City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 6, 2002

Sara Lavy, PE
8509 Jefferson NE
Albuquerque, NM 87113

Re: Bluewater Road near 90th Street Drainage Management Plan
Engineer's Stamp Dated 1-17-02, (K9/D22)

Dear Ms. Lavy,

Based on the information contained in your submittal dated 1-29-02, the above referenced plan is approved for Analysis for DRC.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Leslie Romero
Engineering Associate, PWD
Development and Building Services

c: Terri Martin, Hydrology
File (2)

TIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

(505) 858-3100
fax (505) 858-1118

twllc@tierrawestllc.com
1-800-245-3102

January 28, 2002

Mr. Bradley L. Bingham, PE
Sr. Engineer, PWD
City of Albuquerque
PO Box 1293
Albuquerque, NM 87103

Re: Bluewater/94th Storm Drain Drainage Report (K9/D22)

Dear Mr. Bingham:

We addressed your comments regarding the above referenced drainage report in the following manner:

1. On the developed basin map, please add all pipe sizes in Bluewater, 90th and Volcano, and denote if they are existing, proposed or future.
   We revised the Basin Map to show the storm drain, pipe sizes and status.

2. Also, please add runoff (Q's) from Avalon 2, WRMH2, WRMH and the basin west of WRMH to your basin map.
   We added the additional Qs to the Basin Map.

We only included a copy of the Basin Map and not the drainage report, as no revisions were made to it. If you have any questions or need further information regarding this matter, please do not hesitate to call me.

Sincerely,

Sara Lavy

Sara Lavy, PE

Enclosure/s

cc: Bo Johnson

JN: 21019
scl

21019: 2119 hydrology.ltr.doc

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 17, 2002

Ron Bohannan, PE
Tierra West LLC
8509 Jefferson NE
Albuquerque, NM 87113

Re: Bluewater/94th Storm Drain Drainage Report
Engineer Stamp date 12-22-01 (K9/D22)

Dear Mr. Bohannan,

Based on information provided in your submittal dated 1-7-02, the above referenced plan cannot be approved for Work Order requirements until the following comments are addressed.

- On the developed basin map, please add all pipe sizes in Bluewater, 90th and Volcano, and denote if they are existing, proposed or future.

- Also, please add runoff (Q's) from Avalon 2, WRMH2, WRMH and the basin west of WRMH to your basin map.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE
Sr. Engineer, PWD
Development and Building Services

