



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 3, 1998

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

***RE: Grading and Drainage Certification for Mountain View Estates, Unit Two,
(M10/D7B) Submitted for Release of Financial Guarantees, Engineer's Certification
Stamp Dated 11/30/98.***

Dear Mr. Arfman:

The above referenced Engineer's Certification is adequate to satisfy the Grading and Drainage certification requirement per the Infrastructure List dated October 21, 1997 for the release of Financial Guarantees for Mountain View Estates Unit 2.

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

Sincerely,

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

c: Terri Martin, City Project #580282
Chris Dunn, Longford Homes

File



October 8, 1998

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

**RE: *Grading and Drainage Certification for Mountain View Estates, Unit One, (M10/D7B)
Submitted for Release of Financial Guarantees, Engineer's Stamp Dated 9/29/98.***

Dear Mr. Arfman:

The above referenced Engineer's Certification for Mountain View Estates Unit 1 is adequate to satisfy the Grading and Drainage certification requirements per the Infrastructure List dated October 21, 1997 for the release of Financial Guarantees for this Unit.

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

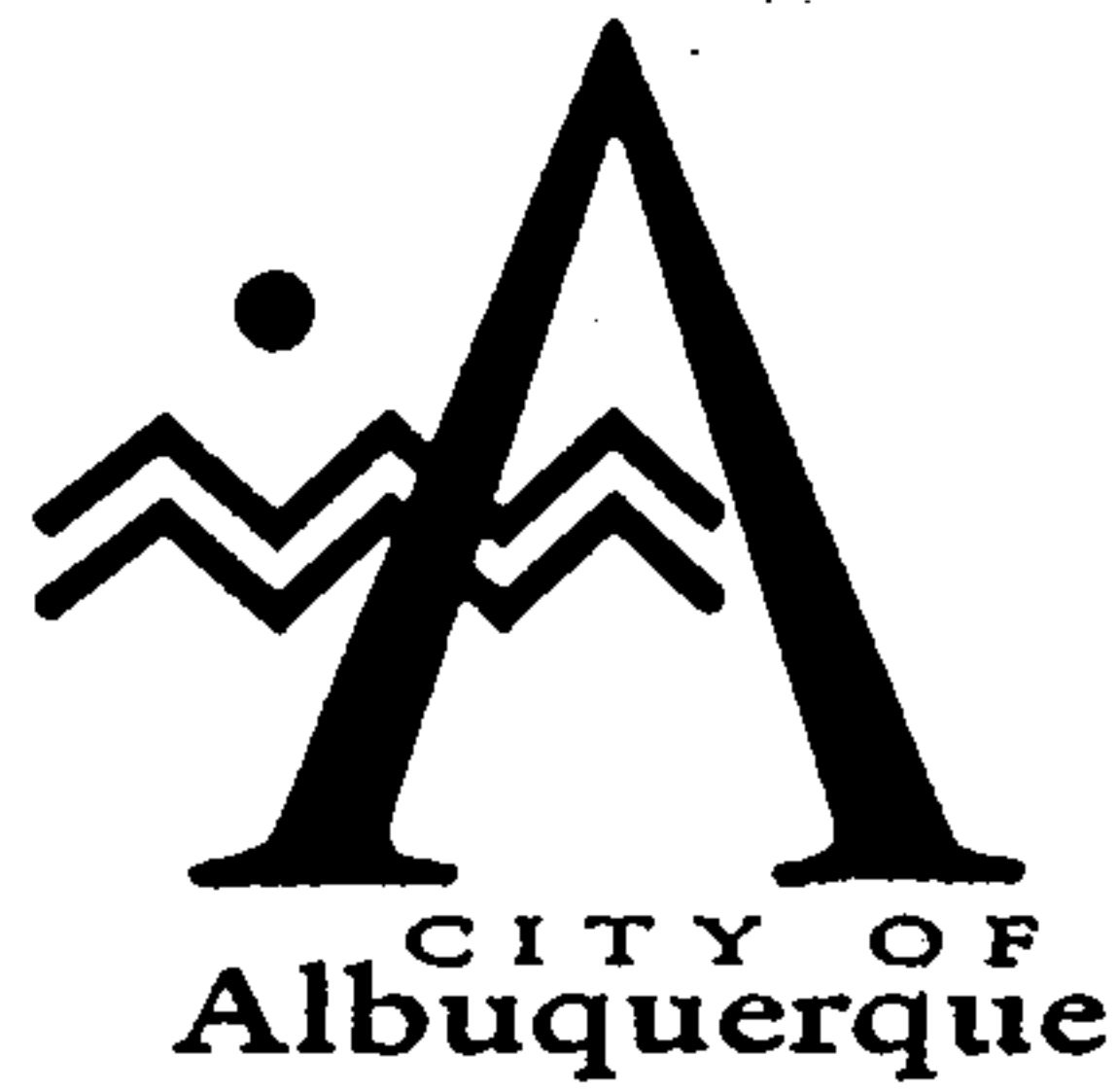
Sincerely,

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

c: Terri Martin, City Project #580281
Chris Murtagh, Longford Homes
File

Good for You, Albuquerque!





March 5, 1998

Fred Arfman, P.E.
Isaacson & Arfman
128 Monroe St. NE
Albuquerque, NM 87108

**RE: ROLLING HILLS UNIT 2 (M10-D7B). GRADING AND DRAINAGE PLAN FOR
FINAL PLAT APPROVAL. ENGINEER'S STAMP DATED FEBRUARY 23, 1998.**

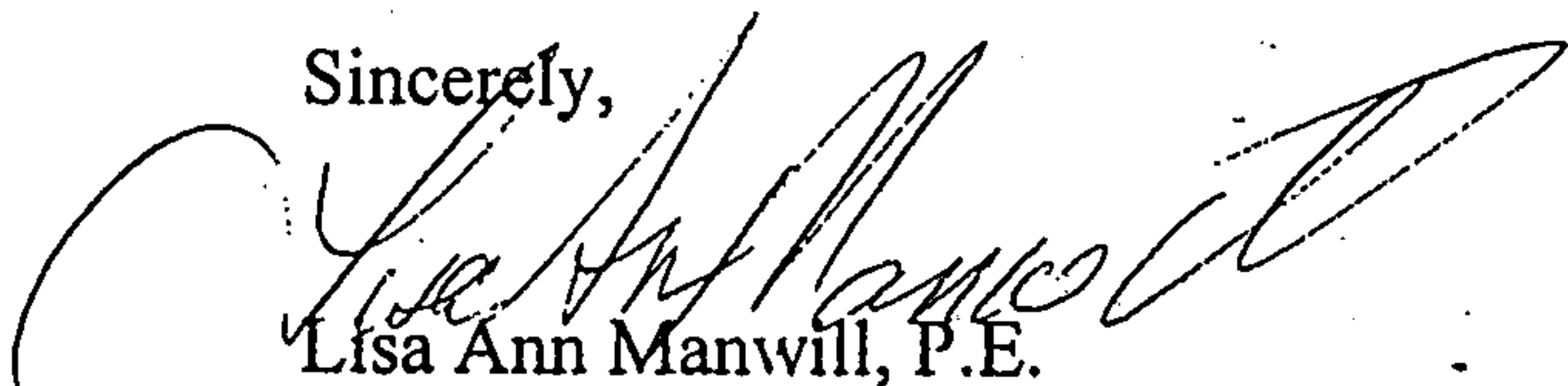
Dear Mr. Arfman:

Based on the information provided on your February 25, 1998 submittal, the above referenced project is approved for Final Plat.

An Engineer's Certification is required for Subdivision Certification.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,


Lisa Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
File

Good for You, Albuquerque!



DRAINAGE REPORT

FOR

**MOUNTAIN VIEW ESTATES
SUBDIVISION, UNITS ONE & TWO**

**A 56 & 58 LOT (TWO PHASE) SINGLE
FAMILY RESIDENTIAL SUBDIVISION**

DRAINAGE REPORT

FOR

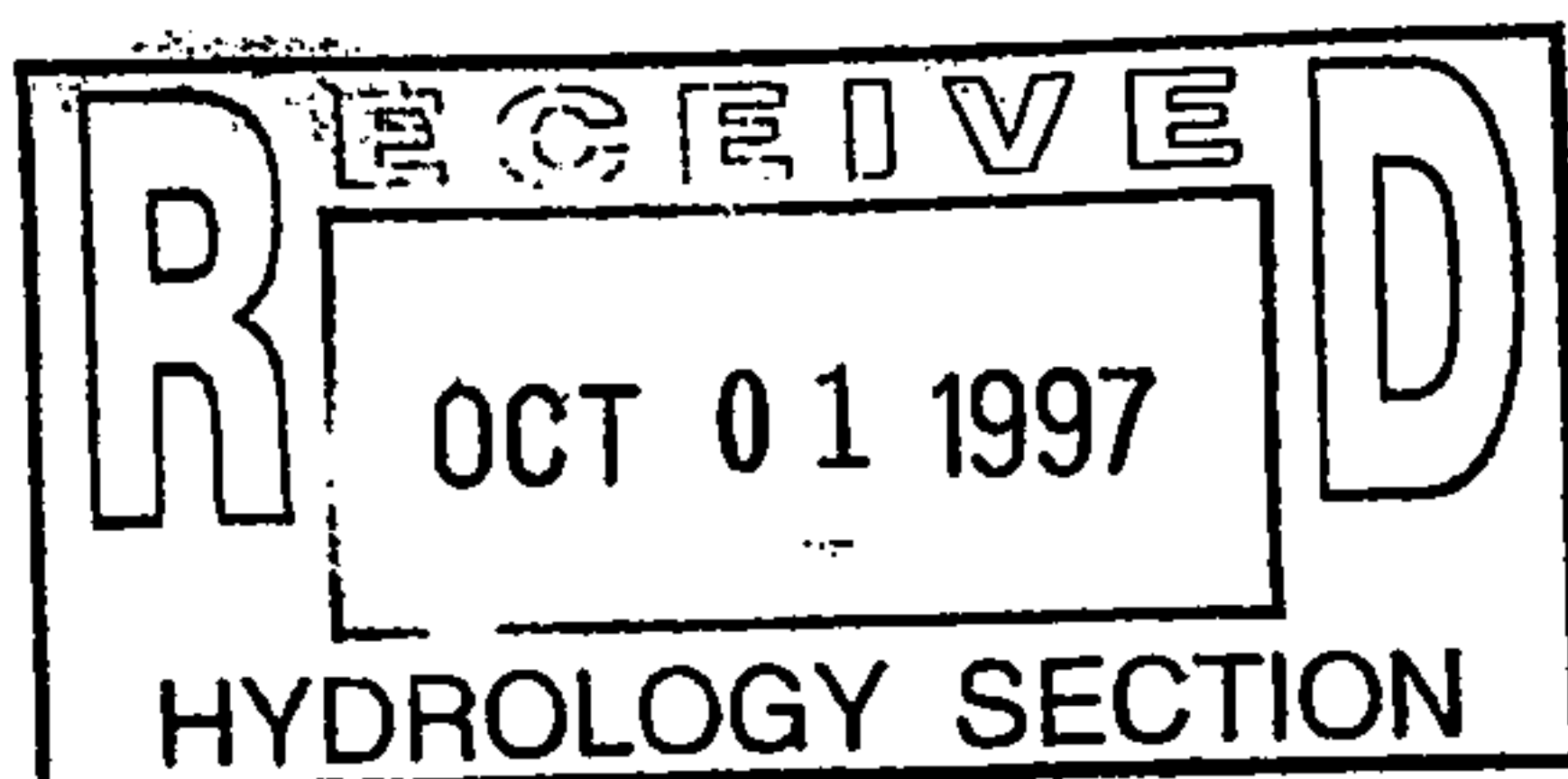
MOUNTAIN VIEW ESTATES SUBDIVISION, UNITS ONE & TWO

**A 56 & 58 LOT (TWO PHASE) SINGLE
FAMILY RESIDENTIAL SUBDIVISION**

**ALBUQUERQUE NEW MEXICO
SEPTEMBER 1997**

Prepared by:

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



Fred C. Arfman, P.E.

Date

09.30.97

INTRODUCTION

The Mountain View Estates Subdivision was created from two of the planned units of Rolling Hills Subdivision, which were re-zoned for a higher housing density. The community is bordered on the north and west by Rolling Hills (Unit Two and a future phase, respectfully). Arenal Road borders the southern property line and the Amole del Norte Channel borders along the east side. Units One and Two, consisting of 56 and 58 lots respectfully, are being designed and processed simultaneously. Both of these areas have been addressed previously in the Rolling Hills Subdivision Drainage Management Plan. This plan will be re-visited in this report in order to discuss the effects of the higher housing density on the total flows into the Amole del Norte Channel. The following study will also offer the drainage and grading solution for Units One and Two of the Mountain View Estates Subdivision.

I. PROJECT INFORMATION

LEGAL DESCRIPTION: A parcel of land comprising of Parcel A-2-5 and a portion of the unplatted Tract KK-2, Town of Atrisco Grant consisting of 18.14 acres.

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

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

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

ZONING: RLT

NUMBER OF EXISTING TRACTS: 2

NUMBER OF PROPOSED LOTS:

Unit One: 56

Unit Two: 58

TOTAL AREA: 18.14 Ac.
790,253 Sq. Ft.

II. SITE CHARACTERISTICS

FLOOD HAZARD: No part of this development is affected nor contributes
to a flood hazard area as determined by Panel No. ^{35001 C0337 D} ~~35002-0033~~ of
the ~~October 14, 1983~~ Edition of the F.E.M.A. Maps.

9-20-96

As depth 1' in Arenal Rd right-of-way

EXISTING CONDITIONS: This site is currently undeveloped and mostly
undisturbed with native ground cover, typical of the City's west side
(Land Treatment B). The site has a slope downward toward the
southeast at slopes ranging from 3 to 5 percent. Rolling Hills Unit
Two abuts to the north and east. Storm waters generated from the
Rolling Hills Unit Two improvements are currently carried by storm

drain and street flow to either the Amole del Norte Channel or an offsite detention pond. Additionally, undeveloped overland flows from the future residential phases to the east cross over the southern portion of Unit One. Arenal Road (28' edge-edge) rural paving within a 86' R.O.W. is adjacent to the south. No flows are accepted from the Arenal Road corridor.

ROLLING HILLS MASTER DRAINAGE PLAN REVISIONS: The Rolling Hills

Master Drainage Plan was re-visited to determine the effect a higher housing density would have on the total flows of the remaining undeveloped phases. The percent imperious was calculated for the new RLT zoned areas and found to be slightly higher than what it was under the original zoning (R-1). To model the undeveloped area to the east of Mountain View Estates Units One and Two it was assumed that the remainder of Tract KK-2² would be developed as RLT zoning and Tract AA² would remain zoned as R-1.

The original AHYMO calculations for the subdivision also did not account for the routing of the upper basin flows through the lower basins. Therefore, when the model was re-run to account for the change in percent imperious, it was also modified to address the routing of the flows (see Appendix A: AHYMO CALCULATIONS). The combined effect of the changes made to the model resulted in no

significant change in the maximum flow rates at the two Amole del Norte Channel outfall points.

PROPOSED CONDITIONS:

UNIT ONE: The development of the 56 lots of this phase will require the construction of a storm drain along Old Aspen Road from the westerly phase line to the Amole del Norte Channel. When the future phases to the west are developed the line will be extended to its ultimate length. This system was identified in the previously mentioned Rolling Hills Drainage Management Plan, on file with the City Hydrology Division. A complete hydraulic analysis was calculated for the system using the pipe soffit elevation at the Amole del Norte as the control surface elevation (see Appendix B).

The storm drain has the following hydraulic and hydrological characteristics:

- A. West Terminus (Silent Meadows and Old Aspen Road): A battery of Type A inlets have the capacity of accepting 32 cfs into a 30" RCP. These flows will be generated within the future phases to the west (refer to Appendix B).

Interim: Prior to the development of the future phases to the west, the upstream flows from Rolling Hills Units Two and Three will be captured by ponds located at the southern terminus of Quiet Desert Drive and the southern terminus of Rolling Rock Place (see Grading Plan for details). Any overland flows generated from the undeveloped phases will be captured by the catch basins located at Silent Meadows Place and Old Aspen Road.

