MASTER DRAINAGE PLAN

SUNRISE TERRACE UNITS III, IV, & V

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SUNRISE TERRACE SUBDIVISION UNITS II-V MASTER DRAINAGE PLAN

INTRODUCTION

Sunrise Terrace is located on Albuquerque's mostly undeveloped west mesa south of Central Avenue, west of 98th Street and just west (uphill) of Snow Vista Channel, north of Gibson Avenue, and east (downhill) of the Powerline Channel.

The present project consists of what was originally called Sunrise Terrace Unit II Phases B-1 and C-1, plus 10 additional acres adjacent to Snow Vista Channel south of Tower Rd. The total size is approximately 300 dwelling units on 55 acres. The proposed design addresses several changes that have occurred since the 1980's when the project (in somewhat different form) was initially designed by Scanlon & Associates, and when AMAFCA's Snow Vista Channel was designed and built.

The following pages discuss relevant project history, hydrologic analyses performed, and interim drainage solutions.

HISTORY

In 1986 Sunrise Terrace Unit II Phase A-1 was approved based on the proposed drainage for the whole of Unit II, which extended south from Tower Rd. roughly 0.6 mi between Sandpiper Dr. and Tanager Dr. All 99 lots of Unit II Phase A-1, adjacent to Tower Rd., have been built out. In the hydrologic analyses described below, Phase A-1 consists of basins 401, 402, & 403. Sunrise Terrace Unit I, north of Tower Rd. was platted in 1983 but not built. It is currently under redesign by others. In the hydrologic analyses, Unit I consists of basins 311 and 312.

At the time Sunrise Terrace was originally proposed, Bellamah Community Development controlled both units I & 2 and the offsite land west of Unit II. Since then, the lands have been sold and there are new, separate owners. The new owners of Unit I (north of Unit II) also control much of the land immediately west of old Unit II and the present project. Not all the easements needed to carry out the proposed drainage were actually granted, nor were all the proposed improvements - even as called for in Phase A-1 - built and maintained as planned. The lack of a water block at Tower road and Sandpiper Drive - a lack which allows water to fall back into the subdivision rather than flowing directly to the Snow Vista Channel - raises questions about the intent of the original drainage plan that have no ready answers.

Probably the single most significant other change is in required hydrology method. The new method yields substantially higher peak runoff for the study area, with the result that Snow Vista Channel does not have capacity for free discharge for full development at expected levels as originally intended. Previous owners contributed significantly to the construction of Snow Vista Channel in anticipation of free discharge.

After reviewing other plans in the same area, Rvals Engineering discussed the above circumstances with City staff. The consensus was that analysis and design

should follow the original plan as much as possible, but that changes would be made to account for the new hydrology and for conditions that exist today. These conditions include the earth diversion channel (as designed, sans an existing gap), the temporary detention-desilting basin located west of Tanager as shown on Plates 1 and 2, and Tower Rd. paved to half-width [illegible] 4 feet of temporary pavement sloping down from the crown).

The outfall for areas west of Sunrise Terrace will be a storm drain running from the southwest corner of the project east to an existing curved concrete channel. The Scanlon and Herkenhoff analyses assumed the outfall in essentially the same location. The curved channel joins the existing Snow Vista Channel very shortly downstream. The new design flow is 424 cfs, compared to 290 per Snow Vista design. Existing construction provides adequate freeboard and superelevation for the higher flow rate.

HYDROLOGIC ANALYSES

GENERAL

The three hydrologic conditions analyzed for this project are: (1) "fair share" for all currently undeveloped basins, (2) Sunrise Terrace developed with fair share conditions offsite, and (3) Sunrise Terrace developed with existing, mostly undeveloped, conditions offsite.

AHYMO, a version of the computer program HYMO (HYdrologic MOdel) modified for Albuquerque by AMAFCA, was used to analyze these conditions. The design storm is the Albuquerque 100-year 6-hour storm for rain zone 1. The cumulative rainfall distribution is included in the AHYMO output (.out) files. One of AHYMO's capabilities is flood routing, wherein flow is attenuated - delayed and decreased in peak rate - as it is conveyed in a pipe or channel. Attenuation can have important effects in natural channels or in constructed channels on flat slopes. For many concrete channels, pipes, and streets attenuation is virtually nil, and routing may even yield a nominal increase in flow rate.

Plate 1 shows the AHYMO drainage basins for fair share and future conditions modelling; Plate 2 shows them for existing offsite conditions modelling. Note that the (temporary) pond at Tanager and Connemara is modelled only for offsite existing conditions. All ponds and channels on the west side of Tanager modelled in this project are assumed to be temporary, to be removed when upstream areas are developed. (It will be the responsibility of future developers to get developed condition flows to the Andalusian storm drain.)

Appendix A contains modelling schematics for the AHYMO runs. Because different features are in place between developed/fair share and existing conditions, some of the drainage basins identified are quite small, especially in the vicinity of Tower-Tanager-106th-Eucariz. This facilitates showing the differences and similarities between conditions analyzed, as a particular basin may, for example, drain east in one case and south in another.

Within Sunrise Terrace, Plates 1 and 2 do NOT show the final flow paths for Units III-V, although the basin boundaries are as shown. Primarily to provide favorable

development phasing and to address City concerns as to street layout, late in the design cycle the streets, storm drains, and Halter Dr. pond were changed to the locations shown on Plate 3.

The new Halter pond receives runoff from two small basins only and discharges slowly and directly to the Snow Vista Channel. For Units III-V the only other hydrologic routing is at the downstream margins, in large pipes (in Andalusian Ave. and Halter Dr.) which have approximately zero attenuation effects. Otherwise basin flows are simply added. Therefore, rearranging the flow paths to the final layout had essentially no effect external to the subdivision and it was not felt necessary to revise the hydrology layout. See the specific condition analyses for more.

One feature common to all the hydrologic analyses is "no sediment bulking". Individual pipes, channels, and ponds must be designed for sediment storage as required. Under fully-developed conditions the sediment load is small and can be neglected. Under undeveloped (existing) conditions the sediment-bulked peak flow is less than future (developed and/or fair share) condition flow. Further, even under offsite-undeveloped conditions most flows in the study area will be routed through desilting cum detention ponds before reaching Snow Vista Channel. Under existing conditions one fairly large area north of Tower Rd. is not desilted; this area primarily of basins 306, 307, 311, 312, and 315. All analyses use a "submerged weir" rating table developed from Snow Vista Channel as-built drawings to route flow through the Snow Vista Desilting Basin.

ONSITE FAIR SHARE DEVELOPMENT AND OFFSITE FAIR SHARE DEVELOPMENT

The purpose of the fair share analysis is to uniformly (fairly) reduce the level of future developed runoff so that the peak flow rate in AMAFCA's Snow Vista Channel just below Sunrise Terrace - based on current methods - matches that expected in the construction of the channel. The runoff levels identified in fair share are used for the offsite developed conditions analysis. The fair share analysis is for the purposes of this project only and is not a master plan for the surrounding area.

In a December 6, 1993 meeting at the City of Albuquerque, Cliff Anderson of AMAFCA agreed that peak flow rate (not volume) was the governing criterion in Snow Vista Channel. On Plate 2 of PHASE III DESIGN GUIDELINES - SNOW VISTA CHANNEL - WESTGATE DIVERSION CHANNELS (July 1982) Gordon Herkenhoff & Associates) identified the relevant flow rate as 701 cfs. However, the construction drawings (Sheet 36, July 1987 record drawing of 11/6/86 revision) show 774 cfs, which is the rate used in the fair share analysis.

Anticipated development for the study area is primarily single-family residential. A reasonable estimate for such areas, corresponding to 5 dwelling units per gross acre, is 50% land treatment B and 50% treatment D. Herkenhoff's Snow Vista design documents expected that some area near Central Avenue would be developed commercially. The fair share analysis assumes that the 80 acres of basin 308 (north of Central) would tend to be 20% B and 80% D. The actual location of commercial development may be different.

The approach taken in this report is to assume that all developed areas will be a combination of land treatments B (lawn and landscaping) and D (impervious) and to uniformly adjust the percentage of land treatment B until the peak flow rate matches the target value. The results are: residential - 81.5%B, 18.5% D; commercial - 32.6%B, 67.4% D; Q peak = 773 cfs. Under this approach the various contributing basins have fairly high peak flows and low runoff volumes. This approach has been discussed with and accepted by the City for this project.

Others, working on the redesign of Sunrise Terrace Unit I, suggest detaining all flows higher than a uniformly allowable peak rate per acre. For their assumptions concerning future development patterns the rate is about 1.3 cfs per acre. For the present project one effect of using this approach would be to reduce the size of the pipe required to convey offsite flows down Andalusian Ave.

Offsite fair share basins (Plate 1) are based fairly closely on Scanlon & Associates' earlier basins, except divided smaller, with additional information from design and construction documents for AMAFCA's Snow Vista Channel. The future concrete Eucariz Rd. channel (approximately 3000 ft) is assumed in place. The earth diversion channel west of Tanager is assumed in place, ending at the Andalusian storm drain (previously the Section Line Channel); this is the same offsite outfall location used in Snow Vista Channel design. The Tanager pond is not part of the fair share analysis. Other offsite flows are routed in approximations of natural arroyos. While this is not a realistic model of future flow paths it may provide a reasonable approximation of a future mix of other flow and storm drains and it does not make specific assumptions about developed condition flow paths and routings. The real developed flow paths cannot be known at this time.

Within Units III-IV the fair share analysis is based final basins and on not-quite-final flowpaths, as discussed above. Analysis Point 7 represents flow entering Unit III from Sandpiper Dr. plus all flow from Units III-V except for Basin 108 along Andalusian Ave. Because of the lack of a water block in Sandpiper Dr. at Tower Rd., fair share analysis assumes that the first 23 cfs of Tower Rd. flow reenters Sunrise Terrace. This is half the total peak flow and slightly more than the 21 cfs capacity at depth equal to centerline height. See EXISTING CONDITIONS for further discussion.

The drainage design for the City of Albuquerque West Side Satellite Center (Basin 299) (Scanlon, March 1990) includes a series of ponds (now constructed) to completely retain the 5-year storm and to reduce peak outflow rate from the 100-year storm to about 0.5 cfs under existing conditions. All analyses use a uniform outflow rate from the ponds starting at t=1.17 hrs. For fair share and developed offsite condition analyses the rate is assumed to increase to 10 cfs. In all other cases existing development is assumed to be "as is".

ONSITE FULL DEVELOPMENT; OFFSITE FAIR SHARE DEVELOPMENT

For this case Sunrise Terrace is developed as shown on Plates 1 and 3. Compared to the fair share analysis the percent impervious for onsite development is increased; there is a storm drain system in Sandpiper, Paso Fino, and Halter which conveys flow from Basin 107 and the basins above 105 and 106, and a small detention pond between Halter Dr.and the Snow Vista Channel which receives runoff

from basins 105 and 106. The entire earth diversion channel west of Tanager is assumed in place and the Tanager pond does not exist.

At approximately 5.5 dwelling units per gross acre, the project is 53.2% impervious (DPM Sec. 22.2 Table A-5), and "average" peak runoff is about 0.63 cfs per dwelling unit. Flows for storm drain system analysis are based on AHYMO results for entire basins and on "per dwelling unit" values for partial basins.

All onsite flow except from basins 105 and 106 passes through the subdivision in street flow and storm drains in what is essentially free discharge. Also included is offsite runoff entering Unit III at Sandpiper - all flow from basin 4 (already developed) and 23 cfs of Tower Rd. flow which falls into Sandpiper Dr. because Sandpiper has no appreciable water block. The remainder of Tower Rd. water is assumed to flow via catch basin inlets to the Snow Vista Channel. One inlet and two pipes are existing; the other inlet will be built with this project. A water block at Stetson Dr. will keep Tower Rd. flow from reentering Unit III. Tower Rd. capacity at Sandpiper is considerably more than the capacity at Tanager, where the slope is flatter: see OFFSITE EXISTING analysis.

Most onsite flow is collected in the Sandpiper-Paso Fino-Halter storm drain system. Analysis Point 7 sums this flow. Flow from basin 108 is collected in the Andalusisan system, which primarily serves to convey offsite flow from west of Sunrise Terrace. The two systems join at Andalusian and Halter. From there the storm drain leads diagonally across Tract A and enters - approximately tangential to centerline - the existing curved concrete channel stubbed from the Snow Vista Channel. (Tract A was created by the Sunrise Terrace Unit II Phase A plat and was reserved for parks, open space, and drainage. It is owned by the City of Albuquerque.)

The Halter Dr. detention pond will be owned and maintained by the City. Part of the pond lies on Tract A. The pond receives all flow from Basins 105 and 106 and none from elsewhere. Outfall will be directly to the Snow Vista Channel via an orifice-throttled 18-inch pipe. With basins 105 and 106 excluded from the AHYMO analysis (area effectively equal zero) the peak flow rate in the Snow Vista Channel just downstream of the project is 767.1 cfs, or 6.9 cfs less than the 774 allowed. Therefore a pond with peak outflow less than 6.9 cfs, when added to the remaining flow, meets the peak rate criterion without timing effects in Snow Vista Channel even being considered.

As designed, the Halter Dr. pond has a peak inflow of 38.4 cfs at 1.50 hrs. and a peak outflow of 6.7 cfs at 2.07 hrs. Outflow returns to 0.0 less than 6 hours after the first inflow. Maximum water depth is 6.65 feet at elevation 5195.15 and 0.80 acre-feet storage volume. Top of berm is at elevation 5196.00. The overflow spillway leads directly to AMAFCA's Snow Vista channel and will pass the 100-year peak inflow rate.

ONSITE FULL DEVELOPMENT, OFFSITE EXISTING CONDITIONS

The analysis assumes that Sunrise Terrace Units III-IV are developed and that existing undeveloped areas offsite are undeveloped. Undeveloped areas are assumed to be 97% treatment A (natural) and 3% treatment C (packed earth); existing

sunrise Terrace development (basins 401, 402, & 403) is taken as 50% B and 50% D; and flow from the Westside Satellite Center is taken at the design value of 0.31 cfs. This case requires sediment analysis for areas west of Tanager Dr.

Conceptually this is the most complicated analysis with the least certainty in the drainage parameters. Assumed land treatment percentages are approximate. Near the north end of the study area some basin boundaries are questionable. Undocumented traffic and erosion patterns in unpaved roads may redirect flow. For example, depending on the extent of recent tire rutting, some of the flow leaving Analysis Point 4 may head south along 106th St. and bypass the Snow Vista Desilting Basin, instead of flowing as shown. However, undeveloped condition flows are so much smaller than fair share flows that this case never governs and the discrepancies can be considered minor. Sunrise Terrace flows are based on developed conditions density and Analysis Point 7 is as in the Onsite Full-Offsite Fair Share analysis.

Plate 2 shows the basins used for analysis. Routing is different from the fair share and offsite developed analysis in several places. Eucariz channel is not in place. The diversion channel west of Tanager does not flow continuously south to the Andalusian storm drain. Instead the Tanager detention pond (at Connemara) receives flow from the earth diversion channel on the north, a natural swale-arroyo on the west, and a north-flowing asphalt channel on the south. The pond outfalls via a small storm drain in Tanager south to the storm drain in Andalusian. The asphalt channel, pond, and outlet pipe are modelled only with existing conditions offsite.

The Tanager pond desilts flow from offsite basins 302.2 and 303 from the south and west respectively in addition to reducing peak flow rates. Inflow from basin 302.2 is via temporary asphalt channel in excess Tanager right of way. The pond will not provide sediment storage for Basins 304, 351, and 352 from the north. Instead the earth channel is designed to have a non-erosive peak velocity of less than 2 ft/sec and has capacity for sediment storage plus 100-year peak flow. Pond and channel provide sediment storage for at least 5 average years plus a 100-year storm. Sediment load from basins was calculated using MUSLE (Modified Universal Soil Loss Equation) with a multiplier of 3 for local use. Sediment load from the natural entering the pond from the west channel was calculated using procedures in AMAFCA's SEDIMENT AND EROSION DESIGN GUIDE, March 1992 draft with April 1993 bed material transport equation.

Outflow from the Tanager pond is via pipe in Tanager right of way to the storm drain in Andalusian Ave. Should the pond overtop in an extraordinary event overflow would be down Connemara in roughly the historical location. Runoff from basin 302.1 on the south is collected in a temporary catch basin in excess Tanager right of way then join flow from the Tanager pond outlet pipe at the Andalusian Storm drain. As described in INTERIM DRAINAGE SOLUTIONS below, construction of Unit III, the first new unit to be built, does not involve Tanager south of the pond, and the outlet pipe and the asphalt swale will be constructed with a subsequent unit.

The existing conditions situation near the intersection of Tower, Tanager, and 106th St. is somewhat complicated. Basins 355 & 403 deliver runoff to the intersection. Flow from basins 307, 353, and 354 is assumed to pass just north of

the intersection and to flow through Sunrise Terrace Unit I (Basin 311, not developed). There is no paving north of the intersection.

The 20'-wide south half of Tower Rd. downstream (east) from the intersection has been built but not the north half. The design slope is 1% and the capacity at centerline width and centerline height (12 cfs) is approximately the same as the 100-year runoff from basin 403 (existing development) which drains to Tanager. Additional flow, above centerline capacity, will spill across centerline and into Sunrise Terrace Unit I (Basin 312, not developed). Existing grades in Unit I are such that Basin 312 flow reenters Tower Rd. near Snow Vista Channel; in other cases Basin 312 is modelled as entering Snow Vista directly, Above Tower Rd.

Between Tanager and Sandpiper sidewalk culverts bring flow from Basin 401 to Tower Rd. Here the slope is steeper and the centerline capacity is 21 cfs. This is not enough to convey the combined flow and there is a second spill to basin 312. Because there is no appreciable water block at Sandpiper, again the first 23 cfs is assumed to fall back into Sunrise Terrace.

INTERIM DRAINAGE SOLUTIONS

Unit III will be constructed first, then IV, then V. Because of the extent of the drainage infrastructure required for this project it is essentially economically impossible to construct all the drainage infrastructure with the first Unit. Certain improvements, including the Andalusian storm drain and the paved Tanager swale, will be deferred until construction of Unit IV. The following is a summary of proposed interim solutions for the required conveyance of both onsite and offsite drainage. See Plates 3 and 4.

OFFSITE

Unit III construction includes regrading the Tanager pond and the earth swale north of the pond. It does not include construction of the asphalt swale entering from the south. Under these conditions the combined sediment storage (for 5 average years plus 100-yr storm) and 100-year storm inflow volume is 5.03 ac-ft. (see RTP00.SUM) Primarily the pond is to be excavated below existing grade. Storage capacity is 6.05 ac-ft at the spillway crest (elev 5253) and 5.11 ac-ft one foot below the spillway crest. For Unit III construction the pond has a graded spillway which discharges at the Connemara intersection.

The Connemara intersection is the approximate location of a swale which heads generally southeast across the site. Per discussion with the City, the portion of Connemara east from the Tanager pond and the upstream end of Unit III will be graded (but not paved) to provide a path through Unit III for spillway flow. A temporary stilling basin in the Connemara-Vaquero intersection will desilt flow entering Unit III prior to constructing Unit IV. In Unit IV a water block (high area) just east of this intersection will divert normal flows (100-yr or less) south to Paso Fino.

Unit IV improvements for offsite drainage include the entire paved swale in Tanager; the sediment trap berm, improved spillway, outlet structure, and outlet pipe for the Tanager pond; and the entire Andalusian storm drain (located in Unit V) except for the inlets which serve Unit V local inflow.

ONSITE

Unit III construction includes the Halter Dr. pond for basins 105 and 106 and its associated structures. All of the Sandpiper-Paso Fino-Halter storm drain piping will be constructed with Unit III. This includes the junction structure at Halter-Andalusian, the conduit joining to the existing stub channel, and all catch basin laterals. Only those catch basins within Unit III will be built with Unit III. A new catch basin in Tower Rd. opposite Foyt Drive will connect to an existing lateral leading to the Snow Vista Channel.

In fully developed conditions there will be a mixture of street and storm drain flow along the storm drain routes because only in small storms do catch basins intercept all the street flow. To prevent street flow in Sandpiper from spilling onto undeveloped Unit IV and causing problems a temporary stilling basin will extend from the end of Unit III paving in Sandpiper to the Sandpiper-Hackamore intersection. The sump condition will allow all remaining street flow to enter the storm drain through a temporary inlet structure.

With the construction of Unit IV the temporary inlet between Hackamore and Connemara will be replaced with permanent catch basins and the stilling basin and temporary inlet will be moved to the Sandpiper-Paso Fino intersection.

APPENDICES

A: HYDROLOGY

B: SEDIMENTATION

C: HYDRAULICS

APPENDIX A: HYDROLOGY

A1: MISCELLANEOUS CALCULATIONS
A2: TIME OF CONCENTRATION
A3: CHANNEL, STREET, & ARROYO CROSS SECTIONS
A4: AHYMO FILE LIST
A5: AHYMO SCHEMATICS
A6: AHYMO FILES

A1: MISCELLANEOUS CALCULATIONS

	100*	100**
	1.97	(1.97)
	2.20	(2.20)
	2.65	(2.66)

* FROM FIGS 22.2 G1, C-2, C-3

** TYPICAL 2008 1, FOR COMPARISON ONLY

SUNRISE TERRACE UNIT II % IMPERVIOUS 11/26/93

USE DPM TABLE A-5 for single family residential

$\% \text{ IMPV} = 7\sqrt{N \cdot N + N \cdot 5}$

N = # DU/gross acre includes local streets
N ≤ 6

PHASE A-1 = BUILT = EXISTING

# DU = 5 + 38 + 34 + (78-60) = 95
AREA = 80.49 ▯ @ 1" = 100'
= 804900 SF
= 18.48 AC
DU/AC = 95/18.48 = 5.14

$\% \text{IMPV} = 7(5.14^2 + 5.14 \cdot 5)^{1/2}$
$= \underline{50.53}$

RECHECK 2/16/94 GIVES 4.895 du/AC
⇒ 48.72% imp USE 50%

REST. = PROPOSED

DU = 26 + 33 + (26-5) + 99 + (61-35) = 205

AREA = 196.5 in² @ 1" = 100' − 40 = 2000±
= 1,885,000 SF
= 43.27 AC
DU/AC = 205/43.27 = 4.74

$\% \text{ IMPV} = 7(4.74^2 + 4.74 \cdot 5)^{1/2}$
$= \underline{47.56}$

NOT INCLUDING CONCRETE SECTION LINE CHANNEL

— OLD — FINAL = 300 UNITS III-V ON ±55 AC

A2: TIME OF CONCENTRATION

SUNRISE TERRACE 11/20/93

ATHMO Tc = time of concentration

→ use K = 2 & K = 0.7 in upper parts of watersheds even though using developed condition land treatments

→ rational = peak/prob same flow paths will be "sideways" rather than all down hill.

BASIN 301

A_{TOT} = 99.8 Ac = 0.14188 mi²

L_{TOT} = 4660 Δel_{tot} = 189.5 S_{AV} = 0.0407 (7 0.04)

Since $L_{TOT} > 4000$ FT use trans. through 5-6 for Tc requires info from method for L ≤ 4000'

Since slope (overall) 7 4.04% use method for adjusting S → S' & K → K' or K''

Start downstream end

(1) $\frac{L_1}{K_1\sqrt{S_1}} = \frac{2400}{3\sqrt{.0323}} = 4451$

(2) $\frac{L_2}{K_2\sqrt{S_2}} = \frac{260}{3\sqrt{.0538}} = 374$

(3) $\frac{L_3}{K_3\sqrt{S_3}} = \frac{1700}{2\sqrt{.0476}} = 3896$

(4) $\frac{L_4}{K_4\sqrt{S_4}} = \frac{300}{.97\sqrt{.0567}} = 1800$

$\Sigma = 10\ 521$

$K = \frac{L_{TOT}/\sqrt{S_{AV}}}{\Sigma L_i/(K_i\sqrt{S_i})} = \frac{4660/\sqrt{.0407}}{10521} = \frac{23099}{10521} = 2.253$

K_H = 0.021 - Mod density urban proposed, flow in streets, storm sewers, & improved (not lined) channels

L_{CA} = 2330 L_{CA}/L = 2330/4660 = 0.50

SKT
ATHYMO Tc cont
B 301 cont

for L > 4000' & < 12000 ft eqn 6-6

$$t_c = \frac{(12000-L)}{72000 \cdot K \cdot \sqrt{S}} + \frac{(L-4000)(LC_A/L)^{.933}(k_n)}{552.2 \cdot S^{.165}}$$

$$= \frac{7340}{72000(2.253)\sqrt{.0407}} + \frac{(660)(.5)^{.33}(0.021)}{552.2 \cdot (.0407)^{.165}}$$

$$= 0.224 + .034$$

$$= 0.258 \text{ hrs} \quad (15.5 \text{ min})$$

$t_p = (2/3)\,t_c$ eqn 6-9

$= 0.172$ hrs $= 10.33$ min

$Q_p = 252$ cfs @ 1.53 hrs (ATHYMO run)

CHECK STEEP SLOPE STUFF $S = 0.0407 > 0.04$ criterion

$S' = 0.052467 + (0.063627 \cdot S) - 0.18197 \exp(-62375 \cdot S)$ ...
$= 0.0407$ = no change to this precision

$K' = 0.302 \times S^{-1/2} Q_p^{0.18} = 4.05 > K = 2.253 \Rightarrow$ no change
$K'' = 0.207 \times$ " $= 2.78 >$ " $\Rightarrow K = 2.78$

redo t_c Q_p w $K = 2.78$
note that much of eqn for t_c stays same

$$t_c = \frac{0.224 \times 2.253}{2.78} + 0.034 = 0.1815 + 0.034$$

$= 0.2155$ hr

$t_p = (2/3)\,t_c = 0.144$ hr (8.6 min)

$Q_p = 276.34$ cfs

$276/252 = 1.095 < 1.10$ (10% test) = OK

∴ use $\underline{t_c = 0.144 \text{ hr}}$

{ ✓ for giggle ⇒ $K' = 4.19$ $K'' = 2.82 \Rightarrow K = 2.82$
$t_c = 0.1815\,(2.78/2.82) + 0.034 = 0.2129$
$t_p = 0.1420$ hr
$Q_p = 278$ $276/276 < 1.10 \Rightarrow$ 10% test OK } 2

SRT ATHYMO 11/29/93
t_c CONT

SAT CHECK Larger basins
if t_c Larger < 0.2 hrs = $t_{c\,min}$, then smaller basins will have $t_c = t_{c\,min} = 0.2$ hrs

B 302

$A_{TOT} = 55.2\ Ac = 0.08625\ mi^2$
$L_{TOT} = 900 + 1450 + 300 = 2650'$
$\Delta EL_{TOT} = 36 + 70 + 28.5 = 134.5$
$S_{AV} = 0.0508 \quad > 0.09$

$\frac{L_1}{K_1\sqrt{S_1}} = \frac{900}{3\sqrt{.04}} = 1500$
$\frac{L_2}{K_2\sqrt{S_2}} = \frac{1300}{2\sqrt{.0483}} = 2958$
$\frac{L_3}{K_3\sqrt{S_3}} = \frac{306}{.7\sqrt{1095}} = 1390$
5848

$K = \frac{2650/\sqrt{.1080}}{5848} = 2.011$ eqn 5-5

$S'_{AV} = 0.0480$
$\frac{L_1}{K_1\sqrt{S_1'}} = \frac{900}{3\sqrt{.04}} = 1500$ (no change)
$\frac{L_2}{K_2\sqrt{S_2'}} = \frac{1300}{2\sqrt{.0466}} = 3011$
$\frac{L_3}{K_3\sqrt{S_3'}} = \frac{300}{.7\sqrt{.0580}} = 1729$
6290

$K = \frac{2650/\sqrt{.048}}{6290} = 1.923$ eqn 5-5

$\Rightarrow t_c = 629.0$ sec $= 10.48$ min $= 0.175$ hr
$t_c = t_{c\,min} = 0.2$ hrs
$\Rightarrow t_p = 0.13333$ hrs

from ATHYMO $Q_p = 177$ cfs @ 1.5 hrs

$K' = 0.302\,(S')^{1/2} \cdot Q_p^{0.16} = 3.520 \quad > K = 2.011 \Rightarrow$ no change
$K'' = 0.207 \quad " \quad " \quad = 2.399 \quad > K = 2.011 \Rightarrow$ use $K = 2.399$

$t_c = \frac{L_{TOT}}{10 \cdot K_{eff}\sqrt{S_{AV}}} = \frac{2650}{10 \cdot 2.399\sqrt{.0480}} = 504$ sec $= 8.40$ min $= 0.140$ hr

$t_c = t_{c\,min} = 0.2$ hr = same $\Rightarrow Q_p$ same $\Rightarrow$ no more change

SRT 11/26/93

ATHYMO t_c/t_p CONT

✓ B 308 semi offsite north of central

A TOT = 80 Ac = 0.1250 mi²
L TOT = ~2300'
ΔEL TOT ~ 2100 x .04 + 200 x .01 = 86'
SAV = 86/2300 = 0.0374

$\frac{L_1}{10 K_1 \sqrt{S_1}} = \frac{200}{10.3\sqrt{.01}} = 67 = t_1$ sec

$\frac{L_2}{10 K_2 \sqrt{S_2}} = \frac{1100}{10.3\sqrt{.04}} = 183$ t_2

$\frac{L_3}{10 K_3 \sqrt{S_3}} = \frac{1000}{10.2\sqrt{.04}} = 250$ t_3

500 sec = 8.33 min = 0.139 hr

0.139 hr < 0.2 hr min
$t_c = t_{c\,min} = 0.2$ hrs

✓ B 309 "

A TOT = 4.0 + 44.5 = 48.5 Ac = 0.13826 mi²
L TOT = 2000 + 500 + 250 + 100 = 2850'
ΔEL TOT = 52 + 12 + 15 + 2 = 81'
SAV = 81/2850 = 0.2842

$\frac{L_1}{1 K_1 \sqrt{S_1}} = \frac{2000}{3\sqrt{.026}} = 4134$

$\frac{L_2}{K_2 \sqrt{S_2}} = \frac{500}{3\sqrt{.024}} = 1076$

$\frac{L_3}{K_3 \sqrt{S_3}} = \frac{200}{2\sqrt{.0520}} = 439$ (S = .06)

$\frac{L_4}{K_4 \sqrt{S_4}} = \frac{100}{.7\sqrt{.02}} = 1010$

6659 sec

$t_c = 6659/10266$ sec = 11.1 min
= 0.185 hr
$t_c = t_{c\,min} = 0.2$ hr
$t_p = t_{p\,min} = 2/3\, t_{c\,min} = 0.13333$ hr

✓ alt def of S based on S' where appropriate
here S = (1/2650)(52 + 12 + 13 + 2) = 79/2650 = 0.02981

A3: CHANNEL, STREET, & ARROYO CROSS SECTIONS

CHANNEL & ARROYO
CROSS-SECTIONS
USED FOR ATTYMO ANALYSES

SUNRISE TERRACE
UNITS III-V

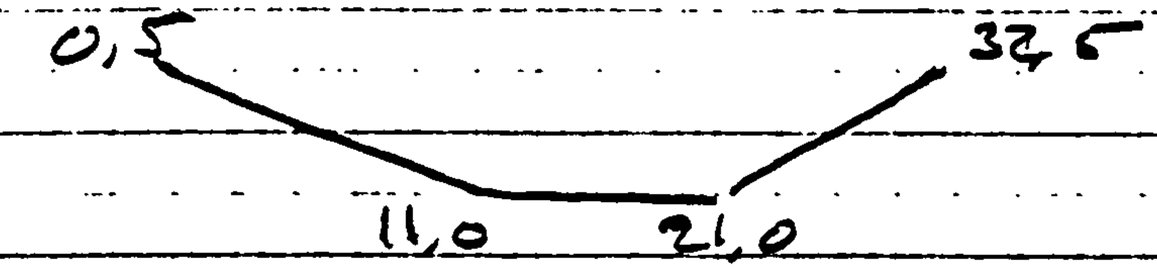
NOTE:
(1) NOT ALL SECTIONS SHOWN FINALLY USED

(2) SOME SECTIONS FINALLY USED NOT SHOWN HERE (ESPECIALLY STORM DRAINS

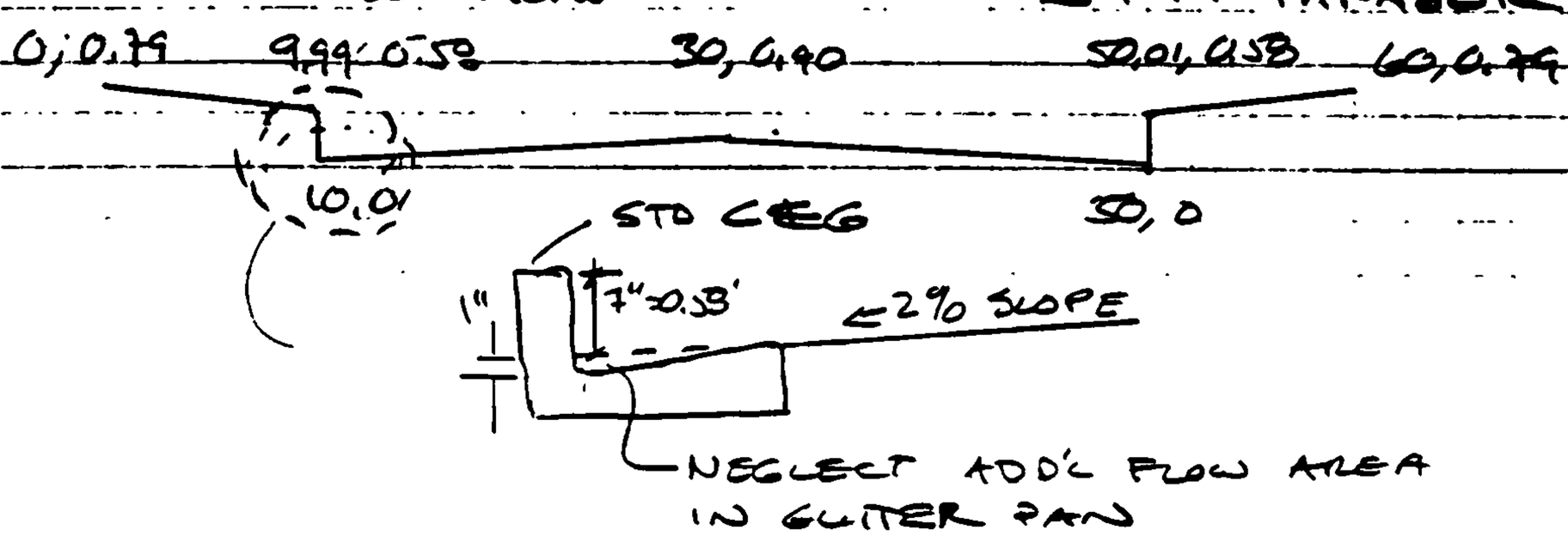
SUNRISE TERRACE – AHMO 11/20/93

CHANNEL SECTIONS

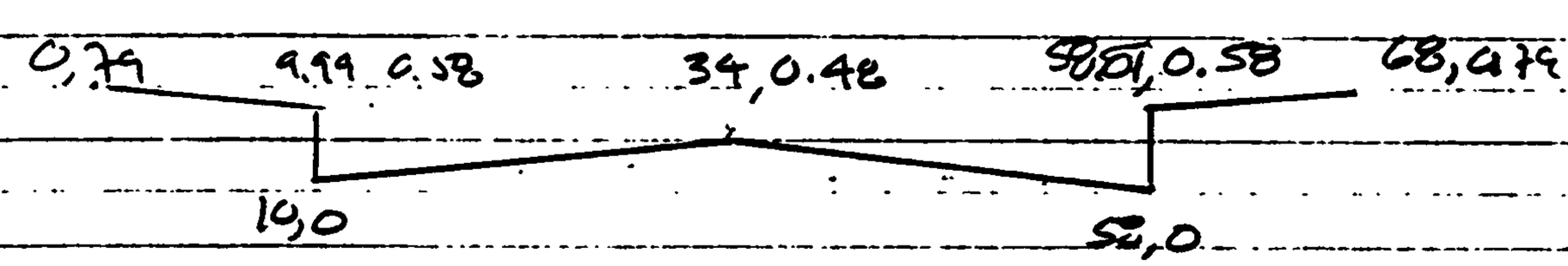
(A) CONC DRAINAGE CHANNEL – AMAFCA / COA TYP
10' BOTTOM 2H:1V SIDESLOPES
ASSUME 5' DEEP TYP n = 0.015



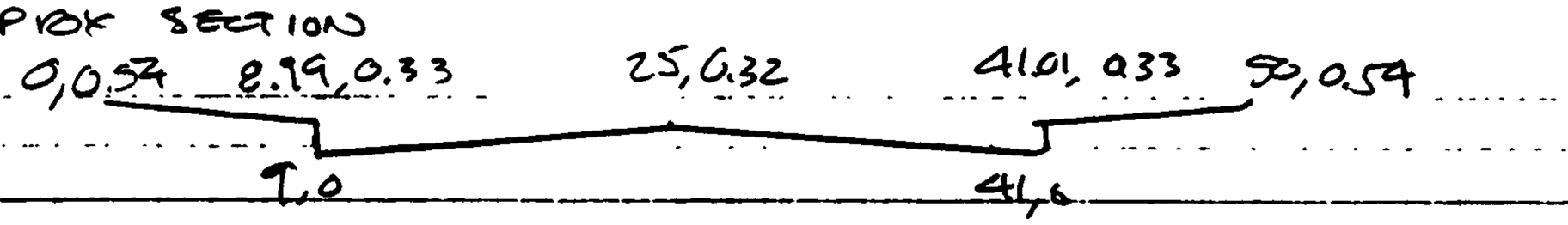
(B) STD C&G 40 FACE TO FACE TOWER ROAD
60' R.O.W. S PART TANAGER



(C) STD C&G 48' FACE TO FACE – N PART TANAGER
SIMILAR TO ABOVE, ONLY 68' R.O.W.



(D) MOUNTABLE ROLL CURB 32 FF, 50 ROW
APPROX SECTION

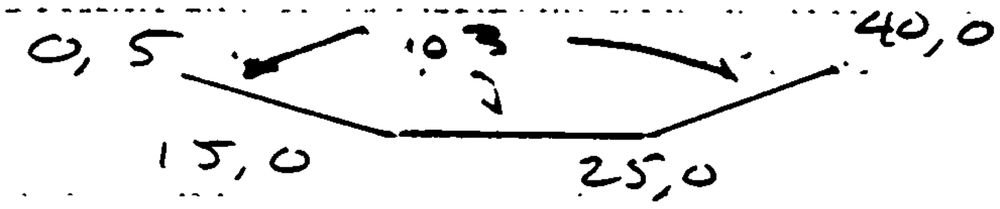


SUNRISE TERRACE AHYMO 11/29/93

CHANNEL SECTIONS CONT

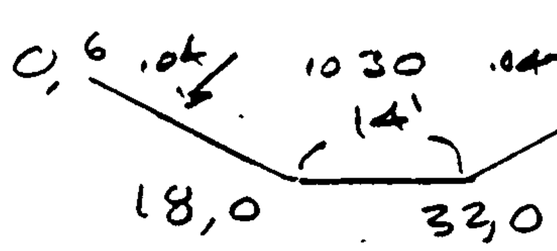
(E) EARTH DIVERSION ALONG TANGER

NOTE: PROB NOT FIT WITHIN R.O.W
: PROB NEED SLOPE GRADING EASEMENT OR SLOPE STABILIZATION
: WAS 10' BOTTOM WIDTH IN SCANLON / SRT PLANS
: MAX DEPTH ACTUAL ~ 1.5', USE ~ 5 TO CHECK CAPACITY



N = 0.03
SOME WEEDS
S = 0.001 ft/ft

(F) NATURAL CHANNEL BASIN 307
SCALE APPROX FROM 1" = 200' TOPO



MANNINGS COEFF
n = 0.030 SAND & WEEDS
→ ASSUME SLOPE ~ 0.03

Quick & Dirty < 40 AC

For 25.4 AC 50% B & 50% D ZONE 1
$Q_p = (1.5 \times 2.03 + 1.5 \times 4.37) \cdot 25.4 = 81.28$ CFS

(If $S = \underline{0.013} \Rightarrow y = 0.9733 \sim 1'$ $F_r(AVE) = .96$ OK
$F_r(y) \sim 0.80$
$F \downarrow \Rightarrow y \downarrow \& Q \downarrow$)

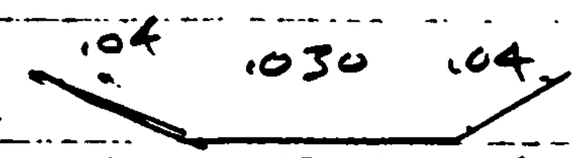
(G) NATURAL CHANNEL N SIDE OF B 303 GPC/CFS ←
ASSUME: 0,2 / 1:4 / 1:30 / 1:4 / 30,2 — 4 = OUTLET POND 2 CO4 WESTSIDE SATELLITE CENTER
10,0 20,0 $S = 0.031 \pm$

NOTE: MADE

SUNRISE TERRACE ARROYO 11/20/93

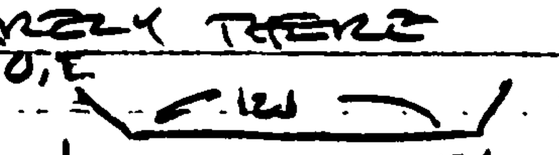
CHANNEL SECTIONS CONT

(H) NATURAL CHANNEL B 309
CHANNEL VARIES - NARROW & DEEP → WIDE & SHALLOW
EST AS THROUGH OUT FROM TOPO



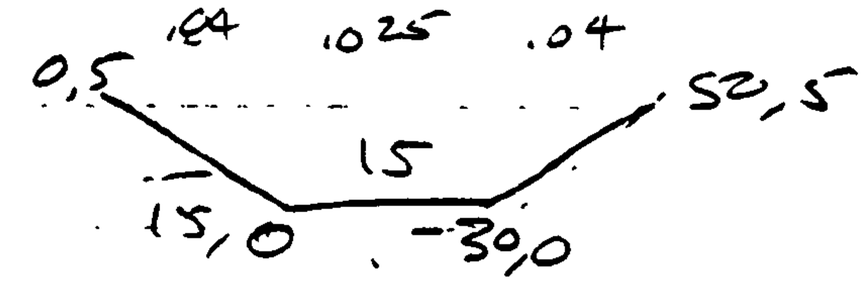
S = 0.02
N = 0.030 center deeper, sand to weeds

I NATURAL CHANNEL B 310 E of 106TH
CHANNEL BARELY THERE
EST AS



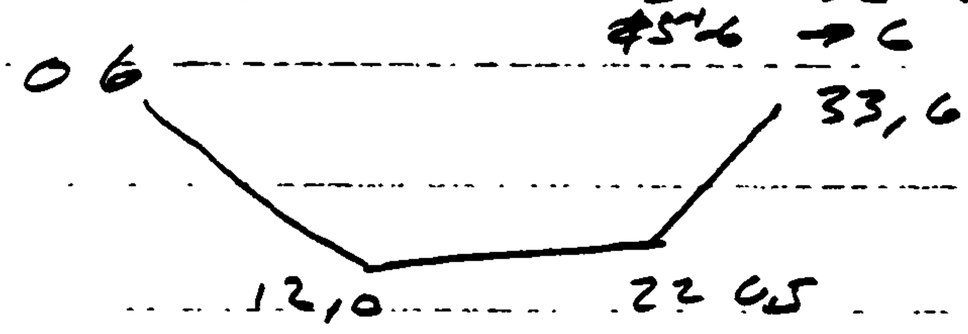
S ~ 22 ≈ 0.0265
830
N = 0.035
Shallow

J NAT CHAN B 310 DOWNSTREAM OF ↑ I ABOVE
INCISED AGAIN - ALSO FUTURE PILOT CHANNEL
EST AS



N = 0.030

K CONC CHANNEL - SIM D A
SAND JUST UPSTREAM OF SECTION LINE
ACTUAL CHANNEL VARIES 5'-→ 5'-6" W SAME BOTTOM & SIDE SLOPES
#5 → 6



SRT

11/29/93

ALTAMO VALLEY SECTIONS FOR ROUTING

#	XSECT	LENGTH	SLOPE	NOTES
		1145	.01089	per 12/3 from as built/ts
1	A	~~1200~~	~~.1606~~	
		505	.01400	
2	A	~~300~~	~~.1006~~	
		500	.00400	
3	A	~~400~~	~~.1008~~	
		977	.01229	
4	A	~~870~~	~~.1029~~	
5		816	Sav = 0.02364	
31	G	1820	.0316	
32	E	500	.001	L=500' ⇒ INPUT @ MID SECTION, NOT WHERE SHOWN. NOTE ALT POSS CHOICE FOR FLOW PATH
33	E	1000	.001	
34	F	2320	.0310	
35	H	2500	.02560	S = Sav 2000 @ .02 + 500 @ .02+
36	I	860	.02558	
37	J	740	.02432	
41	B	950	.02947	S = 28/950
42	PIPE 25'=D	1150	.01826	S = 21/1150
43	A	1450	.03615	inlet channel @ downstream end
44	A	517	.0181	
45	A	320	.0316	curved part
38	A	1200	.0167	

SRT A HYMO

11/29/03

BASIN DATA

#	Acres	mi²	%B	%D	$t_{p,hr}$	Q_p
301	90.8	.14188	50	50	0.144	
302	55.2	.08625			.13333	
303	42.8	.06688				
304	18.8	.02938				
305	44.2	.06906				
306	25.4	.03969				
307	19.3	.03016				
308	80.0	.12500	20	80		
309	48.5	.07575	50	50		
310	25.6	.04000				
311	33.4	.05219				
312	16.5	.02578				
401	9.4	.01469	50	50	.13333	
402	9.9	.01547				
403	11.3	.01766				
404	15.00	.02344				
405	7.8	.01219				
406	11.3	.01766				
299	48.1	.07516	ONA			

R O

A4: AHYMO FILE LIST

AHYMO FILES

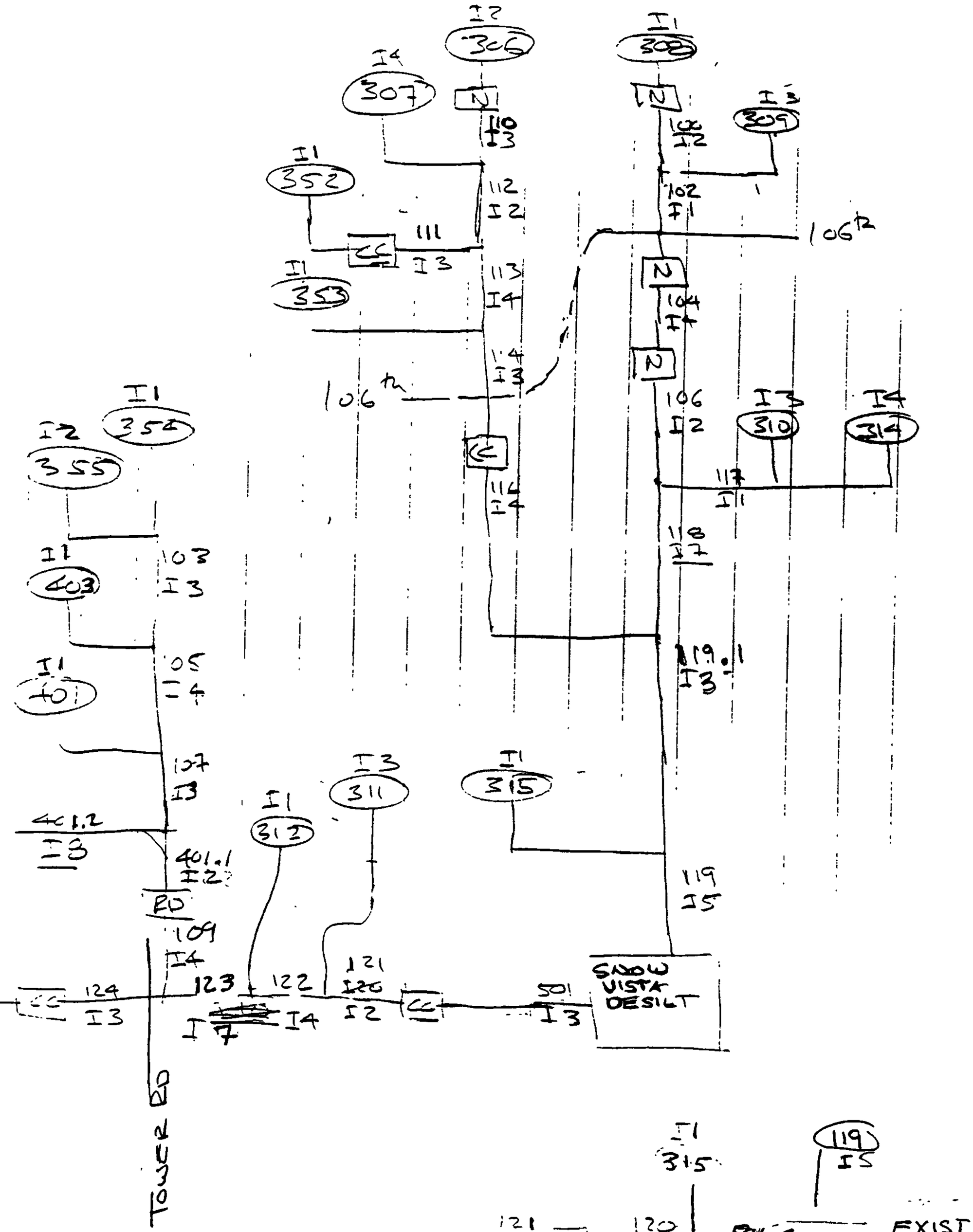
NOTE: R==>REVISED, 00==>100-YEAR, 10==>10-YEAR, 2==>2-YEAR

FILE NAME	DESCRIPTION / USE
RSFAIR00	REVISED FAIR SHARE, 100-YEAR STORM ESTABLISH ALLOWABLE RUNOFF RATES
PAS001	POND NEAR PASO FINO & HALTER, PART 1 ONSITE DEVELOPED, WITHOUT BASINS 105 & 106 GET ALLOWED OUTFALL RATE FOR SMALL POND
PAS002	POND NEAR PASO FINO & HALTER, PART 2 VERIFY POND FOR BASINS 105 & 106
RSFOE00	SUNRISE FULL DEVELOPMENT OFFSITE EXISTING WITH TANAGER POND & ASPHALT SWALE JUST AFTER PROJECT COMPLETED
RTP00	TANAGER POND AREA ONLY VERIFY POND, SWALES, OUTLET
TANGER00 TANGER10 TANGER2	TANAGER POND INFLOW - EARLY FLOWS FOR SEDIMENT CALCULATIONS
RSFOF10	SUNRISE FULL DEVELOPMENT, OFFSITE FAIR SHARE INTERIM POND IN SANDPIPER, 10-YEAR

A5: AHYMO SCHEMATICS

RSF0=00 3-16-94
RSFA'R00 3-16-94

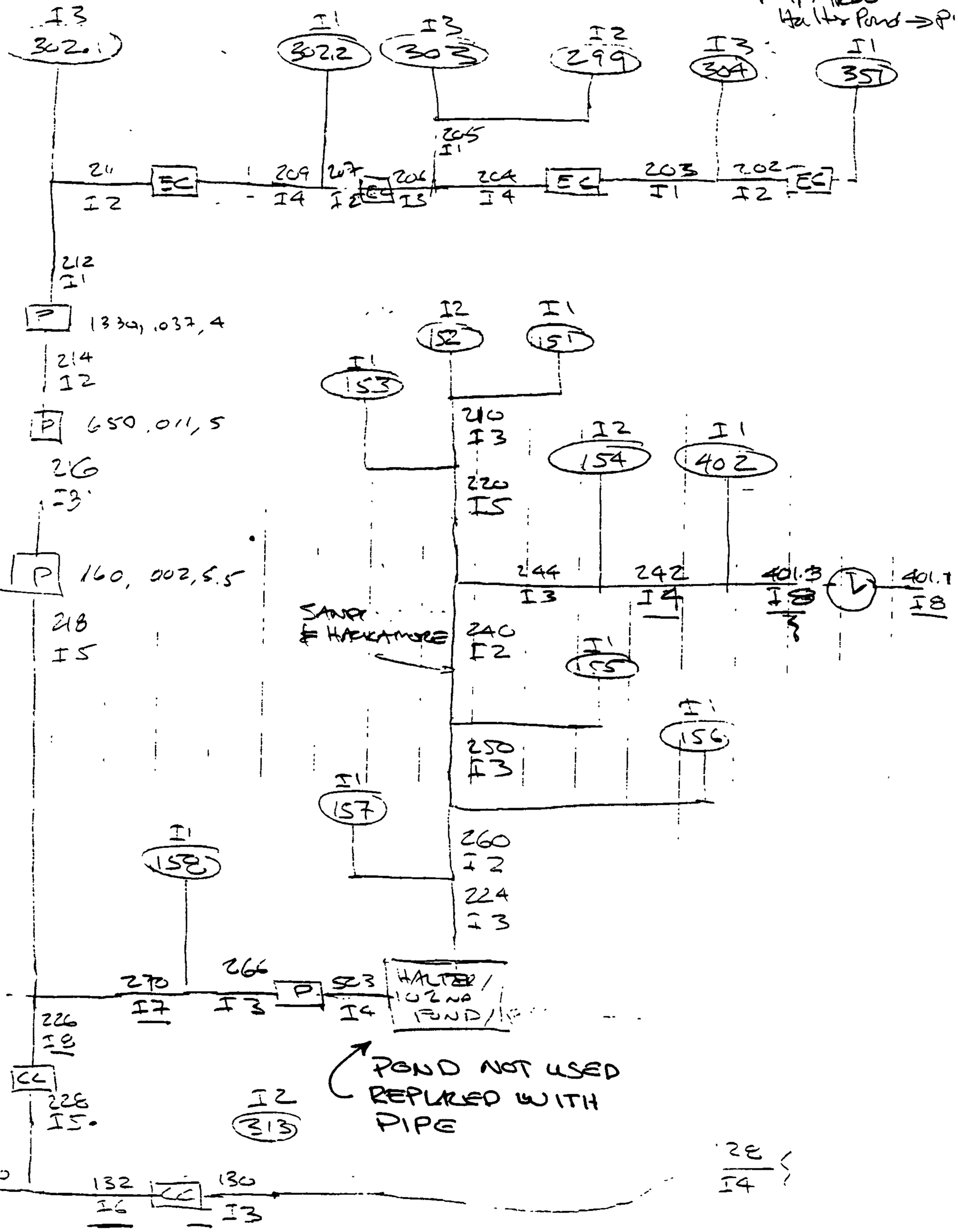
NORTH HALF



1

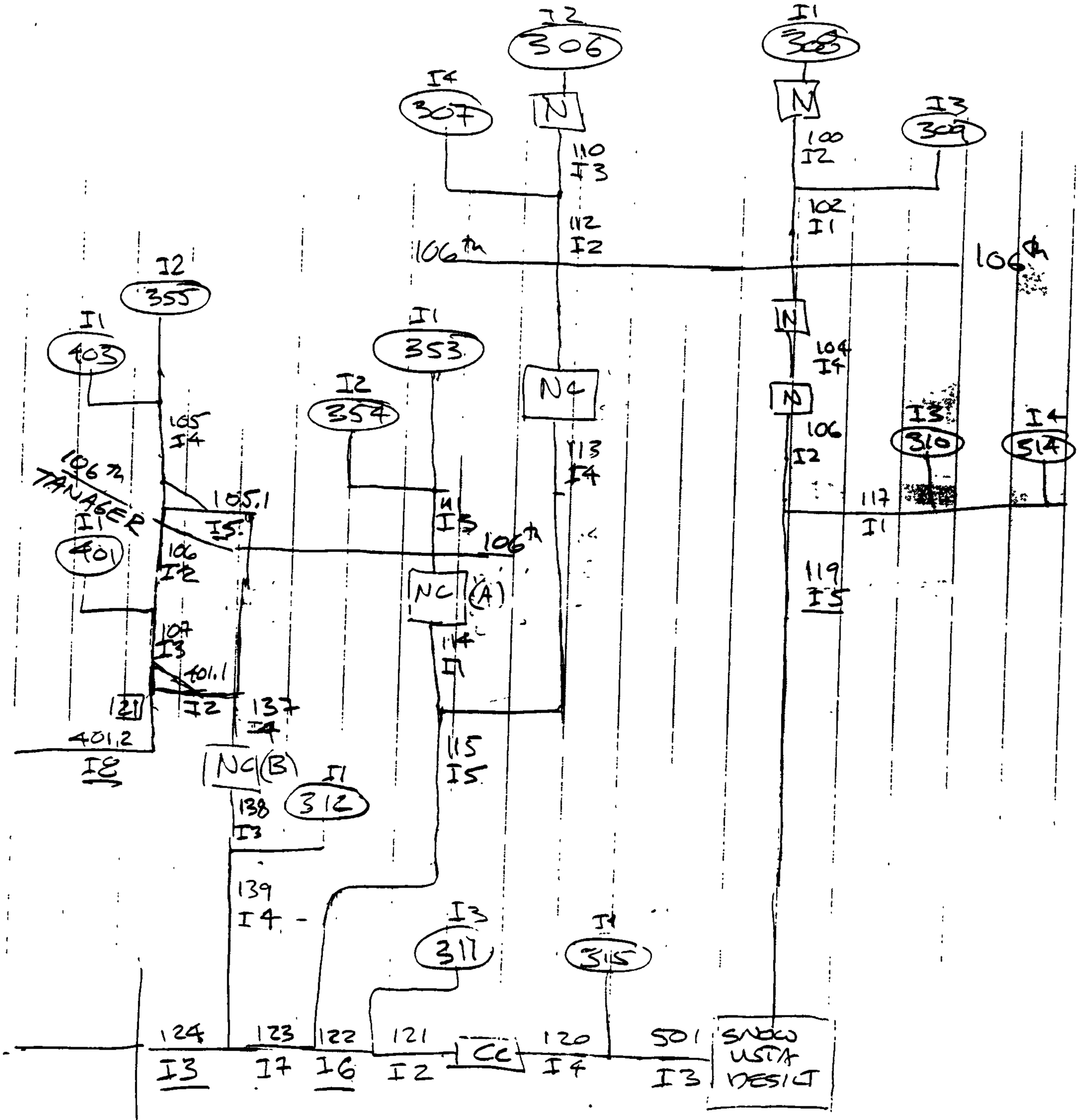
SOUTH HALF

RSFOF00 3/10/94
RSFA200
Halter Pond → P1 PF



NORTH

RSTOE00
Routed Sunkist Full Offsite Station
100 yr storm
3-31-94



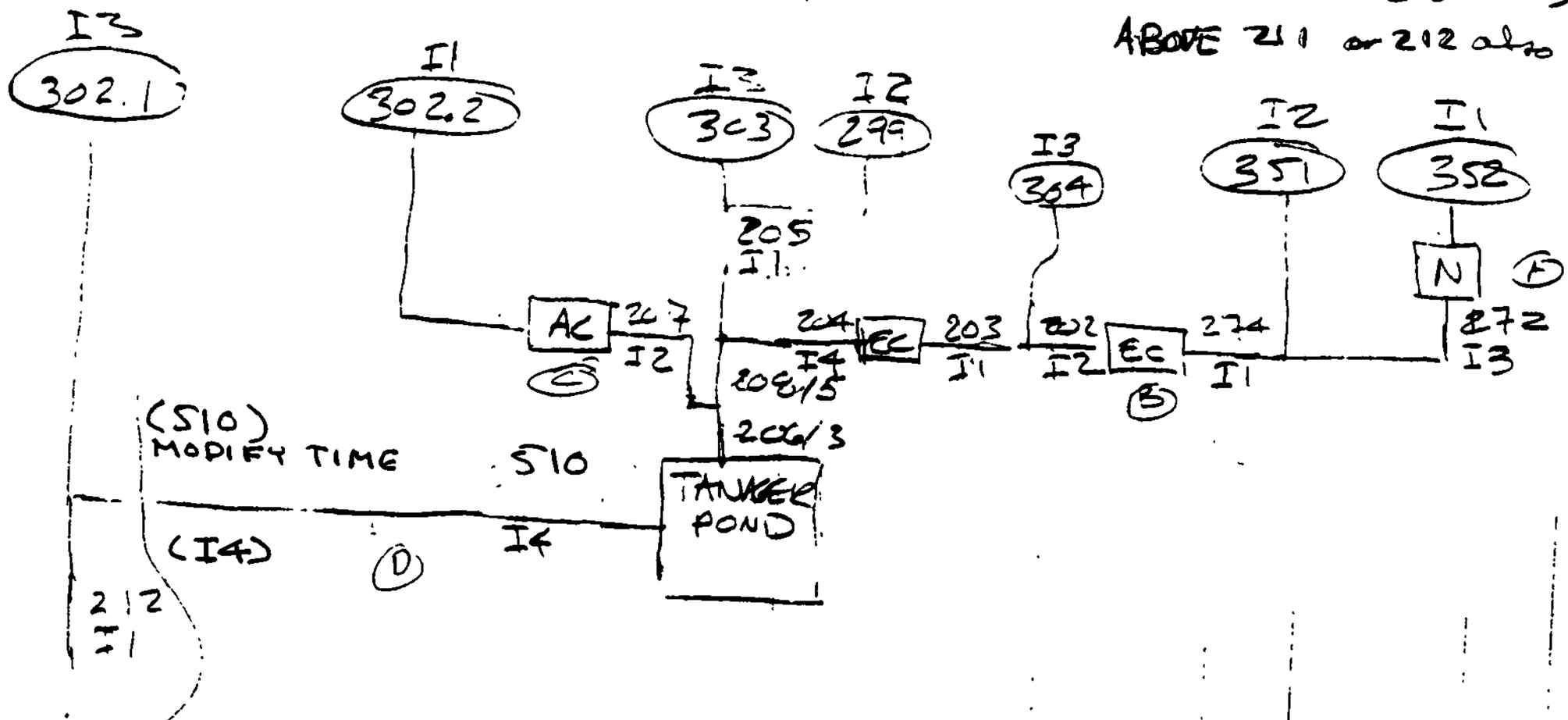
A ~ 120' W x 1' DEEP S=3% n=.035 L=90±
~ OVERLAND N 311 PARALLEL TO "ZERO"
JOIN UP FROM SNOW USTA, NEGLECT
ADD'L TRAVEL TIME

(B) SAME PROPERTIES AS A, BUT IN 312
DOWN FROM SPLIT @ TOWER RD

SOUTH

KSFOE00 3-31-94

ABOVE 211 or 212 also KTPOG

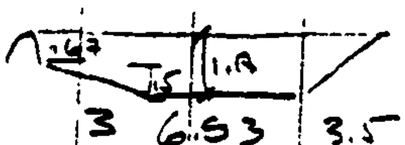


4 AS PER ESPAIR & PA5001 DOWNSTREAM FROM 211

A 20' wide 1 deep $n = .035$ S ≈ 20/540 = .037

B 10' bottom 3H:1V 3' deep $n = .030$ $S = .001$

C asphalt channel



$S = .005$ $n = .017$

D PIPE – 24" RCP $n = .013$ S ≈ .0015

– USE 2 MINUTE DELAY (1 TIME STEP) TO SIMULATE INSTEAD OF ACTUALLY ROUTING PIPE

A6: AHYMO FILES

RSFAIR00 REVISED FAIR SHARE, 100-YEAR STORM
ESTABLISH ALLOWABLE RUNOFF RATES

AHYMO SUMMARY TABLE (AHYM0392) - AMAFCA VERSION OF HYMO - MARCH, 1992 RUN DATE (MON/DAY/YR) =03/19/1994
INPUT FILE = RSFAIR00 USER NO.= RYALS_NM.101

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
#S FILE RSFAIR00 = Revised Sunrise Fair share for currently undeveloped 100-yr
#S INCLUDES BASIN 314 POSSIBLY TO SNOW VISTA POND, USE PER SNOW VISTA DESIGN
#S NO SEDIMENT BULKING, ALL LAND TREATMENTS B=LANDSCAPE OR D=IMPERVIOUS
#S
#S START WITH ALL CURRENTLY UNDEVELOPED BASINS TO BE DEVELOPED IN FUTURE TO
#S TO 50%B & 50%D, EXCEPT BASIN 308 (80 AC) AS "COMMERCIAL" AT 20%B & 80%D.
#S THE ACTUAL LOCATION OF COMMERCIAL DEVELOPMENT WILL PROBABLY BE DIFFERENT.
#S VARY %B THE SAME FRACTION FOR ALL UNDEVELOPED BASINS BY TRIAL & ERROR UNTIL
#S Qpeak-100 BELOW JUNCTION WITH EXISTING CHANNEL INLET (I.E. AP 10) MATCHES+-
#S THAT IDENTIFIED ON THE SNOW VISTA CHANNEL AS-BUILT DRAWINGS (774 CFS).
#S
#S TOWER RD FLOW DIVIDES AT SANDERLING: UP TO 23 CFS FALLS BACK INTO SUNRISE
#S TERRACE & THE REMAINDER FLOWS TO DROP INLETS IN TOWER AT SNOW VISTA CHANNEL
#S
#S BASINS 101-108 PLAN = BASINS 151-158 IN THIS AHYMO FILE
#S REVISED 3-16-94 FOR BASIN 305 BECOMES 351 - 355
#S RAINFALL HUNDRED YR TYPE=1 RAIN QUARTER=0.0 RAIN ONE=1.87
#S RAIN SIX=2.20 RAIN DAY=2.68 DT=.033333 HR
RAINFALL TYPE= 1 RAIN6= 2.200

COMPUTE NM HYD	308.00	-	1	.12500	287.77	10.282	1.54229	1.500	3.597	PER IMP= 67.40
ROUTE	100.00	1	2	.12500	246.74	10.282	1.54229	1.567	3.084	
COMPUTE NM HYD	309.00	-	3	.07575	119.17	3.666	.90752	1.500	2.458	PER IMP= 18.50

#S HYD 102 = (309+ROUTED 308) CROSSING 106TH BTW EUCARIZ & SUNSET GARDEN
#S HYD 102 = AP 4

ADD HYD	102.00	2& 3	1	.20075	358.25	13.948	1.30277	1.533	2.788	
ROUTE	104.00	1	4	.20075	342.73	13.948	1.30277	1.567	2.668	
ROUTE	106.00	4	2	.20075	344.75	13.948	1.30277	1.600	2.683	
COMPUTE NM HYD	314.00	-	4	.05469	85.90	2.647	.90752	1.500	2.454	PER IMP= 18.50
COMPUTE NM HYD	310.00	-	3	.02922	45.90	1.414	.90752	1.500	2.455	PER IMP= 18.50

#S HYD 117 = 310+314 (THE "EXTRA" 35 AC), BOTH EAST OF 106TH, TO DESILT BASIN

ADD HYD	117.00	3& 4	1	.08391	131.81	4.061	.90752	1.500	2.454	
ADD HYD	118.00	1& 2	7	.28466	449.91	18.010	1.18626	1.567	2.470	

#S START NEW BRANCH

COMPUTE NM HYD	306.00	-	2	.03969	62.35	1.921	.90752	1.500	2.454	PER IMP= 18.50
ROUTE	110.00	2	3	.03969	45.78	1.921	.90753	1.600	1.802	
COMPUTE NM HYD	307.00	-	4	.04547	71.42	2.201	.90752	1.500	2.454	PER IMP= 18.50
ADD HYD	112.00	3& 4	2	.08516	110.05	4.122	.90752	1.533	2.019	
COMPUTE NM HYD	352.00	-	1	.03141	49.34	1.520	.90752	1.500	2.455	PER IMP= 18.50
ROUTE	111.00	1	3	.03141	48.81	1.520	.90753	1.533	2.428	
ADD HYD	113.00	2& 3	4	.11657	158.86	5.642	.90752	1.533	2.129	
COMPUTE NM HYD	353.00	-	1	.00172	2.72	.083	.90752	1.500	2.468	PER IMP= 18.50

#S HYD 114 = AP 3 AT 106th ST

ADD HYD	114.00	1& 4	3	.11829	161.53	5.725	.90752	1.533	2.134	
ROUTE	116.00	3	4	.11829	161.06	5.725	.90752	1.567	2.128	
ADD HYD	119.10	4& 7	3	.40295	610.97	23.735	1.10443	1.567	2.369	
COMPUTE NM HYD	315.00	-	1	.01234	19.40	.597	.90752	1.500	2.456	PER IMP= 18.50

#S HYD 119 = COMBINED FLOW INTO SNOW VISTA DESILT BASIN
#S HYD 119 = AP 5 IN

ADD HYD	119.00	1& 3	5	.41529	628.19	24.332	1.09858	1.567	2.364	

#S HYD 501 = ROUTED OUFLOW FROM SNOW VISTA DESILTING BASIN
#S HYD 501 = AP 5 OUT

CSFAIR00.SUM

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
ROUTE RESERVOIR	501.00	5	3	.41529	434.75	24.332	1.09858	1.700	1.636	AC-FT= 0.423
*S START SNOW VISTA CHANNEL										
ROUTE	121.00	3	2	.41529	432.74	24.332	1.09858	1.733	1.628	
COMPUTE NM HYD	311.00	-	3	.03813	39.90	1.846	.90752	1.500	2.454	PER IMP= 18.50
ADD HYD	122.00	2& 3	4	.45342	457.91	26.178	1.08251	1.700	1.578	
COMPUTE NM HYD	312.00	-	1	.01188	18.67	.575	.90752	1.500	2.456	PER IMP= 18.50
ADD HYD	123.00	1& 4	7	.46530	466.43	26.753	1.07804	1.700	1.566	
*S START NEW BRANCH, TO TOWER RD										
COMPUTE NM HYD	354.00	-	1	.00531	8.35	.257	.90752	1.500	2.458	PER IMP= 18.50
COMPUTE NM HYD	355.00	-	2	.00266	4.19	.129	.90752	1.500	2.463	PER IMP= 18.50
ADD HYD	103.00	1& 2	3	.00797	12.55	.386	.90745	1.500	2.460	
COMPUTE NM HYD	403.00	-	1	.00688	14.08	.483	1.31642	1.500	3.198	PER IMP= 50.00
*S HYD 105 = COMBINED FLOW AT TOWER-TANAGER-106th INTERSECTION										
ADD HYD	105.00	1& 3	4	.01485	26.63	.869	1.09691	1.500	2.802	
COMPUTE NM HYD	401.00	-	1	.01016	20.78	.713	1.31642	1.500	3.196	PER IMP= 50.00
ADD HYD	107.00	1& 4	3	.02501	47.41	1.582	1.18607	1.500	2.962	
*S SAY <= 23 FROM TOWER TO SANDERLING; EXCESS IN STREET TO SNOW VISTA										
*S HOLD 401.2 (UNDERFLOW, ID=8) TO ADD TO 402 LATER										
DIVIDE HYD	401.20	3	8	.02002	23.00	1.266	1.18607	1.433	1.795	
	401.10	AND	2	.00499	24.41	.316	1.18607	1.500	7.641	
ROUTE	109.00	2	4	.00499	21.64	.316	1.18711	1.533	6.773	
*S HYD 124 = SNOW VISTA JUST DOWNSTREAM FROM TOWER										
*S HYD 124 = AP 6										
ADD HYD	124.00	4& 7	3	.47029	469.84	27.069	1.07920	1.700	1.561	
ROUTE	128.00	3	4	.47029	467.41	27.069	1.07920	1.733	1.553	
COMPUTE NM HYD	313.00	-	2	.01016	15.97	.492	.90752	1.500	2.456	PER IMP= 18.50
ADD HYD	130.00	2& 4	3	.48045	473.55	27.560	1.07557	1.733	1.540	
*S HYD 132 = SNOW VISTA JUST ABOVE JUNCTION WITH SECTION LINE CHANNEL STUB										
*S HYD 132 = AP 9										
ROUTE	132.00	3	6	.48045	474.46	27.560	1.07557	1.733	1.543	
*S										
*S START SUNRISE TERRACE INTERIOR										
COMPUTE NM HYD	151.00	-	1	.01049	16.49	.508	.90752	1.500	2.456	PER IMP= 18.50
COMPUTE NM HYD	152.00	-	2	.00631	9.92	.305	.90752	1.500	2.458	PER IMP= 18.50
ADD HYD	210.00	1& 2	3	.01680	26.42	.813	.90749	1.500	2.457	
COMPUTE NM HYD	153.00	-	1	.00713	11.22	.345	.90752	1.500	2.457	PER IMP= 18.50
*S HYD 220 = 151+152+153 (BASINS 101, 102, & 103) @ HACKAMORE & SANDERLING										
ADD HYD	220.00	1& 3	5	.02394	37.64	1.158	.90749	1.500	2.457	
*S 401.2 (ID 8) = 'UNDERFLOW' (+-21 CFS MAX) FROM TOWER @ SANDERLING ABOVE										
*S DELAY 401.2 2 MIN (1 TIME STEP) TO SIMULATE ROUTING IN 2 SEGMENTS OF ROAD										
MODIFY TIME	401.20	8	8	.02002	23.00	1.266	1.18607	1.467	1.795	
*S BASIN 402 = EXISTING DEVELOPMENT @ 50%=B=LANDSCAPE, 50%=D=IMPERV										
COMPUTE NM HYD	402.00	-	1	.01547	31.64	1.086	1.31642	1.500	3.196	PER IMP= 50.00
ADD HYD	242.00	1& 8	4	.03549	54.64	2.352	1.24288	1.500	2.406	
COMPUTE NM HYD	154.00	-	2	.00754	11.86	.365	.90752	1.500	2.457	PER IMP= 18.50
*S HYD 244 = 402+154 IN SANDPIPER AT CONNEMARA (HYD 154=BASIN 104)										
ADD HYD	244.00	2& 4	3	.04303	66.49	2.717	1.18412	1.500	2.415	
*S HYD 240 = COMBINED FLOW @ HACKAMORE & SANDERLING										
ADD HYD	240.00	3& 5	2	.06696	104.13	3.876	1.08524	1.500	2.430	
COMPUTE NM HYD	155.00	-	1	.00420	6.61	.203	.90752	1.500	2.460	PER IMP= 18.50
*S HYD 250 = COMBINED FLOW IN HACKAMORE AT HALTER										
ADD HYD	250.00	1& 2	3	.07116	110.74	4.079	1.07475	1.500	2.432	
COMPUTE NM HYD	156.00	-	1	.01414	22.22	.684	.90752	1.500	2.456	PER IMP= 18.50
ADD HYD	260.00	1& 3	2	.08530	132.96	4.763	1.04703	1.500	2.436	