C: file

DRAINAGE ANALYSIS

for

Bluewater Road near 90th Street

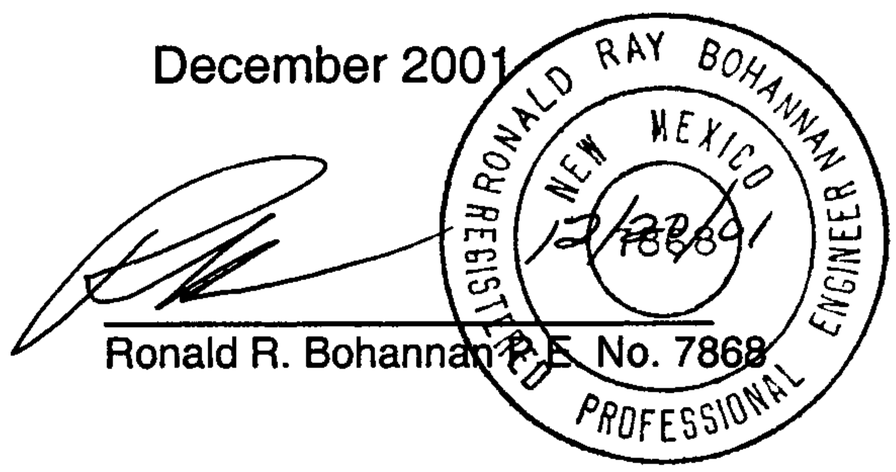
Prepared by

Tierra West, LLC
8509 Jefferson NE
Albuquerque, New Mexico 87113

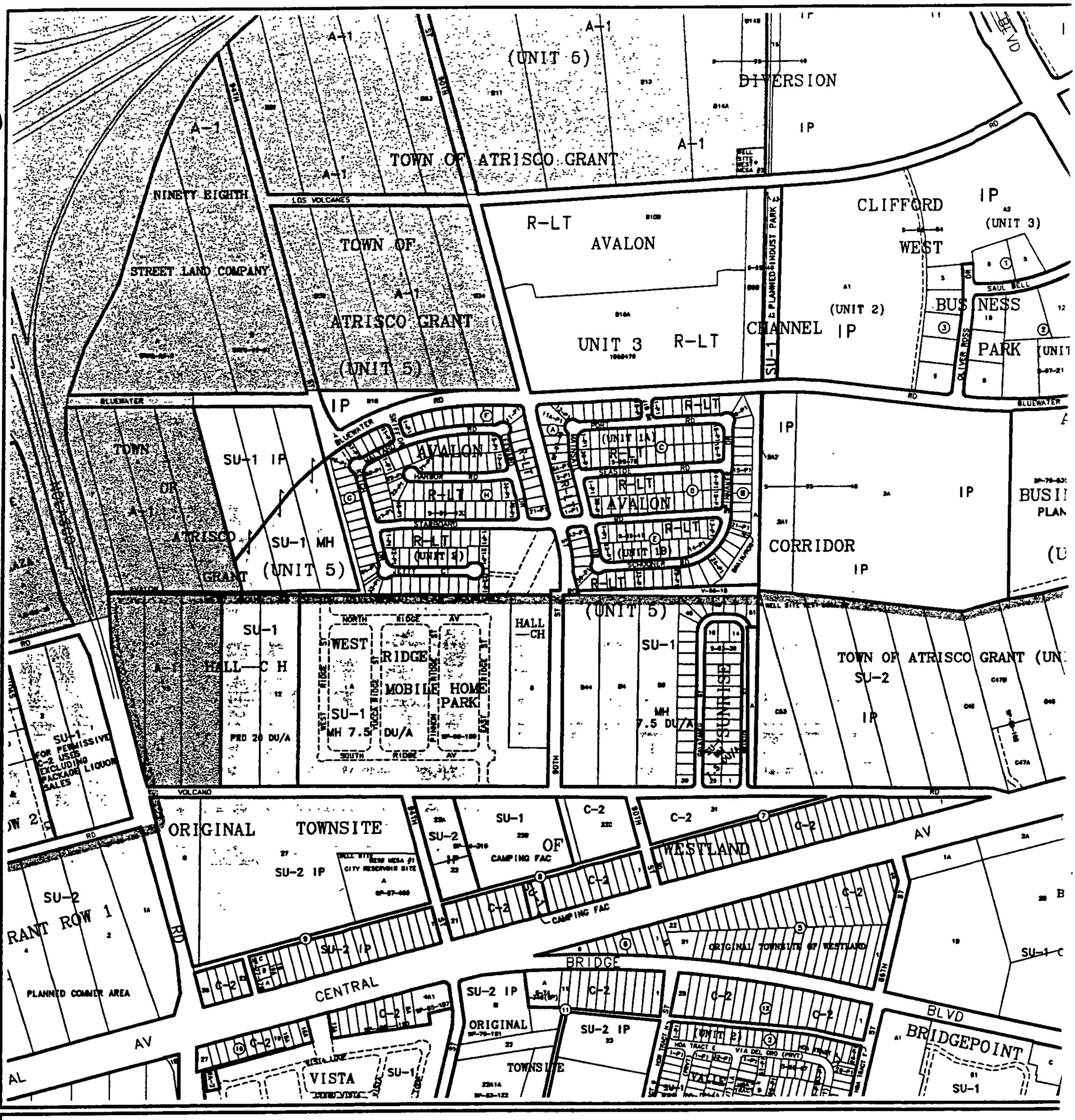
Prepared for

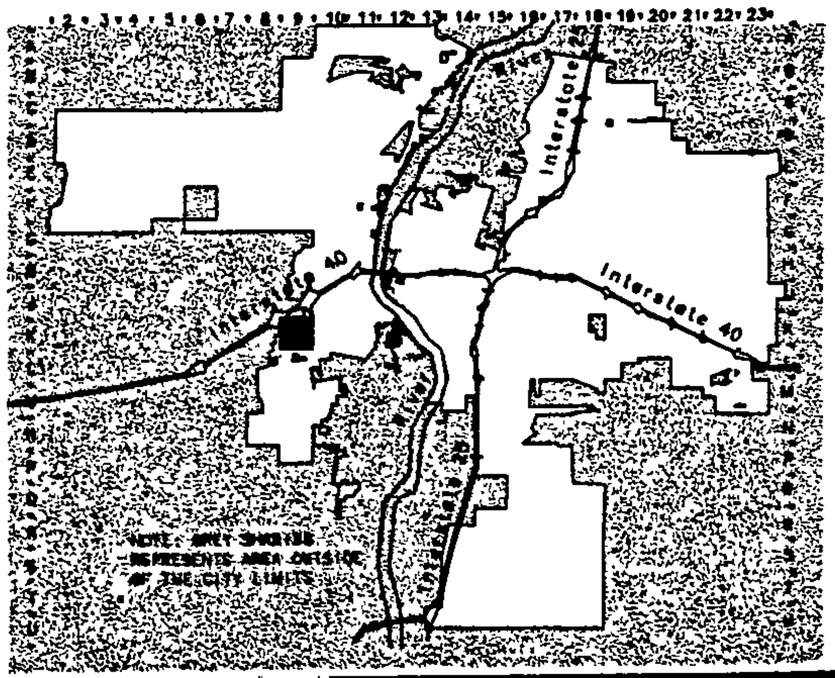
Bo Johnson
Curb Inc.
6301 Indian School Road, NE Suite 680
Albuquerque, New Mexico 87110

December 2001



Ronald R. Bohannan P.E. No. 7868





CITY OF
Albuquerque

A Albuquerque G Geographic I Information S System
PLANNING DEPARTMENT

GRAPHIC SCALE IN FEET

250 0 750 1000

Zone Atlas Page

K-9-Z

Map Amended through July 28, 2000

Purpose

This is a drainage analysis of Bluewater Road to facilitate approval of construction plans for storm drain. The owner of the property adjacent to Bluewater on the south has an existing infrastructure list with storm drain in Bluewater still to be completed. The construction drawings for this storm drain have been submitted to DRC. The construction drawings show for reference only the paving sheet for Bluewater. We are not constructing Bluewater Road as is not part of the existing infrastructure, but it is shown as it affects the storm drain. The only improvement to be constructed at this time is the storm drain in Bluewater Road.

Location

Bluewater Road is located north of Volcano Road and east of 98th Street. Tierra West is only concerned with the piece of Bluewater that is north of West Ridge MHP and Avalon Subdivision (see attached Zone Atlas Page K-9). We divided Bluewater into two sections for ease of discussion. The storm drain is Bluewater is completed north of Avalon Subdivision between 94th Street and 90th Street (Section 1). The current construction plans only show Bluewater Road north of West Ridge MHP and west of 94th Street (Section 2). We have analyzed the drainage to show the new and existing storm drain has capacity for the upland flows.

FIRM Map

This site is located on FIRM Map 35001C0328 D which shows the site in a 100-year floodplain. However, a LOMR was done with the West Ridge Mobile Home Park that removed the floodplain. I have enclosed a copy of the revised floodplain from the LOMR.

