER FOR BRIDGE BLVD SD
COMPUTE NM HYD ID= 14 HYD= YD DA= .02964 SQ MI
PER A= 0 B= 10 C= 5 D= 85
TP= -0.13333 HRS RAIN= -1

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 99.445 CFS UNIT VOLUME = .9993 B = 526.28 P60 = 1.9000
AREA = .025194 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .122603HR TP = .133330HR K/TP RATIO = .919546 SHAPE CONSTANT, N = 3.849372
UNIT PEAK = 11.504 CFS UNIT VOLUME = .9992 B = 345.00 P60 = 1.9000
AREA = .004446 SQ MI IA = .45000 INCHES INF = 1.11000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID= 14 CODE= 1

HYDROGRAPH FROM AREA YD

RUNOFF VOLUME = 1.80576 INCHES = 2.8545 ACRE-FEET
PEAK DISCHARGE RATE = 78.24 CFS AT 1.500 HOURS BASIN AREA = .0296 SQ. MI.

*
****
*S TOTAL UNSER APX 300' S OF AMOLE CHANNEL AT BRIDGE: FUTURE/FULLY DEVELOPED
ADD HYD ID OUT= 7 HYD= FUT.TO.AMOLE IDIN I= 14 IDIN II= 5

PRINT HYD ID= 7 CODE= 1

HYDROGRAPH FROM AREA FUT.TO.AMOLE

RUNOFF VOLUME = 1.47086 INCHES = 18.5665 ACRE-FEET
PEAK DISCHARGE RATE = 465.36 CFS AT 1.533 HOURS BASIN AREA = .2367 SQ. MI.

```
*
**********************************************************************************
**********************************************************************************
*S
*S
*S INTERIM                    INTERIM                    INTERIM
*S INTERIM: RE-USE HYD 312 W/ ID=19, ROUTE IN DIRT CHAN ACROSS BASIN Y EXIST
*C APPROX AS 12' BOTTOM, 3H:1V SIDESLOPES, n=.030, L APX 1250, S=.005
COMPUTE RATING CURVE CID= -1   VS NO= 1    NO SEGS FOR MANNING n= 1
                  ELMIN= 0 ELMAX= 8  FT  CHSLP= .005   FPSLP= .005   FT/FT
                  n .030  DIST 60
                  DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                  0     8       24    0       36    0       60    8
ROUTE MCUNGE      ID= 5   HYD= 502      INFLOW HYD ID= 19  DT= 0.0 HR
                  LENGTH= 1250     NSUBRCH= 0     SLOPE= .005
                  MATCODE= 0       REGCODE= 0     CCODE= 0
     Inflow ID end=222   Max Number=600

     dt = .0333 hr   q0 =   132.42 cfs   ck0 =  6.19 fps
     nlen =  3   dlen =  416.67

     Depth  Area     Q      Qbar   ck    b     C    D     c1    c2    vel   fr    tt
       ft    sf     cfs     cfs   fps   ft                              fps         hr
       .00    .0     .0     5.1  1.84   7.3  .53  .18   .78  -.17  1.84  .52  .189
       .42   5.6    10.3    22.1  3.56  15.8 1.03  .19   .83   .10  2.48  .58  .140
       .84  12.2    34.0    51.9  4.64  18.3 1.34  .29   .78   .24  3.22  .61  .108
      1.26  19.9    69.8    93.8  5.48  20.8 1.58  .39   .73   .33  3.85  .63  .090
      1.68  28.7   117.8   148.3  6.19  23.4 1.78  .49   .70   .39  4.41  .65  .079
      2.11  38.6   178.8   216.0  6.83  25.9 1.97  .59   .67   .44  4.91  .66  .071
      2.53  49.5   253.3   297.7  7.42  28.4 2.14  .68   .64   .48  5.37  .68  .065
      2.95  61.4   342.1   394.0  7.97  30.9 2.29  .77   .62   .51  5.80  .69  .060
      3.37  74.5   445.9   505.7  8.49  33.5 2.44  .85   .60   .53  6.20  .70  .056
      3.79  88.6   565.5   633.6  8.98  36.0 2.59  .94   .58   .56  6.59  .71  .053
      4.21 103.7   701.7   778.4  9.46  38.5 2.72 1.03   .57   .58  6.96  .72  .050
      4.63 119.9   855.1   940.9  9.92  41.1 2.86 1.11   .55   .60  7.32  .73  .047
      5.05 137.2  1026.6  1121.7 10.36  43.6 2.99 1.19   .54   .61  7.66  .74  .045
      5.47 155.6  1216.8  1321.6 10.80  46.1 3.11 1.27   .53   .63  8.00  .74  .043
      5.89 175.0  1426.4  1541.3 11.22  48.6 3.23 1.36   .51   .64  8.32  .75  .042
      6.32 195.5  1656.2  1781.5 11.63  51.2 3.35 1.44   .50   .65  8.64  .76  .040
      6.74 217.0  1906.8  2042.9 12.04  53.7 3.47 1.52   .49   .67  8.95  .76  .039
      7.16 239.6  2178.9  2326.1 12.44  56.2 3.58 1.60   .48   .68  9.25  .77  .038
      7.58 263.3  2473.3  2631.9 12.82  58.7 3.69 1.68   .47   .69  9.55  .78  .036
      8.00 288.0  2790.4     .0   .00    .0  .00  .00   .00   .00   .00  .00  .000
    nlen= 3   Outflow ID end=228
   Route using Ponce procedure:  C1 > 0
PRINT HYD          ID= 5   CODE= 1
```