Ultimate: The fully developed upstream basin will contribute an additional 22 cfs to the storm drain via a battery of Type A inlets to the far west along Old Aspen Road (see the Master Drainage Plan exhibit).

Remaining flows ($Q = 9.45$ cfs) will be carried by the street at a depth of .33 feet (EGL = .43 ft).

- B. Secret Valley Drive and Old Aspen Road: Two Type 'A' inlets will accept 8 cfs of the flow generated along Secret Valley Drive. The storm drain along Old Aspen will increase in size to a 36" diameter capable of conveying 75 cfs at a projected 1.25% slope under gravity (see Flowmaster Worksheet No. 2).

The remaining 31.25 cfs is conveyed by the 32' F.F. street at a flow depth of .46 feet (EGL = 0.71 ft).

- C. Old Aspen Drive and Seven Falls Place: Two Type "A" inlets will accept an additional 13 cfs from Old Aspen Road. The storm drain will remain at a 36" diameter RCP and begin to function under pressure conditions. A remaining 45.6 cfs will flow as channelized flow from Old Aspen to the Amole del Norte Channel.

UNIT TWO: Additional Type C inlets will be added at the end of Rockwood Road to pick up the remaining 17 cfs of street flow. The water will be conveyed via the existing storm drain to the Amole del Norte Channel.

CONCLUSIONS & RECOMMENDATIONS

The Drainage Study for Mountain View Estates Subdivision Units One and Two is consistent with the Rolling Hills Drainage Management Plan previously submitted and on file at the Hydrology Division, P.W.D., City of Albuquerque. Rolling Hills Subdivision Units One, Two, and Three are currently under construction and conform to the same DMP. The individual recommendations for Units One and Two are presented below:

Unit One:

1. A portion of the Old Aspen Road storm drain (from Silent Meadows to the Amole del Norte Channel) should be constructed as part of the Unit One improvements.
2. Developer should have a hard lined connection between the storm drain outfall and the Amole del Norte Diversion Channel.
3. An open channel connection to the Amole del Norte shall be constructed from the western terminus of Old Aspen Road.
4. No rear yard ponding shall be allowed in this portion of the development (see Typical Lot Grading Detail).
5. Adjacent lots may share a common lot line drainage swale (see Typical Lot Grading Detail).

Unit Two:

1. Additional catch basins shall be added at the end of Rockwood Road to collect all remaining street flows into the existing storm drain.
2. No rear yard ponding shall be allowed in Unit Two (see Typical Lot Grading Plan).
3. Adjacent lots may share a common lot line drainage swale (see Typical Lot Grading Plan).

APPENDIX A

AHYMO CALCULATIONS

RUN DATE (MON/DAY/YR) = 09/22/1997
START TIME (HR:MIN:SEC) = 16:30:25
INPUT FILE = RHMPR2.DAT

USER NO. = ISCARFNM.I01

**** Mountain View Subdivision Unit 4 & 5****

**** September 22, 1996 ****

START RAINFALL BEGINS AT 0.0 HRS

RAINFALL TYPE=1 RAIN QUARTER=0 RAIN ONE=1.87

RAIN SIX=2.20 RAIN DAY=0 DT=0.03333HR

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

DT = .033330 HOURS END TIME = 5.999400 HOURS

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

*S **BASIN A
COMPUTE NM HYD

ID=1 HYD NO=100.00 AREA=0.00517 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 10.206 CFS UNIT VOLUME = .9982 B = 526.28 P60 = 1.8700
AREA = .002585 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 6.6089 CFS UNIT VOLUME = .9983 B = 340.80 P60 = 1.8700
 AREA = .002585 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 100.00

RUNOFF VOLUME = 1.35334 INCHES = .3732 ACRE-FEET
 PEAK DISCHARGE RATE = 10.94 CFS AT 1.500 HOURS BASIN AREA = .0052 SQ. MI.

*S ** ROUTE BASIN A THROUGH C

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1

MIN ELEV=100.00 FT MAX ELEV=100.67 FT
 CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
 DIST ELEV DIST ELEV DIST ELEV
 0 100.67 0.1 100.00 16 100.32
 31.9 100.00 32.0 100.67

RATING CURVE VALLEY SECTION 1.0

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

COMPUTE TRAVEL TIME ID=2 REACH NO=1 NO VS=1 L=270 FT
 SLP=.046

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.062	.05	.0906
.071	.248	.33	.0571
.106	.558	.96	.0436
.141	.992	2.07	.0360
.176	1.549	3.75	.0310
.212	2.231	6.10	.0274
.247	3.037	9.20	.0248
.282	3.966	13.13	.0227
.317	5.020	17.98	.0209
.353	6.144	25.01	.0184
.388	7.269	33.05	.0165
.423	8.395	41.95	.0150
.458	9.521	51.67	.0138
.494	10.647	62.16	.0128
.529	11.774	73.40	.0120
.564	12.901	85.36	.0113
.599	14.029	98.01	.0107
.635	15.157	111.33	.0102
.670	16.285	125.31	.0097

ROUTE
PRINT HYD

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

PARTIAL HYDROGRAPH 100.10

RUNOFF VOLUME = 1.35338 INCHES = .3732 ACRE-FEET
PEAK DISCHARGE RATE = 10.79 CFS AT 1.533 HOURS BASIN AREA = .0052 SQ. MI.

*S **BASIN C
COMPUTE NM HYD

ID=3 HYD NO=101.00 AREA=0.00420 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 8.2909 CFS UNIT VOLUME = .9981 B = 526.28 P60 = 1.8700
AREA = .002100 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 5.3689 CFS UNIT VOLUME = .9977 B = 340.80 P60 = 1.8700
AREA = .002100 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD

ID=3 CODE=1

PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = 1.35334 INCHES = .3031 ACRE-FEET
 PEAK DISCHARGE RATE = 8.89 CFS AT 1.500 HOURS BASIN AREA = .0042 SQ. MI.

ADD HYD ID=4 HYD NO=101.1 ID=2 ID=3
 PRINT HYD ID=4 CODE=5

PARTIAL HYDROGRAPH 101.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	19.2	3.000	.2	4.500	.1	5.999	.1
.167	.0	1.667	10.9	3.166	.2	4.666	.1	6.166	.1
.333	.0	1.833	6.0	3.333	.1	4.833	.1	6.333	.0
.500	.0	2.000	4.0	3.500	.1	4.999	.1	6.499	.0
.667	.0	2.166	2.1	3.666	.1	5.166	.1	6.666	.0
.833	.0	2.333	1.0	3.833	.1	5.333	.1	6.833	.0
1.000	.0	2.500	.6	4.000	.1	5.499	.1		
1.167	.0	2.666	.4	4.166	.1	5.666	.1		
1.333	3.5	2.833	.3	4.333	.1	5.833	.1		

RUNOFF VOLUME = 1.35328 INCHES = .6763 ACRE-FEET
 PEAK DISCHARGE RATE = 19.38 CFS AT 1.533 HOURS BASIN AREA = .0094 SQ. MI.

*S ** ROUTE BASIN A & C TO WINDSONG ROAD
 COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
 MIN ELEV=100.00 FT MAX ELEV=100.67 FT
 CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
 DIST ELEV DIST ELEV DIST ELEV
 0 100.67 0.1 100.00 16 100.32
 31.9 100.00 32.0 100.67

RATING CURVE VALLEY SECTION 1.0

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

100.53	11.77	73.40	31.96
100.56	12.90	85.36	31.97
100.60	14.03	98.01	31.98
100.63	15.16	111.33	31.99
100.67	16.28	125.31	32.00

COMPUTE TRAVEL TIME ID=5 REACH NO=1 NO VS=1 L=170 FT
SLP=.046

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.062	.05	.0570
.071	.248	.33	.0359
.106	.558	.96	.0274
.141	.992	2.07	.0226
.176	1.549	3.75	.0195
.212	2.231	6.10	.0173
.247	3.037	9.20	.0156
.282	3.966	13.13	.0143
.317	5.020	17.98	.0132
.353	6.144	25.01	.0116
.388	7.269	33.05	.0104
.423	8.395	41.95	.0094
.458	9.521	51.67	.0087
.494	10.647	62.16	.0081
.529	11.774	73.40	.0076
.564	12.901	85.36	.0071
.599	14.029	98.01	.0068
.635	15.157	111.33	.0064
.670	16.285	125.31	.0061

ROUTE ID=5 HYD NO=101.2 INFLOW ID=4 DT=0.0 HR
PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 101.20

RUNOFF VOLUME = 1.35334 INCHES = .6763 ACRE-FEET
PEAK DISCHARGE RATE = 19.63 CFS AT 1.533 HOURS BASIN AREA = .0094 SQ. MI.

*S **BASIN E
COMPUTE NM HYD

ID=6 HYD NO=102.00 AREA=0.00356 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 7.0275 CFS UNIT VOLUME = .9978 B = 526.28 P60 = 1.8700
AREA = .001780 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 4.5508 CFS UNIT VOLUME = .9972 B = 340.80 P60 = 1.8700
 AREA = .001780 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD

ID=6 CODE=5

PARTIAL HYDROGRAPH 102.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.6	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	7.5	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	3.9	3.000	.1	4.333	.0	5.666	.0
.500	.0	1.833	2.2	3.166	.1	4.500	.0	5.833	.0
.667	.0	2.000	1.5	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.7	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.2	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.35334 INCHES = .2570 ACRE-FEET
 PEAK DISCHARGE RATE = 7.54 CFS AT 1.500 HOURS BASIN AREA = .0036 SQ. MI.

ADD HYD
 PRINT HYD

ID=7 HYD NO=102.1 ID=5 ID=6
 ID=7 CODE=1

PARTIAL HYDROGRAPH 102.10

RUNOFF VOLUME = 1.35328 INCHES = .9332 ACRE-FEET
 PEAK DISCHARGE RATE = 26.91 CFS AT 1.533 HOURS BASIN AREA = .0129 SQ. MI.

*S ** ROUTE BASINS A,C & E TO AUTUMN CANYON ROAD
 COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
 MIN ELEV=100.00 FT MAX ELEV=100.67 FT
 CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
 DIST ELEV DIST ELEV DIST ELEV
 0 100.67 0.1 100.00 16 100.32
 31.9 100.00 32.0 100.67

RATING CURVE VALLEY SECTION 1.0

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

100.21	2.23	6.10	21.09
100.25	3.04	9.20	24.60
100.28	3.97	13.13	28.12
100.32	5.02	17.98	31.63
100.35	6.14	25.01	31.91
100.39	7.27	33.05	31.92
100.42	8.40	41.95	31.93
100.46	9.52	51.67	31.94
100.49	10.65	62.16	31.95
100.53	11.77	73.40	31.96
100.56	12.90	85.36	31.97
100.60	14.03	98.01	31.98
100.63	15.16	111.33	31.99
100.67	16.28	125.31	32.00

COMPUTE TRAVEL TIME ID=8 REACH NO=1 NO VS=1 L=240 FT
SLP=.046

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.062	.05	.0805
.071	.248	.33	.0507
.106	.558	.96	.0387
.141	.992	2.07	.0320
.176	1.549	3.75	.0275
.212	2.231	6.10	.0244
.247	3.037	9.20	.0220
.282	3.966	13.13	.0201
.317	5.020	17.98	.0186
.353	6.144	25.01	.0164
.388	7.269	33.05	.0147
.423	8.395	41.95	.0133
.458	9.521	51.67	.0123
.494	10.647	62.16	.0114
.529	11.774	73.40	.0107
.564	12.901	85.36	.0101
.599	14.029	98.01	.0095
.635	15.157	111.33	.0091
.670	16.285	125.31	.0087

ROUTE
PRINT HYD

ID=8 HYD NO=102.2 INFLOW ID=7 DT=0.0 HR
ID=8 CODE=1

PARTIAL HYDROGRAPH 102.20

RUNOFF VOLUME = 1.35332 INCHES = .9332 ACRE-FEET
PEAK DISCHARGE RATE = 27.23 CFS AT 1.533 HOURS BASIN AREA = .0129 SQ. MI.

*S **BASIN G
COMPUTE NM HYD

ID=9 HYD NO=103.00 AREA=0.00291 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.7444 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.8700
AREA = .001455 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 3.7199 CFS UNIT VOLUME = .9966 B = 340.80 P60 = 1.8700
AREA = .001455 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=9 CODE=1

PARTIAL HYDROGRAPH 103.00

RUNOFF VOLUME = 1.35334 INCHES = .2100 ACRE-FEET
PEAK DISCHARGE RATE = 6.16 CFS AT 1.500 HOURS BASIN AREA = .0029 SQ. MI.

ADD HYD ID=10 HYD NO=103.1 ID=8 ID=9

*S ** ROUTE BASINS A,C,E & G TO AP2

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1

MIN ELEV=100.00 FT MAX ELEV=100.67 FT
CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
DIST ELEV DIST ELEV DIST ELEV
0 100.67 0.1 100.00 16 100.32
31.9 100.00 32.0 100.67

RATING CURVE VALLEY SECTION 1.0

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

100.53	11.77	73.40	31.96
100.56	12.90	85.36	31.97
100.60	14.03	98.01	31.98
100.63	15.16	111.33	31.99
100.67	16.28	125.31	32.00

COMPUTE TRAVEL TIME ID=11 REACH NO=1 NO VS=1 L=250 FT
SLP=.0149

TRAVEL TIME TABLE
REACH= 1.0

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

ROUTE ID=11 HYD NO=103.2 INFLOW ID=10 DT=0.0 HR
PRINT HYD ID=11 CODE=1

PARTIAL HYDROGRAPH 103.20

RUNOFF VOLUME = 1.35330 INCHES = 1.1433 ACRE-FEET
PEAK DISCHARGE RATE = 33.31 CFS AT 1.533 HOURS BASIN AREA = .0158 SQ. MI.

*S **BASIN F
COMPUTE NM HYD ID=12 HYD NO=104.00 AREA=0.00356 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 7.0275 CFS UNIT VOLUME = .9978 B = 526.28 P60 = 1.8700
AREA = .001780 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 4.5508 CFS UNIT VOLUME = .9972 B = 340.80 P60 = 1.8700
AREA = .001780 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=12 CODE=1

PARTIAL HYDROGRAPH 104.00

RUNOFF VOLUME = 1.35334 INCHES = .2570 ACRE-FEET
PEAK DISCHARGE RATE = 7.54 CFS AT 1.500 HOURS BASIN AREA = .0036 SQ. MI.

ADD HYD ID=13 HYD NO=104.1 ID=11 ID=12
*S TOTAL FLOW @ AP2
PRINT HYD ID=13 CODE=5

PARTIAL HYDROGRAPH 104.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	37.2	3.000	.5	4.500	.2	5.999	.2
.167	.0	1.667	24.5	3.166	.3	4.666	.2	6.166	.2
.333	.0	1.833	13.4	3.333	.3	4.833	.2	6.333	.1
.500	.0	2.000	8.8	3.500	.2	4.999	.2	6.499	.0
.667	.0	2.166	5.1	3.666	.2	5.166	.2	6.666	.0
.833	.0	2.333	2.4	3.833	.2	5.333	.2	6.833	.0
1.000	.0	2.500	1.4	4.000	.2	5.499	.2	6.999	.0
1.167	.0	2.666	.9	4.166	.2	5.666	.2	7.166	.0
1.333	4.5	2.833	.6	4.333	.2	5.833	.2		

RUNOFF VOLUME = 1.35327 INCHES = 1.4002 ACRE-FEET
PEAK DISCHARGE RATE = 40.59 CFS AT 1.533 HOURS BASIN AREA = .0194 SQ. MI.

*S *****
*S *****
*S **BASIN B
COMPUTE NM HYD ID=14 HYD NO=200.00 AREA=0.00291 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.7444 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.8700
AREA = .001455 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 3.7199 CFS UNIT VOLUME = .9966 B = 340.80 P60 = 1.8700
 AREA = .001455 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=14 CODE=1

PARTIAL HYDROGRAPH 200.00

RUNOFF VOLUME = 1.35334 INCHES = .2100 ACRE-FEET
 PEAK DISCHARGE RATE = 6.16 CFS AT 1.500 HOURS BASIN AREA = .0029 SQ. MI.