Existing Conditions

The undeveloped flows sheet flow southeast from I-40 towards the West Ridge MHP. A large retention pond was built north of Bluewater Road to capture those flows. This is a temporary solution and only captures undeveloped flows. Developed flows upland of the pond will not be

LOS VOLCANO

90TH

BERNALILLO COUNTY
UNINCORPORATED AREAS
350001

ZONE X

ZONE X

BERNALILLO COUNTY
CITY OF ALBUQUERQUE

CITY OF ALBUQUERQUE
350002

94TH

ZONE A

BLUEWATER ROAD

Tierra Bayita Arroyo "C"

NOLASCO

98TH

STREET

ZONE A

STREET

REVISED AREA

ROAD

AVALON ROAD

ZONE A

ZONE A

AVALON ROAD

STREET

STREET

ZONE X

94TH

90TH

ZONE X

ZONE A

LIMIT OF STUDY

ROAD

VOLCANO

94TH STREET

90TH STREET

CORPORATE LIMITS

VOLCANO ROAD

CITY OF ALBUQUERQUE
350002

CENTRAL AVENUE

ZONE A

N

APPROXIMATE SCALE IN FEET

500 0 500

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

BERNALILLO COUNTY,
NEW MEXICO AND
INCORPORATED AREAS

PANEL 328 OF 825
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
ALBUQUERQUE, CITY OF	350002	0328	D
BERNALILLO COUNTY UNINCORPORATED AREAS	350001	0328	D

REVISED TO REFLECT LOMR EFFECTIVE DATE: JAN 24 2000

MAP NUMBER
35001C0328 D

EFFECTIVE DATE:
SEPTEMBER 20, 1996

Federal Emergency Management Agency

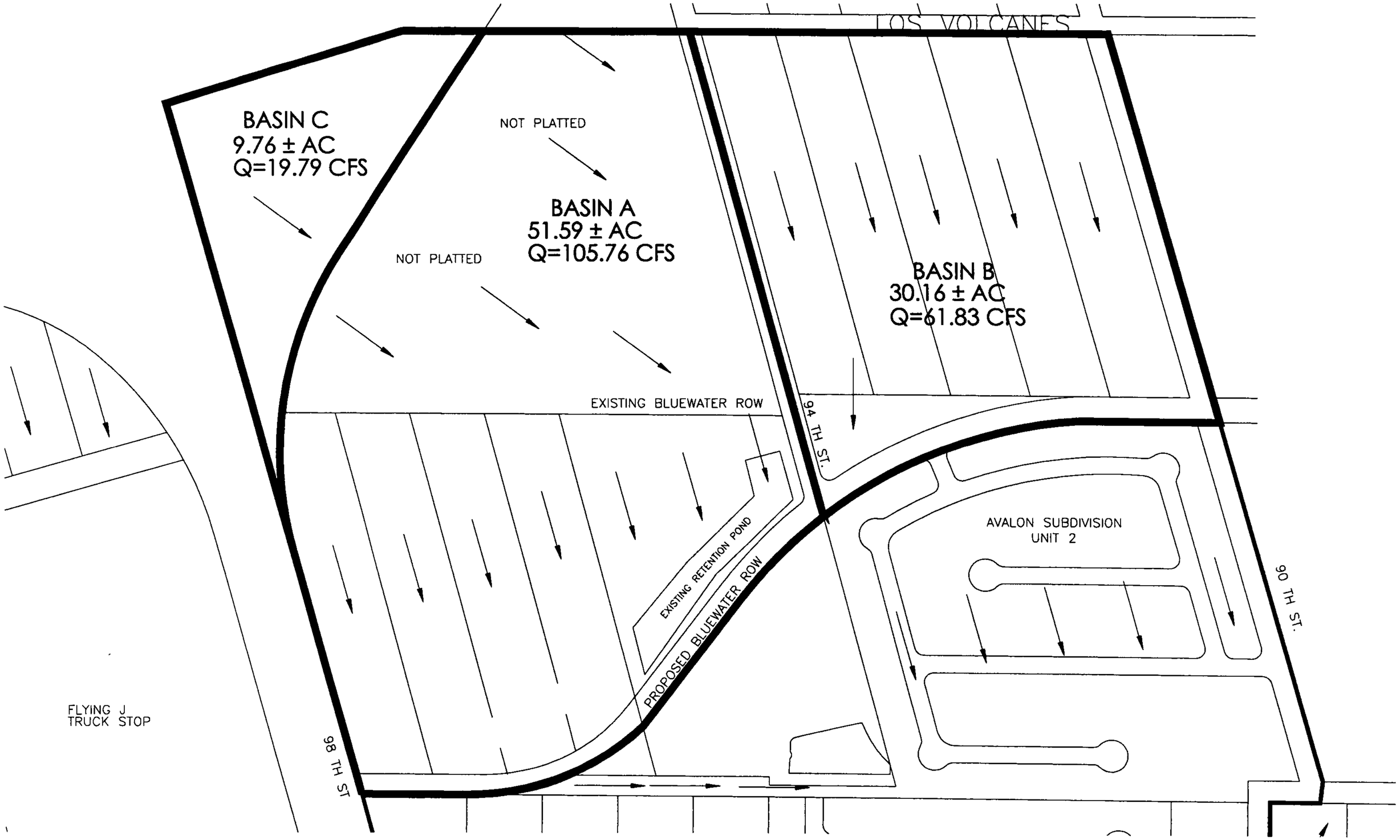
allowed to drain to the pond. The pond is not sized for developed flows and was constructed with the understanding that it would be temporary and the land reclaimed eventually.

Proposed Drainage Solution

A Master Drainage Plan was approved by the City in January 1998 with the West Ridge MHP project (K9/D6). A storm drain in Bluewater was required to capture the upland developed flows. The storm drain will continue east to 90th Street and then turn south to Volcano Road. Several developments have occurred since the Master Plan was approved. We are updating the area of the Master Plan above Bluewater for the new developments in the area.

An Overall Basin Map is included that shows the upland basins based on the current platting in the area. All the land within Basin A has a limitation of 2.05 cfs/ acre. Basin B has the same 2.05 cfs/ acre discharge restriction. The land within Basin C is State Highway Department right-of-way that is allowed to free discharge. The 2.05 cfs/acre is based on the downstream capacity of the storm sewer the City of Albuquerque is building in Central Avenue. Basin A and C will drain to a new 48" storm drain in Bluewater Road (Section 2). Basin B drains to the existing storm drain in Bluewater Road adjacent to Avalon Subdivision (Section 1).

