HYDROLOGY E19/D22 1 PLAN

E19/D22

1 Plan

CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION

HYDROLOGY SECTION PROJ. NO. _____ DATE: 6/30/83

PLANNING DIVISION NO. _____

CONFERENCE RECAP

SUBJECT: Bear Canyon Estates (Bear Canyon Village, Tr C-2) E19

	WHO	REPRESENTING
ATTENDANCE:	FJA	City
	Jeff Mortensen	Clients Engineer

FINDINGS:

1. Free discharge to Academy is acceptable if it can be demonstrated the adequate capacity exists downstream.

2. Drainage Report (if > 5 acres) is required per the DPM
   Drainage Plan (if ≤ 5 acres) is required per the DPM

3. Financial Guarantee may be required for the proposed alley. Further discussion required

The undersigned agrees that the above findings are summarized accurately and are only subject to change if further investigation reveals that they are not reasonable or that they are based on inaccurate information.

SIGNED: [illegible]	SIGNED: [illegible]
TITLE: City Engineer	TITLE: Project Engineer
DATE: 6/30/83	DATE: 6/30/83

CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION

HYDROLOGY SECTION PROJ. NO._____ DATE: 10/10/83

PLANNING DIVISION NO._____

CONFERENCE RECAP

SUBJECT: Bear Canyon Estates E19

ATTENDANCE: WHO	REPRESENTING
Billy Goolsby	City / Hydrology
Steve Schroll	Tom Mann & Assoc.

FINDINGS:

① Drainage Plan required per DPM

② Ponding on-site required due to inadequate down stream capacities

③ Financial guarantee required for drainage, utilities & street improvements (public & private) prior to sign-off final plat

The undersigned agrees that the above findings are summarized accurately and are only subject to change if further investigation reveals that they are not reasonable or that they are based on inaccurate information.

SIGNED: Billy J. Goolsby SIGNED:_____

TITLE: C.E. / Hydrology TITLE:_____

DATE: 10/10/8 DATE:_____

30751

INFORMATION SHEET

PROJECT TITLE Bear Canyon Estates TYPE OF SUBMITTAL Drainage Plan

ZONE ATLAS PAGE NO. E-19-D22 CITY ADDRESS Cubero Dr.

LEGAL DESCRIPTION Tract C-2 Bear Canyon Village

ENGINEERING FIRM Tom Mann & Assoc CONTACT Steve Schroll

ADDRESS 811 Dallas NE PHONE 265-5611

OWNER Hacker Ltd. CONTACT Steve Hacker

ADDRESS 9508 Sierra Vista Ct PHONE 292-6700

ARCHITECT N/A CONTACT

ADDRESS PHONE

SURVEYOR Not available CONTACT

ADDRESS PHONE

CONTRACTOR Not available CONTACT

ADDRESS PHONE

DATE SUBMITTED Oct 21, 1983

BY Steve K Schroll

Use this Information Sheet when submitting the following:

Drainage report or plan, conceptual grading and drainage plan, engineer's certification plan, erosion plan and grading plan. Provide the information applicable to your submittal.

RECEIVED

OCT 21 1983

ENGINEERING

FILE COPY

City of Albuquerque

November 9, 1983

Mr. Steve Schroll
Tom Mann & Associates, Inc.
811 Dallas, N.E.
Albuquerque, N.M. 87110

RE: Grading & Drainage plan for Bear Canyon Estates (E19-D22)

Dear Steve:

Your recent hydrograph calculations submittal are as I requested and do indicate that the discharge from the site has a very negligable impact on downstream conditions therefore, the above referenced plan dated October 21, 1983 is approved.

Prior to final sign-off, financial securities for drainage, utility and street improvements will be required.

If I can be of further assistance, please do not hesitate to call me at 766-7644.

Yours Truly,

Billy J. Goolsby

Billy J. Goolsby P.E.
Civil Engineer/Hydrology

BJG/ccg

MUNICIPAL DEVELOPMENT DEPARTMENT

Richard S. Heller, P.E., City Engineer
LaMonte J. Urban, P.L.S., Chief City Surveyor

ENGINEERING DIVISION

123 Central Avenue N.W.
Albuquerque, New Mexico 87102
Telephone (505) 766-6040

Tom Mann Associates, Inc.
Engineers
811 DALLAS, N.E. • ALBUQUERQUE • NEW MEXICO • 87110 • 505-265-5611

ADVISED JEFF M ON 8/9/84 REGARDING THIS LETTER AND OUR REQUIREMENTS FOR the City Engineer. Also informed Tom Mann

31421
August 6, 1984

RECEIVED
AUG 06 1984
CITY ENGINEER

E19-D28

Mr. Dwayne Sheppard
City Engineer
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Bear Canyon Estates, Unit 2

Dear Dwayne:

I am writing you because I have been unable to contact you personally to try to resolve some of the issues that I am concerned with regarding this project. Unfortunately, I will be out of town until the latter part of the week, however, I would appreciate any consideration that you could offer in my absence.

One of our projects is Bear Canyon Estates, Unit 2, located on Academy Court and Academy N.E. It is a replat of Tract L of Bear Canyon Village. We have been to the DRB and EPC with a site development plan, and both the DRB and EPC have approved that plan. We have simultaneously attempted to file a plat of Bear Canyon Estates, Unit 2, and have had difficulty with the filing.

All City departments have signed the plat except Hydrology, Planning, and City Engineering. We have had several discussions with Fred Aguirre concerning the obtaining of signatures from Hydrology and City Engineering. Academy Court is not a paved street and a water and sewer line will be required in that street. Tract L is located on the east side of the street, and Tract E is located on the west side of the street. Tract E is currently being developed as an apartment complex. The developers are Cauwels & Davis. Cauwels & Davis have retained the firm of Wilson & Company to do their engineering. As part of the apartment complex, Cauwels & Davis have agreed to put the utilities in Academy Court and to pave the street. In addition, they are to make all sewer and water stubouts for our project to the east. My client, Mr. Steve Hacker, has agreed to reimburse Cauwels & Davis for his proportionate share of the expenses.