OUTFLOW HYDROGRAPH RESERVOIR 502.00

RUNOFF VOLUME = 1.45076 INCHES = 10.3742 ACRE-FEET
PEAK DISCHARGE RATE = 260.04 CFS AT 1.600 HOURS BASIN AREA = .1341 SQ. MI.

```
**********************************************************************************
* BASIN YE
COMPUTE NM HYD       ID= 15    HYD= YE              DA=0.02964 SQ MI
                     PER A= 97     B= 0       C= 3       D= 0
                     TP= -0.13333 HRS   RAIN= -1

    K =   .161262HR    TP =   .133330HR    K/TP RATIO =  1.209496     SHAPE CONSTANT, N =  2.939924
    UNIT PEAK =   61.553    CFS   UNIT VOLUME =    .9995       B =   276.89      P60 = 1.9000
    AREA =      .029640 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID= 15  CODE= 1

                                        HYDROGRAPH FROM AREA YE


    RUNOFF VOLUME =      .46670 INCHES     =        .7378 ACRE-FEET
    PEAK DISCHARGE RATE =      26.19 CFS  AT   1.533 HOURS   BASIN AREA =   .0296 SQ. MI.


*
**********************************************************************************
*S
ADD HYD              ID OUT= 8  HYD= INT.2.AMOLE   IDIN I= 15   IDIN II= 5
PRINT HYD            ID= 8   CODE= 1

                                        HYDROGRAPH FROM AREA INT.2.AMOLE


    RUNOFF VOLUME =     1.27260 INCHES     =      11.1120 ACRE-FEET
    PEAK DISCHARGE RATE =     281.49 CFS  AT   1.600 HOURS   BASIN AREA =   .1637 SQ. MI.


*
**********************************************************************************
**********************************************************************************
*S
*S INTERIM W/ V (POINTE WEST)                INTERIM W/ V (POINTE WEST)
*S RE-USE HYD 312 W/ ID=19, HYD V W/ ID=11, & HYD YE W/ ID=15
*S ROUTE IN DIRT CHAN ACROSS BASIN Y EXIST
ADD HYD              ID OUT= 3  HYD= 602       IDIN I= 19   IDIN II= 11
PRINT HYD            ID= 3   CODE= 1

                                        HYDROGRAPH FROM AREA   602.00


    RUNOFF VOLUME =     1.42843 INCHES     =      12.6524 ACRE-FEET
    PEAK DISCHARGE RATE =     323.76 CFS  AT   1.533 HOURS   BASIN AREA =   .1661 SQ. MI.


*
**********************************************************************************
*C APPROX AS 12' BOTTOM, 3H:1V SIDESLOPES, n=.030, L APX 1250, S=.005
COMPUTE RATING CURVE CID= -1   VS NO= 1    NO SEGS FOR MANNING n= 1
                     ELMIN= 0 ELMAX= 8  FT  CHSLP= .005   FPSLP= .005   FT/FT
                     n .030  DIST 60
                     DIST  ELEV     DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0       8       24     0      36     0      60     8
ROUTE MCUNGE         ID= 5   HYD= 604        INFLOW HYD ID= 3  DT= 0.0 HR
                     LENGTH= 1250     NSUBRCH= 0     SLOPE= .005
                     MATCODE= 0       REGCODE= 0     CCODE= 0
      Inflow ID end=222   Max Number=600
```