Section 2 of Bluewater has 125.55 cfs draining to it. The street has capacity for 51.10 cfs at a 0.6% slope. This is the slope we have shown on the paving sheet for Bluewater. The remaining 74.45 cfs will be conveyed in a 42" storm drain to Section 1 of Bluewater. Drop inlets will be constructed at the east side of Section 2 to capture the 51.10 cfs being carried in the street. Section 1 of Bluewater exists and has 61.83 cfs of upland flow draining to it. The existing storm drain has capacity for the upland flows and the flows draining from Section 2. This storm drain connects to an existing storm drain in 90th and drains to Volcano Road.



OVERALL BASIN LAYOUT

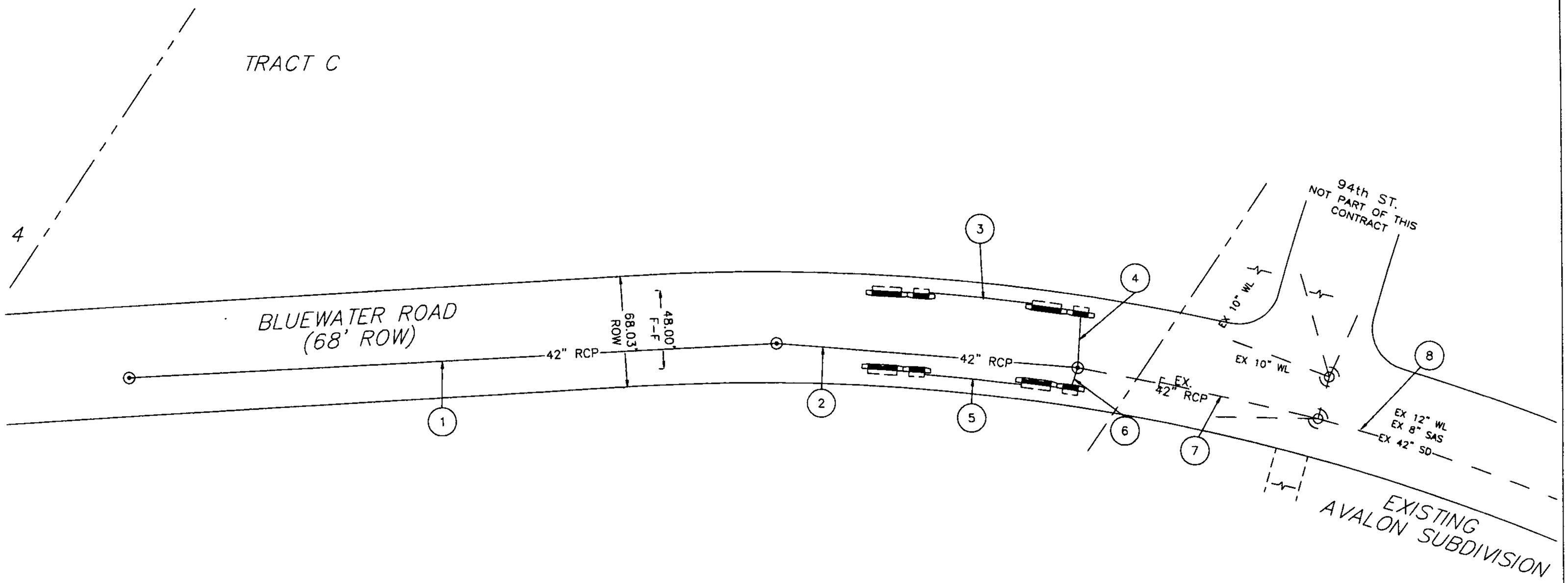
Runoff Calculations

Basin Calculations

Basin	Area (SF)	Area (AC)	Area (MI^2)	Flow (cfs)
A	2,247,260.40	51.59	0.08061	105.76
B	1,313,769.60	30.16	0.04713	61.83
C	425,145.60	9.76	0.01525	19.79

Notes:
The allowable discharge for Basin A and B is limited to 2.05 cfs/acre.
See attached AHYMO for flow calcuation for Basin C.

Storm Sewer



STORM DRAIN LAYOUT

Pipe Capacity

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
1	42	1.15	9.62	0.875	108.18	74.45	7.74
2	42	1.685	9.62	0.875	130.95	74.45	7.74
3	24	1.02	3.14	0.500	22.91	16.50	5.25
4	24	2	3.14	0.500	32.08	24.55	7.81
5	24	1.33	3.14	0.500	26.16	16.50	5.25
6	24	2	3.14	0.500	32.08	24.55	7.81
7	42	1.97	9.62	0.875	141.59	123.55	12.84
8	48	1.94	12.57	1.000	200.61	133.15	10.60

* 2 cfs continues in street to Avalon Subdivision

Manning's Equation:

$Q = 1.49/n * A * R^{(2/3)} * S^{(1/2)}$

A = Area
R = D/4
S = Slope
n = 0.013

Street Capacity Calculations

Bluewater Road
32' F-F Street Section with 8" curb
Slope= 0.006

For water depths less than 0.125 feet

Y=	Water depth
Area =	8*Y^2
P=	SQRT(257*Y^2) + Y
n=	0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0008	0.1703	0.0047	0.0002	0.0003	0.1899	0.0019	0.3347	0.0019
0.02	0.0032	0.3406	0.0094	0.0010	0.0019	0.3015	0.0060	0.3757	0.0046
0.04	0.0128	0.6812	0.0188	0.0061	0.0123	0.4785	0.0191	0.4217	0.0111
0.06	0.0288	1.0219	0.0282	0.0181	0.0361	0.6271	0.0376	0.4511	0.0186
0.08	0.0512	1.3625	0.0376	0.0389	0.0778	0.7596	0.0608	0.4733	0.0268
0.1	0.0800	1.7031	0.0470	0.0705	0.1410	0.8815	0.0881	0.4912	0.0356
0.12	0.1152	2.0437	0.0564	0.1147	0.2293	0.9954	0.1194	0.5064	0.0448
0.125	0.1250	2.1289	0.0587	0.1279	0.2557	1.0229	0.1279	0.5098	0.0472