We have requested that the City sign our subdivision plat. Fred Aguirre believes that a financial guarantee must be posted in accordance with the subdivision ordinance. Since we are not the party who is paving the street, we cannot post a financial guarantee. Wilson & Company has prepared the plans for the street

and is ready to obtain a Work Order. It is my understanding that the only obstacle delaying the construction of the street and utilities is that the City is not sure if a financial guarantee will be required of Cauwels & Davis.

We have now been stalled for approximately two months trying to resolve this matter. Mr. Hacker has three pre-sold units in his subdivision and he is paying approximately $5,000.00 a month in interest money on the land. We need to obtain building permits so that the house construction can be started and he will not lose his sales. It appears that this is just one of those projects that requires special attention and does not fit precisely within the rules. I believe that Cauwels & Davis is one of the strongest developers in the community and I do not believe that they will renig on their commitment to build the street. The City still has the leverage of not issuing an occupancy permit to Cauwels & Davis if the street is not built with their project. I also am certain that Mr. Hacker would complete the street should Cauwels & Davis fail to perform. The requirement that Mr. Hacker not receive the occupancy permits until the streets and utilities are in place could also be imposed by the City thereby assuring a double guarantee for the completion of the street.

The most important issue is that building be started in this area. As you know, interest rates are increasing daily and everyone has made long-term commitments that are based on time. I will be out of town until Thursday of this week, but I would appreciate it if you would contact Mr. Jeff Mortensen, of this office, with any decisions that you might reach. I am requesting that you, or your representative, sign our subdivision plat so that building permits may be obtained. If you should need any additional information regarding this project, Mr. Mortensen will be happy to supply it. Mr. Mortensen would also be available to meet with you in your office to discuss this matter.

I appreciate your prompt attention to this matter. If we can be on any further assistance, please do not hesitate to call.

Thank you,

TOM MANN & ASSOCIATES, INC.

for Jeffrey Mortensen

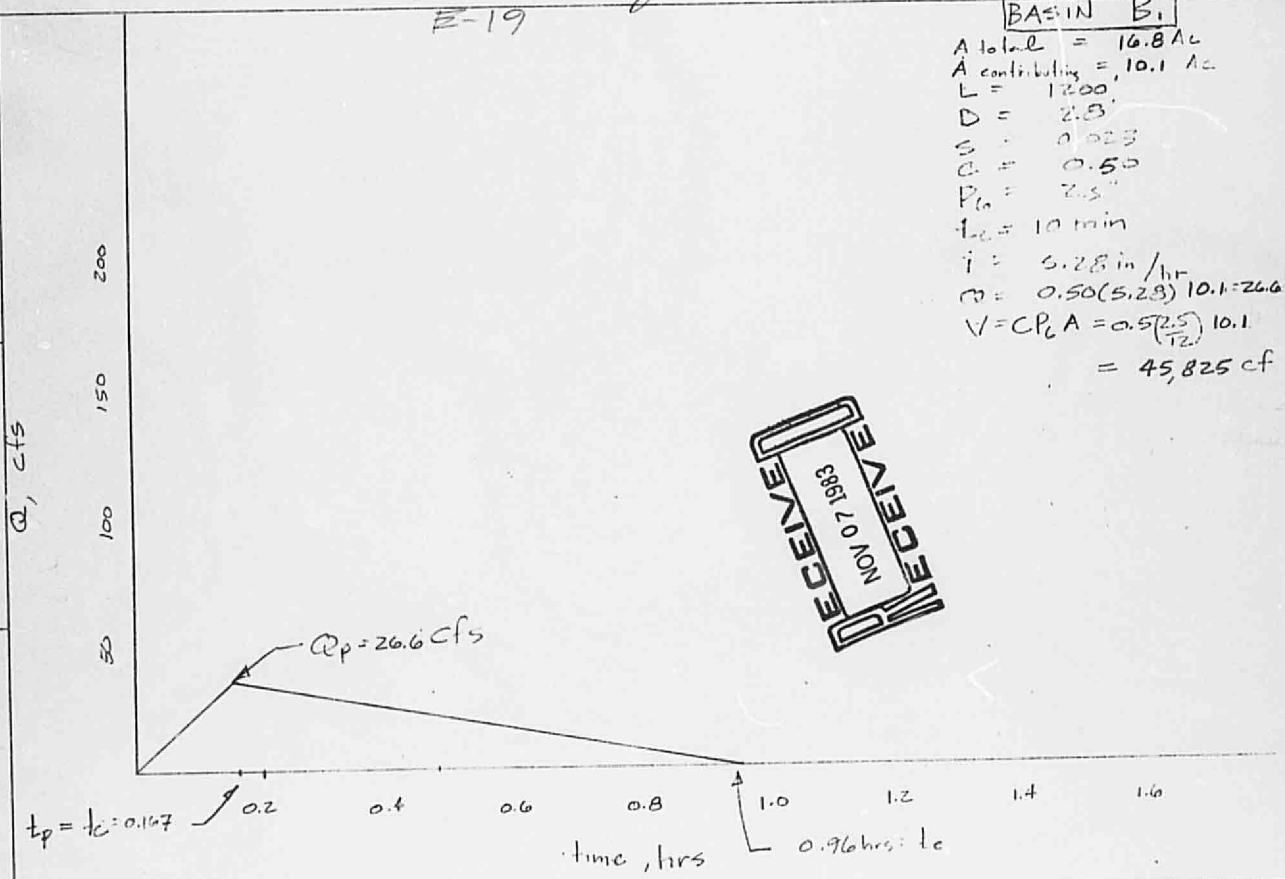
Thomas T. Mann, Jr., P.E.
President

TTM:ra

bear Canyon Estates
E-19

BASIN B1

A total = 16.8 Ac
A contributing = 10.1 Ac
L = 1200'
D = 2.8'
S = 0.023
C = 0.50
P_6 = 2.5"
t_c = 10 min
i = 5.28 in/hr
Q = 0.50(5.28) 10.1 = 26.6
$V = CP_6 A = 0.5\left(\frac{2.5}{12}\right) 10.1$
= 45,825 cf