dt = .0333 hr q0 = 161.88 cfs ck0 = 6.19 fps
nlen = 3 dlen = 416.67

Depth ft	Area sf	Q cfs	Qbar cfs	ck fps	b ft	C	D	c1	c2	vel fps	fr	tt hr
.00	.0	.0	5.1	1.84	7.3	.53	.18	.78	-.17	1.84	.52	.189
.42	5.6	10.3	22.1	3.56	15.8	1.03	.19	.83	.10	2.48	.58	.140
.84	12.2	34.0	51.9	4.64	18.3	1.34	.29	.78	.24	3.22	.61	.108
1.26	19.9	69.8	93.8	5.48	20.8	1.58	.39	.73	.33	3.85	.63	.090
1.68	28.7	117.8	148.3	6.19	23.4	1.78	.49	.70	.39	4.41	.65	.079
2.11	38.6	178.8	216.0	6.83	25.9	1.97	.59	.67	.44	4.91	.66	.071
2.53	49.5	253.3	297.7	7.42	28.4	2.14	.68	.64	.48	5.37	.68	.065
2.95	61.4	342.1	394.0	7.97	30.9	2.29	.77	.62	.51	5.80	.69	.060
3.37	74.5	445.9	505.7	8.49	33.5	2.44	.85	.60	.53	6.20	.70	.056
3.79	88.6	565.5	633.6	8.98	36.0	2.59	.94	.58	.56	6.59	.71	.053
4.21	103.7	701.7	778.4	9.46	38.5	2.72	1.03	.57	.58	6.96	.72	.050
4.63	119.9	855.1	940.9	9.92	41.1	2.86	1.11	.55	.60	7.32	.73	.047
5.05	137.2	1026.6	1121.7	10.36	43.6	2.99	1.19	.54	.61	7.66	.74	.045
5.47	155.6	1216.8	1321.6	10.80	46.1	3.11	1.27	.53	.63	8.00	.74	.043
5.89	175.0	1426.4	1541.3	11.22	48.6	3.23	1.36	.51	.64	8.32	.75	.042
6.32	195.5	1656.2	1781.5	11.63	51.2	3.35	1.44	.50	.65	8.64	.76	.040
6.74	217.0	1906.8	2042.9	12.04	53.7	3.47	1.52	.49	.67	8.95	.76	.039
7.16	239.6	2178.9	2326.1	12.44	56.2	3.58	1.60	.48	.68	9.25	.77	.038
7.58	263.3	2473.3	2631.9	12.82	58.7	3.69	1.68	.47	.69	9.55	.78	.036
8.00	288.0	2790.4	.0	.00	.0	.00	.00	.00	.00	.00	.00	.000

nlen= 3 Outflow ID end=227
Route using Ponce procedure: C1 > 0
PRINT HYD ID= 5 CODE= 1

HYDROGRAPH FROM AREA 604.00

RUNOFF VOLUME = 1.42737 INCHES = 12.6430 ACRE-FEET
PEAK DISCHARGE RATE = 320.37 CFS AT 1.600 HOURS BASIN AREA = .1661 SQ. MI.

*
****
*C RE-USE HYD YE W/ ID=15, ADD TO ROUTED FLOW
ADD HYD ID OUT= 98 HYD= INT.V.2AMOLE IDIN I= 15 IDIN II= 3
PRINT HYD ID= 9 CODE= 1

OUTFLOW HYDROGRAPH REACH .00

RUNOFF VOLUME = .00000 INCHES = .0000 ACRE-FEET
PEAK DISCHARGE RATE = .00 CFS AT .000 HOURS BASIN AREA = .0000 SQ. MI.

*
****
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*S
*S
*S ALLEY ALLEY ALLEY
*S BASINS B, G, & SITE-I TO ALLEY. BASIN A NOT CONTRIBUTE INTERIM/FUTURE
*S FUTURE/INTERIM ALLEY FLOWS FOR INFO ONLY; HOLD TO EXISTING CONDITIONS
****
* BASIN B
COMPUTE NM HYD ID= 1 HYD= B DA=0.01520 SQ MI
PER A= 0 B= 16 C= 8 D= 76
TP= -0.13333 HRS RAIN= -1