*S ** ROUTE BASIN B THROUGH BASIN D TO AP1

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1

MIN ELEV=100.00 FT MAX ELEV=100.67 FT
 CH SLP=.02 FP SLP=.02 N=.017 DIST=28 FT
 DIST ELEV DIST ELEV DIST ELEV
 0 100.67 0.1 100.00 14 100.28
 27.9 100.00 28.0 100.67

RATING CURVE VALLEY SECTION 1.0

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

COMPUTE TRAVEL TIME ID=15 REACH NO=1 NO VS=1 L=640 FT
 SLP=.0388

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.062	.05	.2148
.071	.248	.33	.1353
.106	.557	.96	.1032
.141	.991	2.07	.0852
.176	1.548	3.75	.0734
.212	2.229	6.09	.0650
.247	3.034	9.19	.0587
.282	3.962	13.18	.0534
.317	4.946	19.05	.0462
.353	5.930	25.73	.0410
.388	6.914	33.18	.0370
.423	7.898	41.35	.0340
.458	8.883	50.21	.0315
.494	9.869	59.73	.0294
.529	10.854	69.89	.0276
.564	11.841	80.66	.0261
.599	12.827	92.01	.0248
.635	13.814	103.94	.0236
.670	14.801	116.42	.0226

ROUTE ID=15 HYD NO=200.1 INFLOW ID=14 DT=0.0 HR
 PRINT HYD ID=15 CODE=1

PARTIAL HYDROGRAPH 200.10

RUNOFF VOLUME = 1.35342 INCHES = .2100 ACRE-FEET
 PEAK DISCHARGE RATE = 5.43 CFS AT 1.567 HOURS BASIN AREA = .0029 SQ. MI.

*S **BASIN D
 COMPUTE NM HYD

ID=16 HYD NO=201.00 AREA=0.00259 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 5.1127 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.8700
 AREA = .001295 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 3.3108 CFS UNIT VOLUME = .9962 B = 340.80 P60 = 1.8700
 AREA = .001295 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=16 CODE=1

PARTIAL HYDROGRAPH 201.00

RUNOFF VOLUME = 1.35334 INCHES = .1869 ACRE-FEET
PEAK DISCHARGE RATE = 5.49 CFS AT 1.500 HOURS BASIN AREA = .0026 SQ. MI.

*S **TOTAL FLOW AT AP1 (BASIN B + D)
ADD HYD ID=17 HYD NO=201.1 ID=15 ID=16
PRINT HYD ID=17 CODE=5

PARTIAL HYDROGRAPH 201.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	10.1	3.000	.1	4.500	.0	5.999	.1
.167	.0	1.667	6.9	3.166	.1	4.666	.0	6.166	.0
.333	.0	1.833	3.8	3.333	.1	4.833	.0	6.333	.0
.500	.0	2.000	2.5	3.500	.1	4.999	.0	6.499	.0
.667	.0	2.166	1.4	3.666	.1	5.166	.0	6.666	.0
.833	.0	2.333	.7	3.833	.1	5.333	.0	6.833	.0
1.000	.0	2.500	.4	4.000	.0	5.499	.0	6.999	.0
1.167	.0	2.666	.3	4.166	.0	5.666	.1		
1.333	1.6	2.833	.2	4.333	.0	5.833	.1		

RUNOFF VOLUME = 1.35325 INCHES = .3969 ACRE-FEET
PEAK DISCHARGE RATE = 10.62 CFS AT 1.533 HOURS BASIN AREA = .0055 SQ. MI.

*S **OFFSITE BASIN TO THE NORTH (COMMERCIAL)
COMPUTE NM HYD ID=18 HYD NO=202.00 AREA=0.0075 SQ MI
PER A=0 PER B=10 PER C=0 PER D=90
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 26.649 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 1.8700
AREA = .006750 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 1.8403 CFS UNIT VOLUME = .9932 B = 327.09 P60 = 1.8700
AREA = .000750 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=18 CODE=1

PARTIAL HYDROGRAPH 202.00

RUNOFF VOLUME = 1.83567 INCHES = .7343 ACRE-FEET
PEAK DISCHARGE RATE = 19.86 CFS AT 1.500 HOURS BASIN AREA = .0075 SQ. MI.

*S ** ROUTE OFFSITE FLOWS THROUGH BASIN 2B
 COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
 MIN ELEV=100.00 FT MAX ELEV=100.67 FT
 CH SLP=.02 FP SLP=.02 N=.017 DIST=28 FT
 DIST ELEV DIST ELEV DIST ELEV
 0 100.67 0.1 100.00 14 100.28
 27.9 100.00 28.0 100.67

RATING CURVE VALLEY SECTION 1.0

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

COMPUTE TRAVEL TIME ID=19 REACH NO=1 NO VS=1 L=480 FT
 SLP=.03

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.062	.05	.1611
.071	.248	.33	.1015
.106	.557	.96	.0774
.141	.991	2.07	.0639
.176	1.548	3.75	.0551
.212	2.229	6.09	.0488
.247	3.034	9.19	.0440
.282	3.962	13.18	.0401
.317	4.946	19.05	.0346
.353	5.930	25.73	.0307
.388	6.914	33.18	.0278
.423	7.898	41.35	.0255
.458	8.883	50.21	.0236

.494	9.869	59.73	.0220
.529	10.854	69.89	.0207
.564	11.841	80.66	.0196
.599	12.827	92.01	.0186
.635	13.814	103.94	.0177
.670	14.801	116.42	.0170

ROUTE ID=19 HYD NO=202.1 INFLOW ID=18 DT=0.0 HR
 PRINT HYD ID=19 CODE=1

PARTIAL HYDROGRAPH 202.10

RUNOFF VOLUME = 1.83570 INCHES = .7343 ACRE-FEET
 PEAK DISCHARGE RATE = 19.45 CFS AT 1.533 HOURS BASIN AREA = .0075 SQ. MI.

*S **BASIN 2B
 COMPUTE NM HYD ID=20 HYD NO=203.00 AREA=0.0142 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 28.031 CFS UNIT VOLUME = .9990 B = 526.28 P60 = 1.8700
 AREA = .007100 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 18.152 CFS UNIT VOLUME = .9995 B = 340.80 P60 = 1.8700
 AREA = .007100 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=20 CODE=1

PARTIAL HYDROGRAPH 203.00

RUNOFF VOLUME = 1.35334 INCHES = 1.0249 ACRE-FEET
 PEAK DISCHARGE RATE = 30.02 CFS AT 1.500 HOURS BASIN AREA = .0142 SQ. MI.

*S **TOTAL FLOW AT AP3' (OFFSITE FLOWS + BASIN 2B)
 ADD HYD ID=1 HYD NO=203.1 ID=19 ID=20
 PRINT HYD ID=1 CODE=5

PARTIAL HYDROGRAPH 203.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	48.4	3.000	.5	4.500	.2	5.999	.3
.167	.0	1.667	27.1	3.166	.4	4.666	.2	6.166	.2
.333	.0	1.833	15.7	3.333	.3	4.833	.2	6.333	.1

.500	.0	2.000	11.0	3.500	.3	4.999	.2	6.499	.0
.667	.0	2.166	5.7	3.666	.3	5.166	.2	6.666	.0
.833	.0	2.333	2.7	3.833	.2	5.333	.2	6.833	.0
1.000	.0	2.500	1.6	4.000	.2	5.499	.2	6.999	.0
1.167	.1	2.666	1.1	4.166	.2	5.666	.3	7.166	.0
1.333	9.9	2.833	.8	4.333	.2	5.833	.3		

RUNOFF VOLUME = 1.52002 INCHES = 1.7592 ACRE-FEET
PEAK DISCHARGE RATE = 48.45 CFS AT 1.533 HOURS BASIN AREA = .0217 SQ. MI.

*S **TOTAL FLOW AT BASIN 2F (AP1 + AP3)
ADD HYD ID=2 HYD NO=204.0 ID=1 ID=17
PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 204.00

RUNOFF VOLUME = 1.48630 INCHES = 2.1561 ACRE-FEET
PEAK DISCHARGE RATE = 59.08 CFS AT 1.533 HOURS BASIN AREA = .0272 SQ. MI.

*S ** ROUTE BASINS AP1 & AP3 THROUGH BASIN 2F
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
MIN ELEV=100.00 FT MAX ELEV=100.67 FT
CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
DIST ELEV DIST ELEV DIST ELEV
0 100.67 0.1 100.00 16 100.32
31.9 100.00 32.0 100.67

RATING CURVE VALLEY SECTION 1.0			
WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00
100.04	.06	.05	3.51
100.07	.25	.33	7.03
100.11	.56	.96	10.54
100.14	.99	2.07	14.06
100.18	1.55	3.75	17.57
100.21	2.23	6.10	21.09
100.25	3.04	9.20	24.60
100.28	3.97	13.13	28.12
100.32	5.02	17.98	31.63
100.35	6.14	25.01	31.91
100.39	7.27	33.05	31.92
100.42	8.40	41.95	31.93
100.46	9.52	51.67	31.94
100.49	10.65	62.16	31.95
100.53	11.77	73.40	31.96
100.56	12.90	85.36	31.97
100.60	14.03	98.01	31.98

100.63 15.16 111.33 31.99
 100.67 16.28 125.31 32.00
 COMPUTE TRAVEL TIME ID=3 REACH NO=1 NO VS=1 L=370 FT
 SLP=.0222

TRAVEL TIME TABLE
 REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.062	.05	.1242
.071	.248	.33	.0782
.106	.558	.96	.0597
.141	.992	2.07	.0493
.176	1.549	3.75	.0425
.212	2.231	6.10	.0376
.247	3.037	9.20	.0339
.282	3.966	13.13	.0310
.317	5.020	17.98	.0287
.353	6.144	25.01	.0253
.388	7.269	33.05	.0226
.423	8.395	41.95	.0206
.458	9.521	51.67	.0189
.494	10.647	62.16	.0176
.529	11.774	73.40	.0165
.564	12.901	85.36	.0155
.599	14.029	98.01	.0147
.635	15.157	111.33	.0140
.670	16.285	125.31	.0134

ROUTE ID=3 HYD NO=204.1 INFLOW ID=2 DT=0.0 HR
 PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 204.10

RUNOFF VOLUME = 1.48632 INCHES = 2.1561 ACRE-FEET
 PEAK DISCHARGE RATE = 59.95 CFS AT 1.533 HOURS BASIN AREA = .0272 SQ. MI.

*S **BASIN 2F
 COMPUTE NM HYD

ID=4 HYD NO=205.00 AREA=0.0036 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 7.1065 CFS UNIT VOLUME = .9978 B = 526.28 P60 = 1.8700
 AREA = .001800 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 4.6019 CFS UNIT VOLUME = .9975 B = 340.80 P60 = 1.8700
AREA = .001800 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 205.00

RUNOFF VOLUME = 1.35334 INCHES = .2598 ACRE-Feet
PEAK DISCHARGE RATE = 7.62 CFS AT 1.500 HOURS BASIN AREA = .0036 SQ. MI.

ADD HYD ID=5 HYD NO=205.1 ID=4 ID=3
PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 205.10

RUNOFF VOLUME = 1.47075 INCHES = 2.4159 ACRE-Feet
PEAK DISCHARGE RATE = 67.31 CFS AT 1.533 HOURS BASIN AREA = .0308 SQ. MI.

*S ADD FLOW FROM AP2
ADD HYD ID=6 HYD NO=205.2 ID=13 ID=5
PRINT HYD ID=6 CODE=1

PARTIAL HYDROGRAPH 205.20

RUNOFF VOLUME = 1.42535 INCHES = 3.8161 ACRE-Feet
PEAK DISCHARGE RATE = 107.90 CFS AT 1.533 HOURS BASIN AREA = .0502 SQ. MI.

*S ** ROUTE BASINS AP1, AP2 & AP3 THROUGH BASIN 2I
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
MIN ELEV=100.00 FT MAX ELEV=100.67 FT
CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
DIST ELEV DIST ELEV DIST ELEV
0 100.67 0.1 100.00 16 100.32
31.9 100.00 32.0 100.67

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00
100.04	.06	.05	3.51
100.07	.25	.33	7.03
100.11	.56	.96	10.54

100.14	.99	2.07	14.06
100.18	1.55	3.75	17.57
100.21	2.23	6.10	21.09
100.25	3.04	9.20	24.60
100.28	3.97	13.13	28.12
100.32	5.02	17.98	31.63
100.35	6.14	25.01	31.91
100.39	7.27	33.05	31.92
100.42	8.40	41.95	31.93
100.46	9.52	51.67	31.94
100.49	10.65	62.16	31.95
100.53	11.77	73.40	31.96
100.56	12.90	85.36	31.97
100.60	14.03	98.01	31.98
100.63	15.16	111.33	31.99
100.67	16.28	125.31	32.00

COMPUTE TRAVEL TIME ID=7 REACH NO=1 NO VS=1 L=490 FT
SLP=.0338

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.062	.05	.1644
.071	.248	.33	.1036
.106	.558	.96	.0790
.141	.992	2.07	.0653
.176	1.549	3.75	.0562
.212	2.231	6.10	.0498
.247	3.037	9.20	.0449
.282	3.966	13.13	.0411
.317	5.020	17.98	.0380
.353	6.144	25.01	.0334
.388	7.269	33.05	.0299
.423	8.395	41.95	.0272
.458	9.521	51.67	.0251
.494	10.647	62.16	.0233
.529	11.774	73.40	.0218
.564	12.901	85.36	.0206
.599	14.029	98.01	.0195
.635	15.157	111.33	.0185
.670	16.285	125.31	.0177

ROUTE ID=7 HYD NO=205.3 INFLOW ID=6 DT=0.0 HR
PRINT HYD ID=7 CODE=1

PARTIAL HYDROGRAPH 205.30

RUNOFF VOLUME = 1.42536 INCHES = 3.8161 ACRE-FEET
PEAK DISCHARGE RATE = 107.46 CFS AT 1.533 HOURS BASIN AREA = .0502 SQ. MI.

*S **BASIN 2I
COMPUTE NM HYD

ID=8 HYD NO=206.00 AREA=0.0055 SQ MI
PER A=0 PER B=31 PER C=10 PER D=59
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 12.811 CFS UNIT VOLUME = .9985 B = 526.28 P60 = 1.8700
AREA = .003245 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124864HR TP = .133300HR K/TP RATIO = .936713 SHAPE CONSTANT, N = 3.775485
UNIT PEAK = 5.7502 CFS UNIT VOLUME = .9978 B = 339.91 P60 = 1.8700
AREA = .002255 SQ MI IA = .46341 INCHES INF = 1.14756 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=8 CODE=1

PARTIAL HYDROGRAPH 206.00

RUNOFF VOLUME = 1.46152 INCHES = .4287 ACRE-FEET
PEAK DISCHARGE RATE = 12.29 CFS AT 1.500 HOURS BASIN AREA = .0055 SQ. MI.

ADD HYD ID=9 HYD NO=206.1 ID=7 ID=8
PRINT HYD ID=9 CODE=1

PARTIAL HYDROGRAPH 206.10

RUNOFF VOLUME = 1.42892 INCHES = 4.2448 ACRE-FEET
PEAK DISCHARGE RATE = 119.29 CFS AT 1.533 HOURS BASIN AREA = .0557 SQ. MI.