RECEIVED
NOV 07 1983
RECEIVED

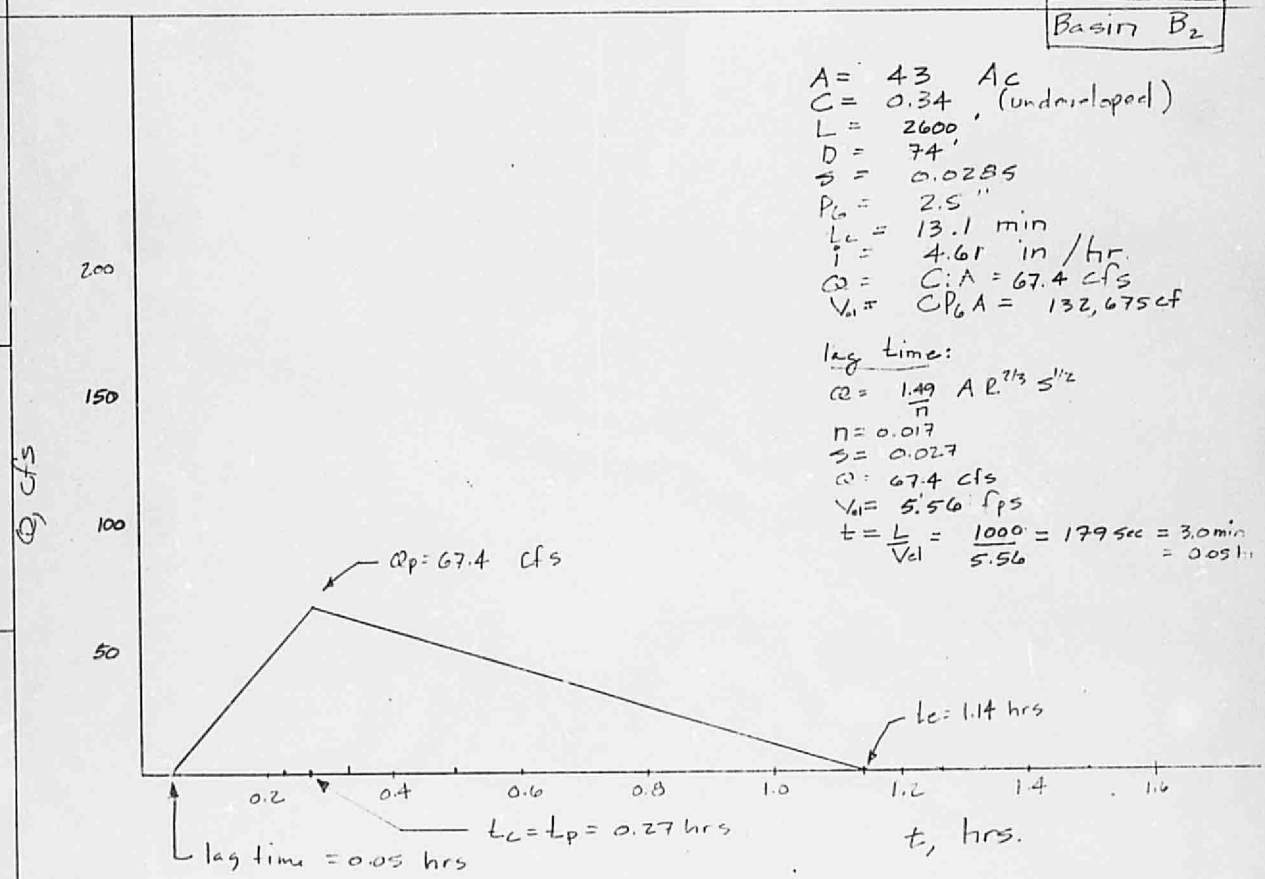
Basin B_2

$A = 43$ Ac
$C = 0.34$, (undeveloped)
$L = 2600'$
$D = 74'$
$S = 0.0285$
$P_6 = 2.5''$
$t_c = 13.1$ min
$i = 4.61$ in/hr.
$Q = C \cdot A = 67.4$ cfs
$V_{ol} = C P_6 A = 132{,}675$ cf

lag time:

$Q = \frac{1.49}{n} A R^{2/3} S^{1/2}$

$n = 0.017$
$S = 0.027$
$Q = 67.4$ cfs
$V_{el} = 5.56$ fps
$t = \frac{L}{V_{el}} = \frac{1000}{5.56} = 179$ sec $= 3.0$ min $= 0.05$ hr