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420

```
    UNIT PEAK =   45.598    CFS   UNIT VOLUME =    .9991       B =   526.28      P60 = 1.9000
    AREA =      .011552 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .122603HR    TP =   .133330HR    K/TP RATIO =   .919546     SHAPE CONSTANT, N =  3.849372
    UNIT PEAK =   9.4394    CFS   UNIT VOLUME =    .9990       B =   345.00      P60 = 1.9000
    AREA =      .003648 SQ MI    IA =    .45000 INCHES    INF =   1.11000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID= 1   CODE= 1

                                        HYDROGRAPH FROM AREA B


    RUNOFF VOLUME =     1.69764 INCHES     =       1.3762 ACRE-FEET
    PEAK DISCHARGE RATE =      38.30 CFS  AT   1.500 HOURS   BASIN AREA =   .0152 SQ. MI.


*
*******************************************************************************
* BASIN G
COMPUTE NM HYD      ID= 2    HYD= G              DA=0.01501 SQ MI
                    PER A= 0      B= 20      C= 10      D= 70
                    TP= -0.13333 HRS   RAIN= -1

    K =   .072665HR    TP =   .133330HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   41.473    CFS   UNIT VOLUME =    .9991       B =   526.28      P60 = 1.9000
    AREA =      .010507 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .122603HR    TP =   .133330HR    K/TP RATIO =   .919546     SHAPE CONSTANT, N =  3.849372
    UNIT PEAK =   11.652    CFS   UNIT VOLUME =    .9992       B =   345.00      P60 = 1.9000
    AREA =      .004503 SQ MI    IA =    .45000 INCHES    INF =   1.11000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID= 2   CODE= 1

                                        HYDROGRAPH FROM AREA G


    RUNOFF VOLUME =     1.62555 INCHES     =       1.3013 ACRE-FEET
    PEAK DISCHARGE RATE =      36.62 CFS  AT   1.500 HOURS   BASIN AREA =   .0150 SQ. MI.

*
*******************************************************************************
ADD HYD             ID OUT= 3  HYD= TO.TOP.ALLEY     IDIN I= 1   IDIN II= 2
PRINT HYD           ID= 3   CODE= 1

                                        HYDROGRAPH FROM AREA TO.TOP.ALLEY


    RUNOFF VOLUME =     1.66180 INCHES     =       2.6775 ACRE-FEET
    PEAK DISCHARGE RATE =      74.92 CFS  AT   1.500 HOURS   BASIN AREA =   .0302 SQ. MI.


*
*******************************************************************************
* BASIN SITE.I
COMPUTE NM HYD      ID= 1    HYD= SITE.I        DA=0.00151 SQ MI
                    PER A= 0      B= 35      C= 0       D= 65
```

TP= -0.13333 HRS RAIN= -1

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 3.8741 CFS UNIT VOLUME = .9965 B = 526.28 P60 = 1.9000
AREA = .000982 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .130790HR TP = .133330HR K/TP RATIO = .980950 SHAPE CONSTANT, N = 3.599935
UNIT PEAK = 1.2984 CFS UNIT VOLUME = .9894 B = 327.55 P60 = 1.9000
AREA = .000529 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID= 1 CODE= 1

HYDROGRAPH FROM AREA SITE.I

RUNOFF VOLUME = 1.53130 INCHES = .1233 ACRE-FEET
PEAK DISCHARGE RATE = 3.50 CFS AT 1.500 HOURS BASIN AREA = .0015 SQ. MI.

*
****
ADD HYD ID OUT= 4 HYD= BOT.ALLEY IDIN I= 1 IDIN II= 3
PRINT HYD ID= 4 CODE= 1

HYDROGRAPH FROM AREA BOT.ALLEY

RUNOFF VOLUME = 1.65558 INCHES = 2.8008 ACRE-FEET
PEAK DISCHARGE RATE = 78.42 CFS AT 1.500 HOURS BASIN AREA = .0317 SQ. MI.

*
****
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FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 12:37:11

CSC STORM DRAIN 11-8-97

100-yr FLOWS GENERATED IN SELECTED STREETS
SEE (PS) DPM14040.WQ1 FILE 11-8-97 8:20 A
FOR $Q_{p,100}$ FOR 100' LENGTHS

<u>UNSER S</u> OF SUNSET GARDENS 156' ROW
CN OF S & INCLUDED IN BASIN 4) (1660 LF)
(6 x 1.4 = 8.4)

APX 800 LF

$800 \times \frac{1}{100} \times 1.40$ CFS PER 100' = <u>11.2</u> CFS

SUNSET GARDENS - 60' ROW
~1100' BTW UNSER & 82ND
~1100' " 82ND 86

$1100 \times \frac{0.55 \text{ CFS}}{100'} \approx \underline{\underline{6.05 \text{ CFS}}}$

86TH S OF SUNSET GARDENS TO (66' ROW)
S R OF BASIN J4D (CANTO III)

$\sim 560' \times \frac{0.63 \text{ CFS}}{100 \text{ FT}} = 3.53 \text{ CFS}$

86TH N OF SUNSET GARDENS (66' ROW)
= BASIN C ARTMO
$Q_p = 3.43$ CFS FROM ARTMO

FILE=DPMHYD40.WQ1
ALBUQUERQUE, NM (1/93 DPM CHAP 22.2) CRITERIA - SIMPLE PROCEDURE FOR <= 40 ACRES
PX100-6 = PRECIPITATION EXCESS FROM 100-YEAR 6-HOUR STORM
VOL10D = VOLUME OF RUNOFF FROM 100-YEAR 10-DAY STORM
TRTMT CLASS A=UNDISTURBED, B=LAWNS, C=UNPAVED ROADS, D=ROOFS,PAVEMENT: SEE DPM 22.2 P A-5