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
COMPUTE NM HYD	157.00	-	1	.01736	27.28	.840	.90753	1.500	2.455	PER IMP= 18.50
*S HYD 224 = TOTAL FLOW TO POND LOCATION										
*S HYD 224 = AP 7 IN										
ADD HYD	224.00	1& 2	3	.10266	160.24	5.603	1.02343	1.500	2.439	
*S REPLACE POND WITH PIPE IN FAIR SHARE ANALYSIS - KEEP "RESERVOIR" HYD NO.										
ROUTE	503.00	3	4	.10266	158.85	5.603	1.02344	1.500	2.418	
ROUTE	266.00	4	3	.10266	153.45	5.603	1.02344	1.533	2.336	
*S HYD 158 = BASIN 108, ALL ANDALUSIAN, NOT TO POND										
COMPUTE NM HYD	158.00	-	1	.01902	29.89	.921	.90752	1.500	2.455	PER IMP= 18.50
*S HYD 270 = ALL SUNRISE ONSITE INC EXISTING 402 & 401.2 (=401 UNDERFLOW)										
*S BUT NOT OFFSITE VIA DUNLIN (SOUTHMOST STREET) PIPE										
ADD HYD	270.00	1& 3	7	.12168	182.92	6.524	1.00531	1.533	2.349	
*S										
*S OFFSITE WEST OF SUNRISE: PER SCANLON LAYOUT EXCEPT PIPE NOT SECT LINE CHAN										
COMPUTE NM HYD	351.00	-	1	.01500	23.57	.726	.90752	1.500	2.455	PER IMP= 18.50
*S USE L FROM MID POINT OF BASIN TO MIDPOINT OF NEXT										
ROUTE	202.00	1	2	.01500	17.33	.726	.90754	1.567	1.805	
COMPUTE NM HYD	304.00	-	3	.02938	46.16	1.422	.90752	1.500	2.455	PER IMP= 18.50
ADD HYD	203.00	2& 3	1	.04438	62.03	2.148	.90751	1.533	2.184	
*S HYD 206 = INTO TANAGER POND *LOCATION* FROM NORTH										
ROUTE	204.00	1	4	.04438	53.94	2.148	.90752	1.567	1.899	
COMPUTE NM HYD	303.00	-	3	.06688	105.11	3.237	.90752	1.500	2.456	PER IMP= 18.50
*S HYD 299=COA SATELLITE: ASSUME 10 CFS CLEAN & NON-ERSOIVE; REAL 1993 0.5+-										
STORE HYD	299.00	-	2	.07516	10.00	7.300	1.82122	1.333	.208	
*S HYD 205 = INTO TANAGER POND LOCATION FROM WEST (303+299 (COA SATELLITE))										
ADD HYD	205.00	2& 3	1	.14204	115.11	10.482	1.38370	1.500	1.266	
*S HYD 206 = AP 2 IN FOR FAIR SHARE AND PROPOSED										
ADD HYD	206.00	1& 4	3	.18642	166.79	12.630	1.27033	1.533	1.398	
ROUTE	207.00	3	2	.18642	153.00	12.630	1.27036	1.533	1.282	
COMPUTE NM HYD	302.20	-	1	.07109	111.79	3.441	.90752	1.500	2.457	PER IMP= 18.50
ADD HYD	209.00	1& 2	4	.25751	263.21	16.071	1.17019	1.533	1.597	
ROUTE	211.00	4	2	.25751	233.89	16.071	1.17019	1.567	1.419	
COMPUTE NM HYD	302.10	-	3	.01031	16.21	.499	.90752	1.500	2.456	PER IMP= 18.50
*S HYD 212 = COMBINED INTO DUNLIN/ANDALUSIAN PIPE @ TANAGER										
*S HYD 212 = AP 1										
ADD HYD	212.00	2& 3	1	.26782	248.28	16.570	1.16008	1.567	1.448	
ROUTE	214.00	1	2	.26782	249.80	16.570	1.16008	1.567	1.457	
ROUTE	216.00	2	3	.26782	248.95	16.570	1.16008	1.567	1.452	
ROUTE	218.00	3	5	.26782	248.50	16.570	1.16008	1.567	1.450	
*S										
*S HYD 226 ALL THROUGH SUNRISE, BUT NOT ROUTED IN STUB CHANNEL										
ADD HYD	226.00	5& 7	8	.38950	421.99	23.094	1.11173	1.567	1.693	
*S HYD 228 = SUNRISE + OFFSITE CONTRIB @ JUNCT W SNOW VISTA POST ROUTE STUB										
*S HYD 228 = AP 8										
ROUTE	228.00	8	5	.38950	423.67	23.094	1.11173	1.567	1.700	
*S HYD 230 = TOTAL COMBINED W SNOW VISTA										
*S HYD 230 = AP 10: TO BE <= ALLOWED PER SNOW VISTA DESIGN										
ADD HYD	230.00	5& 6	1	.86995	773.04	50.655	1.09176	1.667	1.388	
FINISH										

```
START                TIME=0.0   PUNCH CODE=0   PRINT LINES=56
                     CONTROL CODES AT START = 027 015 0 0 0
                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
                     CONTROL CODES AT END = 0 0 0 0 0
                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
* START               TIME=0.0   PUNCH CODE=0   PRINT LINES=56
*                     CONTROL CODES AT START = 027 042 048
*                     027 091 0 0   0 0 0 0 0   0 0 0 0 0 0 0 0
*                     CONTROL CODES AT END =  027 093 0 0 0
*                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
*S FILE RSFAIR00 = Revised Sunrise Fair share for currently undeveloped 100-yr
*S INCLUDES BASIN 314 POSSIBLY TO SNOW VISTA POND. USE PER SNOW VISTA DESIGN
*S NO SEDIMENT BULKING. ALL LAND TREATMENTS B=LANDSCAPE OR D=IMPERVIOUS
*S
*S START WITH ALL CURRENTLY UNDEVELOPED BASINS TO BE DEVELOPED IN FUTURE TO
*S TO 50%B & 50%D, EXCEPT BASIN 308 (80 AC) AS "COMMERCIAL" AT 20%B & 80%D.
*S THE ACTUAL LOCATION OF COMMERCIAL DEVELOPMENT WILL PROBABLY BE DIFFERENT.
*S VARY %B THE SAME FRACTION FOR ALL UNDEVELOPED BASINS BY TRIAL & ERROR UNTIL
*S Qpeak-100 BELOW JUNCTION WITH EXISTING CHANNEL INLET (I.E. AP 10) MATCHES+-
*S THAT IDENTIFIED ON THE SNOW VISTA CHANNEL AS-BUILT DRAWINGS (774 CFS).
*S
*S TOWER RD FLOW DIVIDES AT SANDERLING: UP TO 23 CFS FALLS BACK INTO SUNRISE
*S TERRACE & THE REMAINDER FLOWS TO DROP INLETS IN TOWER AT SNOW VISTA CHANNEL
*S
*S BASINS 101-108 PLAN = BASINS 151-158 IN THIS AHYMO FILE
*S REVISED 3-16-94 FOR BASIN 305 BECOMES 351 - 355
* TUCKER GREEN  2/94, 3/94
*************************************************************************
* SUNRISE TERRACE RAINFALL PER ALBUQUERQUE NM DPM, MAP L-8
* RAINFALL             TWO YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=0.73
*                      RAIN SIX=0.95      RAIN DAY=1.16     DT=.033333 HR
* RAINFALL             TEN YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.24
*                      RAIN SIX=1.47      RAIN DAY=1.79     DT=.033333 HR
*S RAINFALL             HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
*S                      RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR
RAINFALL             HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
                     RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR
*************************************************************************
COMPUTE NM HYD       ID=1 HYD NO=308 DA=0.12500 SQ MI
                     PER A=0  B=32.6 C=0  D=67.4  TP=-0.13333 HRS  RAIN=-1
PRINT HYD            ID=1 CODE=1
* CODES: 0=ALL; 1=TOTALS ONLY; 2=EVERY 2ND + TOTALS; SIMILARLY 3, 5, 10, 20
COMPUTE RATING CURVE CID=-1  VS NO=35  NO SEGS=3
                     MIN EL=0    FT   MAX EL=2    FT
                     CH SLP=.0256     FP SLP= .0256
                     MANNING N   END DIST
                       .040         6     .030 26   .040  32
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     2       6     0       26    0       32    2
COMPUTE TRAVEL TIME  ID=2      REACH=35  NO VS=1
                     L= 2500   ft       SLP=0.02560 ft per ft
ROUTE                ID=2     HYD=100     INFLOW HYD ID=1   DT=.033333 hr
PRINT HYD            ID=2 CODE=1
*************************************************************************
COMPUTE NM HYD       ID=3   HYD=309 DA=.07575 SQ MI
                     PER A=0   B=81.5 C=0   D=18.5 TP=0.13333 HRS    RAIN=-1
PRINT HYD            ID=3   CODE=1
*S HYD 102 = (309+ROUTED 308) CROSSING 106TH BTW EUCARIZ & SUNSET GARDEN
*S HYD 102 = AP 4
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=1   HYD=102    ID I=2      ID II=3
PRINT HYD            ID=1   CODE=2
```

```
PLOT HYD              ID=1
COMPUTE RATING CURVE CID=-1  VS NO=36  NO SEGS=1
                      MIN EL=0    FT   MAX EL=1    FT
                      CH SLP= .02558   FP SLP=.02558  FT PER FT
                        N   END X
                      .035   122
                      DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                      0     1       1     0       121   0       122   1
COMPUTE TRAVEL TIME   ID=4     REACH=36 NO VS=1
                      L=860    ft       SLP=.02558  ft/ft
ROUTE                 ID=4     HYD=104     INFLOW HYD ID=1   DT=.03333
COMPUTE RATING CURVE CID=-1  VS NO=37  NO SEGS=3
                      MIN EL=0    FT   MAX EL=5    FT
                      CH SLP=.02432    FP SLP=.02432   FT PER FT
                        N   END X
                      .040    15     .025  20    .040  50
                      DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                      0     5       15    0       30    0       50    5
COMPUTE TRAVEL TIME   ID=2     REACH=1  NO VS=1
                      L=740    ft       SLP=.02432  ft/ft
ROUTE                 ID=2     HYD=106     INFLOW HYD ID=4   DT=.033333
**************************************************************************
COMPUTE NM HYD        ID=4   HYD=314   DA=0.05469  SQ MI
                      PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1
PRINT HYD             ID=4   CODE=1
**************************************************************************
COMPUTE NM HYD        ID=3   HYD=310   DA=0.02922  SQ MI
                      PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1
PRINT HYD             ID=3   CODE=1
*S HYD 117 = 310+314 (THE "EXTRA" 35 AC), BOTH EAST OF 106TH, TO DESILT BASIN
*                       NEW      NEW        IN1          IN2
ADD HYD               ID=1   HYD=117    ID I=3      ID II=4
ADD HYD               ID=7   HYD=118    ID I=1      ID II=2
*S START NEW BRANCH
**************************************************************************
COMPUTE NM HYD        ID=2   HYD=306   DA=0.03969  SQ MI
                      PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1
PRINT HYD             ID=2   CODE=1
COMPUTE RATING CURVE CID=-1  VS NO=34  NO SEGS=3
                      MIN EL=0    FT   MAX EL=6    FT
                      CH SLP=.0310     FP SLP=.0310    FT PER FT
                        N   END X
                      .04     18    .03   32      .04   50
                      DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                      0     6       18    0       32    0       50    6
COMPUTE TRAVEL TIME   ID=3     REACH=1  NO VS= 1
                      L= 2320  ft       SLP=.0310   ft/ft
ROUTE                 ID=3     HYD=110     INFLOW HYD ID=2   DT=.033333
**************************************************************************
COMPUTE NM HYD        ID=4   HYD=307   DA=0.04547  SQ MI
                      PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1
PRINT HYD             ID=4   CODE=1
*                       NEW      NEW        IN1          IN2
ADD HYD               ID=2   HYD=112    ID I=3      ID II=4
**************************************************************************
COMPUTE NM HYD        ID=1   HYD=352   DA=0.03141  SQ MI
                      PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1
PRINT HYD             ID=1   CODE=1
COMPUTE RATING CURVE CID=-1  VS NO=38   NO SEGS=1
                      MIN EL=0    FT   MAX EL=5    FT
                      CH SLP= .028     FP SLP=.028     FT PER FT
                        N   END X
                      .015   30
                      DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                      0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME   ID=3     REACH=2  NO VS=1
```

```
                    L=1100   ft       SLP=.028    ft/ft
ROUTE               ID=3     HYD=111     INFLOW HYD ID=1   DT=.033333
ADD HYD             ID=4   HYD=113    ID I=2      ID II=3
*************************************************************************
COMPUTE NM HYD      ID=1   HYD=353   DA=0.00172  SQ MI
                    PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1
PRINT HYD           ID=1   CODE=1

*S HYD 114 = AP 3 AT 10oth ST
*                     NEW      NEW        IN1          IN2
ADD HYD             ID=3   HYD=114      ID I=1      ID II=4
PRINT HYD           ID=3   CODE=2
PLOT HYD            ID=3
COMPUTE RATING CURVE CID=-1  VS NO=38  NO SEGS=1
                    MIN EL=0    FT   MAX EL=5    FT
                    CH SLP=.0250     FP SLP=.0250    FT PER FT
                      N   END X
                    .015    30
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME ID=4     REACH=38 NO VS=1
                    L=1200   ft       SLP=.0250   ft/ft
ROUTE               ID=4     HYD=116     INFLOW HYD ID=3   DT=.033333
ADD HYD             ID=3   HYD=119.1  ID I=4      ID II=7
*************************************************************************
COMPUTE NM HYD      ID=1   HYD=315   DA=0.01234  SQ MI
                    PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1
PRINT HYD           ID=1   CODE=1
*S HYD 119 = COMBINED FLOW INTO SNOW VISTA DESILT BASIN
*S HYD 119 = AP 5 IN
*                     NEW      NEW        IN1          IN2
ADD HYD             ID=5   HYD=119    ID I=1      ID II=3
PRINT HYD           ID=5   CODE=2
*************************************************************************
*S HYD 501 = ROUTED OUFLOW FROM SNOW VISTA DESILTING BASIN
*S HYD 501 = AP 5 OUT
ROUTE RESERVOIR     ID=3   HYD=501   INFLOW ID=5   CODE=2
                    CFS OUT    VOL AC-FT   ELEV FT
                    0.          0.         11.05
                    14.35       0.6598     11.55
                    41.46       1.3245     12.05
                    122.4       2.6904     13.05
                    234.7       4.1343     14.05
                    365.8       5.6928     15.05
                    527.6       7.4074     16.05
                    715.0       9.3198     17.05
* PLOT HYD AP 5 IN & OUT
PLOT HYD            ID=5   ID=3
*S START SNOW VISTA CHANNEL
COMPUTE RATING CURVE CID=-1  VS NO=1   NO SEGS=1
                    MIN EL=0    FT   MAX EL=5    FT
                    CH SLP= .0109    FP SLP=.0109    FT PER FT
                      N   END X
                    .015   30
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME ID=2     REACH=1  NO VS=1
                    L=1200   ft       SLP=.0109   ft/ft
ROUTE               ID=2     HYD=121     INFLOW HYD ID=3   DT=.033333
*************************************************************************
COMPUTE NM HYD      ID=3   HYD=311   DA=0.03813  SQ MI
                    PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1
PRINT HYD           ID=3   CODE=1
*                     NEW      NEW        IN1          IN2
ADD HYD             ID=4   HYD=122    ID I=2      ID II=3
*************************************************************************
```

```
COMPUTE NM HYD       ID=1   HYD=312   DA=0.01188  SQ MI
                     PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1
PRINT HYD            ID=1  CODE=1
*                      NEW      NEW         IN1          IN2
ADD HYD              ID=7   HYD=123    ID I=1      ID II=4
*S START NEW BRANCH, TO TOWER RD
*************************************************************************
COMPUTE NM HYD       ID=1   HYD=354   DA=0.00531  SQ MI
                     PER A=0   B=81.5C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1  CODE=1
*************************************************************************
COMPUTE NM HYD       ID=2   HYD=355   DA=0.00266  SQ MI
                     PER A=0   B=81.5 C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=2  CODE=1
ADD HYD              ID=3   HYD=103    ID I=1      ID II=2
*************************************************************************
COMPUTE NM HYD       ID=1   HYD=403   DA=0.00688  SQ MI
                     PER A=0  B=50   C=0    D=50    TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1  CODE=1
*S HYD 105 = COMBINED FLOW AT TOWER-TANAGER-106th INTERSECTION
ADD HYD              ID=4   HYD=105    ID I=1      ID II=3
PRINT HYD            ID=4  CODE=2
*************************************************************************
COMPUTE NM HYD       ID=1   HYD=401   DA=0.01016  SQ MI
                     PER A=0  B=50   C=0    D=50    TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1  CODE=1
ADD HYD              ID=3   HYD=107    ID I=1      ID II=4
*S SAY <= 23 FROM TOWER TO SANDERLING; EXCESS IN STREET TO SNOW VISTA
*S HOLD 401.2 (UNDERFLOW, ID=8) TO ADD TO 402 LATER
DIVIDE HYD           ID=3   Q=23.0  ID=8  HYD=401.2     ID=2  HYD=401.1
PRINT HYD            ID=8   CODE=1
PRINT HYD            ID=2   CODE=1
COMPUTE RATING CURVE CID=-1  VS NO=76  NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP=.025      FP SLP=.025   FT PER FT=EST EFFECTIVE
                       N   END X
                     .015    60
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     .92     9.99  .59      10    0       30    .40
                     50    0      50.01  .59      60    .92
COMPUTE TRAVEL TIME  ID=4     REACH=38 NO VS=1     L=L TO CATCH BASIN
                     L=550    ft       SLP=.025    ft/ft
ROUTE                ID=4   HYD=109     INFLOW HYD ID=2   DT=.033333
PRINT HYD            ID=4   CODE=2
*S HYD 124 = SNOW VISTA JUST DOWNSTREAM FROM TOWER
*S HYD 124 = AP 6
ADD HYD              ID=3   HYD=124    ID I=4    ID II=7
PRINT HYD            ID=3   CODE=2
PLOT HYD             ID=3
* FOR ROUTING EST AVG SLOPE=.01+-: 450'@.014, 500'@.004, 400'@.0126
COMPUTE RATING CURVE CID=-1  VS NO=2   NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP= .010     FP SLP=.010     FT PER FT
                       N   END X
                     .015   30
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME  ID=4     REACH=2  NO VS=1
                     L=1350    ft       SLP=.010    ft/ft
ROUTE                ID=4     HYD=128     INFLOW HYD ID=3   DT=.033333
PRINT HYD            ID=4  CODE=1
*************************************************************************
COMPUTE NM HYD       ID=2   HYD=313   DA=0.01016  SQ MI
                     PER A=0   B=81.5 C=0    D=18.5 T=0.1333 HRS   RAIN=-1
PRINT HYD            ID=2  CODE=1
```

```
ADD HYD              ID=3   HYD=130    ID I=2      ID II=4
PRINT HYD            ID=3  CODE=1
* FOR ROUTE EST AVG SLOPE AS .012
COMPUTE RATING CURVE CID=-1  VS NO=3   NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP= .012     FP SLP=.012     FT PER FT
                       N   END X
                     .015   30
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME  ID=6     REACH=3  NO VS=1
                     L=550   ft       SLP=.012    ft/ft
*S HYD 132 = SNOW VISTA JUST ABOVE JUNCTION WITH SECTION LINE CHANNEL STUB
*S HYD 132 = AP 9
ROUTE                ID=6     HYD=132     INFLOW HYD ID=3   DT=.033333
PRINT HYD            ID=6  CODE=2
PLOT HYD             ID=6
*************************************************************************
*S
*S START SUNRISE TERRACE INTERIOR
*
*************************************************************************
COMPUTE NM HYD       ID=1   HYD=151   DA=0.010492 SQ MI
                     PER A=0   B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1  CODE=1
*************************************************************************
COMPUTE NM HYD       ID=2   HYD=152   DA=0.006309 SQ MI
                     PER A=0   B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=2  CODE=1
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=3   HYD=210    ID I=1      ID II=2
PRINT HYD            ID=3  CODE=1
*************************************************************************
COMPUTE NM HYD       ID=1   HYD=153   DA=0.007134 SQ MI
                     PER A=0   B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1  CODE=1
*S HYD 220 = 151+152+153 (BASINS 101, 102, & 103) @ HACKAMORE & SANDERLING
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=5   HYD=220    ID I=1      ID II=3
*************************************************************************
*S 401.2 (ID 8) = 'UNDERFLOW' (+-21 CFS MAX) FROM TOWER @ SANDERLING ABOVE
*S DELAY 401.2  2 MIN (1 TIME STEP) TO SIMULATE ROUTING IN 2 SEGMENTS OF ROAD
MODIFY TIME          ID=8   TIME SHIFT=0.033333 HRS   CODE=-1
PRINT HYD            ID=8  CODE=1
*S BASIN 402 = EXISTING DEVELOPMENT @ 50%=B=LANDSCAPE, 50%=D=IMPERV
*************************************************************************
COMPUTE NM HYD       ID=1   HYD=402   DA=0.015469  SQ MI
                     PER A=0  B=50   C=0    D=50    TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1  CODE=1
ADD HYD              ID=4   HYD=242    ID I=1      ID II=8
*************************************************************************
COMPUTE NM HYD       ID=2   HYD=154   DA=0.007539 SQ MI
                     PER A=0   B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=2  CODE=1
*S HYD 244 = 402+154 IN SANDPIPER AT CONNEMARA (HYD 154=BASIN 104)
ADD HYD              ID=3   HYD=244    ID I=2      ID II=4
*                      NEW      NEW        IN1          IN2
PRINT HYD            ID=3  CODE=1
*S HYD 240 = COMBINED FLOW @ HACKAMORE & SANDERLING
ADD HYD              ID=2   HYD=240    ID I=3      ID II=5
PRINT HYD            ID=2  CODE=1
*************************************************************************
COMPUTE NM HYD       ID=1   HYD=155   DA=0.004197 SQ MI
                     PER A=0   B=81.5  C=0    D=18.5 TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1  CODE=1
*S   250 = COMBINED FLOW IN HACKAMORE AT HALTER
```

```
*                    NEW      NEW        IN1          IN2
ADD HYD              ID=3   HYD=250    ID I=1       ID II=2
PRINT HYD            ID=3   CODE=1
*************************************************************************
COMPUTE NM HYD       ID=1   HYD=156   DA=0.014138 SQ MI
                     PER A=0   B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1  CODE=1
*                    NEW      NEW        IN1          IN2
ADD HYD              ID=2   HYD=260    ID I=1       ID II=3
*************************************************************************
COMPUTE NM HYD       ID=1   HYD=157   DA=0.017363 SQ MI
                     PER A=0   B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1  CODE=1
*S HYD 224 = TOTAL FLOW TO POND LOCATION
*S HYD 224 = AP 7 IN
*                    NEW      NEW        IN1          IN2
ADD HYD              ID=3   HYD=224    ID I=1       ID II=2
PRINT HYD            ID=3   CODE=2
PLOT HYD             ID=3
*S REPLACE POND WITH PIPE IN FAIR SHARE ANALYSIS - KEEP 'RESERVOIR' HYD NO.
COMPUTE RATING CURVE CID=-1  VS NO=63  NO SEGS=-1 SLP=.002  D=6 FT  N=.013
COMPUTE TRAVEL TIME  ID=4     REACH=33 NO VS=1
                     L=100  ft       SLP=.002    ft/ft
ROUTE                ID=4     HYD=503     INFLOW HYD ID=3   DT=.033333
* ((( LINES BELOW STARTING WITH * ((( FOR USE WITH POND IN PROPOSED CONDITIONS
* ((( OUTFLOW BELOW (2.55--/83.00 FOR 42-IN PIPE w Kent=0.5)
* ((( S HYD 503 = AP 7 OUT
* ((( ROUTE RESERVOIR      ID=4  HYD=503  INFLOW ID=3     CODE=2
* (((                      OUTFLOW CFS    STORAGE AC-FT   ELEVATION FT
* (((                       0.00000       0.0000           88.33
* (((                        2.80         0.0203           89
* (((                       15.55         0.2013           90
* (((                       46.30         0.9056           92
* (((                       63.25         1.6948           94
* (((                       76.95         2.5737           96
* (((                       83.00         3.0551           97
* ((( *
* ((( * OUTFLOW BELOW (2.55--/60.05) FOR 36-IN PIPE w Kent=0.5
* ((( *ROUTE RESERVOIR      ID=4  HYD=503  INFLOW ID=3     CODE=2
* ((( *                    OUTFLOW CFS    STORAGE AC-FT   ELEVATION FT
* ((( *                     0.00000       0.0000           88.33
* ((( *                      2.55         0.0203           89
* ((( *                     14.00         0.2013           90
* ((( *                     35.05         0.9056           92
* ((( *                     46.50         1.6948           94
* ((( *                     55.58         2.5737           96
* ((( *                     60.05         3.0551           97
* ((( * PRINT HYD           ID=4   CODE=2
* ((( * *S PLOT HYD FOR AP 7 IN & OUT
* ((( * PLOT HYD            ID=3   ID=4
* D = 3 OR 3.5 PROPOSED, D = 6 FT FAIR SHARE FOR FREE OUTFALL
COMPUTE RATING CURVE CID=-1  VS NO=63  NO SEGS=-1 SLP=.002  D=6 FT  N=.013
COMPUTE TRAVEL TIME  ID=3     REACH=33 NO VS=1
                     L=744  ft       SLP=.002    ft/ft
ROUTE                ID=3     HYD=266     INFLOW HYD ID=4   DT=.033333
PRINT HYD            ID=3  CODE=1
*************************************************************************
*S HYD 158 = BASIN 108, ALL ANDALUSIAN, NOT TO POND
COMPUTE NM HYD       ID=1   HYD=158   DA=0.019023 SQ MI
                     PER A=0  B=81.5  C=0    D=18.5   TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1  CODE=1
*S HYD 270 = ALL SUNRISE ONSITE INC EXISTING 402 & 401.2 (=401 UNDERFLOW)
*S BUT NOT OFFSITE VIA DUNLIN (SOUTHMOST STREET) PIPE
ADD HYD              ID=7   HYD=270    ID I=1       ID II=3
PRINT HYD            ID=7  CODE=1
```

```
#3
#S OFFSITE WEST OF SUNRISE: PER SCANLON LAYOUT EXCEPT PIPE NOT SECT LINE CHAN
*********************************************************************************
COMPUTE NM HYD       ID=1   HYD=351   DA=0.01500  SQ MI
                     PER A=0  B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1  CODE=1
COMPUTE RATING CURVE CID=1  VS NO=32  NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP=.001      FP SLP=.001     FT PER FT
                      N  END FT
                     .030  40
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       15    0       25    0       40    5
#S USE L FROM MID POINT OF BASIN TO MIDPOINT OF NEXT
COMPUTE TRAVEL TIME  ID=2     REACH=32 NO VS=1
                     L=600    ft       SLP=.001    ft/ft
ROUTE                ID=2     HYD=202     INFLOW HYD ID=1   DT=.033333
*********************************************************************************
COMPUTE NM HYD       ID=3 HYD NO=304 DA=0.02938 SQ MI
                     PER A=0  B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=3   CODE=1
ADD HYD              ID=1   HYD=203    ID I=2      ID II=3
COMPUTE RATING CURVE CID=1  VS NO=32  NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP=.001      FP SLP=.001     FT PER FT
                      N  END FT
                     .030  40
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       15    0       25    0       40    5
# USE  L FROM MID-POINT OF BASIN TO MID-POINT OF NEXT
COMPUTE TRAVEL TIME  ID=4     REACH=32 NO VS=1
                     L=400    ft       SLP=.001    ft/ft
#S HYD 206 = INTO TANAGER POND #LOCATION# FROM NORTH
ROUTE                ID=4     HYD=204     INFLOW HYD ID=1   DT=.033333
*********************************************************************************
COMPUTE NM HYD       ID=3   HYD=303   DA=0.00688  SQ MI
                     PER A=0  B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=3  CODE=1
*********************************************************************************
#3 HYD 299=COA SATELLITE: ASSUME 10 CFS CLEAN & NON-ERSOIVE; REAL 1993 0.5+-
STORE HYD            ID=2   HYD NO=299  DT=0.16667 HR   DA=.07516  SQ MI
                     FLOW RATES CFS= (LEFT TO RIGHT. DOWN, LEFT TO RIGHT ...)
                     0       .00     .00     .00     .00     .00
                     .00     10      10      10      10      10
                     10      10      10      10      10      10
                     10      10      10      10      10      10
                     10      10      10      10      10      10
                     10      10      10      10      10      10
                     10      10      10      10      10      10
                     10      10      10      10      10      10
                     10      10      10      10      10      10
                     10      10      10      10      10      10
#S HYD 205 = INTO TANAGER POND LOCATION FROM WEST (303+299 (COA SATELLITE))
#                      NEW      NEW        IN1          IN2
ADD HYD              ID=1   HYD=205    ID I=2      ID II=3
#                      NEW      NEW        IN1          IN2
#S  HYD 206 = AP 2 IN FOR FAIR SHARE AND PROPOSED
ADD HYD              ID=3   HYD=206    ID I=1      ID II=4
PLOT HYD             ID=3
COMPUTE RATING CURVE CID=-1  VS NO=33  NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP=.001      FP SLP=.001     FT PER FT
                      N  END FT
                     .030  40
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       15    0       25    0       40    5
```

```
COMPUTE TRAVEL TIME  ID=2     REACH=33 NO VS=1
                     L=350  ft       SLP=.001    ft/ft
ROUTE                ID=2     HYD=207     INFLOW HYD ID=3   DT=.033333
**************************************************************************
COMPUTE NM HYD       ID=1   HYD=302.2  DA=.07109   SQ MI
                     PER A=0  B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1   CODE=1
ADD HYD              ID=4   HYD=209    ID I=1      ID II=2
COMPUTE RATING CURVE CID=-1  VS NO=33  NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP=.001      FP SLP=.001     FT PER FT
                      N  END FT
                     .030  40
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       15    0       25    0       40    5
COMPUTE TRAVEL TIME  ID=2     REACH=33 NO VS=1
                     L=500  ft       SLP=.001    ft/ft
ROUTE                ID=2     HYD=211     INFLOW HYD ID=4   DT=.033333
**************************************************************************
* 302.1 = SOUTH END OF BASIN 302
COMPUTE NM HYD       ID=3    HYD=302.1  DA=.01031   SQ MI
                     PER A=0  B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=3    CODE=1
**************************************************************************
*S  HYD 212 = COMBINED INTO DUNLIN/ANDALUSIAN PIPE @ TANAGER
*S  HYD 212 = AP 1
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=1   HYD=212    ID I=2      ID II=3
PRINT HYD            ID=1   CODE=2
PLOT HYD             ID=1
COMPUTE RATING CURVE CID=-1  VS NO=43  NO SEGS=-1 SLP=.0375  D=4 FT  N=.013
COMPUTE TRAVEL TIME  ID=2     REACH=43 NO VS=1
                     L=1330  ft       SLP=.0375   ft/ft
ROUTE                ID=2     HYD=214     INFLOW HYD ID=1   DT=.033333
COMPUTE RATING CURVE CID=-1  VS NO=44  NO SEGS=-1 SLP=.0110  D=5 FT  N=.013
COMPUTE TRAVEL TIME  ID=3     REACH=44 NO VS=1
                     L=650t       SLP=.0110    ft/ft
ROUTE                ID=3     HYD=216     INFLOW HYD ID=2   DT=.033333
COMPUTE RATING CURVE CID=-1  VS NO=44  NO SEGS=-1 SLP=.0120  D=5.5 FT  N=.013
COMPUTE TRAVEL TIME  ID=5     REACH=44 NO VS=1
                     L=160t       SLP=.0020    ft/ft
ROUTE                ID=5     HYD=218     INFLOW HYD ID=3   DT=.033333
PRINT HYD            ID=5   CODE=2
*S
*S HYD 226 ALL THROUGH SUNRISE, BUT NOT ROUTED IN STUB CHANNEL
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=8   HYD=226    ID I=5      ID II=7
COMPUTE RATING CURVE CID=1  VS NO=45  NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP= .0316    FP SLP=.0316    FT PER FT
                      N  END FT
                     .015   30
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME  ID=5     REACH=45 NO VS=1
                     L=270    ft       SLP=.0316   ft/ft
*S HYD 228 = SUNRISE + OFFSITE CONTRIB @ JUNCT W SNOW VISTA POST ROUTE STUB
*S HYD 228 = AP 8
ROUTE                ID=5     HYD=228     INFLOW HYD ID=8   DT=.033333
PRINT HYD            ID=5     CODE=2
PLOT HYD             ID=5
*S HYD 230 = TOTAL COMBINED W SNOW VISTA
*S HYD 230 = AP 10: TO BE <= ALLOWED PER SNOW VISTA DESIGN
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=1   HYD=230    ID I=5      ID II=6
```

```
    AHYMO PROGRAM (AHYM0392) - AMAFCA VERSION OF HYMO - MARCH, 1992
         RUN DATE (MON/DAY/YR) = 06/23/1994
         START TIME (HR:MIN:SEC) = 05:02:02     USER NO.= RYALS_NM.101
         INPUT FILE = RSFAIR00

START                TIME=0.0   PUNCH CODE=0   PRINT LINES=58
                     CONTROL CODES AT START = 027 015 0 0 0
                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
                     CONTROL CODES AT END = 0 0 0 0 0
                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
* START               TIME=0.0   PUNCH CODE=0   PRINT LINES=56
*                     CONTROL CODES AT START = 027 042 048
*                     027 091 0 0   0 0 0 0 0   0 0 0 0 0 0 0 0
*                     CONTROL CODES AT END =  027 093 0 0 0
*                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
*S FILE RSFAIR00 = Revised Sunrise Fair share for currently undeveloped 100-yr
*S INCLUDES BASIN 314 POSSIBLY TO SNOW VISTA POND, USE PER SNOW VISTA DESIGN
*S NO SEDIMENT BULKING, ALL LAND TREATMENTS B=LANDSCAPE OR D=IMPERVIOUS
*S
*S START WITH ALL CURRENTLY UNDEVELOPED BASINS TO BE DEVELOPED IN FUTURE TO
*S TO 50%B & 50%D. EXCEPT BASIN 308 (80 AC) AS "COMMERCIAL" AT 20%B & 80%D.
*S THE ACTUAL LOCATION OF COMMERCIAL DEVELOPMENT WILL PROBABLY BE DIFFERENT.
*S VARY %B THE SAME FRACTION FOR ALL UNDEVELOPED BASINS BY TRIAL & ERROR UNTIL
*S Qpeak-100 BELOW JUNCTION WITH EXISTING CHANNEL INLET (I.E. AP 10) MATCHES+-
*S THAT IDENTIFIED ON THE SNOW VISTA CHANNEL AS-BUILT DRAWINGS (774 CFS).
*S
*S TOWER RD FLOW DIVIDES AT SANDERLING: UP TO 23 CFS FALLS BACK INTO SUNRISE
*S TERRACE & THE REMAINDER FLOWS TO DROP INLETS IN TOWER AT SNOW VISTA CHANNEL
*S
*S BASINS 101-108 PLAN = BASINS 151-158 IN THIS AHYMO FILE
*S REVISED 3-16-94 FOR BASIN 305 BECOMES 351 - 355
* TUCKER GREEN  2/94, 3/94
**************************************************************************
* SUNRISE TERRACE RAINFALL PER ALBUQUERQUE NM DPM, MAP L-8
* RAINFALL            TWO YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=0.73
*                     RAIN SIX=0.95      RAIN DAY=1.16     DT=.033333 HR
* RAINFALL            TEN YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.24
*                     RAIN SIX=1.47      RAIN DAY=1.79     DT=.033333 HR
*S RAINFALL            HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
*S                     RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR
RAINFALL           HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
                     RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT =    .033333 HOURS       END TIME =     5.999940 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   .0810   .0865   .0924   .1051
   .1335   .1773   .2400   .3257   .4384   .5820   .7607
   .9789  1.1808  1.2652  1.3365  1.4000  1.4577  1.5108
  1.5602  1.6063  1.6495  1.6902  1.7285  1.7648  1.7991
  1.8316  1.8624  1.8917  1.9194  1.9458  1.9519  1.9576
  1.9631  1.9683  1.9732  1.9780  1.9826  1.9870  1.9912
  1.9953  1.9993  2.0031  2.0068  2.0105  2.0140  2.0174
  2.0207  2.0240  2.0272  2.0303  2.0333  2.0363  2.0392
  2.0420  2.0448  2.0476  2.0502  2.0529  2.0554  2.0580
  2.0605  2.0629  2.0653  2.0677  2.0701  2.0724  2.0746
  2.0769  2.0791  2.0812  2.0834  2.0855  2.0876  2.0896
  2.0916  2.0936  2.0956  2.0976  2.0995  2.1014  2.1033
  2.1052  2.1070  2.1088  2.1106  2.1124  2.1142  2.1159
```

2.1292 2.1308 2.1324 2.1340 2.1355 2.1371 2.1386
2.1401 2.1416 2.1431 2.1446 2.1461 2.1475 2.1489
2.1504 2.1518 2.1532 2.1546 2.1560 2.1573 2.1587
2.1601 2.1614 2.1627 2.1641 2.1654 2.1667 2.1680
2.1693 2.1705 2.1718 2.1731 2.1743 2.1756 2.1768
2.1780 2.1793 2.1805 2.1817 2.1829 2.1841 2.1852
2.1864 2.1876 2.1887 2.1899 2.1911 2.1922 2.1933
2.1945 2.1956 2.1967 2.1978 2.1989 2.2000

****

COMPUTE NM HYD ID=1 HYD NO=308 DA=0.12500 SQ MI
PER A=0 B=32.6 C=0 D=67.4 TP=-0.13333 HRS RAIN=-1

K = .073725HR TP = .133330HR K/TP RATIO = .552954 SHAPE CONSTANT, N = 6.975974
UNIT PEAK = 328.66 CFS UNIT VOLUME = .9994 B = 520.11 P60 = 1.8700
AREA = .084250 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .128052HR TP = .133330HR K/TP RATIO = .960411 SHAPE CONSTANT, N = 3.678914
UNIT PEAK = 101.83 CFS UNIT VOLUME = 1.000 B = 333.16 P60 = 1.8700
AREA = .040750 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

HYDROGRAPH FROM AREA 308.00

RUNOFF VOLUME = 1.54229 INCHES = 10.2819 ACRE-FEET
PEAK DISCHARGE RATE = 287.77 CFS AT 1.500 HOURS BASIN AREA = .1250 SQ. MI.

* CODES: 0=ALL; 1=TOTALS ONLY; 2=EVERY 2ND + TOTALS; SIMILARLY 3, 5, 10, 20
COMPUTE RATING CURVE CID=-1 VS NO=35 NO SEGS=3
MIN EL=0 FT MAX EL=2 FT
CH SLP=.0256 FP SLP= .0256
MANNING N END DIST
.040 6 .030 26 .040 32
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
0 2 6 0 26 0 32 2
COMPUTE TRAVEL TIME ID=2 REACH=35 NO VS=1
L= 2500 ft SLP=0.02560 ft per ft

TRAVEL TIME TABLE
REACH= 35.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.105	2.139	3.75	.3964
.211	4.343	11.98	.2518
.316	6.615	23.71	.1937
.421	8.953	38.57	.1612
.526	11.357	56.34	.1400
.632	13.828	76.88	.1249
.737	16.366	100.08	.1136
.842	18.970	125.89	.1046
.947	21.640	154.24	.0974
1.053	24.377	185.09	.0915
1.158	27.180	218.41	.0864
1.263	30.050	254.18	.0821
1.368	32.986	292.38	.0783
1.474	35.989	333.00	.0751

1.684	42.194	421.45	.0695
1.789	45.396	469.27	.0672
1.895	48.665	519.48	.0651
2.000	52.000	572.09	.0631

ROUTE ID=2 HYD=100 INFLOW HYD ID=1 DT=.033333 hr
PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 100.00

RUNOFF VOLUME = 1.54229 INCHES = 10.2819 ACRE-FEET
PEAK DISCHARGE RATE = 246.74 CFS AT 1.567 HOURS BASIN AREA = .1250 SQ. MI.

****
COMPUTE NM HYD ID=3 HYD=309 DA=.07575 SQ MI
PER A=0 B=81.5 C=0 D=18.5 TP=0.13333 HRS RAIN=-1

K = .072690HR TP = .133330HR K/TP RATIO = .546686 SHAPE CONSTANT, N = 7.078345
UNIT PEAK = 55.176 CFS UNIT VOLUME = .9991 B = 524.96 P60 = 1.8700
AREA = .014014 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .130392HR TP = .133330HR K/TP RATIO = .977963 SHAPE CONSTANT, N = 3.611161
UNIT PEAK = 152.04 CFS UNIT VOLUME = 1.000 B = 328.35 P60 = 1.8700
AREA = .061736 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=3 CODE=1

HYDROGRAPH FROM AREA 309.00

RUNOFF VOLUME = .90752 INCHES = 3.6664 ACRE-FEET
PEAK DISCHARGE RATE = 119.17 CFS AT 1.500 HOURS BASIN AREA = .0758 SQ. MI.

*S HYD 102 = (309+ROUTED 308) CROSSING 106TH BTW EUCARIZ & SUNSET GARDEN
*S HYD 102 = AP 4
* NEW NEW IN1 IN2
ADD HYD ID=1 HYD=102 ID I=2 ID II=3
PRINT HYD ID=1 CODE=2

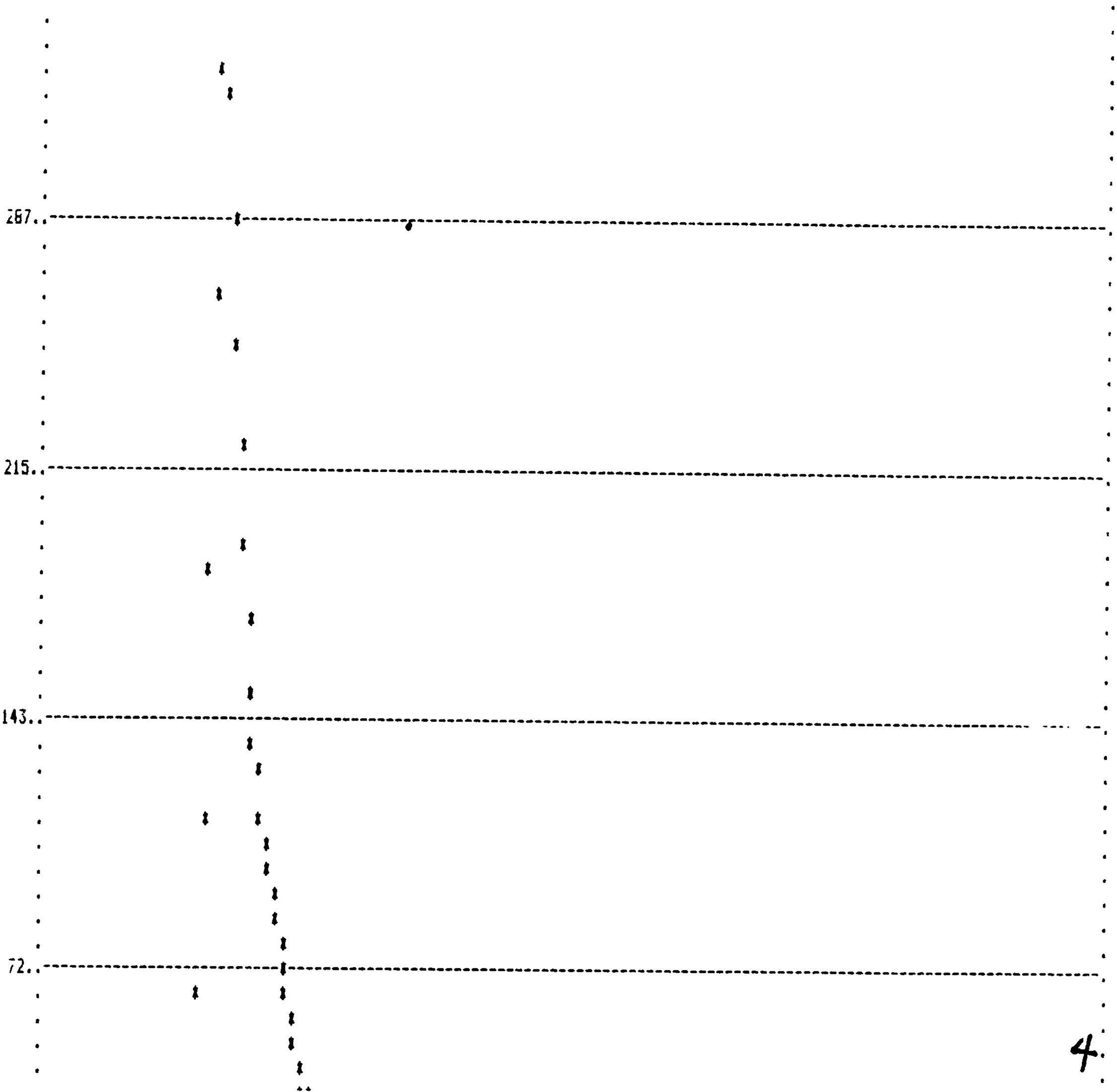
PARTIAL HYDROGRAPH 102.00

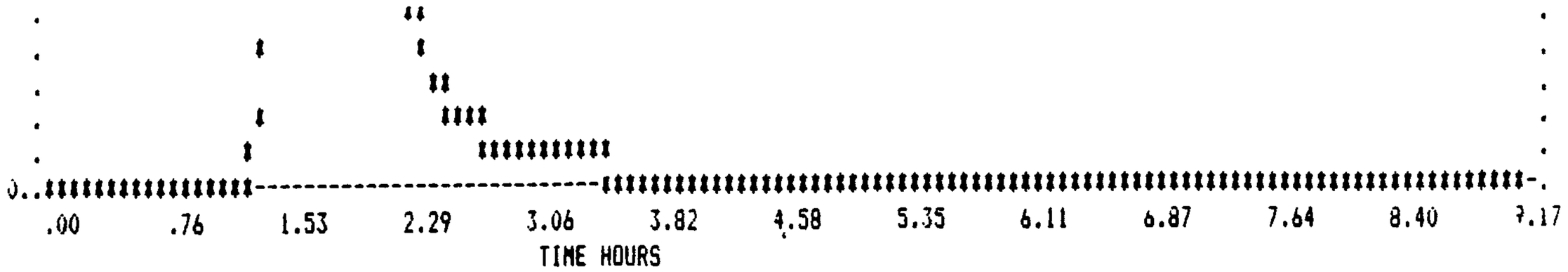
TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.867	125.6	3.733	2.7	5.600	1.7	7.467	.1
.067	.0	1.933	106.6	3.800	2.6	5.667	1.8	7.533	.1
.133	.0	2.000	92.4	3.867	2.4	5.733	1.8	7.600	.1
.200	.0	2.067	80.2	3.933	2.3	5.800	1.8	7.667	.0
.267	.0	2.133	64.1	4.000	2.2	5.867	1.8	7.733	.0
.333	.0	2.200	48.0	4.067	2.1	5.933	1.9	7.800	.0
.400	.0	2.267	36.5	4.133	2.0	6.000	1.9	7.867	.0
.467	.0	2.333	29.4	4.200	2.0	6.067	1.9	7.933	.0
.533	.0	2.400	24.1	4.267	1.9	6.133	1.7	8.000	.0
.600	.0	2.467	19.6	4.333	1.9	6.200	1.5	8.067	.0
.667	.0	2.533	16.4	4.400	1.8	6.267	1.3	8.133	.0
.733	.0	2.600	14.0	4.467	1.8	6.333	1.1	8.200	.0
.800	.0	2.667	11.9	4.533	1.7	6.400	1.0	8.267	.0
.867	.0	2.733	10.3	4.600	1.7	6.467	.8	8.333	.0
.933	.0	2.800	9.1	4.667	1.7	6.533	.7	8.400	.0

1.067	.0	2.933	7.3	4.800	1.7	6.667	.5	8.533	.0
1.133	.0	3.000	6.6	4.867	1.6	6.733	.5	8.600	.0
1.200	.9	3.067	6.0	4.933	1.6	6.800	.4	8.667	.0
1.267	8.0	3.133	5.4	5.000	1.6	6.867	.3	8.733	.0
1.333	31.7	3.200	5.0	5.067	1.6	6.933	.3	8.800	.0
1.400	115.2	3.267	4.5	5.133	1.7	7.000	.2	8.867	.0
1.467	264.1	3.333	4.2	5.200	1.7	7.067	.2	8.933	.0
1.533	358.2	3.400	3.9	5.267	1.7	7.133	.2	9.000	.0
1.600	323.5	3.467	3.6	5.333	1.7	7.200	.1	9.067	.0
1.667	251.3	3.533	3.3	5.400	1.7	7.267	.1	9.133	.0
1.733	193.8	3.600	3.1	5.467	1.7	7.333	.1		
1.800	153.4	3.667	2.9	5.533	1.7	7.400	.1		

RUNOFF VOLUME = 1.30277 INCHES = 13.9482 ACRE-FEET
PEAK DISCHARGE RATE = 358.25 CFS AT 1.533 HOURS BASIN AREA = .2008 SQ. MI.

PLOT HYD ID=1





COMPUTE RATING CURVE CID=-1 VS NO=36 NO SEGS=1
MIN EL=0 FT MAX EL=1 FT
CH SLP= .02558 FP SLP=.02558 FT PER FT
N END X
.035 122
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
0 1 1 0 121 0 122 1
COMPUTE TRAVEL TIME ID=4 REACH=36 NO VS=1
L=860 ft SLP=.02558 ft/ft

TRAVEL TIME TABLE
REACH= 36.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.053	6.319	6.02	.2506
.105	12.643	19.12	.1580
.158	18.972	37.58	.1206
.211	25.307	60.69	.0996
.263	31.648	88.02	.0859
.316	37.994	119.26	.0761
.368	44.346	154.18	.0687
.421	50.704	192.60	.0629
.474	57.066	234.35	.0582
.526	63.435	279.31	.0543
.579	69.809	327.37	.0509
.632	76.188	378.43	.0481
.684	82.573	432.40	.0456
.737	88.964	489.20	.0434
.789	95.360	548.76	.0415
.842	101.762	611.03	.0398
.895	108.169	675.94	.0382
.947	114.582	743.44	.0368
1.000	121.000	813.47	.0355

ROUTE ID=4 HYD=104 INFLOW HYD ID=1 DT=.03333
COMPUTE RATING CURVE CID=-1 VS NO=37 NO SEGS=3
MIN EL=0 FT MAX EL=5 FT
CH SLP=.02432 FP SLP=.02432 FT PER FT
N END X
.040 15 .025 20 .040 50
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
0 5 15 0 30 0 50 5
COMPUTE TRAVEL TIME ID=2 REACH=1 NO VS=1
L=740 ft SLP=.02432 ft/ft

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	4.190	15.38	.0560
.526	8.864	49.95	.0365
.789	14.024	100.39	.0287

```
                                1.316     25.796     245.54      .0216
                                1.579     32.410     339.74      .0196
                                1.842     39.508     448.32      .0181
                                2.105     47.091     571.40      .0169
                                2.368     55.159     709.10      .0160
                                2.632     63.712     861.65      .0152
                                2.895     72.749    1029.24      .0145
                                3.158     82.271    1212.11      .0140
                                3.421     92.278    1410.52      .0134
                                3.684    102.770    1624.72      .0130
                                3.947    113.747    1854.98      .0126
                                4.211    125.208    2101.58      .0122
                                4.474    137.154    2364.78      .0119
                                4.737    149.584    2644.87      .0116
                                5.000    162.500    2942.14      .0114
ROUTE                 ID=2     HYD=106     INFLOW HYD ID=4   DT=.033333
*************************************************************************
COMPUTE NM HYD        ID=4   HYD=314   DA=0.05469  SQ MI
                      PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   39.945    CFS   UNIT VOLUME =    .9991       B =   526.28      P60 = 1.8700
    AREA =      .010118 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

    k =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =   109.37    CFS   UNIT VOLUME =    1.000       B =   327.09      P60 = 1.8700
    AREA =      .044572 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD             ID=4   CODE=1

                                HYDROGRAPH FROM AREA   314.00

    RUNOFF VOLUME =      .90752 INCHES     =       2.6471 ACRE-FEET
    PEAK DISCHARGE RATE =     85.90 CFS  AT   1.500 HOURS   BASIN AREA =   .0547 SQ. MI.

*************************************************************************
COMPUTE NM HYD        ID=3   HYD=310   DA=0.02922  SQ MI
                      PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   21.342    CFS   UNIT VOLUME =    .9989       B =   526.28      P60 = 1.8700
    AREA =      .005406 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

    k =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =   58.435    CFS   UNIT VOLUME =    1.000       B =   327.09      P60 = 1.8700
    AREA =      .023814 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD             ID=3   CODE=1

                                HYDROGRAPH FROM AREA   310.00

    RUNOFF VOLUME =      .90752 INCHES     =       1.4143 ACRE-FEET
    PEAK DISCHARGE RATE =     45.90 CFS  AT   1.500 HOURS   BASIN AREA =   .0292 SQ. MI.
```

```
*S HYD 117 = 310+314 (THE "EXTRA" 35 AC), BOTH EAST OF 106TH, TO DESILT BASIN
*                    NEW      NEW        IN1          IN2
ADD HYD              ID=1   HYD=117    ID I=3       ID II=4
ADD HYD              ID=7   HYD=118    ID I=1       ID II=2
*S START NEW BRANCH
*********************************************************************************
COMPUTE NM HYD       ID=2   HYD=306   DA=0.03969  SQ MI
                     PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1

    k =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   28.989    CFS   UNIT VOLUME =    .9990       B =   526.28      P60 = 1.8700
    AREA =      .007343 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =   79.373    CFS   UNIT VOLUME =    1.000       B =   327.09      P60 = 1.8700
    AREA =      .032347 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=2   CODE=1

                                HYDROGRAPH FROM AREA   306.00

    RUNOFF VOLUME =      .90752 INCHES     =       1.9210 ACRE-FEET
    PEAK DISCHARGE RATE =     62.35 CFS  AT   1.500 HOURS   BASIN AREA =   .0397 SQ. MI.


COMPUTE RATING CURVE CID=-1  VS NO=34  NO SEGS=3
                     MIN EL=0    FT   MAX EL=6    FT
                     CH SLP=.0310     FP SLP=.0310    FT PER FT
                       N   END X
                     .04     18    .03   32      .04   50
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     6       18    0       32    0       50    6
COMPUTE TRAVEL TIME  ID=3     REACH=1  NO VS= 1
                     L= 2320  ft       SLP=.0310   ft/ft

                              TRAVEL TIME TABLE
                                            REACH=  1.0

                              WATER       AVERAGE     FLOW        TRAVEL
                              DEPTH       AREA        RATE        TIME
                              FEET        SQ.FT.      CFS         HRS
                                .316        4.720       18.43       .1650
                                .632       10.039       60.27       .1073
                                .947       15.956      121.91       .0843
                               1.263       22.471      202.47       .0715
                               1.579       29.584      301.75       .0632
                               1.895       37.296      419.84       .0572
                               2.211       45.607      556.97       .0528
                               2.526       54.515      713.46       .0492
                               2.842       64.022      889.70       .0464
                               3.158       74.127     1086.10       .0440
                               3.474       84.831     1303.12       .0420
                               3.789       96.133     1541.20       .0402
                               4.105      108.033     1800.82       .0387
                               4.421      120.532     2082.45       .0373
                               4.737      133.629     2386.57       .0361
                               5.053      147.324     2713.67       .0350
                               5.368      161.618     3064.23       .0340
                               5.684      176.510     3438.73       .0331
                               6.000      192.000     3837.66       .0322
```

```
**********************************************************************
COMPUTE NM HYD       ID=4   HYD=307   DA=0.04547  SQ MI
                     PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   33.211    CFS   UNIT VOLUME =    .9990       B =   526.28      P60 = 1.8700
    AREA =      .008412 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =   90.932    CFS   UNIT VOLUME =    1.000       B =   327.09      P60 = 1.8700
    AREA =      .037058 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=4   CODE=1

                                HYDROGRAPH FROM AREA   307.00


    RUNOFF VOLUME =      .90752 INCHES     =       2.2008 ACRE-FEET
    PEAK DISCHARGE RATE =      71.42 CFS  AT   1.500 HOURS   BASIN AREA =   .0455 SQ. MI.
```

```
*                     NEW      NEW        IN1          IN2
ADD HYD              ID=2   HYD=112    ID I=3      ID II=4
**********************************************************************
COMPUTE NM HYD       ID=1   HYD=352   DA=0.03141  SQ MI
                     PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   22.942    CFS   UNIT VOLUME =    .9989       B =   526.28      P60 = 1.8700
    AREA =      .005811 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =   62.814    CFS   UNIT VOLUME =    1.000       B =   327.09      P60 = 1.8700
    AREA =      .025599 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1   CODE=1

                                HYDROGRAPH FROM AREA   352.00


    RUNOFF VOLUME =      .90752 INCHES     =       1.5203 ACRE-FEET
    PEAK DISCHARGE RATE =      49.34 CFS  AT   1.500 HOURS   BASIN AREA =   .0314 SQ. MI.


COMPUTE RATING CURVE CID=-1  VS NO=38   NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP= .028     FP SLP=.028     FT PER FT
                       N   END X
                     .015   30
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME  ID=3     REACH=2  NO VS=1
                     L=1100   ft       SLP=.028    ft/ft

                              TRAVEL TIME TABLE
                                          REACH=  2.0
```

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	2.770	18.12	.0467
.526	5.817	58.37	.0305
.789	9.141	116.67	.0239
1.053	12.742	191.97	.0203
1.316	16.620	283.97	.0179
1.579	20.776	392.73	.0162
1.842	25.208	518.49	.0149
2.105	29.917	661.62	.0138
2.368	34.903	822.52	.0130
2.632	40.166	1001.66	.0123
2.895	45.706	1199.50	.0116
3.158	51.524	1416.56	.0111
3.421	57.618	1653.34	.0106
3.684	63.989	1910.34	.0102
3.947	70.637	2188.09	.0099
4.211	77.562	2487.11	.0095
4.474	84.765	2807.92	.0092
4.737	92.244	3151.01	.0089
5.000	100.000	3516.92	.0087

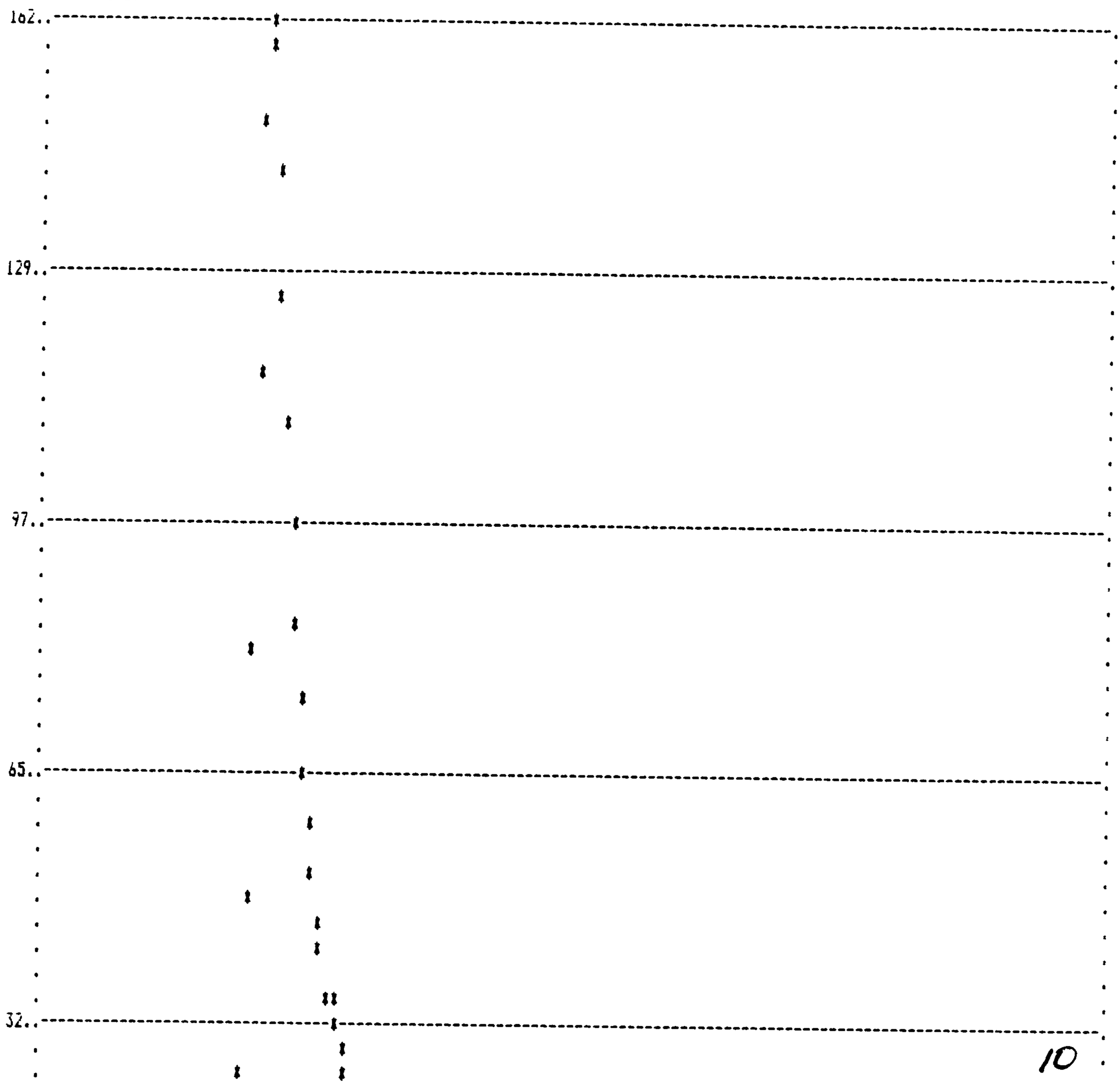
```
ROUTE              ID=3    HYD=111     INFLOW HYD ID=1   DT=.033333
ADD HYD            ID=4   HYD=113    ID I=2      ID II=3
**************************************************************************
COMPUTE NM HYD     ID=1   HYD=353   DA=0.00172  SQ MI
                   PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1

   K =  .072649HR    TP =  .133300HR    K/TP RATIO =  .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =  1.2563    CFS   UNIT VOLUME =    .9897       B =  526.28      P60 = 1.8700
   AREA =      .000318 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


   K =  .130992HR    TP =  .133300HR    K/TP RATIO =  .982685     SHAPE CONSTANT, N =  3.593448
   UNIT PEAK =  3.4397    CFS   UNIT VOLUME =    .9964       B =  327.09      P60 = 1.8700
   AREA =      .001402 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD          ID=1   CODE=1

                                HYDROGRAPH FROM AREA   353.00

   RUNOFF VOLUME =      .90752 INCHES     =        .0832 ACRE-FEET
   PEAK DISCHARGE RATE =      2.72 CFS  AT   1.500 HOURS   BASIN AREA =   .0017 SQ. MI.


$S HYD 114 = AP 3 AT 106th ST
$                    NEW      NEW        IN1         IN2
ADD HYD            ID=3   HYD=114      ID I=1      ID II=4
PRINT HYD          ID=3   CODE=2

                              PARTIAL HYDROGRAPH   114.00
```

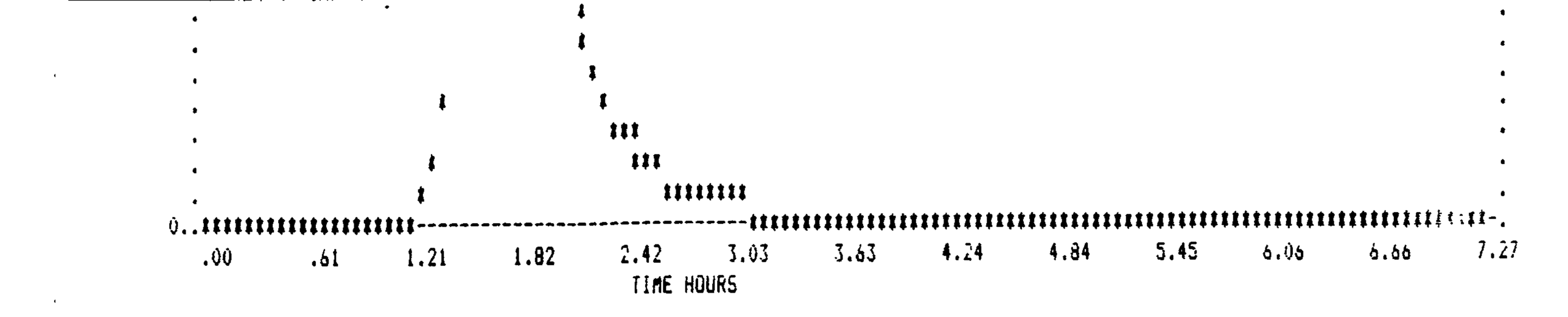
TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.467	117.2	2.933	2.3	4.400	.4	5.867	.4
.067	.0	1.533	161.5	3.000	1.9	4.467	.4	5.933	.4
.133	.0	1.600	143.6	3.067	1.7	4.533	.4	6.000	.4
.200	.0	1.667	110.9	3.133	1.4	4.600	.4	6.067	.4
.267	.0	1.733	84.3	3.200	1.3	4.667	.4	6.133	.3
.333	.0	1.800	64.3	3.267	1.1	4.733	.4	6.200	.2
.400	.0	1.867	50.3	3.333	1.0	4.800	.4	6.267	.1

.533	.0	2.000	34.0	3.467	.8	4.933	.4	6.400	.1
.600	.0	2.067	28.6	3.533	.7	5.000	.4	6.467	.1
.667	.0	2.133	22.8	3.600	.7	5.067	.4	6.533	.0
.733	.0	2.200	17.6	3.667	.6	5.133	.4	6.600	.0
.800	.0	2.267	13.9	3.733	.6	5.200	.4	6.667	.0
.867	.0	2.333	11.2	3.800	.5	5.267	.4	6.733	.0
.933	.0	2.400	9.1	3.867	.5	5.333	.4	6.800	.0
1.000	.0	2.467	7.5	3.933	.5	5.400	.4	6.867	.0
1.067	.0	2.533	6.2	4.000	.5	5.467	.4	6.933	.0
1.133	.0	2.600	5.2	4.067	.4	5.533	.4	7.000	.0
1.200	.6	2.667	4.4	4.133	.4	5.600	.4	7.067	.0
1.267	4.4	2.733	3.7	4.200	.4	5.667	.4	7.133	.0
1.333	13.7	2.800	3.1	4.267	.4	5.733	.4	7.200	.0
1.400	47.8	2.867	2.6	4.333	.4	5.800	.4	7.267	.0

RUNOFF VOLUME = .90752 INCHES = 5.7253 ACRE-FEET
PEAK DISCHARGE RATE = 161.53 CFS AT 1.533 HOURS BASIN AREA = .1183 SQ. MI.

PLOT HYD ID=3





COMPUTE RATING CURVE CID=-1 VS NO=38 NO SEGS=1
MIN EL=0 FT MAX EL=5 FT
CH SLP=.0250 FP SLP=.0250 FT PER FT
N END X
.015 30
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
0 5 10 0 20 0 30 5
COMPUTE TRAVEL TIME ID=4 REACH=38 NO VS=1
L=1200 ft SLP=.0250 ft/ft

TRAVEL TIME TABLE

REACH= 38.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	2.770	17.12	.0539
.526	5.817	55.15	.0352
.789	9.141	110.25	.0276
1.053	12.742	181.39	.0234
1.316	16.620	268.32	.0206
1.579	20.776	371.09	.0187
1.842	25.208	489.93	.0172
2.105	29.917	625.17	.0160
2.368	34.903	777.21	.0150
2.632	40.166	946.48	.0141
2.895	45.706	1133.42	.0134
3.158	51.524	1338.52	.0128
3.421	57.618	1562.25	.0123
3.684	63.989	1805.10	.0118
3.947	70.637	2067.56	.0114
4.211	77.562	2350.10	.0110
4.474	84.765	2653.23	.0106
4.737	92.244	2977.43	.0103
5.000	100.000	3323.18	.0100

ROUTE ID=4 HYD=116 INFLOW HYD ID=3 DT=.033333
ADD HYD ID=3 HYD=119.1 ID I=4 ID II=7
****
COMPUTE NM HYD ID=1 HYD=315 DA=0.01234 SQ MI
PER A=0 B=81.5 C=0 D=18.5 TP=0.1333 HRS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 9.0130 CFS UNIT VOLUME = .9981 B = 526.28 P60 = 1.8700
AREA = .002283 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 24.678 CFS UNIT VOLUME = .9998 B = 327.09 P60 = 1.8700
AREA = .010057 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

//

HYDROGRAPH FROM AREA 315.00

RUNOFF VOLUME = .90752 INCHES = .5973 ACRE-FEET
PEAK DISCHARGE RATE = 19.40 CFS AT 1.500 HOURS BASIN AREA = .0123 SQ. MI.

```
*S HYD 119 = COMBINED FLOW INTO SNOW VISTA DESILT BASIN
*S HYD 119 = AP 5 IN
*                    NEW      NEW        IN1          IN2
ADD HYD             ID=5   HYD=119    ID I=1       ID I=3
PRINT HYD           ID=5   CODE=2
```

PARTIAL HYDROGRAPH 119.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.933	193.6	3.867	4.3	5.800	2.5	7.733	.1
.067	.0	2.000	165.3	3.933	4.1	5.867	2.5	7.800	.1
.133	.0	2.067	142.2	4.000	3.8	5.933	2.5	7.867	.1
.200	.0	2.133	118.8	4.067	3.6	6.000	2.6	7.933	.1
.267	.0	2.200	95.9	4.133	3.4	6.067	2.6	8.000	.1
.333	.0	2.267	76.5	4.200	3.3	6.133	2.4	8.067	.0
.400	.0	2.333	60.0	4.267	3.1	6.200	2.2	8.133	.0
.467	.0	2.400	49.4	4.333	3.0	6.267	2.0	8.200	.0
.533	.0	2.467	41.4	4.400	2.9	6.333	1.8	8.267	.0
.600	.0	2.533	34.8	4.467	2.8	6.400	1.7	8.333	.0
.667	.0	2.600	29.3	4.533	2.7	6.467	1.5	8.400	.0
.733	.0	2.667	24.8	4.600	2.6	6.533	1.4	8.467	.0
.800	.0	2.733	21.2	4.667	2.6	6.600	1.2	8.533	.0
.867	.0	2.800	18.5	4.733	2.5	6.667	1.1	8.600	.0
.933	.0	2.867	16.3	4.800	2.5	6.733	1.0	8.667	.0
1.000	.0	2.933	14.5	4.867	2.4	6.800	.9	8.733	.0
1.067	.0	3.000	12.9	4.933	2.4	6.867	.8	8.800	.0
1.133	.0	3.067	11.6	5.000	2.4	6.933	.7	8.867	.0
1.200	1.1	3.133	10.5	5.067	2.4	7.000	.6	8.933	.0
1.267	8.2	3.200	9.6	5.133	2.4	7.067	.5	9.000	.0
1.333	27.2	3.267	8.7	5.200	2.4	7.133	.4	9.067	.0
1.400	104.3	3.333	8.0	5.267	2.4	7.200	.4	9.133	.0
1.467	338.5	3.400	7.3	5.333	2.4	7.267	.3	9.200	.0
1.533	587.7	3.467	6.8	5.400	2.4	7.333	.3	9.267	.0
1.600	611.4	3.533	6.2	5.467	2.4	7.400	.2	9.333	.0
1.667	499.1	3.600	5.8	5.533	2.4	7.467	.2	9.400	.0
1.733	384.1	3.667	5.4	5.600	2.4	7.533	.2	9.467	.0
1.800	297.8	3.733	5.0	5.667	2.4	7.600	.2	9.533	.0
1.867	236.4	3.800	4.7	5.733	2.5	7.667	.1	9.600	.0

RUNOFF VOLUME = 1.09858 INCHES = 24.3320 ACRE-FEET
PEAK DISCHARGE RATE = 628.19 CFS AT 1.567 HOURS BASIN AREA = .4153 SQ. MI.

```
**********************************************************************************
*S HYD 501 = ROUTED OUFLOW FROM SNOW VISTA DESILTING BASIN
*S HYD 501 = AP 5 OUT
ROUTE RESERVOIR      ID=3   HYD=501   INFLOW ID=5   CODE=2
                     CFS OUT    VOL AC-FT   ELEV FT
                     0.          0.         11.05
                     14.35       0.6598     11.55
                     41.46       1.3245     12.05
                     122.4       2.6904     13.05
                     234.7       4.1343     14.05
                     365.8       5.6928     15.05
                     527.6       7.4074     16.05
```

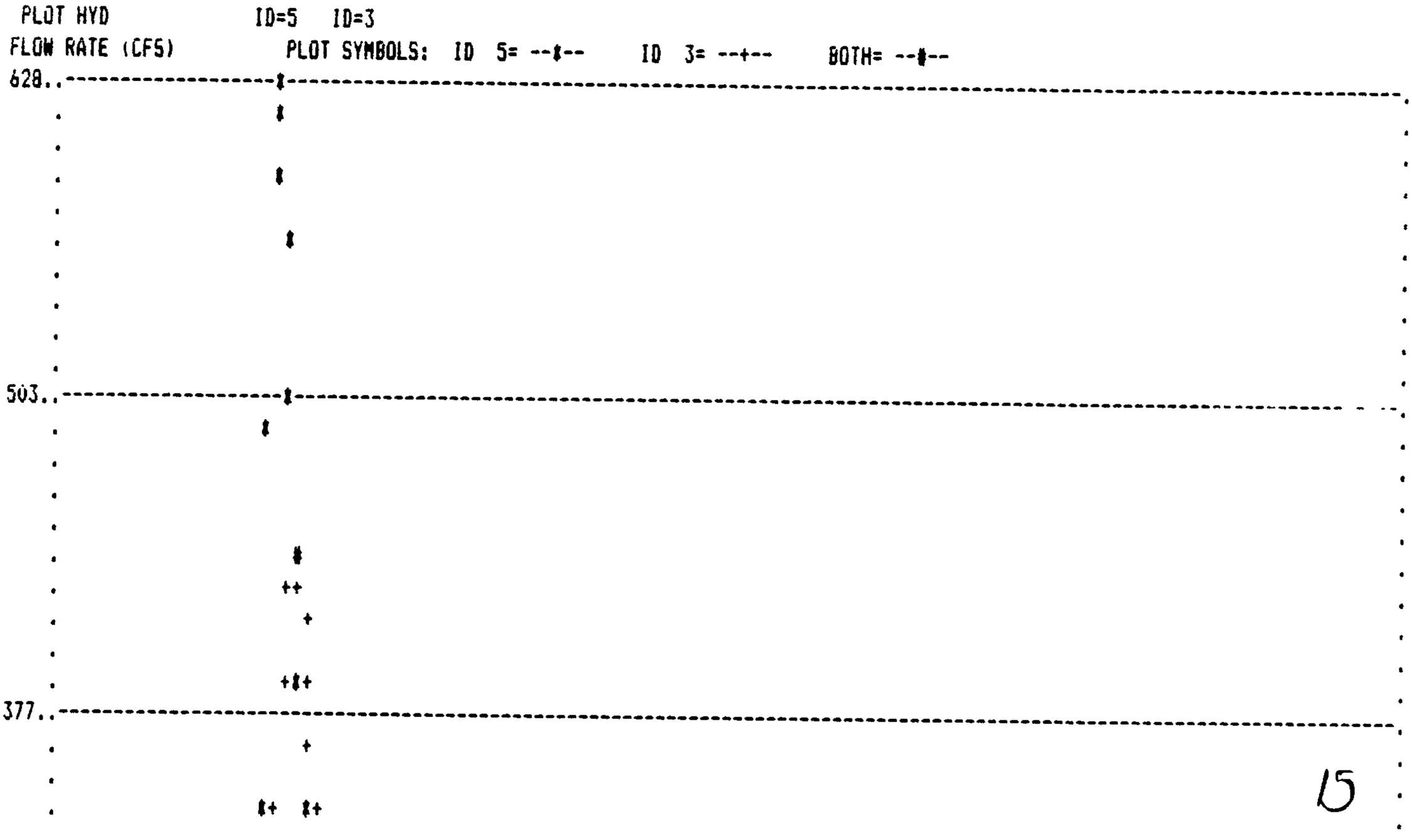
TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	11.05	.000	.00
.07	.00	11.05	.000	.00
.13	.00	11.05	.000	.00
.20	.00	11.05	.000	.00
.27	.00	11.05	.000	.00
.33	.00	11.05	.000	.00
.40	.00	11.05	.000	.00
.47	.00	11.05	.000	.00
.53	.00	11.05	.000	.00
.60	.00	11.05	.000	.00
.67	.00	11.05	.000	.00
.73	.00	11.05	.000	.00
.80	.00	11.05	.000	.00
.87	.00	11.05	.000	.00
.93	.00	11.05	.000	.00
1.00	.00	11.05	.000	.00
1.07	.00	11.05	.000	.00
1.13	.01	11.05	.000	.00
1.20	1.09	11.05	.002	.04
1.27	8.21	11.07	.023	.51
1.33	27.20	11.13	.107	2.32
1.40	104.32	11.36	.406	8.83
1.47	338.45	12.13	1.429	47.65
1.53	587.68	13.57	3.442	180.84
1.60	811.40	14.85	5.376	339.15
1.67	499.11	15.41	6.315	424.51
1.73	384.10	15.44	6.367	429.41
1.80	297.77	15.21	5.964	391.43
1.87	236.36	14.87	5.411	342.10
1.93	193.57	14.50	4.837	293.83
2.00	165.30	14.17	4.325	250.75
2.07	142.23	13.88	3.890	215.72
2.13	118.84	13.61	3.505	185.73
2.20	95.94	13.37	3.149	158.08
2.27	76.45	13.14	2.823	132.69
2.33	60.05	12.93	2.525	112.60
2.40	49.40	12.73	2.250	96.32
2.47	41.43	12.55	2.009	82.03
2.53	34.82	12.40	1.802	69.73
2.60	29.30	12.27	1.623	59.16
2.67	24.75	12.16	1.471	50.15
2.73	21.25	12.06	1.343	42.54
2.80	18.54	11.98	1.232	37.68
2.87	16.31	11.90	1.131	33.58
2.93	14.47	11.84	1.041	29.91
3.00	12.93	11.78	.961	26.64
3.07	11.61	11.72	.890	23.74
3.13	10.50	11.68	.827	21.18
3.20	9.55	11.63	.772	18.93
3.27	8.72	11.60	.724	16.95
3.33	7.98	11.57	.681	15.22
3.40	7.33	11.54	.643	13.99
3.47	6.76	11.51	.607	13.20
3.53	6.24	11.48	.572	12.45
3.60	5.77	11.46	.539	11.72
3.67	5.36	11.43	.507	11.02
3.73	4.99	11.41	.476	10.36
3.80	4.65	11.39	.448	9.73
3.87	4.35	11.37	.420	9.14

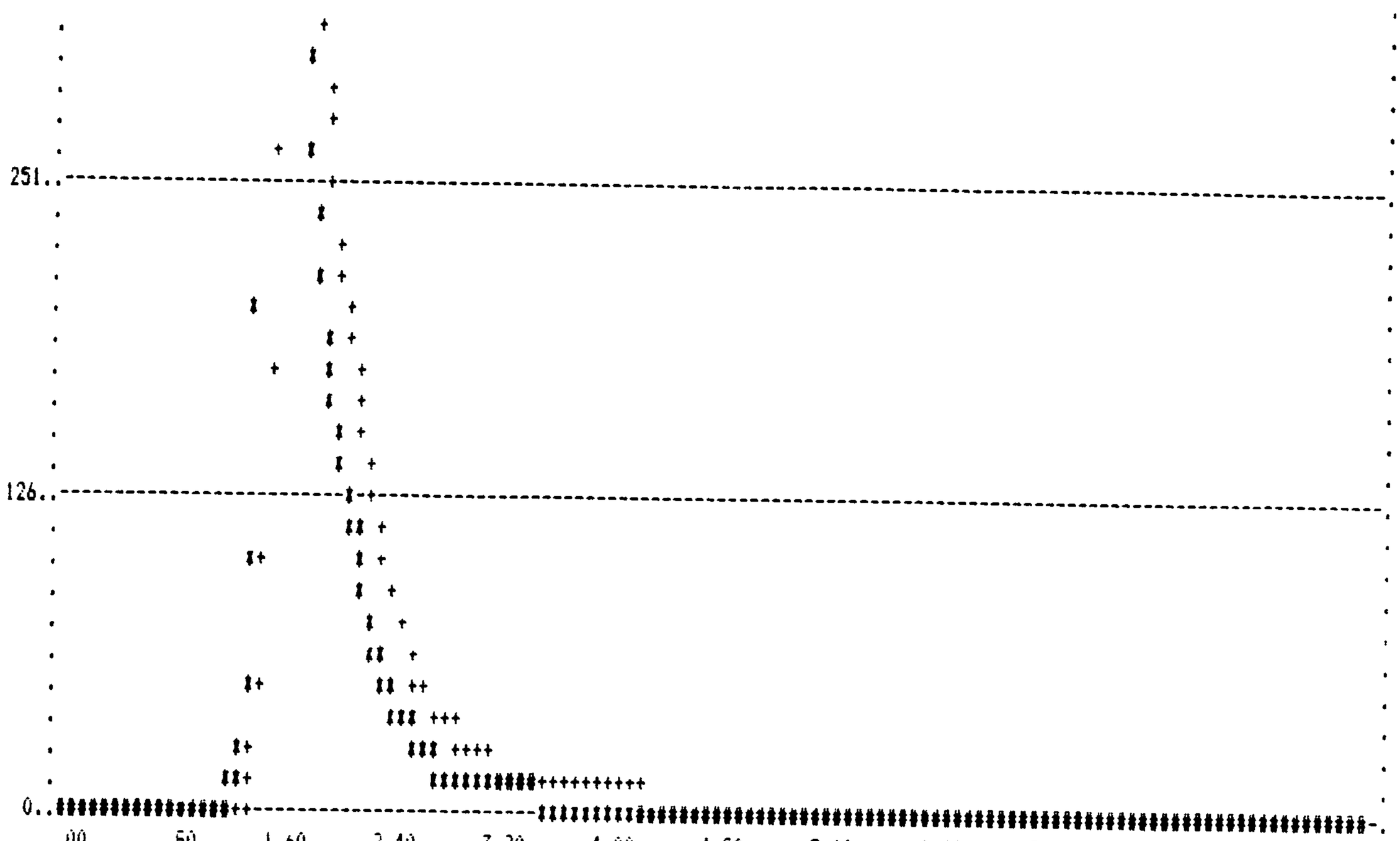
4.00	3.84	11.33	.371	8.06
4.07	3.62	11.31	.348	7.57
4.13	3.43	11.30	.327	7.11
4.20	3.27	11.28	.308	6.69
4.27	3.12	11.27	.289	6.29
4.33	2.99	11.26	.273	5.93
4.40	2.88	11.24	.257	5.59
4.47	2.78	11.23	.243	5.28
4.53	2.69	11.22	.229	4.99
4.60	2.62	11.21	.217	4.73
4.67	2.55	11.21	.206	4.48
4.73	2.50	11.20	.196	4.26
4.80	2.46	11.19	.187	4.06
4.87	2.43	11.19	.178	3.88
4.93	2.40	11.18	.171	3.71
5.00	2.38	11.17	.164	3.56
5.07	2.37	11.17	.158	3.43
5.13	2.36	11.17	.152	3.31
5.20	2.36	11.16	.147	3.20
5.27	2.36	11.16	.143	3.11
5.33	2.36	11.16	.139	3.02
5.40	2.37	11.15	.136	2.95
5.47	2.38	11.15	.133	2.88
5.53	2.40	11.15	.130	2.83
5.60	2.42	11.15	.128	2.78
5.67	2.43	11.15	.126	2.74
5.73	2.46	11.14	.124	2.71
5.80	2.49	11.14	.123	2.68
5.87	2.51	11.14	.122	2.66
5.93	2.55	11.14	.122	2.65
6.00	2.58	11.14	.121	2.64
6.07	2.58	11.14	.121	2.63
6.13	2.41	11.14	.120	2.62
6.20	2.20	11.14	.119	2.58
6.27	2.01	11.14	.116	2.53
6.33	1.84	11.14	.113	2.46
6.40	1.68	11.13	.109	2.38
6.47	1.52	11.13	.105	2.29
6.53	1.37	11.13	.101	2.19
6.60	1.23	11.12	.096	2.09
6.67	1.10	11.12	.091	1.99
6.73	.97	11.12	.086	1.88
6.80	.86	11.11	.081	1.77
6.87	.75	11.11	.076	1.66
6.93	.66	11.10	.071	1.55
7.00	.57	11.10	.067	1.45
7.07	.50	11.10	.062	1.34
7.13	.43	11.09	.057	1.24
7.20	.37	11.09	.053	1.15
7.27	.32	11.09	.049	1.06
7.33	.28	11.08	.045	.97
7.40	.24	11.08	.041	.89
7.47	.21	11.08	.038	.82
7.53	.18	11.08	.034	.75
7.60	.15	11.07	.031	.68
7.67	.13	11.07	.028	.62
7.73	.11	11.07	.026	.56
7.80	.09	11.07	.023	.51
7.87	.08	11.07	.021	.46
7.93	.07	11.06	.019	.42
8.00	.06	11.06	.017	.38
8.07	.05	11.06	.016	.34
8.13	.04	11.06	.014	.31
8.20	.04	11.06	.013	.28
8.27	.03	11.06	.012	.25

8.40	.02	11.06	.009	.20
8.47	.02	11.06	.008	.18
8.53	.02	11.06	.008	.16
8.60	.01	11.06	.007	.15
8.67	.01	11.05	.006	.13
8.73	.01	11.05	.005	.12
8.80	.01	11.05	.005	.11
8.87	.01	11.05	.004	.09
8.93	.01	11.05	.004	.08
9.00	.01	11.05	.003	.08
9.07	.00	11.05	.003	.07
9.13	.00	11.05	.003	.06
9.20	.00	11.05	.002	.05
9.27	.00	11.05	.002	.05
9.33	.00	11.05	.002	.04
9.40	.00	11.05	.002	.04
9.47	.00	11.05	.002	.03
9.53	.00	11.05	.001	.03
9.60	.00	11.05	.001	.03
9.67	.00	11.05	.001	.02
9.73	.00	11.05	.001	.02
9.80	.00	11.05	.001	.02
9.87	.00	11.05	.001	.02
9.93	.00	11.05	.001	.01
10.00	.00	11.05	.001	.01
10.07	.00	11.05	.001	.01
10.13	.00	11.05	.000	.01
10.20	.00	11.05	.000	.01
10.27	.00	11.05	.000	.01
10.33	.00	11.05	.000	.01
10.40	.00	11.05	.000	.01
10.47	.00	11.05	.000	.01
10.53	.00	11.05	.000	.01
10.60	.00	11.05	.000	.00

PEAK DISCHARGE = 434.753 CFS - PEAK OCCURS AT HOUR 1.70
MAXIMUM WATER SURFACE ELEVATION = 15.476
MAXIMUM STORAGE = 6.4235 AC-FT INCREMENTAL TIME= .033333HRS

* PLOT HYD AP 5 IN & OUT
PLOT HYD ID=5 ID=3






```
$S START SNOW VISTA CHANNEL
COMPUTE RATING CURVE CID=-1  VS NO=1   NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP= .0109    FP SLP=.0109    FT PER FT
                       N   END X
                     .015   30
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME  ID=2     REACH=1  NO VS=1
                     L=1200   ft       SLP=.0109   ft/ft

                              TRAVEL TIME TABLE
                                          REACH=  1.0
```

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	2.770	11.30	.0817
.526	5.817	36.42	.0532
.789	9.141	72.80	.0419
1.053	12.742	119.77	.0355
1.316	16.620	177.17	.0313
1.579	20.776	245.03	.0283
1.842	25.208	323.50	.0260
2.105	29.917	412.80	.0242
2.368	34.903	513.20	.0227
2.632	40.166	624.96	.0214
2.895	45.706	748.40	.0204
3.158	51.524	883.83	.0194
3.421	57.618	1031.56	.0186
3.684	63.989	1191.91	.0179
3.947	70.637	1365.21	.0172
4.211	77.562	1551.78	.0167
4.474	84.765	1751.94	.0161

```
                                5.000     100.000     2194.31       .0152
ROUTE                ID=2     HYD=121     INFLOW HYD ID=3   DT=.033333
*************************************************************************
COMPUTE NM HYD       ID=3   HYD=311   DA=0.03813  SQ MI
                     PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   27.850    CFS   UNIT VOLUME =    .9990       B =   526.28      P60 = 1.8700
    AREA =      .007054 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =   76.253    CFS   UNIT VOLUME =    1.000       B =   327.09      P60 = 1.8700
    AREA =      .03107o SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=3   CODE=1

                                HYDROGRAPH FROM AREA   311.00

    RUNOFF VOLUME =      .90752 INCHES     =       1.8455 ACRE-FEET
    PEAK DISCHARGE RATE =      59.90 CFS  AT   1.500 HOURS   BASIN AREA =   .0381 SQ. MI.


*                     NEW      NEW        IN1          IN2
ADD HYD              ID=4   HYD=122    ID I=2      ID II=3
*************************************************************************
COMPUTE NM HYD       ID=1   HYD=312   DA=0.01188  SQ MI
                     PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   8.6770    CFS   UNIT VOLUME =    .9981       B =   526.28      P60 = 1.8700
    AREA =      .002198 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =   23.758    CFS   UNIT VOLUME =    .9998       B =   327.09      P60 = 1.8700
    AREA =      .009682 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1  CODE=1

                                HYDROGRAPH FROM AREA   312.00

    RUNOFF VOLUME =      .90752 INCHES     =        .5750 ACRE-FEET
    PEAK DISCHARGE RATE =      18.67 CFS  AT   1.500 HOURS   BASIN AREA =   .0119 SQ. MI.


*                     NEW      NEW        IN1          IN2
ADD HYD              ID=7   HYD=123    ID I=1      ID II=4
*S START NEW BRANCH, TO TOWER RD
*************************************************************************
COMPUTE NM HYD       ID=1   HYD=354   DA=0.00531  SQ MI
                     PER A=0   B=81.5C=0    D=18.5  TP=0.1333 HRS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   3.8784    CFS   UNIT VOLUME =    .9965       B =   526.28      P60 = 1.8700
    AREA =      .000982 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333
```

```
K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
UNIT PEAK =   10.619    CFS   UNIT VOLUME =    .9990       B =   327.09      P60 = 1.8700
AREA =      .004328 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID=1  CODE=1

                                   HYDROGRAPH FROM AREA   354.00

   RUNOFF VOLUME =      .90752 INCHES     =        .2570 ACRE-FEET
   PEAK DISCHARGE RATE =      8.35 CFS  AT   1.500 HOURS   BASIN AREA =   .0053 SQ. MI.

**********************************************************************************
COMPUTE NM HYD      ID=2   HYD=355   DA=0.00266  SQ MI
                    PER A=0   B=81.5 C=0    D=18.5  TP=0.1333 HRS RAIN=-1
   K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   1.9428    CFS   UNIT VOLUME =    .9933       B =   526.28      P60 = 1.8700
   AREA =      .000492 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


   K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
   UNIT PEAK =   5.3195    CFS   UNIT VOLUME =    .9977       B =   327.09      P60 = 1.8700
   AREA =      .002168 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID=2  CODE=1

                                   HYDROGRAPH FROM AREA   355.00

   RUNOFF VOLUME =      .90752 INCHES     =        .1287 ACRE-FEET
   PEAK DISCHARGE RATE =      4.19 CFS  AT   1.500 HOURS   BASIN AREA =   .0027 SQ. MI.

ADD HYD             ID=3   HYD=103    ID I=1      ID II=2
**********************************************************************************
COMPUTE NM HYD      ID=1   HYD=403   DA=0.00688  SQ MI
                    PER A=0  B=50   C=0    D=50    TP=0.1333 HRS RAIN=-1

   K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   13.581    CFS   UNIT VOLUME =    .9985       B =   526.28      P60 = 1.8700
   AREA =      .003440 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


   K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
   UNIT PEAK =   8.4410    CFS   UNIT VOLUME =    .9986       B =   327.09      P60 = 1.8700
   AREA =      .003440 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID=1  CODE=1

                                   HYDROGRAPH FROM AREA   403.00

   RUNOFF VOLUME =     1.31642 INCHES     =        .4830 ACRE-FEET
   PEAK DISCHARGE RATE =     14.08 CFS  AT   1.500 HOURS   BASIN AREA =   .0069 SQ. MI.
```

```
*S HYD 105 = COMBINED FLOW AT TOWER-TANAGER-106th INTERSECTION
ADD HYD              ID=4   HYD=105    ID I=1      ID II=3
PRINT HYD            ID=4  CODE=2
```

PARTIAL HYDROGRAPH 105.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.400	12.1	2.800	.4	4.200	.1	5.600	.1
.067	.0	1.467	23.8	2.867	.3	4.267	.1	5.667	.1
.133	.0	1.533	26.0	2.933	.3	4.333	.1	5.733	.1
.200	.0	1.600	19.7	3.000	.2	4.400	.1	5.800	.1
.267	.0	1.667	14.1	3.067	.2	4.467	.1	5.867	.1
.333	.0	1.733	10.4	3.133	.2	4.533	.1	5.933	.1
.400	.0	1.800	7.9	3.200	.2	4.600	.1	6.000	.1
.467	.0	1.867	6.3	3.267	.2	4.667	.1	6.067	.1
.533	.0	1.933	5.3	3.333	.1	4.733	.1	6.133	.1
.600	.0	2.000	4.6	3.400	.1	4.800	.1	6.200	.0
.667	.0	2.067	3.9	3.467	.1	4.867	.1	6.267	.0
.733	.0	2.133	2.8	3.533	.1	4.933	.1	6.333	.0
.800	.0	2.200	1.9	3.600	.1	5.000	.1	6.400	.0
.867	.0	2.267	1.5	3.667	.1	5.067	.1	6.467	.0
.933	.0	2.333	1.2	3.733	.1	5.133	.1	6.533	.0
1.000	.0	2.400	1.0	3.800	.1	5.200	.1	6.600	.0
1.067	.0	2.467	.8	3.867	.1	5.267	.1	6.667	.0
1.133	.0	2.533	.7	3.933	.1	5.333	.1	6.733	.0
1.200	.2	2.600	.6	4.000	.1	5.400	.1		
1.267	1.7	2.667	.5	4.067	.1	5.467	.1		
1.333	4.5	2.733	.4	4.133	.1	5.533	.1		

RUNOFF VOLUME = 1.09691 INCHES = .8687 ACRE-FEET
PEAK DISCHARGE RATE = 26.63 CFS AT 1.500 HOURS BASIN AREA = .0149 SQ. MI.

```
**********************************************************************
COMPUTE NM HYD       ID=1   HYD=401   DA=0.01016  SQ MI
                     PER A=0  B=50   C=0    D=50    TP=0.1333 HRS RAIN=-1

   K =  .072649HR    TP =  .133300HR    K/TP RATIO =  .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =  20.056   CFS  UNIT VOLUME =  .9989      B =  526.28      P60 = 1.8700
   AREA =      .005080 SQ MI    IA =   .10000 INCHES    INF =   .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333

   K =  .130992HR    TP =  .133300HR    K/TP RATIO =  .982685     SHAPE CONSTANT, N =  3.593448
   UNIT PEAK =  12.465   CFS  UNIT VOLUME =  .9992      B =  327.09      P60 = 1.8700
   AREA =      .005080 SQ MI    IA =   .50000 INCHES    INF =  1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333

PRINT HYD            ID=1  CODE=1
```

HYDROGRAPH FROM AREA 401.00

RUNOFF VOLUME = 1.31642 INCHES = .7133 ACRE-FEET
PEAK DISCHARGE RATE = 20.78 CFS AT 1.500 HOURS BASIN AREA = .0102 SQ. MI.

```
ADD HYD              ID=3   HYD=107    ID I=1      ID II=4
*5 SAY <= 23 FROM TOWER TO SANDERLING; EXCESS IN STREET TO SNOW VISTA
*S HOLD 401.2 (UNDERFLOW, ID=8) TO ADD TO 402 LATER
DIVIDE HYD           ID=3   Q=23.0  ID=8  HYD=401.2     ID=2  HYD=401.1
```

HYDROGRAPH FROM AREA 401.20

RUNOFF VOLUME = 1.18607 INCHES = 1.2663 ACRE-FEET
PEAK DISCHARGE RATE = 23.00 CFS AT 1.433 HOURS BASIN AREA = .0200 SQ. MI.

PRINT HYD ID=2 CODE=1

HYDROGRAPH FROM AREA 401.10

RUNOFF VOLUME = 1.18607 INCHES = .3158 ACRE-FEET
PEAK DISCHARGE RATE = 24.41 CFS AT 1.500 HOURS BASIN AREA = .0050 SQ. MI.

COMPUTE RATING CURVE CID=-1 VS NO=78 NO SEGS=1
MIN EL=0 FT MAX EL=5 FT
CH SLP=.025 FP SLP=.025 FT PER FT=EST EFFECTIVE
N END X
.015 60

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0	.92	9.99	.59	10	0	30	.40
50	0	50.01	.59	60	.92		

COMPUTE TRAVEL TIME ID=4 REACH=38 NO VS=1 L=L TO CATCH BASIN
L=550 ft SLP=.025 ft/ft

TRAVEL TIME TABLE

REACH= 38.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	3.464	13.85	.0382
.526	13.057	95.29	.0209
.789	24.793	233.23	.0162
1.053	40.067	473.31	.0129
1.316	55.857	823.42	.0104
1.579	71.646	1246.86	.0088
1.842	87.436	1737.70	.0077
2.105	103.225	2291.59	.0069
2.368	119.014	2905.11	.0063
2.632	134.804	3575.48	.0058
2.895	150.593	4300.38	.0054
3.158	166.383	5077.83	.0050
3.421	182.172	5906.11	.0047
3.684	197.962	6783.70	.0045
3.947	213.751	7709.25	.0042
4.211	229.541	8681.55	.0040
4.474	245.330	9699.50	.0039
4.737	261.120	10762.10	.0037
5.000	276.909	11868.43	.0036

ROUTE ID=4 HYD=109 INFLOW HYD ID=2 DT=.033333
PROBLEM FAILED TO CONVERGE AFTER 50 ITERATIONS. CONVERGENCE WAS FORCED. OUTFLOW NUMBER = 600 RATE = .00
PRINT HYD ID=4 CODE=2

PARTIAL HYDROGRAPH 109.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	.533	.0	1.067	.0	1.600	16.8	2.133	.0
.067	.0	.600	.0	1.133	.0	1.667	7.1	2.200	.0

.200	.0	.733	.0	1.267	.0	1.800	.2	2.333	.0
.267	.0	.800	.0	1.333	.0	1.867	.0	2.400	.0
.333	.0	.867	.0	1.400	.0	1.933	.0	2.467	.0
.400	.0	.933	.0	1.467	10.2	2.000	.0		
.467	.0	1.000	.0	1.533	21.6	2.067	.0		

RUNOFF VOLUME = 1.18711 INCHES = .3160 ACRE-FEET
PEAK DISCHARGE RATE = 21.64 CFS AT 1.533 HOURS BASIN AREA = .0050 SQ. MI.

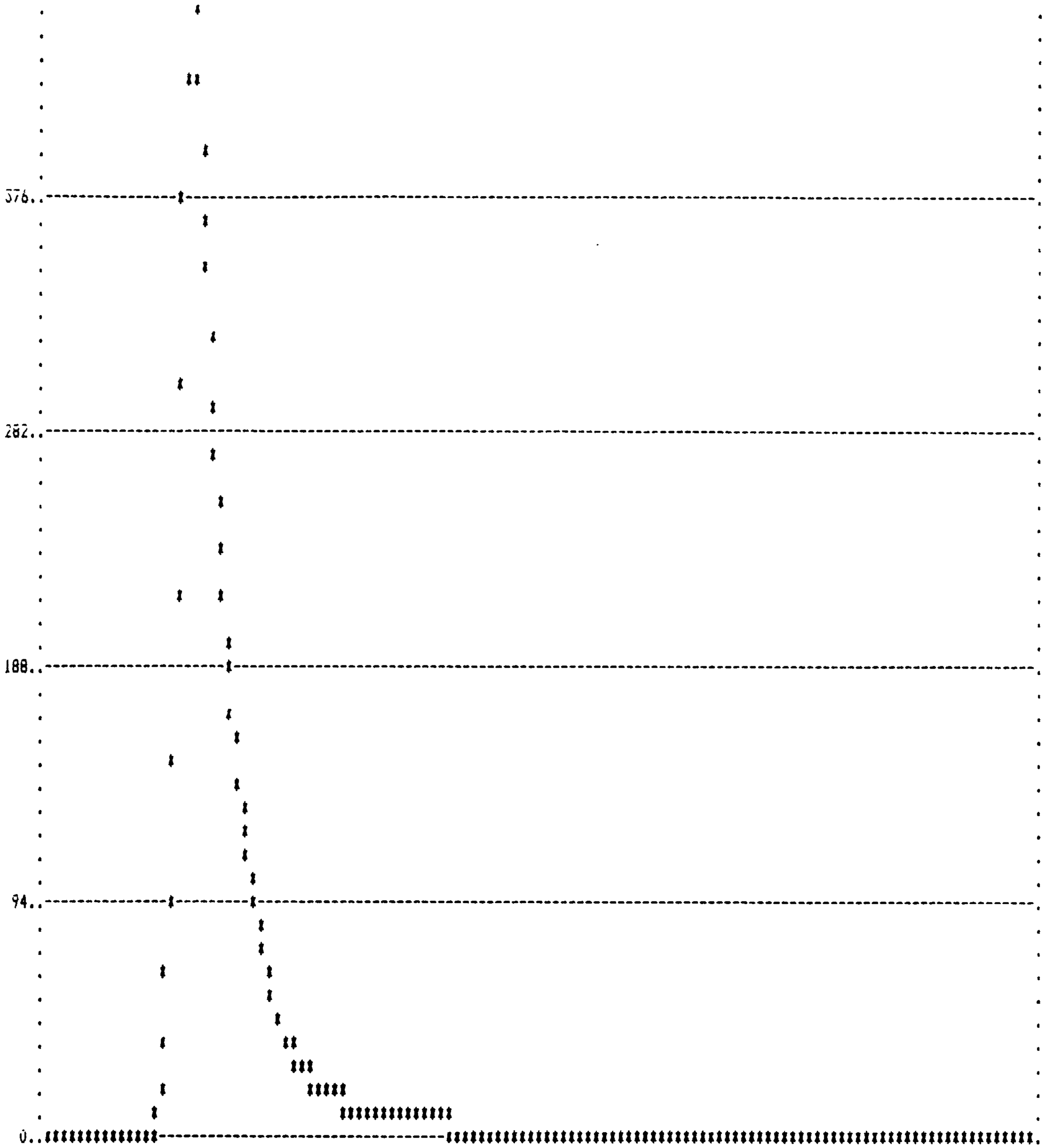
*S HYD 124 = SNOW VISTA JUST DOWNSTREAM FROM TOWER
*S HYD 124 = AF 6
ADD HYD ID=3 HYD=124 ID I=4 ID II=7
PRINT HYD ID=3 CODE=2

PARTIAL HYDROGRAPH 124.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.333	122.6	4.667	4.9	7.000	1.6	9.333	.0
.067	.0	2.400	104.5	4.733	4.7	7.067	1.5	9.400	.0
.133	.0	2.467	89.8	4.800	4.5	7.133	1.4	9.467	.0
.200	.0	2.533	76.9	4.867	4.3	7.200	1.3	9.533	.0
.267	.0	2.600	64.7	4.933	4.1	7.267	1.2	9.600	.0
.333	.0	2.667	55.2	5.000	3.9	7.333	1.1	9.667	.0
.400	.0	2.733	47.4	5.067	3.8	7.400	1.0	9.733	.0
.467	.0	2.800	41.5	5.133	3.6	7.467	.9	9.800	.0
.533	.0	2.867	36.6	5.200	3.5	7.533	.8	9.867	.0
.600	.0	2.933	31.9	5.267	3.4	7.600	.8	9.933	.0
.667	.0	3.000	28.6	5.333	3.3	7.667	.7	10.000	.0
.733	.0	3.067	25.7	5.400	3.2	7.733	.6	10.067	.0
.800	.0	3.133	23.2	5.467	3.1	7.800	.6	10.133	.0
.867	.0	3.200	20.9	5.533	3.1	7.867	.5	10.200	.0
.933	.0	3.267	18.8	5.600	3.0	7.933	.5	10.267	.0
1.000	.0	3.333	17.0	5.667	3.0	8.000	.4	10.333	.0
1.067	.0	3.400	15.5	5.733	2.9	8.067	.4	10.400	.0
1.133	.0	3.467	14.4	5.800	2.9	8.133	.4	10.467	.0
1.200	.5	3.533	13.5	5.867	2.9	8.200	.3	10.533	.0
1.267	3.3	3.600	12.7	5.933	2.9	8.267	.3	10.600	.0
1.333	10.0	3.667	12.0	6.000	2.8	8.333	.3	10.667	.0
1.400	35.4	3.733	11.3	6.067	2.8	8.400	.2	10.733	.0
1.467	97.9	3.800	10.7	6.133	2.7	8.467	.2	10.800	.0
1.533	218.3	3.867	10.1	6.200	2.7	8.533	.2	10.867	.0
1.600	373.2	3.933	9.5	6.267	2.6	8.600	.2	10.933	.0
1.667	459.1	4.000	8.9	6.333	2.5	8.667	.2	11.000	.0
1.733	464.3	4.067	8.4	6.400	2.5	8.733	.1	11.067	.0
1.800	424.8	4.133	7.9	6.467	2.4	8.800	.1	11.133	.0
1.867	370.9	4.200	7.4	6.533	2.3	8.867	.1	11.200	.0
1.933	320.0	4.267	7.0	6.600	2.2	8.933	.1	11.267	.0
2.000	273.8	4.333	6.6	6.667	2.1	9.000	.1	11.333	.0
2.067	234.7	4.400	6.2	6.733	2.0	9.067	.1	11.400	.0
2.133	201.8	4.467	5.8	6.800	1.9	9.133	.1	11.467	.0
2.200	171.9	4.533	5.5	6.867	1.8	9.200	.1		
2.267	144.9	4.600	5.2	6.933	1.7	9.267	.1		

RUNOFF VOLUME = 1.07920 INCHES = 27.0685 ACRE-FEET
PEAK DISCHARGE RATE = 469.84 CFS AT 1.700 HOURS BASIN AREA = .4703 SQ. MI.