BASIN B_3

$A_{total} = 10{,}875$

$A_{contributing} = 6525$

% contribute = 60

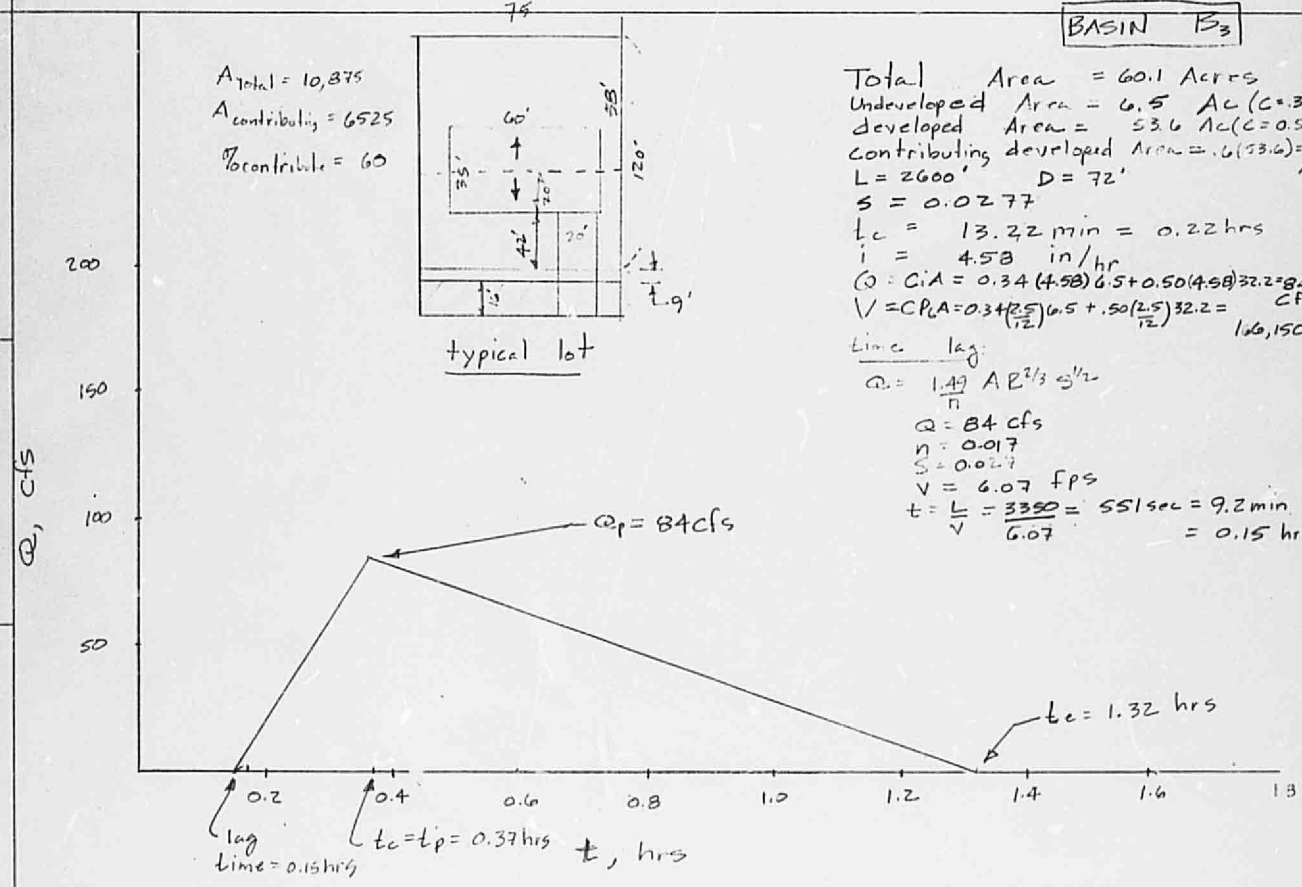
typical lot

Total Area = 60.1 Acres
Undeveloped Area = 6.5 Ac (C=.34
developed Area = 53.6 Ac (C=0.50
contributing developed Area = .6(53.6)=
L = 2600' D = 72'
S = 0.0277
t_c = 13.22 min = 0.22 hrs
i = 4.58 in/hr
$Q = CiA = 0.34(4.58)6.5 + 0.50(4.58)32.2 = 84$ cf
$V = CP_cA = 0.34\left(\frac{2.5}{12}\right)6.5 + .50\left(\frac{2.5}{12}\right)32.2 =$ 166,150c

time lag:

$Q = \frac{1.49}{n} A R^{2/3} S^{1/2}$

Q = 84 cfs
n = 0.017
S = 0.027
V = 6.07 fps
$t = \frac{L}{V} = \frac{3350}{6.07} = 551$ sec = 9.2 min = 0.15 hrs