For water depths greater than 0.125 ft but less than 0.405 ft

Y1=	Y-0.125
A2=	A1 + 2*Y1 + 25*Y1^2
P2=	P1 + SQRT(2501*Y1^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.1356	2.3840	0.0569	0.1358	0.2717	1.0016	0.1302	0.4895	0.0460
0.16	0.2256	3.9143	0.0576	0.2280	0.4559	1.0103	0.1617	0.4451	0.0486
0.2	0.4156	5.9547	0.0698	0.4771	0.9541	1.1478	0.2296	0.4523	0.0624
0.24	0.6856	7.9951	0.0858	0.9028	1.8055	1.3167	0.3160	0.4736	0.0806
0.28	1.0356	10.0355	0.1032	1.5427	3.0855	1.4897	0.4171	0.4961	0.1012
0.32	1.4656	12.0759	0.1214	2.4326	4.8652	1.6598	0.5311	0.5171	0.1235
0.3464	1.7932	13.4225	0.1336	3.1731	6.3463	1.7695	0.6130	0.5298	0.1388
0.39	2.4106	15.6466	0.1541	4.6908	9.3816	1.9459	0.7589	0.5491	0.1652
0.405	2.6450	16.4117	0.1612	5.3038	10.6076	2.0052	0.8121	0.5553	0.1745

For water depths greater than 0.405 ft but less than 0.667 ft

Y2=	Y - 0.405
A3=	A2 + Y2*16
P3=	P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.409	2.7090	16.4157	0.1650	5.5185	11.0370	2.0371	0.8332	0.5613	0.1792
0.44	3.2050	16.4467	0.1949	7.2941	14.5882	2.2759	1.0014	0.6046	0.2158
0.47	3.6850	16.4767	0.2236	9.1931	18.3862	2.4947	1.1725	0.6413	0.2517
0.5	4.1650	16.5067	0.2523	11.2607	22.5213	2.7036	1.3518	0.6738	0.2881
0.55	4.9650	16.5567	0.2999	15.0613	30.1225	3.0335	1.6684	0.7208	0.3495
0.5945	5.6770	16.6012	0.3420	18.7968	37.5936	3.3110	1.9684	0.7568	0.4050
0.63	6.2450	16.6367	0.3754	22.0033	44.0066	3.5233	2.2197	0.7823	0.4498
0.667	6.8370	16.6737	0.4100	25.5505	51.1011	3.7371	2.4926	0.8064	0.4970

Street Capacity Calculations

Bluewater Road
32' F-F Street Section with 8" curb
Slope= 0.006

For water depths less than 0.125 feet

Y= Water depth
Area = 8*Y^2
P= SQRT(257*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0008	0.1703	0.0047	0.0002	0.0003	0.1899	0.0019	0.3347	0.0019
0.02	0.0032	0.3406	0.0094	0.0010	0.0019	0.3015	0.0060	0.3757	0.0046
0.04	0.0128	0.6812	0.0188	0.0061	0.0123	0.4785	0.0191	0.4217	0.0111
0.06	0.0288	1.0219	0.0282	0.0181	0.0361	0.6271	0.0376	0.4511	0.0186
0.08	0.0512	1.3625	0.0376	0.0389	0.0778	0.7596	0.0608	0.4733	0.0268
0.1	0.0800	1.7031	0.0470	0.0705	0.1410	0.8815	0.0881	0.4912	0.0356
0.12	0.1152	2.0437	0.0564	0.1147	0.2293	0.9954	0.1194	0.5064	0.0448
0.125	0.1250	2.1289	0.0587	0.1279	0.2557	1.0229	0.1279	0.5098	0.0472

For water depths greater than 0.125 ft but less than 0.405 ft

Y1= Y-0.125
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.1356	2.3840	0.0569	0.1358	0.2717	1.0016	0.1302	0.4895	0.0460
0.16	0.2256	3.9143	0.0576	0.2280	0.4559	1.0103	0.1617	0.4451	0.0486
0.2	0.4156	5.9547	0.0698	0.4771	0.9541	1.1478	0.2296	0.4523	0.0624
0.24	0.6856	7.9951	0.0858	0.9028	1.8055	1.3167	0.3160	0.4736	0.0806
0.28	1.0356	10.0355	0.1032	1.5427	3.0855	1.4897	0.4171	0.4961	0.1012
0.32	1.4656	12.0759	0.1214	2.4326	4.8652	1.6598	0.5311	0.5171	0.1235
0.3464	1.7932	13.4225	0.1336	3.1731	6.3463	1.7695	0.6130	0.5298	0.1388
0.39	2.4106	15.6466	0.1541	4.6908	9.3816	1.9459	0.7589	0.5491	0.1652
0.405	2.6450	16.4117	0.1612	5.3038	10.6076	2.0052	0.8121	0.5553	0.1745

For water depths greater than 0.405 ft but less than 0.667 ft

Y2= Y - 0.405
A3= A2 + Y2*16
P3= P2 + Y2

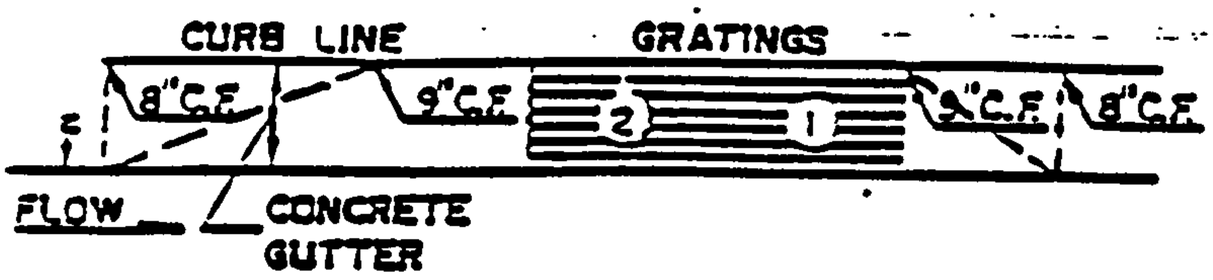
Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.409	2.7090	16.4157	0.1650	5.5185	11.0370	2.0371	0.8332	0.5613	0.1792
0.44	3.2050	16.4467	0.1949	7.2941	14.5882	2.2759	1.0014	0.6046	0.2158
0.47	3.6850	16.4767	0.2236	9.1931	18.3862	2.4947	1.1725	0.6413	0.2517
0.5	4.1650	16.5067	0.2523	11.2607	22.5213	2.7036	1.3518	0.6738	0.2881
0.55	**4.9650**	**16.5567**	**0.2999**	**15.0613**	**30.1225**	**3.0335**	**1.6684**	**0.7208**	**0.3495**
0.5945	5.6770	16.6012	0.3420	18.7968	37.5936	3.3110	1.9684	0.7568	0.4050
0.63	6.2450	16.6367	0.3754	22.0033	44.0066	3.5233	2.2197	0.7823	0.4498
0.667	**6.8370**	**16.6737**	**0.4100**	**25.5505**	**51.1011**	**3.7371**	**2.4926**	**0.8064**	**0.4970**