PLOT HYD ID=3
FLOW RATE (CFS)
470..----------+----------




```
* FOR ROUTING EST AVG SLOPE=.01+-: 450'@.014, 500 @.004, 400'@.0126
COMPUTE RATING CURVE CID=-1  VS NO=2   NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP= .010     FP SLP=.010     FT PER FT
                       N   END X
                     .015   30
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME  ID=4     REACH=2  NO VS=1
                     L=1350    ft       SLP=.010    ft/ft

                              TRAVEL TIME TABLE
```

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	2.770	10.83	.0959
.526	5.817	34.88	.0625
.789	9.141	69.73	.0492
1.053	12.742	114.72	.0417
1.316	16.620	169.70	.0367
1.579	20.776	234.70	.0332
1.842	25.208	309.80	.0305
2.105	29.917	395.39	.0284
2.368	34.903	491.55	.0266
2.632	40.166	598.60	.0252
2.895	45.706	716.84	.0239
3.158	51.524	846.56	.0228
3.421	57.618	988.06	.0219
3.684	63.989	1141.65	.0210
3.947	70.637	1307.64	.0203
4.211	77.562	1486.34	.0196
4.474	84.765	1678.05	.0189
4.737	92.244	1883.09	.0184
5.000	100.000	2101.76	.0178

ROUTE ID=4 HYD=128 INFLOW HYD ID=3 DT=.033333
PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 128.00

RUNOFF VOLUME = 1.07920 INCHES = 27.0685 ACRE-FEET
PEAK DISCHARGE RATE = 467.41 CFS AT 1.733 HOURS BASIN AREA = .4703 SQ. MI.

****
COMPUTE NM HYD ID=2 HYD=313 DA=0.01016 SQ MI
PER A=0 B=81.5 C=0 D=18.5 T=0.1333 HRS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 7.4208 CFS UNIT VOLUME = .9978 B = 526.28 P60 = 1.8700
AREA = .001880 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 20.318 CFS UNIT VOLUME = .9997 B = 327.09 P60 = 1.8700
AREA = .008280 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=2 CODE=1

HYDROGRAPH FROM AREA 313.00

RUNOFF VOLUME = .90752 INCHES = .4918 ACRE-FEET
PEAK DISCHARGE RATE = 15.97 CFS AT 1.500 HOURS BASIN AREA = .0102 SQ. MI.

	NEW	NEW	IN1	IN2
ADD HYD	ID=3	HYD=130	ID I=2	ID II=4

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 130.00

PEAK DISCHARGE RATE = 473.55 CFS AT 1.733 HOURS BASIN AREA = .4805 SQ. MI.

```
* FOR ROUTE EST AVG SLOPE AS .012
COMPUTE RATING CURVE CID=-1  VS NO=3   NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP= .012     FP SLP=.012     FT PER FT
                       N   END X
                     .015   30
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME  ID=6     REACH=3  NO VS=1
                     L=550   ft       SLP=.012    ft/ft
```

TRAVEL TIME TABLE

REACH= 3.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	2.770	11.86	.0357
.526	5.817	38.21	.0233
.789	9.141	76.38	.0183
1.053	12.742	125.67	.0155
1.316	16.620	185.90	.0137
1.579	20.776	257.10	.0123
1.842	25.208	339.43	.0113
2.105	29.917	433.13	.0106
2.368	34.903	538.47	.0099
2.632	40.166	655.74	.0094
2.895	45.706	785.26	.0089
3.158	51.524	927.36	.0085
3.421	57.618	1082.36	.0081
3.684	63.989	1250.61	.0078
3.947	70.637	1432.44	.0075
4.211	77.562	1628.20	.0073
4.474	84.765	1838.21	.0070
4.737	92.244	2062.82	.0068
5.000	100.000	2302.37	.0066

```
*S HYD 132 = SNOW VISTA JUST ABOVE JUNCTION WITH SECTION LINE CHANNEL STUB
*S HYD 132 = AP 9
ROUTE                ID=6     HYD=132     INFLOW HYD ID=3   DT=.033333
PRINT HYD            ID=6  CODE=2
```

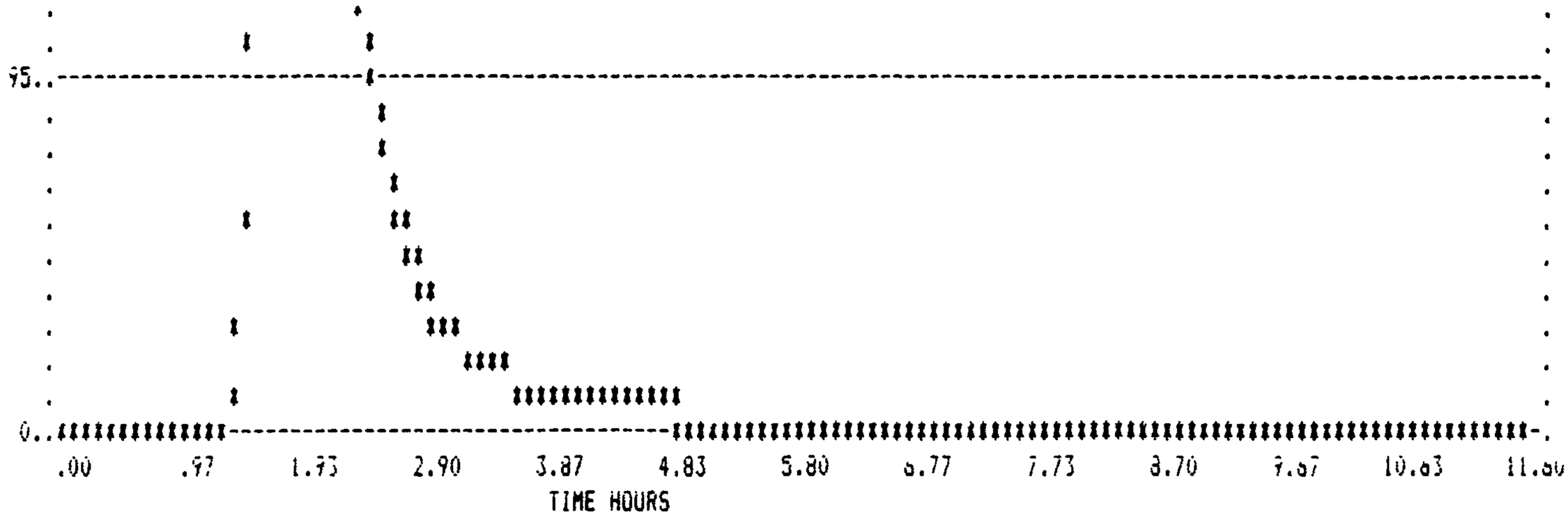
PARTIAL HYDROGRAPH 132.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.333	135.3	4.667	5.6	7.000	1.8	9.333	.1
.067	.0	2.400	115.3	4.733	5.3	7.067	1.7	9.400	.1
.133	.0	2.467	98.6	4.800	5.0	7.133	1.6	9.467	.1
.200	.0	2.533	85.5	4.867	4.8	7.200	1.5	9.533	.0
.267	.0	2.600	73.2	4.933	4.5	7.267	1.4	9.600	.0
.333	.0	2.667	61.4	5.000	4.3	7.333	1.3	9.667	.0
.400	.0	2.733	53.0	5.067	4.1	7.400	1.2	9.733	.0
.467	.0	2.800	46.5	5.133	4.0	7.467	1.1	9.800	.0
.533	.0	2.867	41.3	5.200	3.8	7.533	1.0	9.867	.0
.600	.0	2.933	35.9	5.267	3.7	7.600	.9	9.933	.0
.667	.0	3.000	30.8	5.333	3.6	7.667	.8	10.000	.0
.733	.0	3.067	27.7	5.400	3.4	7.733	.8	10.067	.0
.800	.0	3.133	25.3	5.467	3.3	7.800	.7	10.133	.0
.867	.0	3.200	23.1	5.533	3.3	7.867	.6	10.200	.0
.933	.0	3.267	21.1	5.600	3.2	7.933	.6	10.267	.0

1.000	.0	3.333	17.2	5.867	3.1	8.000	.5	10.333	.0
1.067	.0	3.400	17.6	5.733	3.1	8.067	.5	10.400	.0
1.133	.0	3.467	16.1	5.800	3.0	8.133	.4	10.467	.0
1.200	.1	3.533	15.0	5.867	3.0	8.200	.4	10.533	.0
1.267	.8	3.600	14.1	5.933	2.9	8.267	.4	10.600	.0
1.333	3.4	3.667	13.2	6.000	2.9	8.333	.3	10.667	.0
1.400	12.8	3.733	12.5	6.067	2.9	8.400	.3	10.733	.0
1.467	57.8	3.800	11.8	6.133	2.9	8.467	.3	10.800	.0
1.533	160.1	3.867	11.2	6.200	2.8	8.533	.2	10.867	.0
1.600	317.7	3.933	10.6	6.267	2.7	8.600	.2	10.933	.0
1.667	440.7	4.000	10.1	6.333	2.7	8.667	.2	11.000	.0
1.733	474.5	4.067	9.5	6.400	2.6	8.733	.2	11.067	.0
1.800	447.9	4.133	8.9	6.467	2.5	8.800	.2	11.133	.0
1.867	396.5	4.200	8.4	6.533	2.5	8.867	.1	11.200	.0
1.933	344.5	4.267	7.9	6.600	2.4	8.933	.1	11.267	.0
2.000	295.8	4.333	7.5	6.667	2.3	9.000	.1	11.333	.0
2.067	254.4	4.400	7.0	6.733	2.2	9.067	.1	11.400	.0
2.133	218.4	4.467	6.6	6.800	2.1	9.133	.1	11.467	.0
2.200	188.1	4.533	6.2	6.867	2.0	9.200	.1	11.533	.0
2.267	159.2	4.600	5.9	6.933	1.9	9.267	.1	11.600	.0

RUNOFF VOLUME = 1.07557 INCHES = 27.5603 ACRE-FEET
PEAK DISCHARGE RATE = 474.46 CFS AT 1.733 HOURS BASIN AREA = .4805 SQ. MI.

PLOT HYD ID=6




```
**********************************************************************
*5
*5 START SUNRISE TERRACE INTERIOR
*
**********************************************************************
COMPUTE NM HYD       ID=1   HYD=151   DA=0.010492 SQ MI
                     PER A=0   B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   7.6632    CFS   UNIT VOLUME =    .9978       B =   526.28      P60 = 1.8700
    AREA =      .001941 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =   20.982    CFS   UNIT VOLUME =    .9997       B =   327.09      P60 = 1.8700
    AREA =      .008551 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1  CODE=1

                              PARTIAL HYDROGRAPH   151.00


    RUNOFF VOLUME =      .90752 INCHES     =        .5078 ACRE-FEET
    PEAK DISCHARGE RATE =      16.49 CFS  AT   1.500 HOURS   BASIN AREA =   .0105 SQ. MI.

**********************************************************************
COMPUTE NM HYD       ID=2   HYD=152   DA=0.006309 SQ MI
                     PER A=0   B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   4.6080    CFS   UNIT VOLUME =    .9969       B =   526.28      P60 = 1.8700
    AREA =      .001167 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =   12.617    CFS   UNIT VOLUME =    .9992       B =   327.09      P60 = 1.8700
    AREA =      .005142 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=2  CODE=1

                              PARTIAL HYDROGRAPH   152.00
```

```
    RUNOFF VOLUME =      .90752 INCHES     =        .3054 ACRE-FEET
    PEAK DISCHARGE RATE =      9.92 CFS  AT   1.500 HOURS   BASIN AREA =   .0063 SQ. MI.


*                    NEW      NEW        IN1          IN2
ADD HYD             ID=3   HYD=210    ID I=1      ID II=2
PRINT HYD           ID=3  CODE=1

                              PARTIAL HYDROGRAPH   210.00


    RUNOFF VOLUME =      .90749 INCHES     =        .8132 ACRE-FEET
    PEAK DISCHARGE RATE =     26.42 CFS  AT   1.500 HOURS   BASIN AREA =   .0168 SQ. MI.


*****************************************************************************
COMPUTE NM HYD      ID=1   HYD=153   DA=0.007134 SQ MI
                    PER A=0   B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   5.2106    CFS   UNIT VOLUME =    .9973       B =   526.28      P60 = 1.8700
    AREA =      .001320 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =   14.267    CFS   UNIT VOLUME =    .9994       B =   327.09      P60 = 1.8700
    AREA =      .005814 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID=1  CODE=1

                              PARTIAL HYDROGRAPH   153.00


    RUNOFF VOLUME =      .90752 INCHES     =        .3453 ACRE-FEET
    PEAK DISCHARGE RATE =     11.22 CFS  AT   1.500 HOURS   BASIN AREA =   .0071 SQ. MI.


*S HYD 220 = 151+152+153 (BASINS 101, 102, & 103) @ HACKAMORE & SANDERLING
*                    NEW      NEW        IN1          IN2
ADD HYD             ID=5   HYD=220    ID I=1      ID II=3
*****************************************************************************
*S 401.2 (ID 8) = 'UNDERFLOW' (+-21 CFS MAX) FROM TOWER @ SANDERLING ABOVE
*S DELAY 401.2  2 MIN (1 TIME STEP) TO SIMULATE ROUTING IN 2 SEGMENTS OF ROAD
MODIFY TIME         ID=8   TIME SHIFT=0.033333 HRS   CODE=-1
PRINT HYD           ID=8  CODE=1

                              HYDROGRAPH FROM AREA   401.20


    RUNOFF VOLUME =     1.18607 INCHES     =       1.2663 ACRE-FEET
    PEAK DISCHARGE RATE =     23.00 CFS  AT   1.467 HOURS   BASIN AREA =   .0200 SQ. MI.


*S BASIN 402 = EXISTING DEVELOPMENT @ 50%=B=LANDSCAPE, 50%=D=IMPERV
*****************************************************************************
COMPUTE NM HYD      ID=1   HYD=402   DA=0.015469  SQ MI
                    PER A=0  B=50   C=0    D=50    TP=0.1333 HRS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
```

```
UNIT PEAK =   30.338   CFS   UNIT VOLUME =    .9990      B =   526.28      P60 = 1.8700
AREA =      .007735 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
UNIT PEAK =   18.979   CFS   UNIT VOLUME =    .9996      B =   327.09      P60 = 1.8700
AREA =      .007735 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID=1  CODE=1

                                HYDROGRAPH FROM AREA   402.00


RUNOFF VOLUME =     1.31642 INCHES     =       1.0861 ACRE-FEET
PEAK DISCHARGE RATE =      31.64 CFS  AT   1.500 HOURS   BASIN AREA =   .0155 SQ. MI.



ADD HYD             ID=4   HYD=242    ID I=1      ID II=8
*************************************************************************
COMPUTE NM HYD      ID=2   HYD=154   DA=0.007539 SQ MI
                    PER A=0   B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1

   K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   5.5064   CFS   UNIT VOLUME =    .9973      B =   526.28      P60 = 1.8700
   AREA =      .001395 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


   K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
   UNIT PEAK =   15.077   CFS   UNIT VOLUME =    .9994      B =   327.09      P60 = 1.8700
   AREA =      .006144 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID=2  CODE=1

                               PARTIAL HYDROGRAPH   154.00


   RUNOFF VOLUME =      .90752 INCHES     =        .3649 ACRE-FEET
   PEAK DISCHARGE RATE =      11.86 CFS  AT   1.500 HOURS   BASIN AREA =   .0075 SQ. MI.


*S HYD 244 = 402+154 IN SANDPIPER AT CONNEMARA (HYD 154=BASIN 104)
ADD HYD             ID=3   HYD=244    ID I=2      ID II=4
*                     NEW      NEW        IN1          IN2
PRINT HYD           ID=3  CODE=1

                               PARTIAL HYDROGRAPH   244.00


   RUNOFF VOLUME =     1.18412 INCHES     =       2.7172 ACRE-FEET
   PEAK DISCHARGE RATE =      66.49 CFS  AT   1.500 HOURS   BASIN AREA =   .0430 SQ. MI.



*S HYD 240 = COMBINED FLOW @ HACKAMORE & SANDERLING
ADD HYD             ID=2   HYD=240    ID I=3      ID II=5
PRINT HYD           ID=2  CODE=1

                               PARTIAL HYDROGRAPH   240.00
```

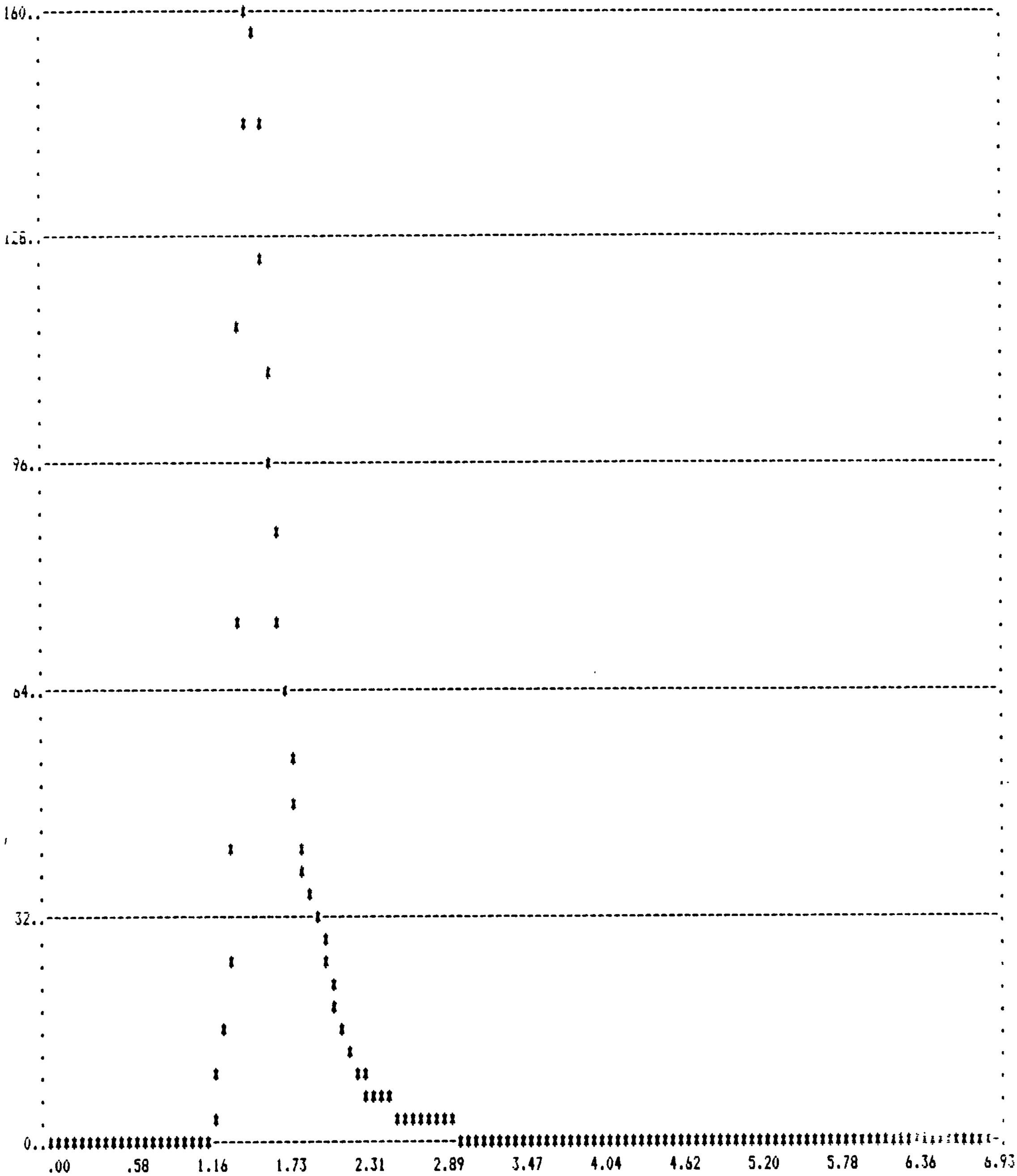
```
    RUNOFF VOLUME =     1.08329 INCHES     =        5.0730 ACRE-FEET
    PEAK DISCHARGE RATE =     104.13 CFS  AT   1.500 HOURS   BASIN AREA =   .0670 SQ. MI.


**********************************************************************************
COMPUTE NM HYD       ID=1   HYD=155   DA=0.004197 SQ MI
                     PER A=0   B=81.5  C=0    D=18.5 TP=0.1333 HRS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   3.0654    CFS   UNIT VOLUME =    .9955       B =   526.28      P60 = 1.8700
    AREA =      .000776 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =   8.3932    CFS   UNIT VOLUME =    .9986       B =   327.09      P60 = 1.8700
    AREA =      .003421 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1  CODE=1

                              PARTIAL HYDROGRAPH   155.00

    RUNOFF VOLUME =      .90752 INCHES     =        .2031 ACRE-FEET
    PEAK DISCHARGE RATE =       6.61 CFS  AT   1.500 HOURS   BASIN AREA =   .0042 SQ. MI.


!S HYD 250 = COMBINED FLOW IN HACKAMORE AT HALTER
!                      NEW      NEW        IN1          IN2
ADD HYD              ID=3   HYD=250    ID I=1      ID II=2
PRINT HYD            ID=3   CODE=1

                              PARTIAL HYDROGRAPH   250.00

    RUNOFF VOLUME =     1.07475 INCHES     =       4.0788 ACRE-FEET
    PEAK DISCHARGE RATE =     110.74 CFS  AT   1.500 HOURS   BASIN AREA =   .0712 SQ. MI.


**********************************************************************************
COMPUTE NM HYD       ID=1   HYD=156   DA=0.014138 SQ MI
                     PER A=0   B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   10.326    CFS   UNIT VOLUME =    .9982       B =   526.28      P60 = 1.8700
    AREA =      .002616 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =   28.273    CFS   UNIT VOLUME =    .9999       B =   327.09      P60 = 1.8700
    AREA =      .011522 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1  CODE=1

                              PARTIAL HYDROGRAPH   156.00

    RUNOFF VOLUME =      .90752 INCHES     =        .6843 ACRE-FEET
    PEAK DISCHARGE RATE =      22.22 CFS  AT   1.500 HOURS   BASIN AREA =   .0141 SQ. MI.
```

```
*                    NEW      NEW        IN1          IN2
ADD HYD             ID=2   HYD=260    ID I=1       ID II=3
*****************************************************************************
COMPUTE NM HYD      ID=1   HYD=157   DA=0.017363 SQ MI
                    PER A=0   B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1

   K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   12.682    CFS   UNIT VOLUME =    .9985       B =   526.28      P60 = 1.8700
   AREA =      .003212 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


   K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
   UNIT PEAK =   34.723    CFS   UNIT VOLUME =    .9999       B =   327.09      P60 = 1.8700
   AREA =      .014151 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID=1  CODE=1

                              PARTIAL HYDROGRAPH   157.00

   RUNOFF VOLUME =      .90753 INCHES     =        .8404 ACRE-FEET
   PEAK DISCHARGE RATE =      27.28 CFS  AT   1.500 HOURS   BASIN AREA =   .0174 SQ. MI.


*S HYD 224 = TOTAL FLOW TO POND LOCATION
*S HYD 224 = AP 7 IN
*                    NEW      NEW        IN1          IN2
ADD HYD             ID=3   HYD=224    ID I=1       ID II=2
PRINT HYD           ID=3   CODE=2

                              PARTIAL HYDROGRAPH   224.00
```

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.400	73.3	2.800	2.5	4.200	.5	5.600	.6
.067	.0	1.467	144.8	2.867	2.2	4.267	.5	5.667	.6
.133	.0	1.533	157.7	2.933	1.9	4.333	.5	5.733	.6
.200	.0	1.600	126.2	3.000	1.7	4.400	.5	5.800	.6
.267	.0	1.667	96.7	3.067	1.5	4.467	.5	5.867	.6
.333	.0	1.733	74.7	3.133	1.3	4.533	.5	5.933	.6
.400	.0	1.800	55.5	3.200	1.2	4.600	.5	6.000	.6
.467	.0	1.867	43.1	3.267	1.1	4.667	.5	6.067	.6
.533	.0	1.933	35.7	3.333	1.0	4.733	.5	6.133	.4
.600	.0	2.000	30.6	3.400	.9	4.800	.5	6.200	.3
.667	.0	2.067	26.1	3.467	.8	4.867	.5	6.267	.1
.733	.0	2.133	19.4	3.533	.8	4.933	.5	6.333	.1
.800	.0	2.200	13.6	3.600	.7	5.000	.5	6.400	.1
.867	.0	2.267	10.3	3.667	.7	5.067	.5	6.467	.0
.933	.0	2.333	8.3	3.733	.6	5.133	.5	6.533	.0
1.000	.0	2.400	6.9	3.800	.6	5.200	.5	6.600	.0
1.067	.0	2.467	5.7	3.867	.6	5.267	.5	6.667	.0
1.133	.0	2.533	4.8	3.933	.5	5.333	.5	6.733	.0
1.200	1.1	2.600	4.1	4.000	.5	5.400	.5	6.800	.0
1.267	8.4	2.667	3.4	4.067	.5	5.467	.5	6.867	.0
1.333	24.9	2.733	2.9	4.133	.5	5.533	.6	6.933	.0

```
   RUNOFF VOLUME =     1.02343 INCHES     =       5.6034 ACRE-FEET
   PEAK DISCHARGE RATE =     160.24 CFS  AT   1.500 HOURS   BASIN AREA =   .1027 SQ. MI.
```

PLOT HYD 10=5



*S REPLACE POND WITH PIPE IN FAIR SHARE ANALYSIS - KEEP "RESERVOIR" HYD NO.
COMPUTE RATING CURVE CID=-1 VS NO=63 NO SEGS=-1 SLP=.002 D=6 FT N=.013
COMPUTE TRAVEL TIME ID=4 REACH=33 NO VS=1
L=100 ft SLP=.002 ft/ft

TRAVEL TIME TABLE
REACH= 33.0

DEPTH FEET	AREA SQ.FT.	RATE CFS	TIME HRS
.313	.562	.99	.0157
.625	1.564	4.31	.0101
.938	2.824	10.03	.0078
1.251	4.271	18.03	.0066
1.563	5.859	28.16	.0058
1.876	7.554	40.17	.0052
2.189	9.329	53.82	.0048
2.501	11.159	68.81	.0045
2.814	13.022	84.83	.0043
3.127	14.897	101.52	.0041
3.439	16.764	118.52	.0039
3.752	18.601	135.42	.0038
4.065	20.388	151.78	.0037
4.377	22.101	167.10	.0037
4.690	23.712	180.81	.0036
5.003	25.189	192.22	.0036
5.315	26.489	200.38	.0037
5.628	27.547	203.74	.0038
6.000	28.274	203.74	.0039

```
ROUTE                ID=4     HYD=503     INFLOW HYD  ID=3   DT=.033333
* ((( LINES BELOW STARTING WITH * ((( FOR USE WITH POND IN PROPOSED CONDITIONS
* ((( OUTFLOW BELOW (2.55-->83.00 FOR 42-IN PIPE W Kent=0.5)
* ((( S HYD 503 = AP 7 OUT
* ((( ROUTE RESERVOIR      ID=4  HYD=503  INFLOW ID=3     CODE=2
* (((                      OUTFLOW CFS    STORAGE AC-FT   ELEVATION FT
* (((                       0.00000       0.0000           88.33
* (((                        2.80         0.0203           89
* (((                       15.55         0.2013           90
* (((                       46.30         0.9056           92
* (((                       63.25         1.6948           94
* (((                       76.95         2.5737           96
* (((                       83.00         3.0551           97
* ((( *
* ((( * OUTFLOW BELOW (2.55-->60.05) FOR 36-IN PIPE W Kent=0.5
* ((( *ROUTE RESERVOIR      ID=4  HYD=503  INFLOW ID=3     CODE=2
* ((( *                    OUTFLOW CFS    STORAGE AC-FT   ELEVATION FT
* ((( *                     0.00000       0.0000           88.33
* ((( *                      2.55         0.0203           89
* ((( *                     14.00         0.2013           90
* ((( *                     35.05         0.9056           92
* ((( *                     46.50         1.6948           94
* ((( *                     55.58         2.5737           96
* ((( *                     60.05         3.0551           97
* ((( * PRINT HYD           ID=4   CODE=2
* ((( * *S PLOT HYD FOR AP 7 IN & OUT
* ((( * PLOT HYD            ID=3   ID=4
* D = 3 OR 3.5 PROPOSED, D = 6 FT FAIR SHARE FOR FREE OUTFALL
COMPUTE RATING CURVE CID=-1  VS NO=63  NO SEGS=-1 SLP=.002  D=6 FT  N=.013
COMPUTE TRAVEL TIME  ID=3     REACH=33 NO VS=1
                     L=744  ft       SLP=.002    ft/ft
```

TRAVEL TIME TABLE

REACH= 33.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.313	.562	.99	.1169
.625	1.564	4.31	.0749
.938	2.824	10.03	.0582
1.251	4.271	18.03	.0489
1.563	5.859	28.16	.0430
1.876	7.554	40.17	.0389

2.501	11.159	88.81	.0335
2.814	13.022	84.83	.0317
3.127	14.897	101.52	.0303
3.439	16.764	118.52	.0292
3.752	18.601	135.42	.0284
4.065	20.388	151.78	.0278
4.377	22.101	167.10	.0273
4.690	23.712	180.81	.0271
5.003	25.189	192.22	.0271
5.315	26.489	200.38	.0273
5.628	27.547	203.74	.0279
6.000	28.274	203.74	.0287

ROUTE ID=3 HYD=266 INFLOW HYD ID=4 DT=.033333
PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 266.00

RUNOFF VOLUME = 1.02344 INCHES = 5.6034 ACRE-FEET
PEAK DISCHARGE RATE = 153.45 CFS AT 1.533 HOURS BASIN AREA = .1027 SQ. MI.

****

*S HYD 158 = BASIN 108, ALL ANDALUSIAN, NOT TO POND
COMPUTE NM HYD ID=1 HYD=158 DA=0.019023 SQ MI
PER A=0 B=81.5 C=0 D=18.5 TP=0.1333 HRS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 13.894 CFS UNIT VOLUME = .9985 B = 526.28 P60 = 1.8700
AREA = .003519 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 38.043 CFS UNIT VOLUME = 1.000 B = 327.09 P60 = 1.8700
AREA = .015504 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 158.00

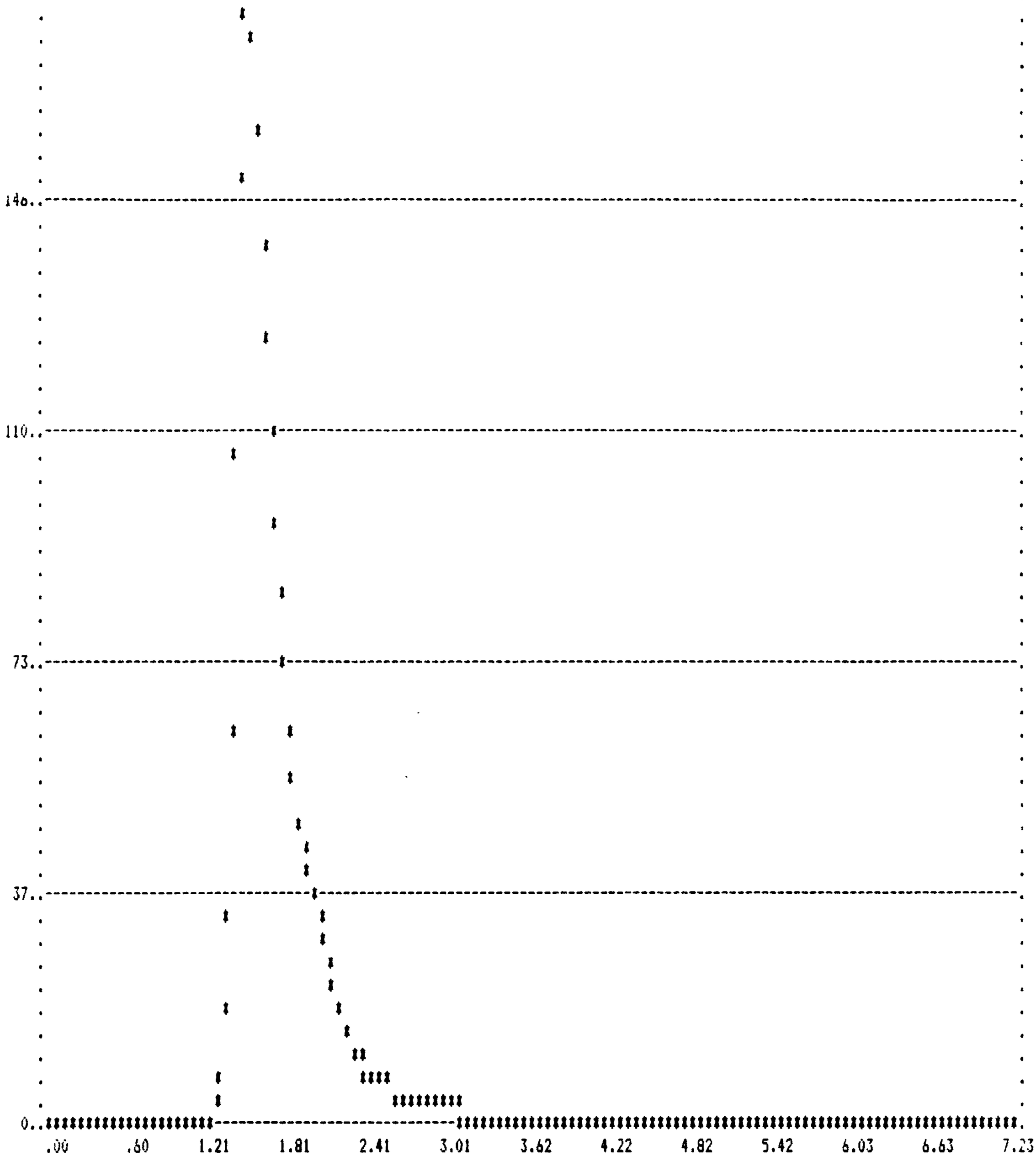
RUNOFF VOLUME = .90752 INCHES = .9207 ACRE-FEET
PEAK DISCHARGE RATE = 29.89 CFS AT 1.500 HOURS BASIN AREA = .0190 SQ. MI.

*S HYD 270 = ALL SUNRISE ONSITE INC EXISTING 402 & 401.2 (=401 UNDERFLOW)
*S BUT NOT OFFSITE VIA DUNLIN (SOUTHMOST STREET) PIPE
ADD HYD ID=7 HYD=270 ID I=1 ID II=3
PRINT HYD ID=7 CODE=1

PARTIAL HYDROGRAPH 270.00

RUNOFF VOLUME = 1.00531 INCHES = 6.5241 ACRE-FEET
PEAK DISCHARGE RATE = 182.92 CFS AT 1.533 HOURS BASIN AREA = .1217 SQ. MI.

PLOT HYD ID=7
FLOW RATE (CFS)
183..----------(----------




```
$S
$S OFFSITE WEST OF SUNRISE: PER SCANLON LAYOUT EXCEPT PIPE NOT SECT LINE CHAN
*************************************************************************
COMPUTE NM HYD       ID=1   HYD=351   DA=0.01500  SQ MI
                     PER A=0  B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1

   k =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   10.956    CFS   UNIT VOLUME =    .9984       B =   526.28      P60 = 1.8700
   AREA =      .002775 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333
```

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 29.997 CFS UNIT VOLUME = .9999 B = 327.09 P60 = 1.8700
AREA = .012225 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

HYDROGRAPH FROM AREA 351.00

RUNOFF VOLUME = .90752 INCHES = .7260 ACRE-FEET
PEAK DISCHARGE RATE = 23.57 CFS AT 1.500 HOURS BASIN AREA = .0150 SQ. MI.

COMPUTE RATING CURVE CID=1 VS NO=32 NO SEGS=1
MIN EL=0 FT MAX EL=5 FT
CH SLP=.001 FP SLP=.001 FT PER FT
N END FT
.030 40
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
0 5 15 0 25 0 40 5

RATING CURVE VALLEY SECTION 32.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.26	2.8	1.7
.53	6.1	5.7
.79	9.8	11.5
1.05	13.9	19.2
1.32	18.4	28.8
1.58	23.3	40.3
1.84	28.6	53.9
2.11	34.3	69.7
2.37	40.5	87.6
2.63	47.1	107.8
2.89	54.1	130.4
3.16	61.5	155.5
3.42	69.3	183.2
3.68	77.6	213.5
3.95	86.2	246.5
4.21	95.3	282.3
4.47	104.8	321.1
4.74	114.7	362.8
5.00	125.0	407.6

*S USE L FROM MID POINT OF BASIN TO MIDPOINT OF NEXT
COMPUTE TRAVEL TIME ID=2 REACH=32 NO VS=1
L=600 ft SLP=.001 ft/ft

TRAVEL TIME TABLE
REACH= 32.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	2.839	1.73	.2729
.526	6.094	5.67	.1793
.789	9.765	11.49	.1416
1.053	13.850	19.18	.1203
1.316	18.352	28.78	.1063
1.579	23.269	40.34	.0961
1.842	28.601	53.94	.0884
2.105	34.349	69.66	.0822

2.632	47.091	107.83	.0728
2.895	54.086	130.45	.0691
3.158	61.496	155.54	.0659
3.421	69.321	183.18	.0631
3.684	77.562	213.47	.0606
3.947	86.219	246.50	.0583
4.211	95.291	282.33	.0563
4.474	104.778	321.07	.0544
4.737	114.681	362.78	.0527
5.000	125.000	407.56	.0511

ROUTE ID=2 HYD=202 INFLOW HYD ID=1 DT=.033333

****

COMPUTE NM HYD ID=3 HYD NO=304 DA=0.02938 SQ MI
PER A=0 B=81.5 C=0 D=18.5 TP=0.1333 HRS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 21.459 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 1.8700
AREA = .005435 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 58.755 CFS UNIT VOLUME = 1.000 B = 327.09 P60 = 1.8700
AREA = .023945 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=3 CODE=1

HYDROGRAPH FROM AREA 304.00

RUNOFF VOLUME = .90752 INCHES = 1.4220 ACRE-FEET
PEAK DISCHARGE RATE = 46.16 CFS AT 1.500 HOURS BASIN AREA = .0294 SQ. MI.

ADD HYD ID=1 HYD=203 ID I=2 ID II=3

COMPUTE RATING CURVE CID=1 VS NO=32 NO SEGS=1
MIN EL=0 FT MAX EL=5 FT
CH SLP=.001 FP SLP=.001 FT PER FT
N END FT
.030 40
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
0 5 15 0 25 0 40 5

RATING CURVE VALLEY SECTION 32.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.26	2.8	1.7
.53	6.1	5.7
.79	9.8	11.5
1.05	13.9	19.2
1.32	18.4	28.8
1.58	23.3	40.3
1.84	28.6	53.9
2.11	34.3	69.7
2.37	40.5	87.6
2.63	47.1	107.8
2.89	54.1	130.4
3.16	61.5	155.5
3.42	69.3	183.2
3.68	77.6	213.5
3.95	86.2	246.5

```
                                    4.47      104.8      321.1
                                    4.74      114.7      362.8
                                    5.00      125.0      407.6
* USE  L FROM MID-POINT OF BASIN TO MID-POINT OF NEXT
COMPUTE TRAVEL TIME  ID=4     REACH=32 NO VS=1
                     L=400    ft       SLP=.001    ft/ft

                              TRAVEL TIME TABLE
                                          REACH= 32.0

                              WATER       AVERAGE     FLOW        TRAVEL
                              DEPTH       AREA        RATE        TIME
                              FEET        SQ.FT.      CFS         HRS
                                 .263        2.839       1.73       .1820
                                 .526        6.094       5.67       .1195
                                 .789        9.765      11.49       .0944
                                1.053       13.850      19.18       .0802
                                1.316       18.352      28.78       .0709
                                1.579       23.269      40.34       .0641
                                1.842       28.601      53.94       .0589
                                2.105       34.349      69.66       .0548
                                2.368       40.512      87.60       .0514
                                2.632       47.091     107.83       .0485
                                2.895       54.086     130.45       .0461
                                3.158       61.496     155.54       .0439
                                3.421       69.321     183.18       .0420
                                3.684       77.562     213.47       .0404
                                3.947       86.219     246.50       .0389
                                4.211       95.291     282.33       .0375
                                4.474      104.778     321.07       .0363
                                4.737      114.681     362.78       .0351
                                5.000      125.000     407.56       .0341
*S HYD 206 = INTO TANAGER POND *LOCATION* FROM NORTH
ROUTE                ID=4     HYD=204     INFLOW HYD ID=1   DT=.033333
*************************************************************************
COMPUTE NM HYD       ID=3   HYD=303   DA=0.06688  SQ MI
                     PER A=0  B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1

    K =   .072723HR    TP =   .133300HR    K/TP RATIO =   .545557     SHAPE CONSTANT, N =  7.097126
    UNIT PEAK =   48.808    CFS   UNIT VOLUME =    .9991       B =   525.84      P60 = 1.8700
    AREA =      .012373 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

    K =   .130784HR    TP =   .133300HR    K/TP RATIO =   .981124     SHAPE CONSTANT, N =  3.599278
    UNIT PEAK =   133.92    CFS   UNIT VOLUME =    1.000       B =   327.50      P60 = 1.8700
    AREA =      .054507 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=3  CODE=1

                                    HYDROGRAPH FROM AREA   303.00


    RUNOFF VOLUME =      .90752 INCHES     =       3.2371 ACRE-FEET
    PEAK DISCHARGE RATE =     105.11 CFS  AT   1.500 HOURS   BASIN AREA =   .0669 SQ. MI.


*************************************************************************
*S HYD 299=COA SATELLITE: ASSUME 10 CFS CLEAN & NON-ERSOIVE; REAL 1993 0.5+-
STORE HYD            ID=2   HYD NO=299  DT=0.16667 HR   DA=.07516  SQ MI
                     FLOW RATES CFS= (LEFT TO RIGHT, DOWN, LEFT TO RIGHT ...)
                     0       .00     .00     .00     .00     .00
                     .00     10      10      10      10      10
```

```
                    10      10      10      10      10      10
                    10      10      10      10      10      10
                    10      10      10      10      10      10
                    10      10      10      10      10      10
                    10      10      10      10      10      10
                    10      10      10      10      10      10
                    10      10      10      10      10      10
                    10      10      10      10      10      10
 *S HYD 205 = INTO TANAGER POND LOCATION FROM WEST (303+299 (COA SATELLITE))
 *                    NEW     NEW       IN1         IN2
 ADD HYD            ID=1   HYD=205    ID I=2      ID II=3
 *                    NEW     NEW       IN1         IN2
 *S  HYD 206 = AP 2 IN FOR FAIR SHARE AND PROPOSED
 ADD HYD            ID=3   HYD=206    ID I=1      ID II=4
 PLOT HYD           ID=3
FLOW RATE (CFS)
167..-------------*-------------------------------------------------------------------------------------------------------------.
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133..-----------------------------------------------------------------------------------------------------------------------.
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67..-----------------------------------------------------------------------------------------------------------------------.
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33..-----------------**-------------------------------------------------------------------------------------------------------.
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   .                *              ************************************************************************************** .
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```

.00 .83 1.67 2.50 3.33 4.17 5.00 5.83 6.67 7.50 8.33 9.17 10.00

TIME HOURS

```
COMPUTE RATING CURVE CID=-1  VS NO=33  NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP=.001      FP SLP=.001     FT PER FT
                      N  END FT
                     .030  40
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       15    0       25    0       40    5
COMPUTE TRAVEL TIME  ID=2     REACH=33 NO VS=1
                     L=350  ft       SLP=.001    ft/ft
```

TRAVEL TIME TABLE

REACH= 33.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	2.839	1.73	.1592
.526	6.094	5.67	.1046
.789	9.765	11.49	.0826
1.053	13.850	19.18	.0702
1.316	18.352	28.78	.0620
1.579	23.269	40.34	.0561
1.842	28.601	53.94	.0516
2.105	34.349	69.66	.0479
2.368	40.512	87.60	.0450
2.632	47.091	107.83	.0425
2.895	54.086	130.45	.0403
3.158	61.496	155.54	.0384
3.421	69.321	183.18	.0368
3.684	77.562	213.47	.0353
3.947	86.219	246.50	.0340
4.211	95.291	282.33	.0328
4.474	104.778	321.07	.0317
4.737	114.681	362.78	.0307
5.000	125.000	407.56	.0298

```
ROUTE                ID=2     HYD=207     INFLOW HYD ID=3   DT=.033333
*************************************************************************
COMPUTE NM HYD       ID=1   HYD=302.2  DA=.07109   SQ MI
                     PER A=0  B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1

     K =   .072794HR    TP =   .133300HR    K/TP RATIO =   .546093     SHAPE CONSTANT, N =  7.088212
     UNIT PEAK =   51.839    CFS   UNIT VOLUME =    .9991       B =   525.42      P60 = 1.8700
     AREA =      .013152 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


     K =   .130584HR    TP =   .133300HR    K/TP RATIO =   .979624     SHAPE CONSTANT, N =  3.604905
     UNIT PEAK =   142.52    CFS   UNIT VOLUME =    1.000       B =   327.91      P60 = 1.8700
     AREA =      .057938 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

FRINT HYD            ID=1   CODE=1
```

HYDROGRAPH FROM AREA 302.20

```
     RUNOFF VOLUME =      .90752 INCHES     =       3.4408 ACRE-FEET
     PEAK DISCHARGE RATE =     111.79 CFS  AT   1.500 HOURS   BASIN AREA =   .0711 SQ. MI.
```

```
ADD HYD              ID=4   HYD=209    ID I=1      ID II=2
COMPUTE RATING CURVE CID=-1  VS NO=33  NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP=.001      FP SLP=.001     FT PER FT
                      N  END FT
                     .030  40
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       15    0       25    0       40    5
COMPUTE TRAVEL TIME  ID=2     REACH=33 NO VS=1
                     L=500  ft       SLP=.001    ft/ft
```

TRAVEL TIME TABLE

REACH= 33.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	2.839	1.73	.2274
.526	6.094	5.67	.1494
.789	9.765	11.49	.1180
1.053	13.850	19.18	.1003
1.316	18.352	28.78	.0886
1.579	23.269	40.34	.0801
1.842	28.601	53.94	.0736
2.105	34.349	69.66	.0685
2.368	40.512	87.60	.0642
2.632	47.091	107.83	.0607
2.895	54.086	130.45	.0576
3.158	61.496	155.54	.0549
3.421	69.321	183.18	.0526
3.684	77.562	213.47	.0505
3.947	86.219	246.50	.0486
4.211	95.291	282.33	.0469
4.474	104.778	321.07	.0453
4.737	114.681	362.78	.0439
5.000	125.000	407.56	.0426

```
ROUTE                ID=2     HYD=211     INFLOW HYD ID=4   DT=.033333
**************************************************************************
* 302.1 = SOUTH END OF BASIN 302
COMPUTE NM HYD       ID=3    HYD=302.1  DA=.01031   SQ MI
                     PER A=0  B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1

   K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   7.5303    CFS   UNIT VOLUME =    .9978       B =   526.28      P60 = 1.8700
   AREA =      .001907 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


   K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
   UNIT PEAK =   20.618    CFS   UNIT VOLUME =    .9997       B =   327.09      P60 = 1.8700
   AREA =      .008403 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=3    CODE=1

                                HYDROGRAPH FROM AREA   302.10


   RUNOFF VOLUME =      .90752 INCHES     =        .4990 ACRE-FEET
   PEAK DISCHARGE RATE =      16.21 CFS  AT   1.500 HOURS   BASIN AREA =   .0103 SQ. MI.


**************************************************************************
*S  HYD 212 = COMBINED INTO DUNLIN/ANDALUSIAN PIPE @ TANAGER
```

```
*                    NEW      NEW        IN1          IN2
ADD HYD              ID=1   HYD=212    ID I=2       ID I=3
PRINT HYD            ID=1   CODE=2
```

PARTIAL HYDROGRAPH 212.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.533	23.7	5.067	10.6	7.600	10.0	10.133	3.7
.067	.0	2.600	21.6	5.133	10.6	7.667	10.0	10.200	3.4
.133	.0	2.667	19.7	5.200	10.6	7.733	10.0	10.267	2.9
.200	.0	2.733	18.3	5.267	10.6	7.800	10.0	10.333	2.5
.267	.0	2.800	17.2	5.333	10.6	7.867	10.0	10.400	2.1
.333	.0	2.867	16.2	5.400	10.6	7.933	10.0	10.467	1.8
.400	.0	2.933	15.4	5.467	10.6	8.000	10.0	10.533	1.6
.467	.0	3.000	14.7	5.533	10.6	8.067	10.0	10.600	1.4
.533	.0	3.067	14.1	5.600	10.6	8.133	10.0	10.667	1.2
.600	.0	3.133	13.6	5.667	10.7	8.200	10.0	10.733	1.0
.667	.0	3.200	13.2	5.733	10.7	8.267	10.0	10.800	.8
.733	.0	3.267	12.8	5.800	10.7	8.333	10.0	10.867	.7
.800	.0	3.333	12.5	5.867	10.7	8.400	10.0	10.933	.5
.867	.0	3.400	12.2	5.933	10.7	8.467	10.0	11.000	.4
.933	.0	3.467	12.0	6.000	10.7	8.533	10.0	11.067	.3
1.000	.0	3.533	11.7	6.067	10.7	8.600	10.0	11.133	.3
1.067	.0	3.600	11.5	6.133	10.6	8.667	10.0	11.200	.2
1.133	.0	3.667	11.4	6.200	10.4	8.733	10.0	11.267	.2
1.200	.2	3.733	11.2	6.267	10.3	8.800	10.0	11.333	.1
1.267	2.3	3.800	11.1	6.333	10.3	8.867	10.0	11.400	.1
1.333	12.5	3.867	11.0	6.400	10.2	8.933	10.0	11.467	.1
1.400	57.8	3.933	10.9	6.467	10.2	9.000	10.0	11.533	.1
1.467	167.6	4.000	10.9	6.533	10.1	9.067	10.0	11.600	.0
1.533	247.5	4.067	10.8	6.600	10.1	9.133	10.0	11.667	.0
1.600	233.1	4.133	10.8	6.667	10.1	9.200	10.0	11.733	.0
1.667	190.5	4.200	10.7	6.733	10.1	9.267	10.0	11.800	.0
1.733	152.1	4.267	10.7	6.800	10.1	9.333	10.0	11.867	.0
1.800	121.0	4.333	10.7	6.867	10.0	9.400	10.0	11.933	.0
1.867	98.8	4.400	10.7	6.933	10.0	9.467	10.0	12.000	.0
1.933	83.6	4.467	10.6	7.000	10.0	9.533	10.0	12.067	.0
2.000	72.6	4.533	10.6	7.067	10.0	9.600	10.0	12.133	.0
2.067	63.3	4.600	10.6	7.133	10.0	9.667	10.0	12.200	.0
2.133	53.1	4.667	10.6	7.200	10.0	9.733	10.0	12.267	.0
2.200	44.3	4.733	10.6	7.267	10.0	9.800	10.0	12.333	.0
2.267	38.0	4.800	10.6	7.333	10.0	9.867	10.0	12.400	.0
2.333	33.3	4.867	10.6	7.400	10.0	9.933	10.0	12.467	.0
2.400	29.3	4.933	10.6	7.467	10.0	10.000	10.0		
2.467	26.1	5.000	10.6	7.533	10.0	10.067	4.4		

```
RUNOFF VOLUME =     1.16008 INCHES     =      16.5702 ACRE-FEET
PEAK DISCHARGE RATE =     248.28 CFS  AT   1.567 HOURS   BASIN AREA =   .2678 SQ. MI.
```

```
 PLOT HYD             ID=1
FLOW RATE (CFS)
248..-------------I------------------------------------------------------------------------------------------.
    .                                                                                                        .
    .                                                                                                        .
    .               I                                                                                        .
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    .                                                                                                        .
    .              I                                                                                         .
    .               I                                                                                        .
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    .                                                                                                        .
199..-------------------------------------------------------------------------------------------------------'
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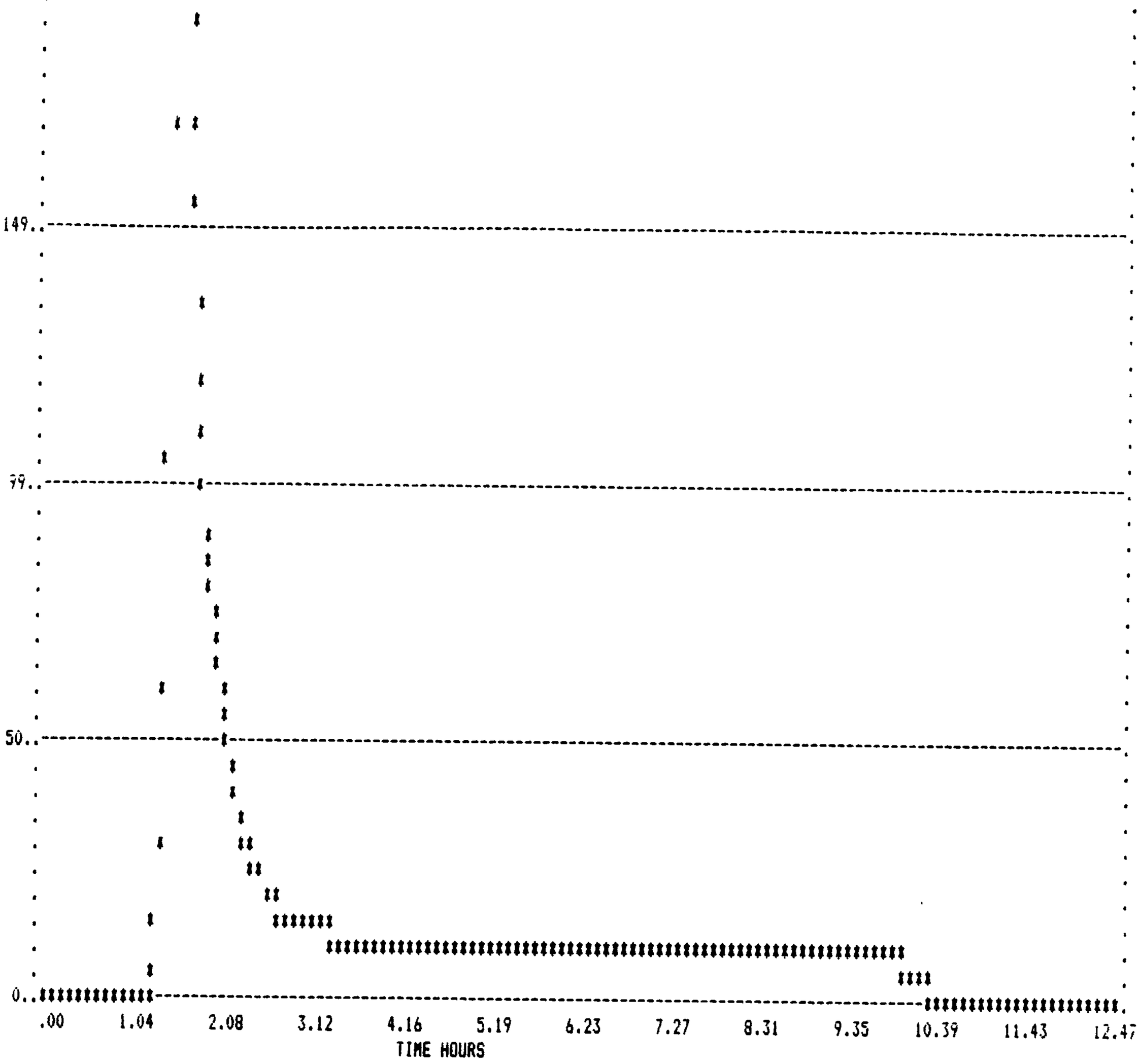


COMPUTE RATING CURVE CID=-1 VS NO=43 NO SEGS=-1 SLP=.0375 D=4 FT N=.013
COMPUTE TRAVEL TIME ID=2 REACH=43 NO VS=1
L=1330 ft SLP=.0375 ft/ft

TRAVEL TIME TABLE

REACH= 43.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.208	.250	1.46	.0632
.417	.695	6.33	.0405
.625	1.255	14.73	.0315
.834	1.898	26.48	.0265
1.042	2.604	41.35	.0233
1.251	3.358	59.00	.0210
1.459	4.146	79.04	.0194
1.668	4.960	101.06	.0181
1.876	5.788	124.58	.0172
2.084	6.621	149.10	.0164
2.293	7.451	174.07	.0158

		2.710	9.082	222.92	.0150
		2.918	9.823	245.42	.0148
		3.127	10.539	265.56	.0147
		3.335	11.195	282.31	.0147
		3.544	11.773	294.30	.0148
		3.752	12.243	299.22	.0151
		4.000	12.566	299.22	.0155

ROUTE ID=2 HYD=214 INFLOW HYD ID=1 DT=.033333
COMPUTE RATING CURVE CID=-1 VS NO=44 NO SEGS=-1 SLP=.0110 D=5 FT N=.013
COMPUTE TRAVEL TIME ID=3 REACH=44 NO VS=1
L=650t SLP=.0110 ft/ft

TRAVEL TIME TABLE

REACH= 44.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.261	.390	1.43	.0492
.521	1.086	6.22	.0315
.782	1.961	14.46	.0245
1.042	2.966	26.01	.0206
1.303	4.069	40.61	.0181
1.563	5.246	57.94	.0163
1.824	6.479	77.62	.0151
2.084	7.749	99.24	.0141
2.345	9.043	122.34	.0133
2.606	10.345	146.42	.0128
2.866	11.641	170.93	.0123
3.127	12.918	195.31	.0119
3.387	14.159	218.90	.0117
3.648	15.348	241.00	.0115
3.908	16.467	260.77	.0114
4.169	17.492	277.22	.0114
4.429	18.395	289.00	.0115
4.690	19.130	293.83	.0118
5.000	19.635	293.83	.0121

ROUTE ID=3 HYD=216 INFLOW HYD ID=2 DT=.033333
COMPUTE RATING CURVE CID=-1 VS NO=44 NO SEGS=-1 SLP=.0120 D=5.5 FT N=.013
COMPUTE TRAVEL TIME ID=5 REACH=44 NO VS=1
L=160t SLP=.0020 ft/ft

TRAVEL TIME TABLE

REACH= 44.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.287	.472	1.93	.0109
.573	1.314	8.38	.0070
.860	2.373	19.47	.0054
1.146	3.589	35.02	.0046
1.433	4.923	54.69	.0040
1.720	6.348	78.02	.0036
2.006	7.839	104.53	.0033
2.293	9.377	133.65	.0031
2.579	10.942	164.76	.0030
2.866	12.518	197.18	.0028
3.153	14.086	230.20	.0027
3.439	15.630	263.03	.0026
3.726	17.132	294.80	.0026
4.013	18.571	324.56	.0025
4.299	19.925	351.19	.0025
4.586	21.166	373.34	.0025
4.872	22.258	389.20	.0025

	5.500	23.758	395.71	.0027

ROUTE ID=5 HYD=218 INFLOW HYD ID=3 DT=.033333
PRINT HYD ID=5 CODE=2

PARTIAL HYDROGRAPH 218.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.533	25.0	5.067	10.6	7.600	10.0	10.133	4.7
.067	.0	2.600	22.7	5.133	10.6	7.667	10.0	10.200	3.8
.133	.0	2.667	20.8	5.200	10.6	7.733	10.0	10.267	3.4
.200	.0	2.733	19.2	5.267	10.6	7.800	10.0	10.333	3.0
.267	.0	2.800	17.9	5.333	10.6	7.867	10.0	10.400	2.8
.333	.0	2.867	16.8	5.400	10.6	7.933	10.0	10.467	2.5
.400	.0	2.933	15.9	5.467	10.6	8.000	10.0	10.533	2.2
.467	.0	3.000	15.2	5.533	10.6	8.067	10.0	10.600	1.7
.533	.0	3.067	14.5	5.600	10.6	8.133	10.0	10.667	1.5
.600	.0	3.133	13.8	5.667	10.6	8.200	10.0	10.733	1.3
.667	.0	3.200	13.4	5.733	10.7	8.267	10.0	10.800	1.1
.733	.0	3.267	13.0	5.800	10.7	8.333	10.0	10.867	1.0
.800	.0	3.333	12.7	5.867	10.7	8.400	10.0	10.933	.8
.867	.0	3.400	12.4	5.933	10.7	8.467	10.0	11.000	.7
.933	.0	3.467	12.1	6.000	10.7	8.533	10.0	11.067	.5
1.000	.0	3.533	11.9	6.067	10.7	8.600	10.0	11.133	.4
1.067	.0	3.600	11.7	6.133	10.7	8.667	10.0	11.200	.3
1.133	.0	3.667	11.5	6.200	10.5	8.733	10.0	11.267	.3
1.200	.0	3.733	11.3	6.267	10.4	8.800	10.0	11.333	.2
1.267	.2	3.800	11.2	6.333	10.3	8.867	10.0	11.400	.2
1.333	2.4	3.867	11.1	6.400	10.3	8.933	10.0	11.467	.1
1.400	27.0	3.933	11.0	6.467	10.2	9.000	10.0	11.533	.1
1.467	119.2	4.000	10.9	6.533	10.2	9.067	10.0	11.600	.1
1.533	230.7	4.067	10.9	6.600	10.1	9.133	10.0	11.667	.1
1.600	244.4	4.133	10.8	6.667	10.1	9.200	10.0	11.733	.0
1.667	206.3	4.200	10.8	6.733	10.1	9.267	10.0	11.800	.0
1.733	165.4	4.267	10.7	6.800	10.1	9.333	10.0	11.867	.0
1.800	131.7	4.333	10.7	6.867	10.1	9.400	10.0	11.933	.0
1.867	106.4	4.400	10.7	6.933	10.0	9.467	10.0	12.000	.0
1.933	88.9	4.467	10.7	7.000	10.0	9.533	10.0	12.067	.0
2.000	77.0	4.533	10.6	7.067	10.0	9.600	10.0	12.133	.0
2.067	67.1	4.600	10.6	7.133	10.0	9.667	10.0	12.200	.0
2.133	57.8	4.667	10.6	7.200	10.0	9.733	10.0	12.267	.0
2.200	48.1	4.733	10.6	7.267	10.0	9.800	10.0	12.333	.0
2.267	40.9	4.800	10.6	7.333	10.0	9.867	10.0	12.400	.0
2.333	35.5	4.867	10.6	7.400	10.0	9.933	10.0	12.467	.0
2.400	31.3	4.933	10.6	7.467	10.0	10.000	10.0	12.533	.0
2.467	27.9	5.000	10.6	7.533	10.0	10.067	8.0	12.600	.0

RUNOFF VOLUME = 1.16008 INCHES = 16.5702 ACRE-FEET
PEAK DISCHARGE RATE = 248.50 CFS AT 1.567 HOURS BASIN AREA = .2678 SQ. MI.

*S
*S HYD 226 ALL THROUGH SUNRISE, BUT NOT ROUTED IN STUB CHANNEL
* NEW NEW IN1 IN2
ADD HYD ID=8 HYD=226 ID I=5 ID II=7
COMPUTE RATING CURVE CID=1 VS NO=45 NO SEGS=1
MIN EL=0 FT MAX EL=5 FT
CH SLP= .0316 FP SLP=.0316 FT PER FT
N END FT
.015 30
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
0 5 10 0 20 0 30 5

RATING CURVE VALLEY SECTION 45.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FL RATE CFS
.00	.0	.0
.26	2.8	19.2
.53	5.8	62.0
.79	9.1	123.9
1.05	12.7	203.9
1.32	16.6	301.7
1.58	20.8	417.2
1.84	25.2	550.8
2.11	29.9	702.9
2.37	34.9	873.8
2.63	40.2	1064.1
2.89	45.7	1274.3
3.16	51.5	1504.9
3.42	57.6	1756.4
3.68	64.0	2029.4
3.95	70.6	2324.5
4.21	77.6	2642.2
4.47	84.8	2983.0
4.74	92.2	3347.5
5.00	100.0	3736.2

COMPUTE TRAVEL TIME ID=5 REACH=45 NO VS=1
L=270 ft SLP=.0316 ft/ft

TRAVEL TIME TABLE

REACH= 45.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	2.770	19.25	.0108
.526	5.817	62.00	.0070
.789	9.141	123.95	.0055
1.053	12.742	203.94	.0047
1.316	16.620	301.67	.0041
1.579	20.776	417.21	.0037
1.842	25.208	550.82	.0034
2.105	29.917	702.87	.0032
2.368	34.903	873.80	.0030
2.632	40.166	1064.10	.0028
2.895	45.706	1274.28	.0027
3.158	51.524	1504.87	.0026
3.421	57.618	1756.41	.0025
3.684	63.989	2029.44	.0024
3.947	70.637	2324.51	.0023
4.211	77.562	2642.17	.0022
4.474	84.765	2982.97	.0021
4.737	92.244	3347.46	.0021
5.000	100.000	3736.18	.0020

$S HYD 228 = SUNRISE + OFFSITE CONTRIB @ JUNCT W SNOW VISTA POST ROUTE STUB
$S HYD 228 = AP 8
ROUTE ID=5 HYD=228 INFLOW HYD ID=8 DT=.033333
PRINT HYD ID=5 CODE=2

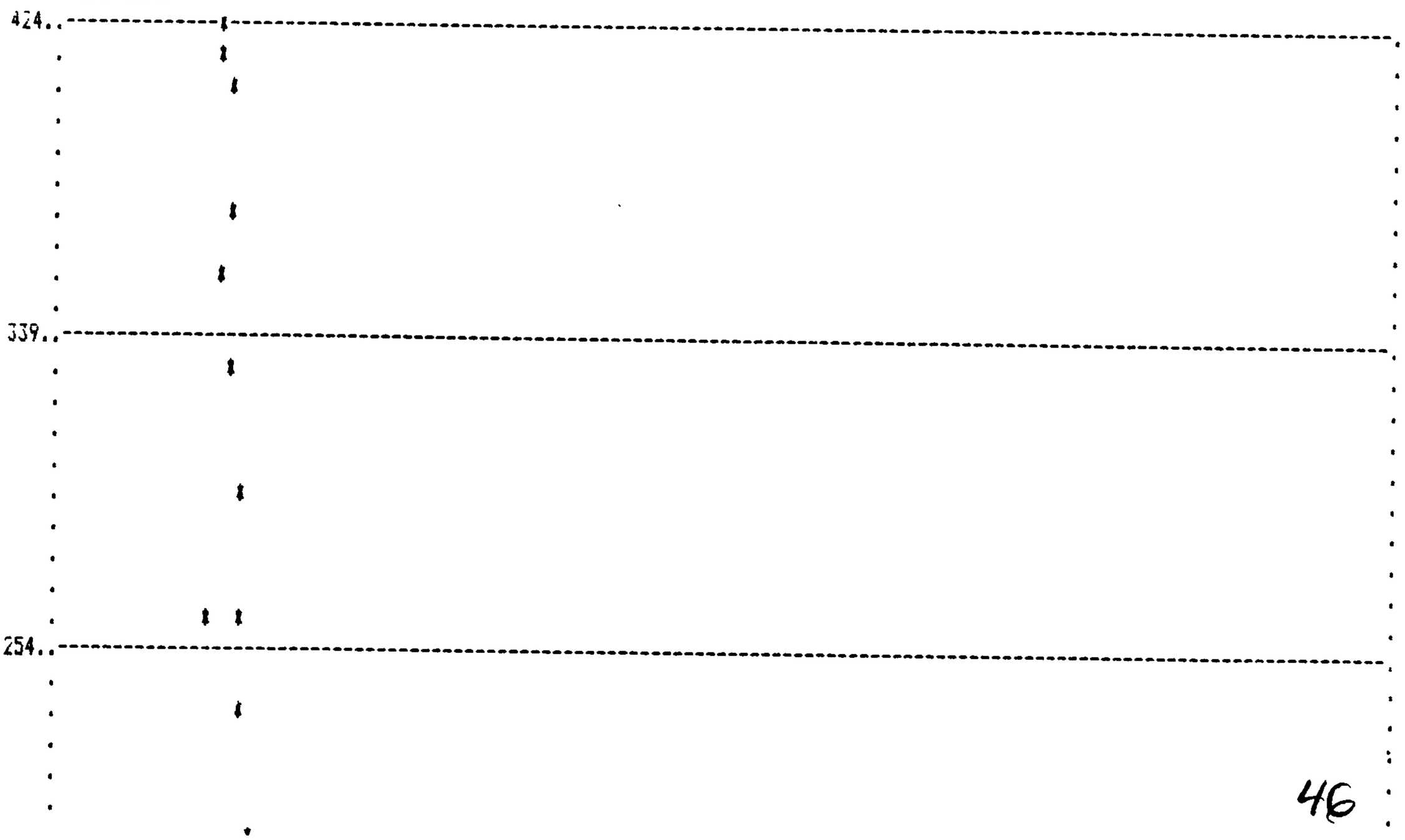
PARTIAL HYDROGRAPH 228.00

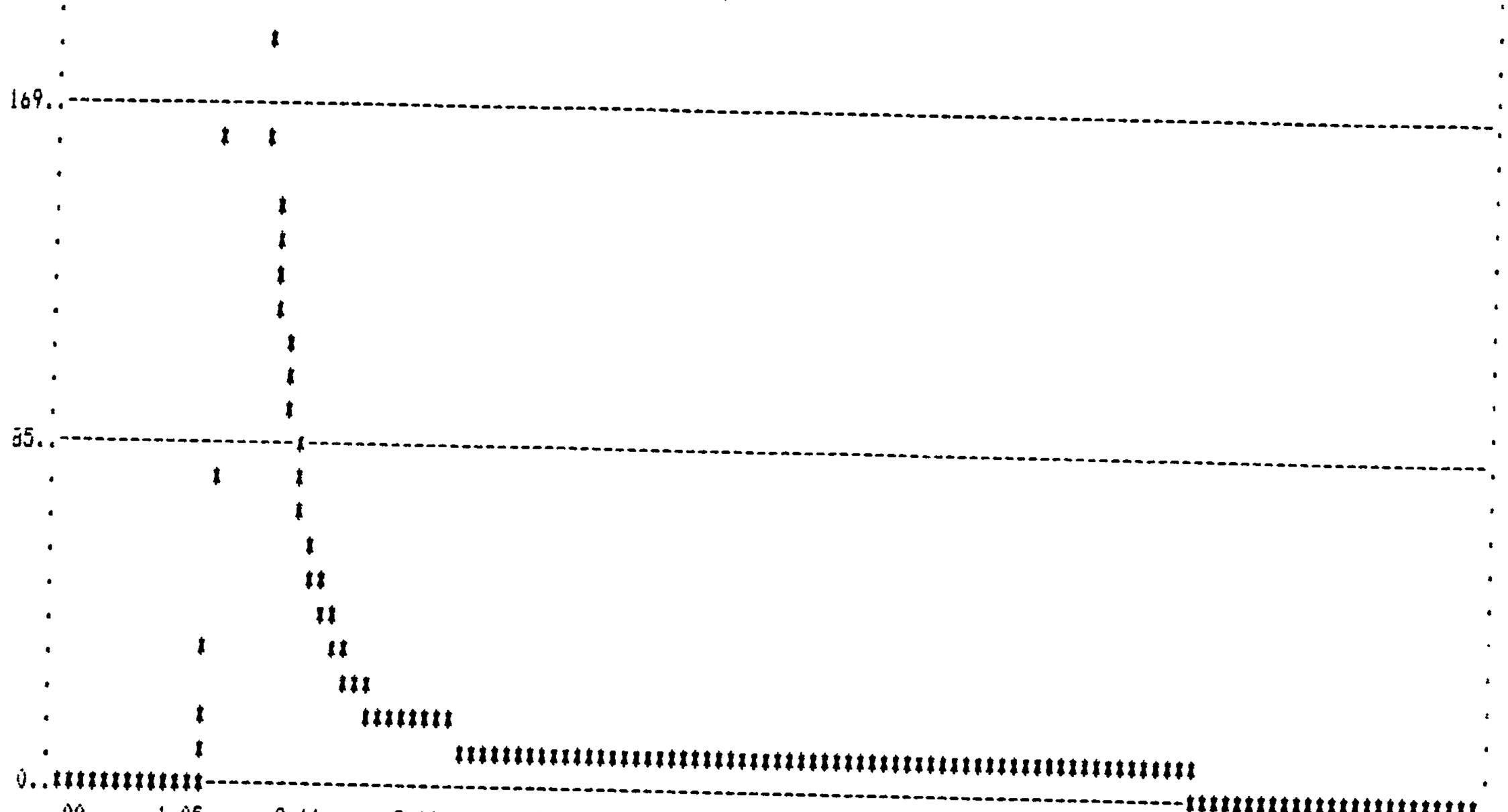
TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.533	31.8	5.067	11.1	7.600	10.0	10.133	3.6
.067	.0	2.600	28.4	5.133	11.2	7.667	10.0	10.200	3.9
.133	.0	2.667	25.6	5.200	11.2	7.733	10.0	10.267	3.5
.200	.0	2.733	23.2	5.267	11.2	7.800	10.0	10.333	3.1
.267	.0	2.800	21.4	5.333	11.2	7.867	10.0	10.400	2.7
.333	.0	2.867	19.9	5.400	11.2	7.933	10.0	10.467	2.3

.467	.0	3.000	17.6	5.533	11.2	8.067	10.0	10.600	1.8
.533	.0	3.067	16.6	5.600	11.2	8.133	10.0	10.667	1.5
.600	.0	3.133	15.7	5.667	11.3	8.200	10.0	10.733	1.3
.667	.0	3.200	15.1	5.733	11.3	8.267	10.0	10.800	1.2
.733	.0	3.267	14.5	5.800	11.3	8.333	10.0	10.867	1.0
.800	.0	3.333	14.0	5.867	11.3	8.400	10.0	10.933	.8
.867	.0	3.400	13.6	5.933	11.3	8.467	10.0	11.000	.7
.933	.0	3.467	13.2	6.000	11.4	8.533	10.0	11.067	.6
1.000	.0	3.533	12.9	6.067	11.4	8.600	10.0	11.133	.4
1.067	.0	3.600	12.6	6.133	11.3	8.667	10.0	11.200	.4
1.133	.0	3.667	12.4	6.200	11.1	8.733	10.0	11.267	.3
1.200	.2	3.733	12.2	6.267	10.8	8.800	10.0	11.333	.3
1.267	2.7	3.800	12.0	6.333	10.6	8.867	10.0	11.400	.2
1.333	15.8	3.867	11.8	6.400	10.4	8.933	10.0	11.467	.1
1.400	79.0	3.933	11.7	6.467	10.3	9.000	10.0	11.533	.1
1.467	259.0	4.000	11.6	6.533	10.3	9.067	10.0	11.600	.1
1.533	411.9	4.067	11.5	6.600	10.2	9.133	10.0	11.667	.1
1.600	403.7	4.133	11.4	6.667	10.1	9.200	10.0	11.733	.0
1.667	332.3	4.200	11.3	6.733	10.1	9.267	10.0	11.800	.0
1.733	263.3	4.267	11.3	6.800	10.1	9.333	10.0	11.867	.0
1.800	206.0	4.333	11.3	6.867	10.1	9.400	10.0	11.933	.0
1.867	163.0	4.400	11.2	6.933	10.0	9.467	10.0	12.000	.0
1.933	134.7	4.467	11.2	7.000	10.0	9.533	10.0	12.067	.0
2.000	115.3	4.533	11.2	7.067	10.0	9.600	10.0	12.133	.0
2.067	100.0	4.600	11.2	7.133	10.0	9.667	10.0	12.200	.0
2.133	84.4	4.667	11.2	7.200	10.0	9.733	10.0	12.267	.0
2.200	67.9	4.733	11.1	7.267	10.0	9.800	10.0	12.333	.0
2.267	55.4	4.800	11.1	7.333	10.0	9.867	10.0	12.400	.0
2.333	47.0	4.867	11.1	7.400	10.0	9.933	10.0	12.467	.0
2.400	40.8	4.933	11.1	7.467	10.0	10.000	10.0	12.533	.0
2.467	35.8	5.000	11.1	7.533	10.0	10.067	8.6	12.600	.0

RUNOFF VOLUME = 1.11173 INCHES = 23.0943 ACRE-FEET
PEAK DISCHARGE RATE = 423.67 CFS AT 1.567 HOURS BASIN AREA = .3895 SQ. MI.

PLOT HYD ID=5






```
#S HYD 230 = TOTAL COMBINED W SNOW VISTA
#S HYD 230 = AP 10: TO BE <= ALLOWED PER SNOW VISTA DESIGN
#                      NEW      NEW        IN1          IN2
ADD HYD               ID=1   HYD=230    ID I=5       ID II=6
PRINT HYD             ID=1   CODE=2
```

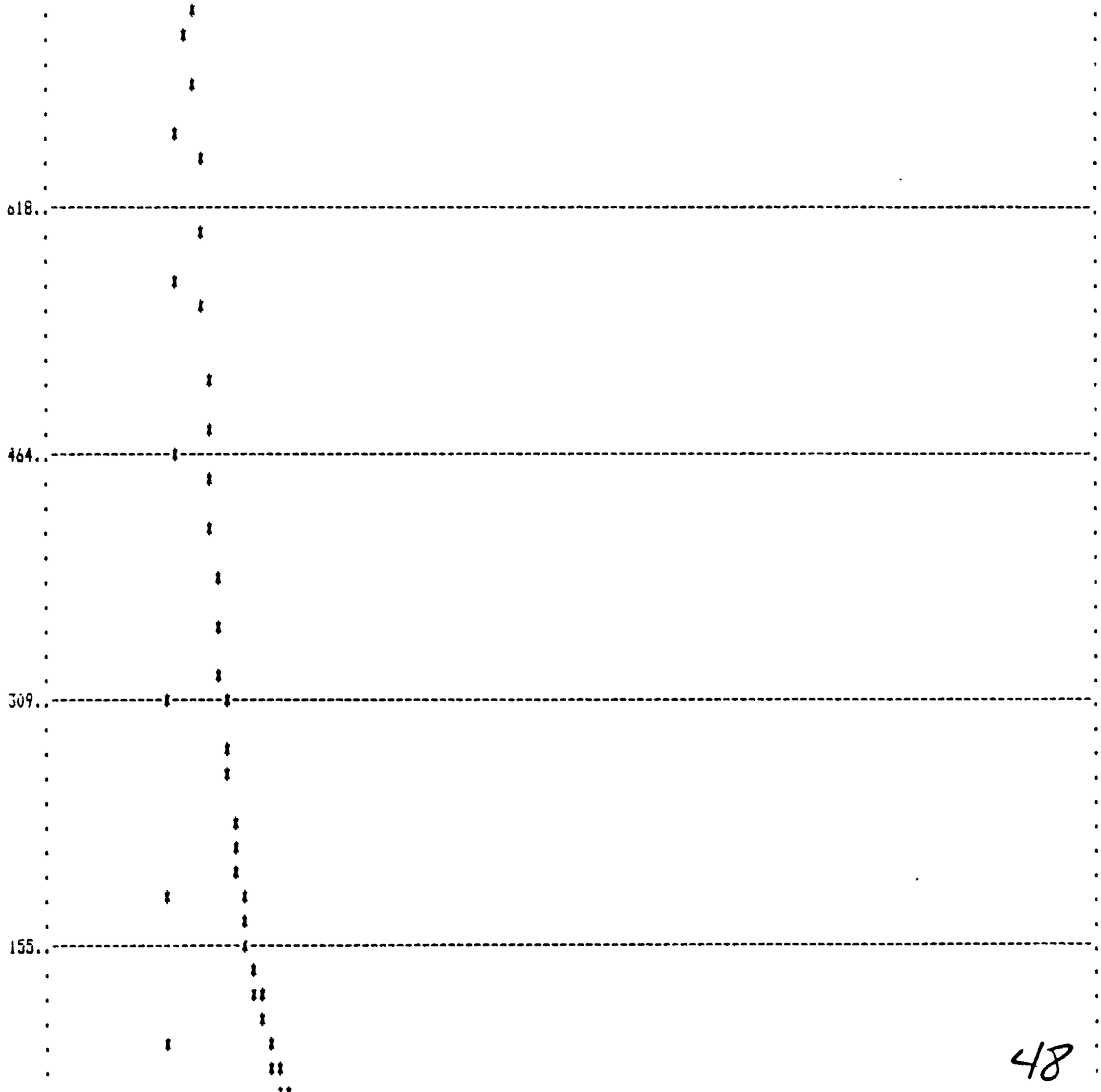
PARTIAL HYDROGRAPH 230.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.533	117.3	5.067	15.3	7.600	10.9	10.133	5.0
.067	.0	2.600	101.6	5.133	15.1	7.667	10.8	10.200	3.9
.133	.0	2.667	86.9	5.200	15.0	7.733	10.8	10.267	3.5
.200	.0	2.733	76.3	5.267	14.8	7.800	10.7	10.333	3.1
.267	.0	2.800	67.9	5.333	14.7	7.867	10.6	10.400	2.7
.333	.0	2.867	61.1	5.400	14.6	7.933	10.6	10.467	2.3
.400	.0	2.933	54.5	5.467	14.6	8.000	10.5	10.533	2.0
.467	.0	3.000	48.3	5.533	14.5	8.067	10.5	10.600	1.8
.533	.0	3.067	44.3	5.600	14.4	8.133	10.4	10.667	1.5
.600	.0	3.133	41.0	5.667	14.4	8.200	10.4	10.733	1.4
.667	.0	3.200	38.1	5.733	14.3	8.267	10.4	10.800	1.2
.733	.0	3.267	35.6	5.800	14.3	8.333	10.3	10.867	1.0
.800	.0	3.333	33.3	5.867	14.3	8.400	10.3	10.933	.8
.867	.0	3.400	31.2	5.933	14.3	8.467	10.3	11.000	.7
.933	.0	3.467	29.4	6.000	14.3	8.533	10.2	11.067	.6
1.000	.0	3.533	27.9	6.067	14.3	8.600	10.2	11.133	.5
1.067	.0	3.600	26.7	6.133	14.2	8.667	10.2	11.200	.4
1.133	.0	3.667	25.6	6.200	13.9	8.733	10.2	11.267	.3
1.200	.3	3.733	24.6	6.267	13.5	8.800	10.2	11.333	.2
1.267	3.5	3.800	23.8	6.333	13.3	8.867	10.1	11.400	.2
1.333	19.2	3.867	23.0	6.400	13.0	8.933	10.1	11.467	.1
1.400	91.8	3.933	22.3	6.467	12.9	9.000	10.1	11.533	.1
1.467	316.8	4.000	21.6	6.533	12.7	9.067	10.1	11.600	.1
1.533	572.0	4.067	21.0	6.600	12.6	9.133	10.1	11.667	.1
1.600	721.3	4.133	20.4	6.667	12.5	9.200	10.1	11.733	.0
1.667	773.0	4.200	19.8	6.733	12.3	9.267	10.1	11.800	.0

1.800	653.9	4.333	18.7	6.867	12.1	9.400	10.1	11.933	.0
1.867	559.5	4.400	18.2	6.933	11.9	9.467	10.1	12.000	.0
1.933	479.2	4.467	17.8	7.000	11.8	9.533	10.0	12.067	.0
2.000	411.0	4.533	17.4	7.067	11.7	9.600	10.0	12.133	.0
2.067	354.4	4.600	17.1	7.133	11.6	9.667	10.0	12.200	.0
2.133	302.8	4.667	16.7	7.200	11.5	9.733	10.0	12.267	.0
2.200	256.0	4.733	16.4	7.267	11.4	9.800	10.0	12.333	.0
2.267	214.6	4.800	16.1	7.333	11.3	9.867	10.0	12.400	.0
2.333	182.3	4.867	15.9	7.400	11.2	9.933	10.0	12.467	.0
2.400	156.1	4.933	15.7	7.467	11.1	10.000	10.0	12.533	.0
2.467	134.4	5.000	15.5	7.533	11.0	10.067	8.6	12.600	.0

RUNOFF VOLUME = 1.09176 INCHES = 50.6546 ACRE-FEET
PEAK DISCHARGE RATE = 773.04 CFS AT 1.667 HOURS BASIN AREA = .8700 SQ. MI.