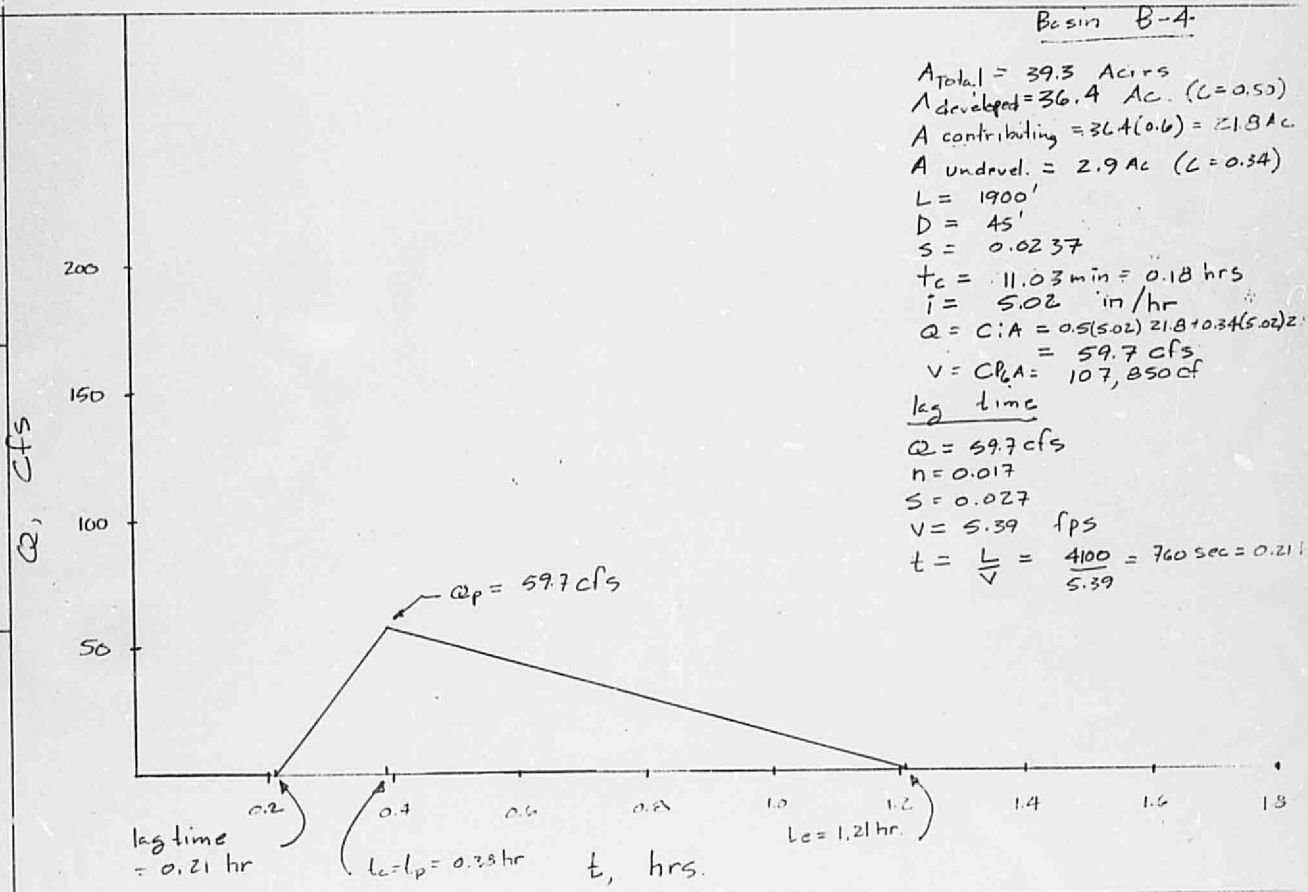


Basin B-4

$A_{Total} = 39.3$ Acres
$A_{developed} = 36.4$ Ac. ($C = 0.50$)
A contributing $= 36.4(0.6) = 21.8$ Ac.
A undevel. $= 2.9$ Ac ($C = 0.34$)
$L = 1900'$
$D = 45'$
$S = 0.0237$
$t_c = 11.03$ min $= 0.18$ hrs
$i = 5.02$ in/hr
$Q = CiA = 0.5(5.02)\,21.8 + 0.34(5.02)2$
$= 59.7$ cfs
$V = CP_6A = 107{,}850$ cf

lag time

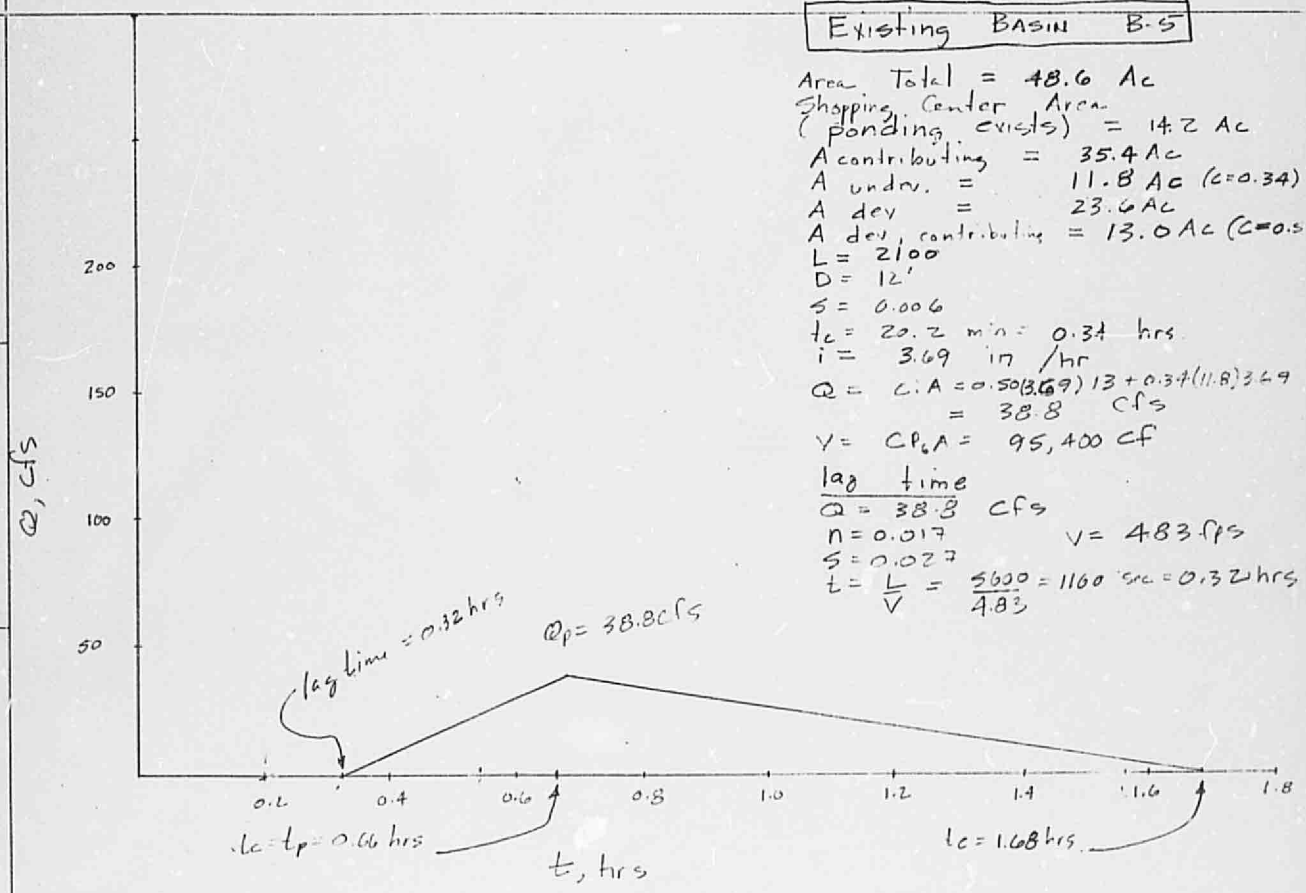
$Q = 59.7$ cfs
$n = 0.017$
$S = 0.027$
$V = 5.39$ fps
$t = \frac{L}{V} = \frac{4100}{5.39} = 760$ sec $= 0.21$