Bluewater Road

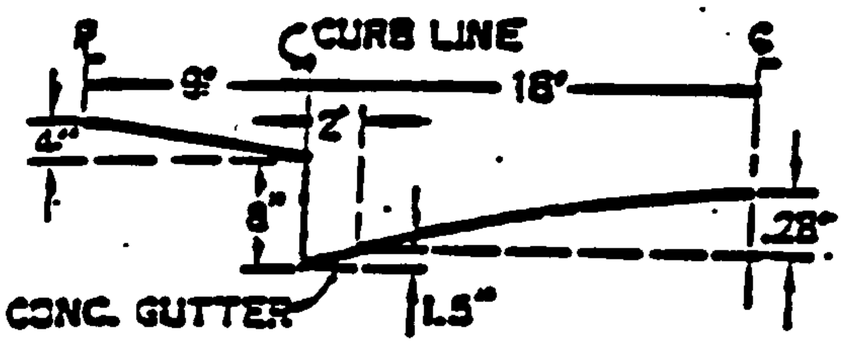
S = 0.6 %

22.3

GRATING CAPACITIES FOR TYPE DOUBLE "C," AND "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

Q = 51.10 cfs

d = 0.67'

$Q_{cap} = 2(10.5) = 21.0$

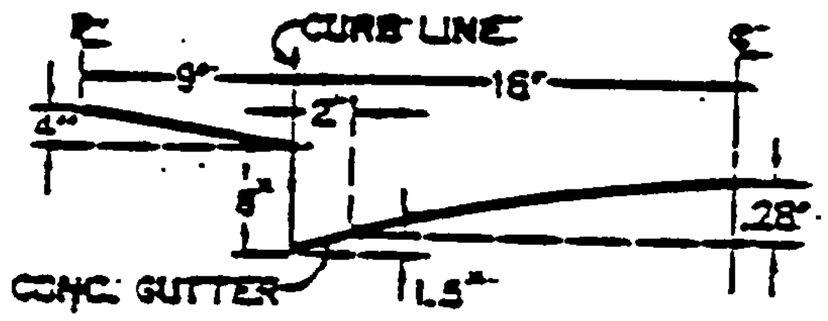
$Q_{norm} = 30.10$

Bluewater Road

$\epsilon = 0.690$

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

GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

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

$Q = 30.1$ cfs

$d = 0.55'$

$Q_{cap} = 2(6.0) = 12.0$

$Q_{rem} = 18.10$

Street Capacity Calculations

Bluewater Road
32' F-F Street Section with 8" curb
Slope= 0.006

For water depths less than 0.125 feet

Y= Water depth
Area = 8*Y^2
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Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.1356	2.3840	0.0569	0.1358	0.2717	1.0016	0.1302	0.4895	0.0460
0.16	0.2256	3.9143	0.0576	0.2280	0.4559	1.0103	0.1617	0.4451	0.0486
0.2	0.4156	5.9547	0.0698	0.4771	0.9541	1.1478	0.2296	0.4523	0.0624
0.24	0.6856	7.9951	0.0858	0.9028	1.8055	1.3167	0.3160	0.4736	0.0806
0.28	1.0356	10.0355	0.1032	1.5427	3.0855	1.4897	0.4171	0.4961	0.1012
0.32	1.4656	12.0759	0.1214	2.4326	4.8652	1.6598	0.5311	0.5171	0.1235
0.355	**1.9116**	**13.8765**	**0.1378**	**3.4523**	**6.9045**	**1.8060**	**0.6417**	**0.5339**	**0.1441**
0.39	2.4106	15.6466	0.1541	4.6908	9.3816	1.9459	0.7589	0.5491	0.1652
0.405	2.6450	16.4117	0.1612	5.3038	10.6076	2.0052	0.8121	0.5553	0.1745

For water depths greater than 0.405 ft but less than 0.667 ft

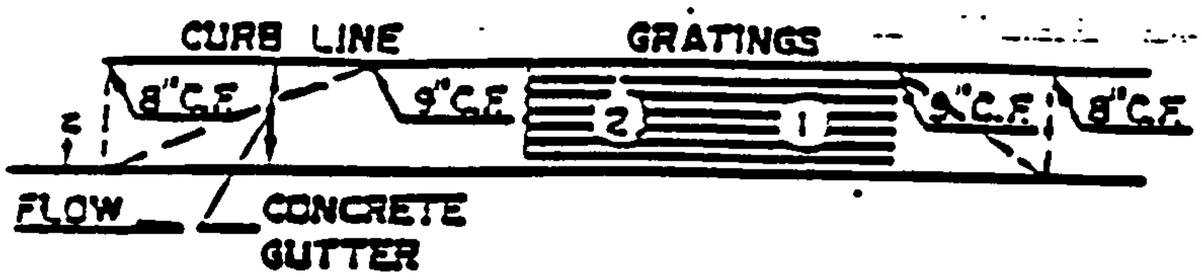
Y2= Y - 0.405
A3= A2 + Y2*16
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.409	2.7090	16.4157	0.1650	5.5185	11.0370	2.0371	0.8332	0.5613	0.1792
0.43	3.0450	16.4367	0.1853	6.7001	13.4002	2.2004	0.9462	0.5913	0.2040
0.468	**3.6514**	**16.4746**	**0.2216**	**9.0546**	**18.1091**	**2.4798**	**1.1603**	**0.6389**	**0.2492**
0.5	4.1650	16.5067	0.2523	11.2607	22.5213	2.7036	1.3518	0.6738	0.2881
0.55	4.9650	16.5567	0.2999	15.0613	30.1225	3.0335	1.6684	0.7208	0.3495
0.5945	5.6770	16.6012	0.3420	18.7968	37.5936	3.3110	1.9684	0.7568	0.4050
0.63	6.2450	16.6367	0.3754	22.0033	44.0066	3.5233	2.2197	0.7823	0.4498
0.667	6.8370	16.6737	0.4100	25.5505	51.1011	3.7371	2.4926	0.8064	0.4970