PLOT HYD ID=1



FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 05:07:30

PAS001 POND NEAR PASO FINO & HALTER, PART 1
ONSITE DEVELOPED, WITHOUT BASINS 105 & 106
GET ALLOWED OUTFALL RATE FOR SMALL POND

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
*S pond in halter btw PASo fino & hackamore, 100-yr storm, case 1										
*S TO CHECK MIN ALLOWABLE Q OUT FROM POND, SET 155 & 156 TO ZERO AREA										
S & RUN REST OF SYSTEM WITH NO ONSITE PONDING. APPROXIMATE REROUTING										
S AS 700 LF OF 66" RCP: ACTUAL SIZE WILL BE LESS, SO Q ALLOW WILL INCREASE										
*S										
S INCLUDES BASIN 314 POSSIBLY TO SNOW VISTA POND, USE PER SNOW VISTA DESIGN										
S NO SEDIMENT BULKING, ALL LAND TREATMENTS B=LANDSCAPE OR D=IMPERVIOUS										
*S NEW SUNRISE TERRACE (UNITS III-V) 46.8% B & 53.2% D										
*S										
*S TOWER RD FLOW DIVIDES AT SANDERLING: UP TO 23 CFS FALLS BACK INTO SUNRISE										
*S TERRACE & THE REMAINDER FLOWS TO DROP INLETS IN TOWER AT SNOW VISTA CHANNEL										
*S										
S BASINS 101-108 PLAN = BASINS 151-158 IN THIS AHYMO FILE										
S REVISED 3-16-94 FOR BASIN 305 BECOMES 351 - 355										
*S 3-19-94 FOR NEW HALTER POND GEOMETRY										
*S 4/20/94 FOR REMOVE HALTER POND, ADD ANDALUSIAN POND AT HALTER										
S RAINFALL HUNDRED YR TYPE=1 RAIN QUARTER=0.0 RAIN ONE=1.87										
*S RAIN SIX=2.20 RAIN DAY=2.68 DT=.033333 HR										
RAINFALL TYPE= 1									RAIN6=	2.200
COMPUTE NM HYD	308.00	-	1	.12500	287.77	10.282	1.54229	1.500	3.597 PER IMP=	67.40
ROUTE	100.00	1	2	.12500	246.74	10.282	1.54229	1.567	3.084	
COMPUTE NM HYD	309.00	-	3	.07575	119.17	3.666	.90752	1.500	2.458 PER IMP=	18.50
S HYD 102 = (309+ROUTED 308) CROSSING 106TH BTW EUCARIZ & SUNSET GARDEN										
S HYD 102 = AP 4										
ADD HYD	102.00	2& 3	1	.20075	358.25	13.948	1.30277	1.533	2.788	
ROUTE	104.00	1	4	.20075	342.73	13.948	1.30277	1.567	2.668	
ROUTE	106.00	4	2	.20075	344.75	13.948	1.30277	1.600	2.683	
COMPUTE NM HYD	314.00	-	4	.05469	85.90	2.647	.90752	1.500	2.454 PER IMP=	18.50
COMPUTE NM HYD	310.00	-	3	.02922	45.90	1.414	.90752	1.500	2.455 PER IMP=	18.50
*S HYD 117 = 310+314 (THE "EXTRA" 35 AC), BOTH EAST OF 106TH, TO DESILT BASIN										
ADD HYD	117.00	3& 4	1	.08391	131.81	4.061	.90752	1.500	2.454	
ADD HYD	118.00	1& 2	7	.28466	449.91	18.010	1.18626	1.567	2.470	
*S START NEW BRANCH										
COMPUTE NM HYD	306.00	-	2	.03969	62.35	1.921	.90752	1.500	2.454 PER IMP=	18.50
ROUTE	110.00	2	3	.03969	45.78	1.921	.90753	1.600	1.802	
COMPUTE NM HYD	307.00	-	4	.04547	71.42	2.201	.90752	1.500	2.454 PER IMP=	18.50
ADD HYD	112.00	3& 4	2	.08516	110.05	4.122	.90752	1.533	2.019	
COMPUTE NM HYD	352.00	-	1	.03141	49.34	1.520	.90752	1.500	2.455 PER IMP=	18.50
ROUTE	111.00	1	3	.03141	48.81	1.520	.90753	1.533	2.428	
ADD HYD	113.00	2& 3	4	.11657	158.86	5.642	.90752	1.533	2.129	
COMPUTE NM HYD	353.00	-	1	.00172	2.72	.083	.90752	1.500	2.468 PER IMP=	18.50
*S HYD 114 = AP 3 AT 106th ST										
ADD HYD	114.00	1& 4	3	.11829	161.53	5.725	.90752	1.533	2.134	
ROUTE	116.00	3	4	.11829	161.06	5.725	.90752	1.567	2.128	
ADD HYD	119.10	4& 7	3	.40295	610.97	23.735	1.10443	1.567	2.369	
COMPUTE NM HYD	315.00	-	1	.01234	19.40	.597	.90752	1.500	2.456 PER IMP=	18.50
*S HYD 119 = COMBINED FLOW INTO SNOW VISTA DESILT BASIN										
*S HYD 119 = AP 5 IN										
ADD HYD	119.00	1& 3	5	.41529	628.19	24.332	1.09858	1.567	2.364	
*S HYD 501 = ROUTED OUFLOW FROM SNOW VISTA DESILTING BASIN										
*S HYD 501 = AP 5 OUT										

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	
ROUTE RESERVOIR	501.00	5	3	.41529	434.75	24.332	1.09858	1.700	1.636	AC-FT=	6.423
*S START SNOW VISTA CHANNEL											
ROUTE	121.00	3	2	.41529	432.74	24.332	1.09858	1.733	1.628		
COMPUTE NM HYD	311.00	-	3	.03813	59.90	1.846	.90752	1.500	2.454	PER IMP=	18.50
ADD HYD	122.00	2& 3	4	.45342	457.91	26.178	1.08251	1.700	1.578		
COMPUTE NM HYD	312.00	-	1	.01188	18.67	.575	.90752	1.500	2.456	PER IMP=	18.50
ADD HYD	123.00	1& 4	7	.46530	466.43	26.753	1.07804	1.700	1.566		
*S START NEW BRANCH, TO TOWER RD											
COMPUTE NM HYD	354.00	-	1	.00531	8.35	.257	.90752	1.500	2.458	PER IMP=	18.50
COMPUTE NM HYD	355.00	-	2	.00266	4.19	.129	.90752	1.500	2.463	PER IMP=	18.50
ADD HYD	103.00	1& 2	3	.00797	12.55	.386	.90745	1.500	2.460		
COMPUTE NM HYD	403.00	-	1	.00688	14.08	.483	1.31642	1.500	3.198	PER IMP=	50.00
*S HYD 105 = COMBINED FLOW AT TOWER-TANAGER-106th INTERSECTION											
ADD HYD	105.00	1& 3	4	.01485	26.63	.869	1.09691	1.500	2.802		
COMPUTE NM HYD	401.00	-	1	.01016	20.78	.713	1.31642	1.500	3.196	PER IMP=	50.00
ADD HYD	107.00	1& 4	3	.02501	47.41	1.582	1.18607	1.500	2.962		
*S SAY \= 23 FROM TOWER TO SANDERLING; EXCESS IN STREET TO SNOW VISTA											
*S HOLD 401.2 (UNDERFLOW, ID=8) TO ADD TO 402 LATER											
DIVIDE HYD	401.20	3	8	.02002	23.00	1.266	1.18607	1.433	1.795		
	401.10	AND	2	.00499	24.41	.316	1.18607	1.500	7.641		
ROUTE	109.00	2	4	.00499	21.64	.316	1.18711	1.533	6.773		
*S HYD 124 = SNOW VISTA JUST DOWNSTREAM FROM TOWER											
*S HYD 124 = AP 6											
ADD HYD	124.00	4& 7	3	.47029	469.84	27.069	1.07920	1.700	1.561		
ROUTE	128.00	3	4	.47029	467.41	27.069	1.07920	1.733	1.553		
COMPUTE NM HYD	313.00	-	2	.01016	15.97	.492	.90752	1.500	2.456	PER IMP=	18.50
ADD HYD	130.00	2& 4	3	.48045	473.55	27.560	1.07557	1.733	1.540		
*S HYD 132 = SNOW VISTA JUST ABOVE JUNCTION WITH SECTION LINE CHANNEL STUB											
*S HYD 132 = AP 9											
ROUTE	132.00	3	6	.48045	474.46	27.560	1.07557	1.733	1.543		
*S											
*S START SUNRISE TERRACE INTERIOR											
COMPUTE NM HYD	151.00	-	1	.01049	21.97	.760	1.35796	1.500	3.272	PER IMP=	53.20
COMPUTE NM HYD	152.00	-	2	.00631	13.22	.457	1.35796	1.500	3.273	PER IMP=	53.20
ADD HYD	210.00	1& 2	3	.01680	35.18	1.217	1.35793	1.500	3.272		
COMPUTE NM HYD	153.00	-	1	.00713	14.94	.517	1.35796	1.500	3.273	PER IMP=	53.20
*S HYD 220 = 151+152+153 (BASINS 101, 102, & 103) @ HACKAMORE & SANDERLING											
ADD HYD	220.00	1& 3	5	.02394	50.13	1.733	1.35792	1.500	3.272		
*S 401.2 (ID 8) = UNDERFLOW (+-21 CFS MAX) FROM TOWER @ SANDERLING ABOVE											
*S DELAY 401.2 2 MIN (1 TIME STEP) TO SIMULATE ROUTING IN 2 SEGMENTS OF ROAD											
MODIFY TIME	401.20	8	8	.02002	23.00	1.266	1.18607	1.467	1.795		
*S BASIN 402 = EXISTING DEVELOPMENT @ 50%=B=LANDSCAPE, 50%=D=IMPERV											
COMPUTE NM HYD	402.00	-	1	.01547	31.64	1.086	1.31642	1.500	3.196	PER IMP=	50.00
ADD HYD	242.00	1& 8	4	.03549	54.64	2.352	1.24288	1.500	2.406		
COMPUTE NM HYD	154.00	-	2	.00754	15.79	.546	1.35796	1.500	3.273	PER IMP=	53.20
*S HYD 244 = 402+154 IN SANDPIPER AT CONNEMARA (HYD 154=BASIN 104)											
ADD HYD	244.00	2& 4	3	.04303	70.43	2.898	1.26304	1.500	2.558		
*S HYD 240 = COMBINED FLOW @ HACKAMORE & SANDERLING											
ADD HYD	240.00	3& 5	2	.06696	120.56	4.632	1.29696	1.500	2.813		
COMPUTE NM HYD	155.00	-	1	.00000	.00	.000	1.35796	1.500	3.693	PER IMP=	53.20
*S HYD 250 = COMBINED FLOW IN HACKAMORE AT HALTER											
ADD HYD	250.00	1& 2	3	.06696	120.56	4.632	1.29695	1.500	2.813		
COMPUTE NM HYD	156.00	-	1	.00000	.00	.000	1.35796	1.500	3.693	PER IMP=	53.20
ADD HYD	260.00	1& 3	2	.06696	120.56	4.632	1.29695	1.500	2.813		

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
COMPUTE NM HYD	157.00	-	1	.01736	36.35	1.258	1.35796	1.500	3.271	PER IMP= 53.20
*S HYD 224 = TOTAL FLOW TO HALTER POND LOCATION, PRINT HYD @ CODE=2										
*S HYD 224 = AP 7 IN										
ADD HYD	224.00	1& 2	3	.08432	156.90	5.889	1.30951	1.500	2.907	
ROUTE	266.00	3	4	.08432	152.74	5.889	1.30952	1.533	2.830	
*S HYD 158 = BASIN 108, ALL ANDALUSIAN, NOT TO POND										
COMPUTE NM HYD	158.00	-	1	.01902	39.82	1.378	1.35796	1.500	3.271	PER IMP= 53.20
*S HYD 270 = ALL SUNRISE ONSITE INC EXISTING 402 & 401.2 (=401 UNDERFLOW)										
*S BUT NOT OFFSITE VIA DUNLIN (SOUTHMOST STREET) PIPE										
ADD HYD	270.00	1& 4	7	.10335	191.18	7.267	1.31843	1.533	2.890	
*S										
*S OFFSITE WEST OF SUNRISE: PER SCANLON LAYOUT EXCEPT PIPE NOT SECT LINE CHAN										
COMPUTE NM HYD	351.00	-	1	.01500	23.57	.726	.90752	1.500	2.455	PER IMP= 18.50
*S USE L FROM MID POINT OF BASIN TO MIDPOINT OF NEXT										
ROUTE	202.00	1	2	.01500	17.33	.726	.90754	1.567	1.805	
COMPUTE NM HYD	304.00	-	3	.02938	46.16	1.422	.90752	1.500	2.455	PER IMP= 18.50
ADD HYD	203.00	2& 3	1	.04438	62.03	2.148	.90751	1.533	2.184	
*S HYD 206 = INTO TANAGER POND *LOCATION* FROM NORTH										
ROUTE	204.00	1	4	.04438	53.94	2.148	.90752	1.567	1.899	
COMPUTE NM HYD	303.00	-	3	.06688	105.11	3.237	.90752	1.500	2.456	PER IMP= 18.50
*S HYD 299=COA SATELLITE: ASSUME 10 CFS CLEAN & NON-EROSIVE; REAL 1993 0.5+-										
STORE HYD	299.00	-	2	.07516	10.00	7.300	1.82122	1.333	.208	
*S HYD 205 = INTO TANAGER POND LOCATION FROM WEST (303+299 (COA SATELLITE))										
ADD HYD	205.00	2& 3	1	.14204	115.11	10.482	1.38370	1.500	1.266	
*S HYD 206 = AP 2 FOR FAIR SHARE AND PROPOSED, AP 2 IN FOR EXISTING OFFSITE										
ADD HYD	206.00	1& 4	3	.18642	166.79	12.630	1.27033	1.533	1.398	
ROUTE	207.00	3	2	.18642	153.00	12.630	1.27036	1.533	1.282	
COMPUTE NM HYD	302.20	-	1	.07109	111.79	3.441	.90752	1.500	2.457	PER IMP= 18.50
ADD HYD	209.00	1& 2	4	.25751	263.21	16.071	1.17019	1.533	1.597	
ROUTE	211.00	4	2	.25751	233.89	16.071	1.17019	1.567	1.419	
COMPUTE NM HYD	302.10	-	3	.01031	16.21	.499	.90752	1.500	2.456	PER IMP= 18.50
*S HYD 212 = COMBINED INTO DUNLIN/ANDALUSIAN PIPE @ TANAGER										
*S HYD 212 = AP 1										
ADD HYD	212.00	2& 3	1	.26782	248.28	16.570	1.16008	1.567	1.448	
ROUTE	214.00	1	2	.26782	249.80	16.570	1.16008	1.567	1.457	
ROUTE	216.00	2	3	.26782	248.95	16.570	1.16008	1.567	1.452	
ROUTE	218.00	3	5	.26782	248.50	16.570	1.16008	1.567	1.450	
*S HYD 226 = AP 8 IN = INFLOW TO ANDLUSIAN POND = TOTAL THROUGH SUNRISE										
ADD HYD	226.00	5& 7	8	.37117	424.96	23.837	1.20417	1.567	1.789	
*S HYD 230 = TOTAL COMBINED W SNOW VISTA										
*S HYD 230 = AP 10: TO BE <= ALLOWED PER SNOW VISTA DESIGN										
ADD HYD	230.00	8& 6	1	.85162	767.11	51.398	1.13162	1.667	1.407	
FINISH										

```
START                 0.0   PUNCH CODE=0   PRINT LINES=58
                      CONTROL CODES AT START = 027 015 0 0 0
                      0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
                      CONTROL CODES AT END = 0 0 0 0 0
                      0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
* START                TIME=0.0   PUNCH CODE=0   PRINT LINES=58
*                     CONTROL CODES AT START = 027 042 049
*                     027 091 0 0   0 0 0 0 0   0 0 0 0 0 0 0 0
*                     CONTROL CODES AT END =  027 092 0 0 0
*                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
+S cond in halter btw PASo fino & rackamore. 100-yr storm, case 1
+S TO CHECK MIN ALLOWABLE Q OUT FROM POND. SET 155 & 156 TO ZERO AREA
+S & RUN REST OF SYSTEM WITH NO INSITE PONDING.  APPROXIMATE REROUTING
+S AS TOC LF OF 66" RCP: ACTUAL SIZE WILL BE LESS, SO @ ALLOW WILL INCREASE
+S
+S INCLUDES BASIN 114 POSSIBLY TO SNOW VISTA POND. USE PER SNOW VISTA DESIGN
+S NO SEDIMENT RUNING, ALL LAND TREATMENTS S=LANDSCAPE OR D=IMPERVIOUS
+S NEW SUNRISE TERRACE UNITS III-A 46.8% S & 53.2% D
+S
+S TOWER RD FLOW DIVIDES AT SANDERLING: UP TO 23 CFS FALLS BACK INTO SUNRISE
+S TERRACE & THE REMAINDER FLOWS TO DROP INLETS IN TOWER AT SNOW VISTA CHANNEL
+S
+S BASINS 101-108 PLAN = BASINS 151-158 IN THIS AHYMO FILE
+S REVISED 3-16-94 FOR BASIN 105 BECOMES 351 - 355
+S         3-19-94 FOR NEW HALTER POND GEOMETRY
+S         4/20/94 FOR REMOVE HALTER POND, ADD ANDALUSIAN POND AT HALTER
+ TUCKER GREEN  2/94, 3/94, 4/94
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
* SUNRISE TERRACE RAINFALL PER ALBUQUERQUE NM DPM, MAP L-8
* RAINFALL             TWO YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=0.73
*                      RAIN SIX=0.95      RAIN DAY=1.16     DT=.033333 HR
* RAINFALL             TEN YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.24
*                      RAIN SIX=1.47      RAIN DAY=1.79     DT=.033333 HR
+S RAINFALL             HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.97
+S                      RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR
RAINFALL              HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.97
                      RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
COMPUTE NM HYD         ID=1 HYD NO=308 DA=0.12500 SQ MI
                      PER A=0  B=22.6 C=0  D=67.4  TP=-0.13333 HRS  RAIN=-1
PRINT HYD             ID=1 CODE=1
* CODES: 0=ALL; 1=TOTALS ONLY; 2=EVERY 2ND + TOTALS; SIMILARLY 3, 5, 10, 20
COMPUTE RATING CURVE CID=-1  VS NO=35  NO SEGS=3
                      MIN EL=0    FT   MAX EL=2    FT
                      CH SLP=.0256     FP SLP= .0256
                      MANNING N   END DIST
                        .040         6     .030 26   .040  32
                      DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                      0     2       6     0       26    0       32    2
COMPUTE TRAVEL TIME   ID=2      REACH=35  NO VS=1
                      L= 2500   ft       SLP=0.02560 ft per ft
ROUTE                 ID=2     HYD=100     INFLOW HYD ID=1   DT=.033333 hr
PRINT HYD             ID=2 CODE=1
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
COMPUTE NM HYD         ID=3   HYD=309 DA=.07575 SQ MI
                      PER A=0   B=81.5 C=0   D=18.5 TP=0.13333 HRS    RAIN=-1
PRINT HYD             ID=3   CODE=1
+S HYD 102 = (309+ROUTED 308) CROSSING 106TH BTW EUCARIZ & SUNSET GARDEN
+S HYD 102 = AP 4
+                       NEW      NEW        IN1          IN2
ADD HYD               ID=1   HYD=102    ID I=2      ID II=3
PRINT HYD             ID=1   CODE=2
PLOT HYD              ID=1
COMPUTE RATING CURVE CID=-1  VS NO=36  NO SEGS=1
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FKSDD1

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                    CH SLP= .02558   FP SLP=.02558  FT PER FT
                      N   END Y
                    .035   122
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     1       1     0       121   0       122   1
COMPUTE TRAVEL TIME ID=4     REACH=36 NO VS=1
                    L=860    ft       SLP=.02558  ft ft
ROUTE               ID=4     HYD=104     INFLOW HYD ID=1   DT=.033333
COMPUTE RATING CURVE CID=-1  VS NO=37  NO SEGS=3
                    MIN EL=0    FT   MAX EL=5    FT
                    CH SLP=.02422    FP SLP=.02422   FT PER FT
                      N   END Y
                    .041    15      .125  20    .041  51
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     5       15    0       20    0       51    5
COMPUTE TRAVEL TIME ID=2     REACH=1  NO VS=1
                    L=740    ft       SLP=.02422  ft/ft
ROUTE               ID=2     HYD=106     INFLOW HYD ID=4   DT=.033333
**********************************************************************
COMPUTE NM HYD      ID=4   HYD=714   DA=1.05469  SQ MI
                    PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1
PRINT HYD           ID=4   CODE=1
**********************************************************************
COMPUTE NM HYD      ID=7   HYD=710   DA=0.12922  SQ MI
                    PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1
PRINT HYD           ID=7   CODE=1
*S HYD 117 = 710+314 :THE "EXTRA" 35 AC:, BOTH EAST OF 105TH, TO DESILT BASIN
*                     NEW      NEW        IN1          IN2
ADD HYD             ID=1   HYD=117    ID I=7      ID II=4
ADD HYD             ID=7   HYD=118    ID I=1      ID II=2
*S START NEW BRANCH
**********************************************************************
COMPUTE NM HYD      ID=2   HYD=306   DA=0.03969  SQ MI
                    PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1
PRINT HYD           ID=2   CODE=1
COMPUTE RATING CURVE CID=-1  VS NO=34  NO SEGS=3
                    MIN EL=0    FT   MAX EL=6    FT
                    CH SLP=.0310     FP SLP=.0310    FT PER FT
                      N   END Y
                    .04     13    .03   32      .04   50
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     5       13    0       32    0       50    6
COMPUTE TRAVEL TIME ID=3     REACH=1  NO VS= 1
                    L= 2320  ft       SLP=.0310   ft/ft
ROUTE               ID=3     HYD=110     INFLOW HYD ID=2   DT=.033333
**********************************************************************
COMPUTE NM HYD      ID=4   HYD=307   DA=0.04547  SQ MI
                    PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1
PRINT HYD           ID=4   CODE=1
*                     NEW      NEW        IN1          IN2
ADD HYD             ID=2   HYD=112    ID I=3      ID II=4
**********************************************************************
COMPUTE NM HYD      ID=1   HYD=352   DA=0.03141  SQ MI
                    PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1
PRINT HYD           ID=1   CODE=1
COMPUTE RATING CURVE CID=-1  VS NO=38   NO SEGS=1
                    MIN EL=0    FT   MAX EL=5    FT
                    CH SLP= .028     FP SLP=.029     FT PER FT
                      N   END X
                    .015   20
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     5       10    0       20    0       20    5
COMPUTE TRAVEL TIME ID=3     REACH=2  NO VS=1
                    L=1100   ft       SLP=.029    ft/ft
ROUTE               ID=3     HYD=111     INFLOW HYD ID=1   DT=.033333
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4 113 2 3

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**********************************************************************************
COMPUTE NM HYD       ID=1   HYD=35I   DA=0.00172  SQ MI
                     PER A=0   B=81.5 C=0   D=18.5 TP=0.1I3C HRS   RAIN=-1
PRINT HYD            ID=1   CODE=1

*S HYD 114 = AP 3 AT 106th ST
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=3   HYD=114      ID I=1      ID I=4
PRINT HYD            ID=3   CODE=2
PLOT HYD             ID=3
COMPUTE RATING CURVE CID=-1  VS NO=38  NO SEGS=1
                     MIN EL=1    FT   MAX EL=9    FT
                     CH SLP=.0250     FP SLP=.0250    FT PER FT
                       N   END X
                     .01E   30
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       10    0       20    0       30    5
COMPLTE TRAVEL TIME  ID=4     REACH=38 NO VS=1
                     L=1210   ft       SLP=.0252   ft/ft
ROUTE                ID=4     HYD=11b     INFLOW HYD ID=3   DT=.0I3I3I
ADD HYD              ID=7   HYD=11?.1  ID I=4      ID I=7
**********************************************************************************
COMPUTE NM HYD       ID=1   HYD=31E   DA=0.01274  SQ MI
                     PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1
PRINT HYD            ID=1   CODE=1
*S HYD 119 = COMBINED FLOW INTO SNOW VISTA DESILT BASIN
*S HYD 119 = AP 5 IN
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=E   HYD=119    ID I=1      ID I=3
PRINT HYD            ID=E   CODE=2
**********************************************************************************
*E HYD 501 = ROUTED OUTFLOW FROM SNOW VISTA DESILTING BASIN
*S HYD 501 = AP E OUT
ROUTE RESERVOIR      ID=E   HYD=501   INFLOW ID=5   CODE=2
                     CFS OUT    VOL AC-FT   ELEV FT
                     0.          0.         11.05
                     14.35       3.e598     11.55
                     41.45       1.3245     12.05
                     122.4       2.6904     13.05
                     234.7       4.1343     14.05
                     3e5.3       5.e928     15.05
                     527.6       7.4074     16.05
                     715.9       9.3198     17.05
* PLOT HYD AP 5 IN & OUT
PLOT HYD             ID=5   ID=3
*E START SNOW VISTA CHANNEL
COMPUTE RATING CURVE CID=-1  VS NO=1   NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP= .0109    FP SLP=.0109    FT PER FT
                       N   END X
                     .015   30
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME  ID=2     REACH=1  NO VS=1
                     L=1200   ft       SLP=.0109   ft/ft
ROUTE                ID=2     HYD=121     INFLOW HYD ID=3   DT=.033333
**********************************************************************************
COMPUTE NM HYD       ID=E   HYD=E11   DA=0.03813  SQ MI
                     PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1
PRINT HYD            ID=E   CODE=1
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=4   HYD=122    ID I=2      ID I=3
**********************************************************************************
COMPUTE NM HYD       ID=1   HYD=312   DA=0.01188  SQ MI
                     PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1
```

3

ID 1 - CODE 1

```
*                       NEW      NEW         IN1          IN2
ADD HYD                 ID=7   HYD=123    ID I=1       ID II=4
*S START NEW BRANCH, TO TOWER RD
*****************************************************************************
COMPUTE NM HYD          ID=1   HYD=254   DA=0.00521  SQ MI
                        PER A=0   B=81.5 C=0    D=18.5  TP=0.1111 HRS RAIN=-1
PRINT HYD               ID=1  CODE=1
*****************************************************************************
COMPUTE NM HYD          ID=2   HYD=255   DA=0.00266  SQ MI
                        PER A=0   B=81.5 C=0    D=18.5  TP=0.1111 HRS RAIN=-1
PRINT HYD               ID=2  CODE=1
ADD HYD                 ID=7   HYD=101    ID I=1       ID II=2
*****************************************************************************
COMPUTE NM HYD          ID=1   HYD=401   DA=0.01016  SQ MI
                        PER A=0   B=81.5 C=0    D=18.5  TP=0.1111 HRS RAIN=-1
PRINT HYD               ID=1  CODE=1
*S HYD 123 = COMBINED FLOW AT TOWER-TANAGER-140th INTERSECTION
ADD HYD                 ID=4   HYD=115    ID I=1       ID II=7
PRINT HYD               ID=4  CODE=2
*****************************************************************************
COMPUTE NM HYD          ID=1   HYD=401   DA=0.01016  SQ MI
                        PER A=0   B=81.5 C=0    D=18.5  TP=0.1111 HRS RAIN=-1
PRINT HYD               ID=1  CODE=1
ADD HYD                 ID=3   HYD=107    ID I=1       ID II=4
*S BAY  = IT FROM TOWER TO SANDERLING; EXCESS IN STREET TO SNOW VISTA
*S HOLD 401.2 (UNDERFLOW, ID=8) TO ADD TO 402 LATER
DIVIDE HYD              ID=7   D=23.0  ID=8  HYD=401.2     ID=2  HYD=401.1
PRINT HYD               ID=8   CODE=1
PRINT HYD               ID=2   CODE=1
COMPUTE RATING CURVE CID=-1  VS NO=78  NO SEGS=1
                        MIN EL=0    FT   MAX EL=5    FT
                        CH SLP=.025      FP SLP=.025   FT PER FT=EST EFFECTIVE
                          N   END X
                        .015    50
                        DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                        0     .92     9.99  .59      10    0       30    .40
                        50    0       50.01  .59     60    .92
COMPUTE TRAVEL TIME  ID=4     REACH=38 NO VS=1     L=L TO CATCH BASIN
                        L=550    ft       SLP=.025    ft/ft
ROUTE                   ID=4   HYD=109     INFLOW HYD ID=2   DT=.033333
PRINT HYD               ID=4   CODE=2
*S HYD 124 = SNOW VISTA JUST DOWNSTREAM FROM TOWER
*S HYD 124 = AF 6
ADD HYD                 ID=3   HYD=124    ID I=4    ID II=7
PRINT HYD               ID=3   CODE=2
PLOT HYD                ID=3
* FOR ROUTING EST AVG SLOPE=.01+-: 450'@.014, 500'@.004, 400'@.012=
COMPUTE RATING CURVE CID=-1  VS NO=2   NO SEGS=1
                        MIN EL=0    FT   MAX EL=5    FT
                        CH SLP= .010     FP SLP=.010     FT PER FT
                          N   END X
                        .015   30
                        DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                        0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME  ID=4     REACH=2  NO VS=1
                        L=1050   ft       SLP=.010    ft/ft
ROUTE                   ID=4     HYD=128     INFLOW HYD ID=3   DT=.033333
PRINT HYD               ID=4  CODE=1
*****************************************************************************
COMPUTE NM HYD          ID=1   HYD=313   DA=0.01016  SQ MI
                        PER A=0   B=81.5 C=0    D=18.5 T=0.1333 HRS   RAIN=-1
PRINT HYD               ID=1  CODE=1
*                         NEW      NEW         IN1          IN2
ADD HYD                 ID=7   HYD=130    ID I=2       ID II=4
PRINT HYD               ID=3  CODE=1
* FOR ROUTE EST AVG SLOPE OF .012
```

0.012

```
COMPUTE RAINFALL CURVE CID=-1  VS NO=3   NO SEGS=1
                       MIN EL=0    FT   MAX EL=5    FT
                       CH SLP= .012     FP SLP=.012     FT PER FT
                         N   END (
                       .015   10
                       DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                       0     5       10    0       20    1       30    5
COMPUTE TRAVEL TIME  ID=6     REACH=3  NO VS=1
                       L=550   ft       SLP=.012    ft ft
*3 mid 102 = SNOW VISTA JUST ABOVE JUNCTION WITH SECTION LINE CHANNEL ST.3
*3 mid 102 = AP 3
ROUTE                  ID=6     HYD=102     INFLOW HYD ID=3   DT=.033333
PRINT HYD              ID=6  CODE=1
PLOT HYD               ID=6
**************************************************************************
*3
*3 START SUNRISE TERRACE INTERIOR
*
**************************************************************************
COMPUTE NM HYD         ID=1   HYD=151   DA=0.01(452 SQ MI
                       PER A=0   B=46.8  C=0    D=57.2  TP=0.1333 HRS RAIN=-1
PRINT HYD              ID=1  CODE=1
**************************************************************************
COMPUTE NM HYD         ID=2   HYD=152   DA=0.006709 SQ MI
                       PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1
PRINT HYD              ID=2  CODE=1
*                        NEW      NEW         IN1          IN2
ADD HYD                ID=3   HYD=210    ID I=1      ID II=2
PRINT HYD              ID=3  CODE=1
**************************************************************************
COMPUTE NM HYD         ID=1   HYD=153   DA=0.007124 SQ MI
                       PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1
PRINT HYD              ID=1  CODE=1
*3 HYD 220 = 151+152+153 (BASINS 101, 102, & 103) @ HACKAMORE & SANDERLING
*                        NEW      NEW         IN1          IN2
ADD HYD                ID=5   HYD=220    ID I=1      ID II=3
**************************************************************************
*3 401.2 (ID 3  = 'UNDERFLOW' (+-21 CFS MAX) FROM TOWER @ SANDERLING ABOVE
*3 DELAY 401.2  2 MIN (1 TIME STEP) TO SIMULATE ROUTING IN 2 SEGMENTS OF ROAD
MODIFY TIME            ID=8   TIME SHIFT=0.033333 HRS   CODE=-1
PRINT HYD              ID=8  CODE=1
*3 BASIN 402 = EXISTING DEVELOPMENT @ 50%=B=LANDSCAPE, 50%=D=IMPERV
**************************************************************************
COMPUTE NM HYD         ID=1   HYD=402   DA=0.015469  SQ MI
                       PER A=0  B=50   C=0    D=50    TP=0.1333 HRS RAIN=-1
PRINT HYD              ID=1  CODE=1
ADD HYD                ID=4   HYD=242    ID I=1      ID II=8
**************************************************************************
COMPUTE NM HYD         ID=2   HYD=154   DA=0.007539 SQ MI
                       PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1
PRINT HYD              ID=2  CODE=1
*3 HYD 244 = 402+154 IN SANDPIPER AT CONNEMARA (HYD 154=BASIN 104)
ADD HYD                ID=3   HYD=244    ID I=2      ID II=4
*                        NEW      NEW         IN1          IN2
PRINT HYD              ID=3  CODE=1
*3 HYD 240 = COMBINED FLOW @ HACKAMORE & SANDERLING
ADD HYD                ID=2   HYD=240    ID I=3      ID II=5
PRINT HYD              ID=2  CODE=1
**************************************************************************
* COMPUTE NM HYD        ID=1   HYD=155   DA=0.004197 SQ MI
COMPUTE NM HYD         ID=1   HYD=155   DA=0.0000001  SQ MI
                       PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1
PRINT HYD              ID=1  CODE=1
*3 HYD 250 = COMBINED FLOW IN HACKAMORE AT HALTER
*                        NEW      NEW         IN1          IN2
ADD HYD                ID=7   (HYD=25)   ID I=1      ID II=
```

```
PRINT HYD              ID=1   CODE=1
**********************************************************************************
* COMPUTE NM HYD        ID=1   HYD=186   DA=0.014138 SQ MI
COMPUTE NM HYD         ID=1   HYD=185   DA=0.0000001  SQ MI
                       PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1
PRINT HYD              ID=1  CODE=1
*                        NEW      NEW        IN1          IN2
ADD HYD                ID=2   HYD=260    ID I=1       ID II=3
**********************************************************************************
COMPUTE NM HYD         ID=1   HYD=187   DA=0.017353 SQ MI
                       PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1
PRINT HYD              ID=1  CODE=1
*S HYD 224 = TOTAL FLOW TO HALTER POND LOCATION, PRINT HYD @ CODE=2
*S HYD 224 = HP 7 IN
*                        NEW      NEW        IN1          IN2
ADD HYD                ID=7   HYD=224    ID I=1       ID II=2
PRINT HYD              ID=7   CODE=2
* B = 5.5 PROPOSED, S=.0002, N=.117
COMPUTE RATING CURVE CID=-1  VS NO=37  NO SEGS=-1 SLP=.0002  B=5.5 FT  N=.017
COMPUTE TRAVEL TIME  ID=4     REACH=33 NO VS=1
                       L=700   ft       SLP=.0002   ft/ft
ROUTE                  ID=4     HYD=266     INFLOW HYD ID=7   DT=.033333
PRINT HYD              ID=4  CODE=1
**********************************************************************************
*S HYD 188 = BASIN 118, ALL ANDALUSIAN, NOT TO POND
COMPUTE NM HYD         ID=1   HYD=188   DA=0.019022 SQ MI
                       PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1
PRINT HYD              ID=1  CODE=1
*S HYD 270 = ALL SUNRISE ONSITE INC EXISTING 402 & 401.2 (=401 UNDERFLOW)
*S PLT NOT OFFSITE VIA DUNLIN (SOUTHMOST STREET) PIPE
ADD HYD                ID=7   HYD=270    ID I=1       ID II=4
PRINT HYD              ID=7  CODE=1
*S
*S OFFSITE WEST OF SUNRISE: PER SCANLON LAYOUT EXCEPT PIPE NOT SECT LINE CHAN
**********************************************************************************
COMPUTE NM HYD         ID=1   HYD=351   DA=0.01500  SQ MI
                       PER A=0  B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD              ID=1  CODE=1
COMPUTE RATING CURVE CID=1  VS NO=32  NO SEGS=1
                       MIN EL=0    FT   MAX EL=5    FT
                       CH SLP=.001      FP SLP=.001     FT PER FT
                        N  END FT
                       .030  40
                       DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                       0     5       15    0       25    0       40    5
*S USE L FROM MID POINT OF BASIN TO MIDPOINT OF NEXT
COMPUTE TRAVEL TIME  ID=2     REACH=32 NO VS=1
                       L=600    ft       SLP=.001    ft/ft
ROUTE                  ID=2     HYD=202     INFLOW HYD ID=1   DT=.033333
**********************************************************************************
COMPUTE NM HYD         ID=3 HYD NO=304 DA=0.02938 SQ MI
                       PER A=0  B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD              ID=3   CODE=1
ADD HYD                ID=1   HYD=203    ID I=2       ID II=3
COMPUTE RATING CURVE CID=1  VS NO=32  NO SEGS=1
                       MIN EL=0    FT   MAX EL=5    FT
                       CH SLP=.001      FP SLP=.001     FT PER FT
                        N  END FT
                       .030  40
                       DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                       0     5       15    0       25    0       40    5
* USE  L FROM MID-POINT OF BASIN TO MID-POINT OF NEXT
COMPUTE TRAVEL TIME  ID=4     REACH=32 NO VS=1
                       L=430    ft       SLP=.001    ft/ft
*S HYD 206 = INTO TANAGER POND *LOCATION* FROM NORTH
ROUTE                  ID=4     HYD=204     INFLOW HYD ID=1   DT=.033333
```

ID 3 HYD 250 ID I = 1 ID II = 2

< 204 1 0.033333

```
**********************************************************************************
COMPUTE NM HYD       ID=3   HYD=303   DA=0.06689  SQ MI
                     PER A=0  B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=3  CODE=1
**********************************************************************************
+3 HYD 299=COA SATELLITE: ASSUME 10 CFS CLEAN & NON-EROSIVE: REAL 1993 3.5--
STORE HYD            ID=2   HYD NO=299  DT=0.1667 HR   DA=.07515  SQ MI
                     FLOW RATES CFS= (LEFT TO RIGHT, DOWN, LEFT TO RIGHT ...)
                     0       .00     .00     .00     .00     .00
                     .00     10      10      10      10      10
                     10      10      10      10      10      10
                     10      10      10      10      10      10
                     10      10      10      10      10      10
                     10      10      10      10      10      10
                     10      10      10      10      10      10
                     10      10      10      10      10      10
                     10      10      10      10      10      10
                     10      10      10      10      10      10
                     10      10      10      10      10      10
+5 HYD 205 = INTO TANAGER POND LOCATION FROM WEST (303+299 (COA SATELLITE))
*                      NEW     NEW       IN1         IN2
ADD HYD              ID=1   HYD=305    ID I=3      ID II=7
+5  HYD 205 = AP 1 FOR FAIR SHARE AND PROPOSED, AP 2 IN FOR EXISTING OFFSITE
ADD HYD              ID=3   HYD=205    ID I=1      ID II=4
PLOT HYD             ID=3
COMPUTE RATING CURVE CID=-1  VS NO=33  NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP=.001      FP SLP=.001     FT PER FT
                      N  END FT
                     .030  40
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       15    0       25    9       40    5
COMPUTE TRAVEL TIME  ID=2     REACH=33 NO VS=1
                     L=250  ft       SLP=.001    ft/ft
ROUTE                ID=2     HYD=207     INFLOW HYD ID=3   DT=.033333
**********************************************************************************
COMPUTE NM HYD       ID=1   HYD=302.2  DA=.07109   SQ MI
                     PER A=0  B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1   CODE=1
ADD HYD              ID=4   HYD=209    ID I=1      ID II=2
COMPUTE RATING CURVE CID=-1  VS NO=33  NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP=.001      FP SLP=.001     FT PER FT
                      N  END FT
                     .030  40
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       15    0       25    0       40    5
COMPUTE TRAVEL TIME  ID=2     REACH=33 NO VS=1
                     L=500  ft       SLP=.001    ft/ft
ROUTE                ID=2     HYD=211     INFLOW HYD ID=4   DT=.033333
**********************************************************************************
* 302.1 = SOUTH END OF BASIN 302
COMPUTE NM HYD       ID=3    HYD=302.1  DA=.01031   SQ MI
                     PER A=0  B=81.5  C=0    D=18.5  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=3    CODE=1
**********************************************************************************
+5  HYD 212 = COMBINED INTO DUNLIN/ANDALUSIAN PIPE @ TANAGER
+5  HYD 212 = AP 1
*                      NEW     NEW       IN1         IN2
ADD HYD              ID=1   HYD=213    ID I=2      ID II=3
PRINT HYD            ID=1   CODE=2
PLOT HYD             ID=1
COMPUTE RATING CURVE CID=-1  VS NO=43  NO SEGS=-1 SLP=.0375  D=4 FT  N=.013
COMPUTE TRAVEL TIME  ID=2     REACH=43 NO VS=1
                     L=1320  ft       SLP=.0375   ft/ft
ROUTE                ID=2     HYD=214     INFLOW HYD ID=1   DT=.033333
```

2 214 1 0.03333

```
COMPUTE RATING CURVE CID=-1  VS NO=44  NO SEGS=-1 SLP=.0110  D=5 FT  N=.013
COMPUTE TRAVEL TIME  ID=3     REACH=44 NO VS=1
                     L=650t       SLP=.0110    ft/ft
ROUTE                ID=3     HYD=216     INFLOW HYD ID=2   DT=.033333
COMPUTE RATING CURVE CID=-1  VS NO=44  NO SEGS=-1 SLP=.0120  D=5.5 FT  N=.013
COMPUTE TRAVEL TIME  ID=5     REACH=44 NO VS=1
                     L=160t       SLP=.0020    ft/ft
ROUTE                ID=5     HYD=213     INFLOW HYD ID=3   DT=.033333
PRINT HYD            ID=5   CODE=2
*S
*S HYD 216 = AF 8 IN = INFLOW TO ANDLUSIAN POND = TOTAL THROUGH SUNRISE
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=3   HYD=213    ID I=5      ID I=7
PRINT HYD            ID=3   CODE=2
*S HYD 220 = TOTAL COMBINED W SNOW VISTA
*S HYD 220 = AP 101 TO 95  = ALLOWED PER SNOW VISTA DESIGN
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=1   HYD=220    ID I=2      ID I=6
PRINT HYD            ID=1   CODE=2
FINISH
```

```
    AHYMO PROGRAM (AHYMO392) - AMAFCA VERSION OF HYMO - MARCH, 1992
         RUN DATE (MON/DAY/YR) = 04/22/1994
         START TIME (HR:MIN:SEC) = 11:00:27     USER NO.= PVALS_NM.101
         INPUT FILE = PAS001

START                0.0   PUNCH CODE=0   PRINT LINES=58
                     CONTROL CODES AT START = 027 033 0 0 0
                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
                     CONTROL CODES AT END = 0 0 0 0 0
                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
* START                TIME=0.0   PUNCH CODE=0   PRINT LINES=58
*                     CONTROL CODES AT START = 027 042 048
*                     027 091 0 0   0 0 0 0 0   0 0 0 0 0 0 0 0
*                     CONTROL CODES AT END =  027 093 0 0 0
*                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
*S pond in halter btw PAS2 trib & hackamore, 100-yr storm, case 1
*S TO CHECK MIN ALLOWABLE Q OUT FROM POND, SET 155 & 156 TO ZERO AREA
*S & RUN REST OF SYSTEM WITH NO ONSITE PONDING.  APPROXIMATE REROUTING
*S AS 700 LF OF 66" RCP: ACTUAL SIZE WILL BE LESS, SO Q ALLOW WILL INCREASE
*S
*S INCLUDES BASIN 314 POSSIBLY TO SNOW VISTA POND. USE PER SNOW VISTA DESIGN
*S NO SEDIMENT BULKING, ALL LAND TREATMENTS B=LANDSCAPE OR D=IMPERVIOUS
*S NEW SUNRISE TERRACE UNITS III-V' 46.3% B & 57.2% D
*S
*S TOWER RD FLOW DIVIDES AT SANDERLING: UP TO 22 CFS FALLS BACK INTO SUNRISE
*S TERRACE & THE REMAINDER FLOWS TO DROP INLETS IN TOWER AT SNOW VISTA CHANNEL
*S
*S BASINS 101-108 PLAN = BASINS 151-158 IN THIS AHYMO FILE
*S REVISED 3-16-94 FOR BASIN 305 BECOMES 351 - 355
*S         3-19-94 FOR NEW HALTER POND GEOMETRY
*S         4/22.94 FOR REMOVE HALTER POND, ADD ANDALUSIAN POND AT HALTER
* TUCKER GREEN  2/94, 3/94, 4/94
**************************************************************************
* SUNRISE TERRACE RAINFALL PER ALBUQUERQUE NM DPM, MAP L-8
* RAINFALL             TWO YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=0.73
*                      RAIN SIX=0.95      RAIN DAY=1.16     DT=.033333 HR
* RAINFALL             TEN YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.24
*                      RAIN SIX=1.47      RAIN DAY=1.79     DT=.033333 HR
*S RAINFALL             HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
*S                      RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR
RAINFALL             HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
                     RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT =    .033333 HOURS        END TIME =     5.999940 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   .0810   .0865   .0924   .1051
   .1335   .1773   .2400   .3257   .4384   .5820   .7607
   .9789  1.1808  1.3652  1.5365  1.4000  1.4577  1.5108
  1.5602  1.6053  1.6495  1.6902  1.7285  1.7648  1.7991
  1.8316  1.8624  1.8917  1.9194  1.9458  1.9519  1.9576
  1.9631  1.9683  1.9732  1.9780  1.9826  1.9870  1.9912
  1.9953  1.9993  2.0031  2.0068  2.0105  2.0140  2.0174
  2.0207  2.0240  2.0272  2.0303  2.0333  2.0363  2.0392
  2.0420  2.0448  2.0476  2.0502  2.0529  2.0554  2.0580
  2.0605  2.0629  2.0653  2.0677  2.0701  2.0724  2.0746
  2.0769  2.0791  2.0812  2.0834  2.0855  2.0876  2.0896
  2.0916  2.0936  2.0956  2.0976  2.0995  2.1014  2.1033
  2.1052  2.1070  2.1088  2.1106  2.1124  2.1142  2.1159
  2.1176  2.1193  2.1210  2.1227  2.1244  2.1260  2.1276
```

2.1401	2.1416	2.1431	2.1446	2.1461	2.1475	2.1489
2.1504	2.1519	2.1532	2.1546	2.1560	2.1577	2.1587
2.1601	2.1614	2.1627	2.1641	2.1654	2.1667	2.1680
2.1692	2.1705	2.1718	2.1731	2.1742	2.1756	2.1769
2.1780	2.1792	2.1805	2.1817	2.1829	2.1841	2.1852
2.1864	2.1876	2.1887	2.1899	2.1911	2.1922	2.1933
2.1945	2.1956	2.1967	2.1978	2.1989	2.2000	

****

COMPUTE NM HYD ID=1 HYD NO=208 DA=0.1250 SQ MI
PER A=0 B=32.6 C=0 D=67.4 TP=-0.17333 HRS RAIN=-1

K = .127715HR TP = .13333HR K/TP RATIO = .952954 SHAPE CONSTANT, N = 3.775474
UNIT PEAK = 328.66 CFS UNIT VOLUME = .9994 B = 520.11 P60 = 1.3700
AREA = .094250 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .122852HR TP = .13333HR K/TP RATIO = .960411 SHAPE CONSTANT, N = 3.679914
UNIT PEAK = 101.87 CFS UNIT VOLUME = 1.000 B = 733.16 P60 = 1.3700
AREA = .040750 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

HYDROGRAPH FROM AREA 208.00

RUNOFF VOLUME = 1.54229 INCHES = 10.2819 ACRE-FEET
PEAK DISCHARGE RATE = 297.77 CFS AT 1.500 HOURS BASIN AREA = .1250 SQ. MI.

* CODES: 0=ALL; 1=TOTALS ONLY; 2=EVERY 2ND + TOTALS; SIMILARLY 3, 5, 10, 20
COMPUTE RATING CURVE CID=-1 VS NO=35 NO SECS=3
MIN EL=0 FT MAX EL=2 FT
CH SLP=.0256 FP SLP= .0256
MANNING N END DIST
.040 6 .030 26 .040 32

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0	2	6	0	26	0	32	2

COMPUTE TRAVEL TIME ID=2 REACH=35 NO VS=1
L= 2500 ft SLP=0.02560 ft per ft

TRAVEL TIME TABLE
REACH= 35.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.105	2.139	3.75	.3964
.211	4.343	11.98	.2518
.316	6.615	23.71	.1937
.421	8.953	38.57	.1612
.526	11.357	56.34	.1400
.632	13.828	76.88	.1249
.737	16.366	100.08	.1136
.842	18.970	125.89	.1046
.947	21.640	154.24	.0974
1.053	24.377	185.09	.0915
1.158	27.180	218.41	.0864
1.263	30.050	254.18	.0821
1.368	32.986	292.38	.0783
1.474	35.989	333.00	.0751
1.579	39.058	376.02	.0721

	1.684	42.194	421.45	.0649
	1.789	45.396	469.27	.0672
	1.895	48.665	519.48	.0691
	2.000	52.000	572.09	.0691

ROUTE ID=2 HYD=100 INFLOW HYD ID=1 DT=.033333 hr
PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 100.00

RUNOFF VOLUME = 1.64229 INCHES = 10.2819 ACRE-FEET
PEAK DISCHARGE RATE = 246.74 CFS AT 1.567 HOURS BASIN AREA = .1250 SQ. MI.

****

COMPUTE NM HYD ID=2 HYD=209 DA=.07575 SQ MI
PER A=0 B=81.5 C=0 D=18.5 TP=0.13333 HRS RAIN=-1

K = .073990HR TP = .133330HR K/TP RATIO = .546696 SHAPE CONSTANT, N = 7.073345
UNIT PEAK = 55.176 CFS UNIT VOLUME = .9991 B = 524.96 P60 = 1.8700
AREA = .014014 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .133992HR TP = .133330HR K/TP RATIO = .999953 SHAPE CONSTANT, N = 3.611161
UNIT PEAK = 152.14 CFS UNIT VOLUME = 1.000 B = 329.35 P60 = 1.8700
AREA = .061736 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=3 CODE=1

HYDROGRAPH FROM AREA 309.00

RUNOFF VOLUME = .90752 INCHES = 3.6664 ACRE-FEET
PEAK DISCHARGE RATE = 119.17 CFS AT 1.500 HOURS BASIN AREA = .0758 SQ. MI.

*S HYD 102 = (209+ROUTED 208) CROSSING 196TH BTW EUCARIZ & SUNSET GARDEN
*S HYD 102 = AP 4

*	NEW	NEW	IN1	IN2
ADD HYD	ID=1	HYD=102	ID I=2	ID II=3

PRINT HYD ID=1 CODE=2

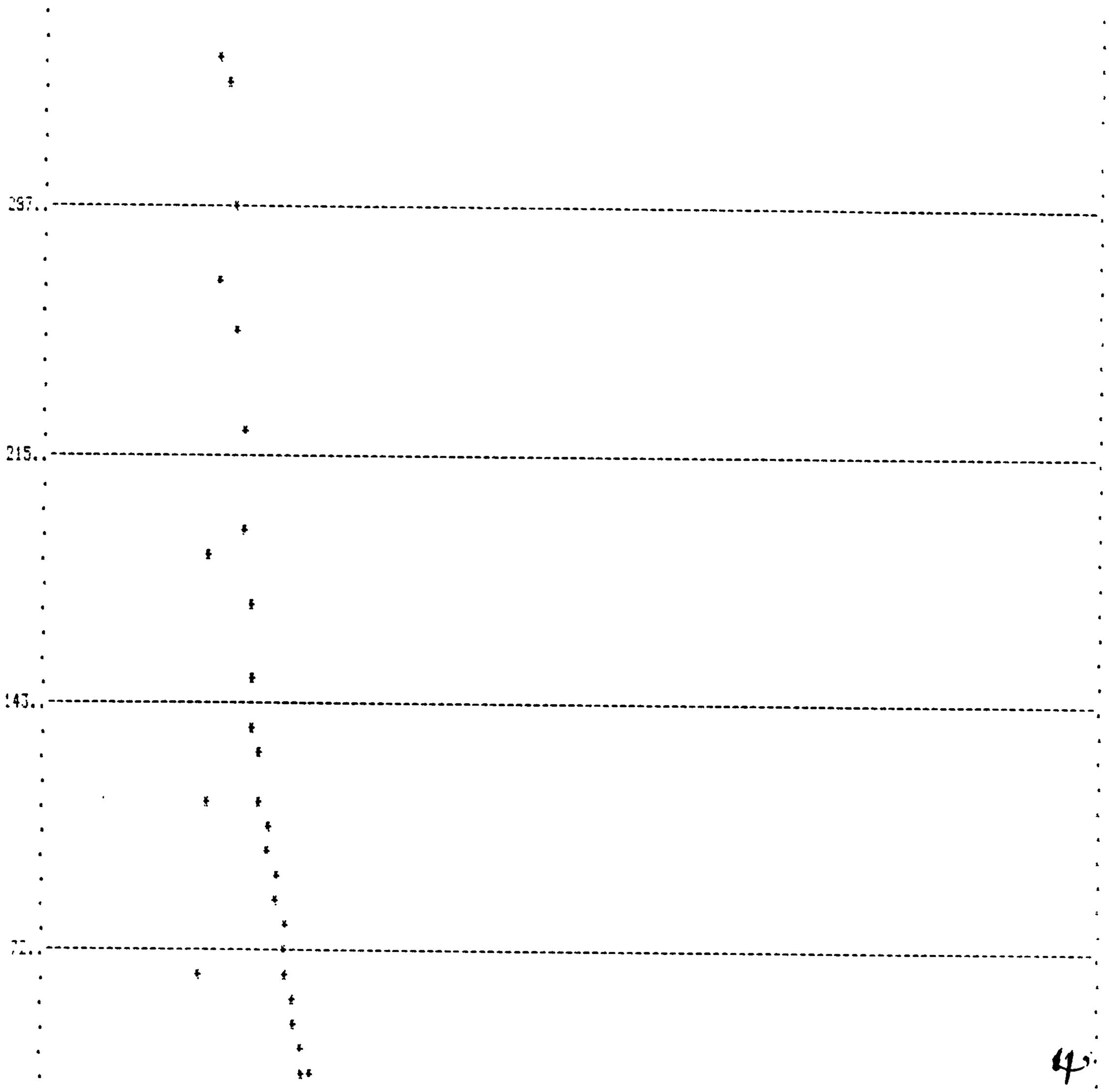
PARTIAL HYDROGRAPH 102.00

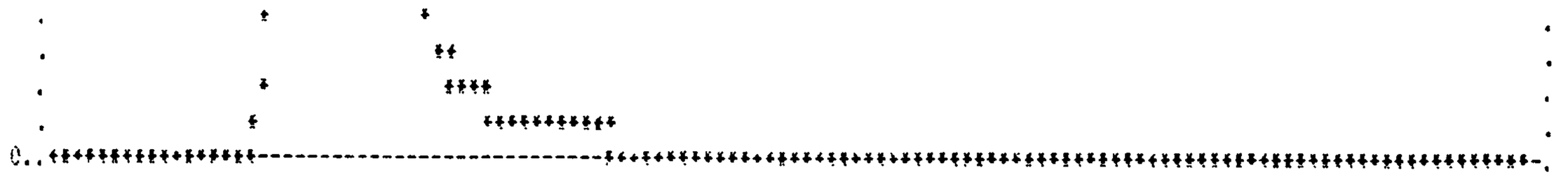
TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.867	125.6	3.733	2.7	5.600	1.7	7.467	.1
.067	.0	1.933	106.6	3.800	2.6	5.667	1.8	7.533	.1
.133	.0	2.000	92.4	3.867	2.4	5.733	1.8	7.600	.1
.200	.0	2.067	80.2	3.933	2.3	5.800	1.8	7.667	.0
.267	.0	2.133	64.1	4.000	2.2	5.867	1.8	7.733	.0
.333	.0	2.200	48.0	4.067	2.1	5.933	1.9	7.800	.0
.400	.0	2.267	36.5	4.133	2.0	6.000	1.9	7.867	.0
.467	.0	2.333	29.4	4.200	2.0	6.067	1.9	7.933	.0
.533	.0	2.400	24.1	4.267	1.9	6.133	1.7	8.000	.0
.600	.0	2.467	19.6	4.333	1.9	6.200	1.5	8.067	.0
.667	.0	2.533	16.4	4.400	1.8	6.267	1.3	8.133	.0
.733	.0	2.600	14.0	4.467	1.8	6.333	1.1	8.200	.0
.800	.0	2.667	11.9	4.533	1.7	6.400	1.0	8.267	.0
.867	.0	2.733	10.3	4.600	1.7	6.467	.8	8.333	.0
.933	.0	2.800	9.1	4.667	1.7	6.533	.7	8.400	.0
1.000	.0	2.867	8.1	4.733	1.7	6.600	.6	8.467	.0

1.133	.0	3.000	6.6	4.867	1.6	6.733	.5	8.600	.0
1.200	.9	3.067	6.0	4.933	1.6	6.800	.4	8.667	.0
1.267	8.0	3.133	5.4	5.000	1.6	6.867	.3	8.733	.0
1.333	31.7	3.200	5.0	5.067	1.6	6.933	.3	8.800	.0
1.400	115.2	3.267	4.5	5.133	1.7	7.000	.2	8.867	.0
1.467	264.1	3.333	4.2	5.200	1.7	7.067	.2	8.933	.0
1.533	358.2	3.400	3.9	5.267	1.7	7.133	.2	9.000	.0
1.600	323.5	3.467	3.6	5.333	1.7	7.200	.1	9.067	.0
1.667	251.5	3.533	3.3	5.400	1.7	7.267	.1	9.133	.0
1.733	193.8	3.600	3.1	5.467	1.7	7.333	.1		
1.800	153.4	3.667	2.9	5.533	1.7	7.400	.1		

RUNOFF VOLUME = 1.00277 INCHES = 13.9482 ACRE-FEET
PEAK DISCHARGE RATE = 359.25 CFS AT 1.533 HOURS BASIN AREA = .2008 SQ. MI.

PLOT HYD ID=1





COMPUTE RATING CURVE CID=-1 VS NO=26 NO SEGS=1
MIN EL=0 FT MAX EL=1 FT
CH SLP=.02552 FP SLP=.02552 FT PER FT
N END X
.035 100
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
0 1 1 0 101 0 102 1
COMPUTE TRAVEL TIME ID=4 REACH=26 NO VS=1
L=3601 ft SLP=.02552 ft/ft

TRAVEL TIME TABLE
REACH= 26.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.052	3.319	6.02	.2306
.105	12.643	19.12	.1580
.158	18.972	37.58	.1206
.211	25.307	60.69	.0996
.263	31.648	88.02	.0859
.316	37.994	119.25	.0761
.368	44.346	154.13	.0687
.421	50.704	192.60	.0629
.474	57.066	234.35	.0582
.526	63.435	279.31	.0543
.579	69.809	327.37	.0509
.632	76.188	378.43	.0481
.684	82.573	432.40	.0456
.737	88.964	489.20	.0434
.789	95.360	548.76	.0415
.842	101.762	611.03	.0398
.895	108.169	675.94	.0382
.947	114.582	743.44	.0368
1.000	121.000	813.47	.0355

ROUTE ID=4 HYD=104 INFLOW HYD ID=1 DT=.03333
COMPUTE RATING CURVE CID=-1 VS NO=37 NO SEGS=3
MIN EL=0 FT MAX EL=5 FT
CH SLP=.02432 FP SLP=.02432 FT PER FT
N END X
.040 15 .025 20 .040 50
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
0 5 15 0 30 0 50 5
COMPUTE TRAVEL TIME ID=2 REACH=1 NO VS=1
L=240 ft SLP=.02432 ft/ft

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	4.199	15.38	.0560
.526	8.864	49.95	.0365
.789	14.024	100.39	.0287
1.053	19.668	165.72	.0244

1.315	25.796	245.54	.0216
1.579	32.410	339.74	.0196
1.842	39.508	448.32	.0181
2.105	47.091	571.40	.0169
2.368	55.159	709.10	.0160
2.632	63.712	861.65	.0152
2.895	72.749	1029.24	.0145
3.158	82.271	1212.11	.0140
3.421	92.278	1410.52	.0134
3.684	102.770	1624.72	.0130
3.947	113.747	1854.99	.0126
4.211	125.209	2101.58	.0122
4.474	137.154	2364.79	.0119
4.737	149.584	2644.87	.0116
5.000	162.500	2942.14	.0114

ROUTE ID=2 HYD=105 INFLOW HYD ID=4 DT=.033333

****

COMPUTE NM HYD ID=4 HYD=314 DA=0.05469 SQ MI
PER A=0 B=81.5 C=0 D=18.5 TP=0.1333 HRS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106421
UNIT PEAK = 39.345 CFS UNIT VOLUME = .9991 B = 526.28 P60 = 1.8700
AREA = .010119 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 109.07 CFS UNIT VOLUME = 1.000 B = 327.09 P60 = 1.8700
AREA = .044572 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=4 CODE=1

HYDROGRAPH FROM AREA 314.00

RUNOFF VOLUME = .90752 INCHES = 2.5471 ACRE-FEET
PEAK DISCHARGE RATE = 35.90 CFS AT 1.500 HOURS BASIN AREA = .0547 SQ. MI.

****

COMPUTE NM HYD ID=3 HYD=310 DA=0.02922 SQ MI
PER A=0 B=81.5 C=0 D=18.5 TP=0.1333 HRS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 21.342 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 1.8700
AREA = .005406 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 53.475 CFS UNIT VOLUME = 1.000 B = 327.09 P60 = 1.8700
AREA = .023814 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=3 CODE=1

HYDROGRAPH FROM AREA 310.00

RUNOFF VOLUME = .90752 INCHES = 1.4147 ACRE-FEET
PEAK DISCHARGE RATE = 45.90 CFS AT 1.500 HOURS BASIN AREA = .0292 SQ. MI.

```
*S ADD ..  # 0.0F.1F TIME  BASIN 30 MI, SOUTH EAST OF LUBBOCK, TO DESOTO BASIN
*                    NEW      NEW        IN1          IN2
ADD HYD              ID=1   HYD=117    ID I=3       ID I1=4
ADD HYD              ID=7   HYD=118    ID I=1       ID I1=2
*S START NEW BRANCH
*********************************************************************************
COMPUTE NM HYD       ID=2   HYD=306   DA=0.03959  SQ MI
                     PER A=0   B=31.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1

    A =   .172649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   28.969    CFS   UNIT VOLUME =    .9990       B =   326.23      P60 = 1.9700
    AREA =      .007243 SQ MI    IA =    .1300 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    A =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.597448
    UNIT PEAK =   79.373    CFS   UNIT VOLUME =    1.000       B =   327.09      P60 = 1.8700
    AREA =      .032347 SQ MI    IA =    .5000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=2   CODE=1

                              HYDROGRAPH FROM AREA   306.00


    RUNOFF VOLUME =      .90752 INCHES     =       1.9210 ACRE-FEET
    PEAK DISCHARGE RATE =      62.35 CFS  AT   1.300 HOURS   BASIN AREA =   .0397 SQ. MI.


COMPUTE RATING CURVE CID=-1  VS NO=34  NO SEGS=3
                     MIN EL=0    FT   MAX EL=6    FT
                     CH SLP=.0310     FP SLP=.0310    FT PER FT
                       N   END X
                     .04     13    .0   32      .04   50
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     6       13    0       32    0       50    6
COMPUTE TRAVEL TIME  ID=7     REACH=1  NO VS= 1
                     L= 2320  ft       SLP=.0310   ft/ft

                              TRAVEL TIME TABLE
                                              REACH=  1.0

                              WATER       AVERAGE     FLOW        TRAVEL
                              DEPTH       AREA        RATE        TIME
                              FEET        SQ.FT.      CFS         HRS
                                 .316       4.720       18.43       .1650
                                 .632      10.039       50.27       .1073
                                 .947      15.956      121.91       .0843
                                1.263      22.471      202.47       .0715
                                1.579      29.564      301.75       .0632
                                1.895      37.296      419.84       .0572
                                2.211      45.607      556.97       .0528
                                2.526      54.515      713.46       .0492
                                2.842      64.022      889.70       .0464
                                3.158      74.127     1086.10       .0440
                                3.474      84.831     1303.12       .0420
                                3.789      96.133     1541.20       .0402
                                4.105     108.032     1800.82       .0387
                                4.421     120.532     2082.45       .0373
                                4.737     133.629     2386.57       .0361
                                5.053     147.324     2713.67       .0350
                                5.368     161.618     3064.23       .0340
                                5.684     176.510     3438.73       .0331
                                6.000     192.000     3837.66       .0322
ROUTE                ID=3     HYD=110     INFLOW HYD ID=2   DT=.033333
```

```
**********************************************************************
COMPUTE NM HYD       ID=4   HYD=307   DA=0.04547  SQ MI
                     PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1

   K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   33.211    CFS   UNIT VOLUME =    .9990       B =   526.23      P60 = 1.8700
   AREA =      .009412 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


   K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
   UNIT PEAK =  90.932    CFS   UNIT VOLUME =    1.000       B =   327.09      P60 = 1.8700
   AREA =      .027953 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=4   CODE=1

                                HYDROGRAPH FROM AREA   307.00


   RUNOFF VOLUME =      .90752 INCHES     =       2.2008 ACRE-FEET
   PEAK DISCHARGE RATE =     71.42 CFS  AT   1.500 HOURS   BASIN AREA =   .0455 SQ. MI.


*                     NEW      NEW        IN1          IN2
ADD HYD              ID=2   HYD=112    ID I=3      ID I=4
**********************************************************************
COMPUTE NM HYD       ID=1   HYD=352   DA=0.03141  SQ MI
                     PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1

   K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   22.942    CFS   UNIT VOLUME =    .9989       B =   526.28      P60 = 1.8700
   AREA =      .006811 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


   K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
   UNIT PEAK =   62.814    CFS   UNIT VOLUME =    1.000       B =   327.09      P60 = 1.8700
   AREA =      .025593 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1   CODE=1

                                HYDROGRAPH FROM AREA   352.00


   RUNOFF VOLUME =      .90752 INCHES     =       1.5203 ACRE-FEET
   PEAK DISCHARGE RATE =     49.34 CFS  AT   1.500 HOURS   BASIN AREA =   .0314 SQ. MI.


COMPUTE RATING CURVE CID=-1  VS NO=38   NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP= .028     FP SLP=.028     FT PER FT
                       N   END X
                     .015   30
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME  ID=3     REACH=2  NO VS=1
                     L=1100   ft       SLP=.028    ft/ft

                              TRAVEL TIME TABLE
                                          REACH=  2.0

                              WATER       AVERAGE     FLOW         TRAVEL
```

DEPTH	AREA	RATE	TIME
FEET	SQ.FT.	CFS	HRS
.263	2.770	18.12	.0467
.526	5.817	58.37	.0305
.789	9.141	116.67	.0239
1.051	12.742	191.97	.0202
1.316	16.620	287.97	.0173
1.579	20.778	398.77	.0152
1.842	25.238	518.19	.0139
2.105	29.917	651.62	.0128
2.368	34.911	800.82	.0120
2.632	40.188	1001.66	.0111
2.895	45.716	1138.61	.0106
3.158	51.524	1416.56	.0101
3.421	57.615	1653.74	.0096
3.684	63.969	1911.34	.0102
3.947	70.557	2186.89	.0099
4.211	77.532	2487.11	.0095
4.474	84.782	2807.92	.0092
4.737	92.244	3151.01	.0089
5.000	100.000	3515.92	.0087

ROUTE ID=3 HYD=111 INFLOW H:D ID=1 DT=.033333

ADD HYD ID=4 HYD=113 ID I=2 ID II=3

****

COMPUTE NM HYD ID=1 HYD=1ST DA=0.00171 SQ MI

PER A=3 B=31.5 C=0 D=16.5 TP=0.1000 HRS RAIN=-1

K = .0754HR TP = .1000HR K/TP RATIO = .754100 SHAPE CONSTANT, N = 7.106420

UNIT PEAK = 1.2567 CFS UNIT VOLUME = .9997 B = 526.28 P60 = 1.9700

AREA = .001715 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .1039HR TP = .1000HR K/TP RATIO = .982655 SHAPE CONSTANT, N = 3.593448

UNIT PEAK = 3.4097 CFS UNIT VOLUME = .9964 B = 227.09 P60 = 1.9700

AREA = .001402 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

HYDROGRAPH FROM AREA 003.00

RUNOFF VOLUME = .90752 INCHES = .0832 ACRE-FEET

PEAK DISCHARGE RATE = 2.72 CFS AT 1.500 HOURS BASIN AREA = .0017 SQ. MI.

+S HYD 114 = AP 3 AT 106th ST

+	NEW	NEW	IN1	IN2
ADD HYD	ID=3	HYD=114	ID I=1	ID II=4
PRINT HYD	ID=3	CODE=2		

PARTIAL HYDROGRAPH 114.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.033	.0	1.467	117.2	2.933	2.3	4.400	.4	5.867	.4
.067	.0	1.533	161.5	3.000	1.9	4.467	.4	5.933	.4
.133	.0	1.600	143.6	3.067	1.7	4.533	.4	6.000	.4
.200	.0	1.667	110.9	3.133	1.4	4.600	.4	6.067	.3
.267	.0	1.733	64.2	3.200	1.3	4.667	.4	6.133	.3
.333	.0	1.800	64.3	3.267	1.1	4.733	.4	6.200	.2
.400	.0	1.867	50.3	3.333	1.0	4.800	.4	6.267	.1
.467	.0	1.933	40.7	3.400	.9	4.867	.4	6.333	.1

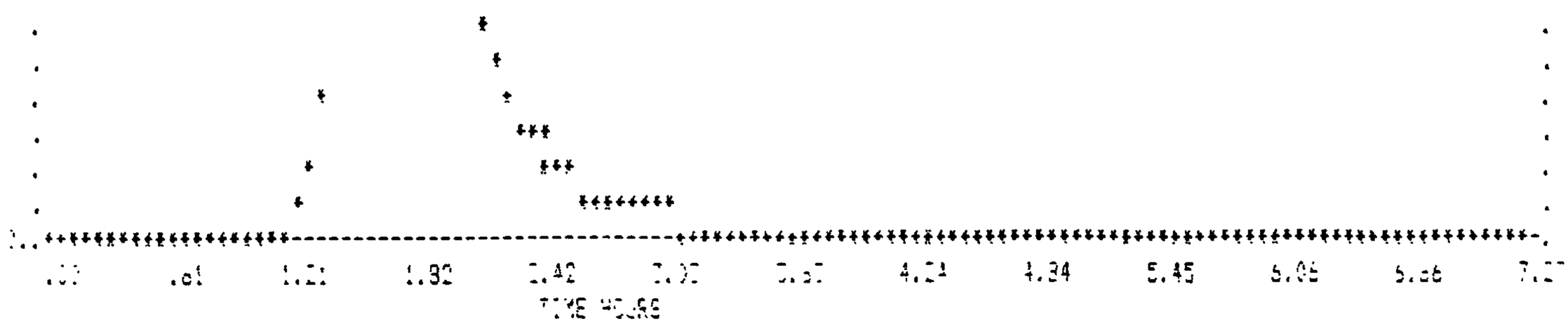
.500	.0	2.067	28.2	3.533	.7	5.900			
.667	.0	2.133	22.2	3.600	.7	5.967	.4	8.533	
.733	.0	2.200	17.6	3.667	.6	6.133	14.4	8.600	
.800	.0	2.267	13.9	3.733	.4	6.200	14.4	8.667	.0
.867	.0	2.333	11.1	3.800	.5	6.267	14.4	8.733	.0
.933	.0	2.400	9.1	3.867	.5	6.333	14.4	8.800	.0
1.000	.0	2.467	7.5	3.933	.5	6.400	.4	8.867	.0
1.067	.0	2.533	6.2	4.000	.5	6.467	.4	8.933	.0
1.133	.0	2.600	5.2	4.067	.4	6.533	.4	9.000	.0
1.200	.0	2.667	4.4	4.133	.4	6.600	.4	9.067	.0
1.267	4.4	2.733	3.7	4.200	.4	6.667	.4	9.133	.0
1.333	10.7	2.800	3.1	4.267	.4	6.733	.4	9.200	.0
1.400	17.3	2.867	2.7	4.333	.4	6.800	.4	9.267	.0

PLATE /SCALE = .2500 INCHES = 5.7857 ACRE-FEET

PEAK DISCHARGE RATE = 161.57 CFS AT 1.533 HOURS BASIN AREA = .187 SQ. MI.

PLOT FOR STATION

PLOT RATE (CFS)




```
COMPUTE RATING CURVE IID=1.  .0 NC=30  NC 0000=1
                  MIN EL=      FT   MAX EL=0     FT
                  0% SLP=.0250      99 SLP=.1000    FT PER FT
                    1   END OF
                  .015    30
                  DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                  0     5       10    4       21    4       30    5
COMPUTE TRAVEL TIME  ID=4     REACH=38 NC NS=1
                  L=1010   FT      SLP=.0250   FT/FT
```

TRAVEL TIME TABLE

REACH= 38.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	2.770	17.12	.0539
.525	5.217	55.15	.0352
.787	9.141	111.25	.0276
1.153	12.742	131.39	.0234
1.316	16.620	268.72	.0205
1.579	20.775	371.09	.0187
1.842	25.208	459.93	.0172
2.105	29.917	525.17	.0160
2.368	34.903	777.21	.0150
2.632	40.166	946.48	.0141
2.895	45.706	1133.42	.0134
3.158	51.524	1339.52	.0128
3.421	57.618	1562.25	.0123
3.684	63.989	1805.10	.0118
3.947	70.637	2067.56	.0114
4.211	77.562	2350.10	.0110
4.474	84.765	2653.23	.0106
4.737	92.244	2977.43	.0103
5.000	100.000	3321.18	.0100

```
ROUTE              ID=4     HYD=116     INFLOW HYD ID=3   DT=.033333
ADD HYD            ID=3   HYD=119.1  ID I=4      ID II=7
**************************************************************************
COMPUTE NM HYD     ID=1   HYD=315   DA=0.01234  SQ MI
                   PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1

    K =  .072649HR    TP =  .133300HR    K/TP RATIO =  .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =  9.0139    CFS   UNIT VOLUME =  .9981      B =  526.28      P60 = 1.8700
    AREA =      .012283 SQ MI    IA =  .10000 INCHES    INF =  .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333


    K =  .130992HR    TP =  .133300HR    K/TP RATIO =  .982685     SHAPE CONSTANT, N =  3.593443
    UNIT PEAK =  24.679    CFS   UNIT VOLUME =  .9998      B =  327.09      P60 = 1.8700
    AREA =      .016057 SQ MI    IA =  .50000 INCHES    INF =  1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333

PRINT HYD          ID=1   CODE=1
```

HYDROGRAPH FROM AREA 119.00

RUNOFF VOLUME = .96752 INCHES = .5977 ACRE-FEET
PEAK DISCHARGE RATE = 19.49 CFS AT 1.533 HOURS BASIN AREA = .0133 SQ. MI.

*S HYD 119 = COMBINED FLOW INTO SNOW VISTA DESILT BASIN
*S HYD 119 = AP 5 IN

	NEW	NEW	IN1	IN2
ADD HYD	ID=5	HYD=119	ID I=1	ID I=3
PRINT HYD	ID=5	CODE=2		

PARTIAL-HYDROGRAPH 119.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	197.6	3.867	4.7	5.300	2.5	7.733	.1
.067	.1	1.400	165.3	3.933	4.1	5.367	2.5	7.800	.1
.133	.1	1.467	142.1	4.000	3.8	5.433	2.5	7.867	.1
.200	.0	1.533	119.3	4.067	3.6	5.500	2.6	7.933	.1
.267	.1	1.600	98.9	4.133	3.4	5.567	2.6	8.000	.1
.333	.0	1.667	78.5	4.200	3.2	5.633	2.4	8.067	.0
.400	.0	1.733	61.3	4.267	3.1	5.700	2.2	8.133	.0
.467	.0	1.800	49.4	4.333	3.1	5.767	2.0	8.200	.0
.533	.0	1.867	41.4	4.400	2.9	5.833	1.8	8.267	.0
.600	.0	1.933	34.8	4.467	2.8	5.900	1.7	8.333	.0
.667	.1	2.000	29.7	4.533	2.7	5.967	1.5	8.400	.0
.733	.0	2.067	24.3	4.600	2.6	6.033	1.4	8.467	.0
.800	.0	2.133	21.2	4.667	2.6	6.100	1.2	8.533	.0
.867	.0	2.200	18.5	4.733	2.5	6.167	1.1	8.600	.0
.933	.0	2.267	16.3	4.800	2.5	6.233	1.0	8.667	.0
1.000	.1	2.333	14.5	4.867	2.4	6.300	.9	8.733	.0
1.067	.0	2.400	12.9	4.933	2.4	6.367	.8	8.800	.0
1.133	.0	2.467	11.6	5.000	2.4	6.433	.7	8.867	.0
1.200	1.1	2.533	10.5	5.067	2.4	7.000	.6	8.933	.0
1.267	8.2	2.600	9.6	5.133	2.4	7.067	.5	9.000	.0
1.333	27.2	2.667	8.7	5.200	2.4	7.133	.4	9.067	.0
1.400	104.3	2.733	8.0	5.267	2.4	7.200	.4	9.133	.0
1.467	338.5	3.400	7.3	5.333	2.4	7.267	.3	9.200	.0
1.533	587.7	3.467	6.8	5.400	2.4	7.333	.3	9.267	.0
1.600	611.4	3.533	6.2	5.467	2.4	7.400	.2	9.333	.0
1.667	497.1	3.600	5.8	5.533	2.4	7.467	.2	9.400	.0
1.733	334.1	3.667	5.4	5.600	2.4	7.533	.2	9.467	.0
1.800	297.8	3.733	5.0	5.667	2.4	7.600	.2	9.533	.0
1.867	226.4	3.800	4.7	5.733	2.5	7.667	.1	9.600	.1

RUNOFF VOLUME = 1.09858 INCHES = 14.6320 ACRE-FEET
PEAK DISCHARGE RATE = 628.19 CFS AT 1.567 HOURS BASIN AREA = .4153 SQ. MI.

****
*S HYD 501 = ROUTED OUTFLOW FROM SNOW VISTA DESILTING BASIN
*S HYD 501 = AP 5 OUT
ROUTE RESERVOIR ID=7 HYD=501 INFLOW ID=5 CODE=2

CFS OUT	VOL AC-FT	ELEV FT
0.	0.	11.05
14.35	0.6698	11.55
41.45	1.3245	12.05
122.4	2.6904	13.05
234.7	4.1343	14.05
365.8	5.6928	15.05
527.6	7.4074	16.05
715.0	9.3198	17.05

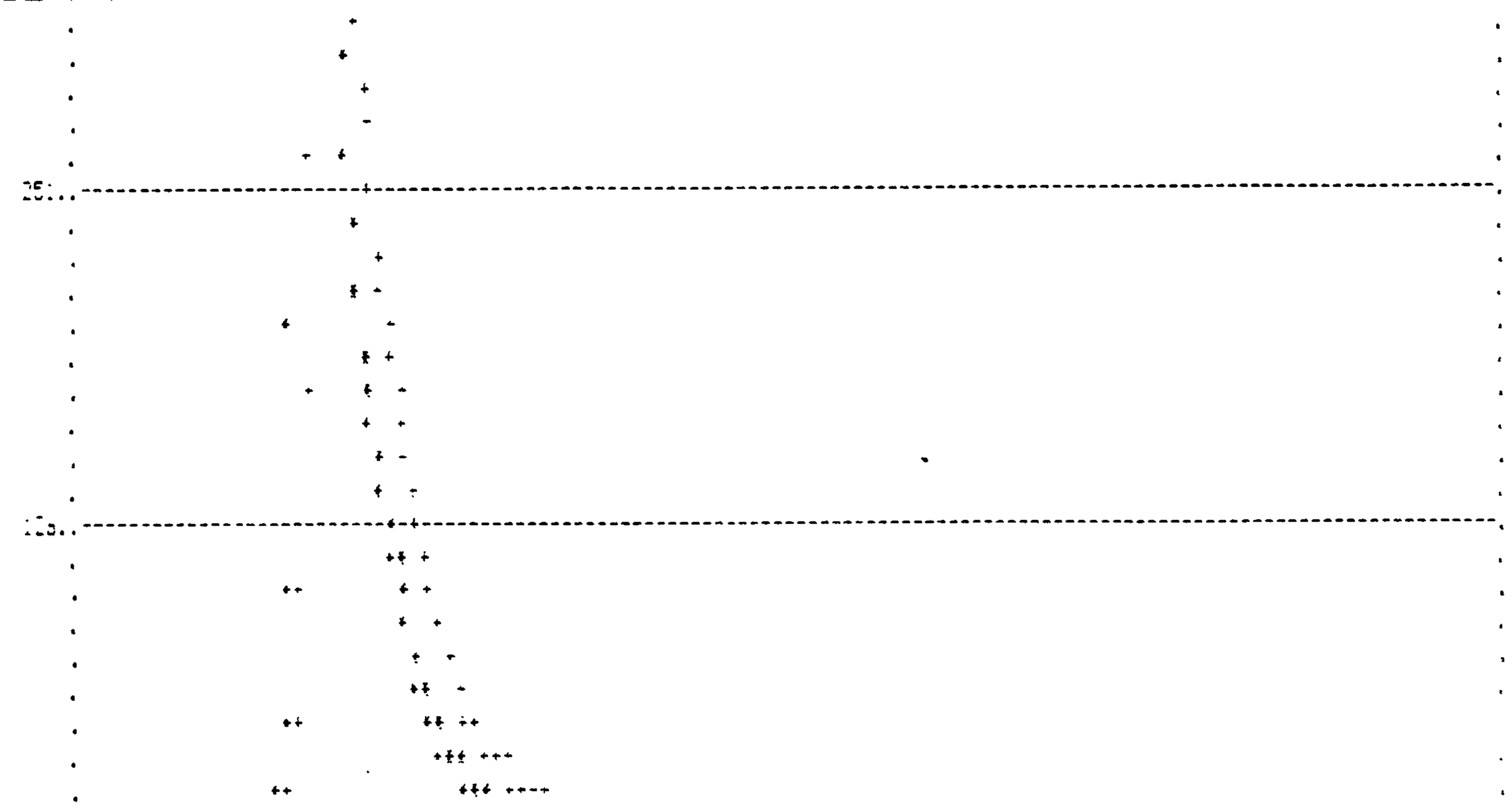
TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	11.05	.000	.00
.07	.00	11.05	.000	.00
.13	.00	11.05	.000	.00
.20	.00	11.05	.000	.00
.27	.00	11.05	.000	.00
.33	.00	11.05	.000	.00
.40	.00	11.05	.000	.00
.47	.00	11.05	.000	.00
.53	.00	11.05	.000	.00
.60	.00	11.05	.000	.00
.67	.00	11.05	.000	.00
.73	.00	11.05	.000	.00
.80	.00	11.05	.000	.00
.87	.00	11.05	.000	.00
.93	.00	11.05	.000	.00
1.00	.00	11.05	.000	.00
1.07	.00	11.05	.000	.00
1.13	.01	11.05	.000	.00
1.20	1.09	11.05	.002	.04
1.27	8.21	11.07	.023	.51
1.33	27.20	11.13	.107	2.32
1.40	104.32	11.36	.406	8.37
1.47	338.45	12.13	1.429	47.65
1.53	887.63	13.57	3.442	130.84
1.60	611.46	14.95	5.276	339.18
1.67	499.11	15.41	6.015	424.81
1.73	384.10	15.44	6.257	429.41
1.80	297.77	15.21	5.964	391.47
1.87	236.36	14.87	5.411	342.10
1.93	193.57	14.50	4.937	293.33
2.00	165.30	14.17	4.525	250.75
2.07	142.23	13.88	3.890	215.72
2.13	118.24	13.61	3.505	185.73
2.20	95.94	13.37	3.149	159.08
2.27	76.45	13.14	2.823	132.69
2.33	60.05	12.93	2.525	112.60
2.40	49.40	12.77	2.250	96.32
2.47	41.43	12.65	2.009	82.03
2.53	34.82	12.40	1.802	69.73
2.60	29.30	12.27	1.623	59.15
2.67	24.75	12.16	1.471	50.15
2.73	21.25	12.06	1.343	42.54
2.80	18.54	11.98	1.232	37.68
2.87	16.31	11.90	1.131	33.58
2.93	14.47	11.84	1.041	29.91
3.00	12.93	11.78	.961	26.64
3.07	11.61	11.72	.890	23.74
3.13	10.50	11.68	.827	21.19
3.20	9.55	11.63	.772	18.93
3.27	8.72	11.60	.724	16.95
3.33	7.98	11.57	.681	15.22
3.40	7.33	11.54	.643	13.99
3.47	6.75	11.51	.607	12.20
3.53	6.24	11.48	.572	12.45
3.60	5.77	11.46	.539	11.72
3.67	5.36	11.43	.507	11.02
3.73	4.99	11.41	.476	10.36
3.80	4.65	11.39	.448	9.72
3.87	4.35	11.37	.420	9.14
3.93	4.08	11.35	.395	8.58

4.00	3.84	11.33	.271	8.06
4.07	3.62	11.31	.348	7.57
4.13	3.43	11.30	.327	7.11
4.20	3.27	11.28	.308	6.69
4.27	3.12	11.27	.289	6.29
4.33	2.99	11.26	.277	5.97
4.40	2.88	11.24	.257	5.53
4.47	2.78	11.23	.242	5.23
4.53	2.69	11.22	.229	4.93
4.60	2.62	11.21	.217	4.77
4.67	2.55	11.21	.206	4.48
4.73	2.50	11.20	.196	4.26
4.80	2.45	11.19	.187	4.06
4.87	2.41	11.19	.178	3.88
4.93	2.41	11.18	.171	3.71
5.00	2.33	11.17	.164	3.56
5.07	2.27	11.17	.158	3.43
5.13	2.23	11.17	.152	3.31
5.20	2.18	11.16	.147	3.20
5.27	2.14	11.16	.142	3.11
5.33	2.10	11.16	.139	3.02
5.40	2.07	11.15	.135	2.95
5.47	2.05	11.15	.133	2.88
5.53	2.00	11.15	.130	2.82
5.60	1.98	11.15	.128	2.78
5.67	1.95	11.15	.126	2.74
5.73	1.93	11.14	.124	2.71
5.80	1.91	11.14	.122	2.68
5.87	1.89	11.14	.122	2.65
5.93	1.88	11.14	.122	2.65
6.00	1.88	11.14	.121	2.64
6.07	1.88	11.14	.121	2.63
6.13	1.87	11.14	.120	2.62
6.20	1.86	11.14	.119	2.59
6.27	1.84	11.14	.116	2.53
6.33	1.84	11.14	.113	2.46
6.40	1.69	11.13	.109	2.38
6.47	1.82	11.13	.105	2.29
6.53	1.77	11.12	.101	2.19
6.60	1.73	11.12	.096	2.09
6.67	1.10	11.12	.091	1.99
6.73	.97	11.12	.086	1.88
6.80	.85	11.11	.081	1.77
6.87	.75	11.11	.076	1.65
6.93	.66	11.10	.071	1.55
7.00	.57	11.10	.067	1.45
7.07	.50	11.10	.062	1.34
7.13	.43	11.09	.057	1.24
7.20	.37	11.09	.053	1.15
7.27	.32	11.09	.049	1.06
7.33	.28	11.08	.045	.97
7.40	.24	11.08	.041	.89
7.47	.21	11.08	.038	.82
7.53	.19	11.08	.034	.75
7.60	.15	11.07	.031	.68
7.67	.13	11.07	.028	.62
7.73	.11	11.07	.026	.56
7.80	.09	11.07	.023	.51
7.87	.08	11.07	.021	.45
7.93	.07	11.06	.019	.42
8.00	.06	11.06	.017	.38
8.07	.05	11.06	.016	.34
8.13	.04	11.06	.014	.31
8.20	.04	11.06	.013	.28
8.27	.03	11.06	.012	.25
8.33	.02	11.06	.010	.22

8.40	.02	11.06	.009	.20
8.47	.02	11.06	.008	.19
8.53	.02	11.06	.008	.18
8.60	.01	11.06	.007	.18
8.67	.01	11.05	.006	.17
8.73	.01	11.05	.005	.16
8.80	.01	11.05	.005	.15
8.87	.01	11.05	.004	.14
8.93	.01	11.05	.004	.13
9.00	.01	11.05	.003	.13
9.07	.00	11.05	.003	.12
9.13	.00	11.05	.003	.11
9.20	.00	11.05	.002	.10
9.27	.00	11.05	.002	.10
9.33	.00	11.05	.002	.09
9.40	.00	11.05	.002	.09
9.47	.00	11.05	.002	.08
9.53	.00	11.05	.001	.08
9.60	.00	11.05	.001	.07
9.67	.00	11.05	.001	.07
9.73	.00	11.05	.001	.06
9.80	.00	11.05	.001	.06
9.87	.00	11.05	.001	.06
9.93	.00	11.05	.001	.05
10.00	.00	11.05	.001	.05
10.07	.00	11.05	.001	.05
10.13	.00	11.05	.000	.04
10.20	.00	11.05	.000	.04
10.27	.00	11.05	.000	.04
10.33	.00	11.05	.000	.04
10.40	.00	11.05	.000	.04
10.47	.00	11.05	.000	.04
10.53	.00	11.05	.000	.04
10.60	.00	11.05	.000	.03

PEAK DISCHARGE = 474.753 CFS - PEAK OCCURS AT HOUR 1.70
MAXIMUM WATER SURFACE ELEVATION = 15.476
MAXIMUM STORAGE = 6.4235 AC-FT INCREMENTAL TIME= .033333HRS

* PLOT HYD AP 5 IN & OUT
PLOT HYD ID=5 ID=3
FLOW RATE (CFS) PLOT SYMBOLS: ID 5= --*-- ID 3= ----- BOTH= --#--



*S START SNJ# /1STA CHANNEL
COMPUTE RATING CURVE CID=-1 VE NC=1 NO SEGS=1
MIN EL=) FT MAX EL=5 FT
CH SLP= .0109 FP SLP=.0109 FT PER FT
N END X
.015 30
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
) 5 10 0 20 0 30 5
COMPUTE TRAVEL TIME ID=2 REACH=1 NO VS=1
L=1200 ft SLP=.0109 ft/ft

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	2.770	11.30	.0817
.526	5.817	36.42	.0532
.789	9.141	72.90	.0419
1.053	12.742	119.77	.0355
1.316	16.620	177.17	.0313
1.579	20.776	245.02	.0283
1.842	25.208	323.50	.0260
2.105	29.917	412.90	.0242
2.368	34.903	513.20	.0227
2.632	40.166	624.96	.0214
2.895	45.706	748.40	.0204
3.158	51.524	883.83	.0194
3.421	57.618	1031.56	.0186
3.684	63.989	1191.91	.0179
3.947	70.637	1365.21	.0172
4.211	77.562	1551.79	.0167
4.474	84.765	1751.94	.0161
4.737	92.244	1965.01	.0156

```
ROUTE                ID=2     HYD=121     INFLOW HYD ID=2   DT=.033333
**************************************************************************
COMPUTE NM HYD       ID=2   HYD=211   DA=0.0181  SQ MI
                     PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1

    K =   .072e49HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   27.859    CFS   UNIT VOLUME =    .9991       B =   526.28      P60 = 1.3700
    AREA =      .007084 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .10099HR    TP =   .13330HR    K/TP RATIO =   .982695     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =   16.282    CFS   UNIT VOLUME =    1.000       B =   327.09      P60 = 1.8700
    AREA =      .011176 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=2   CODE=1

                                HYDROGRAPH FROM AREA   212.00

    RUNOFF VOLUME =      .90752 INCHES     =        1.6455 ACRE-FEET
    PEAK DISCHARGE RATE =      59.99 CFS  AT   1.500 HOURS   BASIN AREA =   .1781 SQ. MI.


+                     NEW      NEW        IN1          IN2
ADD HYD              ID=4   HYD=122    ID I=2      ID II=7
**************************************************************************
COMPUTE NM HYD       ID=1   HYD=212   DA=0.01189  SQ MI
                     PER A=0   B=81.5 C=0   D=18.5 TP=0.1333 HRS   RAIN=-1

    K =   .072e49HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   3.8779    CFS   UNIT VOLUME =    .9991       B =   526.28      P60 = 1.3700
    AREA =      .002193 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .10099HR    TP =   .133300HR    K/TP RATIO =   .982695     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =   23.758    CFS   UNIT VOLUME =    .9999       B =   327.09      P60 = 1.8700
    AREA =      .009632 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1   CODE=1

                                HYDROGRAPH FROM AREA   212.00

    RUNOFF VOLUME =      .90752 INCHES     =         .5750 ACRE-FEET
    PEAK DISCHARGE RATE =      18.67 CFS  AT   1.500 HOURS   BASIN AREA =   .0119 SQ. MI.


+                     NEW      NEW        IN1          IN2
ADD HYD              ID=7   HYD=123    ID I=1      ID II=4
*S START NEW BRANCH, TO TOWER 9D
**************************************************************************
COMPUTE NM HYD       ID=1   HYD=354   DA=0.00531  SQ MI
                     PER A=0   B=81.50=0    D=18.5  TP=0.1333 HRS RAIN=-1

    K =   .072e49HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   3.8734    CFS   UNIT VOLUME =    .9965       B =   526.28      P60 = 1.3700
    AREA =      .000982 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333
```

K = ..00992HR TP = .133000HR K/TP RATIO = .992685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 10.619 CFS UNIT VOLUME = .9990 B = 327.09 P60 = 1.8700
AREA = .004329 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

HYDROGRAPH FROM AREA 101.00

RUNOFF VOLUME = .90752 INCHES = .1571 ACRE-FEET
PEAK DISCHARGE RATE = 9.72 CFS AT 1.300 HOURS BASIN AREA = .0052 SQ. MI.