Existing Basin B-5

Area Total = 48.6 Ac
Shopping Center Area
(ponding exists) = 14.2 Ac
A contributing = 35.4 Ac
A undev. = 11.8 Ac (C=0.34)
A dev = 23.6 Ac
A dev, contributing = 13.0 Ac (C=0.5
L = 2100
D = 12'
S = 0.006
t_c = 20.2 min = 0.34 hrs
i = 3.69 in /hr
Q = C·A = 0.50(3.69) 13 + 0.34(11.8)3.69
= 38.8 cfs
V = CP_6A = 95,400 cf

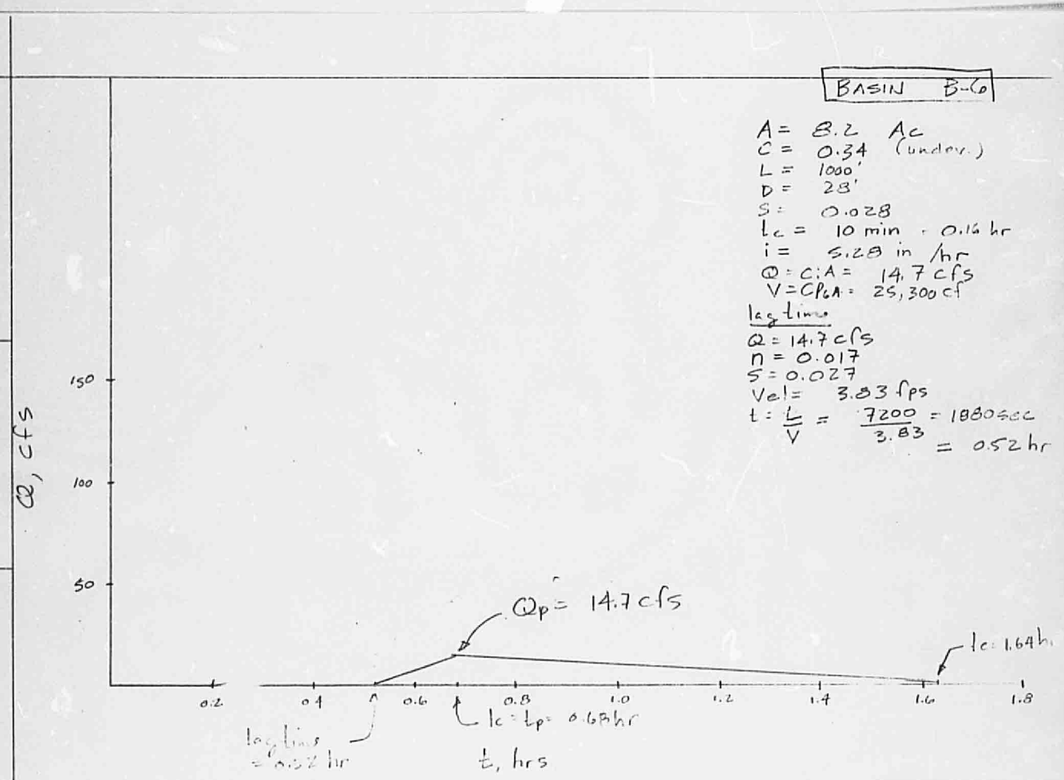
lag time
Q = 38.8 cfs
n = 0.017 V = 4.83 fps
S = 0.027
$t = \frac{L}{V} = \frac{5600}{4.83} = 1160$ sec = 0.32 hrs



BASIN B-6

A = 8.2 Ac
C = 0.34 (undev.)
L = 1000'
D = 28'
S = 0.028
t_c = 10 min = 0.16 hr
i = 5.28 in/hr
Q = CiA = 14.7 cfs
V = CPCA = 25,300 cf

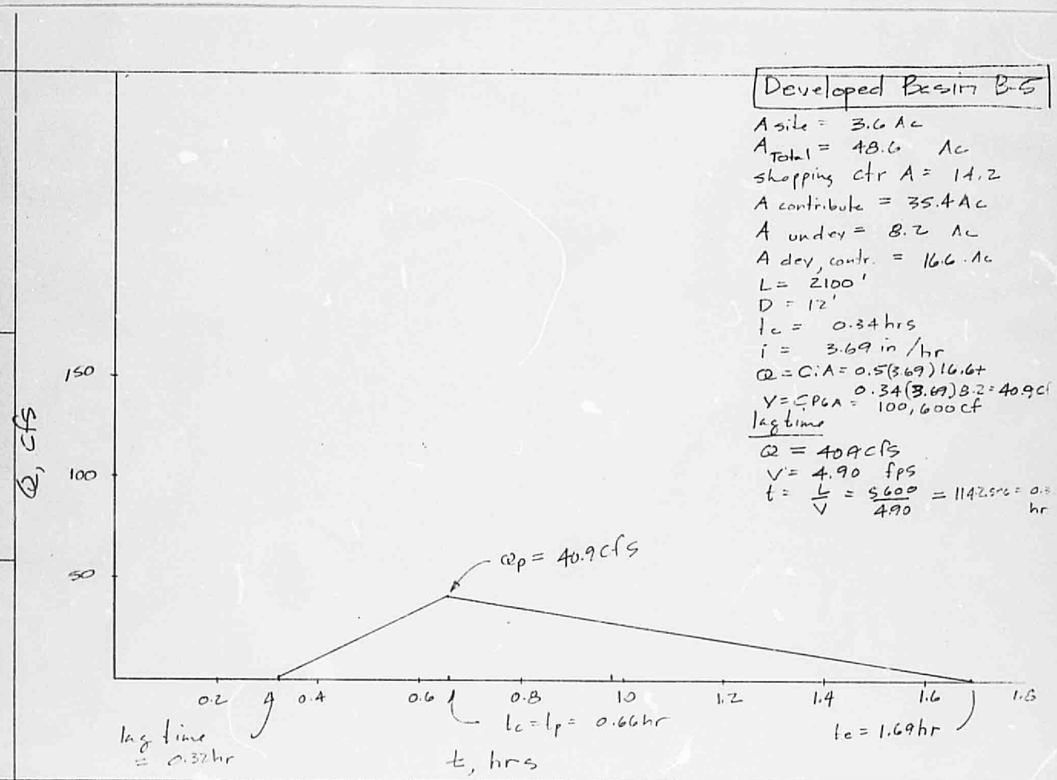
lag time
Q = 14.7 cfs
n = 0.017
S = 0.027
Vel = 3.83 fps
$t = \frac{L}{V} = \frac{7200}{3.83} = 1880 sec = 0.52 hr$