100-YR

****** PROJECT INFO ******
RIGHT-OF-WAY FLOWS: WEST OF RIO G, NEAR UNSER & 86TH

Q's GENERATED IN 100' LENGTHS OF STREETS

RAIN ZONE 1 SEE DPM P 22.2-2
100-YEAR PRECIPTATION (P) DEPTHS, INCHES

1 HR	6 HR	24 HR	4 DAY	10 DAY
1.87	2.20	2.66	3.12	3.67

UNSER 1.40

11/08/97 08:20 AM UNSER: 156' ROW, ASSUME 80% IMPERV, 20% LANDSCAPE===100' LENGTH SF TOT

TRTMT CLASS	AREA SQUARE FEET	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	0.00	0.0000	0.44	1.29	0.000	0.000	0.000	0.000	0.000	0.00
B	3120.00	0.0716	0.67	2.03	0.145	0.004	0.004	0.004	0.004	20.00
C	0.00	0.0000	0.99	2.87	0.000	0.000	0.000	0.000	0.000	0.00
D	12480.00	0.2865	1.97	4.37	1.252	0.047	0.058	0.069	0.082	80.00
TOTAL	15600.00	0.3581	AVG Q/AC=	3.902	1.397	0.051	0.062	0.073	0.086	100.00
					CU FT==>	2223	2701	3180	3752	

SUNSET GARDENS 0.55/100

11/08/97 08:20 AM SUNSET GARDENS: 60' ROW, 85% D & 15% B === 100' LENGTH AC TOT

TRTMT CLASS	AREA SQUARE FEET	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	0.00	0.0000	0.44	1.29	0.000	0.000	0.000	0.000	0.000	0.00
B	900.00	0.0207	0.67	2.03	0.042	0.001	0.001	0.001	0.001	15.00
C	0.00	0.0000	0.99	2.87	0.000	0.000	0.000	0.000	0.000	0.00
D	5100.00	0.1171	1.97	4.37	0.512	0.019	0.024	0.028	0.034	85.00
TOTAL	6000.00	0.1377	AVG Q/AC=	4.019	0.554	0.020	0.025	0.029	0.035	100.00
					CU FT==>	888	1083	1279	1512	

86TH

11/08/97 08:20 AM 86th ST, 68'ROW, 85% D & 15% B === 100' LENGTH 0.63

TRTMT CLASS	AREA SQUARE FEET	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	0.00	0.0000	0.44	1.29	0.000	0.000	0.000	0.000	0.000	0.00
B	1020.00	0.0234	0.67	2.03	0.048	0.001	0.001	0.001	0.001	15.00
C	0.00	0.0000	0.99	2.87	0.000	0.000	0.000	0.000	0.000	0.00
D	5780.00	0.1327	1.97	4.37	0.580	0.022	0.027	0.032	0.038	85.00
TOTAL	6800.00	0.1561	AVG Q/AC=	4.019	0.627	0.023	0.028	0.033	0.039	100.00
					CU FT==>	1006	1227	1449	1714	

10 YR FLOWS PER 100 LF OF STREET

FILE=DPMHYD10.WQ1
ALBUQUERQUE, NM (1/93) CRITERIA - SIMPLE PROCEDURE FOR <= 40 ACRES: 10-yr storm
PX10-6 = PRECIPITATION EXCESS FROM 10-YEAR 6-HOUR STORM
VOL10D = VOLUME OF RUNOFF FROM 10-DAY STORM
TRTMT CLASS A=UNDISTURBED, B=LAWNS, C=UNPAVED ROADS, D=ROOFS,PAVEMENT: SEE DPM 22.2 P A-5

****** PROJECT INFO ******
10-YEAR STREET FLOWS: PER 100 LF OF VARIOUS STREETS
ALBUQUERQUE W. OF THE RIO G: NEAR UNSER & SUNSET GARDENS

RAIN ZONE 1 SEE DPM P 22.2-2
10-YEAR PRECIPTATION (P) DEPTHS, INCHES

1 HR	6 HR	24 HR	4 DAY	10 DAY
1.25	1.47	1.77	2.08	2.45

UNSER: 0.83 10-YR
x 800' => 6.64

11/08/97 12:12 PM UNSER: 156' ROW/ ASSUME 80% IMPERV 'D', 20% LANDSCAPE 'B' AC TOT x 600' => 4.98

TRTMT CLASS	AREA SQUARE FEET	AREA ACRES	PX10-6 IN/AC	QP10-6 CFS/AC	QP10-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	0.00	0.0000	0.08	0.24	0.000	0.000	0.000	0.000	0.000	0.00
B	3120.00	0.0000	0.22	0.76	0.000	0.000	0.000	0.000	0.000	20.00
C	0.00	0.0000	0.44	1.49	0.000	0.000	0.000	0.000	0.000	0.00
D	12480.00	0.2865	1.24	2.89	0.828	0.030	0.037	0.044	0.053	80.00
TOTAL	15600.00	0.2865	AVG Q/AC	2.89	0.828	0.030	0.037	0.044	0.053	100.00
					CU FT==>	1290	1602	1924	2309	