*S **ROUTE BASIN AP1,AP2,AP3 & BASIN 2I TO AMOLE CHANNEL
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1

MIN ELEV=100.00 FT MAX ELEV=100.67 FT
CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
DIST ELEV DIST ELEV DIST ELEV
0 100.67 0.1 100.00 16 100.32
31.9 100.00 32.0 100.67

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00
100.04	.06	.05	3.51
100.07	.25	.33	7.03
100.11	.56	.96	10.54
100.14	.99	2.07	14.06

100.18	1.55	3.75	17.57
100.21	2.23	6.10	21.09
100.25	3.04	9.20	24.60
100.28	3.97	13.13	28.12
100.32	5.02	17.98	31.63
100.35	6.14	25.01	31.91
100.39	7.27	33.05	31.92
100.42	8.40	41.95	31.93
100.46	9.52	51.67	31.94
100.49	10.65	62.16	31.95
100.53	11.77	73.40	31.96
100.56	12.90	85.36	31.97
100.60	14.03	98.01	31.98
100.63	15.16	111.33	31.99
100.67	16.28	125.31	32.00

COMPUTE TRAVEL TIME ID=10 REACH NO=1 NO VS=1 L=240 FT
SLP=.0338

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.062	.05	.0805
.071	.248	.33	.0507
.106	.558	.96	.0387
.141	.992	2.07	.0320
.176	1.549	3.75	.0275
.212	2.231	6.10	.0244
.247	3.037	9.20	.0220
.282	3.966	13.13	.0201
.317	5.020	17.98	.0186
.353	6.144	25.01	.0164
.388	7.269	33.05	.0147
.423	8.395	41.95	.0133
.458	9.521	51.67	.0123
.494	10.647	62.16	.0114
.529	11.774	73.40	.0107
.564	12.901	85.36	.0101
.599	14.029	98.01	.0095
.635	15.157	111.33	.0091
.670	16.285	125.31	.0087

ROUTE ID=10 HYD NO=206.2 INFLOW ID=9 DT=0.0 HR
PRINT HYD ID=10 CODE=1

PARTIAL HYDROGRAPH 206.20

RUNOFF VOLUME = 1.42893 INCHES = 4.2448 ACRE-FEET
PEAK DISCHARGE RATE = 119.04 CFS AT 1.533 HOURS BASIN AREA = .0557 SQ. MI.

*S **BASIN 2J
COMPUTE NM HYD

ID=11 HYD NO=207.00 AREA=0.0029 SQ MI
PER A=0 PER B=31 PER C=10 PER D=59
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 6.7551 CFS UNIT VOLUME = .9976 B = 526.28 P60 = 1.8700
AREA = .001711 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124864HR TP = .133300HR K/TP RATIO = .936713 SHAPE CONSTANT, N = 3.775485
UNIT PEAK = 3.0319 CFS UNIT VOLUME = .9958 B = 339.91 P60 = 1.8700
AREA = .001189 SQ MI IA = .46341 INCHES INF = 1.14756 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=11 CODE=1

PARTIAL HYDROGRAPH 207.00

RUNOFF VOLUME = 1.46152 INCHES = .2260 ACRE-FEET
PEAK DISCHARGE RATE = 6.49 CFS AT 1.500 HOURS BASIN AREA = .0029 SQ. MI.

ADD HYD ID=12 HYD NO=207.1 ID=11 ID=10
*S TOTAL FLOW @ AP4 (ENTRANCE TO AMOLE DEL NORTE CHANNEL)
PRINT HYD ID=12 CODE=5

PARTIAL HYDROGRAPH 207.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	80.3	3.333	1.0	4.999	.5	6.666	.1
.167	.0	1.833	44.4	3.500	.8	5.166	.5	6.833	.1
.333	.0	2.000	29.8	3.666	.7	5.333	.6	6.999	.0
.500	.0	2.166	18.8	3.833	.6	5.499	.6	7.166	.0
.667	.0	2.333	9.0	4.000	.6	5.666	.6	7.333	.0
.833	.0	2.500	5.2	4.166	.6	5.833	.6	7.499	.0
1.000	.0	2.666	3.4	4.333	.5	5.999	.6	7.666	.0
1.167	.0	2.833	2.4	4.500	.5	6.166	.6	7.833	.0
1.333	8.6	3.000	1.7	4.666	.5	6.333	.4		
1.500	110.8	3.166	1.3	4.833	.5	6.499	.2		

RUNOFF VOLUME = 1.43053 INCHES = 4.4708 ACRE-FEET
PEAK DISCHARGE RATE = 125.29 CFS AT 1.533 HOURS BASIN AREA = .0586 SQ. MI.

*S *****
*S *****
FUTURE PHASES**
*S **BASIN 2A1

COMPUTE NM HYD

ID=13 HYD NO=300.00 AREA=0.0087 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 17.174 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 1.8700
AREA = .004350 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 11.121 CFS UNIT VOLUME = .9990 B = 340.80 P60 = 1.8700
AREA = .004350 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD

ID=13 CODE=1

HYDROGRAPH FROM AREA 300.00

RUNOFF VOLUME = 1.35334 INCHES = .6279 ACRE-FEET
PEAK DISCHARGE RATE = 18.40 CFS AT 1.500 HOURS BASIN AREA = .0087 SQ. MI.

*S **ROUTE BASIN 2A1 TO AP5 (32' F-F STREET)
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
MIN ELEV=100.00 FT MAX ELEV=100.67 FT
CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
DIST ELEV DIST ELEV DIST ELEV
0 100.67 0.1 100.00 16 100.32
31.9 100.00 32.0 100.67

RATING CURVE VALLEY SECTION 1.0

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

100.60	14.03	98.01	31.98
100.63	15.16	111.33	31.99
100.67	16.28	125.31	32.00

COMPUTE TRAVEL TIME ID=14 REACH NO=1 NO VS=1 L=620 FT
SLP=.0312

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.062	.05	.2081
.071	.248	.33	.1311
.106	.558	.96	.1000
.141	.992	2.07	.0826
.176	1.549	3.75	.0712
.212	2.231	6.10	.0630
.247	3.037	9.20	.0569
.282	3.966	13.13	.0520
.317	5.020	17.98	.0481
.353	6.144	25.01	.0423
.388	7.269	33.05	.0379
.423	8.395	41.95	.0345
.458	9.521	51.67	.0317
.494	10.647	62.16	.0295
.529	11.774	73.40	.0276
.564	12.901	85.36	.0260
.599	14.029	98.01	.0247
.635	15.157	111.33	.0234
.670	16.285	125.31	.0224

ROUTE ID=14 HYD NO=300.1 INFLOW ID=13 DT=0.0 HR
PRINT HYD ID=14 CODE=1

HYDROGRAPH FROM AREA 300.10

RUNOFF VOLUME = 1.35337 INCHES = .6280 ACRE-FEET
PEAK DISCHARGE RATE = 17.05 CFS AT 1.533 HOURS BASIN AREA = .0087 SQ. MI.

*S **BASIN 2A2
COMPUTE NM HYD

ID=15 HYD NO=301.00 AREA=0.0055 SQ MI
PER A=0 PER B=31 PER C=10 PER D=59
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 12.811 CFS UNIT VOLUME = .9985 B = 526.28 P60 = 1.8700
AREA = .003245 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124864HR TP = .133300HR K/TP RATIO = .936713 SHAPE CONSTANT, N = 3.775485
 UNIT PEAK = 5.7502 CFS UNIT VOLUME = .9978 B = 339.91 P60 = 1.8700
 AREA = .002255 SQ MI IA = .46341 INCHES INF = 1.14756 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=15 CODE=1

HYDROGRAPH FROM AREA 301.00

RUNOFF VOLUME = 1.46152 INCHES = .4287 ACRE-FEET
 PEAK DISCHARGE RATE = 12.29 CFS AT 1.500 HOURS BASIN AREA = .0055 SQ. MI.

*S ** ADD BASIN 2A1 & 2A2 TO FIND FLOW AT AP5
 ADD HYD ID=16 HYD NO=302.00 ID=14 ID=15
 PRINT HYD ID=16 CODE=5

HYDROGRAPH FROM AREA 302.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	27.6	3.000	.3	4.500	.1	5.999	.2
.167	.0	1.667	18.0	3.166	.3	4.666	.1	6.166	.1
.333	.0	1.833	9.9	3.333	.2	4.833	.1	6.333	.0
.500	.0	2.000	6.6	3.500	.2	4.999	.1	6.499	.0
.667	.0	2.166	3.6	3.666	.2	5.166	.1	6.666	.0
.833	.0	2.333	1.7	3.833	.1	5.333	.1	6.833	.0
1.000	.0	2.500	1.1	4.000	.1	5.499	.1	6.999	.0
1.167	.0	2.666	.7	4.166	.1	5.666	.1	7.166	.0
1.333	4.7	2.833	.5	4.333	.1	5.833	.1		

RUNOFF VOLUME = 1.39521 INCHES = 1.0566 ACRE-FEET
 PEAK DISCHARGE RATE = 28.89 CFS AT 1.533 HOURS BASIN AREA = .0142 SQ. MI.

*S **BASIN 2C1
 COMPUTE NM HYD ID=17 HYD NO=303.00 AREA=0.0046 SQ MI
 PER A=0 PER B=37 PER C=13 PER D=50
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 9.0805 CFS UNIT VOLUME = .9981 B = 526.28 P60 = 1.8700
 AREA = .002300 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
 UNIT PEAK = 5.8803 CFS UNIT VOLUME = .9979 B = 340.80 P60 = 1.8700
 AREA = .002300 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD

ID=17 CODE=1

HYDROGRAPH FROM AREA 303.00

RUNOFF VOLUME = 1.35334 INCHES = .3320 ACRE-FEET
 PEAK DISCHARGE RATE = 9.74 CFS AT 1.500 HOURS BASIN AREA = .0046 SQ. MI.

*S **ROUTE BASIN 2C1 TO OLD ASPEN RD (28' F-F STREET)
 COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
 MIN ELEV=100.00 FT MAX ELEV=100.67 FT
 CH SLP=.02 FP SLP=.02 N=.017 DIST=28 FT
 DIST ELEV DIST ELEV DIST ELEV
 0 100.67 0.1 100.00 14 100.28
 27.9 100.00 28.0 100.67

RATING CURVE VALLEY SECTION 1.0			
WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00
100.04	.06	.05	3.51
100.07	.25	.33	7.02
100.11	.56	.96	10.53
100.14	.99	2.07	14.05
100.18	1.55	3.75	17.56
100.21	2.23	6.09	21.07
100.25	3.03	9.19	24.58
100.28	3.96	13.18	27.88
100.32	4.95	19.05	27.89
100.35	5.93	25.73	27.91
100.39	6.91	33.18	27.92
100.42	7.90	41.35	27.93
100.46	8.88	50.21	27.94
100.49	9.87	59.73	27.95
100.53	10.85	69.89	27.96
100.56	11.84	80.66	27.97
100.60	12.83	92.01	27.98
100.63	13.81	103.94	27.99
100.67	14.80	116.42	28.00

COMPUTE TRAVEL TIME ID=18 REACH NO=1 NO VS=1 L=350 FT
 SLP=.0375

TRAVEL TIME TABLE
 REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.062	.05	.1174
.071	.248	.33	.0740
.106	.557	.96	.0565

.141	.991	2.07	.0466
.176	1.548	3.75	.0402
.212	2.229	6.09	.0356
.247	3.034	9.19	.0321
.282	3.962	13.18	.0292
.317	4.946	19.05	.0252
.353	5.930	25.73	.0224
.388	6.914	33.18	.0203
.423	7.898	41.35	.0186
.458	8.883	50.21	.0172
.494	9.869	59.73	.0161
.529	10.854	69.89	.0151
.564	11.841	80.66	.0143
.599	12.827	92.01	.0136
.635	13.814	103.94	.0129
.670	14.801	116.42	.0124

ROUTE ID=18 HYD NO=303.1 INFLOW ID=17 DT=0.0 HR
 PRINT HYD ID=18 CODE=1

HYDROGRAPH FROM AREA 303.10

RUNOFF VOLUME = 1.35339 INCHES = .3320 ACRE-FEET
 PEAK DISCHARGE RATE = 9.49 CFS AT 1.533 HOURS BASIN AREA = .0046 SQ. MI.

*S ** BASIN 2C2
 COMPUTE NM HYD

ID=19 HYD NO=303.20 AREA=0.0035 SQ MI
 PER A=0 PER B=31 PER C=10 PER D=59
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 8.1527 CFS UNIT VOLUME = .9981 B = 526.28 P60 = 1.8700
 AREA = .002065 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124864HR TP = .133300HR K/TP RATIO = .936713 SHAPE CONSTANT, N = 3.775485
 UNIT PEAK = 3.6592 CFS UNIT VOLUME = .9965 B = 339.91 P60 = 1.8700
 AREA = .001435 SQ MI IA = .46341 INCHES INF = 1.14756 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=19 CODE=1

HYDROGRAPH FROM AREA 303.20

RUNOFF VOLUME = 1.46152 INCHES = .2728 ACRE-FEET
 PEAK DISCHARGE RATE = 7.83 CFS AT 1.500 HOURS BASIN AREA = .0035 SQ. MI.

*S **ADD BASIN 2C1 & 2C2

ADD HYD ID=20 HYD NO=303.3 ID=19 ID=18

PRINT HYD ID=20 CODE=1

HYDROGRAPH FROM AREA 303.30

RUNOFF VOLUME = 1.40002 INCHES = .6048 ACRE-FEET
PEAK DISCHARGE RATE = 17.03 CFS AT 1.533 HOURS BASIN AREA = .0081 SQ. MI.

*S **ADD BASINS 2A & 2C

ADD HYD ID=1 HYD NO=304.00 ID=20 ID=16

PRINT HYD ID=1 CODE=1

HYDROGRAPH FROM AREA 304.00

RUNOFF VOLUME = 1.39696 INCHES = 1.6614 ACRE-FEET
PEAK DISCHARGE RATE = 45.91 CFS AT 1.533 HOURS BASIN AREA = .0223 SQ. MI.

*S **ROUTE BASINS 2A & 2C TO AP6 (32' F-F STREET)

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1

MIN ELEV=100.00 FT MAX ELEV=100.67 FT

CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT

DIST ELEV DIST ELEV DIST ELEV

0 100.67 0.1 100.00 16 100.32

31.9 100.00 32.0 100.67

RATING CURVE VALLEY SECTION 1.0

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

100.63 15.16 111.33 31.99
 100.67 16.28 125.31 32.00
 COMPUTE TRAVEL TIME ID=3 REACH NO=1 NO VS=1 L=480 FT
 SLP=.013

TRAVEL TIME TABLE
 REACH= 1.0

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

ROUTE ID=3 HYD NO=304.1 INFLOW ID=1 DT=0.0 HR
 PRINT HYD ID=3 CODE=1

HYDROGRAPH FROM AREA 304.10

RUNOFF VOLUME = 1.39698 INCHES = 1.6615 ACRE-FEET
 PEAK DISCHARGE RATE = 45.68 CFS AT 1.533 HOURS BASIN AREA = .0223 SQ. MI.

*S **BASIN 2D
 COMPUTE NM HYD ID=4 HYD NO=305.00 AREA=0.0058 SQ MI
 PER A=0 PER B=31 PER C=10 PER D=59
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 13.510 CFS UNIT VOLUME = .9985 B = 526.28 P60 = 1.8700
 AREA = .003422 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124864HR TP = .133300HR K/TP RATIO = .936713 SHAPE CONSTANT, N = 3.775485
 UNIT PEAK = 6.0639 CFS UNIT VOLUME = .9981 B = 339.91 P60 = 1.8700
 AREA = .002378 SQ MI IA = .46341 INCHES INF = 1.14756 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=4 CODE=1

HYDROGRAPH FROM AREA 305.00

RUNOFF VOLUME = 1.46152 INCHES = .4521 ACRE-FEET
 PEAK DISCHARGE RATE = 12.96 CFS AT 1.500 HOURS BASIN AREA = .0058 SQ. MI.

*S **ROUTE BASIN 2D TO AP6 (32' F-F STREET)
 COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1

MIN ELEV=100.00 FT MAX ELEV=100.67 FT
 CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
 DIST ELEV DIST ELEV DIST ELEV
 0 100.67 0.1 100.00 16 100.32
 31.9 100.00 32.0 100.67

RATING CURVE VALLEY SECTION 1.0

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

COMPUTE TRAVEL TIME ID=5 REACH NO=1 NO VS=1 L=210 FT
 SLP=.013

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.062	.05	.0705
.071	.248	.33	.0444
.106	.558	.96	.0339
.141	.992	2.07	.0280
.176	1.549	3.75	.0241
.212	2.231	6.10	.0213
.247	3.037	9.20	.0193
.282	3.966	13.13	.0176
.317	5.020	17.98	.0163
.353	6.144	25.01	.0143
.388	7.269	33.05	.0128
.423	8.395	41.95	.0117
.458	9.521	51.67	.0107
.494	10.647	62.16	.0100
.529	11.774	73.40	.0094
.564	12.901	85.36	.0088
.599	14.029	98.01	.0083
.635	15.157	111.33	.0079
.670	16.285	125.31	.0076

ROUTE ID=5 HYD NO=305.1 INFLOW ID=4 DT=0.0 HR
 PRINT HYD ID=5 CODE=1

HYDROGRAPH FROM AREA 305.10

RUNOFF VOLUME = 1.46156 INCHES = .4521 ACRE-FEET
 PEAK DISCHARGE RATE = 12.82 CFS AT 1.533 HOURS BASIN AREA = .0058 SQ. MI.