Developed Basin B-5

A site = 3.6 Ac
A_{Total} = 48.6 Ac
shopping ctr A = 14.2
A contribute = 35.4 Ac
A undev = 8.2 Ac
A dev, contr. = 16.6 Ac
L = 2100'
D = 12'
t_c = 0.34 hrs
i = 3.69 in/hr
Q = CiA = 0.5(3.69)16.6 + 0.34(3.69)8.2 = 40.9 cfs
V = CPCA = 100,600 cf

lag time
Q = 40.9 cfs
V = 4.90 fps
$t = \frac{L}{V} = \frac{5600}{4.90} = 1142 sec = 0.32 hr$



Basins $B_1 - B_6$ UNDEV – Summation of hydrographs

Q, cfs

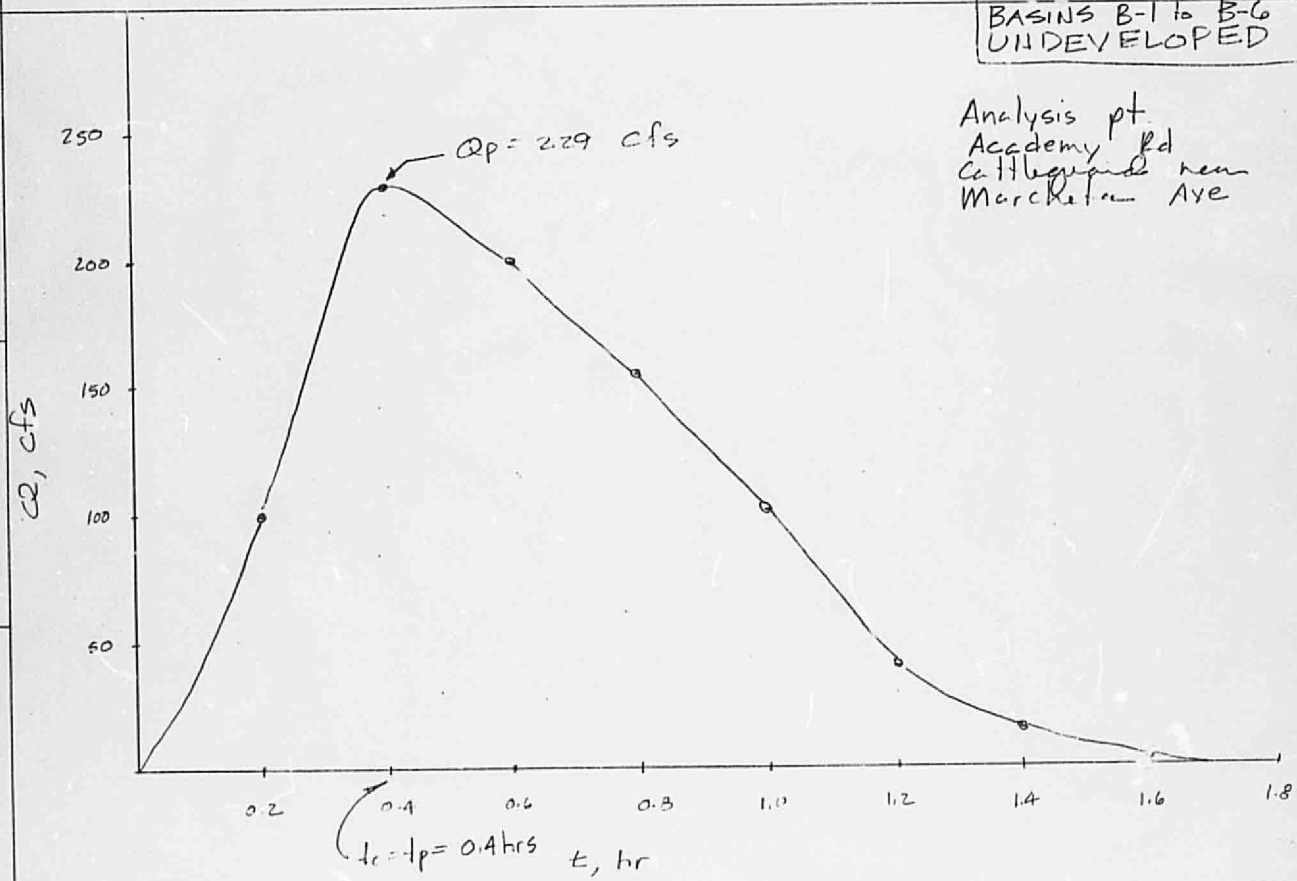
time	B_1	B_2	B_3	B_4	B_5	B_6	total
0	0	→					
0.2	33	45	21	0	0	0	99
0.4	24	57	81	59	8	0	229
0.6	15	41	63	43	30	7	199
0.8	8	26	45	30	53	12	154
1.0	0	11	38	15	26	11	101
1.2	0	0	11	1	20	7	39
1.4	0	0	0	0	10	4	14
1.6	0	0	0	0	1	1	2