11/08/97 12:12 PM SUNSET GARDENS: 60' ROW, 85% 'D' & 15 % 'B' SUNSET GDNS AC TOT 0.35

TRTMT CLASS	AREA SQUARE FEET	AREA ACRES	PX10-6 IN/AC	QP10-6 CFS/AC	QP10-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	0.00	0.0000	0.08	0.24	0.000	0.000	0.000	0.000	0.000	0.00
B	900.00	0.0207	0.22	0.76	0.016	0.000	0.000	0.000	0.000	15.00
C	0.00	0.0000	0.44	1.49	0.000	0.000	0.000	0.000	0.000	0.00
D	5100.00	0.1171	1.24	2.89	0.338	0.012	0.015	0.018	0.022	85.00
TOTAL	6000.00	0.1377	AVG Q/AC	2.57	0.354	0.012	0.015	0.018	0.022	100.00
					CU FT==>	544	671	803	960	

100' => 3.85

11/08/97 12:12 PM 86th ST: 68' ROW: 85% 'D' & 15% 'B' 86TH ST AC TOT 0.40

TRTMT CLASS	AREA SQUARE FEET	AREA ACRES	PX10-6 IN/AC	QP10-6 CFS/AC	QP10-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	0.00	0.0000	0.08	0.24	0.000	0.000	0.000	0.000	0.000	0.00
B	1020.00	0.0234	0.22	0.76	0.018	0.000	0.000	0.000	0.000	15.00
C	0.00	0.0000	0.44	1.49	0.000	0.000	0.000	0.000	0.000	0.00
D	5780.00	0.1327	1.24	2.89	0.383	0.014	0.017	0.020	0.025	85.00
TOTAL	6800.00	0.1561	AVG Q/AC	2.57	0.401	0.014	0.017	0.021	0.025	100.00
					CU FT==>	616	760	910	1088	

x 800' => 2.24

C56 STORM DRAIN 11-8-97

STREET CAPACITY

86TH STREET — COLLECTOR

48' FF STD 8" C&G S = 0.5%

1 LANE CLEAR 10 YR

$Q_{100} = 2(25.71) = 51.42$ @ $y = 0.67$ FRD = 0.65

10-YR KEEP 1 LANE CLEAR

24' FREE TO CL

ASSUME 2' GUTTER + 2 11-FT LANES

AVAIL = GUTTER 1 LANE = 2+11 = 13'

$y = 0.12 + (11 \times .02) = 0.34$

$Q_{1/2} = 2.85$ $Q_{TOT} = 2(2.85) = 5.70'$

FROM SPREAD SHEET — FOR 10

560 LF 10 YR FLOW = 2.24 CFS ±

5.70 − 2.24 = 3.46 ALLOW SPILL FROM LANE TO 11 ENTRANCE

file=CSGSD2.WQ1; valle del Canto Sunset Gardens Storm Drain, ver.2: ==> PRELIMINARY! ALL STATIONS & ELEVATIONS APPROXIMATE: NOTE NOTE H.