*S **ADD BASINS 2A, 2C & 2D TOGETHER
 ADD HYD ID=6 HYD NO=306.00 ID=5 ID=3
 PRINT HYD ID=6 CODE=1

HYDROGRAPH FROM AREA 306.00

RUNOFF VOLUME = 1.41028 INCHES = 2.1135 ACRE-FEET
 PEAK DISCHARGE RATE = 58.50 CFS AT 1.533 HOURS BASIN AREA = .0281 SQ. MI.

*S **BASIN 2E
 COMPUTE NM HYD ID=7 HYD NO=307.00 AREA=0.0023 SQ MI
 PER A=0 PER B=31 PER C=10 PER D=59
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 5.3575 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.8700
 AREA = .001357 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124864HR TP = .133300HR K/TP RATIO = .936713 SHAPE CONSTANT, N = 3.775485
 UNIT PEAK = 2.4046 CFS UNIT VOLUME = .9944 B = 339.91 P60 = 1.8700
 AREA = .000943 SQ MI IA = .46341 INCHES INF = 1.14756 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=7 CODE=1

HYDROGRAPH FROM AREA 307.00

RUNOFF VOLUME = 1.46152 INCHES = .1793 ACRE-FEET
 PEAK DISCHARGE RATE = 5.15 CFS AT 1.500 HOURS BASIN AREA = .0023 SQ. MI.

ADD HYD ID=8 HYD NO=306.10 ID=7 ID=6
 *S **TOTAL FLOW @ AP6
 PRINT HYD ID=8 CODE=5

HYDROGRAPH FROM AREA 306.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	40.0	3.333	.5	4.999	.3	6.666	.0
.167	.0	1.833	22.3	3.500	.4	5.166	.3	6.833	.0
.333	.0	2.000	14.9	3.666	.3	5.333	.3	6.999	.0
.500	.0	2.166	8.6	3.833	.3	5.499	.3	7.166	.0
.667	.0	2.333	4.1	4.000	.3	5.666	.3	7.333	.0
.833	.0	2.500	2.5	4.166	.3	5.833	.3	7.499	.0
1.000	.0	2.666	1.6	4.333	.3	5.999	.3		
1.167	.0	2.833	1.1	4.500	.3	6.166	.3		
1.333	7.9	3.000	.8	4.666	.3	6.333	.1		
1.500	58.6	3.166	.6	4.833	.3	6.499	.1		

RUNOFF VOLUME = 1.41415 INCHES = 2.2928 ACRE-FEET
 PEAK DISCHARGE RATE = 63.45 CFS AT 1.533 HOURS BASIN AREA = .0304 SQ. MI.

*S **BASIN 2G
 COMPUTE NM HYD ID=9 HYD NO=307.10 AREA=0.0061 SQ MI
 PER A=0 PER B=31 PER C=10 PER D=59
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 14.209 CFS UNIT VOLUME = .9985 B = 526.28 P60 = 1.8700
 AREA = .003599 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124864HR TP = .133300HR K/TP RATIO = .936713 SHAPE CONSTANT, N = 3.775485
 UNIT PEAK = 6.3775 CFS UNIT VOLUME = .9981 B = 339.91 P60 = 1.8700
 AREA = .002501 SQ MI IA = .46341 INCHES INF = 1.14756 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD

ID=9 CODE=1

HYDROGRAPH FROM AREA 307.10

RUNOFF VOLUME = 1.46152 INCHES = .4755 ACRE-FEET
PEAK DISCHARGE RATE = 13.63 CFS AT 1.500 HOURS BASIN AREA = .0061 SQ. MI.

*S **ADD 2G TO AP6

ADD HYD

ID=10 HYD NO=306.2 ID=9 ID=8

PRINT HYD

ID=10 CODE=1

HYDROGRAPH FROM AREA 306.20

RUNOFF VOLUME = 1.42206 INCHES = 2.7683 ACRE-FEET
PEAK DISCHARGE RATE = 76.58 CFS AT 1.533 HOURS BASIN AREA = .0365 SQ. MI.

*S **ROUTE BASIN 2G & AP6 TO AP7 (32' F-F STREET)

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1

MIN ELEV=100.00 FT MAX ELEV=100.67 FT

CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT

DIST ELEV DIST ELEV DIST ELEV

0 100.67 0.1 100.00 16 100.32

31.9 100.00 32.0 100.67

RATING CURVE VALLEY SECTION 1.0

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

COMPUTE TRAVEL TIME ID=11 REACH NO=1 NO VS=1 L=320 FT
SLP=.013

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.062	.05	.1074
.071	.248	.33	.0676
.106	.558	.96	.0516
.141	.992	2.07	.0426
.176	1.549	3.75	.0367
.212	2.231	6.10	.0325
.247	3.037	9.20	.0293
.282	3.966	13.13	.0268
.317	5.020	17.98	.0248
.353	6.144	25.01	.0218
.388	7.269	33.05	.0196
.423	8.395	41.95	.0178
.458	9.521	51.67	.0164
.494	10.647	62.16	.0152
.529	11.774	73.40	.0143
.564	12.901	85.36	.0134
.599	14.029	98.01	.0127
.635	15.157	111.33	.0121
.670	16.285	125.31	.0116

ROUTE ID=11 HYD NO=306.3 INFLOW ID=10 DT=0.0 HR
PRINT HYD ID=11 CODE=1

HYDROGRAPH FROM AREA 306.30

RUNOFF VOLUME = 1.42207 INCHES = 2.7683 ACRE-FEET
PEAK DISCHARGE RATE = 76.80 CFS AT 1.533 HOURS BASIN AREA = .0365 SQ. MI.

*S **BASIN 2H1
COMPUTE NM HYD

ID=12 HYD NO=308.00 AREA=0.0047 SQ MI
PER A=0 PER B=37 PER C=13 PER D=50
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 9.2779 CFS UNIT VOLUME = .9981 B = 526.28 P60 = 1.8700
AREA = .002350 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124459HR TP = .133300HR K/TP RATIO = .933679 SHAPE CONSTANT, N = 3.788292
UNIT PEAK = 6.0081 CFS UNIT VOLUME = .9981 B = 340.80 P60 = 1.8700
AREA = .002350 SQ MI IA = .46100 INCHES INF = 1.14080 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD

ID=12 CODE=1

HYDROGRAPH FROM AREA 308.00

RUNOFF VOLUME = 1.35334 INCHES = .3392 ACRE-FEET
 PEAK DISCHARGE RATE = 9.95 CFS AT 1.500 HOURS BASIN AREA = .0047 SQ. MI.

*S **ROUTE BASIN 2H1 TO AP7 (32' F-F STREET)
 COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
 MIN ELEV=100.00 FT MAX ELEV=100.67 FT
 CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
 DIST ELEV DIST ELEV DIST ELEV
 0 100.67 0.1 100.00 16 100.32
 31.9 100.00 32.0 100.67

RATING CURVE VALLEY SECTION 1.0			
WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00
100.04	.06	.05	3.51
100.07	.25	.33	7.03
100.11	.56	.96	10.54
100.14	.99	2.07	14.06
100.18	1.55	3.75	17.57
100.21	2.23	6.10	21.09
100.25	3.04	9.20	24.60
100.28	3.97	13.13	28.12
100.32	5.02	17.98	31.63
100.35	6.14	25.01	31.91
100.39	7.27	33.05	31.92
100.42	8.40	41.95	31.93
100.46	9.52	51.67	31.94
100.49	10.65	62.16	31.95
100.53	11.77	73.40	31.96
100.56	12.90	85.36	31.97
100.60	14.03	98.01	31.98
100.63	15.16	111.33	31.99
100.67	16.28	125.31	32.00

COMPUTE TRAVEL TIME ID=13 REACH NO=1 NO VS=1 L=250 FT
 SLP=.0125

TRAVEL TIME TABLE REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.062	.05	.0839
.071	.248	.33	.0528
.106	.558	.96	.0403

.141	.992	2.07	.0333
.176	1.549	3.75	.0287
.212	2.231	6.10	.0254
.247	3.037	9.20	.0229
.282	3.966	13.13	.0210
.317	5.020	17.98	.0194
.353	6.144	25.01	.0171
.388	7.269	33.05	.0153
.423	8.395	41.95	.0139
.458	9.521	51.67	.0128
.494	10.647	62.16	.0119
.529	11.774	73.40	.0111
.564	12.901	85.36	.0105
.599	14.029	98.01	.0099
.635	15.157	111.33	.0095
.670	16.285	125.31	.0090

ROUTE ID=13 HYD NO=308.1 INFLOW ID=12 DT=0.0 HR
 PRINT HYD ID=13 CODE=1

HYDROGRAPH FROM AREA 308.10

RUNOFF VOLUME = 1.35339 INCHES = .3392 ACRE-FEET
 PEAK DISCHARGE RATE = 9.83 CFS AT 1.533 HOURS BASIN AREA = .0047 SQ. MI.

*S **BASIN 2H2
 COMPUTE NM HYD

ID=14 HYD NO=308.2 AREA=0.0022 SQ MI
 PER A=0 PER B=31 PER C=10 PER D=59
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 5.1246 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.8700
 AREA = .001298 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124864HR TP = .133300HR K/TP RATIO = .936713 SHAPE CONSTANT, N = 3.775485
 UNIT PEAK = 2.3001 CFS UNIT VOLUME = .9944 B = 339.91 P60 = 1.8700
 AREA = .000902 SQ MI IA = .46341 INCHES INF = 1.14756 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=14 CODE=1

HYDROGRAPH FROM AREA 308.20

RUNOFF VOLUME = 1.46152 INCHES = .1715 ACRE-FEET
 PEAK DISCHARGE RATE = 4.93 CFS AT 1.500 HOURS BASIN AREA = .0022 SQ. MI.

*S **ADD BASIN 2H1 & 2H2
 ADD HYD ID=15 HYD NO=308.2 ID=13 ID=14
 PRINT HYD ID=15 CODE=1

HYDROGRAPH FROM AREA 308.20

RUNOFF VOLUME = 1.38776 INCHES = .5107 ACRE-FEET
 PEAK DISCHARGE RATE = 14.57 CFS AT 1.533 HOURS BASIN AREA = .0069 SQ. MI.

*S **ADD BASINS 2H, 2G & AP6 FLOWS
 ADD HYD ID=16 HYD NO=306.4 ID=11 ID=15
 *S **BASIN 2L1
 COMPUTE NM HYD ID=17 HYD NO=309.00 AREA=0.0018 SQ MI
 PER A=0 PER B=31 PER C=10 PER D=59
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 4.1928 CFS UNIT VOLUME = .9965 B = 526.28 P60 = 1.8700
 AREA = .001062 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124864HR TP = .133300HR K/TP RATIO = .936713 SHAPE CONSTANT, N = 3.775485
 UNIT PEAK = 1.8819 CFS UNIT VOLUME = .9932 B = 339.91 P60 = 1.8700
 AREA = .000738 SQ MI IA = .46341 INCHES INF = 1.14756 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=17 CODE=1

HYDROGRAPH FROM AREA 309.00

RUNOFF VOLUME = 1.46152 INCHES = .1403 ACRE-FEET
 PEAK DISCHARGE RATE = 4.03 CFS AT 1.500 HOURS BASIN AREA = .0018 SQ. MI.

ADD HYD ID=18 HYD NO=306.5 ID=16 ID=17
 *S TOTAL FLOW @ AP7
 PRINT HYD ID=18 CODE=5

HYDROGRAPH FROM AREA 306.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	59.5	3.333	.7	4.999	.4	6.666	.1
.167	.0	1.833	33.0	3.500	.6	5.166	.4	6.833	.0
.333	.0	2.000	22.2	3.666	.5	5.333	.4	6.999	.0
.500	.0	2.166	13.1	3.833	.5	5.499	.4	7.166	.0
.667	.0	2.333	6.1	4.000	.4	5.666	.5	7.333	.0
.833	.0	2.500	3.7	4.166	.4	5.833	.5	7.499	.0

1.000	.0	2.666	2.4	4.333	.4	5.999	.5	7.666	.0
1.167	.0	2.833	1.6	4.500	.4	6.166	.4		
1.333	11.2	3.000	1.2	4.666	.4	6.333	.2		
1.500	87.7	3.166	.9	4.833	.4	6.499	.1		

RUNOFF VOLUME = 1.41839 INCHES = 3.4192 ACRE-FEET
 PEAK DISCHARGE RATE = 95.25 CFS AT 1.533 HOURS BASIN AREA = .0452 SQ. MI.

*S **ROUTE AP7 TO AP8 (32' F-F STREET)
 COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
 MIN ELEV=100.00 FT MAX ELEV=100.67 FT
 CH SLP=.02 FP SLP=.02 N=.017 DIST=32 FT
 DIST ELEV DIST ELEV DIST ELEV
 0 100.67 0.1 100.00 16 100.32
 31.9 100.00 32.0 100.67

RATING CURVE VALLEY SECTION 1.0			
WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00
100.04	.06	.05	3.51
100.07	.25	.33	7.03
100.11	.56	.96	10.54
100.14	.99	2.07	14.06
100.18	1.55	3.75	17.57
100.21	2.23	6.10	21.09
100.25	3.04	9.20	24.60
100.28	3.97	13.13	28.12
100.32	5.02	17.98	31.63
100.35	6.14	25.01	31.91
100.39	7.27	33.05	31.92
100.42	8.40	41.95	31.93
100.46	9.52	51.67	31.94
100.49	10.65	62.16	31.95
100.53	11.77	73.40	31.96
100.56	12.90	85.36	31.97
100.60	14.03	98.01	31.98
100.63	15.16	111.33	31.99
100.67	16.28	125.31	32.00

COMPUTE TRAVEL TIME ID=19 REACH NO=1 NO VS=1 L=360 FT
 SLP=.018

TRAVEL TIME TABLE
 REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.062	.05	.1208
.071	.248	.33	.0761
.106	.558	.96	.0581

.141	.992	2.07	.0479
.176	1.549	3.75	.0413
.212	2.231	6.10	.0366
.247	3.037	9.20	.0330
.282	3.966	13.13	.0302
.317	5.020	17.98	.0279
.353	6.144	25.01	.0246
.388	7.269	33.05	.0220
.423	8.395	41.95	.0200
.458	9.521	51.67	.0184
.494	10.647	62.16	.0171
.529	11.774	73.40	.0160
.564	12.901	85.36	.0151
.599	14.029	98.01	.0143
.635	15.157	111.33	.0136
.670	16.285	125.31	.0130

ROUTE ID=19 HYD NO=306.6 INFLOW ID=18 DT=0.0 HR
 PRINT HYD ID=19 CODE=1

HYDROGRAPH FROM AREA 306.60

RUNOFF VOLUME = 1.41840 INCHES = 3.4193 ACRE-FEET
 PEAK DISCHARGE RATE = 94.88 CFS AT 1.533 HOURS BASIN AREA = .0452 SQ. MI.

*S **BASIN 2K
 COMPUTE NM HYD ID=20 HYD NO=310.00 AREA=0.010 SQ MI
 PER A=0 PER B=31 PER C=10 PER D=59
 TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 23.294 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 1.8700
 AREA = .005900 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124864HR TP = .133300HR K/TP RATIO = .936713 SHAPE CONSTANT, N = 3.775485
 UNIT PEAK = 10.455 CFS UNIT VOLUME = .9990 B = 339.91 P60 = 1.8700
 AREA = .004100 SQ MI IA = .46341 INCHES INF = 1.14756 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=20 CODE=1

HYDROGRAPH FROM AREA 310.00

RUNOFF VOLUME = 1.46152 INCHES = .7795 ACRE-FEET
 PEAK DISCHARGE RATE = 22.34 CFS AT 1.500 HOURS BASIN AREA = .0100 SQ. MI.