****
COMPUTE NM HYD ID=2 HYD=102 DA=0.00266 SQ MI
PER A=0 B=81.5 C=0 D=18.5 TP=0.1333 HRS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 3.7428 CFS UNIT VOLUME = .9977 B = 526.29 P60 = 1.8700
AREA = .001702 SQ MI IA = .19000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .132992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 2.9195 CFS UNIT VOLUME = .9977 B = 327.09 P60 = 1.8700
AREA = .001702 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=2 CODE=1

HYDROGRAPH FROM AREA 102.00

RUNOFF VOLUME = .90752 INCHES = .0773 ACRE-FEET
PEAK DISCHARGE RATE = 4.19 CFS AT 1.300 HOURS BASIN AREA = .0027 SQ. MI.

ADD HYD ID=3 HYD=103 ID I=1 ID II=2
****
COMPUTE NM HYD ID=1 HYD=403 DA=0.00699 SQ MI
PER A=0 B=50 C=0 D=50 TP=0.1333 HRS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 13.581 CFS UNIT VOLUME = .9985 B = 526.29 P60 = 1.8700
AREA = .003440 SQ MI IA = .19000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .132992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 3.4410 CFS UNIT VOLUME = .9986 B = 327.09 P60 = 1.8700
AREA = .003440 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

HYDROGRAPH FROM AREA 403.00

RUNOFF VOLUME = 1.31642 INCHES = .4830 ACRE-FEET
PEAK DISCHARGE RATE = 14.03 CFS AT 1.300 HOURS BASIN AREA = .0069 SQ. MI.

+S HYD 105 = COMBINED FLOW AT TOWER-TANAGER-106th INTERSECTION
ADD HYD ID=4 HYD=105 ID I=1 ID II=7
PRINT HYD ID=4 CODE=2

PARTIAL HYDROGRAPH 105.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.400	12.1	2.800	.4	4.200	.1	5.600	.1
.067	.0	1.467	11.8	2.867	.3	4.267	.1	5.667	.1
.133	.0	1.533	10.3	2.933	.3	4.333	.1	5.733	.1
.200	.0	1.600	10.7	3.000	.2	4.400	.1	5.800	.1
.267	.1	1.667	14.1	3.067	.2	4.467	.1	5.867	.1
.333	.1	1.733	10.4	3.133	.2	4.533	.1	5.933	.1
.400	.0	1.800	7.9	3.200	.2	4.600	.1	6.000	.1
.467	.0	1.867	6.7	3.267	.2	4.667	.1	6.067	.1
.533	.1	1.933	5.7	3.333	.1	4.733	.1	6.133	.1
.600	.1	2.000	4.6	3.400	.1	4.800	.1	6.200	.0
.667	.1	2.067	3.9	3.467	.1	4.867	.1	6.267	.0
.733	.0	2.133	2.8	3.533	.1	4.933	.1	6.333	.0
.800	.1	2.200	2.2	3.600	.1	5.000	.1	6.400	.0
.867	.1	2.267	1.5	3.667	.1	5.067	.1	6.467	.0
.933	.0	2.333	1.2	3.733	.1	5.133	.1	6.533	.0
1.000	.0	2.400	1.0	3.800	.1	5.200	.1	6.600	.0
1.067	.1	2.467	.8	3.867	.1	5.267	.1	6.667	.0
1.133	.0	2.533	.7	3.933	.1	5.333	.1	6.733	.0
1.200	.2	2.600	.6	4.000	.1	5.400	.1		
1.267	1.7	2.667	.5	4.067	.1	5.467	.1		
1.333	4.5	2.733	.4	4.133	.1	5.533	.1		

RUNOFF VOLUME = 1.09691 INCHES = .8687 ACRE-FEET
PEAK DISCHARGE RATE = 26.63 CFS AT 1.500 HOURS BASIN AREA = .0149 SQ. MI.

****
COMPUTE NM HYD ID=1 HYD=401 DA=0.01016 SQ MI
PER A=0 B=50 C=0 D=50 TP=0.1333 HRS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 20.056 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 1.3700
AREA = .005080 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 12.465 CFS UNIT VOLUME = .9992 B = 327.09 P60 = 1.8700
AREA = .005080 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

HYDROGRAPH FROM AREA 401.00

RUNOFF VOLUME = 1.21642 INCHES = .7910 ACRE-FEET
PEAK DISCHARGE RATE = 20.78 CFS AT 1.500 HOURS BASIN AREA = .0102 SQ. MI.

ADD HYD ID=3 HYD=107 ID I=1 ID II=4
+3 BAY - = 23 FROM TOWER TO SANDERLING; EXCESS IN STREET TO SNOW VISTA
+S HOLD 401.2 UNDERFLOW, ID=8) TO ADD TO 402 LATER
DIVIDE HYD ID=3 D=23.0 ID=8 HYD=401.2 ID=2 HYD=401.1
PRINT HYD ID=8 CODE=1

HYDROGRAPH FROM AREA 401.20

RUNOFF VOLUME = 1.1860" INCHES = 1.1667 ACRE-FEET
PEAK DISCHARGE RATE = 27.00 CFS AT 1.477 HOURS BASIN AREA = .0200 SQ. MI.

PRINT HYD ID=2 CODE=1

HYDROGRAPH FROM AREA 401.10

RUNOFF VOLUME = 1.1861" INCHES = .7152 ACRE-FEET
PEAK DISCHARGE RATE = 14.41 CFS AT 1.500 HOURS BASIN AREA = .0050 SQ. MI.

COMPUTE RATING CURVE ID=-1 VS NO=76 NO SEGS=1
MIN EL=0 FT MAX EL=3 FT
CH SLP=.025 FP SLP=.025 FT PER FT=EST EFFECTIVE
N END X
.015 60
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
1 .92 9.99 .59 11 0 20 .40
50 0 50.01 .59 60 .92
COMPUTE TRAVEL TIME ID=4 REACH=39 NO VS=1 L=L TO CATCH BASIN
L=550 FT SLP=.025 ft/ft

TRAVEL TIME TABLE
REACH= 39.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	3.464	17.85	.0382
.526	17.057	95.29	.0209
.789	24.793	233.23	.0162
1.052	40.067	473.31	.0129
1.316	55.957	823.42	.0104
1.579	71.646	1246.86	.0088
1.842	87.436	1737.70	.0077
2.105	103.225	2291.59	.0069
2.368	119.014	2905.11	.0063
2.632	134.804	3575.48	.0058
2.895	150.593	4300.38	.0054
3.158	166.383	5077.83	.0050
3.421	182.172	5906.11	.0047
3.684	197.962	6783.70	.0045
3.947	213.751	7709.25	.0042
4.211	229.541	8681.55	.0040
4.474	245.330	9699.50	.0039
4.737	261.120	10762.10	.0037
5.000	276.909	11868.43	.0036

ROUTE ID=4 HYD=109 INFLOW HYD ID=2 DT=.033333
PROBLEM FAILED TO CONVERGE AFTER 50 ITERATIONS. CONVERGENCE WAS FORCED. OUTFLOW NUMBER = 600 RATE = .00
PRINT HYD ID=4 CODE=2

PARTIAL HYDROGRAPH 109.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	.533	.0	1.067	.0	1.600	16.8	2.133	.0
.067	.0	.600	.0	1.133	.0	1.667	7.1	2.200	.0
.133	.0	.667	.0	1.200	.0	1.733	1.4	2.267	.0

.267	.0	.800	.0	1.333	.0	1.867	.0	2.333	.0
.333	.0	.867	.0	1.400	.0	1.933	.0	2.400	.0
.400	.0	.933	.0	1.467	10.2	2.000	.0	2.467	.0
.467	.0	1.000	.0	1.533	21.6	2.067	.0		

RUNOFF VOLUME = 1.13711 INCHES = .3169 ACRE-FEET
PEAK DISCHARGE RATE = 21.64 CFS AT 1.533 HOURS BASIN AREA = .0050 SQ. MI.

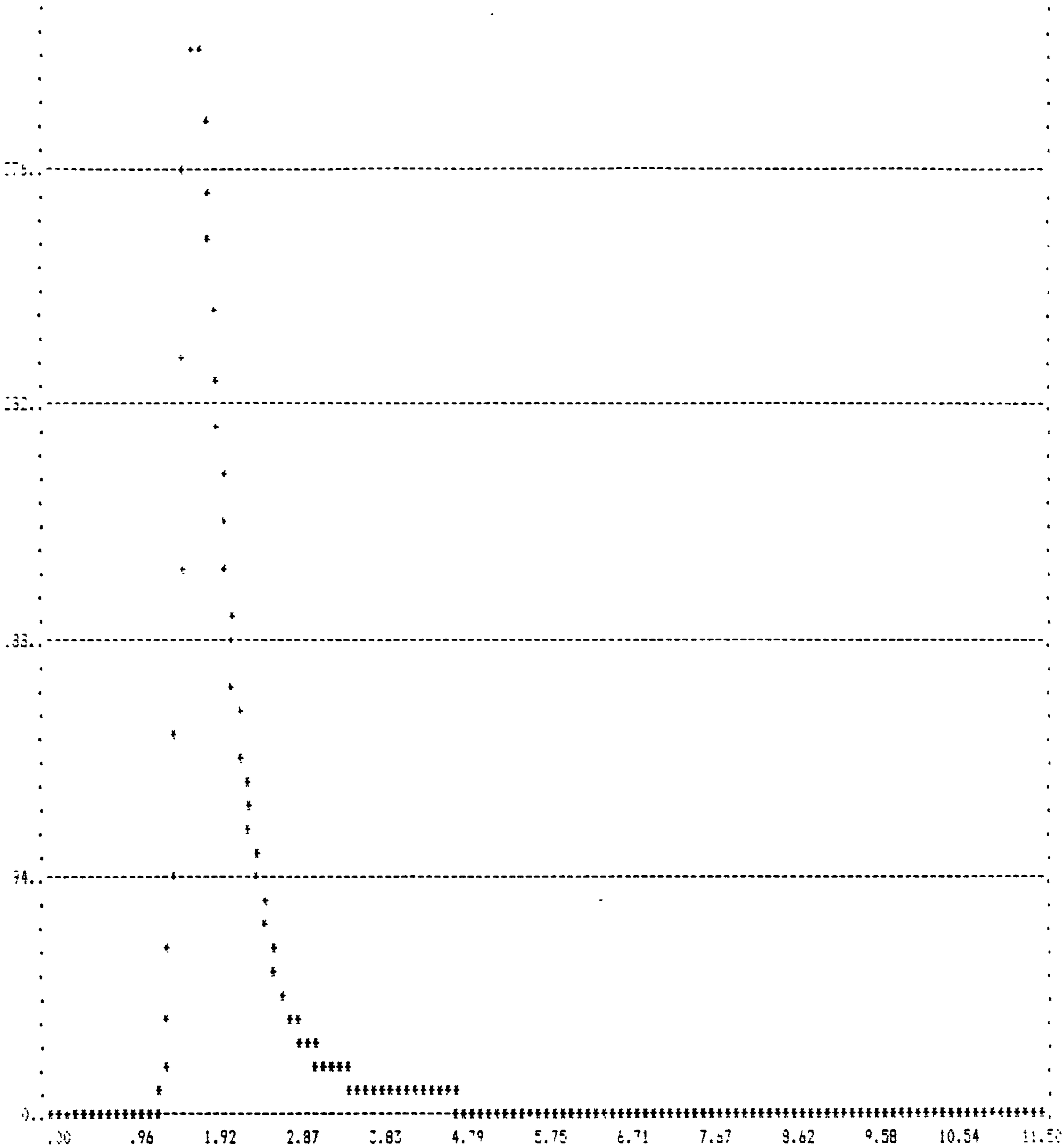
*S HYD 124 = ENCW VISTA JUST DOWNSTREAM FROM TOWER
*3 HYD 124 = AP 5
ADD HYD ID=3 HYD=124 II I=4 II I=7
PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 124.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.333	122.6	4.667	4.9	7.000	1.6	9.333	.0
.067	.0	2.400	104.5	4.733	4.7	7.067	1.5	9.400	.0
.133	.0	2.467	89.3	4.800	4.5	7.133	1.4	9.467	.0
.200	.0	2.533	76.9	4.867	4.3	7.200	1.3	9.533	.0
.267	.0	2.600	64.7	4.933	4.1	7.267	1.2	9.600	.0
.333	.0	2.667	55.2	5.000	3.9	7.333	1.1	9.667	.0
.400	.0	2.733	47.4	5.067	3.8	7.400	1.0	9.733	.0
.467	.0	2.800	41.5	5.133	3.6	7.467	.9	9.800	.0
.533	.0	2.867	36.6	5.200	3.5	7.533	.8	9.867	.0
.600	.0	2.933	31.9	5.267	3.4	7.600	.8	9.933	.0
.667	.0	3.000	28.6	5.333	3.3	7.667	.7	10.000	.0
.733	.0	3.067	25.7	5.400	3.2	7.733	.6	10.067	.0
.800	.0	3.133	23.2	5.467	3.1	7.800	.6	10.133	.1
.867	.0	3.200	20.9	5.533	3.1	7.867	.5	10.200	.1
.933	.0	3.267	18.8	5.600	3.0	7.933	.5	10.267	.0
1.000	.0	3.333	17.0	5.667	3.0	8.000	.4	10.333	.0
1.067	.0	3.400	15.5	5.733	2.9	8.067	.4	10.400	.0
1.133	.0	3.467	14.4	5.800	2.9	8.133	.4	10.467	.0
1.200	.3	3.533	13.5	5.867	2.9	8.200	.3	10.533	.0
1.267	3.3	3.600	12.7	5.933	2.9	8.267	.3	10.600	.0
1.333	10.1	3.667	12.0	6.000	2.8	8.333	.3	10.667	.0
1.400	25.4	3.733	11.3	6.067	2.8	8.400	.2	10.733	.0
1.467	47.9	3.800	10.7	6.133	2.7	8.467	.2	10.800	.0
1.533	219.3	3.867	10.1	6.200	2.7	8.533	.2	10.867	.0
1.600	377.2	3.933	9.5	6.267	2.6	8.600	.2	10.933	.0
1.667	459.1	4.000	9.9	6.333	2.5	8.667	.2	11.000	.0
1.733	464.3	4.067	8.4	6.400	2.5	8.733	.1	11.067	.0
1.800	424.8	4.133	7.9	6.467	2.4	8.800	.1	11.133	.0
1.867	370.9	4.200	7.4	6.533	2.3	8.867	.1	11.200	.0
1.933	320.0	4.267	7.0	6.600	2.2	8.933	.1	11.267	.0
2.000	273.8	4.333	6.6	6.667	2.1	9.000	.1	11.333	.0
2.067	234.7	4.400	6.2	6.733	2.0	9.067	.1	11.400	.0
2.133	201.8	4.467	5.8	6.800	1.9	9.133	.1	11.467	.0
2.200	171.9	4.533	5.5	6.867	1.8	9.200	.1		
2.267	144.9	4.600	5.2	6.933	1.7	9.267	.1		

RUNOFF VOLUME = 1.07920 INCHES = 27.0685 ACRE-FEET
PEAK DISCHARGE RATE = 469.84 CFS AT 1.700 HOURS BASIN AREA = .4703 SQ. MI.

PLOT HYD ID=3
FLOW RATE (CFS)
470..----------*----------
. **
. *




```
* FOR ROUTING EST AVG SLOPE=.01+-: 450'@.014, 500'@.004. 400'@.0126
COMPUTE RATING CURVE CID=-1  VS NO=2   NO SESS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP= .010     FP SLP=.010     FT PER FT
                       N   END X
                     .015   30
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME  ID=4     REACH=2  NO VS=1
                     L=1350    ft       SLP=.010    ft/ft

                           TRAVEL TIME TABLE
                                          REACH=  2.0
```

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	2.770	10.83	.0959
.526	5.817	24.88	.0625
.789	9.141	69.77	.0492
1.053	12.742	124.72	.0417
1.316	16.620	195.70	.0367
1.579	20.776	284.70	.0333
1.842	25.208	394.36	.0308
2.105	29.917	525.29	.0284
2.368	34.901	681.55	.0266
2.632	40.162	868.60	.0252
2.895	45.700	1086.84	.0239
3.158	51.514	1345.58	.0228
3.421	57.613	1668.06	.0219
3.684	63.989	2141.65	.0210
3.947	70.637	2707.64	.0202
4.211	77.562	3436.34	.0196
4.474	84.765	4678.05	.0189
4.737	92.244	6383.89	.0184
5.000	100.000	8101.78	.0179

ROUTE ID=4 HYD=128 INFLOW HYD ID=3 DT=.033333
PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 128.00

RUNOFF VOLUME = 1.07923 INCHES = 27.0685 ACRE-FEET
PEAK DISCHARGE RATE = 467.41 CFS AT 1.733 HOURS BASIN AREA = .4703 SQ. MI.

****
COMPUTE NM HYD ID=2 HYD=313 DA=0.01016 SQ MI
PER A=0 B=81.5 C=0 D=18.5 TC=0.1333 HRS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545099 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 7.4208 CFS UNIT VOLUME = .9978 B = 526.28 P60 = 1.3700
AREA = .001890 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 20.318 CFS UNIT VOLUME = .9997 B = 327.09 P60 = 1.8700
AREA = .008280 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=2 CODE=1

HYDROGRAPH FROM AREA 313.00

RUNOFF VOLUME = .90752 INCHES = .4918 ACRE-FEET
PEAK DISCHARGE RATE = 15.97 CFS AT 1.500 HOURS BASIN AREA = .0102 SQ. MI.

*	NEW	NEW	IN1	IN2
ADD HYD	ID=3	HYD=130	ID I=2	ID II=4
PRINT HYD	ID=3	CODE=1		

PARTIAL HYDROGRAPH 130.00

RUNOFF VOLUME = 1.07557 INCHES = 27.560 ACRE-FEET
PEAK DISCHARGE RATE = 473.55 CFS AT 1.733 HOURS BASIN AREA = .4805 SQ. MI.

* FOR ROUTE EST AVG SLOPE AS .012
COMPLETE RATING CURVE CID=-1 VS NO=3 NO SEGS=1
MIN EL=0 FT MAX EL=5 FT
CH SLP= .012 FP SLP=.012 FT PER FT
N END X
.015 30
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
[illegible]
COMPLETE TRAVEL TIME ID=3 REACH=3 NO PTS=1
L=550 FT SLP=.012 FT/FT

TRAVEL TIME TABLE
REACH= [illegible]

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.261	2.77[illegible]	11.38	.0257
.526	5.817	38.21	.0211
.789	9.141	76.38	.0139
1.052	12.742	128.67	.0105
1.316	16.620	195.91	.0107
1.579	20.776	287.19	.0103
1.842	25.209	399.47	.0093
2.105	29.917	533.13	.0096
2.368	34.903	689.47	.0099
2.632	40.166	865.74	.0094
2.895	45.706	1065.26	.0089
3.158	51.524	1287.36	.0085
3.421	57.618	1532.36	.0081
3.684	63.989	1800.61	.0078
3.947	70.637	2092.44	.0075
4.211	77.562	2408.20	.0073
4.474	84.765	2748.21	.0070
4.737	92.244	3112.92	.0068
5.000	100.000	3502.37	.0066

*S HYD 132 = SNOW VISTA JUST ABOVE JUNCTION WITH SECTION LINE CHANNEL STUB
*S HYD 132 = AP 9
ROUTE ID=6 HYD=132 INFLOW HYD ID=3 DT=.033333
PRINT HYD ID=6 CODE=2

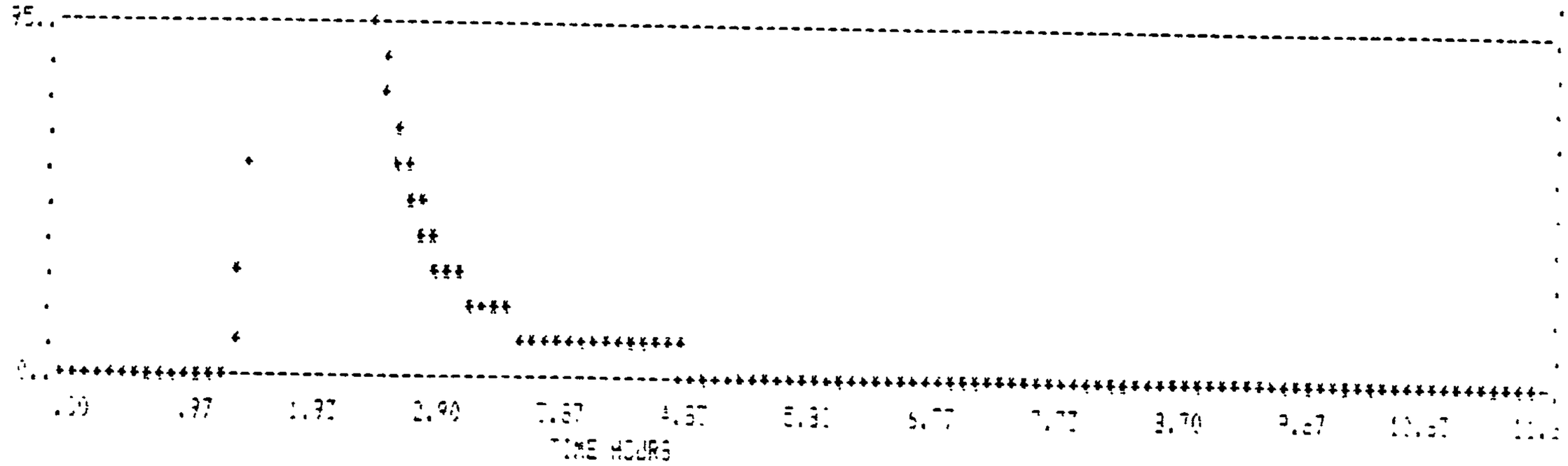
PARTIAL HYDROGRAPH 132.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.333	135.3	4.667	5.6	7.000	1.8	9.333	.1
.067	.0	2.400	115.3	4.733	5.3	7.067	1.7	9.400	.1
.133	.0	2.467	98.6	4.800	5.0	7.133	1.6	9.467	.1
.200	.0	2.533	85.5	4.867	4.8	7.200	1.5	9.533	.0
.267	.0	2.600	73.2	4.933	4.5	7.267	1.4	9.600	.0
.333	.0	2.667	61.4	5.000	4.3	7.333	1.3	9.667	.0
.400	.0	2.733	53.0	5.067	4.1	7.400	1.2	9.733	.0
.467	.0	2.800	46.5	5.133	4.0	7.467	1.1	9.800	.0
.533	.0	2.867	41.3	5.200	3.8	7.533	1.0	9.867	.0
.600	.0	2.933	35.9	5.267	3.7	7.600	.9	9.933	.0
.667	.0	3.000	30.8	5.333	3.6	7.667	.8	10.000	.0
.733	.0	3.067	27.7	5.400	3.4	7.733	.8	10.067	.0
.800	.0	3.133	25.3	5.467	3.3	7.800	.7	10.133	.0
.867	.0	3.200	23.1	5.533	3.3	7.867	.6	10.200	.0
.933	.0	3.267	21.1	5.600	3.2	7.933	.6	10.267	.0
1.000	.0	3.333	19.2	5.667	3.1	8.000	.5	10.333	.0

1.1[illegible]	.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.5	10.400	.1
1.123	.0	3.457	15.1	5.300	2.1	3.133	.4	10.457	.0
1.3[illegible]	.1	3.5[illegible]	15.0	5.367	2.1	9.200	.4	10.533	.1
1.257	.3	3.6[illegible]	14.1	5.4[illegible]	2.3	3.267	.4	10.60[illegible]	.1
1.[illegible]	3.4	3.55[illegible]	13.2	5.10[illegible]	2.4	3.333	.3	10.65[illegible]	.1
1.40[illegible]	12.8	3.7[illegible]	12.3	5.15[illegible]	2.5	3.400	.3	10.733	.1
1.467	57.8	3.8[illegible]	11.8	5.1[illegible]	2.6	3.467	.3	10.800	.1
1.533	161.1	3.867	11.2	5.2[illegible]	2.6	3.533	.2	10.867	.0
1.6[illegible]	317.[illegible]	3.9[illegible]	10.6	5.2[illegible]	2.7	3.5[illegible]	.2	10.9[illegible]	.1
1.667	459.[illegible]	4.0[illegible]	10.1	5.3[illegible]	2.7	3.66[illegible]	.2	11.000	.1
1.7[illegible]	474.5	4.[illegible]67	9.5	5.400	2.8	3.7[illegible]	.2	11.067	.1
1.800	447.[illegible]	4.1[illegible]	8.9	5.46[illegible]	2.9	3.8[illegible]	.2	11.133	.1
1.86[illegible]	3[illegible].8	4.200	8.4	5.5[illegible]	2.9	3.9[illegible]	.1	11.200	.1
1.9[illegible]	344.5	4.267	7.9	5.600	2.9	3.9[illegible]	.1	11.26[illegible]	.1
2.000	296.3	4.3[illegible]	7.5	5.66[illegible]	3.0	3.[illegible]00	.1	11.3[illegible]	.1
2.06[illegible]	254.4	4.40[illegible]	7.1	5.7[illegible]	3.1	3.06[illegible]	.1	11.400	.1
2.1[illegible]	218.[illegible]	4.46[illegible]	6.8	5.8[illegible]	3.1	3.133	.1	11.467	.0
2.200	188.1	4.5[illegible]	6.5	5.86[illegible]	3.2	3.200	.1	11.5[illegible]	.1
2.26[illegible]	162.2	4.6[illegible]	6.2	5.9[illegible]	3.3	3.267	.1	11.60[illegible]	.1

RUNOFF VOLUME = [illegible] INCHES = [illegible] ACRE-FEET

PEAK DISCHARGE RATE = 474.4[illegible] CFS AT [illegible] HOURS BASIN AREA = .4[illegible] SQ. MI.




```
**********************************************************************
*S
*S START SUNRISE TERRACE INTERIOR
*
**********************************************************************
COMPUTE NM HYD       ID=1   HYD=151   DA=0.010492 SQ MI
                     PER A=1   B=46.8  C=0    D=53.2  TP=.1333 HRS RAIN=-1

    K =  .072649HR    TP =  .133300HR    K/TP RATIO =  .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =  22.057   CFS   UNIT VOLUME =  .9985      B =  526.28      P60 = 1.8700
    AREA =      .010492 SQ MI    IA =  .10000 INCHES    INF =  .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333


    K =  .130992HR    TP =  .133300HR    K/TP RATIO =  .982685     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =  12.049   CFS   UNIT VOLUME =  .9992      B =  327.09      P60 = 1.8700
    AREA =      .010491 SQ MI    IA =  .50000 INCHES    INF =  1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333

PRINT HYD            ID=1  CODE=1

                        PARTIAL HYDROGRAPH   151.00

    RUNOFF VOLUME =      1.35796 INCHES      =        .7899 ACRE-FEET
    PEAK DISCHARGE RATE =      21.97 CFS  AT   1.500 HOURS   BASIN AREA =   .0105 SQ. MI.


**********************************************************************
COMPUTE NM HYD       ID=2   HYD=152   DA=0.006209 SQ MI
                     PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1

    K =  .072649HR    TP =  .133300HR    K/TP RATIO =  .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =  13.251   CFS   UNIT VOLUME =  .9985      B =  526.28      P60 = 1.8700
    AREA =      .006356 SQ MI    IA =  .10000 INCHES    INF =  .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333


    K =  .130992HR    TP =  .133300HR    K/TP RATIO =  .982685     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =  7.2450   CFS   UNIT VOLUME =  .9995      B =  327.09      P60 = 1.8700
    AREA =      .002953 SQ MI    IA =  .50000 INCHES    INF =  1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333

PRINT HYD            ID=2  CODE=1

                        PARTIAL HYDROGRAPH   152.00
```

RUNOFF VOLUME = 1.05791 INCHES = .4569 ACRE-FEET
PEAK DISCHARGE RATE = 13.22 CFS AT 1.500 HOURS BASIN AREA = .0063 SQ. MI.

* NEW NEW IN1 IN2
ADD HYD ID=3 HYD=210 ID I=1 ID II=2
PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 210.00

RUNOFF VOLUME = 1.05791 INCHES = 1.2169 ACRE-FEET
PEAK DISCHARGE RATE = 15.18 CFS AT 1.500 HOURS BASIN AREA = .0168 SQ. MI.

****
COMPUTE NM HYD ID=1 HYD=151 DA=0.007174 SQ MI
PER A=0 B=45.8 C=0 D=52.2 TP=0.1333 HRS RAIN=-1

A = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 14.934 CFS UNIT VOLUME = .9987 B = 526.29 P60 = 1.3700
AREA = .007175 SQ MI IA = .10000 INCHES INF = .2400 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

A = .101991HR TP = .133300HR K/TP RATIO = .782695 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 8.1924 CFS UNIT VOLUME = .9985 B = 327.09 P60 = 1.3700
AREA = .007179 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 151.00

RUNOFF VOLUME = 1.25796 INCHES = .5167 ACRE-FEET
PEAK DISCHARGE RATE = 14.94 CFS AT 1.500 HOURS BASIN AREA = .0071 SQ. MI.

*B HYD 220 = 101+151+151 (BASINS 101, 102, & 103) @ MACKAMORE & SANDERLING
* NEW NEW IN1 IN2
ADD HYD ID=8 HYD=220 ID I=1 ID II=3
****
*B 401.2 (ID 8) = 'UNDERFLOW' (+-21 CFS MAX) FROM TOWER @ SANDERLING ABOVE
*B DELAY 401.2 2 MIN (1 TIME STEP) TO SIMULATE ROUTING IN 2 SEGMENTS OF ROAD
MODIFY TIME ID=8 TIME SHIFT=0.033333 HRS CODE=-1
PRINT HYD ID=8 CODE=1

HYDROGRAPH FROM AREA 401.20

RUNOFF VOLUME = 1.19607 INCHES = 1.2663 ACRE-FEET
PEAK DISCHARGE RATE = 23.03 CFS AT 1.467 HOURS BASIN AREA = .0200 SQ. MI.

*B BASIN 402 = EXISTING DEVELOPMENT @ 50%=B=LANDSCAPE, 50%=D=IMPERV
****
COMPUTE NM HYD ID=1 HYD=402 DA=0.015469 SQ MI
PER A=0 B=50 C=0 D=50 TP=0.1333 HRS RAIN=-1

A = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 33.535 CFS UNIT VOLUME = .9990 B = 536.23 P60 = 1.3700

AREA = .0[illegible] SQ MI IA = .[illegible] INCHES INF = .0400 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .[illegible]

K = .[illegible]HR TP = .[illegible]HR K/TP RATIO = .482e05 SHAPE CONSTANT, N = [illegible]
UNIT PEAK = .3.979 CFS UNIT VOLUME = .[illegible] B = [illegible] P60 = 1.8710
AREA = .007735 SQ MI IA = .[illegible] INCHES INF = [illegible] INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .[illegible]

PRINT HYD ID=1 CODE=1

[illegible] PEAK FLOW

RUNOFF VOLUME = [illegible] INCHES = [illegible] ACRE-FEET
PEAK DISCHARGE RATE = [illegible] CFS AT [illegible] HOURS BASIN AREA = [illegible] SQ. MI.

ADD HYD ID=4 HYD=241 ID I=1 ID II=3
****
COMPUTE NM HYD ID=1 HYD=154 DA=.007739 SQ MI
PER A=[illegible] B=45.0 C=[illegible] D=53.0 PER=0.[illegible] RAIN=-1

K = .072e-[illegible]HR TP = .[illegible]HR K/TP RATIO = .545010 SHAPE CONSTANT, N = 7.116421
UNIT PEAK = .8.838 CFS UNIT VOLUME = .9957 B = 526.23 P60 = 1.8700
AREA = .[illegible] SQ MI IA = .[illegible] INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .[illegible]

K = .[illegible]HR TP = .[illegible] K/TP RATIO = .782685 SHAPE CONSTANT, N = 3.593443
UNIT PEAK = 3.6875 CFS UNIT VOLUME = .9933 B = 727.09 P60 = 1.8700
AREA = .[illegible] SQ MI IA = .[illegible] INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .[illegible]

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 154.00

RUNOFF VOLUME = 1.75796 INCHES = .5460 ACRE-FEET
PEAK DISCHARGE RATE = 15.79 CFS AT 1.500 HOURS BASIN AREA = .0075 SQ. MI.

*E HYC 244 = 402+154 IN SANDPIPER AT CONNEMARA (HYD 154=BASIN 104)
ADD HYD ID=3 HYD=244 ID I=2 ID II=4
* NEW NEW IN1 IN2
PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 244.00

RUNOFF VOLUME = 1.26304 INCHES = 2.9993 ACRE-FEET
PEAK DISCHARGE RATE = 70.47 CFS AT 1.500 HOURS BASIN AREA = .0430 SQ. MI.

*3 HYD 240 = COMBINED FLOW @ MACNAMARE & SANDERLING
ADD HYD ID=2 HYD=240 ID I=3 ID II=5
PRINT HYC ID=2 CODE=1

PARTIAL HYDROGRAPH 240.00

RUNOFF VOLUME = 1.29696 INCHES = 4.6317 ACRE-FEET

```
**************************************************************************************
* COMPUTE NM HYD       ID=1   HYD=155   DA=1.0[illegible] SQ MI
COMPLETE NM HYD        ID=1   HYD=155   DA=1.[illegible]  SQ MI
                       PER A=0   B=45.3  C=[illegible]   D=51.2  TP=1.[illegible] HRS RAIN=-1

    [illegible] =  .[illegible]HR    TP =  .[illegible]HR    K/TP RATIO =  [illegible]    SHAPE CONSTANT, N =  7.[illegible]
    UNIT PEAK =  .[illegible]CFS  UNIT VOLUME =  .[illegible]    B =  [illegible]    P60 = 1.[illegible]
    AREA =  .[illegible] SQ MI    IA =  .[illegible]    INF =  .[illegible] INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  [illegible]


    [illegible] =  .[illegible]HR    TP =  .[illegible]HR    K/TP RATIO =  .932685    SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =  .[illegible]CFS  UNIT VOLUME =  .[illegible]    B =  [illegible]    P60 = 1.[illegible]
    AREA =  .[illegible] SQ MI    IA =  .[illegible]    INF =  .[illegible] INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  [illegible]

PRINT HYD              ID=1   CODE=1

                                PARTIAL HYDROGRAPH   [illegible].00

    RUNOFF VOLUME =  [illegible] INCHES     =  [illegible] ACRE-FEET
    PEAK DISCHARGE RATE =  [illegible] CFS  AT  [illegible] HOURS   BASIN AREA =  [illegible] SQ. MI.


*8 HYD 250 = COMBINED FLOW IN MACKAMORE AT WALTER
*                      NEW      NEW        IN1          IN2
ADD HYD                ID=3   HYD=250    ID I=1      ID II=2
PRINT HYD              ID=3   CODE=1

                                PARTIAL HYDROGRAPH   250.00

    RUNOFF VOLUME =  1.29695 INCHES     =  4.6317 ACRE-FEET
    PEAK DISCHARGE RATE =  120.56 CFS  AT  1.500 HOURS   BASIN AREA =  .0670 SQ. MI.


**************************************************************************************
* COMPUTE NM HYD       ID=1   HYD=156   DA=0.014178 SQ MI
COMPUTE NM HYD         ID=1   HYD=156   DA=0.000000  SQ MI
                       PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1

    . =  .072649HR    TP =  .133300HR    K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106429
    UNIT PEAK =  .21004E-02CFS  UNIT VOLUME =  .3974    B =  526.28    P60 = 1.8700
    AREA =  .000000 SQ MI    IA =  .10000 INCHES    INF =  .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333


    K =  .123992HR    TP =  .133300HR    K/TP RATIO =  .932685    SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =  .11434E-02CFS  UNIT VOLUME =  .3722    B =  327.09    P60 = 1.8700
    AREA =  .000000 SQ MI    IA =  .50000 INCHES    INF =  1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .033333

PRINT HYD              ID=1   CODE=1

                                PARTIAL HYDROGRAPH   156.00

    RUNOFF VOLUME =  1.25796 INCHES     =  .0000 ACRE-FEET
    PEAK DISCHARGE RATE =  .00 CFS  AT  1.500 HOURS   BASIN AREA =  .0000 SQ. MI.
```

```
*                    NEW      NEW        IN1          IN2
ADD HYD              ID=2   HYD=250    ID I=1       ID I=3
*************************************************************************
COMPLETE NM HYD      ID=1   HYD=157   DA=0.11[illegible] SQ MI
                     PER A=1   B=45.3  C=1    D=53.2  TP=0.1[illegible] HRS RAIN=-1

    [illegible] =  .072647HR    TP =  .1[illegible]CHR    A/TP RATIO =  .[illegible]     SHAPE CONSTANT, N =  7.[illegible]
    UNIT PEAK =  76.46[illegible]    CFS   UNIT VOLUME =  .[illegible]       B =  [illegible]      P[illegible] = 1.[illegible]
    AREA =      .0[illegible] SQ MI    IA =  .1[illegible] INCHES    INF =  .[illegible] INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - CT =  .[illegible]


    [illegible] =  .1[illegible]HR    TP =  .[illegible]HR    A/TP RATIO =  .[illegible]     SHAPE CONSTANT, N =  3.[illegible]
    UNIT PEAK =  19.[illegible]    CFS   UNIT VOLUME =  .[illegible]       B =  [illegible]      P50 = 1.[illegible]
    AREA =      .[illegible] SQ MI    IA =  .[illegible] INCHES    INF =  1.[illegible] INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - CT =  .[illegible]

PRINT HYD            ID=1  CODE=1

                    PARTIAL HYDROGRAPH   157.10

    RUNOFF VOLUME =     1.[illegible] INCHES     =       1.[illegible] ACRE-FEET
    PEAK DISCHARGE RATE =      [illegible] CFS  AT   1.[illegible] HOURS   BASIN AREA =   .0174 SQ. MI.


*3 ADD ID= = TOTAL FLOW TO ALTER POND LOCATION, PRINT HYD & CODE=2
*3 ADD ID= = AP [illegible]
*                    NEW      NEW        IN1          IN2
ADD HYD              ID=3   HYD=224    ID I=1       ID I=2
PRINT HYD            ID=3   CODE=2

                    PARTIAL HYDROGRAPH   224.30

   TIME     FLOW        TIME     FLOW        TIME     FLOW        TIME     FLOW        TIME     FLOW
   HRS      CFS         HRS      CFS         HRS      CFS         HRS      CFS         HRS      CFS
   .[illegible]      .0       1.[illegible]     [illegible].0       2.[illegible]     2.[illegible]       4.[illegible]     .[illegible]       5.[illegible]     .[illegible]
   .[illegible]      .0       1.[illegible]     [illegible].9       2.[illegible]     2.[illegible]       4.[illegible]     .[illegible]       5.[illegible]     .[illegible]
   .[illegible]      .0       1.[illegible]     [illegible].9       2.[illegible]     2.[illegible]       4.[illegible]     .[illegible]       5.[illegible]     .[illegible]
   .[illegible]      .0       1.[illegible]     [illegible].1       2.[illegible]     2.[illegible]       4.[illegible]     .[illegible]       5.[illegible]     .[illegible]
   .[illegible]      .0       1.[illegible]     [illegible].0       2.[illegible]     1.[illegible]       4.[illegible]     .[illegible]       5.[illegible]     .[illegible]
   .[illegible]      .0       1.[illegible]     [illegible].1
```

* D = 5.5 PROPOSED, S=.0002, N=.013
COMPUTE RATING CURVE CID=-1 VS NO=50 NO SESS=-1 SLP=.0002 D=5.5 FT N=.013
COMPUTE TRAVEL TIME ID=4 REACH=22 NO VS=1
L=700 FT SLP=.0022 FT FT

TRAVEL TIME TABLE

REACH= 22.1

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.287	.471	1.11	.0922
.577	1.214	4.77	.0691
.865	2.072	10.15	.0459
1.146	3.033	17.19	.0298
1.422	4.033	26.14	.0229
1.721	5.248	41.29	.0206
2.106	7.823	57.33	.0152
2.292	9.177	69.12	.0134
2.679	12.342	95.03	.0120
3.066	15.819	121.82	.0115
3.453	19.396	149.37	.0110
3.479	19.639	151.27	.0224
3.926	23.132	181.27	.0119
4.013	23.971	187.80	.0218
4.239	25.925	203.05	.0214
4.586	29.166	228.79	.0212
4.372	33.259	260.98	.0215
5.159	33.147	264.24	.0220
5.531	33.758	264.24	.0226

ROUTE ID=4 HYD=266 INFLOW HYD ID=3 DT=.033333
PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 266.00

RUNOFF VOLUME = 1.21952 INCHES = 5.8893 ACRE-FEET
PEAK DISCHARGE RATE = 152.74 CFS AT 1.533 HOURS BASIN AREA = .0943 SQ. MI.

****
* S AND ISS = BASIN .03, ALL ANDALUSIAN, NOT TO POND
COMPUTE NM HYD ID=1 HYD=156 DA=0.019120 SQ MI
PER A=0 B=46.8 C=0 D=53.2 TP=0.1333 HRS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 39.955 CFS UNIT VOLUME = .9991 B = 526.23 P60 = 1.9700
AREA = .010120 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .101792HR TP = .133300HR K/TP RATIO = .792695 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 21.345 CFS UNIT VOLUME = .9997 B = 227.09 P60 = 1.9700
AREA = .008900 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 158.30

RUNOFF VOLUME = 1.05776 INCHES = 1.0777 ACRE-FEET
PEAK DISCHARGE RATE = 33.32 CFS AT 1.500 HOURS BASIN AREA = .0190 SQ. MI.

+B H:D 27: = ALL BLNRIGE ONSITE INC EXISTING 40C & 401.2 (=4:1 UNDERFLOW)
+B BUT NOT OFFSITE /L= DLNLIN SOUTHMOST STREET) PIPE
ADD H:D ID=7 HYD=27) ID I=1 ID II=4
PRINT H:D ID=7 IOOB=1

PARTIAL HYDROGRAPH (T:.X)

RUNOFF VOLUME = 1.71847 INCHES = 7.25e-9 ACRE-FEET
PEAK DISCHARGE RATE = 191.18 CFS AT 1.5TT HOURS BASIN AREA = .1137 SQ. MI.

+B
+B OFFSITE WEST OF BLNRIGE PER SCANLON LAYOUT EXCEPT PIPE NOT SECT LINE CHAN
****
COMPUTE NM H/D ID=1 HYD=151 DA=0.01500 SQ MI
PER A=0 B=21.5 C=0 D=3.5 TP=0.1777 MPS RAIN=-1

K = .0726496R TP = .1777049R K/TP RATIO = .545100 SHAPE CONSTANT, N = 3.115429
UNIT PEAK = 11.936 CFS UNIT VOLUME = .3934 B = 526.25 P&Q = 1.8700
AREA = .013775 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .1019924R TP = .1777049R K/TP RATIO = .573685 SHAPE CONSTANT, N = 3.393449
UNIT PEAK = 27.997 CFS UNIT VOLUME = .3959 B = 727.09 P&Q = 1.8700
AREA = .032225 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 IOOB=1

HYDROGRAPH FROM AREA (01.00)

RUNOFF VOLUME = .90752 INCHES = .7264 ACRE-FEET
PEAK DISCHARGE RATE = 27.67 CFS AT 1.500 HOURS BASIN AREA = .0150 SQ. MI.

COMPUTE RATING CURVE OID=1 WS NO=32 40 SEGS=1
MIN EL=(FT MAX EL=5 FT
CH SLP=.001 FP SLP=.001 FT PER FT
N END FT
.030 40
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
0 5 15 0 25 (40 5

RATING CURVE VALLEY SECTION 32.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.30	.0	.)
.36	2.9	1.7
.33	6.1	5.7
.79	9.3	11.5
1.05	13.9	19.2
1.32	18.4	28.8
1.58	23.3	40.3
1.84	28.5	53.9
2.11	34.3	69.7
2.37	40.5	87.6
2.63	47.1	107.8
2.89	54.1	130.4

3.42	69.3	180.2
3.63	77.6	213.5
3.95	86.2	246.5
4.21	95.7	282.7
4.47	104.3	321.1
4.74	114.7	362.3
5.00	125.1	407.5

+3 USE 1 FROM MID POINT OF BASIN TO MIDPOINT OF NEXT
COMPUTE TRAVEL TIME ID=2 REACH=32 NO SE=1
L=630 ft SLP=.101 ft/ft

TRAVEL TIME TABLE

REACH= 32.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.267	2.339	1.73	.2729
.525	5.094	5.67	.1797
.739	9.765	11.49	.1416
1.057	17.950	19.18	.1032
1.316	18.352	28.79	.1063
1.579	23.269	41.24	.0961
1.842	28.601	58.94	.0884
2.105	34.349	79.66	.0822
2.368	40.512	97.60	.0771
2.632	47.091	107.83	.0729
2.895	54.086	130.45	.0691
3.158	61.496	155.54	.0659
3.421	69.321	183.18	.0631
3.684	77.562	213.47	.0606
3.947	86.219	246.50	.0583
4.211	95.291	282.33	.0563
4.474	104.778	321.07	.0544
4.737	114.681	362.78	.0527
5.000	125.000	407.55	.0511

ROUTE ID=2 HYD=202 INFLOW HYD ID=1 DT=.033333

****

COMPUTE NM HYD ID=3 HYD NO=304 DA=0.02936 SQ MI
PER A=0 B=81.5 C=0 D=18.5 TP=0.1333 HRS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 21.459 CFS UNIT VOLUME = .9999 B = 526.29 P60 = 1.9700
AREA = .005435 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593443
UNIT PEAK = 58.755 CFS UNIT VOLUME = 1.000 B = 227.09 P60 = 1.8700
AREA = .023945 SQ MI IA = .30000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=3 CODE=1

HYDROGRAPH FROM AREA 304.00

RUNOFF VOLUME = .90752 INCHES = 1.4220 ACRE-FEET
PEAK DISCHARGE RATE = 46.16 CFS AT 1.500 HOURS BASIN AREA = .0294 SQ. MI.

ADD HYD ID=1 HYD=203 ID I=2 ID II=3
COMPUTE RATING CURVE CID=1 VS NO=32 NO SEGS=1
MIN EL=0 FT MAX EL=5 FT

CH SLP=.001 FP SLP=.001 FT PER FT

N END FT
.030 40

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0	5	15	0	25	0	40	5

RATING CURVE VALLEY SECTION ID.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.26	1.6	1.7
.53	3.1	5.7
.79	4.8	11.5
1.05	10.9	19.2
1.32	18.4	29.6
1.58	27.2	40.7
1.84	33.6	57.3
2.11	74.2	53.7
2.37	40.8	87.5
2.63	47.1	107.3
2.89	54.1	130.4
3.16	61.8	155.9
3.42	69.7	183.2
3.68	77.6	212.3
3.95	86.2	245.5
4.21	95.2	280.3
4.47	104.8	321.1
4.74	114.7	362.9
5.00	125.0	407.6

* USE _ FROM MID-POINT OF BASIN TO MID-POINT OF REACH
COMPUTE TRAVEL TIME ID=4 REACH=32 NO VS=1
L=400 ft SLP=.001 ft/ft

TRAVEL TIME TABLE
REACH= 32.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	2.839	1.73	.1820
.526	6.094	5.67	.1195
.789	9.765	11.49	.0944
1.053	13.850	19.19	.0802
1.316	18.352	29.78	.0709
1.579	23.269	40.34	.0641
1.842	28.601	53.94	.0589
2.105	34.349	69.66	.0548
2.368	40.512	87.69	.0514
2.632	47.091	107.83	.0485
2.895	54.086	130.45	.0461
3.158	61.496	155.54	.0439
3.421	69.321	183.18	.0420
3.684	77.562	213.47	.0404
3.947	86.219	246.50	.0389
4.211	95.291	282.33	.0375
4.474	104.778	321.07	.0363
4.737	114.681	362.79	.0351
5.000	125.000	407.56	.0341

*S R/D 206 = INTO TANAGER POND *LOCATION* FROM NORTH
ROUTE ID=4 HYD=204 INFLOW HYD ID=1 DT=.033333
****
COMPUTE NM HYD ID=3 HYD=203 DA=0.06688 SQ MI
PER A=0 B=81.5 C=0 D=18.5 TP=0.1333 HRS RAIN=-1

K = .072731HR TP = .133300HR K/TP RATIO = .545557 SHAPE CONSTANT, N = 3.097126

```
                AREA =      .012373 SQ MI    IA =     .10000 INCHES    INF =     .04000 INCHES PER HOUR
                RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333

                                                                                                    *
                                                                                                    *
                                                                                                    *
                K =    .130794HR    TP =    .133300HR    K/TP RATIO =    .981114     SHAPE CONSTANT, N =  3.539279
                UNIT PEAK =    103.31    CFS    UNIT VOLUME =    1.000       B =    727.50      P60 = 1.3700
                AREA =      .054507 SQ MI    IA =     .50000 INCHES    INF =    1.25000 INCHES PER HOUR
                RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333

        PRINT HYD               ID=7  CODE=1

\

                                                    HYDROGRAPH FROM AREA    207.00


                RUNOFF VOLUME =      .21761 INCHES      =       7.227; ACRE-FEET
                PEAK DISCHARGE RATE =     105.11 CFS  AT    1.533 HOURS   BASIN AREA =    .063? SQ. MI.



+ + + ********************************************************************************
        +S HYD 299=COA SATELLITE: ASSUME 10 CFS CLEAN & NON-ERODIBLE; REAL 1997 0.5+-
        STORE HYD               ID=1   HYD NO=299  DT=1.16667 MN   DA=.17513  SQ MI
                                FLOW RATES CFS= 'LEFT TO RIGHT, DOWN, LEFT TO RIGHT ...'
                                  10       10       10       10       10       10
                                  10       10       10       10       10       10
                                  10       10       10       10       10       10
                                  10       10       10       10       10       10
                                  10       10       10       10       10       10
                                  10       10       10       10       10       10
                                  10       10       10       10       10       10
                                  10       10       10       10       10       10
                                  10       10       10       10       10       10
                                  10       10       10       10       10       10
        +S HYD 205 = INTO TANABER POND LOCATION FROM WEST (303+299 (COA SATELLITE))
        +                        NEW      NEW        IN1          IN2
        ADD HYD                 ID=1   HYD=205    ID I=2      ID I=7
        +                        NEW      NEW        IN1          IN2
        +S  HYD 206 = AP 1 FOR FAIR SHARE AND PROPOSED, AP 1 IN FOR EXISTING OFFSITE
        ADD HYD                 ID=7   HYD=206    ID I=1      ID I=4
        PLOT HYD                ID=3
      FLOW RATE (CFS)
      167..----------------+-------------------------------------------------------------------------------------------------------------------.
                           .                                                                                                                   .
                           .                    +                                                                                              .
                           .                    +                                                                                              .
                           .                    +                                                                                              .
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                           .                    +                                                                                              .
      133..----------------+-------------------------------------------------------------------------------------------------------------------.
                           .                    +                                                                                              .
                           .                    +                                                                                              .
                           .                    +                                                                                              .
                           .                    +                                                                                              .
                           .                    +                                                                                              .
                           .                    +                                                                                              .
      100..----------------+-------------------------------------------------------------------------------------------------------------------.
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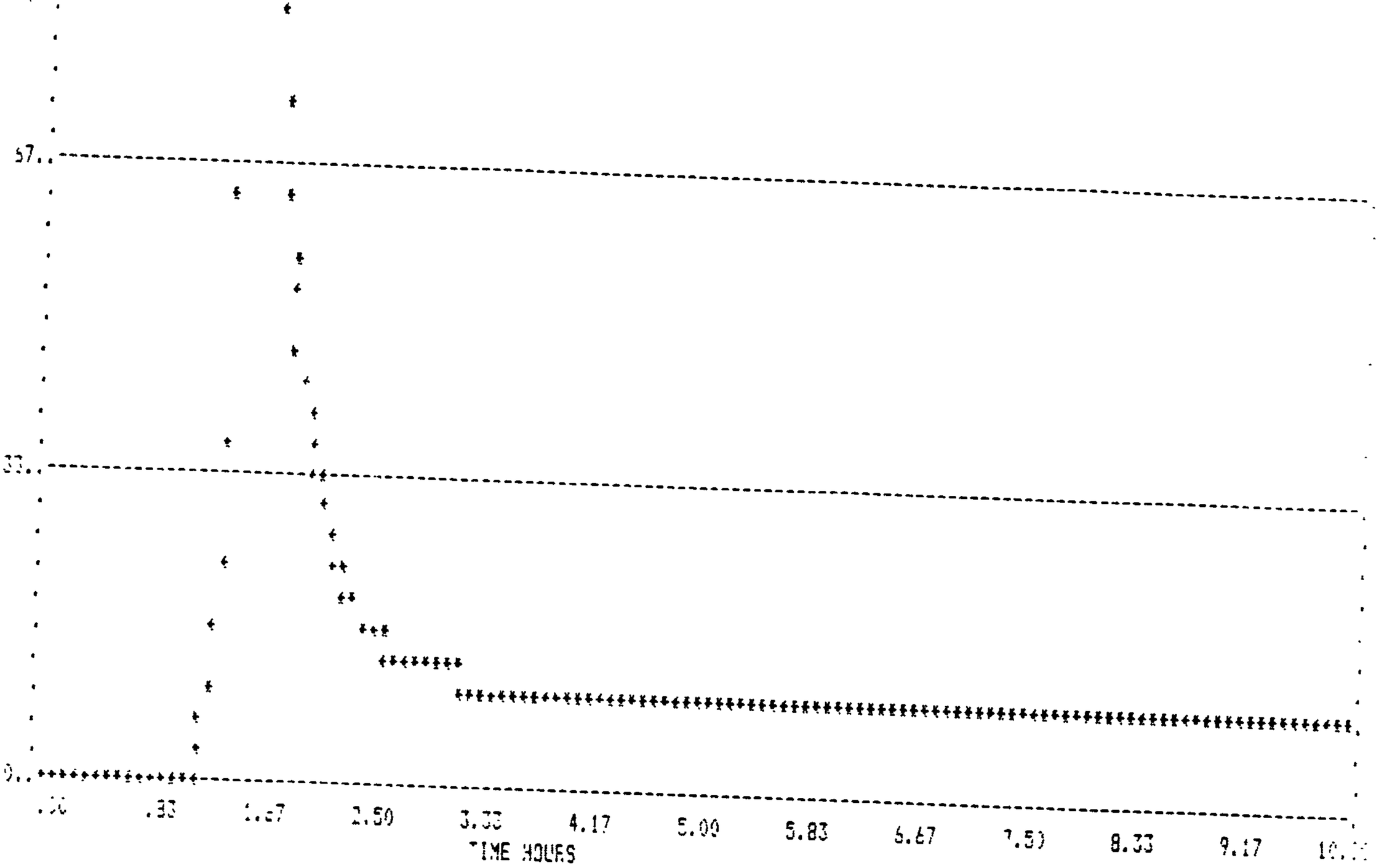


COMPUTE RATING CURVE CID=-1 VS NO=33 NO SEGS=1
MIN EL=0 FT MAX EL=5 FT
CH SLP=.001 FP SLP=.001 FT PER FT
N END FT
.030 40
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
0 5 15 0 25 0 40 5

COMPUTE TRAVEL TIME ID=2 REACH=33 NO VS=1
L=350 ft SLP=.001 ft/ft

TRAVEL TIME TABLE

REACH= 33.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	2.839	1.73	.1592
.526	6.094	5.67	.1046
.789	9.765	11.49	.0826
1.053	13.950	19.19	.0702
1.316	18.352	29.78	.0620
1.579	23.269	40.34	.0561
1.842	28.601	53.94	.0516
2.105	34.349	69.66	.0479
2.368	40.512	87.60	.0450
2.632	47.091	107.83	.0425
2.895	54.086	130.45	.0403
3.158	61.496	155.54	.0384
3.421	69.321	183.18	.0368
3.684	77.562	213.47	.0353
3.947	86.219	246.50	.0340
4.211	95.291	282.33	.0328
4.474	104.778	321.07	.0317
4.737	114.681	362.78	.0307

ROUTE ID=2 HYD=207 INFLOW HYD ID=3 DT=.033333

****

COMPUTE NM HYD ID=1 HYD=302.2 DA=.07109 SQ MI

PER A=0 B=31.5 C=0 D=18.5 TP=0.1333 HRS RAIN=-1

N = .272794HR TP = .133300HR K/TP RATIO = .546070 SHAPE CONSTANT, N = 7.088210

UNIT PEAK = 31.839 CFS UNIT VOLUME = .9991 S = 525.42 P60 = 1.8700

AREA = .071052 SQ MI IA = .10400 INCHES INF = .14001 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

N = .120534HR TP = .133300-R K/TP RATIO = .929621 SHAPE CONSTANT, N = 7.604915

UNIT PEAK = 142.62 CFS UNIT VOLUME = 1.000 B = 727.21 P60 = 1.8700

AREA = .187918 SQ MI IA = .52000 INCHES INF = 1.25400 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

HYDROGRAPH FROM AREA 302.20

RUNOFF VOLUME = .30711 INCHES = 3.4406 ACRE-FEET

PEAK DISCHARGE RATE = 111.77 CFS AT 1.500 HOURS BASIN AREA = .0711 SQ. MI.

ADD HYD ID=4 HYD=209 ID 1=1 ID 2=2

COMPUTE RATING CURVE ID=1 NS NC=30 NO SEGS=1

MIN EL=0 FT MAX EL=5 FT

CH SLP=.001 FP SLP=.001 FT PER FT

N END FT

.120 40

DIST ELEV DIST ELEV DIST ELEV DIST ELEV

0 5 15 0 25 0 40 5

COMPUTE TRAVEL TIME ID=1 REACH=30 NC VS=1

L=500 ft SLP=.001 ft/ft

TRAVEL TIME TABLE

REACH= 33.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	2.829	1.73	.2274
.526	6.094	5.67	.1494
.789	9.765	11.49	.1180
1.053	13.850	19.18	.1003
1.316	18.352	28.78	.0886
1.579	23.269	40.34	.0801
1.842	28.601	53.94	.0736
2.105	34.349	69.66	.0685
2.368	40.512	87.60	.0642
2.632	47.091	107.83	.0607
2.895	54.086	130.45	.0576
3.158	61.496	155.54	.0549
3.421	69.321	183.18	.0525
3.684	77.562	213.47	.0505
3.947	86.219	246.50	.0486
4.211	95.291	282.33	.0469
4.474	104.778	321.07	.0453
4.737	114.681	362.79	.0439
5.000	125.000	407.56	.0426

ROUTE ID=2 HYD=211 INFLOW HYD ID=4 DT=.033333

****

* 302.1 = SOUTH END OF BASIN 302

PER A=0 B=81.3 C=0 D=18.5 TP=0.1[illegible] HRS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 7.510C CFS UNIT VOLUME = .9973 B = 326.28 P60 = 1.9700
AREA = .00:907 SQ MI IA = .11000 INCHES INF = .14000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .1[illegible]

K = .120972HR TP = .133300HR TP RATIO = .[illegible] SHAPE CONSTANT, N = 3.[illegible]
UNIT PEAK = 20.618 CFS UNIT VOLUME = .9997 B = 327.09 P60 = 1.[illegible]
AREA = .009400 SQ MI IA = .[illegible] INCHES INF = 1.[illegible] INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .1[illegible]

PRINT ID 2 ID=2 CODE=1

HYDROGRAPH FROM AREA ID=2.00

RUNOFF VOLUME = .9[illegible] INCHES = .1990 ACRE-FEET
PEAK DISCHARGE RATE = 16.21 CFS AT 1.500 HOURS BASIN AREA = .010C SQ. MI.

```
**********************************************************************************
*S  mID 212 = COMBINED INTO DUNLIN/ANDALUSIAN PIPE & TANAGER
*S  mID 212 = AP 1
*                    NEW      NEW        IN1          IN2
ADD mIC              ID=1   HYD=212    ID I=2      ID II=3
PRINT mID            ID=1   CODE=2
```

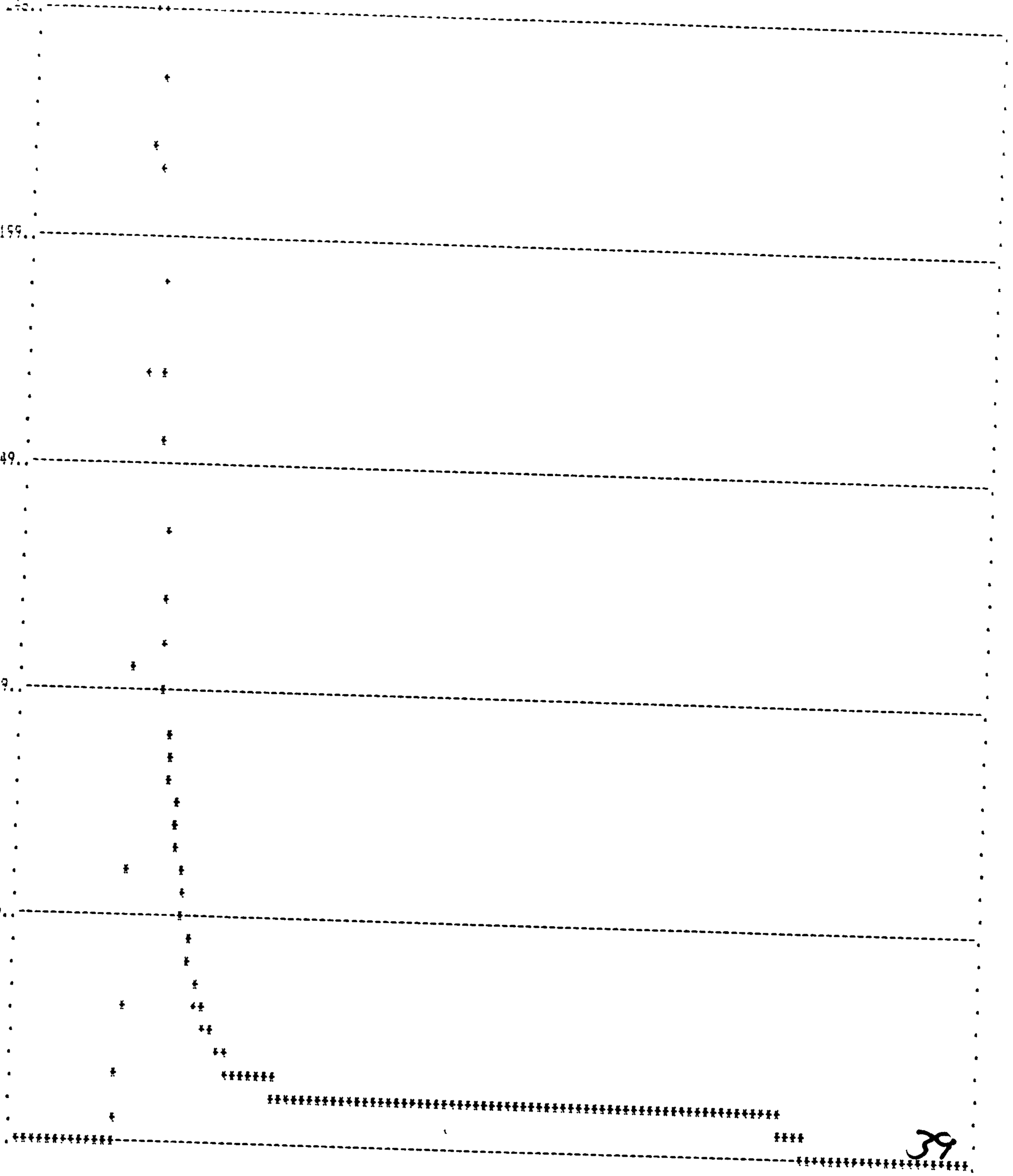
PARTIAL HYDROGRAPH 212.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.533	23.7	5.067	10.6	7.600	10.0	10.133	2.9
.067	.0	2.600	21.6	5.133	10.6	7.667	10.0	10.200	2.4
.133	.0	2.667	19.7	5.200	10.6	7.733	10.0	10.267	2.0
.200	.0	2.733	18.3	5.267	10.6	7.800	10.0	10.333	2.5
.267	.0	2.800	17.2	5.333	10.6	7.867	10.0	10.400	2.1
.333	.0	2.867	16.2	5.400	10.6	7.933	10.0	10.467	1.8
.400	.0	2.933	15.4	5.467	10.6	8.000	10.0	10.533	1.6
.467	.0	3.000	14.7	5.533	10.6	8.067	10.0	10.600	1.4
.533	.0	3.067	14.1	5.600	10.6	8.133	10.0	10.667	1.2
.600	.0	3.133	13.6	5.667	10.7	8.200	10.0	10.733	1.0
.667	.0	3.200	13.2	5.733	10.7	8.267	10.0	10.800	.8
.733	.0	3.267	12.8	5.800	10.7	8.333	10.0	10.867	.7
.800	.0	3.333	12.5	5.867	10.7	8.400	10.0	10.933	.5
.867	.0	3.400	12.2	5.933	10.7	8.467	10.0	11.000	.4
.933	.0	3.467	12.0	6.000	10.7	8.533	10.0	11.067	.3
1.000	.0	3.533	11.7	6.067	10.7	8.600	10.0	11.133	.3
1.067	.0	3.600	11.5	6.133	10.6	8.667	10.0	11.200	.2
1.133	.0	3.667	11.4	6.200	10.4	8.733	10.0	11.267	.2
1.200	.2	3.733	11.2	6.267	10.3	8.800	10.0	11.333	.1
1.267	2.3	3.800	11.1	6.333	10.3	8.867	10.0	11.400	.1
1.333	13.5	3.867	11.0	6.400	10.2	8.933	10.0	11.467	.1
1.400	57.8	3.933	10.9	6.467	10.2	9.000	10.0	11.533	.1
1.467	167.0	4.000	10.9	6.533	10.1	9.067	10.0	11.600	.0
1.533	247.5	4.067	10.8	6.600	10.1	9.133	10.0	11.667	.0
1.600	233.1	4.133	10.8	6.667	10.1	9.200	10.0	11.733	.0
1.667	190.5	4.200	10.7	6.733	10.1	9.267	10.0	11.800	.0
1.733	152.1	4.267	10.7	6.800	10.1	9.333	10.0	11.867	.0
1.800	121.0	4.333	10.7	6.867	10.0	9.400	10.0	11.933	.0
1.867	98.9	4.400	10.7	6.933	10.0	9.467	10.0	12.000	.0
1.933	83.6	4.467	10.6	7.000	10.0	9.533	10.0	12.067	.0
2.000	72.6	4.533	10.6	7.067	10.0	9.600	10.0	12.133	.0

2.200	44.2	4.733	10.6	7.200	10.0	9.733	10.0	12.267	.0
2.267	38.0	4.800	10.6	7.267	10.0	9.800	10.0	12.333	.0
2.333	33.2	4.867	10.6	7.333	10.0	9.867	10.0	12.400	.0
2.400	29.5	4.933	10.6	7.400	10.0	9.933	10.0	12.467	.0
2.467	26.6	5.000	10.6	7.467	10.0	10.000	10.0		
				7.533	10.0	10.067	4.4		

RUNOFF VOLUME = 1.16009 INCHES = 16.5712 ACRE-FEET
PEAK DISCHARGE RATE = 249.28 CFS AT 1.867 HOURS BASIN AREA = .2578 SQ. MI.

PLOT NO. 1 IO=1
FLOW RATE CFS



						8.31	9.35	10.39	11.43	12.47

TIME HOURS

COMPUTE RATING CURVE CID=-1 VS NC=43 NO SEGS=-1 SLP=.0375 D=4 FT N=.013
COMPUTE TRAVEL TIME ID=2 REACH=43 NO VS=1
L=1330 ft SLP=.0375 ft/ft

TRAVEL TIME TABLE
REACH= 43.)

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.208	.259	1.46	.0572
.417	.695	5.37	.0405
.625	1.255	14.77	.0275
.834	1.998	26.49	.0255
1.042	2.804	41.35	.0233
1.251	3.753	59.00	.0210
1.459	4.846	79.04	.0194
1.668	4.960	101.06	.0181
1.876	5.798	124.58	.0172
2.084	6.621	149.10	.0164
2.292	7.451	174.07	.0156
2.501	8.267	198.39	.0154
2.710	9.062	222.92	.0150
2.919	9.923	245.42	.0148
3.127	10.539	265.56	.0147
3.335	11.195	282.31	.0147
3.544	11.773	294.30	.0148
3.752	12.242	299.22	.0151
4.000	12.566	299.22	.0155

ROUTE ID=2 HYD=214 INFLOW HYD ID=1 DT=.033333
COMPUTE RATING CURVE CID=-1 VS NC=44 NO SESS=-1 SLP=.0110 D=5 FT N=.013
COMPUTE TRAVEL TIME ID=3 REACH=44 NO VS=1
L=650t SLP=.0110 ft/ft

TRAVEL TIME TABLE
REACH= 44.)

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.261	.390	1.43	.0492
.521	1.086	6.22	.0315
.782	1.961	14.46	.0245
1.042	2.966	26.01	.0206
1.303	4.069	40.61	.0181
1.563	5.246	57.94	.0163
1.824	6.479	77.62	.0151
2.084	7.749	99.24	.0141
2.345	9.043	122.34	.0133
2.606	10.345	146.42	.0128
2.866	11.641	170.93	.0123
3.127	12.918	195.31	.0119
3.387	14.159	218.90	.0117
3.648	15.348	241.00	.0115
3.909	16.467	260.77	.0114
4.169	17.492	277.22	.0114
4.429	18.395	289.00	.0115
4.690	19.130	293.83	.0118
5.000	19.635	293.83	.0121

ROUTE ID=3 HYD=216 INFLOW HYD ID=2 DT=.033333
COMPUTE RATING CURVE CID=-1 VS NO=44 NO SEGS=-1 SLP=.0120 D=5.5 FT N=.013

COMPUTE TRAVEL TIME ID=3 REACH=44 NO VS=1
L=1501 SLP=.0020 ft/ft

TRAVEL TIME TABLE
REACH= 44.1

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.297	.472	1.93	.0169
.577	1.314	9.79	.1070
.850	2.777	19.47	.0054
1.136	3.529	25.12	.0045
1.422	4.922	34.69	.0040
1.720	5.748	79.02	.0036
2.006	7.329	104.53	.0033
2.292	9.277	133.65	.0031
2.579	10.942	154.76	.0029
2.865	12.513	177.19	.0029
3.152	14.096	200.27	.0027
3.439	15.630	267.07	.0026
3.726	17.122	294.90	.0026
4.012	18.571	324.56	.0025
4.299	19.925	351.19	.0025
4.586	21.166	372.34	.0025
4.872	22.338	389.20	.0025
5.159	23.147	395.71	.0025
5.300	23.758	395.71	.0027

ROUTE ID=5 HYD=218 INFLOW HYD ID=3 DT=.033333
PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 218.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.533	25.0	5.067	10.6	7.600	10.0	10.133	4.7
.067	.0	2.600	22.7	5.133	10.6	7.667	10.0	10.200	3.9
.133	.0	2.667	20.3	5.200	10.6	7.733	10.0	10.267	3.4
.200	.0	2.733	19.2	5.267	10.6	7.800	10.0	10.333	3.0
.267	.0	2.800	17.9	5.333	10.6	7.867	10.0	10.400	2.6
.333	.0	2.867	16.8	5.400	10.6	7.933	10.0	10.467	2.3
.400	.0	2.933	15.9	5.467	10.6	8.000	10.0	10.533	2.0
.467	.0	3.000	15.2	5.533	10.6	8.067	10.0	10.600	1.7
.533	.0	3.067	14.5	5.600	10.6	8.133	10.0	10.667	1.5
.600	.0	3.133	13.8	5.667	10.6	8.200	10.0	10.733	1.3
.667	.0	3.200	13.4	5.733	10.7	8.267	10.0	10.800	1.1
.733	.0	3.267	13.0	5.800	10.7	8.333	10.0	10.867	1.0
.800	.0	3.333	12.7	5.867	10.7	8.400	10.0	10.933	.8
.867	.0	3.400	12.4	5.933	10.7	8.467	10.0	11.000	.7
.933	.0	3.467	12.1	6.000	10.7	8.533	10.0	11.067	.5
1.000	.0	3.533	11.9	6.067	10.7	8.600	10.0	11.133	.4
1.067	.0	3.600	11.7	6.133	10.7	8.667	10.0	11.200	.3
1.133	.0	3.667	11.5	6.200	10.5	8.733	10.0	11.267	.3
1.200	.0	3.733	11.3	6.267	10.4	8.800	10.0	11.333	.2
1.267	.2	3.800	11.2	6.333	10.3	8.867	10.0	11.400	.2
1.333	2.4	3.867	11.1	6.400	10.3	8.933	10.0	11.467	.1
1.400	27.0	3.933	11.0	6.467	10.2	9.000	10.0	11.533	.1
1.467	119.2	4.000	10.9	6.533	10.2	9.067	10.0	11.600	.1
1.533	203.7	4.067	10.9	6.600	10.1	9.133	10.0	11.667	.1
1.600	244.4	4.133	10.8	6.667	10.1	9.200	10.0	11.733	.0
1.667	206.3	4.200	10.8	6.733	10.1	9.267	10.0	11.800	.0
1.733	165.4	4.267	10.7	6.800	10.1	9.333	10.0	11.867	.0
1.800	131.7	4.333	10.7	6.867	10.1	9.400	10.0	11.933	.0
1.867	106.4	4.400	10.7	6.933	10.0	9.467	10.0	12.000	.0
1.933	88.9	4.467	10.7	7.000	10.0	9.533	10.0	12.067	.0
2.000	77.1	4.533	10.6	7.067	10.0	9.600	10.0	12.133	.0

2.067	57.1	4.600	10.6	7.133	10.0	9.667	10.0	12.200	.0
2.133	57.3	4.667	10.6	7.200	10.0	9.733	10.0	12.267	.0
2.200	48.1	4.733	10.6	7.267	10.0	9.800	10.0	12.333	.0
2.267	40.9	4.800	10.6	7.333	10.0	9.867	10.0	12.400	.0
2.333	35.5	4.867	10.6	7.400	10.0	9.933	10.0	12.467	.0
2.400	31.7	4.933	10.6	7.467	10.0	10.000	10.0	12.533	.0
2.467	27.9	5.000	10.6	7.533	10.0	10.067	8.0	12.600	.0

RUNOFF VOLUME = 1.16008 INCHES = 16.9702 ACRE-FEET
PEAK DISCHARGE RATE = 245.50 CFS AT 1.367 HOURS BASIN AREA = .0678 SQ. MI.

+S
+3 HYD 22a = AP 3 IN = INFLOW TO ANDALUSIAN POND = TOTAL THROUGH SUNRISE
+ NEW NEW IN1 IN2
ADD HYD ID=3 HYD=226 ID I=5 ID II=7
PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 226.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.533	21.7	5.067	11.5	7.600	10.0	10.133	4.7
.067	.1	2.601	23.4	5.133	11.5	7.667	10.0	10.200	3.8
.133	.0	2.667	25.5	5.200	11.5	7.733	10.0	10.267	3.4
.200	.0	2.733	23.2	5.267	11.5	7.800	10.0	10.333	3.0
.267	.0	2.800	21.4	5.333	11.5	7.867	10.0	10.400	2.6
.333	.0	2.867	19.9	5.400	11.6	7.933	10.0	10.467	2.3
.400	.0	2.933	18.7	5.467	11.6	8.000	10.0	10.533	2.0
.467	.0	3.000	17.6	5.533	11.6	8.067	10.0	10.600	1.7
.533	.0	3.067	16.7	5.600	11.6	8.133	10.0	10.667	1.5
.600	.0	3.133	15.9	5.667	11.6	8.200	10.0	10.733	1.3
.667	.0	3.200	15.2	5.733	11.7	8.267	10.0	10.800	1.1
.733	.0	3.267	14.6	5.800	11.7	8.333	10.0	10.867	1.0
.800	.0	3.333	14.2	5.867	11.7	8.400	10.0	10.933	.8
.867	.0	3.400	13.8	5.933	11.7	8.467	10.0	11.000	.7
.933	.1	3.467	13.4	6.000	11.8	8.533	10.0	11.067	.5
1.000	.0	3.533	13.1	6.067	11.8	8.600	10.0	11.133	.4
1.067	.1	3.600	12.9	6.133	11.6	8.667	10.0	11.200	.3
1.133	.0	3.667	12.6	6.200	11.2	8.733	10.0	11.267	.3
1.200	.9	3.733	12.4	6.267	10.8	8.800	10.0	11.333	.2
1.267	9.3	3.800	12.2	6.333	10.6	8.867	10.0	11.400	.2
1.333	37.3	3.867	12.1	6.400	10.4	8.933	10.0	11.467	.1
1.400	113.3	3.933	12.0	6.467	10.3	9.000	10.0	11.533	.1
1.467	295.8	4.000	11.8	6.533	10.2	9.067	10.0	11.600	.1
1.533	421.8	4.067	11.8	6.600	10.2	9.133	10.0	11.667	.1
1.600	400.2	4.133	11.7	6.667	10.1	9.200	10.0	11.733	.0
1.667	326.4	4.200	11.6	6.733	10.1	9.267	10.0	11.800	.0
1.733	261.4	4.267	11.6	6.800	10.1	9.333	10.0	11.867	.0
1.800	208.3	4.333	11.6	6.867	10.1	9.400	10.0	11.933	.0
1.867	169.0	4.400	11.5	6.933	10.0	9.467	10.0	12.000	.0
1.933	142.0	4.467	11.5	7.000	10.0	9.533	10.0	12.067	.0
2.000	122.1	4.533	11.5	7.067	10.0	9.600	10.0	12.133	.0
2.067	107.0	4.600	11.5	7.133	10.0	9.667	10.0	12.200	.0
2.133	88.6	4.667	11.5	7.200	10.0	9.733	10.0	12.267	.0
2.200	68.3	4.733	11.5	7.267	10.0	9.800	10.0	12.333	.0
2.267	55.9	4.800	11.5	7.333	10.0	9.867	10.0	12.400	.0
2.333	47.2	4.867	11.5	7.400	10.0	9.933	10.0	12.467	.0
2.400	40.9	4.933	11.5	7.467	10.0	10.000	10.0	12.533	.0
2.467	35.9	5.000	11.5	7.533	10.0	10.067	8.0	12.600	.0

RUNOFF VOLUME = 1.20417 INCHES = 23.3371 ACRE-FEET
PEAK DISCHARGE RATE = 424.96 CFS AT 1.367 HOURS BASIN AREA = .3712 SQ. MI.

```
*S HYD 230 = TOTAL COMBINED W SNOW VISTA
*S HYD 230 = AF 10: TO BE  = ALLOWED PER SNOW VISTA DESIGN
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=1   HYD=230    ID I=8      ID II=6
PRINT HYD            ID=1   CODE=2
```

PARTIAL HYDROGRAPH 230.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.533	117.2	5.067	.5.5	7.600	10.9	10.133	4.7
.067	.0	2.600	101.6	5.133	15.3	7.667	10.8	10.200	3.9
.133	.1	2.667	95.9	5.200	15.2	7.733	10.8	10.267	3.4
.200	.0	2.733	75.3	5.267	15.2	7.800	10.7	10.333	3.0
.267	.0	2.800	67.9	5.333	15.1	7.867	10.6	10.400	2.6
.333	.0	2.867	61.2	5.400	15.0	7.933	10.6	10.467	2.3
.400	.0	2.933	54.3	5.467	14.9	8.000	10.5	10.533	2.0
.467	.0	3.000	48.4	5.533	14.9	8.067	10.5	10.600	1.7
.533	.0	3.067	44.3	5.600	14.8	8.133	10.4	10.667	1.5
.600	.0	3.133	41.1	5.667	14.8	8.200	10.4	10.733	1.3
.667	.0	3.200	38.3	5.733	14.7	8.267	10.4	10.800	1.1
.733	.0	3.267	35.7	5.800	14.7	8.333	10.3	10.867	1.0
.800	.0	3.333	33.4	5.867	14.7	8.400	10.3	10.933	.8
.867	.0	3.400	31.3	5.933	14.7	8.467	10.3	11.000	.7
.933	.0	3.467	29.6	6.000	14.7	8.533	10.2	11.067	.5
1.000	.0	3.533	28.1	6.067	14.7	8.600	10.2	11.133	.4
1.067	.0	3.600	26.9	6.133	14.4	8.667	10.2	11.200	.3
1.133	.0	3.667	25.8	6.200	14.0	8.733	10.2	11.267	.3
1.200	1.9	3.733	24.9	6.267	13.6	8.800	10.2	11.333	.2
1.267	10.1	3.800	24.0	6.333	13.3	8.867	10.1	11.400	.2
1.333	40.7	3.867	23.3	6.400	13.0	8.933	10.1	11.467	.1
1.400	126.1	3.933	22.6	6.467	12.9	9.000	10.1	11.533	.1
1.467	342.5	4.000	21.9	6.533	12.7	9.067	10.1	11.600	.1
1.533	581.9	4.067	21.3	6.600	12.6	9.133	10.1	11.667	.1
1.600	717.9	4.133	20.6	6.667	12.4	9.200	10.1	11.733	.1
1.667	767.1	4.200	20.1	6.733	12.3	9.267	10.1	11.800	.0
1.733	725.3	4.267	19.5	6.800	12.2	9.333	10.1	11.867	.0
1.800	656.2	4.333	19.0	6.867	12.1	9.400	10.1	11.933	.0
1.867	585.6	4.400	18.5	6.933	11.9	9.467	10.1	12.000	.0
1.933	486.3	4.467	18.1	7.000	11.8	9.533	10.0	12.067	.0
2.000	418.8	4.533	17.7	7.067	11.7	9.600	10.0	12.133	.0
2.067	351.4	4.600	17.4	7.133	11.6	9.667	10.0	12.200	.0
2.133	306.4	4.667	17.0	7.200	11.5	9.733	10.0	12.267	.0
2.200	256.9	4.733	16.7	7.267	11.4	9.800	10.0	12.333	.0
2.267	215.1	4.800	16.5	7.333	11.3	9.867	10.0	12.400	.0
2.333	182.5	4.867	16.2	7.400	11.2	9.933	10.0	12.467	.0
2.400	156.2	4.933	16.0	7.467	11.1	10.000	10.0	12.533	.0
2.467	134.4	5.000	15.8	7.533	11.0	10.067	8.1	12.600	.0

RUNOFF VOLUME = 1.13162 INCHES = 51.3974 ACRE-FEET
PEAK DISCHARGE RATE = 767.11 CFS AT 1.667 HOURS BASIN AREA = .8516 SQ. MI.