11/13/97 07:53 AM

	35.51	:A	:A	:A, B, F	:B	:B			:C	:C, E	:D	:D	:G	:G	
ECHO TOTAL LOSS ^	UNS/AMOLE		UNS/SG-1	UNS/SG-2		SG/82nd			SG/86	INLETS	SG/END	JYD 1 (N)	JYD 2 (S)	JYD 3 (S)	
ANALYSIS POINT	OUTFALL	MH 1	MH 2	MH 3	MH 4	MH 5	MH 6	MH 7	MH 8	MH 9	NO MH	MH 10	MH 11	MH 12	MH 13	
STATION	87.00	387.00	626.00	712.00	1080.00	1480.00	1780.00	2180.00	2580.00	2900.00	2979.00	3017.00	3209.00	3449.00	3527.00	
GROUND ELEV (FL?, RIM?), FT	85.50	87.00	88.20	88.90	90.50	92.50	95.10	101.30	107.50	112.50	113.10	114.10	114.60	115.10	116.00	
DIAMETER upstream, FT	6.00	6.00	6.00	6.00	6.00	6.00	5.00	4.50	4.50	4.00	4.00	4.00	3.00	3.00	2.50	
Sf FRICTION SLOPE, ECHO	0.01009	0.00719	0.00719	0.00449	0.00449	0.00449	0.00624	0.01085	0.01085	0.02052	0.01393	0.00861	0.00693	0.00693	0.01833	
INVERT, FT	88.90															
MANNING'S n, upstream	0.0130	0.0130	0.0130	0.0130	0.0130	0.0130	0.0130	0.0130	0.0130	0.0130	0.01	0.0130	0.0130	0.0130	0.0130	
BEND LOSS COEFF, Kb * _?_, ENTER	—	0.20	—	0.18	0.06	0.06	0.20	—	—	—	—	—	0.57	0.14	0.14	
MANHOLE LOSS COEFF, Kmh or 0	0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.05	0.05	0.05	0.05	
OTHER LOSSES, ENTER	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
SIDE (JUNCTION) Q, CFS	—	66.35	—	75.25	—	—	78.06	—	—	—	36.20	52.79	61.20	—	—	
SIDE Q DIAMETER, FT	0.00	2.50	—	3.50	—	—	3.00	—	—	—	2.83	3.00	2.50	—	—	
SIDE Q ANGLE, DEG	0.00	90.00	—	45.00	—	—	90.00	—	—	—	45.00	45.00	50.00	—	—	
-- next 5 entry items optional																
Q100 upstr AHYMO, CFS: OPTION	485.36	399.01	399.01	323.76	323.76	323.76	235.70	235.70	235.70	235.70	—	116.71	55.51	55.51	55.51	
Q10, upstream, AHYMO: OPTIONAL	270.23	228.90	228.90	187.38	187.38	187.38	135.38	135.38	135.38	135.38	—	69.68	—	—	—	
STREET Q, 100-yr capacity, up	47.68	47.68	47.68	51.20	51.20	51.20	86.40	86.40	86.40	15.24	—	(76.92)	—	—	—	
STREET Q, 10-yr capacity, up	17.20	17.20	17.20	17.20	17.20	17.20	86.40	86.40	86.40	0.00	—	—	—	—	—	
D.STREET Q cap, 100yr-10yr	30.48	30.48	30.48	34.00	34.00	34.00	0.00	0.00	0.00	15.24	—	0.00	—	—	—	
STREET Q USED, 100-yr	40.00	40.00	40.00	40.00	40.00	40.00	30.00	30.00	30.00	30.00	—	15.00	—	—	—	
Q100.AHYMO - STREET Q USED	425.36	359.01	359.01	283.76	283.76	283.76	205.70	205.70	205.70	205.70	—	101.71	—	—	—	
PIPE Q, upstream: ENTER	425.36	359.01	359.01	283.76	283.76	283.76	205.70	205.70	205.70	205.70	189.50	115.71	55.51	55.51	55.51	
L = STA - PREV.DOWN STA	—	300.00	239.00	86.00	368.00	400.00	300.00	400.00	400.00	320.00	79.00	38.00	192.00	240.00	78.00	
GROUND SLOPE, up-down	0.00000	0.00500	0.00502	0.00814	0.00435	0.00500	0.00667	0.01550	0.01550	0.01563	0.00759	0.02632	0.00260	0.00208	0.01154	
PIPE SLOPE, up-down	0.00000	-0.22967	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
Sf (FRICTION SLOPE, CALC'D)	0.010095	0.007191	0.007191	0.004492	0.004492	0.004492	0.006242	0.010949	0.010949	0.020521	0.013934	0.008606	0.006931	0.006931	0.018328	
A pipe, upstr, SF	28.27	28.27	28.27	28.27	28.27	28.27	19.63	15.90	15.90	12.57	12.57	12.57	7.07	7.07	4.91	
V upstr, FPS	15.04	12.70	12.70	10.04	10.04	10.04	10.48	12.93	12.93	16.37	13.49	9.29	7.85	7.85	11.31	