ADD HYD ID=1 HYD NO=306.7 ID=19 ID=20
PRINT HYD ID=1 CODE=1

HYDROGRAPH FROM AREA 306.70

RUNOFF VOLUME = 1.42619 INCHES = 4.1987 ACRE-FEET
PEAK DISCHARGE RATE = 116.38 CFS AT 1.533 HOURS BASIN AREA = .0552 SQ. MI.

*S **BASIN 2L
COMPUTE NM HYD

ID=2 HYD NO=309.1 AREA=0.0024 SQ MI
PER A=0 PER B=31 PER C=10 PER D=59
TP=-0.1333 HR MASSRAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.5904 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.8700
AREA = .001416 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124864HR TP = .133300HR K/TP RATIO = .936713 SHAPE CONSTANT, N = 3.775485
UNIT PEAK = 2.5092 CFS UNIT VOLUME = .9949 B = 339.91 P60 = 1.8700
AREA = .000984 SQ MI IA = .46341 INCHES INF = 1.14756 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=2 CODE=1

HYDROGRAPH FROM AREA 309.10

RUNOFF VOLUME = 1.46152 INCHES = .1871 ACRE-FEET
PEAK DISCHARGE RATE = 5.37 CFS AT 1.500 HOURS BASIN AREA = .0024 SQ. MI.

ADD HYD ID=3 HYD NO=306.8 ID=1 ID=2
*S TOTAL FLOW @ AP8 (ENTRANCE TO AMOLE DEL NORTE CHANNEL)
PRINT HYD ID=3 CODE=5

HYDROGRAPH FROM AREA 306.80

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	76.7	3.333	.9	4.999	.5	6.666	.1
.167	.0	1.833	42.6	3.500	.8	5.166	.5	6.833	.1
.333	.0	2.000	28.7	3.666	.7	5.333	.6	6.999	.0
.500	.0	2.166	17.2	3.833	.6	5.499	.6	7.166	.0
.667	.0	2.333	8.2	4.000	.6	5.666	.6	7.333	.0
.833	.0	2.500	4.9	4.166	.5	5.833	.6	7.499	.0
1.000	.0	2.666	3.2	4.333	.5	5.999	.6	7.666	.0
1.167	.1	2.833	2.1	4.500	.5	6.166	.5	7.833	.0
1.333	13.3	3.000	1.5	4.666	.5	6.333	.3		

1.500 111.1 3.166 1.2 4.833 .5 6.499 .2

RUNOFF VOLUME = 1.42766 INCHES = 4.3858 ACRE-FEET
PEAK DISCHARGE RATE = 121.56 CFS AT 1.533 HOURS BASIN AREA = .0576 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 16:30:28

APPENDIX B

- **PRESSURE CALCULATIONS**
- **FLOWMASTER SHEETS**

Total # of Lots = 114
Total Acres = 18.14

Du/Ac = 6.28 per DPM calculate percent D

45 x 110 Lots

Total Area = 6075 ft²

House = 1800 ft²

Drivepad/Sdwk/C&G/Paving = 1523 ft² ∴ % D = 55%

40 x 100 Lots

Total Area = 5000 ft²

House = 1700 ft²

Drivepad/Sdwk/C&G/Paving = 1420 ft² % D = 62.4%

∴ use D = 59%

B = 31%

C = 10%

$$Q @ AP5 = 28.89 \text{ cfs}$$

$$Q_{1/2 \text{ street}} = 14.45 \text{ cfs}$$

$$S = 1.37\%$$

$$\text{per DPM plate } 22.3 \text{ D-1}$$

$$D = .41 \text{ ft}$$

$$\text{per DPM plate } 22.3 \text{ D-5}$$

$$Q_{\text{inlet}} = 5.5 \text{ cfs (use 4 Type A inlets)}$$

$$\therefore \text{pass through flow } 28.89 - 22 = 6.89 \text{ cfs}$$

$$Q @ AP6 = 63.5 \text{ cfs} - 22 \text{ cfs} = 41.5 \text{ cfs}$$

$$Q_{1/2 \text{ street}} = 20.75 \text{ cfs}$$

$$D = .51 \text{ ft (per DPM plate } 22.3 \text{ D-1)}$$

$$S = 1.37\%$$

$$\text{per DPM plate } 22.3 \text{ D-5}$$

$$Q_{\text{inlet}} = 8 \text{ cfs (use 4 Type A inlets)}$$

$$\therefore \text{pass through flow } 41.5 - 32 = 9.5 \text{ cfs}$$

$$Q \text{ from Basin } 2H = 14.5 \text{ cfs}$$

$$Q_{1/2} = 7.25 \text{ cfs}$$

$$S = 1.25\%$$

$$Q_{1/2 @ d=.67} = 87.41 (.0125)^5 (6.32) (.43)^{.67} = 35.11 \text{ cfs}$$

$$Q_{1/2 @ d=.33} = 87.41 (.0125)^5 (1.59) (.11)^{.67} = 3.56 \text{ cfs}$$

$$d \approx .37 \text{ ft}$$

$$\text{per DPM plate } 22.3 \text{ D-5}$$

$$Q_{\text{inlet}} = 4 \text{ cfs (use 2 Type A inlets @ Secret Valley)}$$

$$\therefore \text{pass through } 14.5 - 8 = 6.5 \text{ cfs}$$

$$Q @ AP7 = 95.25 - 64 = 31.25 \text{ cfs}$$

$$Q_{1/2 \text{ street}} = 15.6 \text{ cfs}$$

$$D = .51 \text{ ft (per DPM plate } 22.3 \text{ D-1)}$$

$$S = .57\%$$

$$\text{per DPM plate } 22.3 \text{ D-5}$$

$$Q_{\text{inlet}} = 6.5 \text{ cfs (use 2 Type A inlets)}$$

$$\therefore \text{pass through } 31.25 - 13 = 18.25 \text{ cfs}$$

Old Aspen Rd Storm Drain

From Amole del Norte to MH #4

$D = 3\text{ ft}$	$Q = 115\text{ cfs}$
$S = .8\%$	$V = 10.61\text{ ft/sec}$
$E = 102.5$	$A = 7.07\text{ ft}^2$
$E_2 = 100.81$	$L = 215$
$P_1 = ?$	$Z = .001$
$P_2 = 3.0\text{ ft}$	

* Use Moody Diagram to find friction factor

$$N_{RE} = \frac{DV}{\nu} = \frac{10.61(3)}{1.21 \times 10^{-5}} = 2.63 \times 10^4 \therefore f \approx .018$$

$$h_L = f\left(\frac{L}{D}\right)\left(\frac{V^2}{2g}\right) = 2.26\text{ ft}$$

* find headloss from bend (30° Bend)

$$K_b = .25 \sqrt{\Phi/90} = .14$$

$$h_b = .14(10.61^2/64.4) = .25\text{ ft}$$

$$E_1 + P_1 + \cancel{V_1^2/2g} = E_2 + P_2 + \cancel{V_2^2/2g} + h_L + h_b$$

$$P_1 = 100.81 + 3 + .25 + 2.26 - 102.5 = 3.81\text{ ft}$$

$$HGL = 102.5 + 3.81 = 106.31 < 107.11 \checkmark \text{ ok}$$

From MH4 to MH3

Try $D = 2.5$	$Q = 62\text{ cfs}$
$S = 1.25\%$	$V = 12.63\text{ ft/sec}$
$E_1 = 107.13$	$A = 4.91$
$E_2 = 103$	$L = 330\text{ ft}$
$P_1 = ?$	
$P_2 = 3.31$	

MH4 to MH3 (cont')

* Use Moody Diagram to find f

$$N_{RE} = 12.63(2.5)/1.21 \times 10^{-5} = 2.61 \times 10^6 \quad f \approx .018$$

$$h_L = .018 (330/2.5) (12.63^2/64.4) = 5.89 \text{ ft}$$

$$P_1 = 3.31 + 103 + 5.89 - 107.13 = 5.07 \text{ ft}$$

$$\underline{HGL} = 107.13 + 5.07 = \underline{112.2} < 12.40 \text{ OK}$$

from MH3 to MH2

$$D = 2.5 \text{ ft}$$

$$S = 1.25\%$$

$$E = 111.44$$

$$E_2 = 107.63$$

$$P_1 = ?$$

$$P_2 = 5.07$$

$$Q = 54 \text{ cfs}$$

$$V = 10.99 \text{ ft/sec}$$

$$A = 4.91 \text{ ft}^2$$

$$L = 305 \text{ ft}$$

* Find f (use Moody Diagram)

$$N_{RE} = 2.27 \times 10^6 \quad f \approx .018$$

$$h_L = .018 (305/2.5) (10.99^2/64.4) = 4.12 \text{ ft}$$

$$P_1 = 107.63 + 5.07 + 4.12 - 111.44 = 5.38 \text{ ft}$$

$$\underline{HGL} = 111.44 + 5.38 = 116.82 > 115.99 \text{ TOO HIGH!}$$

→ ∴ Upsize pipe from MH4 to MH3 to 36" ϕ RCP. Will function under gravity (see Flowmaster) So use soffit of incoming pipe as control elevation (104.73).

$$P_2 = 2.5 \text{ ft}$$

$$\therefore P_1 = 107.3 + 2.5 + 4.12 - 111.44 = 2.81$$

$$\underline{HGL} = 2.81 + 111.44 = \underline{114.25} < 115.99 \text{ OK}$$

MH2 to MH1 (future)

Try $D = 1.5$ ft

$L = 450$ ft

$S = 1.25\%$

$Q = 22$ cfs

$P_1 = ?$

$V = 12.45$ ft/sec

$P_2 = 1.81$

$A = 1.77$ ft²

$E_1 = 118.07$

$E_2 = 112.44$

* find f (use Moody Diagram)

$$N_{RE} = 1.54 \times 10^6 \quad \therefore f \approx .019$$

$$h_L = .019 (450/1.5) (12.45^2/64.4) = 13.72$$

$$P_1 = 112.44 + 13.72 + 1.81 - 118.07 = 9.9 \text{ ft}$$

$$HGL = 118.07 + 9.9 = 127.97 \approx 122.54$$

—————> * use a 24" d RCP under Gravity flow (see Flowmaster)

Values of $(D''V)$ for Water at 60°F (diameter in inches x velocity in ft/sec) = $N_R/6839$

0.1 0.2 0.4 0.6 1 2 4 6 8 10 20 40 60 100 200 400 1000 2000 10,000

Values of $(D''V)$ for Atmospheric Air at 60°F

2 4 6 8 10 20 40 60 100 200 400 1000 4000 10,000 40,000 100,000

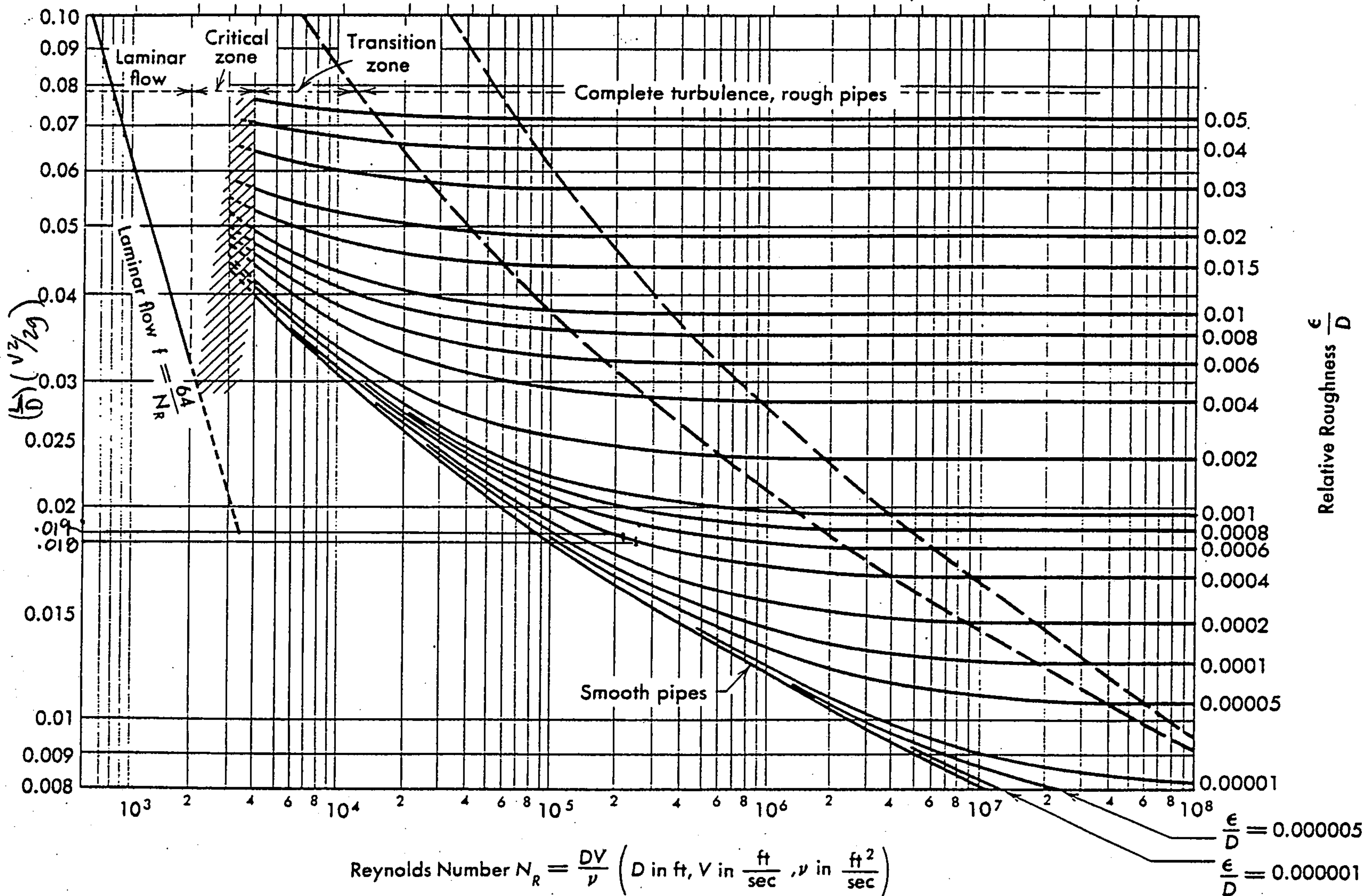


Fig. 3-3. Friction factor for pipes.

36" Diameter RCP from MH3 to MH4
Worksheet for Circular Channel

Project Description	
Project File	c:\haestad\fmw\rhmvesd.fm2
Worksheet	36" RCP @ s= 1.25%
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Mannings Coefficient	0.013
Channel Slope	1.25 %
Depth	36.0 in
Diameter	36.00 in

Results		
Discharge	74.57	cfs
Flow Area	7.07	ft ²
Wetted Perimeter	9.42	ft
Top Width	0.00	ft
Critical Depth	2.71	ft
Percent Full	100.00	
Critical Slope	0.010959	ft/ft
Velocity	10.55	ft/s
Velocity Head	1.73	ft
Specific Energy	FULL	ft
Froude Number	FULL	
Maximum Discharge	80.21	cfs
Full Flow Capacity	74.57	cfs
Full Flow Slope	0.012500	ft/ft

24" Diameter RCP from MH1 to MH2(future)
Worksheet for Circular Channel

Project Description	
Project File	c:\haestad\fmw\rhmvesd.fm2
Worksheet	24" RCP from MH1 to MH2
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Mannings Coefficient	0.013
Channel Slope	1.25 %
Diameter	24.00 in
Discharge	22.00 cfs

Results		
Depth	17.3	in
Flow Area	2.43	ft ²
Wetted Perimeter	4.06	ft
Top Width	1.79	ft
Critical Depth	1.68	ft
Percent Full	72.12	
Critical Slope	0.009114	ft/ft
Velocity	9.07	ft/s
Velocity Head	1.28	ft
Specific Energy	2.72	ft
Froude Number	1.37	
Maximum Discharge	27.21	cfs
Full Flow Capacity	25.29	cfs
Full Flow Slope	0.009458	ft/ft
Flow is supercritical.		