```
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 11:03:50
```

AHYMO SUMMARY TABLE (AHYMC392) - AMAFCA VERSION OF HYMO - MARCH, 1992 RUN DATE (MON/DAY/YR) =04/25/1994
INPUT FILE = PAS002 USER NO.= RYALS_NM.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
START										TIME= .00
+S PASO FIND pond @ Halter(102nd), 100-yr storm. trial 2										
+S SMALL POND AT FOR BASINS 155 & 156 ONLY										
+S STRAT 25 FT S OF INT OLD 10 4C PL W HALTER ROW, THEN PERP TO SNOW VISTA ROW										
+S KEEP Qout <= 5.5 CFS										
+S NEW SUNRISE TERRACE (UNITS 111-4) 46.8% 3 & 57.2% 2										
+S										
+S										
+S BASINS 101-108 PLAN = BASINS 151-158 IN THIS AHYMO FILE										
+S RAINFALL	HUNDRED YR TYPE=1 RAIN QUARTER=0.0 RAIN ONE=1.87									
+S	RAIN SIX=2.20 RAIN DAY=2.65 DT=.033333 HR									
RAINFALL TYPE= 1										RAIN6= 2.200
COMPUTE NM HYD	155.01	-	1	.00423	9.99	.324	1.35796	1.500	3.275	PER IMP= 50.20
COMPUTE NM HYD	156.01	-	2	.01414	29.60	1.024	1.35796	1.500	3.271	PER IMP= 50.20
ADD HYD	250.01	1& 2	3	.01834	38.40	1.328	1.35793	1.500	3.272	
ROUTE RESERVOIR	258.01	3	3	.01834	6.70	1.328	1.35793	2.067	.571	AC-FT= .801
FINISH										

```
                    0.0   PUNCH CODE=0   PRINT LINES=59
                    CONTROL CODES AT START = 027 015 0 0 0
                    0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
                    CONTROL CODES AT END = 0 0 0 0 0
                    0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
* START               TIME=0.0   PUNCH CODE=0   PRINT LINES=59
*                   CONTROL CODES AT START = 027 042 048
*                   027 091 0 0   0 0 0 0 0   0 0 0 0 0 0 0 0 0 0
*                   CONTROL CODES AT END =  027 093 0 0 0
*                   0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
*B PASO FINO pond @ Halter(100nd), 100-yr storm. trial 2
*B SMALL POND AT FOR BASINS 155 & 156 ONLY
*B START 25 FT S OF INT OLD TO PC FL W HALTER ROW, THEN PERP TO SNOW VISTA ROW
*B KEEP Qout  = 5.9 CFS
*B NEW SUNRISE TERRACE UNITS 101-4) 45.3% B & 54.2% D
*B
*B
*S BASINS 101-108 PLAN = BASINS 151-158 IN THIS AHYMO FILE
* REVISED 8-16-94 BASIN 105 BECOMES 151 - 155
*         9-19-94 NEW HALTER POND GEOMETRY
*         4.21.94 REMOVE HALTER POND, ADD SMALLER POND AT PASO FINO @ HALTER
* TUCKER GREEN  2/94, 7/94, 4/94
**********************************************************************************
* SUNRISE TERRACE RAINFALL PER ALBUQUERQUE NM DPM, MAP L-8
* RAINFALL            TWO YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=0.72
*                     RAIN SIX=0.95      RAIN DAY=1.16     DT=.033333 HR
* RAINFALL            TEN YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.24
*                     RAIN SIX=1.47      RAIN DAY=1.79     DT=.033333 HR
*S RAINFALL            HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
*S                     RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR
RAINFALL              HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
                      RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR
**********************************************************************************
COMPUTE NM HYD        ID=1   HYD=155   DA=0.004197 SQ MI
                      PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1
PRINT HYD             ID=1  CODE=1
**********************************************************************************
COMPUTE NM HYD        ID=3   HYD=156   DA=0.014138 SQ MI
                      PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1
PRINT HYD             ID=3  CODE=1
*                      NEW                  IN1          IN2
ADD HYD               ID=2   HYD=250    ID I=1       ID I=3
PRINT HYD             ID=2 CODE=2
**********************************************************************************
ROUTE RESERVOIR       ID=3  HYD=505    INFLOW ID=2    CODE=2
                     CFS OUT    STORAGE AF   ELEV FT
                      00.00       0.0000      88.50
                       3.68       0.1180      90.50
                       5.20       0.3172      92.50
                       6.37       0.6136      94.50
                       6.88       0.9032      95.50
                       7.13       0.9092      96.00
PRINT HYD             ID=3   CODE=2
PLOT HYD              ID=2   ID=3
**********************************************************************************
FINISH
```

PASO DEL NORTE

1

PAS002 POND NEAR PASO FINO & HALTER, PART 2
VERIFY POND FOR BASINS 105 & 106

```
    AHYMO PROGRAM (AHYM0392) - AMAFCA VERSION OF HYMO - MARCH. 1992
         RUN DATE (MON/DAY/YR) = 04/25/1994
         START TIME (HR:MIN:SEC) = 13:46:24     USER NO.= RYALS_NM.101
         INPUT FILE = PAS002

START                0.0   PUNCH CODE=0   PRINT LINES=58
                     CONTROL CODES AT START = 027 015 0 0 0
                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
                     CONTROL CODES AT END = 0 0 0 0 0
                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
* START               TIME=0.0   PUNCH CODE=0   PRINT LINES=58
*                     CONTROL CODES AT START = 027 042 048
*                     027 091 0 0   0 0 0 0 0   0 0 0 0 0 0 0 0
*                     CONTROL CODES AT END =  027 093 0 0 0
*                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
*S PASO FINO pond @ Halter(102nd), 100-yr storm, trial 2
*S SMALL POND AT FOR BASINS 155 & 156 ONLY
*S STRAT 25 FT S OF INT OLD 10 AC PL W HALTER ROW, THEN PERP TO SNOW VISTA ROW
*S KEEP Qout <= 6.9 CFS
*S NEW SUNRISE TERRACE (UNITS III-V) 46.8% B & 53.2% D
*S
*S
*S BASINS 101-108 PLAN = BASINS 151-158 IN THIS AHYMO FILE
* REVISED 3-16-94 BASIN 305 BECOMES 351 - 355
*         3-19-94 NEW HALTER POND GEOMETRY
*         4/21/94 REMOVE HALTER POND, ADD SMALLER POND AT PASO FINO @ HALTER
* TUCKER GREEN  2/94, 3/94, 4/94
**********************************************************************************
* SUNRISE TERRACE RAINFALL PER ALBUQUERQUE NM DPM, MAP L-8
* RAINFALL             TWO YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=0.73
*                      RAIN SIX=0.95      RAIN DAY=1.16     DT=.033333 HR
* RAINFALL             TEN YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.24
*                      RAIN SIX=1.47      RAIN DAY=1.79     DT=.033333 HR
*S RAINFALL             HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
*S                      RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR
RAINFALL             HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
                     RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR

          COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
          DT =    .033333 HOURS       END TIME =     5.999940 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   .0810   .0865   .0924   .1051
           .1335   .1773   .2400   .3257   .4384   .5820   .7607
           .9789  1.1808  1.2652  1.3365  1.4000  1.4577  1.5108
          1.5602  1.6063  1.6495  1.6902  1.7285  1.7648  1.7991
          1.8316  1.8624  1.8917  1.9194  1.9458  1.9519  1.9576
          1.9631  1.9683  1.9732  1.9780  1.9826  1.9870  1.9912
          1.9953  1.9993  2.0031  2.0068  2.0105  2.0140  2.0174
          2.0207  2.0240  2.0272  2.0303  2.0333  2.0363  2.0392
          2.0420  2.0448  2.0476  2.0502  2.0529  2.0554  2.0580
          2.0605  2.0629  2.0653  2.0677  2.0701  2.0724  2.0746
          2.0769  2.0791  2.0812  2.0834  2.0855  2.0876  2.0896
          2.0916  2.0936  2.0956  2.0976  2.0995  2.1014  2.1033
          2.1052  2.1070  2.1088  2.1106  2.1124  2.1142  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  2.1461  2.1475  2.1489
          2.1504  2.1518  2.1532  2.1546  2.1560  2.1573  2.1587
          2.1601  2.1614  2.1627  2.1641  2.1654  2.1667  2.1680
```

2.1693 2.1705 2.1718 2.1731 2.1743 2.1756 2.1768
2.1780 2.1793 2.1805 2.1817 2.1829 2.1841 2.1852
2.1864 2.1876 2.1887 2.1899 2.1911 2.1922 2.1933
2.1945 2.1956 2.1967 2.1978 2.1989 2.2000

****
COMPUTE NM HYD ID=1 HYD=155 DA=0.004197 SQ MI
PER A=0 B=46.8 C=0 D=53.2 TP=0.1333 HRS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 8.8152 CFS UNIT VOLUME = .9981 B = 526.28 P60 = 1.8700
AREA = .002233 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 4.8197 CFS UNIT VOLUME = .9975 B = 327.09 P60 = 1.8700
AREA = .001964 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 155.00

RUNOFF VOLUME = 1.35796 INCHES = .3040 ACRE-FEET
PEAK DISCHARGE RATE = 8.80 CFS AT 1.500 HOURS BASIN AREA = .0042 SQ. MI.

****
COMPUTE NM HYD ID=3 HYD=156 DA=0.014138 SQ MI
PER A=0 B=46.8 C=0 D=53.2 TP=0.1333 HRS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 29.695 CFS UNIT VOLUME = .9990 B = 526.28 P60 = 1.8700
AREA = .007521 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 16.236 CFS UNIT VOLUME = .9995 B = 327.09 P60 = 1.8700
AREA = .006617 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 156.00

RUNOFF VOLUME = 1.35796 INCHES = 1.0239 ACRE-FEET
PEAK DISCHARGE RATE = 29.60 CFS AT 1.500 HOURS BASIN AREA = .0141 SQ. MI.

	NEW	IN1	IN2
ADD HYD	ID=2 HYD=260	ID I=1	ID II=3
PRINT HYD	ID=2 CODE=2		

PARTIAL HYDROGRAPH 260.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.400	19.4	2.800	.6	4.200	.2	5.600	.2
.067	.0	1.467	34.7	2.867	.5	4.267	.2	5.667	.2

2

.200	.0	1.600	27.3	3.000	.4	4.400	.2	5.800	.2
.267	.0	1.667	20.0	3.067	.3	4.467	.2	5.867	.2
.333	.0	1.733	15.4	3.133	.3	4.533	.2	5.933	.2
.400	.0	1.800	12.4	3.200	.3	4.600	.2	6.000	.2
.467	.0	1.867	10.3	3.267	.3	4.667	.2	6.067	.2
.533	.0	1.933	8.9	3.333	.2	4.733	.2	6.133	.1
.600	.0	2.000	7.8	3.400	.2	4.800	.2	6.200	.1
.667	.0	2.067	6.6	3.467	.2	4.867	.2	6.267	.0
.733	.0	2.133	4.6	3.533	.2	4.933	.2	6.333	.0
.800	.0	2.200	3.0	3.600	.2	5.000	.2	6.400	.0
.867	.0	2.267	2.3	3.667	.2	5.067	.2	6.467	.0
.933	.0	2.333	1.8	3.733	.2	5.133	.2	6.533	.0
1.000	.0	2.400	1.5	3.800	.2	5.200	.2	6.600	.0
1.067	.0	2.467	1.3	3.867	.2	5.267	.2	6.667	.0
1.133	.0	2.533	1.1	3.933	.2	5.333	.2	6.733	.0
1.200	.5	2.600	.9	4.000	.2	5.400	.2	6.800	.0
1.267	3.3	2.667	.8	4.067	.2	5.467	.2	6.867	.0
1.333	8.7	2.733	.7	4.133	.2	5.533	.2	6.933	.0

RUNOFF VOLUME = 1.35793 INCHES = 1.3279 ACRE-FEET
PEAK DISCHARGE RATE = 38.40 CFS AT 1.500 HOURS BASIN AREA = .0183 SQ. MI.

****

ROUTE RESERVOIR ID=3 HYD=505 INFLOW ID=2 CODE=2

CFS OUT	STORAGE AF	ELEV FT
00.00	0.0000	88.50
3.68	0.1180	90.50
5.20	0.3172	92.50
6.37	0.6136	94.50
6.88	0.9032	95.50
7.13	0.9092	96.00

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	88.50	.000	.00
.07	.00	88.50	.000	.00
.13	.00	88.50	.000	.00
.20	.00	88.50	.000	.00
.27	.00	88.50	.000	.00
.33	.00	88.50	.000	.00
.40	.00	88.50	.000	.00
.47	.00	88.50	.000	.00
.53	.00	88.50	.000	.00
.60	.00	88.50	.000	.00
.67	.00	88.50	.000	.00
.73	.00	88.50	.000	.00
.80	.00	88.50	.000	.00
.87	.00	88.50	.000	.00
.93	.00	88.50	.000	.00
1.00	.00	88.50	.000	.00
1.07	.00	88.50	.000	.00
1.13	.00	88.50	.000	.00
1.20	.49	88.51	.001	.03
1.27	3.29	88.66	.010	.30
1.33	8.66	89.14	.038	1.18
1.40	19.45	90.21	.101	3.16
1.47	34.67	91.62	.229	4.53
1.53	37.07	93.10	.406	5.55
1.60	27.54	94.09	.552	6.13
1.67	19.97	94.62	.647	6.43
1.73	15.35	94.93	.708	6.54

1.80	12.37	94.96	.748	6.61
1.87	10.30	95.05	.773	6.65
1.93	8.88	95.11	.789	6.68
2.00	7.78	95.14	.798	6.70
2.07	6.63	95.15	.801	6.70
2.13	4.59	95.13	.795	6.69
2.20	3.05	95.07	.779	6.66
2.27	2.27	95.00	.757	6.62
2.33	1.83	94.91	.732	6.58
2.40	1.51	94.82	.705	6.53
2.47	1.25	94.72	.677	6.48
2.53	1.05	94.62	.647	6.43
2.60	.89	94.51	.618	6.38
2.67	.76	94.32	.587	6.27
2.73	.65	94.12	.557	6.15
2.80	.57	93.91	.527	6.03
2.87	.50	93.71	.497	5.91
2.93	.44	93.51	.467	5.79
3.00	.39	93.31	.438	5.68
3.07	.34	93.12	.409	5.56
3.13	.31	92.93	.380	5.45
3.20	.28	92.74	.352	5.34
3.27	.26	92.55	.325	5.23
3.33	.25	92.30	.298	5.05
3.40	.23	92.04	.272	4.85
3.47	.21	91.79	.247	4.66
3.53	.20	91.55	.223	4.48
3.60	.19	91.32	.200	4.30
3.67	.19	91.10	.177	4.13
3.73	.18	90.88	.156	3.97
3.80	.18	90.68	.136	3.81
3.87	.17	90.47	.116	3.62
3.93	.16	90.17	.099	3.07
4.00	.16	89.92	.084	2.61
4.07	.16	89.71	.071	2.23
4.13	.16	89.53	.061	1.90
4.20	.16	89.38	.052	1.62
4.27	.15	89.26	.045	1.39
4.33	.15	89.15	.038	1.20
4.40	.15	89.06	.033	1.03
4.47	.15	88.99	.029	.89
4.53	.15	88.92	.025	.78
4.60	.16	88.87	.022	.68
4.67	.16	88.82	.019	.60
4.73	.16	88.79	.017	.53
4.80	.16	88.75	.015	.47
4.87	.16	88.73	.013	.42
4.93	.16	88.71	.012	.38
5.00	.16	88.69	.011	.34
5.07	.16	88.67	.010	.32
5.13	.17	88.66	.009	.29
5.20	.17	88.65	.009	.27
5.27	.17	88.64	.008	.26
5.33	.17	88.63	.008	.24
5.40	.17	88.63	.007	.23
5.47	.18	88.62	.007	.22
5.53	.18	88.62	.007	.22
5.60	.18	88.61	.007	.21
5.67	.18	88.61	.007	.21
5.73	.19	88.61	.006	.20
5.80	.19	88.61	.006	.20
5.87	.19	88.61	.006	.20
5.93	.20	88.61	.006	.20
6.00	.20	88.61	.006	.20
6.07	.19	88.61	.006	.20
6.13	.19	88.60	.006	.19

6.20	.06	88.59	.006	.17
6.27	.03	88.58	.005	.15
6.33	.02	88.57	.004	.13
6.40	.02	88.56	.004	.11
6.47	.01	88.55	.003	.10
6.53	.01	88.55	.003	.08
6.60	.01	88.54	.002	.07
6.67	.00	88.53	.002	.06
6.73	.00	88.53	.002	.05
6.80	.00	88.52	.001	.04
6.87	.00	88.52	.001	.04
6.93	.00	88.52	.001	.03
7.00	.00	88.51	.001	.03
7.07	.00	88.51	.001	.02
7.13	.00	88.51	.001	.02
7.20	.00	88.51	.001	.02
7.27	.00	88.51	.000	.01
7.33	.00	88.51	.000	.01
7.40	.00	88.51	.000	.01
7.47	.00	88.50	.000	.01
7.53	.00	88.50	.000	.01
7.60	.00	88.50	.000	.01
7.67	.00	88.50	.000	.00

PEAK DISCHARGE = 6.700 CFS - PEAK OCCURS AT HOUR 2.07
MAXIMUM WATER SURFACE ELEVATION = 95.148
MAXIMUM STORAGE = .8012 AC-FT INCREMENTAL TIME= .033333HRS

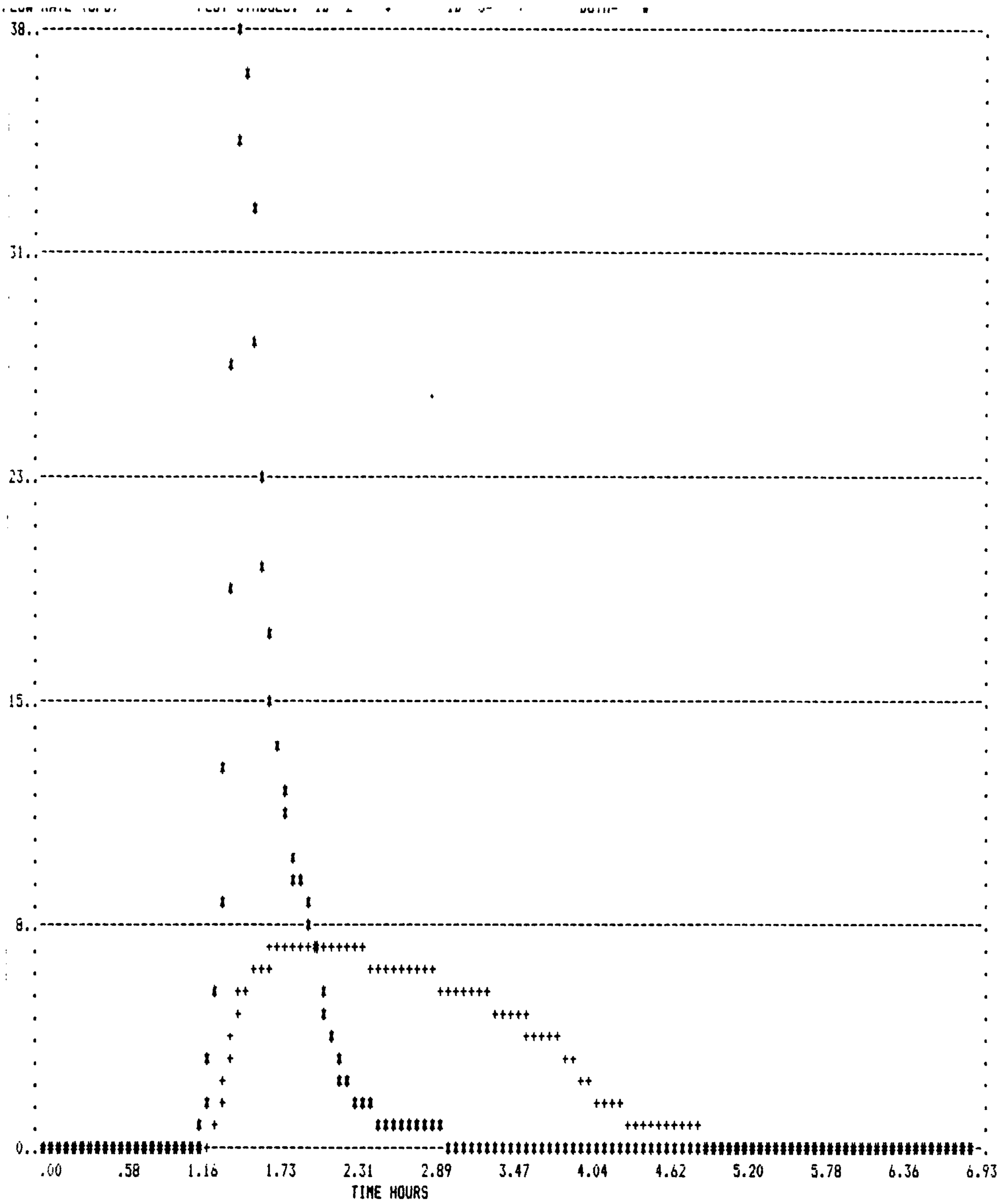
PRINT HYD ID=3 CODE=2

OUTFLOW HYDROGRAPH RESERVOIR 505.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	6.4	3.333	5.1	5.000	.3	6.667	.1
.067	.0	1.733	6.5	3.400	4.9	5.067	.3	6.733	.1
.133	.0	1.800	6.6	3.467	4.7	5.133	.3	6.800	.0
.200	.0	1.867	6.7	3.533	4.5	5.200	.3	6.867	.0
.267	.0	1.933	6.7	3.600	4.3	5.267	.3	6.933	.0
.333	.0	2.000	6.7	3.667	4.1	5.333	.2	7.000	.0
.400	.0	2.067	6.7	3.733	4.0	5.400	.2	7.067	.0
.467	.0	2.133	6.7	3.800	3.8	5.467	.2	7.133	.0
.533	.0	2.200	6.7	3.867	3.6	5.533	.2	7.200	.0
.600	.0	2.267	6.6	3.933	3.1	5.600	.2	7.267	.0
.667	.0	2.333	6.6	4.000	2.6	5.667	.2	7.333	.0
.733	.0	2.400	6.5	4.067	2.2	5.733	.2	7.400	.0
.800	.0	2.467	6.5	4.133	1.9	5.800	.2	7.467	.0
.867	.0	2.533	6.4	4.200	1.6	5.867	.2	7.533	.0
.933	.0	2.600	6.4	4.267	1.4	5.933	.2	7.600	.0
1.000	.0	2.667	6.3	4.333	1.2	6.000	.2	7.667	.0
1.067	.0	2.733	6.1	4.400	1.0	6.067	.2	7.733	.0
1.133	.0	2.800	6.0	4.467	.9	6.133	.2	7.800	.0
1.200	.0	2.867	5.9	4.533	.8	6.200	.2	7.867	.0
1.267	.3	2.933	5.8	4.600	.7	6.267	.2	7.933	.0
1.333	1.2	3.000	5.7	4.667	.6	6.333	.1	8.000	.0
1.400	3.2	3.067	5.6	4.733	.5	6.400	.1	8.067	.0
1.467	4.5	3.133	5.4	4.800	.5	6.467	.1	8.133	.0
1.533	5.5	3.200	5.3	4.867	.4	6.533	.1	8.200	.0
1.600	6.1	3.267	5.2	4.933	.4	6.600	.1	8.267	.0

RUNOFF VOLUME = 1.35793 INCHES = 1.3279 ACRE-FEET
PEAK DISCHARGE RATE = 6.70 CFS AT 2.067 HOURS BASIN AREA = .0183 SQ. MI.

PLOT HYD ID=2 ID=3



FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 13:46:49

RSFOE00 SUNRISE FULL DEVELOPMENT OFFSITE EXISTING
WITH TANAGER POND & ASPHALT SWALE
JUST AFTER PROJECT COMPLETED

AHYMO SUMMARY TABLE (AHYMO392) - AMAFCA VERSION OF HYMO - MARCH, 1992 RUN DATE (MON/DAY/YR) =06/23/1994
INPUT FILE = RSFOE00 USER NO.= RYALS_NM.101

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
#S FILE RSFOE@00 = Revised Sunrise Fully-developed Offsite Existing 100-yr											
#S INCLUDES BASIN 314 POSSIBLY TO SNOW VISTA POND, USE PER SNOW VISTA DESIGN											
#S NO SEDIMENT BULKING, ALL LAND TREATMENTS B=LANDSCAPE OR D=IMPERVIOUS											
#S											
#S TOWER RD FLOW DIVIDES AT CONNEMARA: UP TO 23 CFS FALLS BACK INTO SUNRISE											
#S TERRACE & THE REMAINDER FLOWS TO DROP INLETS IN TOWER AT SNOW VISTA CHANNEL											
#S											
#S BASINS 101-108 PLAN = BASINS 151-158 IN THIS AHYMO FILE											
#S REVISED 3-16-94 FOR BASIN 305 BECOMES 351 - 355											
#S											
#S AP#7 = SUNRISE FLOW EXCEPT BASINS 105, 106, & 108											
#S RAINFALL	HUNDRED YR TYPE=1 RAIN QUARTER=0.0 RAIN ONE=1.87										
#S	RAIN SIX=2.20			RAIN DAY=2.68		DT=.033333 HR					
RAINFALL TYPE= 1										RAIN6=	2.200
COMPUTE NM HYD	308.00	-	1	.12500	110.27	3.007	.45102	1.533	1.378	PER IMP=	.00
ROUTE	100.00	1	2	.12500	82.48	3.007	.45103	1.600	1.031		
COMPUTE NM HYD	309.00	-	3	.07575	65.15	1.822	.45102	1.533	1.344	PER IMP=	.00
#S HYD 102 = (309+ROUTED 308) CROSSING 106TH BTW EUCARIZ & SUNSET GARDEN											
#S HYD 102 = AP 4											
ADD HYD	102.00	2& 3	1	.20075	138.37	4.829	.45102	1.567	1.077		
ROUTE	104.00	1	4	.20075	125.18	4.829	.45102	1.633	.974		
ROUTE	106.00	4	2	.20075	123.64	4.829	.45102	1.633	.962		
COMPUTE NM HYD	314.00	-	4	.05469	46.74	1.316	.45102	1.533	1.335	PER IMP=	.00
COMPUTE NM HYD	310.00	-	3	.02922	24.97	.703	.45102	1.533	1.335	PER IMP=	.00
#S HYD 117 = 310+314 (THE "EXTRA" 35 AC), BOTH EAST OF 106TH, TO DESILT BASIN											
ADD HYD	117.00	3& 4	1	.08391	71.71	2.018	.45102	1.533	1.335		
#S HYD 119 = COMBINED FLOW INTO SNOW VISTA DESILT BASIN											
#S HYD 119 = AP 5 IN											
ADD HYD	119.00	1& 2	5	.28466	172.91	6.847	.45102	1.633	.949		
ADD HYD	119.00	1& 3	5	.11313	96.68	2.721	.45102	1.533	1.335		
#S HYD 501 = ROUTED OUFLOW FROM SNOW VISTA DESILTING BASIN											
#S HYD 501 = AP 5 OUT											
ROUTE RESERVOIR	501.00	5	3	.11313	40.56	2.721	.45102	1.733	.560	AC-FT=	1.302
#S START SNOW VISTA CHANNEL											
COMPUTE NM HYD	315.00	-	1	.01234	10.55	.297	.45102	1.533	1.336	PER IMP=	.00
ADD HYD	120.00	1& 3	4	.12547	45.43	3.018	.45101	1.700	.566		
ROUTE	121.00	3	4	.11313	40.11	2.721	.45101	1.767	.554		
COMPUTE NM HYD	311.00	-	3	.03813	32.59	.917	.45102	1.533	1.335	PER IMP=	.00
ADD HYD	122.00	2& 3	6	.23888	146.03	5.746	.45102	1.633	.955		
#S START NEW BRANCH: BASINS 306&307, 353&354											
COMPUTE NM HYD	306.00	-	2	.03969	33.92	.955	.45102	1.533	1.335	PER IMP=	.00
ROUTE	110.00	2	3	.03969	21.91	.955	.45104	1.633	.862		
COMPUTE NM HYD	307.00	-	4	.04547	38.86	1.094	.45102	1.533	1.335	PER IMP=	.00
#S HYD 112 = AP 3 AT 106th ST											
ADD HYD	112.00	3& 4	2	.08516	55.80	2.048	.45102	1.567	1.024		
ROUTE	113.00	2	4	.08516	45.13	2.049	.45103	1.633	.828		
COMPUTE NM HYD	353.00	-	1	.00172	1.48	.041	.45102	1.533	1.340	PER IMP=	.00
COMPUTE NM HYD	354.00	-	2	.00531	4.54	.128	.45102	1.533	1.337	PER IMP=	.00
ADD HYD	111.00	1& 2	3	.00703	6.02	.169	.45100	1.533	1.338		
ROUTE	114.00	3	1	.00703	3.18	.169	.45114	1.667	.706		

RSFOE00.S.M

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
ADD HYD	115.00	1& 4	5	.09219	48.22	2.218	.45103	1.633	.817	
ADD HYD	123.00	5& 6	7	.33107	194.25	7.964	.45102	1.633	.917	
*S										
*S START NEW BRANCH (355+403&401 EXIST SUNRISE) W 2 DIVIDE HYD'S IN TOWER RD										
COMPUTE NM HYD	355.00	-	2	.00266	2.28	.064	.45102	1.533	1.339	PER IMP= .00
COMPUTE NM HYD	403.00	-	1	.00688	14.08	.483	1.31642	1.500	3.198	PER IMP= 50.00
*S HYD 105 = COMBINED FLOW AT TOWER-TANAGER-106th INTERSECTION										
ADD HYD	105.00	1& 2	4	.00954	16.31	.547	1.07509	1.500	2.672	
*S AT TOWER/TANAGER/106TH, SPLIT EXCESS OVER 12 CFS (CL CAPACITY) TO 312										
DIVIDE HYD	106.00	4	2	.00892	12.00	.511	1.07509	1.467	2.102	
	105.10	AND	5	.00062	4.31	.036	1.07509	1.500	10.853	
COMPUTE NM HYD	401.00	-	1	.01016	20.78	.713	1.31642	1.500	3.196	PER IMP= 50.00
ADD HYD	107.00	1& 2	3	.01908	32.78	1.225	1.20359	1.500	2.685	
*S SAY <= 23 FROM TOWER TO CONNEMARA; EXCESS IN STREET TO SNOW VISTA										
*S HOLD 401.2 (UNDERFLOW, ID=8) TO ADD TO 402 LATER										
DIVIDE HYD	401.20	3	8	.01735	23.00	1.114	1.20359	1.433	2.071	
	401.10	AND	2	.00172	9.78	.111	1.20359	1.500	8.864	
ADD HYD	137.00	2& 5	4	.00235	14.10	.146	1.16958	1.500	9.390	
ROUTE	138.00	4	3	.00235	4.94	.147	1.17179	1.567	3.292	
COMPUTE NM HYD	312.00	-	1	.01188	10.16	.286	.45102	1.533	1.336	PER IMP= .00
ADD HYD	139.00	1& 3	4	.01423	14.41	.432	.56983	1.567	1.583	
*S HYD 124 = SNOW VISTA JUST DOWNSTREAM FROM TOWER										
*S HYD 124 = AP 6										
ADD HYD	124.00	4& 7	3	.34530	205.70	8.396	.45592	1.633	.931	
ROUTE	128.00	3	4	.34530	201.81	8.396	.45592	1.667	.913	
COMPUTE NM HYD	313.00	-	2	.01016	8.69	.244	.45102	1.533	1.336	PER IMP= .00
ADD HYD	130.00	2& 4	3	.35546	206.74	8.640	.45578	1.667	.909	
*S HYD 132 = SNOW VISTA JUST ABOVE JUNCTION WITH SECTION LINE CHANNEL STUB										
*S HYD 132 = AP 9										
ROUTE	132.00	3	6	.35546	207.67	8.640	.45578	1.667	.913	
*S										
*S START SUNRISE TERRACE INTERIOR										
COMPUTE NM HYD	151.00	-	1	.01049	21.97	.760	1.35796	1.500	3.272	PER IMP= 53.20
COMPUTE NM HYD	152.00	-	2	.00631	13.22	.457	1.35796	1.500	3.273	PER IMP= 53.20
ADD HYD	210.00	1& 2	3	.01680	35.18	1.217	1.35793	1.500	3.272	
COMPUTE NM HYD	153.00	-	1	.00713	14.94	.517	1.35796	1.500	3.273	PER IMP= 53.20
*S HYD 220 = 151+152+153 (BASINS 101, 102, & 103) @ HACKAMORE & CONNEMARA										
ADD HYD	220.00	1& 3	5	.02394	50.13	1.733	1.35792	1.500	3.272	
*S 401.2 (ID 8) = 'UNDERFLOW' (+-21 CFS MAX) FROM TOWER @ CONNEMARA ABOVE										
*S DELAY 401.2 2 MIN (1 TIME STEP) TO SIMULATE ROUTING IN 2 SEGMENTS OF ROAD										
MODIFY TIME	401.20	8	8	.01735	23.00	1.114	1.20359	1.467	2.071	
*S BASIN 402 = EXISTING DEVELOPMENT @ 50%=B=LANDSCAPE, 50%=D=IMPERV										
COMPUTE NM HYD	402.00	-	1	.01547	31.64	1.086	1.31642	1.500	3.196	PER IMP= 50.00
ADD HYD	242.00	1& 8	4	.03282	54.64	2.200	1.25676	1.500	2.601	
COMPUTE NM HYD	154.00	-	2	.00754	15.79	.546	1.35796	1.500	3.273	PER IMP= 53.20
*S HYD 244 = 402+154 IN SANDPIPER AT CONNEMARA (HYD 154=BASIN 104)										
ADD HYD	244.00	2& 4	3	.04036	70.43	2.746	1.27565	1.500	2.726	
*S HYD 240 = COMBINED FLOW @ HACKAMORE & CONNEMARA										
ADD HYD	240.00	3& 5	2	.06430	120.56	4.479	1.30628	1.500	2.930	
COMPUTE NM HYD	155.00	-	1	.00000	.00	.000	1.35796	1.500	3.693	PER IMP= 53.20
*S HYD 250 = COMBINED FLOW IN HACKAMORE AT HALTER										
ADD HYD	250.00	1& 2	3	.06430	120.56	4.480	1.30627	1.500	2.930	
COMPUTE NM HYD	156.00	-	1	.00000	.00	.000	1.35796	1.500	3.693	PER IMP= 53.20
ADD HYD	260.00	1& 3	2	.06430	120.56	4.480	1.30627	1.500	2.930	

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
COMPUTE NM HYD	157.00	-	1	.01736	36.35	1.258	1.35796	1.500	3.271	PER IMP= 53.20
*S HYD 224 = AP 7 IN										
ADD HYD	224.00	1& 2	3	.08166	156.91	5.737	1.31725	1.500	3.002	
*S REPLACE POND WITH PIPE IN FAIR SHARE ANALYSIS - KEEP "RESERVOIR" HYD NO.										
ROUTE	503.00	3	4	.08166	156.00	5.737	1.31726	1.500	2.985	
ROUTE	266.00	4	3	.08166	149.40	5.737	1.31726	1.533	2.859	
*S HYD 158 = BASIN 108, ALL ANDALUSIAN, NOT TO POND										
COMPUTE NM HYD	158.00	-	1	.01902	39.82	1.378	1.35796	1.500	3.271	PER IMP= 53.20
*S HYD 270 = ALL SUNRISE ONSITE INC EXISTING 402 & 401.2 (=401 UNDERFLOW)										
*S BUT NOT OFFSITE VIA DUNLIN (SOUTHWEST STREET) PIPE										
ADD HYD	270.00	1& 3	7	.10069	187.84	7.115	1.32494	1.533	2.915	
*S										
*S OFFSITE WEST OF SUNRISE: PER SCANLON LAYOUT EXCEPT PIPE NOT SECT LINE CHAN										
COMPUTE NM HYD	352.00	-	1	.03141	26.84	.756	.45102	1.533	1.335	PER IMP= .00
ROUTE	272.00	1	3	.03141	17.61	.756	.45105	1.633	.876	
COMPUTE NM HYD	351.00	-	2	.01500	12.82	.361	.45102	1.533	1.336	PER IMP= .00
ADD HYD	274.00	2& 3	1	.04641	27.98	1.116	.45103	1.600	.942	
*S USE L FROM MID POINT OF BASIN TO MIDPOINT OF NEXT										
ROUTE	202.00	1	2	.04641	22.11	1.116	.45104	1.633	.744	
COMPUTE NM HYD	304.00	-	3	.02938	25.11	.707	.45102	1.533	1.335	PER IMP= .00
ADD HYD	203.00	2& 3	1	.07579	41.55	1.823	.45102	1.567	.857	
*S HYD 206 = INTO TANAGER POND *LOCATION* FROM NORTH										
ROUTE	204.00	1	4	.07579	39.01	1.823	.45103	1.600	.804	
COMPUTE NM HYD	303.00	-	3	.06688	57.28	1.609	.45102	1.533	1.338	PER IMP= .00
*S HYD 299=COA SATELLITE: ASSUME 10 CFS CLEAN & NON-ERSOIVE; REAL 1993 0.5+-										
STORE HYD	299.00	-	2	.07516	.51	.372	.09288	1.333	.011	
*S HYD 205 = INTO TANAGER POND LOCATION FROM WEST (303+299 (COA SATELLITE))										
ADD HYD	205.00	2& 3	1	.14204	57.79	1.978	.26114	1.533	.636	
ADD HYD	208.00	1& 4	5	.21783	91.44	3.801	.32721	1.567	.656	
COMPUTE NM HYD	302.20	-	1	.07109	61.01	1.710	.45102	1.533	1.341	PER IMP= .00
ROUTE	207.00	1	2	.07109	61.51	1.710	.45103	1.533	1.352	
*S HYD 206 = AP 2 IN = TANAGER POND IN										
ADD HYD	206.00	2& 5	3	.28892	152.50	5.511	.35767	1.533	.825	
*S HYD 510 = AP2 OUT = TANAGER POND OUT										
ROUTE RESERVOIR	510.00	3	4	.28892	22.12	5.511	.35767	2.067	.120	AC-FT= 3.160
*S DELAY 510 2 MIN (1 TIME STEP) TO SIMULATE PIPE ROUTING: L=900', V=7.04										
MODIFY TIME	510.00	4	4	.28892	22.12	5.511	.35767	2.100	.120	
COMPUTE NM HYD	302.10	-	3	.01031	8.82	.248	.45102	1.533	1.336	PER IMP= .00
*S HYD 212 = COMBINED INTO DUNLIN/ANDALUSIAN PIPE @ TANAGER										
*S HYD 212 = AP 1										
ADD HYD	212.00	4& 3	1	.29923	27.47	5.759	.36089	1.533	.143	
ROUTE	214.00	1	2	.29923	27.79	5.759	.36089	1.567	.145	
ROUTE	216.00	2	3	.29923	28.02	5.759	.36089	1.567	.146	
ROUTE	218.00	3	5	.29923	28.00	5.759	.36089	1.567	.146	
*S										
*S HYD 226 ALL THROUGH SUNRISE, BUT NOT ROUTED IN STUB CHANNEL										
ADD HYD	226.00	5& 7	8	.39992	212.17	12.874	.60360	1.533	.829	
*S HYD 228 = SUNRISE + OFFSITE CONTRIB @ JUNCT W SNOW VISTA POST ROUTE STUB										
*S HYD 228 = AP 8										
ROUTE	228.00	8	5	.39992	212.34	12.874	.60360	1.533	.830	
*S HYD 230 = TOTAL COMBINED W SNOW VISTA										
*S HYD 230 = AP 10: TO BE <= ALLOWED PER SNOW VISTA DESIGN										
ADD HYD	230.00	5& 6	1	.75537	364.91	21.515	.53404	1.633	.755	
FINISH										

```
START                TIME=0.0   PUNCH CODE=0   PRINT LINES=58
                     CONTROL CODES AT START = 027 015 0 0 0
                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
                     CONTROL CODES AT END = 0 0 0 0 0
                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
* START               TIME=0.0   PUNCH CODE=0   PRINT LINES=56
*                    CONTROL CODES AT START = 027 042 048
*                    027 091 0 0   0 0 0 0 0   0 0 0 0 0 0 0 0
*                    CONTROL CODES AT END =  027 093 0 0 0
*                    0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
*S FILE R5FOE#00 = Revised Sunrise Fully-developed Offsite Existing 100-yr
*S INCLUDES BASIN 314 POSSIBLY TO SNOW VISTA POND, USE PER SNOW VISTA DESIGN
*S NO SEDIMENT BULKING, ALL LAND TREATMENTS B=LANDSCAPE OR D=IMPERVIOUS
*S
*S TOWER RD FLOW DIVIDES AT CONNEMARA: UP TO 23 CFS FALLS BACK INTO SUNRISE
*S TERRACE & THE REMAINDER FLOWS TO DROP INLETS IN TOWER AT SNOW VISTA CHANNEL
*S
*S BASINS 101-108 PLAN = BASINS 151-158 IN THIS AHYMO FILE
*S REVISED 3-16-94 FOR BASIN 305 BECOMES 351 - 355
*S
*S AP#7 = SUNRISE FLOW EXCEPT BASINS 105, 106, & 108
* TUCKER GREEN  2/94, 3/94, 6/94
**********************************************************************************
* SUNRISE TERRACE RAINFALL PER ALBUQUERQUE NM DPM, MAP L-8
* RAINFALL             TWO YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=0.73
*                      RAIN SIX=0.95      RAIN DAY=1.16     DT=.033333 HR
* RAINFALL             TEN YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.24
*                      RAIN SIX=1.47      RAIN DAY=1.79     DT=.033333 HR
*S RAINFALL             HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
*S                      RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR
RAINFALL             HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
                     RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR
**********************************************************************************
COMPUTE NM HYD       ID=1 HYD NO=308 DA=0.12500 SQ MI
                     PER A=97  B=0    C=3  D=0     TP=-0.13333 HRS  RAIN=-1
PRINT HYD            ID=1 CODE=1
* CODES: 0=ALL; 1=TOTALS ONLY; 2=EVERY 2ND + TOTALS; SIMILARLY 3, 5, 10, 20
COMPUTE RATING CURVE CID=-1  VS NO=35  NO SEGS=3
                     MIN EL=0    FT   MAX EL=2    FT
                     CH SLP=.0256     FP SLP= .0256
                     MANNING N   END DIST
                       .040         6     .030 26   .040  32
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     2       6     0       26    0       32    2
COMPUTE TRAVEL TIME  ID=-2      REACH=35  NO VS=1
                     L= 2500   ft       SLP=0.02560 ft per ft
ROUTE                ID=2     HYD=100     INFLOW HYD ID=1   DT=.033333 hr
PRINT HYD            ID=2 CODE=1
**********************************************************************************
COMPUTE NM HYD       ID=3   HYD=309 DA=.07575 SQ MI
                     PER A=97   B=0 C=3   D=0 TP=0.13333 HRS    RAIN=-1
PRINT HYD            ID=3   CODE=1
*S HYD 102 = (309+ROUTED 308) CROSSING 106TH BTW EUCARIZ & SUNSET GARDEN
*S HYD 102 = AP 4
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=1   HYD=102    ID I=2      ID II=3
PRINT HYD            ID=1   CODE=2
PLOT HYD             ID=1
COMPUTE RATING CURVE CID=-1  VS NO=36  NO SEGS=1
                     MIN EL=0    FT   MAX EL=1    FT
                     CH SLP= .02558   FP SLP=.02558  FT PER FT
                       N   END X
                     .035   122
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
```

F DE00

IN2.T

1

```
COMPUTE TRAVEL TIME  ID=-4     REACH=36 NO VS=1
                     L=860     ft        SLP=.02558  ft/ft
ROUTE                ID=4      HYD=104      INFLOW HYD ID=1    DT=.03333
COMPUTE RATING CURVE CID=-1  VS NO=37  NO SEGS=3
                     MIN EL=0     FT    MAX EL=5     FT
                     CH SLP=.02432     FP SLP=.02432   FT PER FT
                       N    END X
                     .040     15      .025  20     .040  50
                     DIST  ELEV     DIST  ELEV     DIST  ELEV     DIST  ELEV
                     0     5        15    0        30    0        50    5
COMPUTE TRAVEL TIME  ID=-2     REACH=1  NO VS=1
                     L=740     ft        SLP=.02432  ft/ft
ROUTE                ID=2      HYD=106      INFLOW HYD ID=4    DT=.033333
*********************************************************************************
COMPUTE NM HYD       ID=4   HYD=314   DA=0.05469  SQ MI
                     PER A=97   B=0 C=3   D=0 TP=0.1333 HRS   RAIN=-1
PRINT HYD            ID=4   CODE=1
*********************************************************************************
COMPUTE NM HYD       ID=3   HYD=310   DA=0.02922  SQ MI
                     PER A=97   B=0 C=3   D=0 TP=0.1333 HRS   RAIN=-1
PRINT HYD            ID=3   CODE=1
*S HYD 117 = 310+314 (THE "EXTRA" 35 AC), BOTH EAST OF 106TH, TO DESILT BASIN
*                      NEW      NEW         IN1          IN2
ADD HYD              ID=1   HYD=117    ID I=3      ID II=4
*S HYD 119 = COMBINED FLOW INTO SNOW VISTA DESILT BASIN
*S HYD 119 = AP 5 IN
ADD HYD              ID=5   HYD=119    ID I=1      ID II=2
*                      NEW      NEW         IN1          IN2
ADD HYD              ID=5   HYD=119    ID I=1      ID II=3
PRINT HYD            ID=5   CODE=2
*********************************************************************************
*S HYD 501 = ROUTED OUFLOW FROM SNOW VISTA DESILTING BASIN
*S HYD 501 = AP 5 OUT
ROUTE RESERVOIR      ID=3   HYD=501   INFLOW ID=5   CODE=2
                     CFS OUT    VOL AC-FT   ELEV FT
                     0.         0.          11.05
                     14.35      0.6598      11.55
                     41.46      1.3245      12.05
                     122.4      2.6904      13.05
                     234.7      4.1343      14.05
                     365.8      5.6928      15.05
                     527.6      7.4074      16.05
                     715.0      9.3198      17.05
* PLOT HYD AP 5 IN & OUT
PLOT HYD             ID=5   ID=3
*S START SNOW VISTA CHANNEL
*********************************************************************************
COMPUTE NM HYD       ID=1   HYD=315   DA=0.01234  SQ MI
                     PER A=97   B=0 C=3   D=0 TP=0.1333 HRS   RAIN=-1
PRINT HYD            ID=1   CODE=1
ADD HYD              ID=4   HYD=120    ID I=1      ID II=3
COMPUTE RATING CURVE CID=-1  VS NO=1   NO SEGS=1
                     MIN EL=0     FT    MAX EL=5     FT
                     CH SLP= .0109     FP SLP=.0109    FT PER FT
                       N    END X
                     .015   30
                     DIST  ELEV     DIST  ELEV     DIST  ELEV     DIST  ELEV
                     0     5        10    0        20    0        30    5
COMPUTE TRAVEL TIME  ID=-4     REACH=1  NO VS=1
                     L=1200    ft        SLP=.0109   ft/ft
ROUTE                ID=4      HYD=121      INFLOW HYD ID=3    DT=.033333
*********************************************************************************
COMPUTE NM HYD       ID=3   HYD=311   DA=0.03813  SQ MI
                     PER A=97   B=0 C=3   D=0 TP=0.1333 HRS   RAIN=-1
PRINT HYD            ID=3   CODE=1
ADD HYD              ID=4   HYD=122    ID I=3      ID II=7
```

```
**********************************************************************************
COMPUTE NM HYD       ID=2   HYD=306   DA=0.03969  SQ MI
                     PER A=97   B=0 C=3   D=0 TP=0.1333 HRS   RAIN=-1
PRINT HYD            ID=2   CODE=1
COMPUTE RATING CURVE CID=-1  VS NO=34  NO SEGS=3
                     MIN EL=0    FT   MAX EL=6    FT
                     CH SLP=.0310     FP SLP=.0310    FT PER FT
                       N   END X
                     .04     18    .03   32      .04   50
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     6       18    0       32    0       50    0
COMPUTE TRAVEL TIME  ID=-3     REACH=1  NO VS= 1
                     L= 2320  ft       SLP=.0310   ft/ft
ROUTE                ID=3     HYD=110     INFLOW HYD ID=2   DT=.033333
**********************************************************************************
COMPUTE NM HYD       ID=4   HYD=307   DA=0.04547  SQ MI
                     PER A=97   B=0 C=3   D=0 TP=0.1333 HRS   RAIN=-1
PRINT HYD            ID=4   CODE=1
*S HYD 112 = AP 3 AT 106th ST
ADD HYD              ID=2   HYD=112    ID I=3      ID II=4
* EST EFFECT NAT CHAN IN 311 AS 1 SECTION; ACTUAL NARROW/DEEP UPPER, OPP LOWER
COMPUTE RATING CURVE CID=-1  VS NO=50   NO SEGS=1
                     MIN EL=0    FT   MAX EL=4    FT
                     CH SLP=.0250     FP SLP=.0250   FT PER FT
                       N   END X
                     .035    60
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     4       20    0       40    0       60    4
COMPUTE TRAVEL TIME  ID=-4     REACH=1  NO VS=1
                     L=1600   ft       SLP=.0250   ft/ft
ROUTE                ID=4     HYD=113     INFLOW HYD ID=2  DT=.033333
PRINT HYD            ID=4  CODE=2

**********************************************************************************
COMPUTE NM HYD       ID=1   HYD=353   DA=0.00172  SQ MI
                     PER A=97   B=0 C=3   D=0 TP=0.1333 HRS   RAIN=-1
PRINT HYD            ID=1   CODE=1
**********************************************************************************
COMPUTE NM HYD       ID=2   HYD=354   DA=0.00531  SQ MI
                     PER A=97  B=0.0  C=3   D=0.0  TP=0.1333 HRS   RAIN=-1
PRINT HYD            ID=1   CODE=1
ADD HYD              ID=3   HYD=111    ID I=1      ID II=2
COMPUTE RATING CURVE CID=-1  VS NO=99   NO SEGS=1
                     MIN EL=0    FT   MAX EL=1    FT
                     CH SLP= .03      FP SLP=.03      FT PER FT
                       N   END X
                     .035   122
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     1       1     0       121   0       121   4
COMPUTE TRAVEL TIME  ID=-1     REACH=99 NO VS=1
                     L=900    ft       SLP=.03     ft/ft
ROUTE                ID=1     HYD=114     INFLOW HYD ID=3   DT=.033333
*                      NEW      NEW         IN1          IN2
ADD HYD              ID=5   HYD=115      ID I=1      ID II=4
PRINT HYD            ID=5   CODE=1
ADD HYD              ID=7   HYD=123    ID I=5      ID II=6
*S
*S START NEW BRANCH (355+403&401 EXIST SUNRISE) W 2 DIVIDE HYD'S IN TOWER RD
**********************************************************************************
COMPUTE NM HYD       ID=2   HYD=355   DA=0.00266  SQ MI
                     PER A=97   B=0 C=3    D=0  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=2  CODE=1
**********************************************************************************
COMPUTE NM HYD       ID=1   HYD=403   DA=0.00688  SQ MI
                     PER A=0  B=50   C=0    D=50    TP=0.1333 HRS RAIN=-1
```

```
PRINT HYD           ID=1  CODE=1
*S HYD 105 = COMBINED FLOW AT TOWER-TANAGER-106th INTERSECTION
ADD HYD             ID=4   HYD=105    ID I=1      ID II=2
PRINT HYD           ID=4  CODE=2
*S AT TOWER/TANAGER/106TH, SPLIT EXCESS OVER 12 CFS (CL CAPACITY) TO 312
DIVIDE HYD          ID=4   Q=12.0  ID=2  HYD=106       ID=5  HYD=105.1
PRINT HYD           ID=5   CODE=1
PRINT HYD           ID=2   CODE=1
*************************************************************************
COMPUTE NM HYD      ID=1   HYD=401   DA=0.01016  SQ MI
                    PER A=0  B=50   C=0    D=50    TP=0.1333 HRS RAIN=-1
PRINT HYD           ID=1  CODE=1
ADD HYD             ID=3   HYD=107    ID I=1      ID II=2
*S SAY <= 23 FROM TOWER TO CONNEMARA; EXCESS IN STREET TO SNOW VISTA
*S HOLD 401.2 (UNDERFLOW, ID=8) TO ADD TO 402 LATER
DIVIDE HYD          ID=3   Q=23.0  ID=8  HYD=401.2     ID=2  HYD=401.1
PRINT HYD           ID=8   CODE=1
PRINT HYD           ID=2   CODE=1
ADD HYD             ID=4   HYD=137    ID I=2    ID II=5
COMPUTE RATING CURVE CID=-1  VS NO=99   NO SEGS=1
                    MIN EL=0    FT   MAX EL=1    FT
                    CH SLP= .03     FP SLP=.03     FT PER FT
                      N   END X
                    .035   122
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     1       1     0       121   0       121   4
COMPUTE TRAVEL TIME ID=-3     REACH=99 NO VS=1
                    L=900    ft       SLP=.03     ft/ft
ROUTE               ID=3     HYD=138     INFLOW HYD ID=4   DT=.033333
*************************************************************************
COMPUTE NM HYD      ID=1   HYD=312   DA=0.01188  SQ MI
                    PER A=97   B=0 C=3   D=0 TP=0.1333 HRS   RAIN=-1
PRINT HYD           ID=1  CODE=1
*                     NEW      NEW        IN1          IN2
ADD HYD             ID=4   HYD=139    ID I=1      ID II=3
*S HYD 124 = SNOW VISTA JUST DOWNSTREAM FROM TOWER
*S HYD 124 = AP 6
ADD HYD             ID=3   HYD=124    ID I=4    ID II=7
PRINT HYD           ID=3   CODE=2
PLOT HYD            ID=3
* FOR ROUTING EST AVG SLOPE=.01+-: 450'@.014, 500'@.004, 400'@.0126
COMPUTE RATING CURVE CID=-1  VS NO=2   NO SEGS=1
                    MIN EL=0    FT   MAX EL=5    FT
                    CH SLP= .010     FP SLP=.010     FT PER FT
                      N   END X
                    .015   30
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME ID=-4     REACH=2  NO VS=1
                    L=1350    ft       SLP=.010    ft/ft
ROUTE               ID=4     HYD=128     INFLOW HYD ID=3   DT=.033333
PRINT HYD           ID=4  CODE=1
*************************************************************************
COMPUTE NM HYD      ID=2   HYD=313   DA=0.01016  SQ MI
                    PER A=97   B=0 C=3    D=0 T=0.1333 HRS   RAIN=-1
PRINT HYD           ID=2  CODE=1
*                     NEW      NEW        IN1          IN2
ADD HYD             ID=3   HYD=130    ID I=2      ID II=4
PRINT HYD           ID=3  CODE=1
* FOR ROUTE EST AVG SLOPE AS .012
COMPUTE RATING CURVE CID=-1  VS NO=3   NO SEGS=1
                    MIN EL=0    FT   MAX EL=5    FT
                    CH SLP= .012     FP SLP=.012     FT PER FT
                      N   END X
                    .015   30
```

```
                  0     0       10    0       20    0       30    5
COMPUTE TRAVEL TIME  ID=-6     REACH=3  NO VS=1
                  L=550   ft       SLP=.012    ft/ft
*S HYD 132 = SNOW VISTA JUST ABOVE JUNCTION WITH SECTION LINE CHANNEL STUB
*S HYD 132 = AP 9
ROUTE             ID=6     HYD=132     INFLOW HYD ID=3   DT=.033333
PRINT HYD         ID=6  CODE=2
PLOT HYD          ID=6
*************************************************************************
*S
*S START SUNRISE TERRACE INTERIOR
*
*************************************************************************
COMPUTE NM HYD    ID=1   HYD=151   DA=0.010492 SQ MI
                  PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1
PRINT HYD         ID=1  CODE=1
*************************************************************************
COMPUTE NM HYD    ID=2   HYD=152   DA=0.006309 SQ MI
                  PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1
PRINT HYD         ID=2  CODE=1
*                   NEW      NEW        IN1          IN2
ADD HYD           ID=3   HYD=210    ID I=1      ID II=2
PRINT HYD         ID=3  CODE=1
*************************************************************************
COMPUTE NM HYD    ID=1   HYD=153   DA=0.007134 SQ MI
                  PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1
PRINT HYD         ID=1  CODE=1
*S HYD 220 = 151+152+153 (BASINS 101, 102, & 103) @ HACKAMORE & CONNEMARA
*                   NEW      NEW        IN1          IN2
ADD HYD           ID=5   HYD=220    ID I=1      ID II=3
*************************************************************************
*S 401.2 (ID 8) = 'UNDERFLOW' (+-21 CFS MAX) FROM TOWER @ CONNEMARA ABOVE
*S DELAY 401.2  2 MIN (1 TIME STEP) TO SIMULATE ROUTING IN 2 SEGMENTS OF ROAD
MODIFY TIME       ID=8   TIME SHIFT=0.033333 HRS   CODE=-1
PRINT HYD         ID=8  CODE=1
*S BASIN 402 = EXISTING DEVELOPMENT @ 50%=B=LANDSCAPE, 50%=D=IMPERV
*************************************************************************
COMPUTE NM HYD    ID=1   HYD=402   DA=0.015469  SQ MI
                  PER A=0  B=50   C=0    D=50    TP=0.1333 HRS RAIN=-1
PRINT HYD         ID=1  CODE=1
ADD HYD           ID=4   HYD=242    ID I=1      ID II=8
*************************************************************************
COMPUTE NM HYD    ID=2   HYD=154   DA=0.007539 SQ MI
                  PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1
PRINT HYD         ID=2  CODE=1
*S HYD 244 = 402+154 IN SANDPIPER AT CONNEMARA (HYD 154=BASIN 104)
ADD HYD           ID=3   HYD=244    ID I=2      ID II=4
*                   NEW      NEW        IN1          IN2
PRINT HYD         ID=3  CODE=1
*S HYD 240 = COMBINED FLOW @ HACKAMORE & CONNEMARA
ADD HYD           ID=2   HYD=240    ID I=3      ID II=5
PRINT HYD         ID=2  CODE=1
*************************************************************************
* COMPUTE NM HYD     ID=1   HYD=155   DA=0.004197 SQ MI
COMPUTE NM HYD    ID=1   HYD=155   DA=0.000001 SQ MI
                  PER A=0   B=46.8  C=0    D=53.2 TP=0.1333 HRS RAIN=-1
PRINT HYD         ID=1  CODE=1
*S HYD 250 = COMBINED FLOW IN HACKAMORE AT HALTER
*                   NEW      NEW        IN1          IN2
ADD HYD           ID=3   HYD=250    ID I=1      ID II=2
PRINT HYD         ID=3   CODE=1
*************************************************************************
* COMPUTE NM HYD     ID=1   HYD=156   DA=0.014138 SQ MI
COMPUTE NM HYD    ID=1   HYD=156   DA=0.000001 SQ MI
                  PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1
PRINT HYD         ID=1  CODE=1
```

```
*                    NEW      NEW        IN1          IN2
ADD HYD              ID=2   HYD=260    ID I=1      ID II=3
**************************************************************************
COMPUTE NM HYD       ID=1   HYD=157   DA=0.017363 SQ MI
                     PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1  CODE=1
*S HYD 224 = AP 7 IN
*                    NEW      NEW        IN1          IN2
ADD HYD              ID=3   HYD=224    ID I=1      ID II=2
PRINT HYD            ID=3   CODE=2
PLOT HYD             ID=3
*S REPLACE POND WITH PIPE IN FAIR SHARE ANALYSIS - KEEP "RESERVOIR" HYD NO.
COMPUTE RATING CURVE CID=-1  VS NO=63  NO SEGS=-1 SLP=.002  D=6 FT  N=.013
COMPUTE TRAVEL TIME  ID=-4     REACH=33 NO VS=1
                     L=100  ft       SLP=.002    ft/ft
ROUTE                ID=4     HYD=503     INFLOW HYD ID=3   DT=.033333
* ((( LINES BELOW STARTING WITH * ((( FOR USE WITH POND IN PROPOSED CONDITIONS
* ((( OUTFLOW BELOW (2.55-->83.00 FOR 42-IN PIPE W Kent=0.5)
* ((( S HYD 503 = AP 7 OUT
* ((( ROUTE RESERVOIR      ID=4  HYD=503  INFLOW ID=3     CODE=2
* (((                      OUTFLOW CFS    STORAGE AC-FT   ELEVATION FT
* (((                      0.00000        0.0000          88.33
* (((                       2.80          0.0203          89
* (((                      15.55          0.2013          90
* (((                      46.30          0.9056          92
* (((                      63.25          1.6948          94
* (((                      76.95          2.5737          96
* (((                      83.00          3.0551          97
* ((( *
* ((( * OUTFLOW BELOW (2.55-->60.05) FOR 36-IN PIPE W Kent=0.5
* ((( *ROUTE RESERVOIR      ID=4  HYD=503  INFLOW ID=3     CODE=2
* ((( *                     OUTFLOW CFS    STORAGE AC-FT   ELEVATION FT
* ((( *                     0.00000        0.0000          88.33
* ((( *                      2.55          0.0203          89
* ((( *                     14.00          0.2013          90
* ((( *                     35.05          0.9056          92
* ((( *                     46.50          1.6948          94
* ((( *                     55.58          2.5737          96
* ((( *                     60.05          3.0551          97
* ((( * PRINT HYD           ID=4   CODE=2
* ((( * *S PLOT HYD FOR AP 7 IN & OUT
* ((( * PLOT HYD            ID=3   ID=4
* D = 3 OR 3.5 PROPOSED, D = 6 FT FAIR SHARE FOR FREE OUTFALL
COMPUTE RATING CURVE CID=-1  VS NO=63  NO SEGS=-1 SLP=.002  D=6 FT  N=.013
COMPUTE TRAVEL TIME  ID=-3     REACH=33 NO VS=1
                     L=744  ft       SLP=.002    ft/ft
ROUTE                ID=3     HYD=266     INFLOW HYD ID=4   DT=.033333
PRINT HYD            ID=3  CODE=1
**************************************************************************
*S HYD 158 = BASIN 108, ALL ANDALUSIAN, NOT TO POND
COMPUTE NM HYD       ID=1   HYD=158   DA=0.019023 SQ MI
                     PER A=0  B=46.8  C=0    D=53.2   TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1  CODE=1
*S HYD 270 = ALL SUNRISE ONSITE INC EXISTING 402 & 401.2 (=401 UNDERFLOW)
*S BUT NOT OFFSITE VIA DUNLIN (SOUTHMOST STREET) PIPE
ADD HYD              ID=7   HYD=270    ID I=1      ID II=3
PRINT HYD            ID=7  CODE=1
PLOT HYD             ID=7
*S
*S OFFSITE WEST OF SUNRISE: PER SCANLON LAYOUT EXCEPT PIPE NOT SECT LINE CHAN
**************************************************************************
**************************************************************************
COMPUTE NM HYD       ID=1   HYD=352   DA=0.03141  SQ MI
                     PER A=97  B=0    C=3   D=0    TP=0.1333 HRS   RAIN=-1
PRINT HYD            ID=1   CODE=1
```

```
                    MIN EL=0    FT   MAX EL=1    FT
                    CH SLP= .037     FP SLP=.037     FT PER FT
                      N   END X
                    .035   122
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     1       1     0       121   0       122   1
COMPUTE TRAVEL TIME ID=-3     REACH=2  NO VS=1
                    L=900    ft       SLP=.037    ft/ft
ROUTE               ID=3     HYD=272     INFLOW HYD ID=1   DT=.033333
*************************************************************************
COMPUTE NM HYD      ID=2   HYD=351   DA=0.01500  SQ MI
                    PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1
PRINT HYD           ID=1  CODE=1
ADD HYD             ID=1   HYD=274    ID I=2      ID II=3
COMPUTE RATING CURVE CID=1  VS NO=32  NO SEGS=1
                    MIN EL=0    FT   MAX EL=5    FT
                    CH SLP=.001      FP SLP=.001     FT PER FT
                     N  END FT
                    .030  40
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     5       15    0       25    0       40    5
*S USE L FROM MID POINT OF BASIN TO MIDPOINT OF NEXT
COMPUTE TRAVEL TIME  ID=-2     REACH=32 NO VS=1
                    L=600    ft       SLP=.001    ft/ft
ROUTE               ID=2     HYD=202     INFLOW HYD ID=1   DT=.033333
*************************************************************************
COMPUTE NM HYD      ID=3 HYD NO=304 DA=0.02938 SQ MI
                    PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1
PRINT HYD           ID=3   CODE=1
ADD HYD             ID=1   HYD=203    ID I=2      ID II=3
COMPUTE RATING CURVE CID=1  VS NO=32  NO SEGS=1
                    MIN EL=0    FT   MAX EL=5    FT
                    CH SLP=.001      FP SLP=.001     FT PER FT
                     N  END FT
                    .030  40
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     5       15    0       25    0       40    5
* USE  L FROM MID-POINT OF BASIN TO MID-POINT OF NEXT
COMPUTE TRAVEL TIME  ID=-4     REACH=32 NO VS=1
                    L=250    ft       SLP=.001    ft/ft
*S HYD 206 = INTO TANAGER POND *LOCATION* FROM NORTH
ROUTE               ID=4     HYD=204     INFLOW HYD ID=1   DT=.033333
*************************************************************************
COMPUTE NM HYD      ID=3   HYD=303   DA=0.06688  SQ MI
                    PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1
PRINT HYD           ID=3  CODE=1
*************************************************************************
*S HYD 299=COA SATELLITE: ASSUME 10 CFS CLEAN & NON-ERSOIVE; REAL 1993 0.5+-
STORE HYD           ID=2   HYD NO=299  DT=0.16667 HR   DA=.07516  SQ MI
                    FLOW RATES CFS= (LEFT TO RIGHT, DOWN, LEFT TO RIGHT ...)
                    0       .00     .00     .00     .00     .00
                    .00     .51     .51     .51     .51     .51
                    .51     .51     .51     .51     .51     .51
                    .51     .51     .51     .51     .51     .51
                    .51     .51     .51     .51     .51     .51
                    .51     .51     .51     .51     .51     .51
                    .51     .51     .51     .51     .51     .51
                    .51     .51     .51     .51     .51     .51
                    .51     .51     .51     .51     .51     .51
                    .51     .51     .51     .51     .51     .51
*S HYD 205 = INTO TANAGER POND LOCATION FROM WEST (303+299 (COA SATELLITE))
*                     NEW      NEW        IN1          IN2
ADD HYD             ID=1   HYD=205    ID I=2      ID II=3
*                     NEW      NEW        IN1          IN2
ADD HYD             ID=5   HYD=208    ID I=1      ID II=4
*************************************************************************
```

```
COMPUTE NM HYD       ID=1   HYD=302.2  DA=.07109   SQ MI
                     PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1   CODE=1
COMPUTE RATING CURVE CID=-1  VS NO=33  NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP=.005      FP SLP=.005     FT PER FT
                      N  END FT
                     .017  13.33
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     1.17    .01   .5      3     0       9.83  0
                     13.33 1.17
COMPUTE TRAVEL TIME  ID=-2     REACH=33 NO VS=1
                     L=350  ft       SLP=.005    ft/ft
ROUTE                ID=2     HYD=207     INFLOW HYD ID=1   DT=.033333
*S  HYD 206 = AP 2 IN = TANAGER POND IN
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=3   HYD=206    ID I=2      ID II=5
PRINT HYD            ID=3   CODE=1
PLOT HYD             ID=3
*S  HYD 510 = AP2 OUT = TANAGER POND OUT
*   Qout=21.33 @ 52.00 FOR 24"RCP AND SILT-STOP BERM @ 49.0
ROUTE RESERVOIR      ID=4  HYD=510  INFLOW ID=3  CODE=2
                     OUTFLOW CFS    STORAGE AC-FT   ELEVATION FT
                       0.            0.0000          49
                       13.42         0.1515          49.2
                       18.25         0.3826          49.5
                       18.91         0.7781          50
                       20.15         1.6084          51
                       21.33         2.4923          52
                       21.88         2.9549          52.5
                       22.44         3.4315          53
                       22.92         3.9222          53.5
                       23.54         4.4272          54
*S DELAY 510 2 MIN (1 TIME STEP) TO SIMULATE PIPE ROUTING: L=900', V=7.04
MODIFY TIME          ID=4   TIME SHIFT=0.033333 HRS   CODE=-1
PRINT HYD            ID=4   CODE=1
*COMPUTE RATING CURVE CID=-1  VS NO=33  NO SEGS=-1   PIPE
*                     S=.0015 FT/FT   DIAM=2 FT    N=.013
*COMPUTE TRAVEL TIME  ID=-2     REACH=33 NO VS=1
*                     L=900  ft       SLP=.0015   ft/ft
*ROUTE                ID=2     HYD=211     INFLOW HYD ID=4   DT=.033333
*********************************************************************************
* 302.1 = SOUTH END OF BASIN 302
COMPUTE NM HYD       ID=3    HYD=302.1  DA=.01031   SQ MI
                     PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=3    CODE=1
*                      NEW      NEW        IN1          IN2
PRINT HYD            ID=1    CODE=1
*********************************************************************************
*S  HYD 212 = COMBINED INTO DUNLIN/ANDALUSIAN PIPE @ TANAGER
*S  HYD 212 = AP 1
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=1   HYD=212    ID I=4      ID II=3
PRINT HYD            ID=1   CODE=2
PLOT HYD             ID=1
COMPUTE RATING CURVE CID=-1  VS NO=43  NO SEGS=-1 SLP=.0375  D=4 FT  N=.013
COMPUTE TRAVEL TIME  ID=-2     REACH=43 NO VS=1
                     L=1330  ft       SLP=.0375   ft/ft
ROUTE                ID=2     HYD=214     INFLOW HYD ID=1   DT=.033333
COMPUTE RATING CURVE CID=-1  VS NO=44  NO SEGS=-1 SLP=.0110  D=5 FT  N=.013
COMPUTE TRAVEL TIME  ID=-3     REACH=44 NO VS=1
                     L=650t       SLP=.0110    ft/ft
ROUTE                ID=3     HYD=216     INFLOW HYD ID=2   DT=.033333
COMPUTE RATING CURVE CID=-1  VS NO=44  NO SEGS=-1 SLP=.0120  D=5.5 FT  N=.013
COMPUTE TRAVEL TIME  ID=-5     REACH=44 NO VS=1
                     L=160t       SLP=.0020    ft/ft
```

```
ROUTE                 ID=3     HYD=218     INFLOW HYD ID=3   DT=.033333
PRINT HYD             ID=5   CODE=2
*S
*S HYD 226 ALL THROUGH SUNRISE, BUT NOT ROUTED IN STUB CHANNEL
*                       NEW      NEW        IN1          IN2
ADD HYD               ID=8   HYD=226    ID I=5      ID II=7
COMPUTE RATING CURVE CID=1  VS NO=45  NO SEGS=1
                      MIN EL=0    FT   MAX EL=5    FT
                      CH SLP= .0316    FP SLP=.0316    FT PER FT
                       N  END FT
                      .015   30
                      DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                      0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME  ID=-5     REACH=45 NO VS=1
                     L=270    ft       SLP=.0316   ft/ft
*S HYD 228 = SUNRISE + OFFSITE CONTRIB @ JUNCT W SNOW VISTA POST ROUTE STUB
*S HYD 228 = AP 8
ROUTE                 ID=5     HYD=228     INFLOW HYD ID=8   DT=.033333
PRINT HYD             ID=5     CODE=2
PLOT HYD              ID=5
*S HYD 230 = TOTAL COMBINED W SNOW VISTA
*S HYD 230 = AP 10: TO BE <= ALLOWED PER SNOW VISTA DESIGN
*                       NEW      NEW        IN1          IN2
ADD HYD               ID=1   HYD=230    ID I=5      ID II=6
PRINT HYD             ID=1   CODE=2
PLOT HYD              ID=1
FINISH
```

```
    AHYMO PROGRAM (AHYM0392) - AMAFCA VERSION OF HYMO - MARCH, 1992
         RUN DATE (MON/DAY/YR) = 06/23/1994
         START TIME (HR:MIN:SEC) = 16:15:02     USER NO.= RYALS_NM.101
         INPUT FILE = RSFOE00

START                TIME=0.0   PUNCH CODE=0   PRINT LINES=58
                     CONTROL CODES AT START = 027 015 0 0 0
                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
                     CONTROL CODES AT END = 0 0 0 0 0
                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
* START               TIME=0.0   PUNCH CODE=0   PRINT LINES=56
*                    CONTROL CODES AT START = 027 042 046
*                    027 091 0 0   0 0 0 0 0   0 0 0 0 0 0 0 0
*                    CONTROL CODES AT END =  027 093 0 0 0
*                    0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
*S FILE RSFOER00 = Revised Sunrise Fully-developed Offsite Existing 100-yr
*S INCLUDES BASIN 314 POSSIBLY TO SNOW VISTA POND, USE PER SNOW VISTA DESIGN
*S NO SEDIMENT BULKING, ALL LAND TREATMENTS B=LANDSCAPE OR D=IMPERVIOUS
*S                          106th, 12 cfs, ✱
*S TOWER RD FLOW DIVIDES AT GONNEHARA: UP TO 23 CFS FALLS BACK INTO SUNRISE @ SNIPER
*S TERRACE & THE REMAINDER FLOWS TO DROP INLETS IN TOWER AT SNOW VISTA CHANNEL
*S
*S BASINS 101-108 PLAN = BASINS 151-158 IN THIS AHYMO FILE
*S REVISED 3-16-94 FOR BASIN 305 BECOMES 351 - 355
*S
*S AP#7 = SUNRISE FLOW EXCEPT BASINS 105, 106, & 108
* TUCKER GREEN  2/94, 3/94, 6/94
*****************************************************************************
* SUNRISE TERRACE RAINFALL PER ALBUQUERQUE NM DPM, MAP L-8
* RAINFALL            TWO YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=0.73
*                     RAIN SIX=0.95      RAIN DAY=1.16     DT=.033333 HR
* RAINFALL            TEN YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.24
*                     RAIN SIX=1.47      RAIN DAY=1.79     DT=.033333 HR
*S RAINFALL           HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
*S                    RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR
RAINFALL            HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
                    RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT =    .033333 HOURS       END TIME =     5.999940 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   .0810   .0865   .0924   .1051
   .1335   .1773   .2400   .3257   .4384   .5820   .7607
   .9789  1.1808  1.2652  1.3365  1.4000  1.4577  1.5108
  1.5602  1.6063  1.6495  1.6902  1.7285  1.7648  1.7991
  1.8316  1.8624  1.8917  1.9194  1.9458  1.9519  1.9576
  1.9631  1.9683  1.9732  1.9780  1.9826  1.9870  1.9912
  1.9953  1.9993  2.0031  2.0068  2.0105  2.0140  2.0174
  2.0207  2.0240  2.0272  2.0303  2.0333  2.0363  2.0392
  2.0420  2.0448  2.0476  2.0502  2.0529  2.0554  2.0580
  2.0605  2.0629  2.0653  2.0677  2.0701  2.0724  2.0746
  2.0769  2.0791  2.0812  2.0834  2.0855  2.0876  2.0896
  2.0916  2.0936  2.0956  2.0976  2.0995  2.1014  2.1033
  2.1052  2.1070  2.1088  2.1106  2.1124  2.1142  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  2.1461  2.1475  2.1489
```

```
2.1504  2.1518  2.1532  2.1546  2.1560  2.1573  2.1587
2.1601  2.1614  2.1627  2.1641  2.1654  2.1667  2.1680
2.1693  2.1705  2.1718  2.1731  2.1743  2.1756  2.1768
2.1780  2.1793  2.1805  2.1817  2.1829  2.1841  2.1852
2.1864  2.1876  2.1887  2.1899  2.1911  2.1922  2.1933
2.1945  2.1956  2.1967  2.1978  2.1989  2.2000

**********************************************************************************
COMPUTE NM HYD       ID=1 HYD NO=308 DA=0.12500 SQ MI
                     PER A=97  B=0    C=3  D=0     TP=-0.13333 HRS  RAIN=-1

   K =   .154720HR    TP =   .133330HR    K/TP RATIO =  1.160429     SHAPE CONSTANT, N =  3.054578
   UNIT PEAK =   268.36    CFS   UNIT VOLUME =    .9997       B =   286.24      P60 = 1.8700
   AREA =      .125000 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1 CODE=1

                                    HYDROGRAPH FROM AREA   308.00

   RUNOFF VOLUME =      .45102 INCHES     =       3.0068 ACRE-FEET
   PEAK DISCHARGE RATE =     110.27 CFS  AT   1.533 HOURS   BASIN AREA =   .1250 SQ. MI.


* CODES: 0=ALL; 1=TOTALS ONLY; 2=EVERY 2ND + TOTALS; SIMILARLY 3, 5, 10, 20
COMPUTE RATING CURVE CID=-1  VS NO=35  NO SEGS=3
                     MIN EL=0    FT   MAX EL=2    FT
                     CH SLP=.0256     FP SLP= .0256
                     MANNING N   END DIST
                       .040          6     .030 26   .040  32
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     2       6     0       26    0       32    2
COMPUTE TRAVEL TIME  ID=-2      REACH=35  NO VS=1
                     L= 2500   ft       SLP=0.02560 ft per ft
ROUTE                ID=2     HYD=100     INFLOW HYD ID=1   DT=.033333 hr
PRINT HYD            ID=2 CODE=1

                                    PARTIAL HYDROGRAPH   100.00

   RUNOFF VOLUME =      .45103 INCHES     =       3.0068 ACRE-FEET
   PEAK DISCHARGE RATE =     82.48 CFS  AT   1.600 HOURS   BASIN AREA =   .1250 SQ. MI.


**********************************************************************************
COMPUTE NM HYD       ID=3   HYD=309 DA=.07575 SQ MI
                     PER A=97   B=0 C=3   D=0 TP=0.13333 HRS    RAIN=-1

   K =   .160445HR    TP =   .133330HR    K/TP RATIO =  1.203371     SHAPE CONSTANT, N =  2.953604
   UNIT PEAK =   157.95    CFS   UNIT VOLUME =    .9997       B =   278.02      P60 = 1.8700
   AREA =      .075750 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=3   CODE=1

                                    HYDROGRAPH FROM AREA   309.00

   RUNOFF VOLUME =      .45102 INCHES     =       1.8221 ACRE-FEET
   PEAK DISCHARGE RATE =     65.15 CFS  AT   1.533 HOURS   BASIN AREA =   .0758 SQ. MI.
```

```
*S HYD 102 = (309+ROUTED 308) CROSSING 106TH BTW EUCARIZ & SUNSET GARDEN
*S HYD 102 = AP 4
*                        NEW      NEW        IN1          IN2
ADD HYD                 ID=1    HYD=102    ID I=2       ID II=3
PRINT HYD               ID=1    CODE=2
```

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	1.400	18.3	2.800	5.1	4.200	.4	5.600	.0
.067	.0	1.467	74.4	2.867	4.5	4.267	.4	5.667	.0
.133	.0	1.533	129.0	2.933	4.1	4.333	.3	5.733	.0
.200	.0	1.600	135.6	3.000	3.7	4.400	.3	5.800	.0
.267	.0	1.667	111.0	3.067	3.3	4.467	.2	5.867	.0
.333	.0	1.733	82.6	3.133	2.9	4.533	.2	5.933	.0
.400	.0	1.800	59.4	3.200	2.6	4.600	.2	6.000	.0
.467	.0	1.867	42.3	3.267	2.3	4.667	.2	6.067	.0
.533	.0	1.933	31.4	3.333	2.1	4.733	.1	6.133	.0
.600	.0	2.000	24.5	3.400	1.8	4.800	.1	6.200	.0
.667	.0	2.067	20.2	3.467	1.6	4.867	.1	6.267	.0
.733	.0	2.133	17.3	3.533	1.4	4.933	.1	6.333	.0
.800	.0	2.200	14.9	3.600	1.3	5.000	.1	6.400	.0
.867	.0	2.267	12.8	3.667	1.1	5.067	.1	6.467	.0
.933	.0	2.333	11.1	3.733	1.0	5.133	.1	6.533	.0
1.000	.0	2.400	9.8	3.800	.9	5.200	.1	6.600	.0
1.067	.0	2.467	8.7	3.867	.8	5.267	.0	6.667	.0
1.133	.0	2.533	7.8	3.933	.7	5.333	.0	6.733	.0
1.200	.0	2.600	7.0	4.000	.6	5.400	.0	6.800	.0
1.267	.0	2.667	6.3	4.067	.5	5.467	.0	6.867	.0
1.333	.0	2.733	5.6	4.133	.5	5.533	.0		

```
RUNOFF VOLUME =      .45102 INCHES     =       4.8289 ACRE-FEET
PEAK DISCHARGE RATE =     138.37 CFS  AT   1.567 HOURS   BASIN AREA =   .2008 SQ. MI.
```

```
 PLOT HYD               ID=1
FLOW RATE (CFS)
138..----------------------+-----------------------------------------------------------------------.
    .                      !                                                                       .
    .                      !                                                                       .
    .                      !                                                                       .
    .                      !                                                                       .
    .                      !                                                                       .
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    .                      !                                                                       .
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    .                      !                                                                       .
    .                      !                                                                       .
111..----------------------+-----------------------------------------------------------------------
    .                      !                                                                       .
    .                      !                                                                       .
    .                      !                                                                       .
    .                      !                                                                       .
    .                      !                                                                       .
    .                      !                                                                       .
    .                      !                                                                       .
    .                      !                                                                       .
    .                      !                                                                       .
    .                      !                                                                       .
 83..----------------------+-----------------------------------------------------------------------
    .                      !                                                                       .
    .                      !                                                                       .
    .                      !                                                                       .
    .                      !                                                                       .
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    .                      !                                                                       .
    .                      !                                                                       .
```
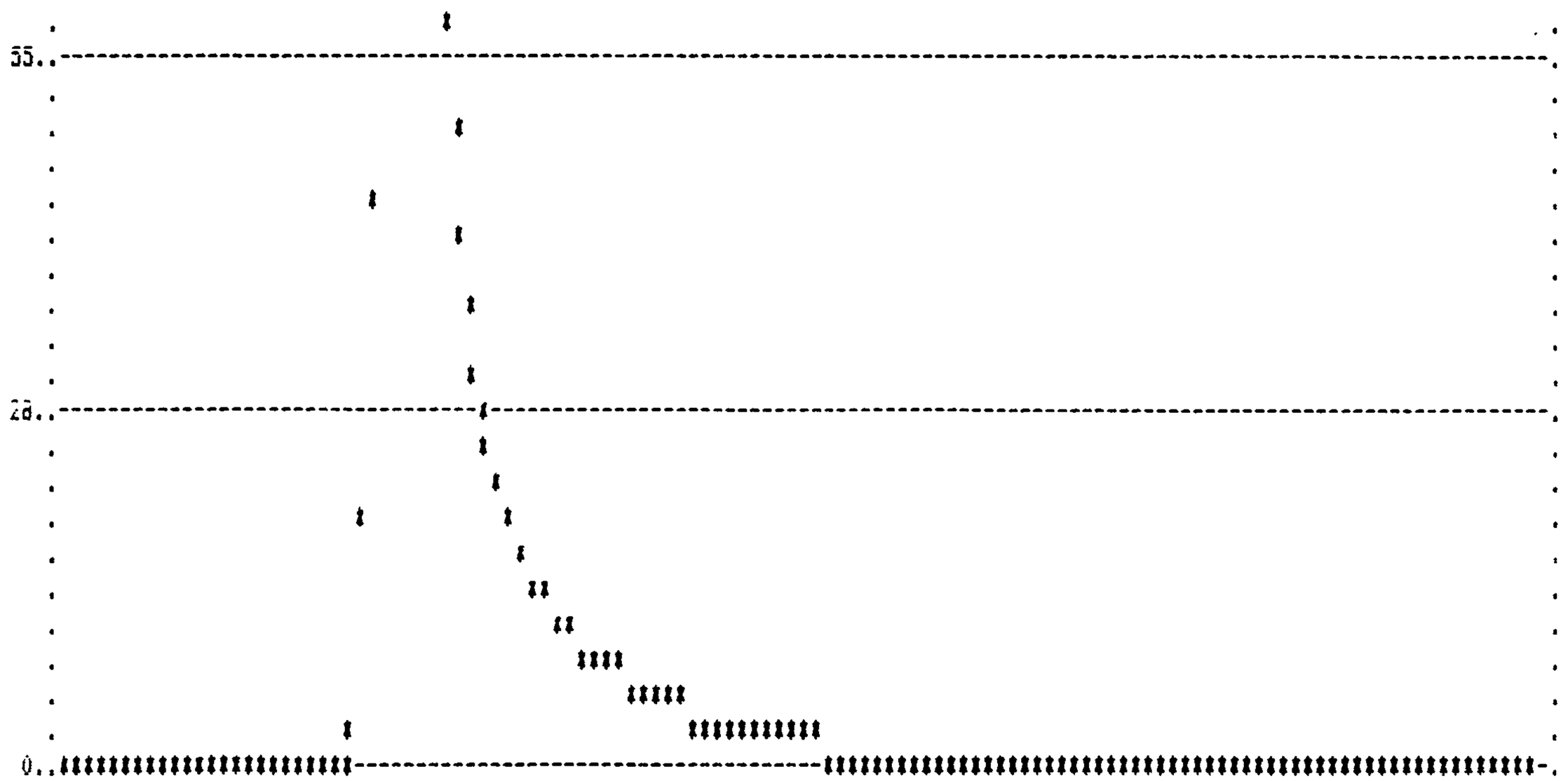




```
COMPUTE RATING CURVE CID=-1  VS NO=36  NO SEGS=1
                     MIN EL=0    FT   MAX EL=1    FT
                     CH SLP= .02558   FP SLP=.02558  FT PER FT
                       N   END X
                     .035   122
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     1       1     0       121   0       122   1
COMPUTE TRAVEL TIME  ID=-4     REACH=36 NO VS=1
                     L=860    ft       SLP=.02558  ft/ft
ROUTE                ID=4     HYD=104     INFLOW HYD ID=1   DT=.03333
COMPUTE RATING CURVE CID=-1  VS NO=37  NO SEGS=3
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP=.02432    FP SLP=.02432   FT PER FT
                       N   END X
                     .040    15     .025  20    .040  50
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       15    0       30    0       50    5
COMPUTE TRAVEL TIME  ID=-2     REACH=1  NO VS=1
                     L=740    ft       SLP=.02432  ft/ft
ROUTE                ID=2     HYD=106     INFLOW HYD ID=4   DT=.033333
********************************************************************************
COMPUTE NM HYD       ID=4   HYD=314   DA=0.05469  SQ MI
                     PER A=97   B=0 C=3   D=0 TP=0.1333 HRS   RAIN=-1

    K =   .161949HR    TP =   .133300HR    K/TP RATIO =  1.214924     SHAPE CONSTANT, N =  2.927948
    UNIT PEAK =   113.19    CFS   UNIT VOLUME =    .9996       B =   275.89      P60 = 1.8700
    AREA =      .054690 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=4   CODE=1

                                   HYDROGRAPH FROM AREA   314.00


    RUNOFF VOLUME =      .45102 INCHES     =       1.3155 ACRE-FEET
    PEAK DISCHARGE RATE =      46.74 CFS  AT   1.533 HOURS   BASIN AREA =   .0547 SQ. MI.
```

```
**********************************************************************************
COMPUTE NM HYD       ID=3   HYD=310   DA=0.02922  SQ MI
                     PER A=97   B=0 C=3   D=0 TP=0.1333 HRS   RAIN=-1

    k =   .161949HR    TP =   .133300HR    K/TP RATIO =  1.214924     SHAPE CONSTANT, N =  2.927948
    UNIT PEAK =   60.477    CFS   UNIT VOLUME =    .9995      B =   275.89      P60 = 1.8700
    AREA =      .029220 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=3   CODE=1

                                        HYDROGRAPH FROM AREA   310.00


    RUNOFF VOLUME =      .45102 INCHES     =        .7029 ACRE-FEET
    PEAK DISCHARGE RATE =      24.97 CFS  AT   1.533 HOURS   BASIN AREA =   .0292 SQ. MI.
```

```
*S HYD 117 = 310+314 (THE "EXTRA" 35 AC), BOTH EAST OF 106TH, TO DESILT BASIN
*                     NEW    NEW        IN1          IN2
ADD HYD              ID=1   HYD=117    ID I=3       ID II=4
*S HYD 119 = COMBINED FLOW INTO SNOW VISTA DESILT BASIN
*S HYD 119 = AP 5 IN
ADD HYD              ID=5   HYD=119    ID I=1       ID II=2
*                     NEW     NEW        IN1          IN2
ADD HYD              ID=5   HYD=119    ID I=1       ID II=3
PRINT HYD            ID=5   CODE=2
```

PARTIAL HYDROGRAPH 119.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.133	.0	2.267	5.2	3.400	.5	4.533	.0
.067	.0	1.200	.0	2.333	4.5	3.467	.4	4.600	.0
.133	.0	1.267	.0	2.400	3.9	3.533	.4	4.667	.0
.200	.0	1.333	.0	2.467	3.4	3.600	.3	4.733	.0
.267	.0	1.400	24.6	2.533	3.0	3.667	.3	4.800	.0
.333	.0	1.467	80.8	2.600	2.6	3.733	.3	4.867	.0
.400	.0	1.533	96.7	2.667	2.3	3.800	.2	4.933	.0
.467	.0	1.600	79.0	2.733	2.0	3.867	.2	5.000	.0
.533	.0	1.667	54.8	2.800	1.7	3.933	.2	5.067	.0
.600	.0	1.733	36.6	2.867	1.5	4.000	.1	5.133	.0
.667	.0	1.800	24.3	2.933	1.3	4.067	.1	5.200	.0
.733	.0	1.867	16.1	3.000	1.1	4.133	.1	5.267	.0
.800	.0	1.933	11.1	3.067	1.0	4.200	.1	5.333	.0
.867	.0	2.000	9.0	3.133	.9	4.267	.1		
.933	.0	2.067	7.8	3.200	.8	4.333	.1		
1.000	.0	2.133	6.8	3.267	.7	4.400	.1		
1.067	.0	2.200	5.9	3.333	.6	4.467	.1		

```
    RUNOFF VOLUME =      .45102 INCHES     =       2.7212 ACRE-FEET
    PEAK DISCHARGE RATE =      96.68 CFS  AT   1.533 HOURS   BASIN AREA =   .1131 SQ. MI.
```

```
**********************************************************************************
*S HYD 501 = ROUTED OUFLOW FROM SNOW VISTA DESILTING BASIN
*S HYD 501 = AP 5 OUT
ROUTE RESERVOIR      ID=3   HYD=501   INFLOW ID=5   CODE=2
                     CFS OUT    VOL AC-FT   ELEV FT
                     0.          0.         11.05
                     14.35       0.6598     11.55
```

		41.48	1.3243	12.03
		122.4	2.6904	13.05
		234.7	4.1343	14.05
		365.8	5.6928	15.05
		527.6	7.4074	16.05
		715.0	9.3198	17.05

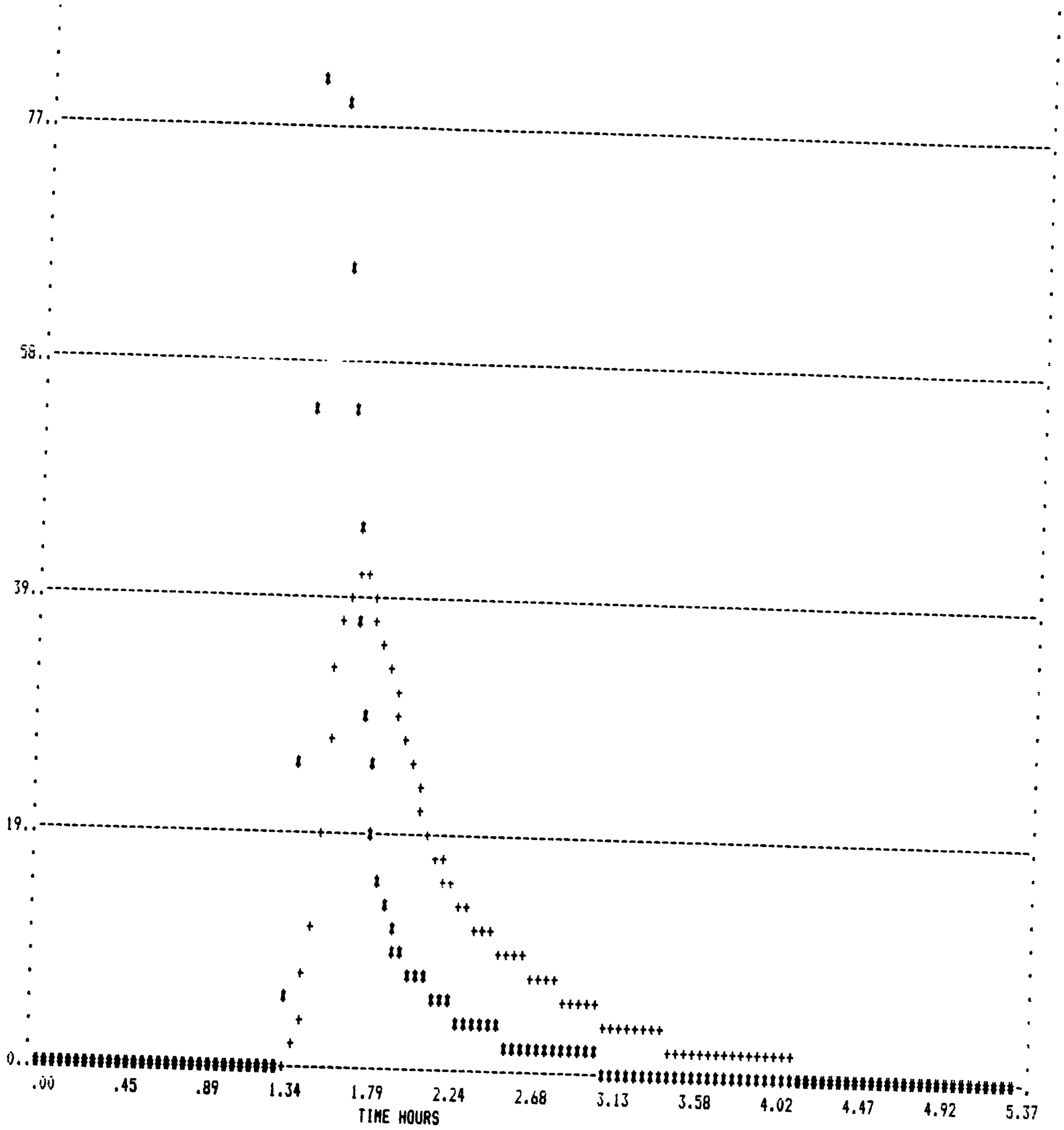
TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	11.05	.000	.00
.07	.00	11.05	.000	.00
.13	.00	11.05	.000	.00
.20	.00	11.05	.000	.00
.27	.00	11.05	.000	.00
.33	.00	11.05	.000	.00
.40	.00	11.05	.000	.00
.47	.00	11.05	.000	.00
.53	.00	11.05	.000	.00
.60	.00	11.05	.000	.00
.67	.00	11.05	.000	.00
.73	.00	11.05	.000	.00
.80	.00	11.05	.000	.00
.87	.00	11.05	.000	.00
.93	.00	11.05	.000	.00
1.00	.00	11.05	.000	.00
1.07	.00	11.05	.000	.00
1.13	.00	11.05	.000	.00
1.20	.00	11.05	.000	.00
1.27	.00	11.05	.000	.00
1.33	.00	11.05	.000	.00
1.40	24.62	11.09	.048	1.04
1.47	80.81	11.29	.323	7.03
1.53	96.68	11.63	.761	18.48
1.60	78.95	11.89	1.108	32.63
1.67	54.85	12.01	1.274	39.42
1.73	36.63	12.03	1.302	40.56
1.80	24.28	11.99	1.250	38.42
1.87	16.08	11.93	1.158	34.68
1.93	11.15	11.85	1.053	30.38
2.00	9.05	11.77	.952	26.27
2.07	7.79	11.70	.864	22.66
2.13	6.79	11.65	.788	19.56
2.20	5.92	11.60	.722	16.90
2.27	5.16	11.55	.666	14.61
2.33	4.50	11.52	.616	13.39
2.40	3.92	11.48	.568	12.35
2.47	3.42	11.45	.523	11.37
2.53	2.98	11.41	.480	10.45
2.60	2.60	11.38	.441	9.58
2.67	2.26	11.36	.403	8.77
2.73	1.97	11.33	.369	8.02
2.80	1.72	11.31	.337	7.32
2.87	1.50	11.28	.307	6.68
2.93	1.31	11.26	.280	6.08
3.00	1.14	11.24	.254	5.53
3.07	.99	11.23	.231	5.03
3.13	.87	11.21	.210	4.56
3.20	.76	11.19	.190	4.14
3.27	.66	11.18	.173	3.75
3.33	.57	11.17	.156	3.40
3.40	.50	11.16	.141	3.07
3.47	.44	11.15	.128	2.78
3.53	.38	11.14	.116	2.51

3.60	.33	11.13	.109	2.27
3.67	.29	11.12	.094	2.05
3.73	.25	11.11	.085	1.85
3.80	.22	11.11	.077	1.66
3.87	.19	11.10	.069	1.50
3.93	.17	11.10	.062	1.35
4.00	.15	11.09	.056	1.22
4.07	.13	11.09	.050	1.09
4.13	.11	11.08	.045	.98
4.20	.10	11.08	.041	.88
4.27	.08	11.08	.037	.79
4.33	.07	11.07	.033	.71
4.40	.06	11.07	.029	.64
4.47	.06	11.07	.026	.58
4.53	.05	11.07	.024	.52
4.60	.04	11.07	.021	.46
4.67	.04	11.06	.019	.41
4.73	.03	11.06	.017	.37
4.80	.03	11.06	.015	.33
4.87	.02	11.06	.014	.30
4.93	.02	11.06	.012	.27
5.00	.02	11.06	.011	.24
5.07	.01	11.06	.010	.21
5.13	.01	11.06	.009	.19
5.20	.01	11.06	.008	.17
5.27	.01	11.06	.007	.15
5.33	.00	11.05	.006	.13
5.40	.00	11.05	.006	.12
5.47	.00	11.05	.005	.11
5.53	.00	11.05	.004	.09
5.60	.00	11.05	.004	.08
5.67	.00	11.05	.003	.07
5.73	.00	11.05	.003	.07
5.80	.00	11.05	.003	.06
5.87	.00	11.05	.002	.05
5.93	.00	11.05	.002	.05
6.00	.00	11.05	.002	.04
6.07	.00	11.05	.002	.04
6.13	.00	11.05	.001	.03
6.20	.00	11.05	.001	.03
6.27	.00	11.05	.001	.03
6.33	.00	11.05	.001	.02
6.40	.00	11.05	.001	.02
6.47	.00	11.05	.001	.02
6.53	.00	11.05	.001	.02
6.60	.00	11.05	.001	.01
6.67	.00	11.05	.001	.01
6.73	.00	11.05	.001	.01
6.80	.00	11.05	.000	.01
6.87	.00	11.05	.000	.01
6.93	.00	11.05	.000	.01
7.00	.00	11.05	.000	.01
7.07	.00	11.05	.000	.01
7.13	.00	11.05	.000	.01
7.20	.00	11.05	.000	.00

PEAK DISCHARGE = 40.558 CFS - PEAK OCCURS AT HOUR 1.73
MAXIMUM WATER SURFACE ELEVATION = 12.033
MAXIMUM STORAGE = 1.3024 AC-FT INCREMENTAL TIME= .033333HRS

* PLOT HYD AP 5 IN & OUT
PLOT HYD ID=5 ID=3
FLOW RATE (CFS) PLOT SYMBOLS: ID 5= --*-- ID 3= --+-- BOTH= --#--

97..----------*----------




```
*S START SNOW VISTA CHANNEL
*************************************************************************************
COMPUTE NM HYD       ID=1   HYD=315   DA=0.01234  SQ MI
                     PER A=97   B=0 C=3   D=0 TP=0.1333 HRS   RAIN=-1

   K =   .161949HR    TP =   .133300HR    K/TP RATIO =  1.214924     SHAPE CONSTANT, N =  2.927948
   UNIT PEAK =   25.540    CFS   UNIT VOLUME =    .9991       B =   275.89      P60 = 1.8700
   AREA =      .012340 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1   CODE=1

                                   HYDROGRAPH FROM AREA   315.00
```

```
    RUNOFF VOLUME =      .45102 INCHES     =        .2968 ACRE-FEET
    PEAK DISCHARGE RATE =     10.55 CFS  AT   1.533 HOURS   BASIN AREA =   .0123 SQ. MI.