Basins $B_1 - B_6$ Dev. – Summation of hydrographs

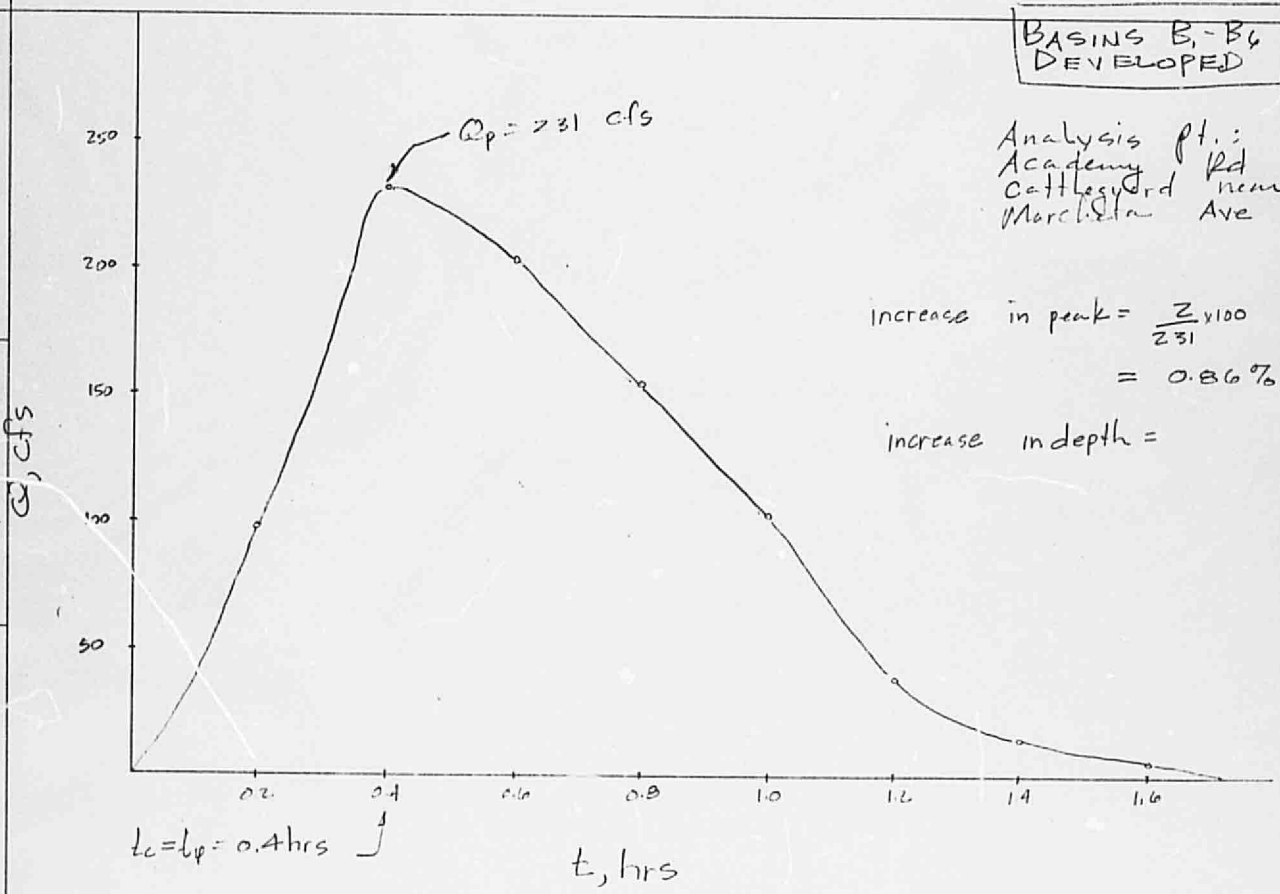
time	B_1	B_2	B_3	B_4	B_5	B_6	total
0	0	→					
0.2	33	45	21	0	0	0	99
0.4	24	57	83	59	10	0	231
0.6	15	41	63	43	35	7	204
0.8	8	26	45	30	34	12	155
1.0	0	11	38	15	28	11	103
1.2	0	0	11	1	20	7	39
1.4	0	0	0	0	11	4	15
1.6	0	0	0	0	3	1	4

BASINS B-1 to B-6
UNDEVELOPED

Analysis pt
Academy Rd
Cattleguard near
Marcheta Ave



BASINS B_1 - B_6
DEVELOPED



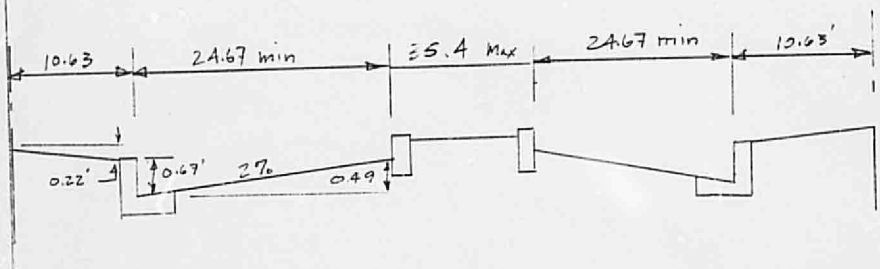
Analysis pt.:
Academy Rd
Cattlegard near
Marchetta Ave

increase in peak = $\frac{2}{231} \times 100$

= 0.86 %

increase in depth =

Academy Rd. Capacity:



max depth = 0.87 as per drainage ordinance

$S = 0.027$

$n = 0.017$

$\frac{1}{2} A = 24.67(0.49)\,0.5 + 0.35(24.67) + \frac{1}{2}(0.20)\,10.63$

$= 16.48$ sf

$R = A/P = \frac{16.48}{24.67 + .67 + .38 + 10.6} = 0.45$

$\frac{1}{2} Q = \frac{1.49}{n} A R^{2/3} S^{1/2} = \frac{1.49}{.017}(16.48)(0.45)^{2/3}(0.027)^{1/2}$

$= 139.0$ cfs

Q Total capacity $= 139 \times 2 = \underline{\underline{278}}$ cfs

depth @ $Q = 229$ cfs $= 0.781$

depth @ $Q = 231$ cfs $= 0.788$

∴ increase in depth due to development $= \underline{\underline{0.007'}}$

CONSTRUCTED CHANNEL
BASIN B-2
BASIN B-4
BASIN B-3
SITE
ACADEMY ROAD
BASIN B-6
100-YEAR FLOOD CONFINED TO CONSTRUCTED CHANNEL
ARROYO DEL OSO DR
ROAD

0065