Hv upstr, FT	3.52	2.51	2.51	1.57	1.57	1.57	1.71	2.60	2.60	4.16	2.83	1.34	0.96	0.96	1.99	
H.bend, FT	—	0.70	—	0.46	0.09	0.09	0.31	—	—	—	—	—	0.76	0.14	0.14	2.89
H.manhole, FT	—	0.18	0.13	0.13	0.08	0.08	0.08	0.09	0.13	0.13	—	0.14	0.07	0.05	0.05	1.31
Hf, = L*Sf, FT	0.00	3.03	1.72	0.62	1.65	1.80	1.35	2.50	4.38	3.50	1.62	0.53	1.27	1.66	0.54	28.17
-- JUNCTION LOSS --																
A SIDE Q	—	4.91	—	9.62	—	—	7.07	—	—	—	6.29	7.07	4.91	—	—	
V SIDE Q	—	13.52	—	7.82	—	—	11.04	—	—	—	5.76	7.47	12.47	—	—	
Hv SIDE Q	—	2.84	—	0.95	—	—	1.90	—	—	—	0.51	0.87	2.42	—	—	
ANGLE SIDE Q (echo degs)	0.00	90.00	—	45.00	—	—	90.00	—	—	—	45.00	45.00	50.00	—	—	4.42
D.y=D.hgl, FT	—	2.02	—	1.42	—	—	0.90	—	—	—	2.31	2.28	0.50	—	—	0.92
Hj=D.y+Hv.up-Hv.dwn	—	1.01	—	0.48	—	—	1.04	—	—	—	0.97	0.80	0.12	—	—	0.00
Hxc, SUDDEN eXpand/Contract	NA	0.06	0.00	0.06	0.00	0.00	0.00	0.09	0.00	0.18	0.09	0.19	0.03	0.00	0.19	
OTHER LOSSES, ECHO & USE	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
==TOTAL ENERGY LOSSES===>	0.00	4.98	1.84	1.76	1.82	1.97	2.78	2.68	4.51	3.82	2.68	1.66	2.24	1.85	0.81	35.51
E.G.L DOWN	78.42	81.45	85.12	85.86	88.68	90.63	92.15	96.08	100.64	104.27	106.21	107.80	110.20	112.83	113.56	TOT LOSS ^
H.G.L DOWN	74.90	78.94	82.61	83.36	87.09	89.06	90.58	94.37	98.04	101.67	102.04	104.97	108.86	111.88	112.60	
GROUND (ECHO)	85.50	87.00	88.20	88.90	90.50	92.50	95.10	101.30	107.50	112.50	113.10	114.10	114.60	115.10	116.00	
GROUND-EGL DOWN	7.08	5.55	3.08	3.04	1.84	1.87	2.95	5.22	6.86	8.23	6.89	6.30	4.40	2.27	2.44	
GROUND-HGL DOWN	10.60	8.06	5.59	5.54	3.41	3.44	4.52	6.93	9.46	10.83	11.06	9.13	5.74	3.22	3.40	
E.G.L UP	78.42	83.40	85.24	87.00	88.83	90.80	93.58	96.26	100.77	104.58	107.27	108.93	111.17	113.02	113.93	
H.G.L UP	74.90	80.89	82.74	85.44	87.26	89.23	91.88	93.66	98.17	100.42	104.44	107.59	110.21	112.06	111.94	
GROUND-E.G.L UP	7.08	3.60	2.96	1.90	1.67	1.70	1.52	5.04	6.73	7.92	5.83	5.17	3.43	2.08	2.07	
GROUND-H.G.L UP	10.60	6.11	5.46	3.46	3.24	3.27	3.22	7.64	9.33	12.08	9.66	8.51	4.39	3.04	4.06	
SOFFIT DOWN	74.90	6.00	6.00	6.00	6.00	6.00	6.00	5.00	4.50	4.50	4.00	4.00	4.00	3.00	3.00	
HGL DOWN - SOFFIT DOWN	0.00	72.94	76.61	77.36	81.09	83.06	84.58	89.37	93.54	97.17	98.04	100.97	104.86	108.88	109.60	
SOFFIT UP	6.00	6.00	6.00	6.00	6.00	6.00	5.00	4.50	4.50	4.00	4.00	4.00	3.00	3.00	2.50	
HGL UP - SOFFIT UP	68.90	74.89	76.74	79.44	81.26	83.23	86.88	89.16	93.67	96.42	100.44	103.59	107.21	109.06	109.44	

A: Q10 STREET CAP BASED ON 2'GUTTER+6'BIKELANE=12'DRIVING @ 0.5%
B: BEND LOSSES COEFFS ENTERED & LOSSES APPLIED AT UPSTREAM MANHOLE
C: Q100 INFLOW BASED ON INLETS THAT ESSENTIALLY DRY UP Q10 IN SUNSET GARDENS
D: BTW SG/END & JYD-1 (N) ARE 3 BENDS OF APX 45 DEGREES EACH

E: APX INLET FLOW AS 1 JUNCT: USE EQUIV DIAMETER TO GIVE APX SAME VEL AS ACTUAL PIPE
F: APPLY UNSER SIDE FLOW JUNCTION LOSS AT MH-3; APPROXIMATE BUT CONVENIENT
G: BEND UPSTREAM RIFHT AT MH: APPLY LOSS AT MH
H: FLOW RATES Q DIFFER FROM AHYMO PEAK Q'S PARTLY BY ROUTING EFFECTS, PARTLY BY ROAD FLOW

FROM:
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