ADD HYD             ID=4   HYD=120    ID I=1      ID II=3
COMPUTE RATING CURVE CID=-1  VS NO=1   NO SEGS=1
                    MIN EL=0    FT   MAX EL=5    FT
                    CH SLP= .0109    FP SLP=.0109    FT PER FT
                      N   END X
                    .015   30
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME ID=-4     REACH=1  NO VS=1
                    L=1200   ft       SLP=.0109   ft/ft
ROUTE               ID=4     HYD=121     INFLOW HYD ID=3   DT=.033333
*********************************************************************************
COMPUTE NM HYD      ID=3   HYD=311   DA=0.03813  SQ MI
                    PER A=97   B=0 C=3   D=0 TP=0.1333 HRS   RAIN=-1

    k =   .161949HR    TP =   .133300HR    K/TP RATIO =  1.214924     SHAPE CONSTANT, N =  2.927948
    UNIT PEAK =   78.918    CFS   UNIT VOLUME =    .9995       B =   275.89      P60 = 1.8700
    AREA =      .038130 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID=3   CODE=1

                                  HYDROGRAPH FROM AREA   311.00

    RUNOFF VOLUME =      .45102 INCHES     =        .9172 ACRE-FEET
    PEAK DISCHARGE RATE =     32.59 CFS  AT   1.533 HOURS   BASIN AREA =   .0381 SQ. MI.



ADD HYD             ID=6   HYD=122    ID I=2      ID II=3
*S START NEW BRANCH: BASINS 306&307, 353&354
*********************************************************************************
COMPUTE NM HYD      ID=2   HYD=306   DA=0.03969  SQ MI
                    PER A=97   B=0 C=3   D=0 TP=0.1333 HRS   RAIN=-1

    k =   .161949HR    TP =   .133300HR    K/TP RATIO =  1.214924     SHAPE CONSTANT, N =  2.927948
    UNIT PEAK =   82.147    CFS   UNIT VOLUME =    .9995       B =   275.89      P60 = 1.8700
    AREA =      .039690 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

FRINT HYD           ID=2   CODE=1

                                  HYDROGRAPH FROM AREA   306.00

    RUNOFF VOLUME =      .45102 INCHES     =        .9547 ACRE-FEET
    PEAK DISCHARGE RATE =     33.92 CFS  AT   1.533 HOURS   BASIN AREA =   .0397 SQ. MI.



COMPUTE RATING CURVE CID=-1  VS NO=34  NO SEGS=3
                    MIN EL=0    FT   MAX EL=6    FT
                    CH SLP=.0310     FP SLP=.0310    FT PER FT
                      N   END X
                    .04     18    .03   32      .04   50
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     6       18    0       32    0       50    6
COMPUTE TRAVEL TIME ID=-3     REACH=1  NO VS= 1
                    L= 2320  ft       SLP=.0310   ft/ft
ROUTE               ID=3     HYD=341     INFLOW HYD ID=4   DT=.033333
```

```
COMPUTE NM HYD       ID=4   HYD=307   DA=0.04547  SQ MI
                     PER A=97   B=0 C=3   D=0 TP=0.1333 HRS   RAIN=-1

   K =   .161949HR    TP =   .133300HR    K/TP RATIO =  1.214924     SHAPE CONSTANT, N =  2.927948
   UNIT PEAK =   94.110    CFS   UNIT VOLUME =    .9996       B =   275.89      P60 = 1.8700
   AREA =      .045470 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=4   CODE=1
```

HYDROGRAPH FROM AREA 307.00

RUNOFF VOLUME = .45102 INCHES = 1.0937 ACRE-FEET
PEAK DISCHARGE RATE = 38.86 CFS AT 1.533 HOURS BASIN AREA = .0455 SQ. MI.

```
*S HYD 112 = AP 3 AT 106th ST
ADD HYD              ID=2   HYD=112    ID I=3      ID II=4
* EST EFFECT NAT CHAN IN 311 AS 1 SECTION; ACTUAL NARROW/DEEP UPPER, OPP LOWER
COMPUTE RATING CURVE CID=-1  VS NO=50   NO SEGS=1
                     MIN EL=0    FT   MAX EL=4    FT
                     CH SLP=.0250     FP SLP=.0250   FT PER FT
                       N   END X
                     .035    60
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     4       20    0       40    0       60    4
COMPUTE TRAVEL TIME  ID=-4     REACH=1  NO VS=1
                     L=1600   ft       SLP=.0250   ft/ft
ROUTE                ID=4     HYD=113     INFLOW HYD ID=2  DT=.033333
PRINT HYD            ID=4  CODE=2
```

PARTIAL HYDROGRAPH 113.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.267	.0	2.533	5.2	3.800	.3	5.067	.0
.067	.0	1.333	.0	2.600	4.4	3.867	.3	5.133	.0
.133	.0	1.400	1.2	2.667	3.8	3.933	.3	5.200	.0
.200	.0	1.467	9.9	2.733	3.3	4.000	.2	5.267	.0
.267	.0	1.533	27.5	2.800	2.8	4.067	.2	5.333	.0
.333	.0	1.600	43.1	2.867	2.5	4.133	.2	5.400	.0
.400	.0	1.667	44.8	2.933	2.1	4.200	.1	5.467	.0
.467	.0	1.733	40.4	3.000	1.8	4.267	.1	5.533	.0
.533	.0	1.800	33.3	3.067	1.6	4.333	.1	5.600	.0
.600	.0	1.867	26.1	3.133	1.4	4.400	.1	5.667	.0
.667	.0	1.933	21.0	3.200	1.2	4.467	.1	5.733	.0
.733	.0	2.000	17.5	3.267	1.0	4.533	.1	5.800	.0
.800	.0	2.067	14.8	3.333	.9	4.600	.1	5.867	.0
.867	.0	2.133	12.7	3.400	.8	4.667	.1	5.933	.0
.933	.0	2.200	10.9	3.467	.7	4.733	.0	6.000	.0
1.000	.0	2.267	9.4	3.533	.6	4.800	.0		
1.067	.0	2.333	8.1	3.600	.5	4.867	.0		
1.133	.0	2.400	7.0	3.667	.5	4.933	.0		
1.200	.0	2.467	6.0	3.733	.4	5.000	.0		

RUNOFF VOLUME = .45103 INCHES = 2.0485 ACRE-FEET
PEAK DISCHARGE RATE = 45.13 CFS AT 1.633 HOURS BASIN AREA = .0852 SQ. MI.

****

COMPUTE NM HYD ID=1 HYD=757 DA=0.00173 SQ MI

```
PER A=97   B=0 C=3   D=0 TP=0.1333 HRS   RAIN=-1

K =   .161949HR    TP =   .133300HR    K/TP RATIO =  1.214924     SHAPE CONSTANT, N =  2.927948
UNIT PEAK =   3.5599    CFS   UNIT VOLUME =    .9957       B =   275.89      P60 = 1.8700
AREA =      .001720 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD          ID=1   CODE=1

                                HYDROGRAPH FROM AREA   353.00

   RUNOFF VOLUME =      .45102 INCHES     =        .0414 ACRE-FEET
   PEAK DISCHARGE RATE =       1.48 CFS  AT   1.533 HOURS   BASIN AREA =   .0017 SQ. MI.

**********************************************************************************
COMPUTE NM HYD      ID=2   HYD=354   DA=0.00531  SQ MI
                    PER A=97  B=0.0  C=3   D=0.0  TP=0.1333 HRS   RAIN=-1

   K =   .161949HR    TP =   .133300HR    K/TP RATIO =  1.214924     SHAPE CONSTANT, N =  2.927948
   UNIT PEAK =   10.990    CFS   UNIT VOLUME =    .9984       B =   275.89      P60 = 1.8700
   AREA =      .005310 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

FRINT HYD          ID=1   CODE=1

                                HYDROGRAPH FROM AREA   353.00

   RUNOFF VOLUME =      .45102 INCHES     =        .0414 ACRE-FEET
   PEAk DISCHARGE RATE =       1.48 CFS  AT   1.533 HOURS   BASIN AREA =   .0017 SQ. MI.

ADD HYD             ID=3   HYD=111    ID I=1      ID II=2
COMPUTE RATING CURVE CID=-1  VS NO=99   NO SEGS=1
                    MIN EL=0    FT   MAX EL=1    FT
                    CH SLP= .03      FP SLP=.03     FT PER FT
                      N   END X
                    .035   122
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     1       1     0       121   0       121   4
COMPUTE TRAVEL TIME ID=-1     REACH=99 NO VS=1
                    L=900    ft       SLP=.03     ft/ft
ROUTE               ID=1     HYD=114     INFLOW HYD ID=3   DT=.033333
*                     NEW      NEW         IN1          IN2
ADD HYD             ID=5   HYD=115      ID I=1      ID II=4
PRINT HYD           ID=5   CODE=1

                              PARTIAL HYDROGRAPH   115.00

   RUNOFF VOLUME =      .45103 INCHES     =       2.2176 ACRE-FEET
   PEAK DISCHARGE RATE =      48.22 CFS  AT   1.633 HOURS   BASIN AREA =   .0922 SQ. MI.

ADD HYD             ID=7   HYD=123    ID I=5      ID II=6
*S
*S START NEW BRANCH (355+403&401 EXIST SUNRISE) W 2 DIVIDE HYD'S IN TOWER RD
**********************************************************************************
COMPUTE NM HYD      ID=2   HYD=355   DA=0.00266  SQ MI
                    PER A=97   B=0 C=3    D=0  TP=0.1333 HRS RAIN=-1
```

```
K =   .101949HR    TP =   .133300HR    K/TP RATIO =  1.214924     SHAPE CONSTANT, N =  2.927948
UNIT PEAK =   5.5055    CFS   UNIT VOLUME =    .9971       B =   275.89      P60 = 1.8700
AREA =      .002660 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID=2  CODE=1

                                HYDROGRAPH FROM AREA   355.00


   RUNOFF VOLUME =      .45102 INCHES     =        .0640 ACRE-FEET
   PEAK DISCHARGE RATE =      2.28 CFS  AT   1.533 HOURS   BASIN AREA =   .0027 SQ. MI.



**************************************************************************
COMPUTE NM HYD      ID=1   HYD=403   DA=0.00688  SQ MI
                    PER A=0  B=50   C=0    D=50    TP=0.1333 HRS RAIN=-1

   K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   13.581    CFS   UNIT VOLUME =    .9985       B =   526.28      P60 = 1.8700
   AREA =      .003440 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

   K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
   UNIT PEAK =   8.4410    CFS   UNIT VOLUME =    .9986       B =   327.09      P60 = 1.8700
   AREA =      .003440 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID=1  CODE=1

                               HYDROGRAPH FROM AREA   403.00


   RUNOFF VOLUME =     1.31642 INCHES     =        .4830 ACRE-FEET
   PEAK DISCHARGE RATE =     14.08 CFS  AT   1.500 HOURS   BASIN AREA =   .0069 SQ. MI.



*S HYD 105 = COMBINED FLOW AT TOWER-TANAGER-106th INTERSECTION
ADD HYD             ID=4   HYD=105    ID I=1      ID II=2
PRINT HYD           ID=4  CODE=2
```

PARTIAL HYDROGRAPH 105.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.400	7.6	2.800	.2	4.200	.1	5.600	.1
.067	.0	1.467	14.6	2.867	.2	4.267	.1	5.667	.1
.133	.0	1.533	15.9	2.933	.2	4.333	.1	5.733	.1
.200	.0	1.600	12.0	3.000	.2	4.400	.1	5.800	.1
.267	.0	1.667	8.6	3.067	.1	4.467	.1	5.867	.1
.333	.0	1.733	6.5	3.133	.1	4.533	.1	5.933	.1
.400	.0	1.800	5.1	3.200	.1	4.600	.1	6.000	.1
.467	.0	1.867	4.1	3.267	.1	4.667	.1	6.067	.1
.533	.0	1.933	3.5	3.333	.1	4.733	.1	6.133	.0
.600	.0	2.000	3.0	3.400	.1	4.800	.1	6.200	.0
.667	.0	2.067	2.6	3.467	.1	4.867	.1	6.267	.0
.733	.0	2.133	1.8	3.533	.1	4.933	.1	6.333	.0
.800	.0	2.200	1.2	3.600	.1	5.000	.1	6.400	.0
.867	.0	2.267	.9	3.667	.1	5.067	.1	6.467	.0
.933	.0	2.333	.8	3.733	.1	5.133	.1	6.533	.0
1.000	.0	2.400	.6	3.800	.1	5.200	.1	6.600	.0
1.067	.0	2.467	.5	3.867	.1	5.267	.1	6.667	.0

1.200	.2	2.600	.4	4.000	.1	5.400	.1
1.267	1.2	2.667	.3	4.067	.1	5.467	.1
1.333	3.1	2.733	.3	4.133	.1	5.533	.1

RUNOFF VOLUME = 1.07509 INCHES = .5470 ACRE-FEET
PEAK DISCHARGE RATE = 16.31 CFS AT 1.500 HOURS BASIN AREA = .0095 SQ. MI.

#S AT TOWER/TANAGER/106TH, SPLIT EXCESS OVER 12 CFS (CL CAPACITY) TO 312
DIVIDE HYD ID=4 Q=12.0 ID=2 HYD=106 ID=5 HYD=105.1
PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 105.10

RUNOFF VOLUME = 1.07509 INCHES = .0356 ACRE-FEET
PEAK DISCHARGE RATE = 4.31 CFS AT 1.500 HOURS BASIN AREA = .0006 SQ. MI.

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 106.00

RUNOFF VOLUME = 1.07509 INCHES = .5114 ACRE-FEET
PEAK DISCHARGE RATE = 12.00 CFS AT 1.467 HOURS BASIN AREA = .0089 SQ. MI.

****
COMPUTE NM HYD ID=1 HYD=401 DA=0.01016 SQ MI
PER A=0 B=50 C=0 D=50 TP=0.1333 HRS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 20.056 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 1.8700
AREA = .005080 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 12.465 CFS UNIT VOLUME = .9992 B = 327.09 P60 = 1.8700
AREA = .005080 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

HYDROGRAPH FROM AREA 401.00

RUNOFF VOLUME = 1.31642 INCHES = .7133 ACRE-FEET
PEAK DISCHARGE RATE = 20.78 CFS AT 1.500 HOURS BASIN AREA = .0102 SQ. MI.

ADD HYD ID=3 HYD=107 ID I=1 ID II=2
#S SAY <= 23 FROM TOWER TO CONNEMARA; EXCESS IN STREET TO SNOW VISTA
#S HOLD 401.2 (UNDERFLOW, ID=8) TO ADD TO 402 LATER
DIVIDE HYD ID=3 Q=23.0 ID=8 HYD=401.2 ID=2 HYD=401.1
PRINT HYD ID=8 CODE=1

HYDROGRAPH FROM AREA 401.20

RUNOFF VOLUME = 1.20760 INCHES = 1.1140 ACRE-FEET

PEAK DISCHARGE RATE = 23.00 CFS AT 1.433 HOURS BASIN AREA = .0174 SQ. MI.

```
PRINT HYD              ID=2   CODE=1
```

HYDROGRAPH FROM AREA 401.10

RUNOFF VOLUME = 1.20359 INCHES = .1107 ACRE-FEET
PEAK DISCHARGE RATE = 9.78 CFS AT 1.500 HOURS BASIN AREA = .0017 SQ. MI.

```
ADD HYD                ID=4   HYD=137    ID I=2    ID II=5
COMPUTE RATING CURVE   CID=-1  VS NO=99   NO SEGS=1
                       MIN EL=0    FT   MAX EL=1    FT
                       CH SLP= .03     FP SLP=.03     FT PER FT
                         N   END X
                       .035   122
                       DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                       0     1       1     0       121   0       121   4
COMPUTE TRAVEL TIME    ID=-3    REACH=99 NO VS=1
                       L=900    ft       SLP=.03     ft/ft
ROUTE                  ID=3     HYD=138     INFLOW HYD ID=4   DT=.033333
*************************************************************************
COMPUTE NM HYD         ID=1   HYD=312   DA=0.01188  SQ MI
                       PER A=97   B=0 C=3   D=0 TP=0.1333 HRS   RAIN=-1
```

K = .161949HR TP = .133300HR K/TP RATIO = 1.214924 SHAPE CONSTANT, N = 2.927948
UNIT PEAK = 24.588 CFS UNIT VOLUME = .9991 B = 275.89 P60 = 1.8700
AREA = .011880 SQ MI IA = .64100 INCHES INF = 1.64480 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

```
PRINT HYD              ID=1  CODE=1
```

HYDROGRAPH FROM AREA 312.00

RUNOFF VOLUME = .45102 INCHES = .2858 ACRE-FEET
PEAK DISCHARGE RATE = 10.16 CFS AT 1.533 HOURS BASIN AREA = .0119 SQ. MI.

```
*                        NEW      NEW        IN1          IN2
ADD HYD                ID=4   HYD=139    ID I=1      ID II=3
*S HYD 124 = SNOW VISTA JUST DOWNSTREAM FROM TOWER
*S HYD 124 = AP 6
ADD HYD                ID=3   HYD=124    ID I=4    ID II=7
PRINT HYD              ID=3   CODE=2
```

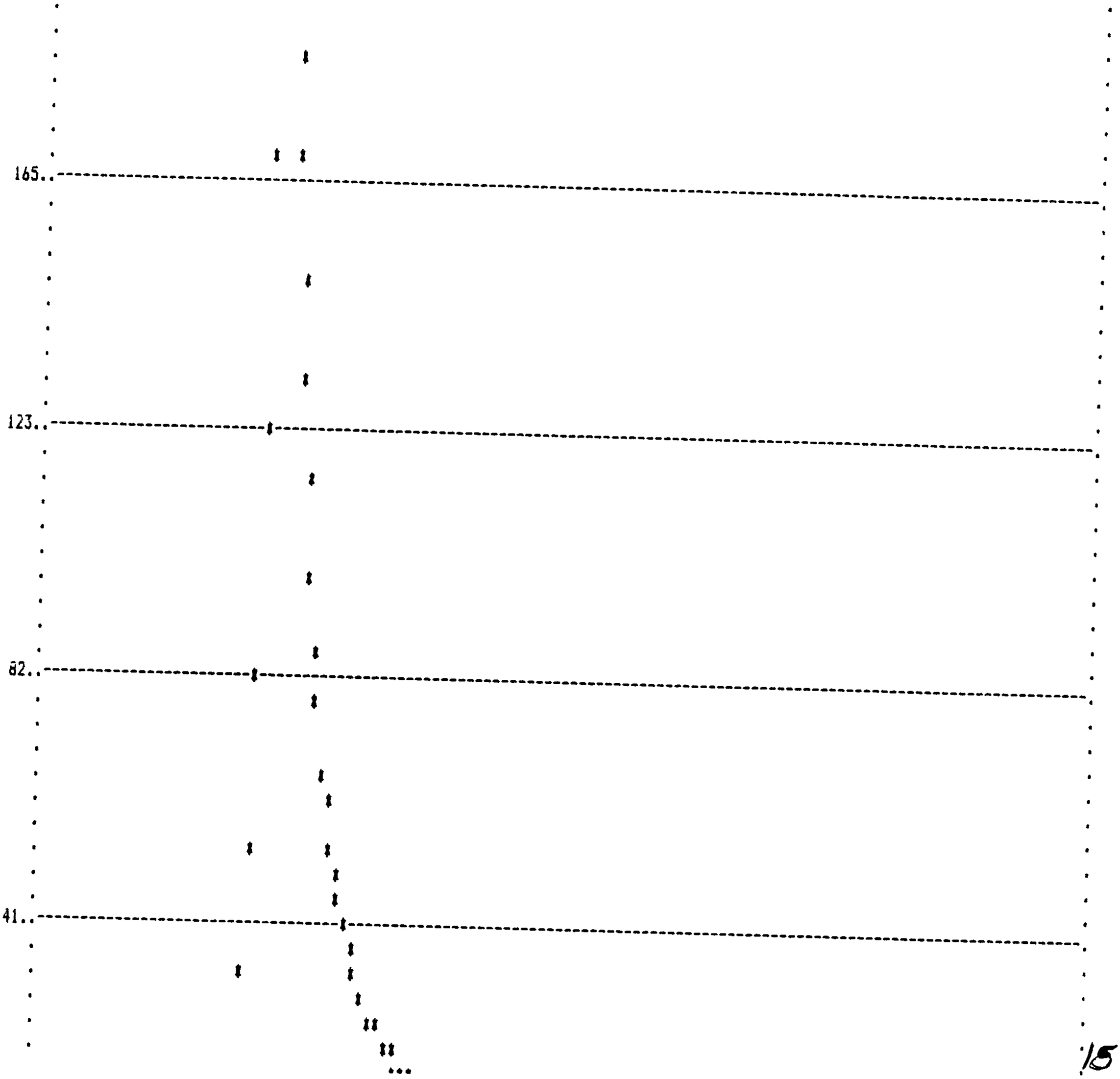
PARTIAL HYDROGRAPH 124.00

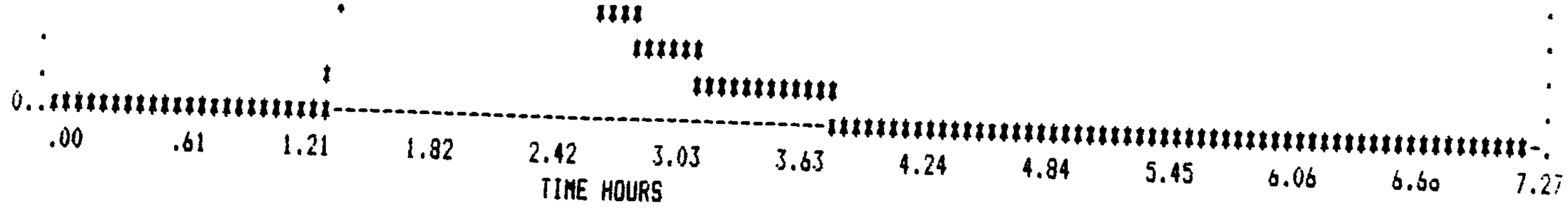
TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.467	54.6	2.933	9.3	4.400	.7	5.867	.0
.067	.0	1.533	121.8	3.000	8.4	4.467	.6	5.933	.0
.133	.0	1.600	197.4	3.067	7.6	4.533	.6	6.000	.0
.200	.0	1.667	199.6	3.133	6.8	4.600	.5	6.067	.0
.267	.0	1.733	168.8	3.200	6.1	4.667	.4	6.133	.0
.333	.0	1.800	131.3	3.267	5.5	4.733	.4	6.200	.0
.400	.0	1.867	100.5	3.333	4.9	4.800	.3	6.267	.0
.467	.0	1.933	76.9	3.400	4.4	4.867	.3	6.333	.0
.533	.0	2.000	60.1	3.467	3.9	4.933	.3	6.400	.0
.600	.0	2.067	49.9	3.533	3.5	5.000	.2	6.467	.0

.800	.0	2.267	30.8	3.733	2.5	5.200	.1	6.667	.0
.867	.0	2.333	26.6	3.800	2.2	5.267	.1	6.733	.0
.933	.0	2.400	23.2	3.867	1.9	5.333	.1	6.800	.0
1.000	.0	2.467	20.4	3.933	1.7	5.400	.1	6.867	.0
1.067	.0	2.533	18.1	4.000	1.5	5.467	.1	6.933	.0
1.133	.0	2.600	16.1	4.067	1.3	5.533	.1	7.000	.0
1.200	.0	2.667	14.3	4.133	1.2	5.600	.1	7.067	.0
1.267	.0	2.733	12.8	4.200	1.1	5.667	.1	7.133	.0
1.333	.0	2.800	11.5	4.267	.9	5.733	.0	7.200	.0
1.400	12.8	2.867	10.3	4.333	.8	5.800	.0	7.267	.0

RUNOFF VOLUME = .45592 INCHES = 8.3960 ACRE-FEET
PEAK DISCHARGE RATE = 205.70 CFS AT 1.633 HOURS BASIN AREA = .3453 SQ. MI.

PLOT HYD ID=3






```
* FOR ROUTING EST AVG SLOPE=.01+-: 450'@.014, 500'@.004, 400 @.0126
COMPUTE RATING CURVE CID=-1  VS NO=2   NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP= .010     FP SLP=.010     FT PER FT
                       N   END X
                     .015   30
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME  ID=-4     REACH=2  NO VS=1
                     L=1350    ft       SLP=.010    ft/ft
ROUTE                ID=4     HYD=128     INFLOW HYD ID=3   DT=.033333
PRINT HYD            ID=4  CODE=1
```

PARTIAL HYDROGRAPH 128.00

RUNOFF VOLUME = .45592 INCHES = 8.3960 ACRE-FEET
PEAK DISCHARGE RATE = 201.81 CFS AT 1.667 HOURS BASIN AREA = .3453 SQ. MI.

```
**********************************************************************************
COMPUTE NM HYD       ID=2   HYD=313   DA=0.01016  SQ MI
                     PER A=97   B=0 C=3    D=0 T=0.1333 HRS   RAIN=-1
```

K = .161949HR TP = .133300HR K/TP RATIO = 1.214924 SHAPE CONSTANT, N = 2.927948
UNIT PEAK = 21.028 CFS UNIT VOLUME = .9990 B = 275.89 P60 = 1.8700
AREA = .010160 SQ MI IA = .64100 INCHES INF = 1.64480 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

```
PRINT HYD            ID=2  CODE=1
```

HYDROGRAPH FROM AREA 313.00

RUNOFF VOLUME = .45102 INCHES = .2444 ACRE-FEET
PEAK DISCHARGE RATE = 8.69 CFS AT 1.533 HOURS BASIN AREA = .0102 SQ. MI.

```
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=3   HYD=130    ID I=2      ID II=4
PRINT HYD            ID=3  CODE=1
```

PARTIAL HYDROGRAPH 130.00

RUNOFF VOLUME = .45578 INCHES = 8.6404 ACRE-FEET
PEAK DISCHARGE RATE = 206.74 CFS AT 1.667 HOURS BASIN AREA = .3555 SQ. MI.

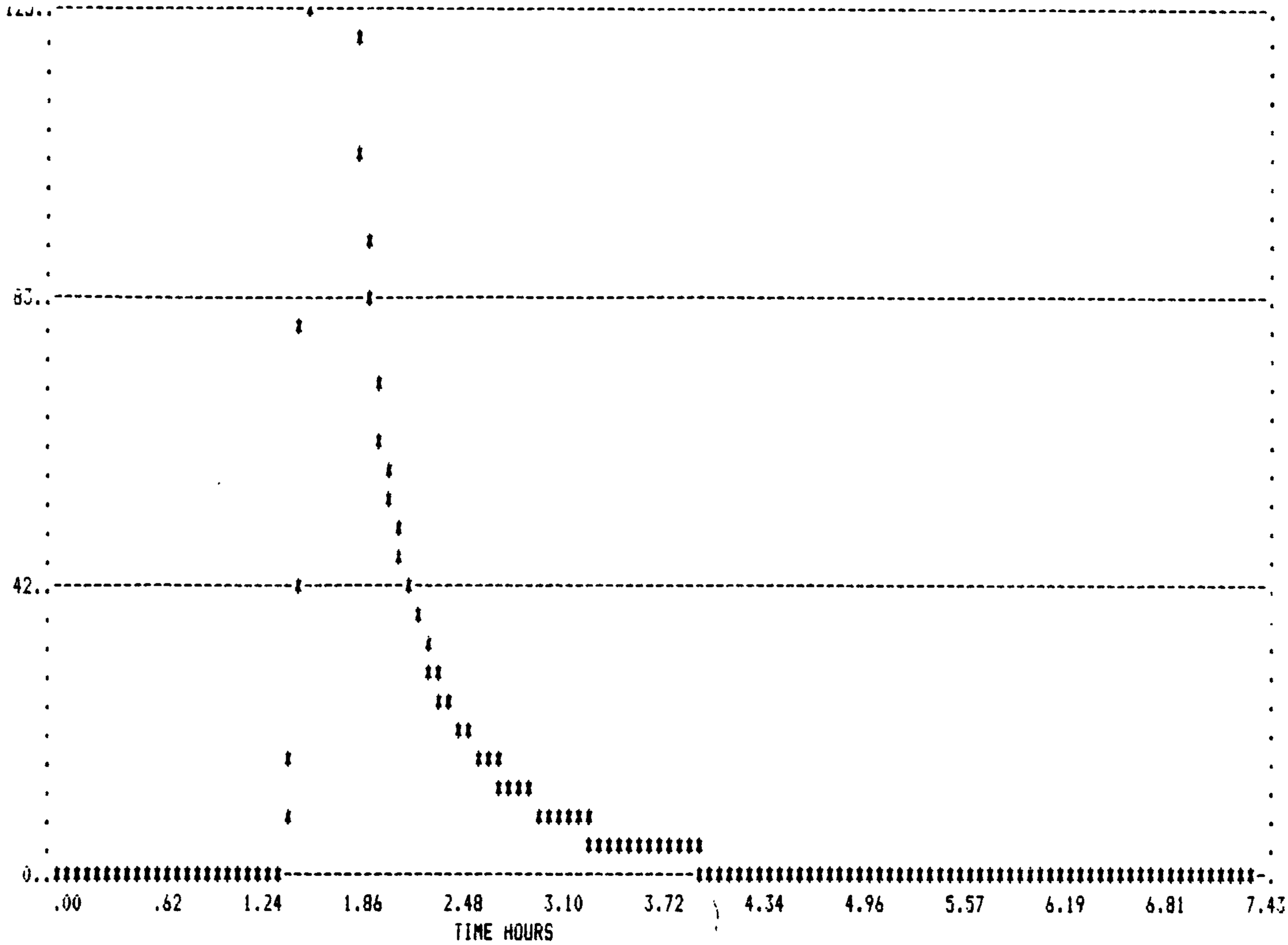
```
* FOR ROUTE EST AVG SLOPE AS .012
COMPUTE RATING CURVE CID=-1  VS NO=3   NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP= .012     FP SLP=.012     FT PER FT
                       N   END X
```

```
                    .015   30
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     5       10    0       20    0       30    5
COMPUTE TRAVEL TIME ID=-6     REACH=3  NO VS=1
                    L=550   ft       SLP=.012    ft/ft
*S HYD 132 = SNOW VISTA JUST ABOVE JUNCTION WITH SECTION LINE CHANNEL STUB
*S HYD 132 = AP 9
ROUTE               ID=6     HYD=132     INFLOW HYD ID=3   DT=.033333
PRINT HYD           ID=6  CODE=2
```

PARTIAL HYDROGRAPH 132.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.533	78.3	3.067	9.4	4.600	.6	6.133	.0
.067	.0	1.600	107.1	3.133	8.5	4.667	.6	6.200	.0
.133	.0	1.667	207.7	3.200	7.7	4.733	.5	6.267	.0
.200	.0	1.733	189.1	3.267	6.9	4.800	.4	6.333	.0
.267	.0	1.800	152.8	3.333	6.2	4.867	.4	6.400	.0
.333	.0	1.867	119.1	3.400	5.6	4.933	.3	6.467	.0
.400	.0	1.933	91.8	3.467	5.0	5.000	.3	6.533	.0
.467	.0	2.000	71.8	3.533	4.5	5.067	.3	6.600	.0
.533	.0	2.067	57.3	3.600	4.0	5.133	.2	6.667	.0
.600	.0	2.133	48.8	3.667	3.6	5.200	.2	6.733	.0
.667	.0	2.200	42.2	3.733	3.2	5.267	.2	6.800	.0
.733	.0	2.267	35.6	3.800	2.8	5.333	.1	6.867	.0
.800	.0	2.333	29.7	3.867	2.5	5.400	.1	6.933	.0
.867	.0	2.400	26.0	3.933	2.2	5.467	.1	7.000	.0
.933	.0	2.467	23.3	4.000	2.0	5.533	.1	7.067	.0
1.000	.0	2.533	20.9	4.067	1.8	5.600	.1	7.133	.0
1.067	.0	2.600	18.8	4.133	1.6	5.667	.1	7.200	.0
1.133	.0	2.667	16.9	4.200	1.4	5.733	.1	7.267	.0
1.200	.0	2.733	15.2	4.267	1.2	5.800	.1	7.333	.0
1.267	.0	2.800	13.8	4.333	1.1	5.867	.0	7.400	.0
1.333	.0	2.867	12.5	4.400	.9	5.933	.0		
1.400	1.9	2.933	11.4	4.467	.8	6.000	.0		
1.467	17.5	3.000	10.4	4.533	.7	6.067	.0		

```
RUNOFF VOLUME =      .45578 INCHES     =       8.6404 ACRE-FEET
PEAK DISCHARGE RATE =     207.67 CFS  AT   1.667 HOURS   BASIN AREA =    .3555 SQ. MI.

 PLOT HYD            ID=6
FLOW RATE (CFS)
206..----------------------!----------------------------------------------------------------------------------------------------.
    .                      !                                                                                                    .
    .                      !                                                                                                    .
    .                      !                                                                                                    .
    .                      !                                                                                                    .
    .                      !                                                                                                    .
    .                      !                                                                                                    .
    .                      !                                                                                                    .
    .                      !                                                                                                    .
    .                      !                                                                                                    .
166..----------------------!----------------------------------------------------------------------------------------------------.
    .                      !                                                                                                    .
    .                      !                                                                                                    .
    .                      !                                                                                                    .
    .                      !                                                                                                    .
    .                      !                                                                                                    .
    .                      !                                                                                                    .
    .                      !                                                                                                    .
    .                      !                                                                                                    .
    .                      !                                                                                                    .
```


83.
42.
0.
.00
.62
1.24
1.86
2.48
3.10
3.72
4.34
4.96
5.57
6.19
6.81
7.43
TIME HOURS

```
!!!
```

```
COMPUTE NM HYD       ID=2   HYD=152   DA=0.003356 SQ MI
                     PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1

   K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   13.251    CFS   UNIT VOLUME =    .9985       B =   526.28      P60 = 1.8700
   AREA =      .003356 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


   K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
   UNIT PEAK =   7.2450    CFS   UNIT VOLUME =    .9985       B =   327.09      P60 = 1.8700
   AREA =      .002953 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=2  CODE=1

                                PARTIAL HYDROGRAPH   152.00


   RUNOFF VOLUME =     1.35796 INCHES     =        .4569 ACRE-FEET
   PEAK DISCHARGE RATE =      13.22 CFS  AT   1.500 HOURS   BASIN AREA =   .0063 SQ. MI.
```

```
*                     NEW      NEW        IN1          IN2
ADD HYD              ID=3   HYD=210    ID I=1      ID II=2
PRINT HYD            ID=3  CODE=1

                                PARTIAL HYDROGRAPH   210.00


   RUNOFF VOLUME =     1.35793 INCHES     =        1.2168 ACRE-FEET
   PEAK DISCHARGE RATE =      35.18 CFS  AT   1.500 HOURS   BASIN AREA =   .0168 SQ. MI.
```

```
*********************************************************************************
COMPUTE NM HYD       ID=1   HYD=153   DA=0.007134 SQ MI
                     PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1

   K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   14.984    CFS   UNIT VOLUME =    .9987       B =   526.28      P60 = 1.8700
   AREA =      .003795 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


   K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
   UNIT PEAK =   8.1924    CFS   UNIT VOLUME =    .9986       B =   327.09      P60 = 1.8700
   AREA =      .003339 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1  CODE=1

                                PARTIAL HYDROGRAPH   153.00


   RUNOFF VOLUME =     1.35796 INCHES     =        .5167 ACRE-FEET
   PEAK DISCHARGE RATE =      14.94 CFS  AT   1.500 HOURS   BASIN AREA =   .0071 SQ. MI.


*S HYD 220 = 151+152+153 (BASINS 101, 102, & 103) @ HACKAMORE & CONNEMARA
*                     NEW      NEW        IN1          IN2
ADD HYD              ID=5   HYD=220    ID I=1      ID II=3
*********************************************************************************
*S 401.2 (ID 8) = 'UNDERFLOW' (+-21 CFS MAX) FROM TOWER @ CONNEMARA ABOVE
```

```
*S DELAY 401.2  2 MIN (1 TIME STEP) TO SIMULATE ROUTING IN 2 SEGMENTS OF ROAD
MODIFY TIME          ID=8   TIME SHIFT=0.033333 HRS   CODE=-1
PRINT HYD            ID=8  CODE=1

                                   HYDROGRAPH FROM AREA   401.20


    RUNOFF VOLUME =     1.20359 INCHES     =       1.1140 ACRE-FEET
    PEAK DISCHARGE RATE =      23.00 CFS  AT   1.467 HOURS   BASIN AREA =   .0174 SQ. MI.



*S BASIN 402 = EXISTING DEVELOPMENT @ 50%=B=LANDSCAPE, 50%=D=IMPERV
*************************************************************************
COMPUTE NM HYD       ID=1   HYD=402   DA=0.015469  SQ MI
                     PER A=0  B=50   C=0    D=50    TP=0.1333 HRS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   30.536    CFS   UNIT VOLUME =    .9990       B =   526.28      P60 = 1.8700
    AREA =      .007735 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

    K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =   18.979    CFS   UNIT VOLUME =    .9996       B =   327.09      P60 = 1.8700
    AREA =      .007735 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1  CODE=1

                                   HYDROGRAPH FROM AREA   402.00


    RUNOFF VOLUME =     1.31642 INCHES     =       1.0861 ACRE-FEET
    PEAK DISCHARGE RATE =      31.64 CFS  AT   1.500 HOURS   BASIN AREA =   .0155 SQ. MI.



ADD HYD              ID=4   HYD=242    ID I=1      ID II=8
*************************************************************************
COMPUTE NM HYD       ID=2   HYD=154   DA=0.007539 SQ MI
                     PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   15.835    CFS   UNIT VOLUME =    .9987       B =   526.28      P60 = 1.8700
    AREA =      .004011 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

    K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =   8.6575    CFS   UNIT VOLUME =    .9988       B =   327.09      P60 = 1.8700
    AREA =      .003528 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=2  CODE=1

                                  PARTIAL HYDROGRAPH   154.00


    RUNOFF VOLUME =     1.35796 INCHES     =        .5460 ACRE-FEET
    PEAK DISCHARGE RATE =      15.79 CFS  AT   1.500 HOURS   BASIN AREA =   .0075 SQ. MI.



*S HYD 244 = 402+154 IN SANDPIPER AT CONNEMARA (HYD 154=BASIN 104)
ADD HYD              ID=3   HYD=244    ID I=2      ID II=4
```

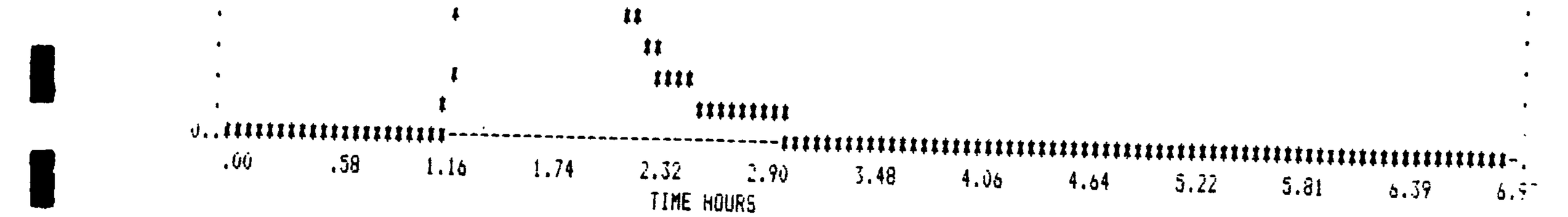
```
PRINT HYD           ID=3  CODE=1

                              PARTIAL HYDROGRAPH   244.00


    RUNOFF VOLUME =     1.27565 INCHES     =       2.7460 ACRE-FEET
    PEAK DISCHARGE RATE =      70.43 CFS  AT   1.500 HOURS   BASIN AREA =   .0404 SQ. MI.



*S HYD 240 = COMBINED FLOW @ HACKAMORE & CONNEMARA
ADD HYD             ID=2   HYD=240    ID I=3      ID II=5
PRINT HYD           ID=2  CODE=1

                              PARTIAL HYDROGRAPH   240.00


    RUNOFF VOLUME =     1.30628 INCHES     =       4.4795 ACRE-FEET
    PEAK DISCHARGE RATE =     120.56 CFS  AT   1.500 HOURS   BASIN AREA =   .0643 SQ. MI.

*************************************************************************
* COMPUTE NM HYD       ID=1   HYD=155   DA=0.004197 SQ MI
COMPUTE NM HYD       ID=1   HYD=155   DA=0.000001 SQ MI
                     PER A=0   B=46.8  C=0    D=53.2 TP=0.1333 HRS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   .21004E-02CFS   UNIT VOLUME =    .8874       B =   526.28      P60 = 1.8700
    AREA =      .000001 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
    UNIT PEAK =   .11484E-02CFS   UNIT VOLUME =    .8722       B =   327.09      P60 = 1.8700
    AREA =      .000000 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD           ID=1  CODE=1

                              PARTIAL HYDROGRAPH   155.00


    RUNOFF VOLUME =     1.35796 INCHES     =        .0001 ACRE-FEET
    PEAK DISCHARGE RATE =       .00 CFS  AT   1.500 HOURS   BASIN AREA =   .0000 SQ. MI.


*S HYD 250 = COMBINED FLOW IN HACKAMORE AT HALTER
*                     NEW      NEW        IN1          IN2
ADD HYD             ID=3   HYD=250    ID I=1      ID II=2
PRINT HYD           ID=3   CODE=1

                              PARTIAL HYDROGRAPH   250.00


    RUNOFF VOLUME =     1.30627 INCHES     =       4.4795 ACRE-FEET
    PEAK DISCHARGE RATE =     120.56 CFS  AT   1.500 HOURS   BASIN AREA =   .0643 SQ. MI.


*************************************************************************
* COMPUTE NM HYD       ID=1   HYD=156   DA=0.014138 SQ MI
COMPUTE NM HYD       ID=1   HYD=156   DA=0.000001 SQ MI
                     PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1
```

```
K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   .21004E-02CFS   UNIT VOLUME =    .8874       B =   526.28      P60 = 1.8700
AREA =      .000001 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .982685     SHAPE CONSTANT, N =  3.593448
UNIT PEAK =   .11484E-02CFS   UNIT VOLUME =    .8722       B =   327.09      P60 = 1.8700
AREA =      .000000 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD          ID=1  CODE=1

                              PARTIAL HYDROGRAPH   156.00


RUNOFF VOLUME =     1.35796 INCHES     =        .0001 ACRE-FEET
PEAK DISCHARGE RATE =        .00 CFS  AT   1.500 HOURS   BASIN AREA =   .0000 SQ. MI.


*                    NEW      NEW        IN1          IN2
ADD HYD            ID=2   HYD=260    ID I=1      ID II=3
*************************************************************************
COMPUTE NM HYD     ID=1   HYD=157   DA=0.017363 SQ MI
                   PER A=0   B=46.8  C=0    D=53.2  TP=0.1333 HRS RAIN=-1

   K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   36.469    CFS   UNIT VOLUME =    .9990       B =   526.28      P60 = 1.8700
   AREA =      .009237 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


   K =   .130992HR    TP =   .133300HR    K/TP RATIO =   .782685     SHAPE CONSTANT, N =  3.593448
   UNIT PEAK =   19.939    CFS   UNIT VOLUME =    .9997       B =   327.09      P60 = 1.8700
   AREA =      .008126 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD          ID=1  CODE=1

                              PARTIAL HYDROGRAPH   157.00


RUNOFF VOLUME =     1.35796 INCHES     =       1.2575 ACRE-FEET
PEAK DISCHARGE RATE =       36.35 CFS  AT   1.500 HOURS   BASIN AREA =   .0174 SQ. MI.


*S HYD 224 = AP 7 IN
*                    NEW      NEW        IN1          IN2
ADD HYD            ID=3   HYD=224    ID I=1      ID II=2
PRINT HYD          ID=3   CODE=2

                              PARTIAL HYDROGRAPH   224.00

 TIME    FLOW        TIME    FLOW        TIME    FLOW        TIME    FLOW        TIME    FLOW
 HRS     CFS         HRS     CFS         HRS     CFS         HRS     CFS         HRS     CFS
 .000     .0        1.400    79.4       2.800     2.6       4.200     .7        5.600     .8
 .067     .0        1.467   143.9       2.867     2.2       4.267     .7        5.667     .8
 .133     .0        1.533   152.3       2.933     2.0       4.333     .7        5.733     .8
 .200     .0        1.600   119.1       3.000     1.7       4.400     .7        5.800     .8
 .267     .0        1.667    92.5       3.067     1.5       4.467     .7        5.867     .8
 .333     .0        1.733    70.3       3.133     1.4       4.533     .7        5.933     .8
 .400     .0        1.800    56.1       3.200     1.3       4.600     .7        6.000     .9
 .467     .0        1.867    46.3       3.267     1.2       4.667     .7        6.067     .8
```

.600	.0	2.000	34.6	3.400	1.0	4.800	.7	6.200	.3
.667	.0	2.067	29.7	3.467	1.0	4.867	.7	6.267	.1
.733	.0	2.133	21.1	3.533	.9	4.933	.7	6.333	.1
.800	.0	2.200	14.0	3.600	.9	5.000	.7	6.400	.1
.867	.0	2.267	10.4	3.667	.8	5.067	.7	6.467	.1
.933	.0	2.333	8.3	3.733	.8	5.133	.7	6.533	.0
1.000	.0	2.400	6.8	3.800	.8	5.200	.7	6.600	.0
1.067	.0	2.467	5.7	3.867	.7	5.267	.7	6.667	.0
1.133	.0	2.533	4.8	3.933	.7	5.333	.7	6.733	.0
1.200	1.8	2.600	4.0	4.000	.7	5.400	.8	6.800	.0
1.267	12.7	2.667	3.5	4.067	.7	5.467	.8	6.867	.0
1.333	34.8	2.733	3.0	4.133	.7	5.533	.8	6.933	.0

RUNOFF VOLUME = 1.31725 INCHES = 5.7370 ACRE-FEET
PEAK DISCHARGE RATE = 156.91 CFS AT 1.500 HOURS BASIN AREA = .0817 SQ. MI.

FLOT HYD ID=3
FLOW RATE (CFS)
157.
120.
84.
47.
31.




```
*S REPLACE POND WITH PIPE IN FAIR SHARE ANALYSIS - KEEP "RESERVOIR" HYD NO.
COMPUTE RATING CURVE CID=-1  VS NO=63  NO SEGS=-1 SLP=.002  D=6 FT  N=.013
COMPUTE TRAVEL TIME  ID=-4     REACH=33 NO VS=1
                     L=100  ft       SLP=.002    ft/ft
ROUTE                ID=4     HYD=503     INFLOW HYD ID=3   DT=.033333
* ((( LINES BELOW STARTING WITH * ((( FOR USE WITH POND IN PROPOSED CONDITIONS
* ((( OUTFLOW BELOW (2.55-->83.00 FOR 42-IN PIPE W Kent=0.5)
* ((( S HYD 503 = AP 7 OUT
* ((( ROUTE RESERVOIR      ID=4  HYD=503  INFLOW ID=3     CODE=2
* (((                      OUTFLOW CFS    STORAGE AC-FT   ELEVATION FT
* (((                       0.00000       0.0000           88.33
* (((                        2.80         0.0203           89
* (((                       15.55         0.2013           90
* (((                       46.30         0.9056           92
* (((                       63.25         1.6948           94
* (((                       76.95         2.5737           96
* (((                       83.00         3.0551           97
* ((( *
* ((( * OUTFLOW BELOW (2.55-->60.05) FOR 36-IN PIPE W Kent=0.5
* ((( *ROUTE RESERVOIR      ID=4  HYD=503  INFLOW ID=3     CODE=2
* ((( *                    OUTFLOW CFS    STORAGE AC-FT   ELEVATION FT
* ((( *                     0.00000       0.0000           88.33
* ((( *                      2.55         0.0203           89
* ((( *                     14.00         0.2013           90
* ((( *                     35.05         0.9056           92
* ((( *                     46.50         1.6948           94
* ((( *                     55.58         2.5737           96
* ((( *                     60.05         3.0551           97
* ((( * PRINT HYD           ID=4   CODE=2
* ((( * *S PLOT HYD FOR AP 7 IN & OUT
* ((( * PLOT HYD            ID=3   ID=4
* D = 3 OR 3.5 PROPOSED, D = 6 FT FAIR SHARE FOR FREE OUTFALL
COMPUTE RATING CURVE CID=-1  VS NO=63  NO SEGS=-1 SLP=.002  D=6 FT  N=.013
COMPUTE TRAVEL TIME  ID=-3     REACH=33 NO VS=1
                     L=744  ft       SLP=.002    ft/ft
ROUTE                ID=3     HYD=266     INFLOW HYD ID=4   DT=.033333
PRINT HYD            ID=3  CODE=1

                              PARTIAL HYDROGRAPH   266.00


    RUNOFF VOLUME =     1.31726 INCHES     =       5.7371 ACRE-FEET
    PEAK DISCHARGE RATE =     149.40 CFS  AT   1.533 HOURS   BASIN AREA =    .0817 SQ. MI.



**********************************************************************************
*S HYD 158 = BASIN 108, ALL ANDALUSIAN, NOT TO POND
COMPUTE NM HYD       ID=1   HYD=158   DA=0.019023 SQ MI
                     PER A=0  B=46.8  C=0    D=53.2   TP=0.1333 HRS RAIN=-1

    k =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   39.955    CFS   UNIT VOLUME =    .9991       B =   526.28      P60 = 1.8700
    AREA =      .010120 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333
```

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 21.845 CFS UNIT VOLUME = .9997 B = 327.09 P60 = 1.8700
AREA = .008903 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 156.00

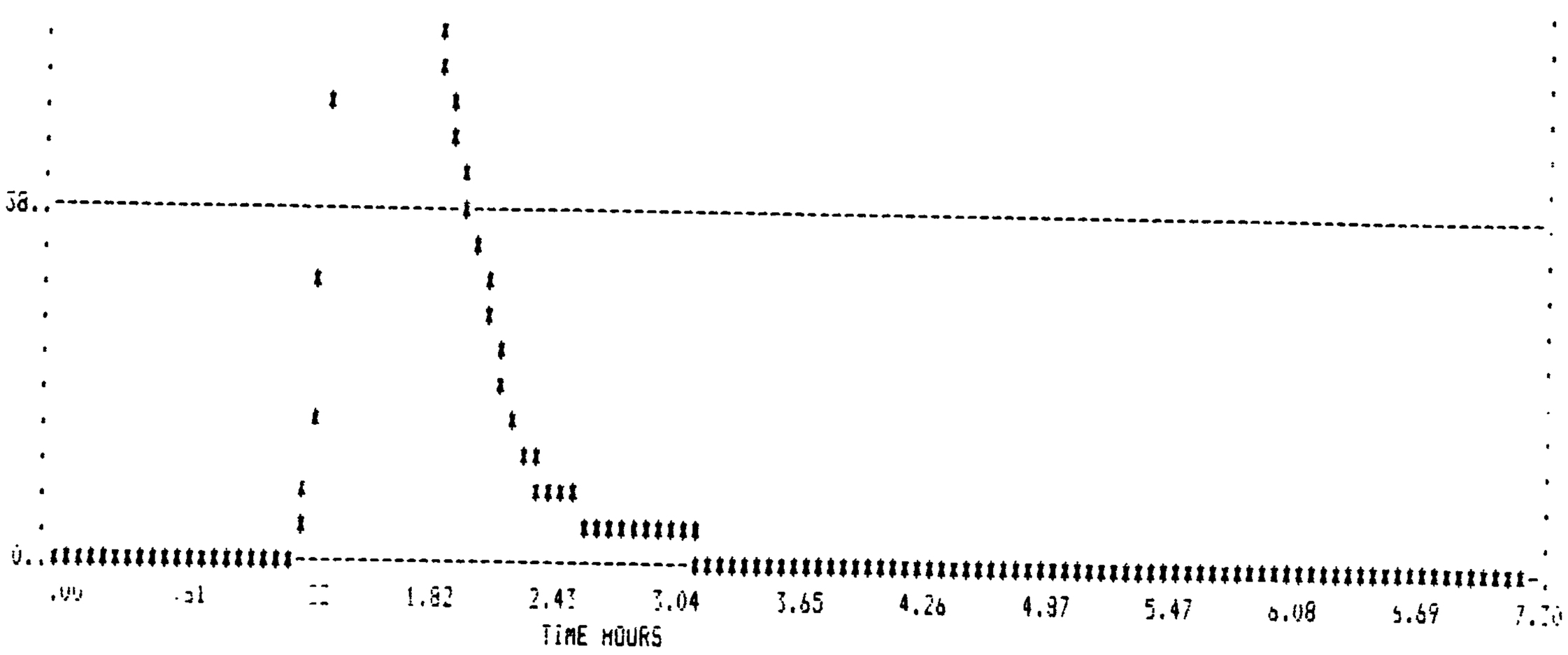
RUNOFF VOLUME = 1.35796 INCHES = 1.3777 ACRE-FEET
PEAK DISCHARGE RATE = 39.82 CFS AT 1.500 HOURS BASIN AREA = .0190 SQ. MI.

*S HYD 270 = ALL SUNRISE ONSITE INC EXISTING 402 & 401.2 (=401 UNDERFLOW)
*S BUT NOT OFFSITE VIA DUNLIN (SOUTHMOST STREET) PIPE
ADD HYD ID=7 HYD=270 ID I=1 ID II=3
PRINT HYD ID=7 CODE=1

PARTIAL HYDROGRAPH 270.00

RUNOFF VOLUME = 1.32494 INCHES = 7.1148 ACRE-FEET
PEAK DISCHARGE RATE = 187.84 CFS AT 1.533 HOURS BASIN AREA = .1007 SQ. MI.

PLOT HYD ID=7
FLOW RATE (CFS)




```
*S
*S OFFSITE WEST OF SUNRISE: PER SCANLON LAYOUT EXCEPT PIPE NOT SECT LINE CHAN
**************************************************************************
**************************************************************************
COMPUTE NM HYD       ID=1   HYD=352   DA=0.03141  SQ MI
                     PER A=97  B=0    C=3   D=0    TP=0.1333 HRS   RAIN=-1

    K =   .161949HR    TP =   .133300HR    K/TP RATIO =  1.214924     SHAPE CONSTANT, N =  2.927948
    UNIT PEAK =   65.010    CFS   UNIT VOLUME =    .9995       B =   275.89      P60 = 1.8700
    AREA =      .031410 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1   CODE=1

                                    HYDROGRAPH FROM AREA   352.00


    RUNOFF VOLUME =      .45102 INCHES     =        .7555 ACRE-FEET
    PEAK DISCHARGE RATE =      26.84 CFS  AT   1.533 HOURS   BASIN AREA =   .0314 SQ. MI.



COMPUTE RATING CURVE CID=-1  VS NO=38   NO SEGS=1
                     MIN EL=0    FT   MAX EL=1    FT
                     CH SLP= .037     FP SLP=.037     FT PER FT
                       N   END X
                     .035   122
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     1       1     0       121   0       122   1
COMPUTE TRAVEL TIME  ID=-3     REACH=2  NO VS=1
                     L=900    ft       SLP=.037    ft/ft
ROUTE                ID=3     HYD=272     INFLOW HYD ID=1   DT=.033333
**************************************************************************
COMPUTE NM HYD       ID=2   HYD=351   DA=0.01500  SQ MI
                     PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1

    K =   .161949HR    TP =   .133300HR    K/TP RATIO =  1.214924     SHAPE CONSTANT, N =  2.927948
    UNIT PEAK =   31.046    CFS   UNIT VOLUME =    .9992       B =   275.89      P60 = 1.8700
    AREA =      .015000 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1  CODE=1

                                    HYDROGRAPH FROM AREA   352.00
```

RUNOFF VOLUME = .45102 INCHES = .7555 ACRE-FEET
PEAK DISCHARGE RATE = 26.84 CFS AT 1.533 HOURS BASIN AREA = .0314 SQ. MI.

ADD HYD ID=1 HYD=274 ID I=2 ID II=3
COMPUTE RATING CURVE CID=1 VS NO=32 NO SEGS=1
MIN EL=0 FT MAX EL=5 FT
CH SLP=.09 FP SLP=.001 FT PER FT
N END FT
.030 40

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0	5	15	0	25	0	40	5

RATING CURVE VALLEY SECTION 32.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.26	2.8	1.7
.53	6.1	5.7
.79	9.8	11.5
1.05	13.9	19.2
1.32	18.4	28.8
1.58	23.3	40.3
1.84	28.6	53.9
2.11	34.3	69.7
2.37	40.5	87.6
2.63	47.1	107.8
2.89	54.1	130.4
3.16	61.5	155.5
3.42	69.3	183.2
3.68	77.6	213.5
3.95	86.2	246.5
4.21	95.3	282.3
4.47	104.8	321.1
4.74	114.7	362.8
5.00	125.0	407.6

*S USE L FROM MID POINT OF BASIN TO MIDPOINT OF NEXT
COMPUTE TRAVEL TIME ID=-2 REACH=32 NO VS=1
L=600 ft SLP=.001 ft/ft
ROUTE ID=2 HYD=202 INFLOW HYD ID=1 DT=.033333

****

COMPUTE NM HYD ID=3 HYD NO=304 DA=0.02938 SQ MI
PER A=97 B=0 C=3 D=0 TP=0.1333 HRS RAIN=-1

K = .161949HR TP = .133300HR K/TP RATIO = 1.214924 SHAPE CONSTANT, N = 2.927948
UNIT PEAK = 60.808 CFS UNIT VOLUME = .9995 B = 275.89 P60 = 1.8700
AREA = .029380 SQ MI IA = .64100 INCHES INF = 1.64480 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=3 CODE=1

HYDROGRAPH FROM AREA 304.00

RUNOFF VOLUME = .45102 INCHES = .7067 ACRE-FEET
PEAK DISCHARGE RATE = 25.11 CFS AT 1.533 HOURS BASIN AREA = .0294 SQ. MI.

ADD HYD ID=1 HYD=203 ID I=2 ID II=3
COMPUTE RATING CURVE CID=1 VS NO=32 NO SEGS=1
MIN EL=0 FT MAX EL=5 FT

N END FT
.030 40

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0	5	15	0	25	0	40	5

RATING CURVE VALLEY SECTION 32.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.26	2.8	1.7
.53	6.1	5.7
.79	9.8	11.5
1.05	13.9	19.2
1.32	18.4	28.8
1.58	23.3	40.3
1.84	28.6	53.7
2.11	34.3	69.7
2.37	40.5	87.6
2.63	47.1	107.8
2.89	54.1	130.4
3.16	61.5	155.5
3.42	69.3	183.2
3.68	77.6	213.5
3.95	86.2	246.5
4.21	95.3	282.3
4.47	104.8	321.1
4.74	114.7	362.8
5.00	125.0	407.6

* USE L FROM MID-POINT OF BASIN TO MID-POINT OF NEXT
COMPUTE TRAVEL TIME ID=-4 REACH=32 NO VS=1
L=250 ft SLP=.001 ft/ft
*S HYD 206 = INTO TANAGER POND *LOCATION* FROM NORTH
ROUTE ID=4 HYD=204 INFLOW HYD ID=1 DT=.033333
****
COMPUTE NM HYD ID=3 HYD=303 DA=0.06688 SQ MI
PER A=97 B=0 C=3 D=0 TP=0.1333 HRS RAIN=-1

K = .161440HR TP = .133300HR K/TP RATIO = 1.211105 SHAPE CONSTANT, N = 2.936360
UNIT PEAK = 138.77 CFS UNIT VOLUME = .9996 B = 276.59 P60 = 1.3700
AREA = .066880 SQ MI IA = .64100 INCHES INF = 1.64480 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=3 CODE=1

HYDROGRAPH FROM AREA 303.00

RUNOFF VOLUME = .45102 INCHES = 1.6087 ACRE-FEET
PEAK DISCHARGE RATE = 57.28 CFS AT 1.533 HOURS BASIN AREA = .0669 SQ. MI.

****
*S HYD 299=COA SATELLITE: ASSUME 10 CFS CLEAN & NON-ERSOIVE; REAL 1993 0.5+-
STORE HYD ID=2 HYD NO=299 DT=0.16667 HR DA=.07516 SQ MI
FLOW RATES CFS= (LEFT TO RIGHT, DOWN, LEFT TO RIGHT ...)

0	.00	.00	.00	.00	.00
.00	.51	.51	.51	.51	.51
.51	.51	.51	.51	.51	.51
.51	.51	.51	.51	.51	.51
.51	.51	.51	.51	.51	.51
.51	.51	.51	.51	.51	.51
.51	.51	.51	.51	.51	.51
.51	.51	.51	.51	.51	.51
.51	.51	.51	.51	.51	.51

```
                    .51     .51     .51     .51     .51     .51
*S HYD 205 = INTO TANAGER POND LOCATION FROM WEST (303+299 (COA SATELLITE))
*                     NEW     NEW       IN1         IN2
ADD HYD             ID=1   HYD=205    ID I=2      ID II=3
*                     NEW     NEW       IN1         IN2
ADD HYD             ID=5   HYD=208    ID I=1      ID II=4
*************************************************************************
COMPUTE NM HYD      ID=1   HYD=302.2  DA=.07109   SQ MI
                    PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1

   K =   .160951HR    TP =   .133300HR    K/TP RATIO = 1.207454     SHAPE CONSTANT, N =  2.944510
   UNIT PEAK =   147.87    CFS   UNIT VOLUME =    .9997       B =   277.27      P60 = 1.8700
   AREA =      .071090 SQ MI    IA =    .04100 INCHES    INF =   1.64480 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT H/D           ID=1   CODE=1

                                HYDROGRAPH FROM AREA   302.20


   RUNOFF VOLUME =      .45102 INCHES     =       1.7100 ACRE-FEET
   PEAK DISCHARGE RATE =      01.01 CFS  AT   1.533 HOURS   BASIN AREA =   .0711 SQ. MI.

COMPUTE RATING CURVE CID=-1  VS NO=33  NO SEGS=1
                    MIN EL=0    FT   MAX EL=5    FT
                    CH SLP=.005      FP SLP=.005     FT PER FT
                     N  END FT
                    .017  13.33
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     1.17    .01   .5      3     0       9.83  0
                    13.33 1.17
COMPUTE TRAVEL TIME ID=-2     REACH=33 NO VS=1
                    L=350  ft       SLP=.005    ft/ft
ROUTE               ID=2     HYD=207     INFLOW HYD ID=1   DT=.033333
*S  HYD 206 = AF 2 IN = TANAGER POND IN
*                     NEW     NEW       IN1         IN2
ADD HYD             ID=3   HYD=206    ID I=2      ID II=5
PRINT HYD           ID=3   CODE=1

                                PARTIAL HYDROGRAPH   206.00


   RUNOFF VOLUME =      .35767 INCHES     =       5.5114 ACRE-FEET
   PEAK DISCHARGE RATE =     152.50 CFS  AT   1.533 HOURS   BASIN AREA =   .2889 SQ. MI.


 PLOT HYD            ID=3
FLOW RATE (CFS)
153..----------------+-------------------------------------------------------------------------------------------------------------
    .                .                                                                                                            .
    .                .                                                                                                            .
    .                .                                                                                                            .
    .                *                                                                                                            .
    .                 *                                                                                                           .
    .                                                                                                                             .
    .                                                                                                                             .
    .                                                                                                                             .
    .                                                                                                                             .
122..----------------+-------------------------------------------------------------------------------------------------------------
    .                                                                                                                             .
    .                                                                                                                             .
    .                                                                                                                             .
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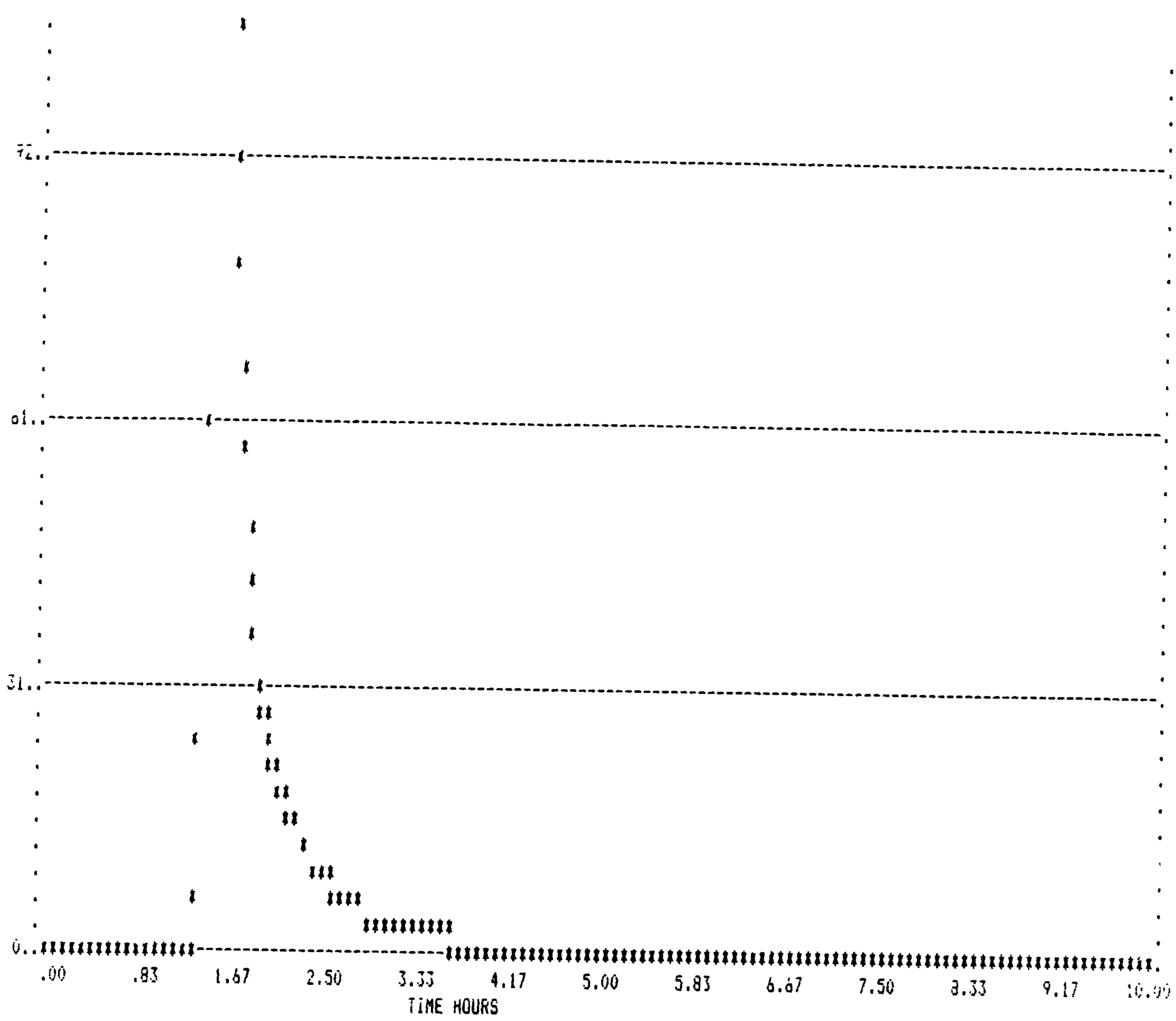



```
*S  HYD 510 = AP2 OUT = TANAGER POND OUT
*   Qout=21.33 @ 52.00 FOR 24"RCP AND SILT-STOP BERM @ 49.0
ROUTE RESERVOIR     ID=4  HYD=510  INFLOW ID=3  CODE=2
                    OUTFLOW CFS    STORAGE AC-FT   ELEVATION FT
                      0.             0.0000          49
                      13.42          0.1515          49.2
                      18.25          0.3826          49.5
                      18.91          0.7781          50
                      20.15          1.6084          51
                      21.33          2.4923          52
                      21.88          2.9549          52.5
                      22.44          3.4315          53
                      22.92          3.9222          53.5
                      23.54          4.4272          54

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

  TIME      INFLOW    ELEV      VOLUME    OUTFLOW
  (HRS)     (CFS)     (FEET)    (AC-FT)   (CFS)

    .00       .00     49.00       .000       .00
    .07       .00     49.00       .000       .00
    .13       .00     49.00       .000       .00
    .20       .00     49.00       .000       .00
```

.33	.00	49.00	.000	.00
.40	.00	49.00	.000	.00
.47	.00	49.00	.000	.00
.53	.00	49.00	.000	.00
.60	.00	49.00	.000	.00
.67	.00	49.00	.000	.00
.73	.00	49.00	.000	.00
.80	.00	49.00	.000	.00
.87	.00	49.00	.000	.00
.93	.00	49.00	.000	.00
1.00	.00	49.00	.000	.00
1.07	.00	49.00	.000	.00
1.13	.00	49.00	.000	.00
1.20	.10	47.00	.000	.01
1.27	.31	49.00	.001	.09
1.33	.51	49.00	.002	.21
1.40	23.19	49.05	.042	3.67
1.47	109.20	49.43	.331	17.16
1.53	152.50	50.24	.776	19.21
1.60	138.64	51.06	1.682	20.25
1.67	106.71	51.72	2.246	21.00
1.73	77.85	52.15	2.634	21.50
1.80	56.82	52.42	2.883	21.79
1.87	41.69	52.58	3.032	21.97
1.93	31.72	52.66	3.111	22.06
2.00	26.21	52.70	3.148	22.11
2.07	22.51	52.72	3.160	22.12
2.13	19.49	52.71	3.154	22.11
2.20	16.92	52.69	3.132	22.09
2.27	14.77	52.65	3.098	22.05
2.33	12.93	52.60	3.053	21.99
2.40	11.23	52.55	2.998	21.93
2.47	9.82	52.48	2.935	21.86
2.53	8.67	52.40	2.866	21.77
2.60	7.71	52.32	2.791	21.69
2.67	6.87	52.24	2.712	21.59
2.73	6.14	52.15	2.629	21.49
2.80	5.49	52.06	2.543	21.39
2.87	4.93	51.96	2.454	21.28
2.93	4.43	51.85	2.363	21.16
3.00	4.00	51.75	2.270	21.03
3.07	3.59	51.64	2.176	20.91
3.13	3.25	51.53	2.080	20.78
3.20	2.97	51.42	1.983	20.65
3.27	2.70	51.31	1.885	20.52
3.33	2.46	51.20	1.786	20.39
3.40	2.24	51.09	1.687	20.26
3.47	2.04	50.98	1.588	20.12
3.53	1.86	50.86	1.488	19.97
3.60	1.70	50.74	1.388	19.82
3.67	1.55	50.61	1.289	19.67
3.73	1.42	50.49	1.189	19.52
3.80	1.31	50.37	1.089	19.37
3.87	1.21	50.25	.990	19.23
3.93	1.12	50.14	.891	19.08
4.00	1.04	50.02	.792	18.93
4.07	.97	49.89	.694	18.77
4.13	.91	49.77	.596	18.61
4.20	.86	49.65	.499	18.44
4.27	.81	49.52	.402	18.28
4.33	.77	49.41	.310	16.72
4.40	.74	49.30	.226	14.99
4.47	.71	49.20	.152	13.43
4.53	.68	49.13	.096	8.53
4.60	.66	49.08	.062	5.48

4.67	.64	49.03	.041	3.61
4.73	.62	49.04	.028	2.46
4.80	.61	49.03	.020	1.74
4.87	.60	49.02	.015	1.30
4.93	.58	49.02	.012	1.02
5.00	.57	49.01	.010	.85
5.07	.57	49.01	.008	.74
5.13	.56	49.01	.008	.67
5.20	.55	49.01	.007	.63
5.27	.54	49.01	.007	.59
5.33	.54	49.01	.006	.57
5.40	.53	49.01	.006	.56
5.47	.53	49.01	.006	.55
5.53	.52	49.01	.006	.54
5.60	.52	49.01	.006	.53
5.67	.52	49.01	.006	.53
5.73	.52	49.01	.006	.52
5.80	.51	49.01	.006	.52
5.87	.51	49.01	.006	.52
5.93	.51	49.01	.006	.52
6.00	.51	49.01	.006	.51
6.07	.51	49.01	.006	.51
6.13	.51	49.01	.006	.51
6.20	.51	49.01	.006	.51
6.27	.51	49.01	.006	.51
6.33	.51	49.01	.006	.51
6.40	.51	49.01	.006	.51
6.47	.51	49.01	.006	.51
6.53	.51	49.01	.006	.51
6.60	.51	49.01	.006	.51
6.67	.51	49.01	.006	.51
6.73	.51	49.01	.006	.51
6.80	.51	49.01	.006	.51
6.87	.51	49.01	.006	.51
6.93	.51	49.01	.006	.51
7.00	.51	49.01	.006	.51
7.07	.51	49.01	.006	.51
7.13	.51	49.01	.006	.51
7.20	.51	49.01	.006	.51
7.27	.51	49.01	.006	.51
7.33	.51	49.01	.006	.51
7.40	.51	49.01	.006	.51
7.47	.51	49.01	.006	.51
7.53	.51	49.01	.006	.51
7.60	.51	49.01	.006	.51
7.67	.51	49.01	.006	.51
7.73	.51	49.01	.006	.51
7.80	.51	49.01	.006	.51
7.87	.51	49.01	.006	.51
7.93	.51	49.01	.006	.51
8.00	.51	49.01	.006	.51
8.07	.51	49.01	.006	.51
8.13	.51	49.01	.006	.51
8.20	.51	49.01	.006	.51
8.27	.51	49.01	.006	.51
8.33	.51	49.01	.006	.51
8.40	.51	49.01	.006	.51
8.47	.51	49.01	.006	.51
8.53	.51	49.01	.006	.51
8.60	.51	49.01	.006	.51
8.67	.51	49.01	.006	.51
8.73	.51	49.01	.006	.51
8.80	.51	49.01	.006	.51
8.87	.51	49.01	.006	.51
8.93	.51	49.01	.006	.51
9.00	.51	49.01	.006	.51

9.13	.51	49.01	.006	.51
9.20	.51	49.01	.006	.51
9.27	.51	49.01	.006	.51
9.33	.51	49.01	.006	.51
9.40	.51	49.01	.006	.51
9.47	.51	49.01	.006	.51
9.53	.51	49.01	.006	.51
9.60	.51	49.01	.006	.51
9.67	.51	49.01	.006	.51
9.73	.51	49.01	.006	.51
9.80	.51	49.01	.006	.51
9.87	.51	49.01	.006	.51
9.93	.51	49.01	.006	.51
10.00	.51	49.01	.006	.51
10.07	.00	49.01	.004	.36
10.13	.00	49.00	.002	.22
10.20	.00	49.00	.002	.13
10.27	.00	49.00	.001	.08
10.33	.00	49.00	.001	.05
10.40	.00	49.00	.000	.03
10.47	.00	49.00	.000	.02
10.53	.00	49.00	.000	.01
10.60	.00	49.00	.000	.01
10.67	.00	49.00	.000	.00

PEAK DISCHARGE = 22.121 CFS - PEAK OCCURS AT HOUR 2.07
MAXIMUM WATER SURFACE ELEVATION = 52.716
MAXIMUM STORAGE = 3.1603 AC-FT INCREMENTAL TIME= .033333HRS

```
*S DELAY 510 2 MIN (1 TIME STEP) TO SIMULATE PIPE ROUTING: L=900 , V=7.04
MODIFY TIME          ID=4   TIME SHIFT=0.033333 HRS   CODE=-1
PRINT HYD            ID=4   CODE=1
```

OUTFLOW HYDROGRAPH RESERVOIR 510.00

RUNOFF VOLUME = .35767 INCHES = 5.5114 ACRE-FEET
PEAK DISCHARGE RATE = 22.12 CFS AT 2.100 HOURS BASIN AREA = .2889 SQ. MI.

```
*COMPUTE RATING CURVE CID=-1  VS NO=33  NO SEGS=-1   PIPE
*                     S=.0015 FT/FT   DIAM=2 FT    N=.013
*COMPUTE TRAVEL TIME  ID=-2     REACH=33 NO VS=1
*                     L=900  ft       SLP=.0015   ft/ft
*ROUTE                ID=2     HYD=211     INFLOW HYD ID=4   DT=.033333
*************************************************************************
* 302.1 = SOUTH END OF BASIN 302
COMPUTE NM HYD       ID=3    HYD=302.1  DA=.01031   SQ MI
                     PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1
```

K = .161949HR TP = .133300HR K/TP RATIO = 1.214924 SHAPE CONSTANT, N = 2.927948
UNIT PEAK = 21.339 CFS UNIT VOLUME = .9991 B = 275.89 P60 = 1.8700
AREA = .010310 SQ MI IA = .64100 INCHES INF = 1.64480 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

```
PRINT HYD            ID=3    CODE=1
```

HYDROGRAPH FROM AREA 302.10

RUNOFF VOLUME = .45102 INCHES = .2480 ACRE-FEET
PEAK DISCHARGE RATE = 8.82 CFS AT 1.533 HOURS BASIN AREA = .0103 SQ. MI.

```
*                    NEW      NEW       IN1          IN2
PRINT HYD           ID=1    CODE=1
```

HYDROGRAPH FROM AREA 302.20

RUNOFF VOLUME = .45102 INCHES = 1.7100 ACRE-FEET
PEAK DISCHARGE RATE = 61.01 CFS AT 1.533 HOURS BASIN AREA = .0711 SQ. MI.