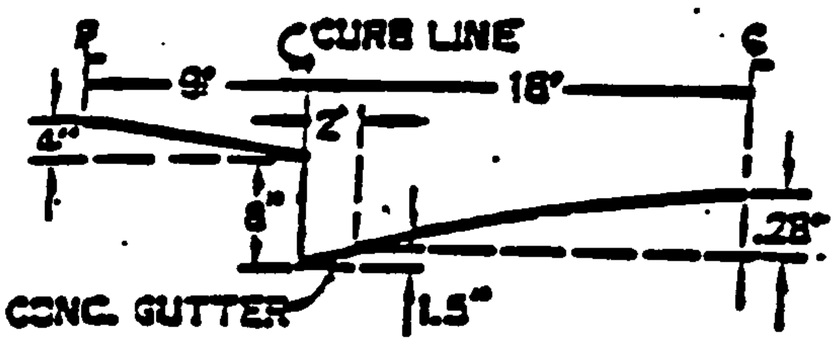
Blueworks Rd

S = 0.1090

GRATING CAPACITIES FOR TYPE DOUBLE "C," AND "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

Q = 18.1

d = 0.47

$Q_{rap} = 2(5.6) = 11.2$

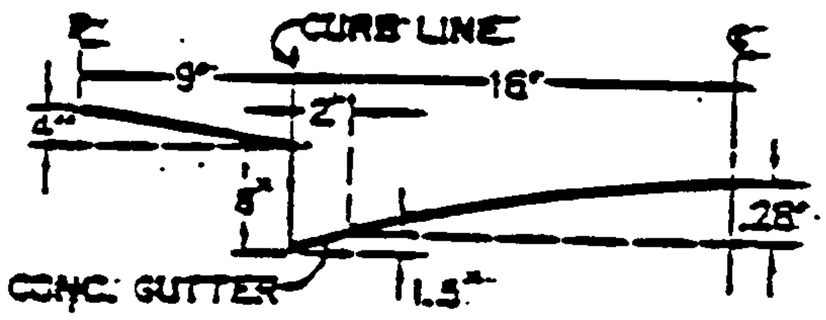
$Q_{rem} = 6.90$

Bluewater Rd

S = 0.6 %

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

GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

Q = 6.90

d = 0.36

Q = 2(2.45) = 4.90

Q_{NOM} = 6.9 - 4.9 = 2.00 cfs.

AHYMO
Input, Output and Summary

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02a RUN DATE (MON/DAY/YR) =11/28/2001
INPUT FILE = A:BASINC.DAT USER NO.= AHYMO-I-9702a0100011K-SH

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	
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.200
COMPUTE NM HYD	100.10	-	1	.01525	19.79	.543	.66738	1.533	2.028	PER IMP=	.00
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	1.470
COMPUTE NM HYD	110.10	-	1	.01525	7.48	.182	.22437	1.533	.766	PER IMP=	.00
FINISH											

```
**************************************************************
*                  WESTRIDGE MOBILE HOME PARK                *
**************************************************************
*           UNDEVELOPED LAND WITHIN STATE HIGHWAY ROW        *
 ************************************************************
*       100-YEAR, 6-HR STORM  (UNDER EXISTING CONDITIONS)    *
**************************************************************
*
START                  TIME=0.0
*
* BASIN C
*
RAINFALL               TYPE=1 RAIN QUARTER=0.0 IN
                       RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                       RAIN DAY=2.66 IN DT=0.03333 HR
*
COMPUTE NM HYD         ID=1 HYD NO=100.10 AREA=0.01525 SQ MI
                       PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                       TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD              ID=1 CODE=1
*
*
*
**************************************************************
*        10-YEAR, 6-HR STORM  (UNDER EXISTING CONDITIONS)    *
**************************************************************
*
START                  TIME=0.0
*
* BASIN C
*
RAINFALL               TYPE=1 RAIN QUARTER=0.0 IN
                       RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                       RAIN DAY=1.77 IN DT=0.03333 HR
*
COMPUTE NM HYD         ID=1 HYD NO=110.10 AREA=0.01525 SQ MI
                       PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                       TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD              ID=1 CODE=1
*
*
FINISH
```

```
    AHYMO PROGRAM (AHYMO_97) -                          - Version:  1997.02a
          RUN DATE (MON/DAY/YR) = 11/28/2001
          START TIME (HR:MIN:SEC) = 11:34:08     USER NO.= AHYMO-I-9702a0100011K-SH
          INPUT FILE = A:BASINC.DAT

**************************************************************
*                  WESTRIDGE MOBILE HOME PARK                *
**************************************************************
*           UNDEVELOPED LAND WITHIN STATE HIGHWAY ROW        *
 ************************************************************
*       100-YEAR, 6-HR STORM  (UNDER EXISTING CONDITIONS)    *
**************************************************************
*
START                 TIME=0.0
*
* BASIN C
*
RAINFALL              TYPE=1 RAIN QUARTER=0.0 IN
                      RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                      RAIN DAY=2.66 IN DT=0.03333 HR

                      COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK
AT 1.40 HR.
                      DT =     .033330 HOURS        END TIME =     5.999400 HOURS
                         .0000   .0016   .0033   .0050   .0067   .0085   .0103
                         .0122   .0141   .0160   .0180   .0201   .0222   .0243
                         .0266   .0289   .0312   .0337   .0362   .0388   .0415
                         .0443   .0472   .0502   .0534   .0567   .0601   .0637
                         .0675   .0715   .0758   .0809   .0865   .0924   .1050
                         .1334   .1771   .2398   .3254   .4379   .5814   .7600
                         .9780  1.1804  1.2649  1.3363  1.3997  1.4575  1.5106
                        1.5600  1.6061  1.6493  1.6900  1.7284  1.7646  1.7989
                        1.8314  1.8623  1.8915  1.9193  1.9456  1.9518  1.9576
                        1.9630  1.9682  1.9732  1.9780  1.9825  1.9869  1.9912
                        1.9953  1.9993  2.0031  2.0068  2.0104  2.0140  2.0174
                        2.0207  2.0240  2.0272  2.0303  2.0333  2.0363  2.0392
                        2.0420  2.0448  2.0475  2.0502  2.0528  2.0554  2.0580
                        2.0605  2.0629  2.0653  2.0677  2.0700  2.0723  2.0746
                        2.0768  2.0790  2.0812  2.0833  2.0855  2.0875  2.0896
                        2.0916  2.0936  2.0956  2.0976  2.0995  2.1014  2.1033
                        2.1051  2.1070  2.1088  2.1106  2.1124  2.1141  2.1159
                        2.1176  2.1193  2.1210  2.1227  2.1244  2.1260  2.1276
                        2.1292  2.1308  2.1324  2.1340  2.1355  2.1371  2.1386
                        2.1401  2.1416  2.1431  2.1446  2.1460  2.1475  2.1489
                        2.1504  2.1518  2.1532  2.1546  2.1560  2.1573  2.1587
                        2.1600  2.1614  2.1627  2.1640  2.1654  2.1667  2.1680
                        2.1692  2.1705  2.1718  2.1731  2.1743  2.1756  2.1768
                        2.1780  2.1792  2.1804  2.1817  2.1829  2.1840  2.1852
                        2.1864  2.1876  2.1887  2.1899  2.1910  2.1922  2.1933
                        2.1944  2.1956  2.1967  2.1978  2.1989  2.2000

     *
     COMPUTE NM HYD       ID=1 HYD NO=100.10 AREA=0.01525 SQ MI
                          PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                          TP=-0.1333 HR MASS RAINFALL=-1

          K =    .130992HR     TP =    .133300HR     K/TP RATIO =    .982685      SHAPE
CONSTANT, N =  3.593448
          UNIT PEAK =    37.420     CFS    UNIT VOLUME =     1.000         B =    327.09
P60 = 1.8700
          AREA =       .015250 SQ MI     IA =     .50000 INCHES     INF =    1.25000 INCHES
PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033330

     PRINT HYD            ID=1 CODE=1
```