M10

TEMPORARY PUBLIC DRAINAGE EASEMENT

THIS GRANT OF TEMPORARY EASEMENT, by and between Empire Southwest LTD. CO., A New Mexico Corporation ("Grantor"), whose address is 6121 Indian School Rd. Suite 200, Albuquerque, NM 87110, and the City of Albuquerque, a New Mexico Municipal Corporation ("City"), whose address is P.O. Box 1293, Albuquerque, New Mexico 87103.

1. **Grant of Temporary Public Drainage Easement.** The Grantor grants to the City an exclusive, temporary public drainage easement ("Easement"), for Temporary Retention Pond for Vista Manzano Subdivision ("Public Improvement"), on, over, across, and through the property described below ("Property"), together with the right of the City to operate, maintain, repair, replace and construct the Public Improvement and the right to remove trees, bushes, undergrowth and any other obstacles upon the Property if the City determines they interfere with the appropriate use of this Easement. The Property described as follows:

See Attached Exhibit "A"

2. **Warranties.** Grantor covenants and warrants that it is the owner in fee simple of the Property and that it has a good lawful right to convey the Property or any part thereof and that Grantor will forever warrant and defend the title to the Property against all claims from all persons or entities.

3. **Binding on Grantor's Property.** The grant and other provisions of this Easement constitute covenants running with title to the Property for the benefit of the City and its successors and assigns until terminated.

4. **Temporary.** This easement will be released by the City when the City Engineer determines that the Easement is no longer required.

WITNESS my hand and seal this 9TH day of September, 1998.

GRANTOR:

Empire Southwest LTD Co.

BY:

ITS:

Phillip C. Ward
Designated Agent

STATE OF NEW MEXICO)

) ss.

COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me this 9 day of SEPT., 1998, by Phillip C. Ward, its DESIGNATED AGENT, on behalf of EMPIRE SOUTHWEST LIMITED Co.

BY:

Timothy J. McEwen
Notary Public

My commission expires:

0/12/00

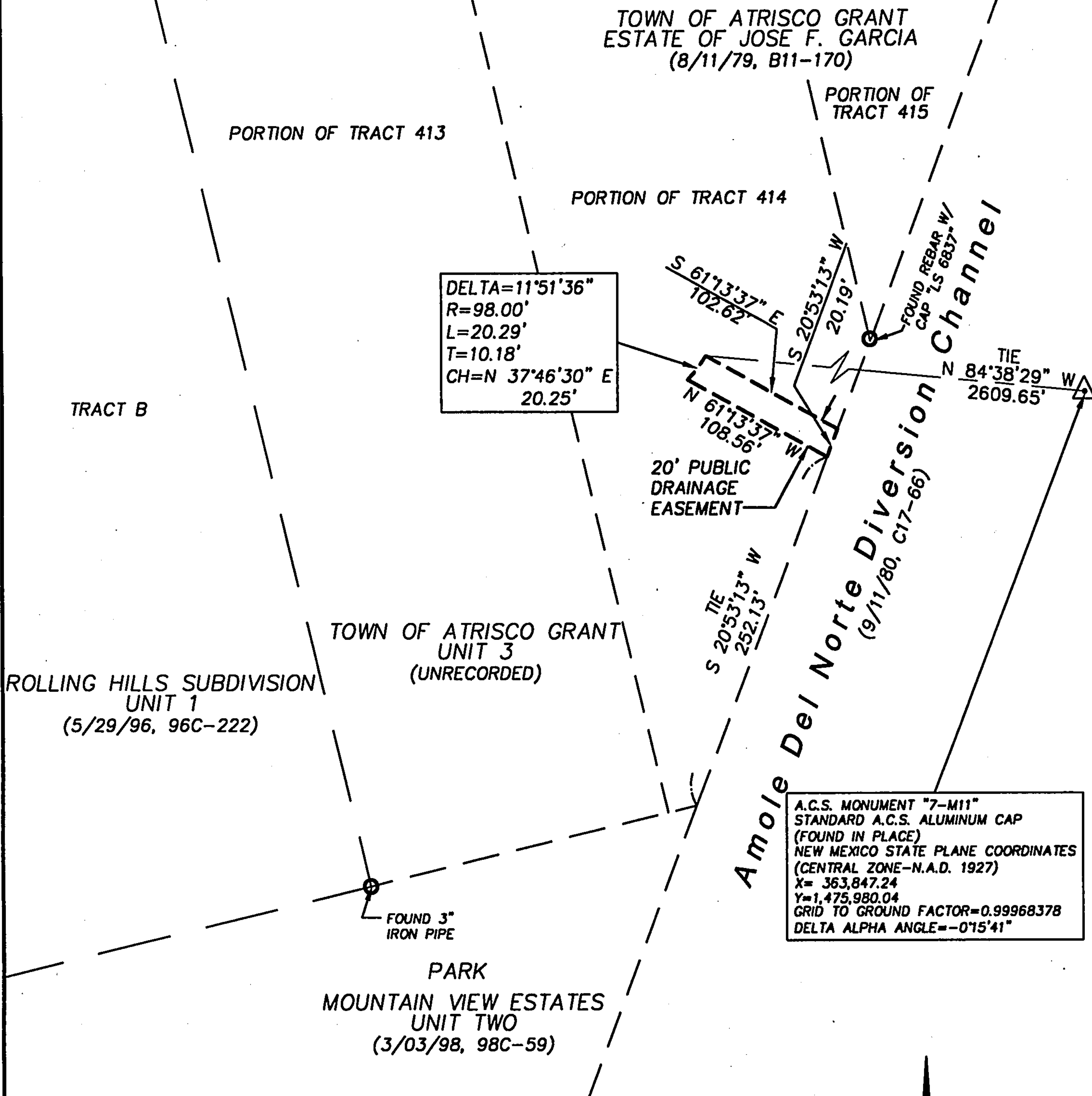


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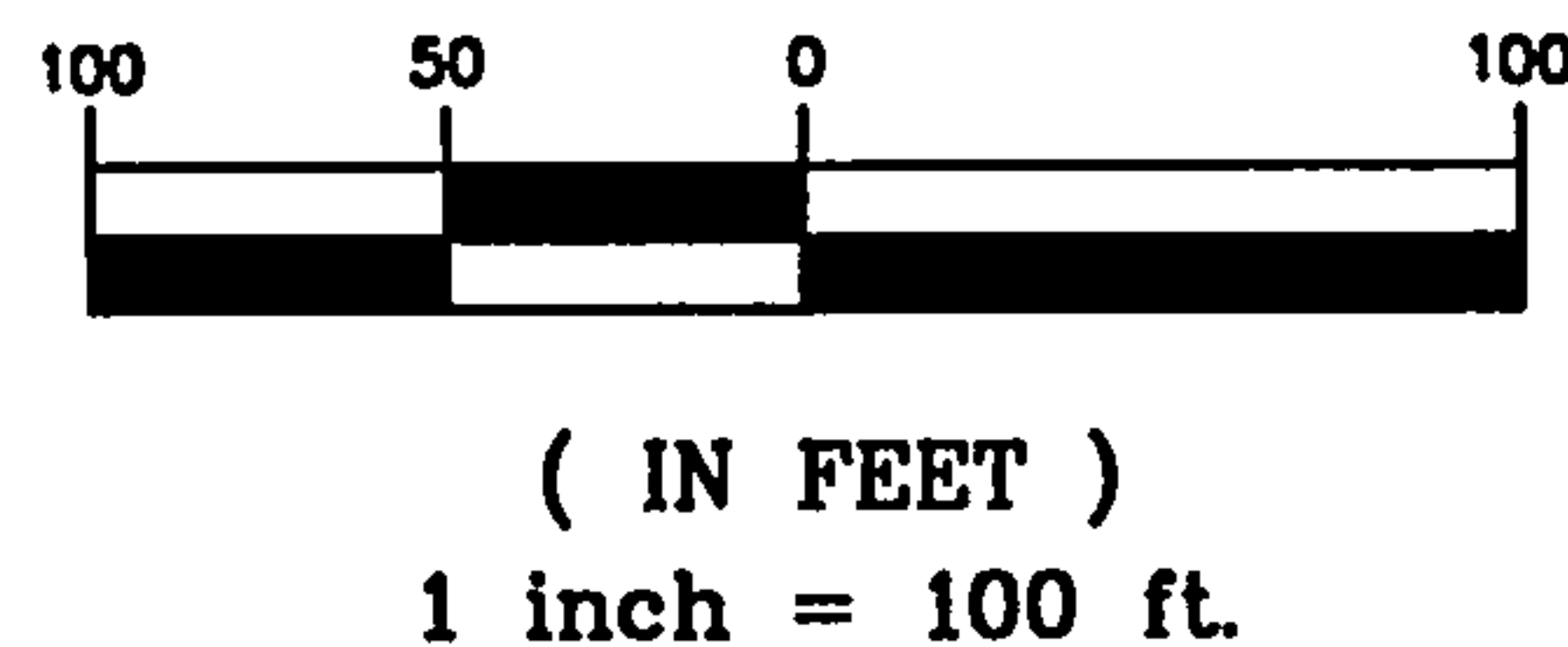
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Judy D. Woodward Bern. Co. ERSE R 11.00



SURVEYOR'S CERTIFICATE

I, LARRY W. MEDRANO LICENSED UNDER THE LAWS OF THE STATE OF NEW MEXICO, DO HEREBY CERTIFY THAT THIS EASEMENT SURVEY WAS PREPARED BY ME OR UNDER MY DIRECTION FROM NOTES OF AN ACTUAL FIELD SURVEY, AND THE SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.



PRECISION SURVEYS

LARRY W. MEDRANO
N.M.L.S. NO. 11993

DATE

8/27/99

8414-D JEFFERSON STREET NE PHONE 505 856 5700
ALBUQUERQUE, NEW MEXICO 87113 FAX 505 856 7900

TEMPORARY PUBLIC DRAINAGE EASEMENT

THIS GRANT OF TEMPORARY EASEMENT, by and between Empire Southwest LTD. CO., A New Mexico Corporation ("Grantor"), whose address is 6121 Indian School Rd. Suite 200, Albuquerque, NM 87110, and the City of Albuquerque, a New Mexico Municipal Corporation ("City"), whose address is P.O. Box 1293, Albuquerque, New Mexico 87103.

1. **Grant of Temporary Public Drainage Easement.** The Grantor grants to the City an exclusive, temporary public drainage easement ("Easement"), for Temporary Retention Pond for Vista Manzano Subidvision ("Public Improvement"), on, over, across, and through the property described below ("Property"), together with the right of the City to operate, maintain, repair, replace and construct the Public Improvement and the right to remover trees, bushes, undergrowth and any other obstacles upon the Property if the City determines they interfere with the appropriate use of this Easement. The Property described as follows:

See Attached Exhibit "A"

2. **Warranties.** Grantor covenants and warrants that it is the owner in fee simple of the Property and that it has a good lawful right to convey the Property or any part thereof and that Grantor will forever warrant and defend the title to the Property against all claims form all persons or entities.

3. **Binding on Grantor's Property.** The grant and other provisions of this Easement constitute covenants running with title to the Property for the benefit of the City and its successors and assigns until terminated.

4. **Temporary.** This easement will be released by the City when the City Engineer determines that the Easement is no longer required.

WITNESS my hand and seal this 9th day of September, 1998.

GRANTOR: Empire Southwest LTD Co

BY: Phillip C. Ward
ITS: Designated Agent

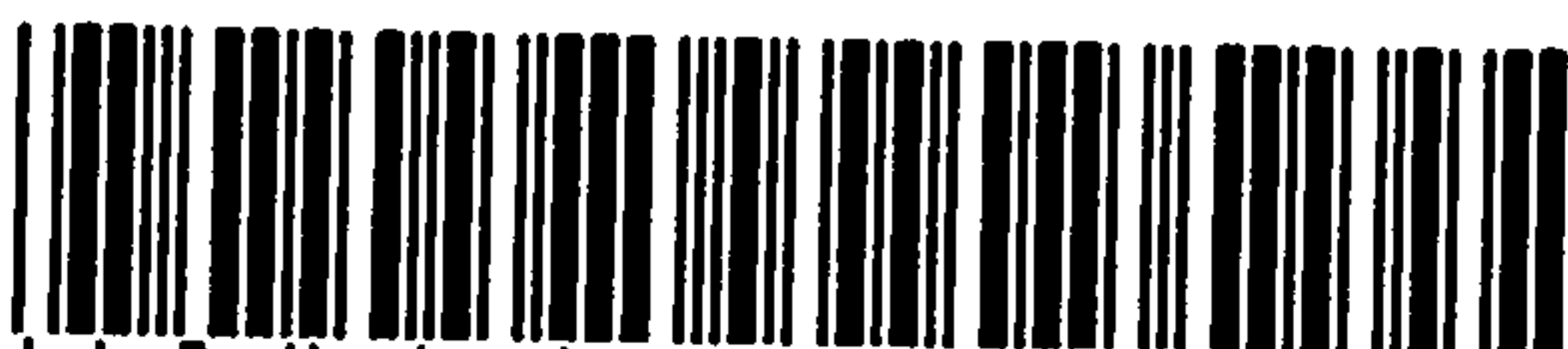
STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me this 9th day of SEPT, 1998, by Phillip C. Ward, its DESIGNATED AGENT, on behalf of EMPIRE SOUTHWEST LTD.

BY: Timothy J. Moore

Notary Public

My commission expires: 8/12/00



Judy D. Woodward

Bern. Co. EASE

R 9 00

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Page: 1 of 2

09/13/1999 01:41P

AK-9912 Pn-7796

TOWN OF ATRISCO GRANT
ESTATE OF JOSE F. GARCIA
(8/11/79, B11-170)

PORTION OF TRACT 414

PORTION OF TRACT 415

TEMPORARY 46'X46'
DRAINAGE POND EASEMENT

PORTION OF TRACT 413

TRACT B

ROLLING HILLS SUBDIVISION
UNIT 1
(5/29/96, 96C-222)

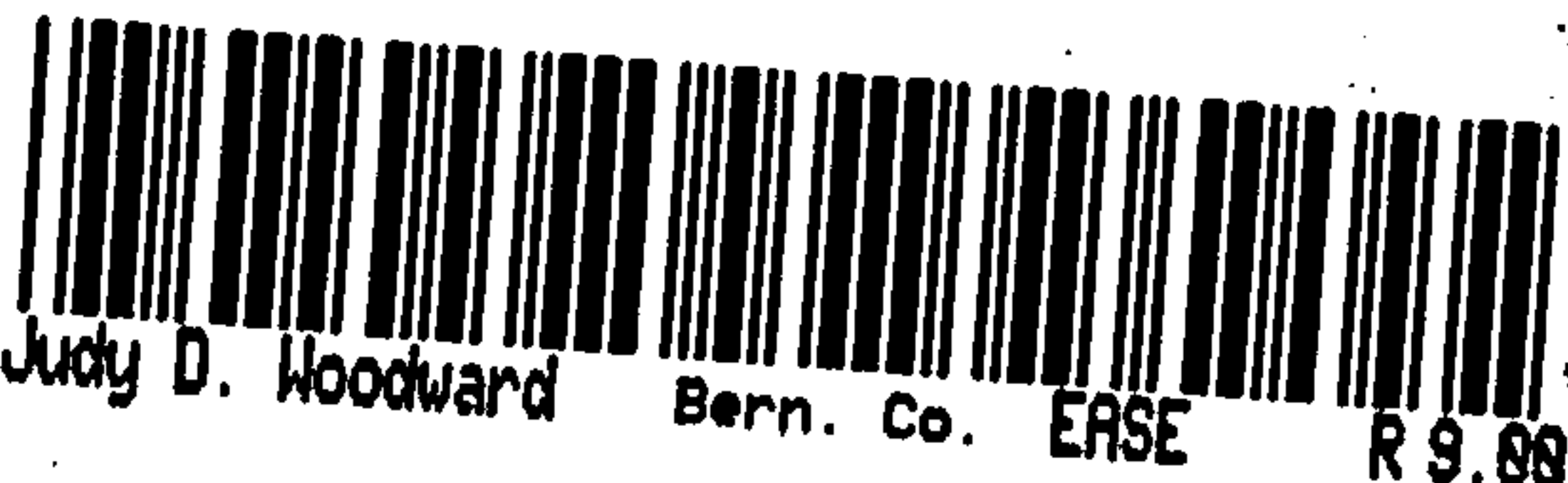
TOWN OF ATRISCO GRANT
UNIT 3
(UNRECORDED)