PARTIAL HYDROGRAPH 100.10

RUNOFF VOLUME = .66738 INCHES = .5428 ACRE-FEET
PEAK DISCHARGE RATE = 19.79 CFS AT 1.533 HOURS BASIN AREA = .0153 SQ. MI.

```
*
*
*
**************************************************************
*        10-YEAR, 6-HR STORM  (UNDER EXISTING CONDITIONS)    *
**************************************************************
*
START                TIME=0.0
*
* BASIN C
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                     RAIN DAY=1.77 IN DT=0.03333 HR
```

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.

DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0011	.0022	.0033	.0045	.0056	.0069
.0081	.0094	.0106	.0120	.0133	.0147	.0162
.0177	.0192	.0208	.0224	.0241	.0258	.0276
.0294	.0314	.0334	.0355	.0377	.0400	.0424
.0449	.0476	.0504	.0538	.0575	.0615	.0700
.0889	.1181	.1600	.2173	.2925	.3884	.5078
.6535	.7888	.8453	.8930	.9354	.9740	1.0095
1.0425	1.0733	1.1022	1.1294	1.1551	1.1793	1.2022
1.2240	1.2446	1.2641	1.2827	1.3003	1.3044	1.3083
1.3119	1.3154	1.3187	1.3219	1.3249	1.3279	1.3307
1.3335	1.3361	1.3387	1.3411	1.3436	1.3459	1.3482
1.3504	1.3526	1.3547	1.3568	1.3588	1.3608	1.3627
1.3646	1.3665	1.3683	1.3701	1.3719	1.3736	1.3753
1.3769	1.3786	1.3802	1.3818	1.3833	1.3849	1.3864
1.3879	1.3893	1.3908	1.3922	1.3936	1.3950	1.3964
1.3977	1.3991	1.4004	1.4017	1.4030	1.4042	1.4055
1.4067	1.4080	1.4092	1.4104	1.4116	1.4128	1.4139
1.4151	1.4162	1.4173	1.4185	1.4196	1.4207	1.4217
1.4228	1.4239	1.4249	1.4260	1.4270	1.4280	1.4291
1.4301	1.4311	1.4321	1.4330	1.4340	1.4350	1.4359
1.4369	1.4378	1.4388	1.4397	1.4406	1.4415	1.4425
1.4434	1.4443	1.4451	1.4460	1.4469	1.4478	1.4486
1.4495	1.4503	1.4512	1.4520	1.4529	1.4537	1.4545
1.4553	1.4562	1.4570	1.4578	1.4586	1.4594	1.4601
1.4609	1.4617	1.4625	1.4633	1.4640	1.4648	1.4655
1.4663	1.4670	1.4678	1.4685	1.4693	1.4700	

```
*
COMPUTE NM HYD       ID=1 HYD NO=110.10 AREA=0.01525 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.1333 HR MASS RAINFALL=-1
```

K = .141901HR TP = .133300HR K/TP RATIO = 1.064525 SHAPE CONSTANT, N = 3.317383
UNIT PEAK = 35.093 CFS UNIT VOLUME = .9997 B = 306.75
P60 = 1.2500
AREA = .015250 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

```
     PRINT HYD             ID=1 CODE=1

                                        PARTIAL HYDROGRAPH   110.10


         RUNOFF VOLUME =       .22437 INCHES     =         .1825 ACRE-FEET
         PEAK DISCHARGE RATE =       7.48 CFS  AT   1.533 HOURS   BASIN AREA =    .0153
SQ. MI.


     *
     *
     FINISH

         NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 11:34:08
```