FOUND 3"
IRON PIPE

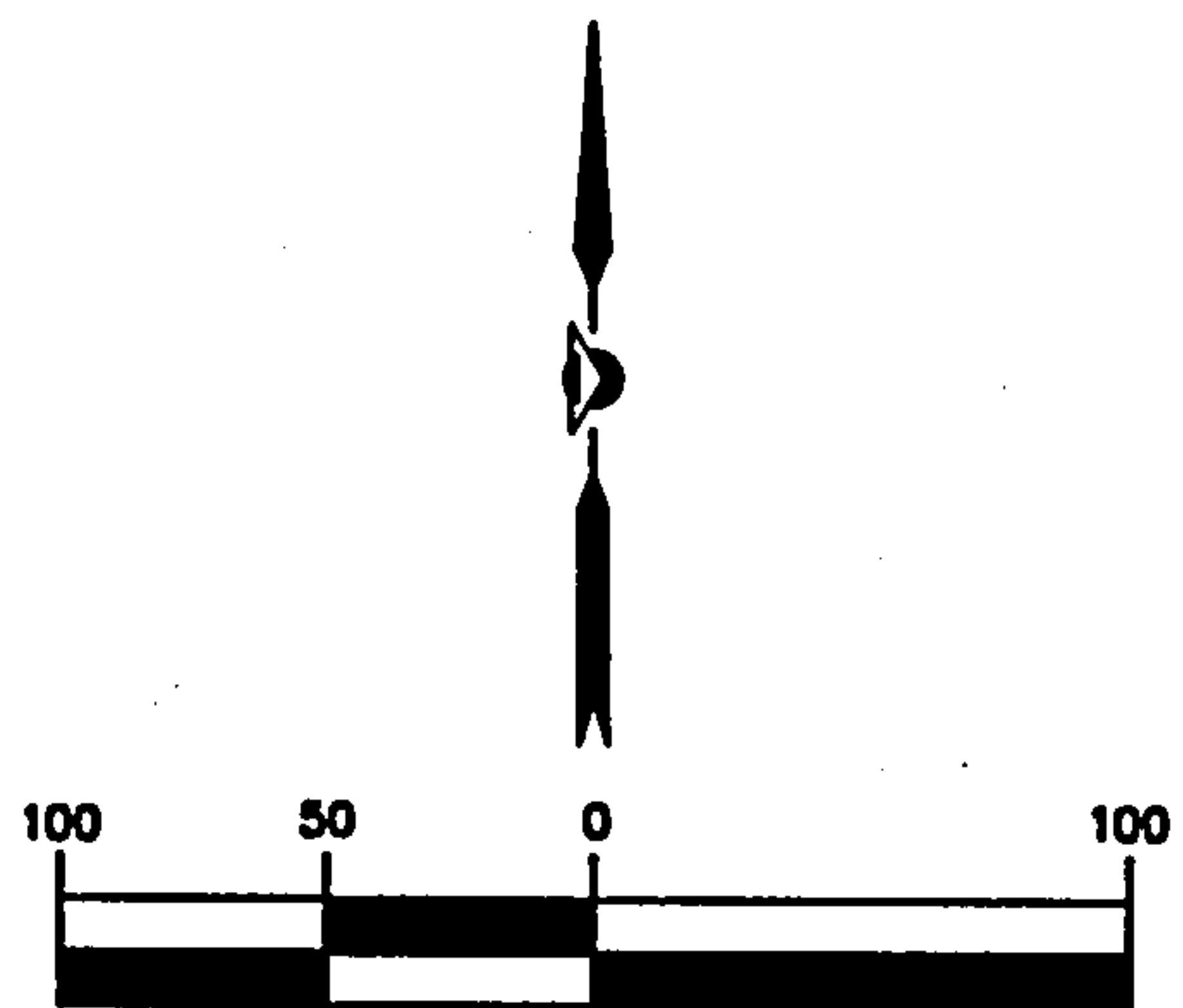
PARK
MOUNTAIN VIEW ESTATES
UNIT TWO
(3/03/98, 98C-59)

Amole Del Norte Diversion Channel
(9/11/80, C17-66)

A.C.S. MONUMENT "7-M11"
STANDARD A.C.S. ALUMINUM CAP
(FOUND IN PLACE)
NEW MEXICO STATE PLANE COORDINATES
(CENTRAL ZONE-N.A.D. 1927)
X= 363,847.24
Y=1,475,980.04
GRID TO GROUND FACTOR=0.99968378
DELTA ALPHA ANGLE=-0°15'41"



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Page: 2 of 2
09/13/1999 01:41P
Bk-9912 Pg-7797



(IN FEET)
1 inch = 100 ft.

SURVEYOR'S CERTIFICATE

I, LARRY W. MEDRANO LICENSED UNDER THE LAWS OF THE STATE OF NEW MEXICO, DO
HEREBY CERTIFY THAT THIS EASEMENT SURVEY WAS PREPARED BY ME OR UNDER MY
DIRECTION FROM NOTES OF AN ACTUAL FIELD SURVEY, AND THE SURVEY MEETS THE
MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.



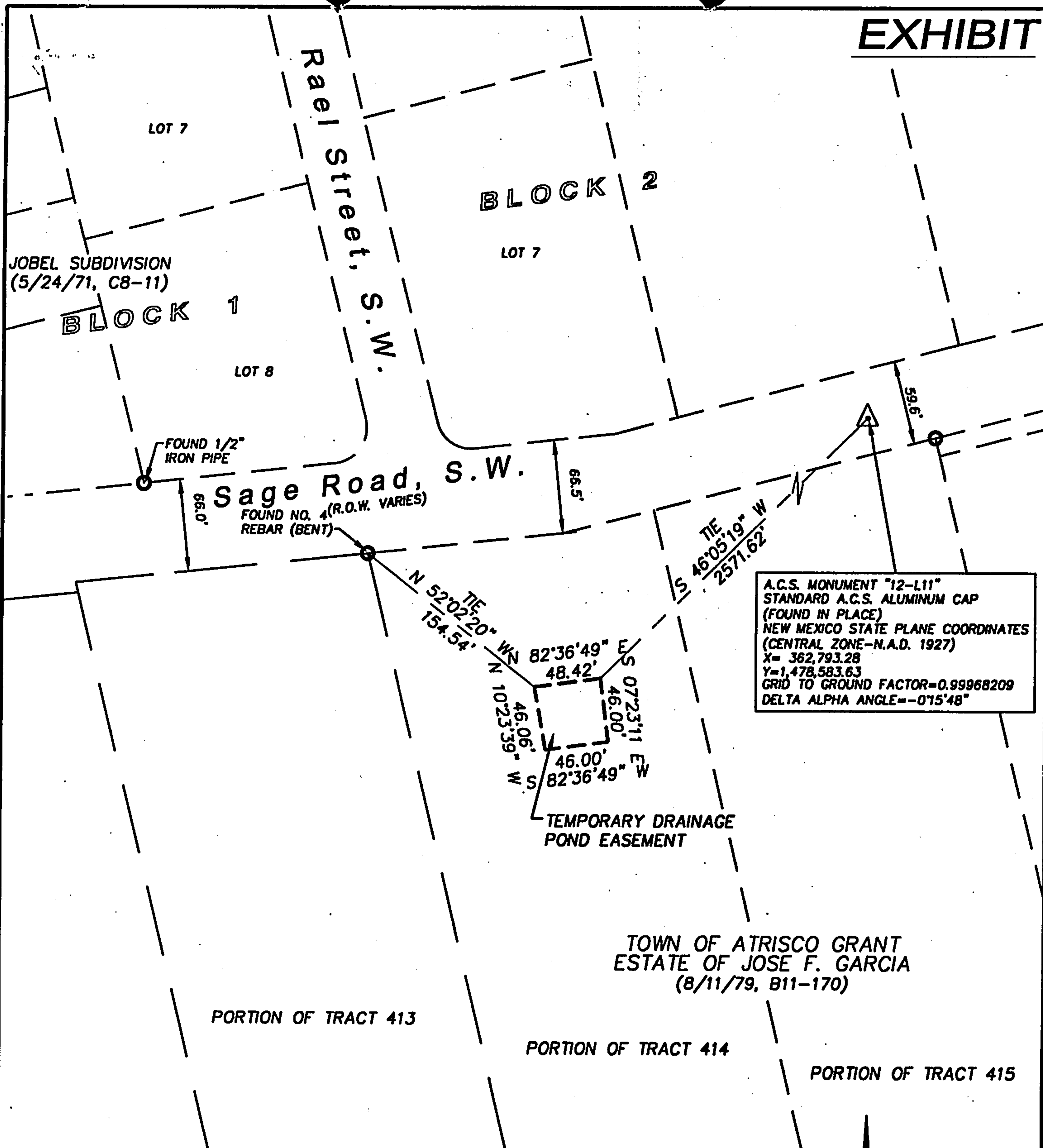
PRECISION SURVEYS

8414-D JEFFERSON STREET NE PHONE 505 856 5700
ALBUQUERQUE, NEW MEXICO 87113 FAX 505 856 7900

LARRY W. MEDRANO
N.M.L.S. NO. 11993

8/27/99
DATE

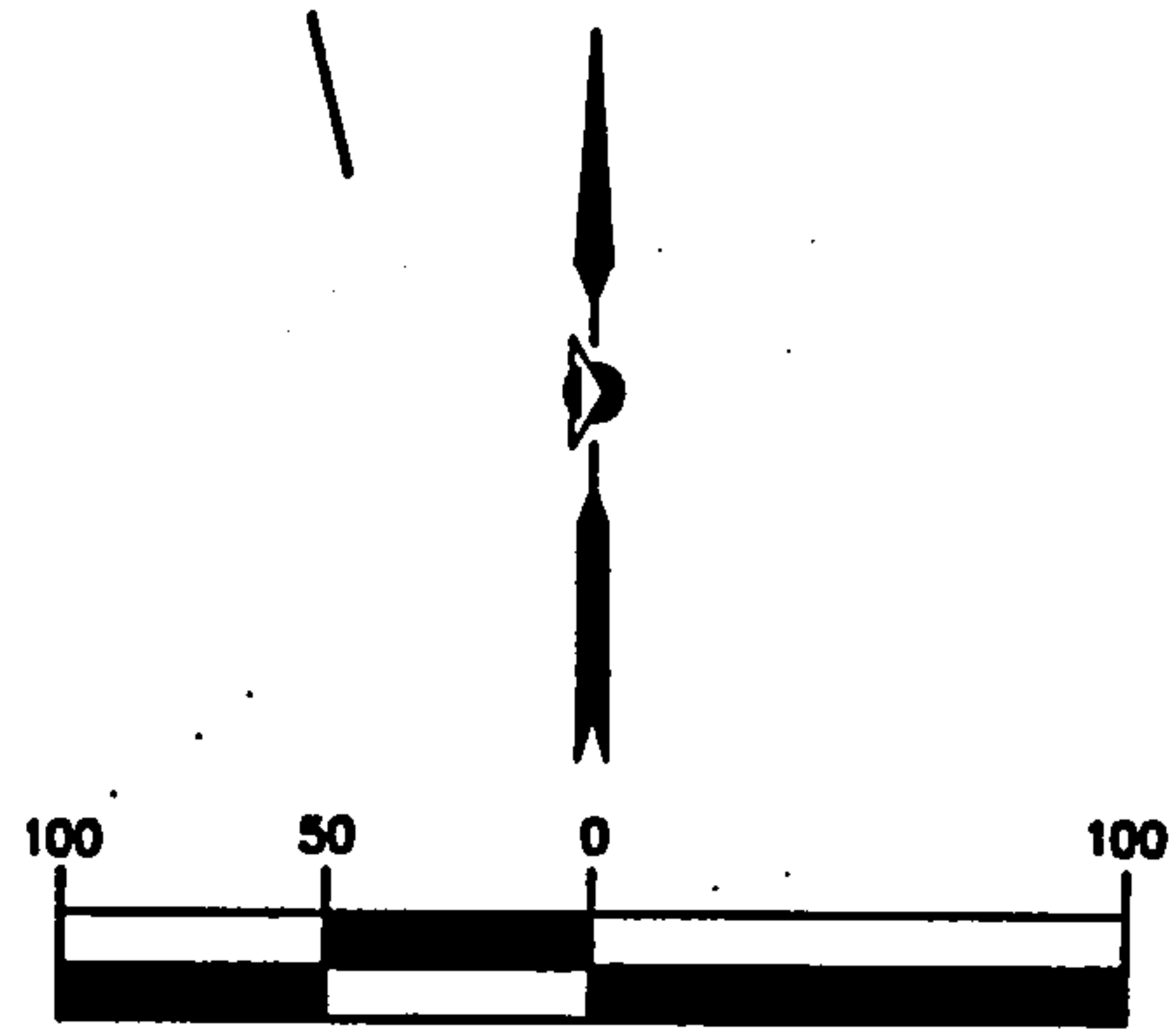
EXHIBIT



A.C.S. MONUMENT "12-L11"
STANDARD A.C.S. ALUMINUM CAP
(FOUND IN PLACE)
NEW MEXICO STATE PLANE COORDINATES
(CENTRAL ZONE-N.A.D. 1927)
X= 362,793.28
Y=1,478,583.63
GRID TO GROUND FACTOR=0.99968209
DELTA ALPHA ANGLE=-0'15"48"

Judy D. Woodward Bern. Co. ERSE R 9.00

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Page: 2 of 2
09/13/1999 01:41P
BK-9912 Pg-7796



(IN FEET)
1 inch = 100 ft.

SURVEYOR'S CERTIFICATE

I, LARRY W. MEDRANO LICENSED UNDER THE LAWS OF THE STATE OF NEW MEXICO, DO HEREBY CERTIFY THAT THIS EASEMENT SURVEY WAS PREPARED BY ME OR UNDER MY DIRECTION FROM NOTES OF AN ACTUAL FIELD SURVEY, AND THE SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.



Larry W. Medrano
LARRY W. MEDRANO
N.M.L.S. NO. 11993

8/27/99
DATE



PRECISION SURVEYS

8414-D JEFFERSON STREET NE PHONE 505 856 5700
ALBUQUERQUE, NEW MEXICO 87113 FAX 505 856 7900

997069ex



CITY OF
Albuquerque
Public Works Department
October 21, 1997

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

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

RE: Drainage Report and Grading and Drainage Plan for Mountain View Estates, Units One & Two, (M10/D7B) Submitted for Preliminary Plat and Grading Permit Approval, Engineer's Stamp Dated 9/30/97 on Report and Plans Dated 9/9/97.

Dear Mr. Arfman:

Based on the information provided in the submittals of October 1, 1997 and October 14, 1997, the above referenced Drainage Report and Plan are approved for Preliminary Plat action.

The plan dated September 9, 1997 is also approved for Rough Grading Permit release. Grading will not be allowed within the City's Amole del Norte right-of-way without concurrence from the City's Storm Drain Maintenance staff. Prior to Final Plat approval, or Work Order approval, concurrence must also be obtained for the proposed rundown structure into the Amole. This rundown must be compatible with access on that side of the channel.

As you are aware, the Engineer's Certification is required prior to release of financial guarantees for each Unit of this Subdivision. If you should have any questions, or if I may be of further assistance to you, please call me at 924-3982.

Sincerely,

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

c: Scott Roe, Longford Homes of New Mexico
Fred Aguirre, DRB-97-427
Glenn Jurgensen, Storm Drain/Arroyo Maintenance
Larry Caudill, Environmental Health
File

Good for You, Albuquerque!

P.O. Box 1293, Albuquerque, New Mexico 87103