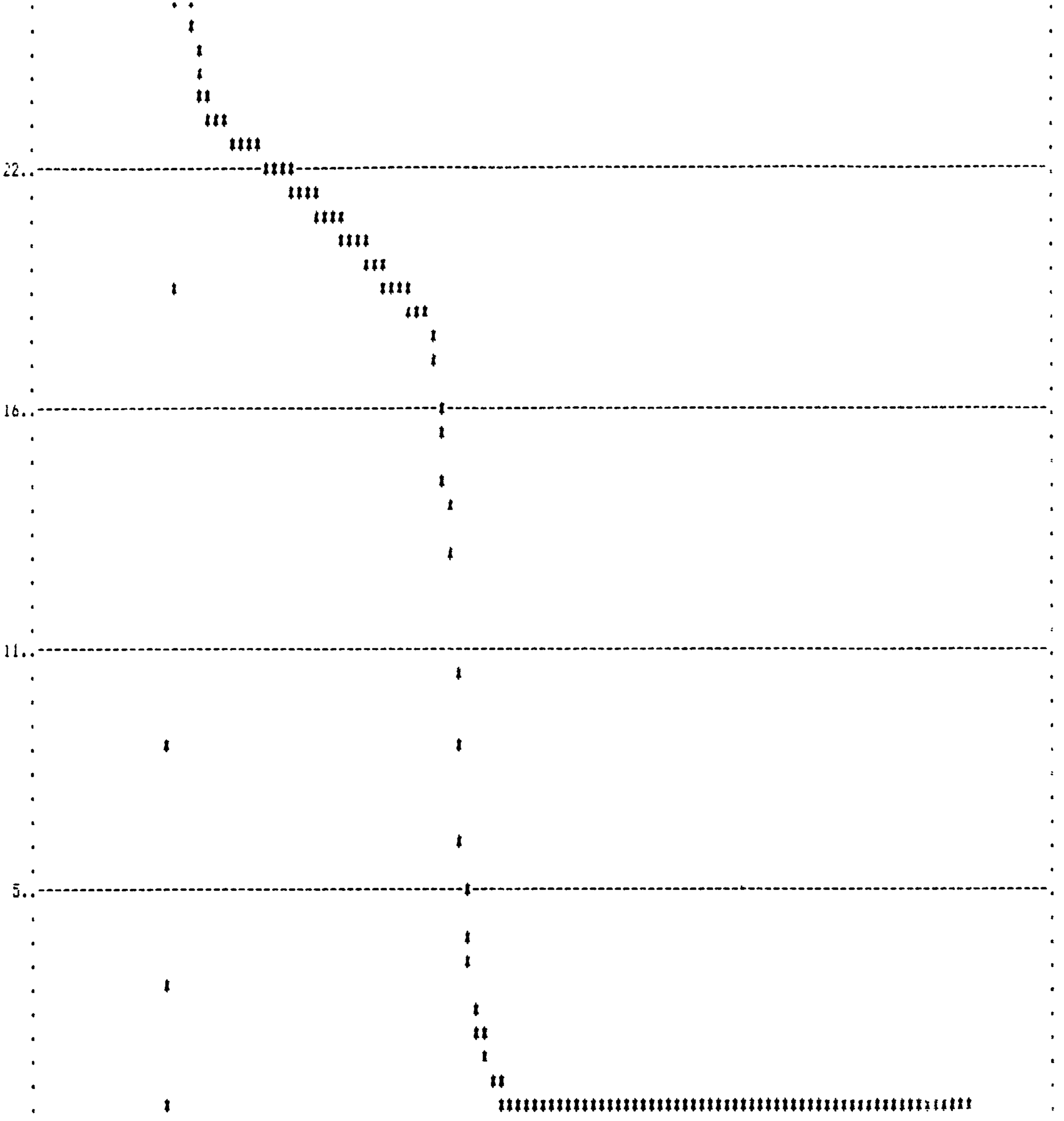
```
**********************************************************************************
*S  HYD 212 = COMBINED INTO DUNLIN/ANDALUSIAN PIPE @ TANAGER
*3  HYD 212 = AP 1
*                    NEW      NEW       IN1          IN2
ADD HYD             ID=1   HYD=212    ID I=4      ID I=3
PRINT HYD           ID=1   CODE=2
```

PARTIAL HYDROGRAPH 212.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.200	22.6	4.400	15.8	6.600	.5	8.800	.5
.067	.0	2.267	22.5	4.467	14.2	6.667	.5	8.867	.5
.133	.0	2.333	22.4	4.533	10.7	6.733	.5	8.933	.5
.200	.0	2.400	22.3	4.600	6.8	6.800	.5	9.000	.5
.267	.0	2.467	22.2	4.667	4.4	6.867	.5	9.067	.5
.333	.0	2.533	22.1	4.733	3.0	6.933	.5	9.133	.5
.400	.0	2.600	22.0	4.800	2.1	7.000	.5	9.200	.5
.467	.0	2.667	21.8	4.867	1.5	7.067	.5	9.267	.5
.533	.0	2.733	21.7	4.933	1.1	7.133	.5	9.333	.5
.600	.0	2.800	21.6	5.000	.9	7.200	.5	9.400	.5
.667	.0	2.867	21.5	5.067	.8	7.267	.5	9.467	.5
.733	.0	2.933	21.3	5.133	.7	7.333	.5	9.533	.5
.800	.0	3.000	21.2	5.200	.6	7.400	.5	9.600	.5
.867	.0	3.067	21.1	5.267	.6	7.467	.5	9.667	.5
.933	.0	3.133	20.9	5.333	.6	7.533	.5	9.733	.5
1.000	.0	3.200	20.8	5.400	.6	7.600	.5	9.800	.5
1.067	.0	3.267	20.6	5.467	.6	7.667	.5	9.867	.5
1.133	.0	3.333	20.5	5.533	.5	7.733	.5	9.933	.5
1.200	.0	3.400	20.4	5.600	.5	7.800	.5	10.000	.5
1.267	.0	3.467	20.2	5.667	.5	7.867	.5	10.067	.5
1.333	.1	3.533	20.1	5.733	.5	7.933	.5	10.133	.5
1.400	3.0	3.600	19.9	5.800	.5	8.000	.5	10.200	.2
1.467	19.4	3.667	19.8	5.867	.5	8.067	.5	10.267	.1
1.533	27.5	3.733	19.6	5.933	.5	8.133	.5	10.333	.1
1.600	26.9	3.800	19.5	6.000	.5	8.200	.5	10.400	.0
1.667	25.7	3.867	19.3	6.067	.5	8.267	.5	10.467	.0
1.733	24.6	3.933	19.2	6.133	.5	8.333	.5	10.533	.0
1.800	23.9	4.000	19.0	6.200	.5	8.400	.5	10.600	.0
1.867	23.4	4.067	18.9	6.267	.5	8.467	.5	10.667	.0
1.933	23.0	4.133	18.7	6.333	.5	8.533	.5	10.733	.0
2.000	22.9	4.200	18.5	6.400	.5	8.600	.5	10.800	.0
2.067	22.8	4.267	18.4	6.467	.5	8.667	.5	10.867	.0
2.133	22.7	4.333	17.7	6.533	.5	8.733	.5		

RUNOFF VOLUME = .36089 INCHES = 5.7593 ACRE-FEET
PEAK DISCHARGE RATE = 27.47 CFS AT 1.533 HOURS BASIN AREA = .2992 SQ. MI.

```
 PLOT HYD            ID=1
FLOW RATE (CFS)
 27..----------------*+-----------------------------------------------------------------.
    .                +
    .                 +
```




```
COMPUTE RATING CURVE CID=-1  VS NO=43  NO SEGS=-1 SLP=.0375  D=4 FT  N=.013
COMPUTE TRAVEL TIME  ID=-2     REACH=43 NO VS=1
                     L=1330  ft       SLP=.0375   ft/ft
ROUTE                ID=2     HYD=214     INFLOW HYD ID=1   DT=.033333
COMPUTE RATING CURVE CID=-1  VS NO=44  NO SEGS=-1 SLP=.0110  D=5 FT  N=.013
COMPUTE TRAVEL TIME  ID=-3     REACH=44 NO VS=1
                     L=650t       SLP=.0110    ft/ft
ROUTE                ID=3     HYD=216     INFLOW HYD ID=2   DT=.033333
COMPUTE RATING CURVE CID=-1  VS NO=44  NO SEGS=-1 SLP=.0120  D=5.5 FT  N=.013
COMPUTE TRAVEL TIME  ID=-5     REACH=44 NO VS=1
                     L=160t       SLP=.0020    ft/ft
ROUTE                ID=5     HYD=218     INFLOW HYD ID=3   DT=.033333
PRINT HYD            ID=5   CODE=2
```

CRITICAL HYDROGRAPH 218.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.267	22.6	4.533	13.3	6.800	.5	9.067	.5
.067	.0	2.333	22.5	4.600	9.5	6.867	.5	9.133	.5
.133	.0	2.400	22.4	4.667	6.4	6.933	.5	9.200	.5
.200	.0	2.467	22.3	4.733	4.1	7.000	.5	9.267	.5
.267	.0	2.533	22.2	4.800	3.1	7.067	.5	9.333	.5
.333	.0	2.600	22.0	4.867	2.4	7.133	.5	9.400	.5
.400	.0	2.667	21.9	4.933	1.8	7.200	.5	9.467	.5
.467	.0	2.733	21.8	5.000	1.4	7.267	.5	9.533	.5
.533	.0	2.800	21.7	5.067	1.2	7.333	.5	9.600	.5
.600	.0	2.867	21.5	5.133	1.0	7.400	.5	9.667	.5
.667	.0	2.933	21.4	5.200	.8	7.467	.5	9.733	.5
.733	.0	3.000	21.3	5.267	.7	7.533	.5	9.800	.5
.800	.0	3.067	21.1	5.333	.7	7.600	.5	9.867	.5
.867	.0	3.133	21.0	5.400	.6	7.667	.5	9.933	.5
.933	.0	3.200	20.9	5.467	.6	7.733	.5	10.000	.5
1.000	.0	3.267	20.7	5.533	.6	7.800	.5	10.067	.5
1.067	.0	3.333	20.6	5.600	.6	7.867	.5	10.133	.5
1.133	.0	3.400	20.5	5.667	.5	7.933	.5	10.200	.4
1.200	.0	3.467	20.3	5.733	.5	8.000	.5	10.267	.3
1.267	.0	3.533	20.2	5.800	.5	8.067	.5	10.333	.2
1.333	.0	3.600	20.0	5.867	.5	8.133	.5	10.400	.1
1.400	.2	3.667	19.9	5.933	.5	8.200	.5	10.467	.1
1.467	3.8	3.733	19.7	6.000	.5	8.267	.5	10.533	.0
1.533	24.3	3.800	19.6	6.067	.5	8.333	.5	10.600	.0
1.600	27.9	3.867	19.4	6.133	.5	8.400	.5	10.667	.0
1.667	26.4	3.933	19.3	6.200	.5	8.467	.5	10.733	.0
1.733	25.1	4.000	19.1	6.267	.5	8.533	.5	10.800	.0
1.800	24.2	4.067	19.0	6.333	.5	8.600	.5	10.867	.0
1.867	23.6	4.133	18.8	6.400	.5	8.667	.5	10.933	.0
1.933	23.2	4.200	18.6	6.467	.5	8.733	.5	11.000	.0
2.000	23.0	4.267	18.5	6.533	.5	8.800	.5	11.067	.0
2.067	22.9	4.333	18.2	6.600	.5	8.867	.5		
2.133	22.8	4.400	17.0	6.667	.5	8.933	.5		
2.200	22.7	4.467	15.3	6.733	.5	9.000	.5		

RUNOFF VOLUME = .36089 INCHES = 5.7594 ACRE-FEET
PEAK DISCHARGE RATE = 28.00 CFS AT 1.567 HOURS BASIN AREA = .2992 SQ. MI.

```
*S
*S HYD 226 ALL THROUGH SUNRISE, BUT NOT ROUTED IN STUB CHANNEL
*                    NEW      NEW        IN1          IN2
ADD HYD             ID=8   HYD=226    ID I=5       ID II=7
COMPUTE RATING CURVE CID=1  VS NO=45  NO SEGS=1
                    MIN EL=0    FT    MAX EL=5     FT
                    CH SLP= .0316     FP SLP=.0316     FT PER FT
                     N  END FT
                    .015   30
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     5       10    0       20    0       30    5
```

RATING CURVE VALLEY SECTION 45.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.26	2.8	19.2
.53	5.8	62.0
.79	9.1	123.9
1.05	12.7	203.9

1.58	20.8	417.2
1.84	25.2	550.8
2.11	29.9	702.9
2.37	34.9	873.8
2.63	40.2	1064.1
2.89	45.7	1274.3
3.16	51.5	1504.9
3.42	57.6	1756.4
3.68	64.0	2029.4
3.95	70.6	2324.5
4.21	77.6	2642.2
4.47	84.8	2983.0
4.74	92.2	3347.5
5.00	100.0	3736.2

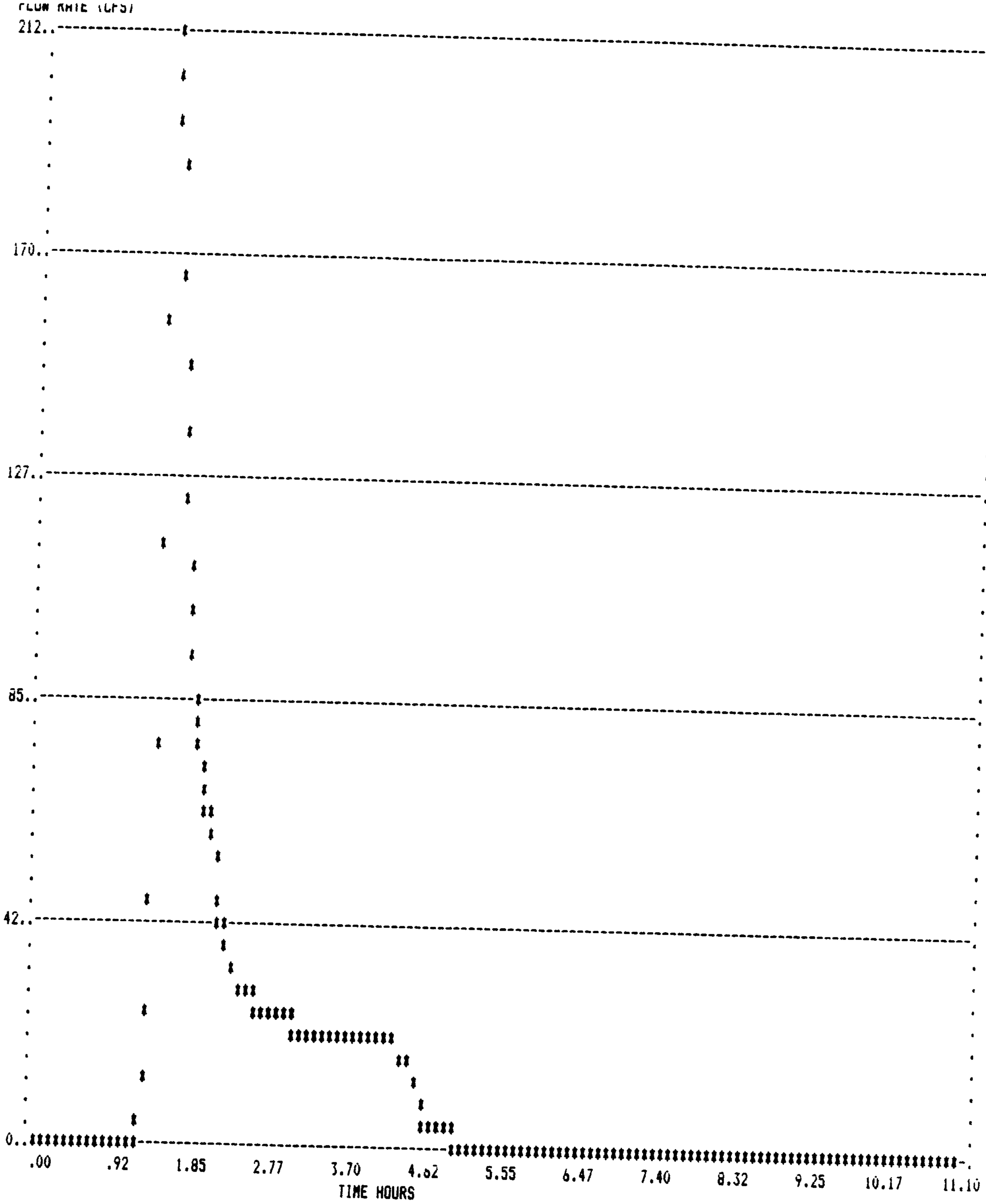
```
COMPUTE TRAVEL TIME  ID=-5     REACH=45 NO VS=1
                     L=270    ft       SLP=.0316   ft/ft
*S HYD 228 = SUNRISE + OFFSITE CONTRIB @ JUNCT W SNOW VISTA POST ROUTE STUB
*S HYD 228 = AP 8
ROUTE                ID=5     HYD=228     INFLOW HYD ID=8   DT=.033333
PRINT HYD            ID=5     CODE=2
```

PARTIAL HYDROGRAPH 228.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.267	38.2	4.533	14.5	6.800	.5	9.067	.5
.067	.0	2.333	34.6	4.600	11.0	6.867	.5	9.133	.5
.133	.0	2.400	32.1	4.667	7.7	6.933	.5	9.200	.5
.200	.0	2.467	30.4	4.733	5.3	7.000	.5	9.267	.5
.267	.0	2.533	29.0	4.800	4.1	7.067	.5	9.333	.5
.333	.0	2.600	27.9	4.867	3.3	7.133	.5	9.400	.5
.400	.0	2.667	26.8	4.933	2.7	7.200	.5	9.467	.5
.467	.0	2.733	25.9	5.000	2.4	7.267	.5	9.533	.5
.533	.0	2.800	25.3	5.067	2.1	7.333	.5	9.600	.5
.600	.0	2.867	24.7	5.133	1.9	7.400	.5	9.667	.5
.667	.0	2.933	24.2	5.200	1.7	7.467	.5	9.733	.5
.733	.0	3.000	23.8	5.267	1.6	7.533	.5	9.800	.5
.800	.0	3.067	23.4	5.333	1.6	7.600	.5	9.867	.5
.867	.0	3.133	23.0	5.400	1.5	7.667	.5	9.933	.5
.933	.0	3.200	22.7	5.467	1.5	7.733	.5	10.000	.5
1.000	.0	3.267	22.4	5.533	1.5	7.800	.5	10.067	.5
1.067	.0	3.333	22.1	5.600	1.5	7.867	.5	10.133	.5
1.133	.0	3.400	21.9	5.667	1.5	7.933	.5	10.200	.4
1.200	.5	3.467	21.7	5.733	1.5	8.000	.5	10.267	.3
1.267	5.6	3.533	21.4	5.800	1.5	8.067	.5	10.333	.2
1.333	26.3	3.600	21.2	5.867	1.5	8.133	.5	10.400	.1
1.400	75.2	3.667	21.0	5.933	1.5	8.200	.5	10.467	.1
1.467	157.5	3.733	20.8	6.000	1.6	8.267	.5	10.533	.0
1.533	212.3	3.800	20.6	6.067	1.6	8.333	.5	10.600	.0
1.600	186.0	3.867	20.4	6.133	1.4	8.400	.5	10.667	.0
1.667	150.5	3.933	20.2	6.200	1.2	8.467	.5	10.733	.0
1.733	121.5	4.000	20.0	6.267	1.0	8.533	.5	10.800	.0
1.800	100.4	4.067	19.9	6.333	.9	8.600	.5	10.867	.0
1.867	85.9	4.133	19.7	6.400	.8	8.667	.5	10.933	.0
1.933	76.0	4.200	19.5	6.467	.7	8.733	.5	11.000	.0
2.000	68.6	4.267	19.3	6.533	.6	8.800	.5	11.067	.0
2.067	62.6	4.333	19.1	6.600	.6	8.867	.5		
2.133	53.3	4.400	18.1	6.667	.6	8.933	.5		
2.200	44.2	4.467	16.4	6.733	.6	9.000	.5		

RUNOFF VOLUME = .60360 INCHES = 12.8741 ACRE-FEET
PEAK DISCHARGE RATE = 212.34 CFS AT 1.533 HOURS BASIN AREA = .3999 SQ. MI.

PLOT HYD ID=5



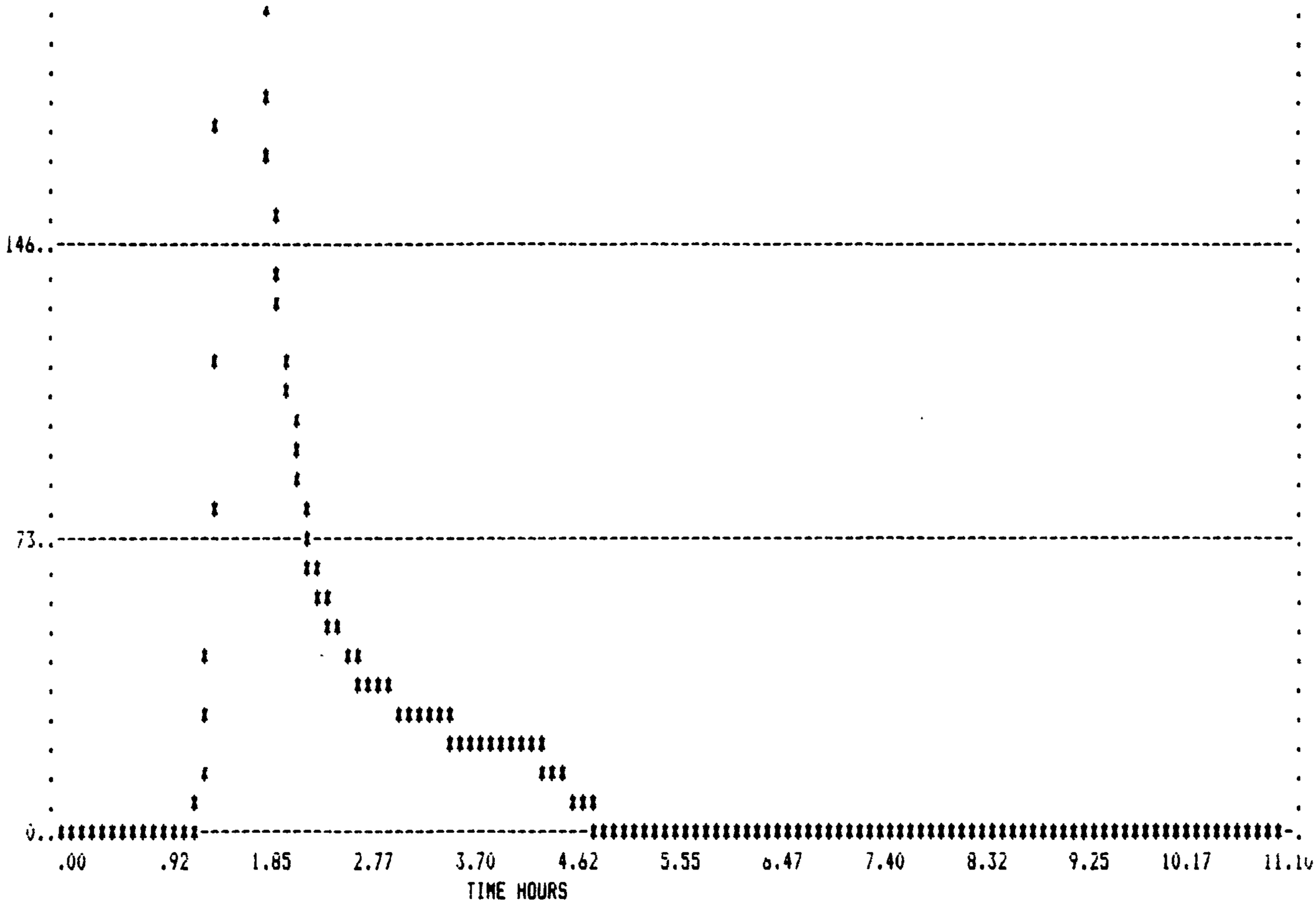

```
*S HYD 230 = TOTAL COMBINED W SNOW VISTA
*S HYD 230 = AP 10: TO BE <= ALLOWED PER SNOW VISTA DESIGN
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=1   HYD=230    ID I=5      ID II=6
PRINT HYD            ID=1   CODE=2
```

PARTIAL HYDROGRAPH 230.00

HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.267	73.9	4.533	15.2	6.800	.5	9.067	.5
.067	.0	2.333	64.3	4.600	11.6	6.867	.5	9.133	.5
.133	.0	2.400	58.2	4.667	8.3	6.933	.5	9.200	.5
.200	.0	2.467	53.7	4.733	5.8	7.000	.5	9.267	.5
.267	.0	2.533	49.9	4.800	4.5	7.067	.5	9.333	.5
.333	.0	2.600	46.7	4.867	3.7	7.133	.5	9.400	.5
.400	.0	2.667	43.7	4.933	3.1	7.200	.5	9.467	.5
.467	.0	2.733	41.2	5.000	2.6	7.267	.5	9.533	.5
.533	.0	2.800	39.0	5.067	2.3	7.333	.5	9.600	.5
.600	.0	2.867	37.2	5.133	2.1	7.400	.5	9.667	.5
.667	.0	2.933	35.6	5.200	1.9	7.467	.5	9.733	.5
.733	.0	3.000	34.1	5.267	1.8	7.533	.5	9.800	.5
.800	.0	3.067	32.8	5.333	1.7	7.600	.5	9.867	.5
.867	.0	3.133	31.5	5.400	1.7	7.667	.5	9.933	.5
.933	.0	3.200	30.4	5.467	1.6	7.733	.5	10.000	.5
1.000	.0	3.267	29.3	5.533	1.6	7.800	.5	10.067	.5
1.067	.0	3.333	28.4	5.600	1.6	7.867	.5	10.133	.5
1.133	.0	3.400	27.5	5.667	1.6	7.933	.5	10.200	.4
1.200	.5	3.467	26.7	5.733	1.6	8.000	.5	10.267	.3
1.267	5.6	3.533	25.9	5.800	1.6	8.067	.5	10.333	.2
1.333	26.3	3.600	25.2	5.867	1.6	8.133	.5	10.400	.1
1.400	77.1	3.667	24.6	5.933	1.6	8.200	.5	10.467	.1
1.467	175.0	3.733	24.0	6.000	1.6	8.267	.5	10.533	.0
1.533	290.7	3.800	23.4	6.067	1.6	8.333	.5	10.600	.0
1.600	353.2	3.867	22.9	6.133	1.5	8.400	.5	10.667	.0
1.667	358.2	3.933	22.5	6.200	1.3	8.467	.5	10.733	.0
1.733	310.6	4.000	22.0	6.267	1.1	8.533	.5	10.800	.0
1.800	253.2	4.067	21.6	6.333	.9	8.600	.5	10.867	.0
1.867	205.0	4.133	21.2	6.400	.8	8.667	.5	10.933	.0
1.933	167.8	4.200	20.9	6.467	.7	8.733	.5	11.000	.0
2.000	140.4	4.267	20.6	6.533	.6	8.800	.5	11.067	.0
2.067	119.9	4.333	20.2	6.600	.6	8.867	.5		
2.133	102.1	4.400	19.1	6.667	.6	8.933	.5		
2.200	86.4	4.467	17.3	6.733	.6	9.000	.5		

RUNOFF VOLUME = .53404 INCHES = 21.5144 ACRE-FEET
PEAK DISCHARGE RATE = 364.91 CFS AT 1.633 HOURS BASIN AREA = .7554 SQ. MI.

PLOT HYD ID=1



FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 16:19:57

RTP00 TANAGER POND AREA ONLY
VERIFY POND, SWALES, OUTLET

RTP00.SUM

AHYMO SUMMARY TABLE (AHYM0392) - AMAFCA VERSION OF HYMO - MARCH. 1992 RUN DATE (MON/DAY/YR) =06/22/1994
INPUT FILE = RTP00 USER NO.= RYALS_NM.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
*S FILE RTP00 = Revised Tanager Pond existing conditions 100-YR storm										
*S ALL STUFF W OF TANAGER EXIST COND @ 97%A & 3%C										
*S BASIN 299 (COA SATELLITE CENTER) AT EXIST 0.51 CFS										
*S										
*S RAINFALL	HUNDRED YR TYPE=1 RAIN QUARTER=0.0 RAIN ONE=1.87									
*S	RAIN SIX=2.20 RAIN DAY=2.68 DT=.033333 HR									
RAINFALL TYPE= 1										RAIN6= 2.200
*S										
COMPUTE NM HYD	352.00	-	1	.03141	26.84	.756	.45102	1.533	1.335	PER IMP= .00
ROUTE	272.00	1	3	.03141	17.61	.756	.45105	1.633	.876	
COMPUTE NM HYD	351.00	-	2	.01500	12.82	.361	.45102	1.533	1.336	PER IMP= .00
ADD HYD	274.00	2& 3	1	.04641	27.98	1.116	.45103	1.600	.942	
*S USE L FROM MID POINT OF BASIN TO MIDPOINT OF NEXT										
ROUTE	202.00	1	2	.04641	22.11	1.116	.45104	1.633	.744	
COMPUTE NM HYD	304.00	-	3	.02938	25.11	.707	.45102	1.533	1.335	PER IMP= .00
ADD HYD	203.00	2& 3	1	.07579	41.55	1.823	.45102	1.567	.857	
*S HYD 206 = INTO TANAGER POND *LOCATION* FROM NORTH										
ROUTE	204.00	1	4	.07579	39.01	1.823	.45103	1.600	.804	
COMPUTE NM HYD	303.00	-	3	.06688	57.28	1.609	.45102	1.533	1.338	PER IMP= .00
*S HYD 299=COA SATELLITE: ASSUME 10 CFS CLEAN & NON-ERSOIVE; REAL 1993 0.5+-										
STORE HYD	299.00	-	2	.07516	.51	.372	.09288	1.333	.011	
*S HYD 205 = INTO TANAGER POND LOCATION FROM WEST (303+299 (COA SATELLITE))										
ADD HYD	205.00	2& 3	1	.14204	57.79	1.978	.26114	1.533	.636	
ADD HYD	208.00	1& 4	5	.21783	91.44	3.801	.32721	1.567	.656	
COMPUTE NM HYD	302.20	-	1	.07109	61.01	1.710	.45102	1.533	1.341	PER IMP= .00
ROUTE	207.00	1	2	.07109	61.51	1.710	.45103	1.533	1.352	
*S HYD 206 = AP 2 IN = TANAGER POND IN										
ADD HYD	206.00	2& 5	3	.28892	152.50	5.511	.35767	1.533	.825	
*S HYD 510 = AP2 OUT = TANAGER POND OUT										
ROUTE RESERVOIR	510.00	3	4	.28892	22.12	5.511	.35767	2.067	.120	AC-FT= 3.160
*S DELAY 510 2 MIN (1 TIME STEP) TO SIMULATE PIPE ROUTING: L=900', V=7.04										
FINISH										

ADD'L CALCS FOR INTERIM

5.51 ... Wate...
- 1.21 Basin 302.?, not in INTE...
3.30 ... Wate...
+ 1.23 ... ...
5.03 ... ... INTERIM

* ... NOT ... for absence of 302.02 in INTERIM

```
START                TIME=0.0   PUNCH CODE=0   PRINT LINES=58
                     CONTROL CODES AT START = 027 015 0 0 0
                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
                     CONTROL CODES AT END = 0 0 0 0 0
                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
* START               TIME=0.0   PUNCH CODE=0   PRINT LINES=56
*                    CONTROL CODES AT START = 027 042 048
*                    027 091 0 0   0 0 0 0 0   0 0 0 0 0 0 0 0
*                    CONTROL CODES AT END =  027 093 0 0 0
*                    0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
*S FILE RTP00 = Revised Tanager Pond existing conditions 100-YR storm
*S ALL STUFF W OF TANAGER EXIST COND @ 97%A & 3%C
*S BASIN 299 (COA SATELLITE CENTER) AT EXIST 0.51 CFS
*S
* TUCKER GREEN  4/94
*************************************************************************
* SUNRISE TERRACE RAINFALL PER ALBUQUERQUE NM DPM, MAP L-8
* RAINFALL             TWO YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=0.73
*                      RAIN SIX=0.95      RAIN DAY=1.16     DT=.033333 HR
* RAINFALL             TEN YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.24
*                      RAIN SIX=1.47      RAIN DAY=1.79     DT=.033333 HR
*S RAINFALL            HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
*S                     RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR
RAINFALL             HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
                     RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR
*S
*************************************************************************
COMPUTE NM HYD       ID=1   HYD=352   DA=0.03141  SQ MI
                     PER A=97  B=0    C=3   D=0    TP=0.1333 HRS   RAIN=-1
PRINT HYD            ID=1   CODE=1
COMPUTE RATING CURVE CID=-1  VS NO=38   NO SEGS=1
                     MIN EL=0    FT   MAX EL=1    FT
                     CH SLP= .037     FP SLP=.037     FT PER FT
                       N   END X
                     .035   122
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     1       1     0       121   0       122   1
COMPUTE TRAVEL TIME  ID=3     REACH=2  NO VS=1
                     L=900    ft       SLP=.037    ft/ft
ROUTE                ID=3     HYD=272     INFLOW HYD ID=1   DT=.033333
*************************************************************************
COMPUTE NM HYD       ID=2   HYD=351   DA=0.01500  SQ MI
                     PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1  CODE=1
ADD HYD              ID=1   HYD=274    ID I=2      ID II=3
COMPUTE RATING CURVE CID=1  VS NO=32  NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP=.001      FP SLP=.001     FT PER FT
                      N  END FT
                     .030  40
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       15    0       25    0       40    5
*S USE L FROM MID POINT OF BASIN TO MIDPOINT OF NEXT
COMPUTE TRAVEL TIME  ID=2     REACH=32 NO VS=1
                     L=600    ft       SLP=.001    ft/ft
ROUTE                ID=2     HYD=202     INFLOW HYD ID=1   DT=.033333
*************************************************************************
COMPUTE NM HYD       ID=3 HYD NO=304 DA=0.02938 SQ MI
                     PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=3   CODE=1
ADD HYD              ID=1   HYD=203    ID I=2      ID II=3
COMPUTE RATING CURVE CID=1  VS NO=32  NO SEGS=1
```

RTP00 INFLT

1

```
                    CH SLP=.001      FP SLP=.001     FT PER FT
                     N  END FT
                    .030  40
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     5       15    0       25    0       40    5
* USE  L FROM MID-POINT OF BASIN TO MID-POINT OF NEXT
COMPUTE TRAVEL TIME  ID=4     REACH=32 NO VS=1
                    L=250    ft       SLP=.001    ft/ft
*S HYD 206 = INTO TANAGER POND *LOCATION* FROM NORTH
ROUTE                ID=4     HYD=204     INFLOW HYD ID=1   DT=.033333
*************************************************************************
COMPUTE NM HYD       ID=3   HYD=303   DA=0.06688  SQ MI
                    PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=3  CODE=1
*************************************************************************
*S HYD 299=COA SATELLITE: ASSUME 10 CFS CLEAN & NON-ERSOIVE; REAL 1993 0.5+-
STORE HYD            ID=2   HYD NO=299  DT=0.16667 HR   DA=.07516  SQ MI
                    FLOW RATES CFS= (LEFT TO RIGHT, DOWN, LEFT TO RIGHT ...)
                    0       .00     .00     .00     .00     .00
                    .00     .51     .51     .51     .51     .51
                    .51     .51     .51     .51     .51     .51
                    .51     .51     .51     .51     .51     .51
                    .51     .51     .51     .51     .51     .51
                    .51     .51     .51     .51     .51     .51
                    .51     .51     .51     .51     .51     .51
                    .51     .51     .51     .51     .51     .51
                    .51     .51     .51     .51     .51     .51
*S HYD 205 = INTO TANAGER POND LOCATION FROM WEST (303+299 (COA SATELLITE))
*                     NEW      NEW        IN1          IN2
ADD HYD              ID=1   HYD=205    ID I=2      ID II=3
*                     NEW      NEW        IN1          IN2
ADD HYD              ID=5   HYD=208    ID I=1      ID II=4
*************************************************************************
COMPUTE NM HYD       ID=1   HYD=302.2  DA=.07109   SQ MI
                    PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1   CODE=1
COMPUTE RATING CURVE CID=-1  VS NO=33  NO SEGS=1
                    MIN EL=0    FT   MAX EL=5    FT
                    CH SLP=.005      FP SLP=.005     FT PER FT
                     N  END FT
                    .017  13.33
                    DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                    0     1.17    .01   .5      3     0       9.83  0
                    13.33 1.17
COMPUTE TRAVEL TIME  ID=2     REACH=33 NO VS=1
                    L=350  ft       SLP=.005    ft/ft
ROUTE                ID=2     HYD=207     INFLOW HYD ID=1   DT=.033333
*S  HYD 206 = AP 2 IN = TANAGER POND IN
*                     NEW      NEW        IN1          IN2
ADD HYD              ID=3   HYD=206    ID I=2      ID II=5
PRINT HYD            ID=3   CODE=1
PLOT HYD             ID=3
*S  HYD 510 = AP2 OUT = TANAGER POND OUT
*   Qout=21.33 @ 52.00 FOR 24"RCP AND SILT-STOP BERM @ 49.0
ROUTE RESERVOIR      ID=4  HYD=510  INFLOW ID=3  CODE=2
                    OUTFLOW CFS    STORAGE AC-FT   ELEVATION FT
                      0.            0.0000          49
                      13.42         0.1515          49.2
                      18.25         0.3826          49.5
                      18.91         0.7781          50
                      20.15         1.6084          51
                      21.33         2.4923          52
                      21.88         2.9549          52.5
                      22.44         3.4315          53
                      22.92         3.9222          53.5
```

2

```
                    23.34        4.4272         54
*S DELAY 510 2 MIN (1 TIME STEP) TO SIMULATE PIPE ROUTING: L=900', V=7.04
                     =4   TIME SHIFT=0.033333 HRS   CODE=-1
PRINT HYD           ID=4   CODE=1
*COMPUTE RATING CURVE CID=-1  VS NO=33  NO SEGS=-1   PIPE
*                   S=.0015 FT/FT   DIAM=2 FT    N=.013
*COMPUTE TRAVEL TIME  ID=2     REACH=33 NO VS=1
*                   L=900  ft       SLP=.0015   ft/ft
*ROUTE              ID=2     HYD=211     INFLOW HYD ID=4   DT=.033333
*************************************************************************
* 302.1 = SOUTH END OF BASIN 302
COMPUTE NM HYD      ID=3    HYD=302.1  DA=.01031   SQ MI
                    PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1
PRINT HYD           ID=3    CODE=1
*                     NEW      NEW       IN1          IN2
ADD HYD             ID=1   HYD=212    ID I=4      ID II=3
PRINT HYD           ID=1    CODE=1

FINISH
```

```
    AHYMO PROGRAM (AHYM0392) - AMAFCA VERSION OF HYMO - MARCH. 1992
         RUN DATE (MON/DAY/YR) = 06/22/1994
         START TIME (HR:MIN:SEC) = 17:05:27     USER NO.= RYALS_NM.101
         INPUT FILE = RTP00

START                TIME=0.0   PUNCH CODE=0   PRINT LINES=58
                     CONTROL CODES AT START = 027 015 0 0 0
                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
                     CONTROL CODES AT END = 0 0 0 0 0
                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
* START                TIME=0.0   PUNCH CODE=0   PRINT LINES=56
*                     CONTROL CODES AT START = 027 042 048
*                     027 091 0 0   0 0 0 0 0   0 0 0 0 0 0 0 0
*                     CONTROL CODES AT END =  027 093 0 0 0
*                     0 0 0 0 0   0 0 0 0 0   0 0 0 0 0
*S FILE RTP00 = Revised Tanager Pond existing conditions 100-YR storm
*S ALL STUFF W OF TANAGER EXIST COND @ 97%A & 3%C
*S BASIN 299 (COA SATELLITE CENTER) AT EXIST 0.51 CFS
*S
* TUCKER GREEN  4/94
*********************************************************************************
* SUNRISE TERRACE RAINFALL PER ALBUQUERQUE NM DPM, MAP L-8
* RAINFALL             TWO YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=0.73
*                      RAIN SIX=0.95      RAIN DAY=1.16     DT=.033333 HR
* RAINFALL             TEN YR      TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.24
*                      RAIN SIX=1.47      RAIN DAY=1.79     DT=.033333 HR
*S RAINFALL             HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
*S                      RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR
RAINFALL             HUNDRED YR  TYPE=1 RAIN QUARTER=0.0  RAIN ONE=1.87
                     RAIN SIX=2.20      RAIN DAY=2.68     DT=.033333 HR

                COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                DT =    .033333 HOURS       END TIME =     5.999940 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   .0810   .0865   .0924   .1051
                   .1335   .1773   .2400   .3257   .4384   .5820   .7607
                   .9789  1.1808  1.2652  1.3365  1.4000  1.4577  1.5108
                  1.5602  1.6063  1.6495  1.6902  1.7285  1.7648  1.7991
                  1.8316  1.8624  1.8917  1.9194  1.9458  1.9519  1.9576
                  1.9631  1.9683  1.9732  1.9780  1.9826  1.9870  1.9912
                  1.9953  1.9993  2.0031  2.0068  2.0105  2.0140  2.0174
                  2.0207  2.0240  2.0272  2.0303  2.0333  2.0363  2.0392
                  2.0420  2.0448  2.0476  2.0502  2.0529  2.0554  2.0580
                  2.0605  2.0629  2.0653  2.0677  2.0701  2.0724  2.0746
                  2.0769  2.0791  2.0812  2.0834  2.0855  2.0876  2.0896
                  2.0916  2.0936  2.0956  2.0976  2.0995  2.1014  2.1033
                  2.1052  2.1070  2.1088  2.1106  2.1124  2.1142  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  2.1461  2.1475  2.1489
                  2.1504  2.1518  2.1532  2.1546  2.1560  2.1573  2.1587
                  2.1601  2.1614  2.1627  2.1641  2.1654  2.1667  2.1680
                  2.1693  2.1705  2.1718  2.1731  2.1743  2.1756  2.1768
                  2.1780  2.1793  2.1805  2.1817  2.1829  2.1841  2.1852
                  2.1864  2.1876  2.1887  2.1899  2.1911  2.1922  2.1933
                  2.1945  2.1956  2.1967  2.1978  2.1989  2.2000

*S
```

1

```
**********************************************************************************
COMPUTE NM HYD       ID=1   HYD=352   DA=0.03141  SQ MI
                     PER A=97  B=0    C=3   D=0    TP=0.1333 HRS   RAIN=-1

   K =   .161949HR    TP =   .133300HR    K/TP RATIO =  1.214924     SHAPE CONSTANT, N =  2.927948
   UNIT PEAK =   65.010    CFS   UNIT VOLUME =    .9995       B =   275.89      P60 = 1.8700
   AREA =      .031410 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1   CODE=1

                                    HYDROGRAPH FROM AREA   352.00


   RUNOFF VOLUME =      .45102 INCHES     =        .7555 ACRE-FEET
   PEAK DISCHARGE RATE =      26.84 CFS  AT   1.533 HOURS   BASIN AREA =   .0314 SQ. MI.



COMPUTE RATING CURVE CID=-1  VS NO=38   NO SEGS=1
                     MIN EL=0    FT   MAX EL=1    FT
                     CH SLP= .037     FP SLP=.037     FT PER FT
                       N   END X
                     .035   122
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     1       1     0       121   0       122   1
COMPUTE TRAVEL TIME  ID=3     REACH=2  NO VS=1
                     L=900    ft       SLP=.037    ft/ft

                     TRAVEL TIME TABLE
                                    REACH=  2.0

                     WATER       AVERAGE     FLOW        TRAVEL
                     DEPTH       AREA        RATE        TIME
                     FEET        SQ.FT.      CFS         HRS
                        .053       6.319       7.24       .2181
                        .105      12.643      22.99       .1375
                        .158      18.972      45.19       .1050
                        .211      25.307      72.99       .0867
                        .263      31.648     105.86       .0747
                        .316      37.994     143.43       .0662
                        .368      44.346     185.43       .0598
                        .421      50.704     231.63       .0547
                        .474      57.066     281.85       .0506
                        .526      63.435     335.92       .0472
                        .579      69.809     393.72       .0443
                        .632      76.188     455.13       .0419
                        .684      82.573     520.03       .0397
                        .737      88.964     588.35       .0378
                        .789      95.360     659.99       .0361
                        .842     101.762     734.88       .0346
                        .895     108.169     812.94       .0333
                        .947     114.582     894.12       .0320
                       1.000     121.000     978.35       .0309
ROUTE                ID=3     HYD=272     INFLOW HYD ID=1   DT=.033333
**********************************************************************************
COMPUTE NM HYD       ID=2   HYD=351   DA=0.01500  SQ MI
                     PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1

   K =   .161949HR    TP =   .133300HR    K/TP RATIO =  1.214924     SHAPE CONSTANT, N =  2.927948
   UNIT PEAK =   31.046    CFS   UNIT VOLUME =    .9992       B =   275.89      P60 = 1.8700
   AREA =      .015000 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1  CODE=1
```

HYDROGRAPH FROM AREA 352.00

RUNOFF VOLUME = .45102 INCHES = .7555 ACRE-FEET
PEAK DISCHARGE RATE = 26.84 CFS AT 1.533 HOURS BASIN AREA = .0314 SQ. MI.

```
ADD HYD              ID=1   HYD=274    ID I=2      ID II=3
COMPUTE RATING CURVE CID=1  VS NO=32  NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP=.001      FP SLP=.001     FT PER FT
                      N  END FT
                     .030  40
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       15    0       25    0       40    5
```

RATING CURVE VALLEY SECTION 32.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.26	2.8	1.7
.53	6.1	5.7
.79	9.8	11.5
1.05	13.9	19.2
1.32	18.4	28.8
1.58	23.3	40.3
1.84	28.6	53.9
2.11	34.3	69.7
2.37	40.5	87.6
2.63	47.1	107.8
2.89	54.1	130.4
3.16	61.5	155.5
3.42	69.3	183.2
3.68	77.6	213.5
3.95	86.2	246.5
4.21	95.3	282.3
4.47	104.8	321.1
4.74	114.7	362.8
5.00	125.0	407.6

```
*S USE L FROM MID POINT OF BASIN TO MIDPOINT OF NEXT
COMPUTE TRAVEL TIME  ID=2     REACH=32 NO VS=1
                     L=600    ft       SLP=.001    ft/ft
```

TRAVEL TIME TABLE

REACH= 32.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	2.839	1.73	.2729
.526	6.094	5.67	.1793
.789	9.765	11.49	.1416
1.053	13.850	19.18	.1203
1.316	18.352	28.78	.1063
1.579	23.269	40.34	.0961
1.842	28.601	53.94	.0884
2.105	34.349	69.66	.0822
2.368	40.512	87.60	.0771
2.632	47.091	107.83	.0728
2.895	54.086	130.45	.0691
3.158	61.496	155.54	.0659
3.421	69.321	183.18	.0631
3.684	77.562	213.47	.0606
3.947	86.219	246.50	.0583

4.211	95.291	282.33	.0563
4.474	104.778	321.07	.0544
4.737	114.681	362.78	.0527
5.000	125.000	407.56	.0511

ROUTE ID=2 HYD=202 INFLOW HYD ID=1 DT=.033333

****

COMPUTE NM HYD ID=3 HYD NO=304 DA=0.02938 SQ MI
PER A=97 B=0 C=3 D=0 TP=0.1333 HRS RAIN=-1

K = .161949HR TP = .133300HR K/TP RATIO = 1.214924 SHAPE CONSTANT. N = 2.927948
UNIT PEAK = 60.808 CFS UNIT VOLUME = .9995 B = 275.89 P60 = 1.8700
AREA = .029380 SQ MI IA = .64100 INCHES INF = 1.64480 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=3 CODE=1

HYDROGRAPH FROM AREA 304.00

RUNOFF VOLUME = .45102 INCHES = .7067 ACRE-FEET
PEAK DISCHARGE RATE = 25.11 CFS AT 1.533 HOURS BASIN AREA = .0294 SQ. MI.

ADD HYD ID=1 HYD=203 ID I=2 ID II=3

COMPUTE RATING CURVE CID=1 VS NO=32 NO SEGS=1
MIN EL=0 FT MAX EL=5 FT
CH SLP=.001 FP SLP=.001 FT PER FT
N END FT
.030 40

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0	5	15	0	25	0	40	5

RATING CURVE VALLEY SECTION 32.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.26	2.8	1.7
.53	6.1	5.7
.79	9.8	11.5
1.05	13.9	19.2
1.32	18.4	28.8
1.58	23.3	40.3
1.84	28.6	53.9
2.11	34.3	69.7
2.37	40.5	87.6
2.63	47.1	107.8
2.89	54.1	130.4
3.16	61.5	155.5
3.42	69.3	183.2
3.68	77.6	213.5
3.95	86.2	246.5
4.21	95.3	282.3
4.47	104.8	321.1
4.74	114.7	362.8
5.00	125.0	407.6

* USE L FROM MID-POINT OF BASIN TO MID-POINT OF NEXT
COMPUTE TRAVEL TIME ID=4 REACH=32 NO VS=1
L=250 ft SLP=.001 ft/ft

TRAVEL TIME TABLE

REACH= 32.0

WATER DEPTH	AVERAGE AREA	FLOW RATE	TRAVEL TIME

FEET	SQ.FT.	CFS	HRS
.263	2.839	1.73	.1137
.526	6.094	5.67	.0747
.789	9.765	11.49	.0590
1.053	13.850	19.18	.0501
1.316	18.352	28.78	.0443
1.579	23.269	40.34	.0401
1.842	28.601	53.94	.0368
2.105	34.349	69.66	.0342
2.368	40.512	87.60	.0321
2.632	47.091	107.83	.0303
2.895	54.086	130.45	.0288
3.158	61.496	155.54	.0275
3.421	69.321	183.18	.0263
3.684	77.562	213.47	.0252
3.947	86.219	246.50	.0243
4.211	95.291	282.33	.0234
4.474	104.778	321.07	.0227
4.737	114.681	362.78	.0220
5.000	125.000	407.56	.0213

```
*S HYD 206 = INTO TANAGER POND *LOCATION* FROM NORTH
ROUTE                ID=4     HYD=204     INFLOW HYD ID=1   DT=.033333
*************************************************************************
COMPUTE NM HYD       ID=3   HYD=303   DA=0.06688  SQ MI
                     PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1

   K =   .161440HR    TP =   .133300HR    K/TP RATIO =  1.211105     SHAPE CONSTANT, N =  2.936360
   UNIT PEAK =   138.77    CFS   UNIT VOLUME =    .9996       B =   276.59      P60 = 1.8700
   AREA =      .066880 SQ MI    IA =    .64100 INCHES    INF =   1.64480 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=3  CODE=1

                                    HYDROGRAPH FROM AREA   303.00


   RUNOFF VOLUME =      .45102 INCHES     =       1.6087 ACRE-FEET
   PEAK DISCHARGE RATE =      57.28 CFS  AT   1.533 HOURS   BASIN AREA =   .0669 SQ. MI.



*************************************************************************
*S HYD 299=COA SATELLITE: ASSUME 10 CFS CLEAN & NON-ERSOIVE; REAL 1993 0.5+-
STORE HYD            ID=2   HYD NO=299  DT=0.16667 HR   DA=.07516  SQ MI
                     FLOW RATES CFS= (LEFT TO RIGHT, DOWN, LEFT TO RIGHT ...)
                     0       .00     .00     .00     .00     .00
                     .00     .51     .51     .51     .51     .51
                     .51     .51     .51     .51     .51     .51
                     .51     .51     .51     .51     .51     .51
                     .51     .51     .51     .51     .51     .51
                     .51     .51     .51     .51     .51     .51
                     .51     .51     .51     .51     .51     .51
                     .51     .51     .51     .51     .51     .51
                     .51     .51     .51     .51     .51     .51
                     .51     .51     .51     .51     .51     .51
*S HYD 205 = INTO TANAGER POND LOCATION FROM WEST (303+299 (COA SATELLITE))
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=1   HYD=205    ID I=2      ID II=3
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=5   HYD=208    ID I=1      ID II=4
*************************************************************************
COMPUTE NM HYD       ID=1   HYD=302.2  DA=.07109   SQ MI
                     PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1

   K =   .160951HR    TP =   .133300HR    K/TP RATIO =  1.207434     SHAPE CONSTANT, N =  2.944510
   UNIT PEAK =   147.87    CFS   UNIT VOLUME =    .9997       B =   277.27      P60 = 1.8700
```

AREA = .071090 SQ MI IA = .64100 INCHES INF = 1.64480 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

HYDROGRAPH FROM AREA 302.20

RUNOFF VOLUME = .45102 INCHES = 1.7100 ACRE-FEET
PEAK DISCHARGE RATE = 61.01 CFS AT 1.533 HOURS BASIN AREA = .0711 SQ. MI.

COMPUTE RATING CURVE CID=-1 VS NO=33 NO SEGS=1
MIN EL=0 FT MAX EL=5 FT
CH SLP=.005 FP SLP=.005 FT PER FT
N END FT
.017 13.33
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
0 1.17 .01 .5 3 0 9.83 0
13.33 1.17

COMPUTE TRAVEL TIME ID=2 REACH=33 NO VS=1
L=350 ft SLP=.005 ft/ft

TRAVEL TIME TABLE
REACH= 33.0

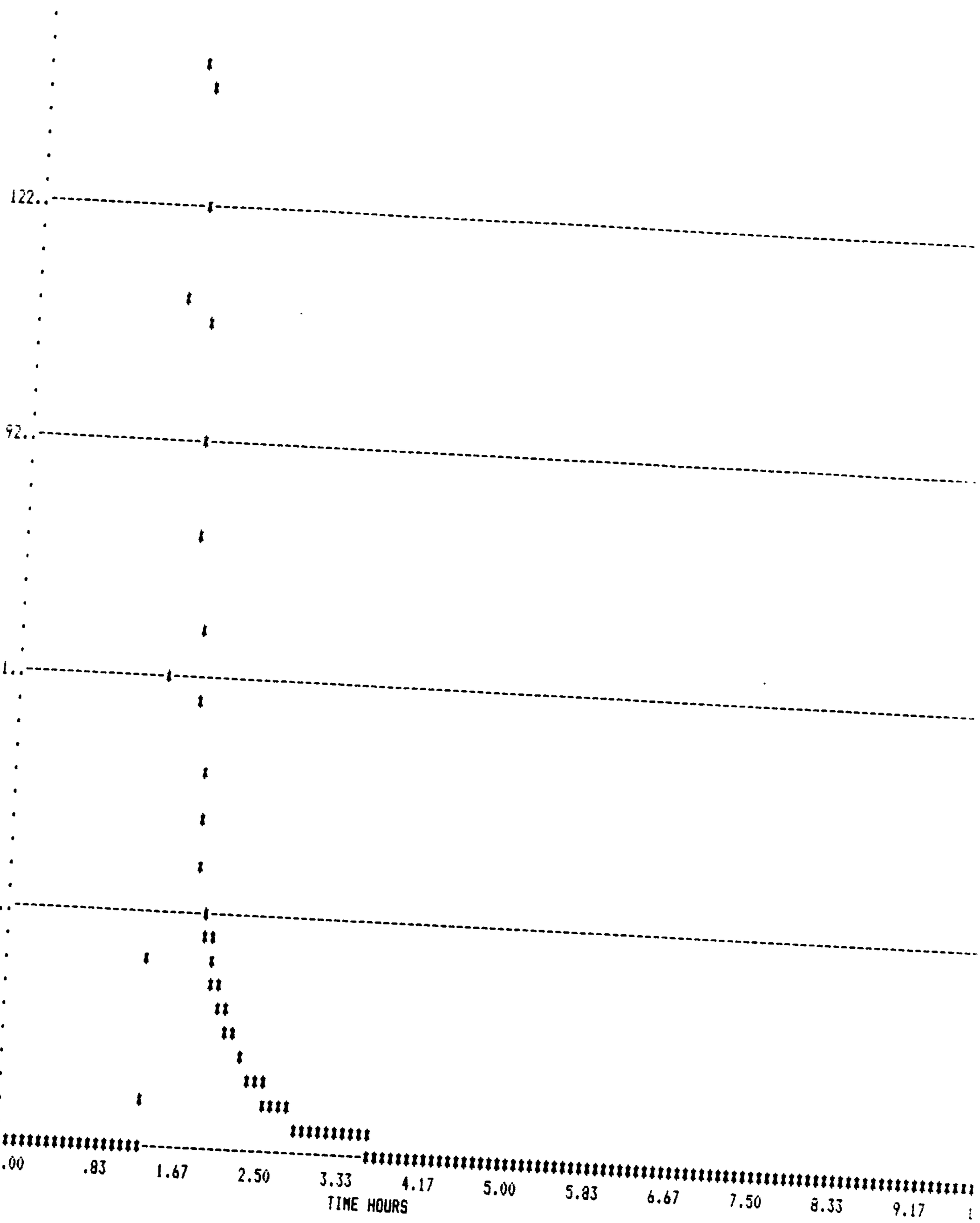
WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.263	2.108	4.86	.0422
.526	4.835	16.73	.0281
.789	7.938	35.98	.0215
1.053	11.249	60.86	.0180
1.316	14.736	93.27	.0154
1.579	18.244	133.13	.0133
1.842	21.752	178.48	.0118
2.105	25.260	228.98	.0107
2.368	28.768	284.40	.0098
2.632	32.276	344.51	.0091
2.895	35.783	409.15	.0085
3.158	39.291	478.17	.0080
3.421	42.799	551.41	.0075
3.684	46.307	628.78	.0072
3.947	49.815	710.15	.0068
4.211	53.323	795.44	.0065
4.474	56.831	884.55	.0062
4.737	60.339	977.41	.0060
5.000	63.847	1073.94	.0058

ROUTE ID=2 HYD=207 INFLOW HYD ID=1 DT=.033333
*5 HYD 206 = AP 2 IN = TANAGER POND IN
* NEW NEW IN1 IN2
ADD HYD ID=3 HYD=206 ID I=2 ID II=5
PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 206.00

RUNOFF VOLUME = .35767 INCHES = 5.5114 ACRE-FEET
PEAK DISCHARGE RATE = 152.50 CFS AT 1.533 HOURS BASIN AREA = .2889 SQ. MI.

PLOT HYD ID=3
FLOW RATE (CFS)




```
*S  HYD 510 = AP2 OUT = TANAGER POND OUT
*   Qout=21.33 @ 52.00 FOR 24"RCP AND SILT-STOP BERM @ 49.0
ROUTE RESERVOIR      ID=4  HYD=510  INFLOW ID=3  CODE=2
                     OUTFLOW CFS    STORAGE AC-FT   ELEVATION FT
                       0.             0.0000          49
                      13.42           0.1515          49.2
                      18.25           0.3826          49.5
                      18.91           0.7781          50
                      20.15           1.6084          51
                      21.33           2.4923          52
                      21.88           2.9549          52.5
```

22.44	3.4315	53
22.92	3.9222	53.5
23.54	4.4272	54

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	49.00	.000	.00
.07	.00	49.00	.000	.00
.13	.00	49.00	.000	.00
.20	.00	49.00	.000	.00
.27	.00	49.00	.000	.00
.33	.00	49.00	.000	.00
.40	.00	49.00	.000	.00
.47	.00	49.00	.000	.00
.53	.00	49.00	.000	.00
.60	.00	49.00	.000	.00
.67	.00	49.00	.000	.00
.73	.00	49.00	.000	.00
.80	.00	49.00	.000	.00
.87	.00	49.00	.000	.00
.93	.00	49.00	.000	.00
1.00	.00	49.00	.000	.00
1.07	.00	49.00	.000	.00
1.13	.00	49.00	.000	.00
1.20	.10	49.00	.000	.01
1.27	.31	49.00	.001	.09
1.33	.51	49.00	.002	.21
1.40	23.19	49.05	.042	3.69
1.47	109.20	49.43	.331	17.16
1.53	152.50	50.24	.976	19.21
1.60	136.64	51.08	1.682	20.25
1.67	106.71	51.72	2.246	21.00
1.73	77.85	52.15	2.634	21.50
1.80	56.82	52.42	2.883	21.79
1.87	41.67	52.58	3.032	21.97
1.93	31.72	52.66	3.111	22.06
2.00	26.21	52.70	3.148	22.11
2.07	22.51	52.72	3.160	22.12
2.13	19.49	52.71	3.154	22.11
2.20	16.92	52.69	3.132	22.09
2.27	14.77	52.65	3.098	22.05
2.33	12.93	52.60	3.053	21.99
2.40	11.23	52.55	2.998	21.93
2.47	9.82	52.48	2.935	21.86
2.53	8.67	52.40	2.866	21.77
2.60	7.71	52.32	2.791	21.69
2.67	6.87	52.24	2.712	21.59
2.73	6.14	52.15	2.629	21.49
2.80	5.49	52.06	2.543	21.39
2.87	4.93	51.96	2.454	21.28
2.93	4.43	51.85	2.363	21.16
3.00	4.00	51.75	2.270	21.03
3.07	3.59	51.64	2.176	20.91
3.13	3.25	51.53	2.080	20.78
3.20	2.97	51.42	1.983	20.65
3.27	2.70	51.31	1.885	20.52
3.33	2.46	51.20	1.786	20.39
3.40	2.24	51.09	1.687	20.26
3.47	2.04	50.98	1.588	20.12
3.53	1.86	50.86	1.488	19.97
3.60	1.70	50.74	1.388	19.82
3.67	1.55	50.61	1.289	19.67
3.73	1.42	50.49	1.189	19.52

3.80	1.31	50.37	1.089	19.37
3.87	1.21	50.25	.990	19.23
3.93	1.12	50.14	.891	19.08
4.00	1.04	50.02	.792	18.93
4.07	.97	49.89	.694	18.77
4.13	.91	49.77	.596	18.61
4.20	.86	49.65	.499	18.44
4.27	.81	49.52	.402	18.28
4.33	.77	49.41	.310	16.72
4.40	.74	49.30	.226	14.99
4.47	.71	49.20	.152	13.43
4.53	.68	49.13	.096	8.53
4.60	.66	49.08	.062	5.48
4.67	.64	49.05	.041	3.61
4.73	.62	49.04	.028	2.46
4.80	.61	49.03	.020	1.74
4.87	.60	49.02	.015	1.30
4.93	.58	49.02	.012	1.02
5.00	.57	49.01	.010	.85
5.07	.57	49.01	.008	.74
5.13	.56	49.01	.008	.67
5.20	.55	49.01	.007	.63
5.27	.54	49.01	.007	.59
5.33	.54	49.01	.006	.57
5.40	.53	49.01	.006	.56
5.47	.53	49.01	.006	.55
5.53	.52	49.01	.006	.54
5.60	.52	49.01	.006	.53
5.67	.52	49.01	.006	.53
5.73	.52	49.01	.006	.52
5.80	.51	49.01	.006	.52
5.87	.51	49.01	.006	.52
5.93	.51	49.01	.006	.52
6.00	.51	49.01	.006	.51
6.07	.51	49.01	.006	.51
6.13	.51	49.01	.006	.51
6.20	.51	49.01	.006	.51
6.27	.51	49.01	.006	.51
6.33	.51	49.01	.006	.51
6.40	.51	49.01	.006	.51
6.47	.51	49.01	.006	.51
6.53	.51	49.01	.006	.51
6.60	.51	49.01	.006	.51
6.67	.51	49.01	.006	.51
6.73	.51	49.01	.006	.51
6.80	.51	49.01	.006	.51
6.87	.51	49.01	.006	.51
6.93	.51	49.01	.006	.51
7.00	.51	49.01	.006	.51
7.07	.51	49.01	.006	.51
7.13	.51	49.01	.006	.51
7.20	.51	49.01	.006	.51
7.27	.51	49.01	.006	.51
7.33	.51	49.01	.006	.51
7.40	.51	49.01	.006	.51
7.47	.51	49.01	.006	.51
7.53	.51	49.01	.006	.51
7.60	.51	49.01	.006	.51
7.67	.51	49.01	.006	.51
7.73	.51	49.01	.006	.51
7.80	.51	49.01	.006	.51
7.87	.51	49.01	.006	.51
7.93	.51	49.01	.006	.51
8.00	.51	49.01	.006	.51
8.07	.51	49.01	.006	.51
8.13	.51	49.01	.006	.51

8.20	.51	49.01	.006	.51
8.27	.51	49.01	.006	.51
8.33	.51	49.01	.006	.51
8.40	.51	49.01	.006	.51
8.47	.51	49.01	.006	.51
8.53	.51	49.01	.006	.51
8.60	.51	49.01	.006	.51
8.67	.51	49.01	.006	.51
8.73	.51	49.01	.006	.51
8.80	.51	49.01	.006	.51
8.87	.51	49.01	.006	.51
8.93	.51	49.01	.006	.51
9.00	.51	49.01	.006	.51
9.07	.51	49.01	.006	.51
9.13	.51	49.01	.006	.51
9.20	.51	49.01	.006	.51
9.27	.51	49.01	.006	.51
9.33	.51	49.01	.006	.51
9.40	.51	49.01	.006	.51
9.47	.51	49.01	.006	.51
9.53	.51	49.01	.006	.51
9.60	.51	49.01	.006	.51
9.67	.51	49.01	.006	.51
9.73	.51	49.01	.006	.51
9.80	.51	49.01	.006	.51
9.87	.51	49.01	.006	.51
9.93	.51	49.01	.006	.51
10.00	.51	49.01	.006	.51
10.07	.00	49.01	.004	.36
10.13	.00	49.00	.002	.22
10.20	.00	49.00	.002	.13
10.27	.00	49.00	.001	.08
10.33	.00	49.00	.001	.05
10.40	.00	49.00	.000	.03
10.47	.00	49.00	.000	.02
10.53	.00	49.00	.000	.01
10.60	.00	49.00	.000	.01
10.67	.00	49.00	.000	.00

PEAK DISCHARGE = 22.121 CFS - PEAK OCCURS AT HOUR 2.07
MAXIMUM WATER SURFACE ELEVATION = 52.716
MAXIMUM STORAGE = 3.1603 AC-FT INCREMENTAL TIME= .033333HRS

*S DELAY 510 2 MIN (1 TIME STEP) TO SIMULATE PIPE ROUTING: L=900 , V=7.04
=4 TIME SHIFT=0.033333 HRS CODE=-1
COMMAND NOT IN TABLE

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 17:05:31

TANGER00 TANAGER POND INFLOW - EARLY
TANGER10 FLOWS FOR SEDIMENT CALCULATIONS
TANGER2

~~PAGE~~ TANGER00.SUM 2/8/94

AHYMO SUMMARY TABLE (AHYMO392) - AMAFCA VERSION OF HYMO - MARCH. 1992 RUN DATE (MON/DAY/YR) =02/08/1994
INPUT FILE = tanger00 USER NO.= S:ALS_NM.101

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
*S POND EL BOT 49; EL TOP 55; ABOT 32730 SF; RCP D=2.5. OUTLET IN SUMP, Ke=0.5										
*S BASIN 302.2 DIRECTLY TO POND, NOT ROUTED. POSS TEMORARY; BASIN 304 ROUTED										
*S NO BUILDING. SINCE DEBULKED IN POND AND/OR FLAT CHAN										
*S										
*S REVISED 2/6/94 AREAS FOR 302.1 & 302.2										
*S RAINFALL	HUNDRED YR TYPE=1 RAIN QUARTER=0.0				RAIN ONE=1.37					
*S	RAIN SIX=2.20				RAIN DAY=2.68		DT=.033333 HR			
RAINFALL TYPE= 1									RAIN6=	2.200
COMPUTE NM HYD	304.00	-	3	.02938	25.11	.707	.45102	1.533	1.335 PER IMP=	.00
*S HYD 206 = 304 INTO TANAGER POND FROM NORTH: ROUTED USING L=250 FT										
ROUTE	206.00	3	4	.02938	22.25	.707	.45105	1.567	1.183	
COMPUTE NM HYD	303.00	-	3	.06688	57.28	1.609	.45102	1.533	1.338 PER IMP=	.00
*S HYD 299 = ROUTED COA SATELLITE: (POSS 10 CFS FUTURE) 0.51+- 1993										
STORE HYD	299.00	-	2	.07516	.51	.372	.09298	1.333	.011	
*S HYD 204=INTO TANAGER POND FROM WEST = 303 + 299 (SATELLITE)										
ADD HYD	204.00	2& 3	1	.14204	57.79	1.978	.26114	1.533	.636	
ADD HYD	208.00	1& 4	2	.17142	80.62	2.685	.29369	1.533	.729	
*S HYD 302.2 = 600/1000*FULL BASIN 302 = 33.1/55.2 AC. TO TANAGER POND FROM S										
COMPUTE NM HYD	302.20	-	3	.05172	44.20	1.244	.45102	1.533	1.335 PER IMP=	.00
*S HYD 209 = TOTAL FLOW INTO TANAGER POND @ SANDERLING										
ADD HYD	209.00	2& 3	4	.22314	124.22	3.929	.33015	1.533	.870	
*S RES ROUTE W PIPE IN SUMP: USES Q FOR HW=0 @EL 49 & Q FOR HW=2.25 @EL 49.25										
ROUTE RESERVOIR	510.00	4	3	.22314	24.93	3.929	.33015	1.867	.175 AC-FT=	2.055
ROUTE	210.00	3	4	.22314	24.82	3.929	.33015	1.933	.174	
*S HYD 302.1 = 400/1000*FULL BASIN 302 = 22.1/55.2 AC. DUNLIN PIPE AT TANAGER										
COMPUTE NM HYD	302.10	-	3	.03453	29.51	.831	.45102	1.533	1.335 PER IMP=	.00
FINISH										

TANGER10.SUM 2/8/94

HYMO SUMMARY TABLE (HH/MO392) - AMAFCA VERSION OF HYMO - MARCH, 1992 RUN DATE (MON/DAY/YR) =02/08/1994
INPUT FILE = tanger10 USER NO.= RYAL3_NM.101

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
*S POND EL BOT 47; EL TOP 55; WBOT 32780 SF; RCP D=2.5, OUTLET IN SUMP, ke=0.5										
*S BASIN 302.2 DIRECTLY TO POND, NOT ROUTED, POSS TEMPORARY; BASIN 304 ROUTED										
*S NO BULKING, SINCE DEBULKED IN POND AND/OR FLAT CHAN										
*S										
*S REVISED 2/8/94 AREAS FOR 302.1 & 302.2										
*S RAINFALL TEN YR TYPE=1 RAIN QUARTER=0.0 RAIN ONE=1.24										
*S RAIN SIX=1.47 RAIN DAY=1.79 DT=.033333 HR										
RAINFALL TYPE= 1										RAINo= 1.47
COMPUTE NM HYD	304.00	-	3	.02958	4.97	.138	.08833	1.533	.264	PER IMP= .00
*S HYD 206 = 304 INTO TANAGER POND FROM NORTH: ROUTED USING L/2=250 FT										
ROUTE	206.00	3	4	.02958	3.78	.138	.08836	1.600	.201	
COMPUTE NM HYD	303.00	-	3	.00689	11.33	.315	.08835	1.533	.265	PER IMP= .00
*S HYD 299 = ROUTED COA SATELLITE: (POSS 10 CFS FUTURE) 0.51+- 1993										
STORE HYD	299.00	-	2	.07516	.51	.372	.09288	1.333	.011	
*S HYD 204=INTO TANAGER POND FROM WEST = 303 + 299 (SATELLITE)										
ADD HYD	204.00	2& 3	1	.14204	11.84	.685	.09037	1.533	.130	
ADD HYD	208.00	1& 4	2	.17142	15.11	.823	.09002	1.533	.138	
*S HYD 302.2 = 600/1000*FULL BASIN 302 = 33.1/55.2 AC, TO TANAGER POND FROM S										
COMPUTE NM HYD	302.20	-	3	.05172	8.75	.244	.08835	1.533	.264	PER IMP= .00
*S HYD 209 = TOTAL FLOW INTO TANAGER POND @ SANDERLING										
ADD HYD	209.00	2& 3	4	.22314	23.87	1.067	.08963	1.533	.167	
*S RES ROUTE W PIPE IN SUMP: USES Q FOR HW=0 @EL 49 & Q FOR HW=2.25 @EL 49.25										
ROUTE RESERVOIR	510.00	4	3	.22314	16.70	1.067	.08963	1.667	.117	AC-FT= .161
ROUTE	210.00	3	4	.22314	15.22	1.067	.08964	1.700	.107	
*S HYD 302.1 = 400/1000*FULL BASIN 302 = 22.1/55.2 AC, DUNLIN PIPE AT TANAGER										
COMPUTE NM HYD	302.10	-	3	.03453	5.84	.163	.08835	1.533	.264	PER IMP= .00
FINISH										

TANGER 2.SUM 2/8/94

AHYMO SUMMARY TABLE (AHYMO392) - AMAFCA VERSION OF HYMO - MARCH, 1992 RUN DATE (MON/DAY/YR) =02/08/1994
INPUT FILE = tanger2 USER NO.= RYAL5_AM.IN1

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= .000
*S POND EL BOT 49; EL TOP 53; ABOT 32780 SF; RCP D=2.5. OUTLET IN SUMP, Ke=0.5										
*S BASIN 302.2 DIRECTLY TO POND, NOT ROUTED. FOSS TEMORARY; BASIN 304 ROUTED										
*S NO BULKING, SINCE DEBULKED IN POND AND/OR FLAT CHAN										
*S										
*S REVISED 2/8/94 AREAS FOR 302.1 & 302.2										
*S RAINFALL	TWO YR			TYPE=1 RAIN QUARTER=0.0		RAIN ONE=0.73				
*S	RAIN SIX=0.95			RAIN DAY=1.16		DT=.033333 HR				
RAINFALL TYPE= 1										RAIN6= .950
COMPUTE NM HYD	304.00	-	3	.02938	.00	.000	.00000	-.033	.000	PER IMP= .00
*S HYD 206 = 304 INTO TANAGER POND FROM NORTH; ROUTED USING L/2=250 FT										
ROUTE	206.00	3	4	.02938	.00	.000	.00000	-.033	.000	
COMPUTE NM HYD	303.00	-	3	.00638	.00	.000	.00000	-.033	.000	PER IMP= .00
*S HYD 299 = ROUTED CDA SATELLITE: (FOSS 10 CFS FUTURE) 0.51+- 1993										
STORE HYD	299.00	-	2	.07516	.51	.372	.07298	1.333	.011	
*S HYD 204=INTO TANAGER POND FROM WEST = 303 + 299 (SATELLITE)										
ADD HYD	204.00	2& 3	1	.14204	.51	.369	.04878	1.367	.006	
ADD HYD	208.00	1& 4	2	.17142	.51	.369	.04042	1.367	.005	
*S HYD 302.2 = 600/1000*FULL BASIN 302 = 33.1/55.2 AC, TO TANAGER POND FROM S										
COMPUTE NM HYD	302.20	-	3	.05172	.00	.000	.00000	-.033	.000	PER IMP= .00
*S HYD 209 = TOTAL FLOW INTO TANAGER POND @ SANDERLING										
ADD HYD	209.00	2& 3	4	.22314	.51	.367	.03105	1.367	.004	
*S RES ROUTE W PIPE IN SUMP; USES Q FOR HW=0 @EL 49 & Q FOR HW=2.25 @EL 49.25										
ROUTE RESERVOIR	510.00	4	3	.22314	.51	.369	.03105	3.267	.004	AC-FT= .006
ROUTE	210.00	3	4	.22314	.51	.370	.03105	4.133	.004	
*S HYD 302.1 = 400/1000*FULL BASIN 302 = 22.1/55.2 AC. DUNLIN PIPE AT TANAGER										
COMPUTE NM HYD	302.10	-	3	.03453	.00	.000	.00000	-.033	.000	PER IMP= .00
FINISH										

RSFOF10 SUNRISE FULL DEVELOPMENT, OFFSITE FAIR SHARE
INTERIM POND IN SANDPIPER, 10-YEAR

USE ONLY FOR INTERIM INTERSECTION PONDS -10 YR
SEE HYD 244

AHYMO SUMMARY TABLE (AHYMO392) - AMAFCA VERSION OF HYMO - MARCH, 1992 RUN DATE (MON/DAY/YR) =04/01/1994
INPUT FILE = rsfof10 USER NO.= RYALS_NM.101

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=0.0 PUNCH CODE=0 PRINT LINES=59									
*START	TIME=0.0 PUNCH CODE=0 PRINT LINES=59									
START									TIME=	.00
*S Revised Sunrise Full Dev & Offsite Fair share 10-yr										
*S INCLUDES BASIN 314 POSSIBLY TO SNOW VISTA POND, USE PER SNOW VISTA DESIGN										
*S NO SEDIMENT BULKING, ALL LAND TREATMENTS B=LANDSCAPE OR D=IMPERVIOUS										
*S NEW SUNRISE TERRACE (UNITS III-V) 46.8% B & 53.2% D										
*S										
*S TOWER RD FLOW DIVIDES AT SANDERLING: UP TO 23 CFS FALLS BACK INTO SUNRISE										
*S TERRACE & THE REMAINDER FLOWS TO DROP INLETS IN TOWER AT SNOW VISTA CHANNEL										
*S										
*S BASINS 101-109 PLAN = BASINS 151-159 IN THIS AHYMO FILE										
*S REVISED 3-16-94 FOR BASIN 305 BECOMES 351 - 355										
*S 3-19-94 FOR NEW HALTER POND GEOMETRY										
RAINFALL TYPE= 1									RAIN=	1.470
COMPUTE NM HYD	309.00	-	1	.12500	170.88	6.043	.90641	1.500	2.136	PER IMP= 67.40
ROUTE	100.00	1	2	.12500	139.11	6.043	.90641	1.567	1.739	
COMPUTE NM HYD	209.00	-	3	.07575	54.53	1.655	.40959	1.500	1.125	PER IMP= 19.50
*S HYD 102 = (309+ROUTED 309) CROSSING 106TH BTW EUCARIZ & SUNSET GARDEN										
*S HYD 102 = AP 4										
ADD HYD	102.00	2& 3	1	.20075	187.54	7.697	.71894	1.567	1.460	
ROUTE	104.00	1	4	.20075	174.62	7.698	.71895	1.600	1.359	
ROUTE	106.00	4	2	.20075	172.94	7.697	.71894	1.633	1.346	
COMPUTE NM HYD	314.00	-	4	.05469	39.49	1.195	.40959	1.500	1.129	PER IMP= 19.50
COMPUTE NM HYD	310.00	-	3	.02922	21.10	.638	.40959	1.500	1.129	PER IMP= 19.50
*S HYD 117 = 310+314 (THE "EXTRA" 35 AC), BOTH EAST OF 106TH, TO DESILT BASIN										
ADD HYD	117.00	3& 4	1	.08391	60.58	1.833	.40958	1.500	1.129	
ADD HYD	119.00	1& 2	2	.28466	217.68	9.530	.62775	1.600	1.195	
*S START NEW BRANCH										
COMPUTE NM HYD	306.00	-	2	.03969	28.65	.867	.40959	1.500	1.129	PER IMP= 19.50
ROUTE	110.00	2	3	.03969	17.97	.867	.40960	1.633	.709	
COMPUTE NM HYD	307.00	-	4	.04547	32.83	.993	.40959	1.500	1.129	PER IMP= 19.50
ADD HYD	112.00	3& 4	2	.08516	47.42	1.860	.40958	1.533	.870	
COMPUTE NM HYD	352.00	-	1	.03141	22.68	.686	.40959	1.500	1.129	PER IMP= 19.50
ROUTE	111.00	1	3	.03141	20.78	.686	.40960	1.567	1.034	
ADD HYD	113.00	2& 3	4	.11657	67.59	2.546	.40958	1.533	.906	
COMPUTE NM HYD	353.00	-	1	.00172	1.25	.038	.40959	1.500	1.136	PER IMP= 19.50
*S HYD 114 = AP 3 AT 105th ST										
ADD HYD	114.00	1& 4	3	.11829	68.92	2.584	.40958	1.533	.909	
ROUTE	116.00	3	4	.11829	68.70	2.584	.40959	1.567	.907	
ADD HYD	119.10	4& 7	3	.40295	283.94	12.114	.56371	1.600	1.101	
COMPUTE NM HYD	315.00	-	1	.01234	8.91	.270	.40959	1.500	1.129	PER IMP= 19.50
*S HYD 119 = COMBINED FLOW INTO SNOW VISTA DESILT BASIN										
*S HYD 119 = AP 5 IN										
ADD HYD	119.00	1& 3	5	.41529	290.57	12.384	.55912	1.500	1.093	
*S HYD 501 = ROUTED OUFLOW FROM SNOW VISTA DESILTING BASIN										
*S HYD 501 = AP 5 OUT										
ROUTE RESERVOIR	501.00	5	3	.41529	196.52	12.384	.55912	1.767	.702	AC-FT= 3.515
*S START SNOW VISTA CHANNEL										

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
ROUTE	121.00	3	2	.41529	195.76	12.384	.55912	1.767	.699	
COMPUTE NM HYD	311.00	-	3	.03913	27.53	.933	.40959	1.500	1.129	PER IMP= 19.50
ADD HYD	122.00	2& 3	4	.45342	194.39	13.317	.54655	1.767	.670	
COMPUTE NM HYD	312.00	-	1	.01199	8.53	.290	.40959	1.500	1.129	PER IMP= 19.50
ADD HYD	123.00	1& 4	2	.46530	197.09	13.476	.54305	1.767	.662	
*S START NEW BRANCH, TO TOWER RD										
COMPUTE NM HYD	354.00	-	1	.00531	3.84	.116	.40959	1.500	1.130	PER IMP= 19.50
COMPUTE NM HYD	355.00	-	2	.00266	1.93	.058	.40959	1.500	1.133	PER IMP= 19.50
ADD HYD	103.00	1& 2	3	.00797	5.77	.174	.40952	1.500	1.131	
COMPUTE NM HYD	403.00	-	1	.00699	7.94	.269	.72963	1.500	1.804	PER IMP= 50.00
*S HYD 105 = COMBINED FLOW AT TOWER-TANAGER-106th INTERSECTION										
ADD HYD	105.00	1& 3	4	.01495	13.71	.443	.55781	1.500	1.443	
COMPUTE NM HYD	401.00	-	1	.01016	11.72	.395	.72963	1.500	1.903	PER IMP= 50.00
ADD HYD	107.00	1& 4	2	.02501	25.44	.837	.62760	1.500	1.589	
*S SAY 1= 23 FROM TOWER TO SANDERLING; EXCESS IN STREET TO SNOW VISTA										
*S HOLD 401.2 (UNDERFLOW, ID=9) TO ADD TO 402 LATER										
DIVIDE HYD	401.20	2	9	.02466	23.00	.926	.62760	1.500	1.457	
	401.10	AND	2	.00035	2.44	.012	.62760	1.500	11.029	
ROUTE	109.00	2	4	.00035	1.55	.012	.64256	1.533	7.084	
*S HYD 124 = SNOW VISTA JUST DOWNSTREAM FROM TOWER										
*S HYD 124 = AP 6										
ADD HYD	124.00	4& 7	3	.46565	197.10	13.488	.54312	1.767	.661	
ROUTE	129.00	3	4	.46565	195.79	13.488	.54312	1.800	.657	
COMPUTE NM HYD	313.00	-	2	.01016	7.34	.222	.40959	1.500	1.129	PER IMP= 19.50
ADD HYD	130.00	2& 4	3	.47581	197.80	13.710	.54027	1.800	.650	
*S HYD 132 = SNOW VISTA JUST ABOVE JUNCTION WITH SECTION LINE CHANNEL STUB										
*S HYD 132 = AP 9										
ROUTE	132.00	3	5	.47581	197.91	13.710	.54027	1.800	.650	
*S										
*S START SUNRISE TERRACE INTERIOR										
COMPUTE NM HYD	151.00	-	1	.01049	12.57	.426	.76214	1.500	1.872	PER IMP= 53.20
COMPUTE NM HYD	152.00	-	2	.00621	7.55	.256	.76214	1.500	1.872	PER IMP= 53.20
ADD HYD	210.00	1& 2	3	.01680	20.13	.683	.76211	1.500	1.872	
COMPUTE NM HYD	153.00	-	1	.00713	8.55	.290	.76214	1.500	1.872	PER IMP= 53.20
*S HYD 220 = 151+152+153 (BASINS 101, 102, & 103) @ HACKAMORE & SANDERLING										
ADD HYD	220.00	1& 3	5	.02394	28.68	.973	.76210	1.500	1.872	
*S 401.2 (ID 9) = 'UNDERFLOW' (+-21 CFS MAX) FROM TOWER @ SANDERLING ABOVE										
*S DELAY 401.2 2 MIN (1 TIME STEP) TO SIMULATE ROUTING IN 2 SEGMENTS OF ROAD										
MODIFY TIME	401.20	9	9	.02466	23.00	.926	.62760	1.533	1.457	
*S BASIN 402 = EXISTING DEVELOPMENT @ 50%=B=LANDSCAPE, 50%=D=IMPERV										
COMPUTE NM HYD	402.00	-	1	.01547	17.85	.602	.72963	1.500	1.803	PER IMP= 50.00
ADD HYD	242.00	1& 8	4	.04013	40.32	1.428	.66692	1.500	1.570	
COMPUTE NM HYD	154.00	-	2	.00754	9.03	.306	.76214	1.500	1.872	PER IMP= 53.20
*S HYD 244 = 402+154 IN SANDPIPER AT CONNEMARA (HYD 154=BASIN 104)										
ADD HYD	244.00	2&.4	3	.04767	49.35	1.734	.68197	1.500	1.618	
*S HYD 240 = COMBINED FLOW @ HACKAMORE & SANDERLING										
ADD HYD	240.00	3& 5	2	.07161	78.03	2.707	.70875	1.500	1.703	
COMPUTE NM HYD	155.00	-	1	.00420	5.03	.171	.76214	1.500	1.872	PER IMP= 53.20
*S HYD 250 = COMBINED FLOW IN HACKAMORE AT WALTER										
ADD HYD	250.00	1& 2	3	.07580	83.06	2.877	.71171	1.500	1.712	
COMPUTE NM HYD	156.00	-	1	.01414	16.93	.575	.76214	1.500	1.871	PER IMP= 53.20
ADD HYD	260.00	1& 3	2	.08994	99.99	3.452	.71963	1.500	1.737	

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
COMPUTE NM HYD	157.00	-	1	.01736	20.79	.706	.76214	1.500	1.971	PER IMP= 53.20
*S HYD 224 = TOTAL FLOW TO HALTER POND LOCATION										
*S HYD 224 = AP 7 IN										
ADD HYD	224.00	1& 2	3	.10731	120.79	4.159	.72651	1.500	1.759	
*S HYD 503 = AP 7 OUT = HALTER POND OUTFALL										
ROUTE RESERVOIR	503.00	3	4	.10731	54.88	4.159	.72651	1.700	.799	AC-FT= 1.343
ROUTE	269.00	4	3	.10731	54.54	4.159	.72651	1.767	.794	
*S HYD 159 = BASIN 109, ALL ANDALUSIAN, NOT TO POND										
COMPUTE NM HYD	159.00	-	1	.01902	22.79	.773	.76214	1.500	1.971	PER IMP= 53.20
*S HYD 270 = ALL SUNRISE ONSITE INC EXISTING 402 & 401.2 (=401 UNDERFLOW)										
*S BUT NOT OFFSITE VIA DUNLIN (SOUTHMOST STREET) PIPE										
ADD HYD	270.00	1& 3	7	.12633	94.29	4.931	.73187	1.533	.795	
*S										
*S OFFSITE WEST OF SUNRISE: PER SCANLON LAYOUT EXCEPT PIPE NOT SECT LINE CHAN										
COMPUTE NM HYD	251.00	-	1	.01500	10.93	.329	.40959	1.500	1.129	PER IMP= 19.50
*S USE L FROM MID POINT OF BASIN TO MIDPOINT OF NEXT										
ROUTE	202.00	1	2	.01500	6.97	.329	.40960	1.567	.726	
COMPUTE NM HYD	204.00	-	3	.02939	21.21	.642	.40959	1.500	1.129	PER IMP= 19.50
ADD HYD	203.00	2& 3	1	.04439	27.35	.969	.40959	1.533	.963	
*S HYD 206 = INTO TANAGER POND *LOCATION* FROM NORTH										
ROUTE	204.00	1	4	.04439	22.79	.959	.41.11	.667	.802	
COMPUTE NM HYD	203.00	-	3	.06689	18.24	1.461	.40959	1.500	1.127	PER IMP= 19.50
*S HYD 299=COA SATELLITE: ASSUME 10 CFS CLEAN & NON-EROSIVE, REAL 1993 0.5+-										
STORE HYD	299.00	-	2	.07516	10.00	7.300	1.92122	1.333	.208	
*S HYD 205 = INTO TANAGER POND LOCATION FROM WEST (303+299 (COA SATELLITE))										
ADD HYD	205.00	2& 3	1	.14204	58.24	9.705	1.14924	1.500	.541	
*S HYD 206 = AP 2 FOR FAIR SHARE AND PROPOSED, AP 2 IN FOR EXISTING OFFSITE										
ADD HYD	206.00	1& 4	3	.19642	79.59	9.675	.97315	1.533	.557	
ROUTE	207.00	3	2	.19642	71.45	9.676	.97318	1.567	.599	
COMPUTE NM HYD	302.20	-	1	.07109	51.23	1.553	.40959	1.500	1.126	PER IMP= 19.50
ADD HYD	209.00	1& 2	4	.25751	121.88	11.229	.81759	1.533	.740	
ROUTE	211.00	4	2	.25751	105.85	11.229	.91759	1.567	.642	
COMPUTE NM HYD	302.10	-	3	.01031	7.45	.225	.40959	1.500	1.129	PER IMP= 19.50
*S HYD 212 = COMBINED INTO DUNLIN/ANDALUSIAN PIPE @ TANAGER										
*S HYD 212 = AP 1										
ADD HYD	212.00	2& 3	1	.26782	112.46	11.454	.80198	1.567	.656	
ROUTE	214.00	1	2	.26782	112.47	11.454	.80198	1.567	.656	
ROUTE	216.00	2	3	.26782	111.67	11.454	.80189	1.500	.652	
ROUTE	219.00	3	5	.26782	111.97	11.454	.80189	1.600	.653	
*S										
*S HYD 225 ALL THROUGH SUNRISE, BUT NOT ROUTED IN STUB CHANNEL										
ADD HYD	225.00	5& 7	8	.39415	175.79	16.385	.77944	1.500	.697	
*S HYD 229 = SUNRISE + OFFSITE CONTRIB @ JUNCT W SNOW VISTA POST ROUTE STUB										
*S HYD 229 = AP 8										
ROUTE	229.00	8	5	.39415	176.62	16.385	.77945	1.500	.700	
*S HYD 230 = TOTAL COMBINED W SNOW VISTA										
*S HYD 230 = AP 10: TO BE <= ALLOWED PER SNOW VISTA DESIGN										
ADD HYD	230.00	5& 6	1	.86995	330.91	30.095	.64963	1.767	.594	
FINISH										

APPENDIX B: SEDIMENT CALCULATIONS

B1: SUMMARY
B2: BEDLOAD EQUATION
B3: BEDLOAD SPREADSHEETS
B4: FLOW SEGMENT GRAPHS
B5: HEC-2 FOR FLOW SEGMENTS
B6: MUSLE SPREADSHEETS
B7: MUSLE - TYPICAL URBAN AREA
B8: MUSLE - METHOD & PARAMETERS
B9: GRAIN SIZE DISTRIBUTIONS
B10: MUSLE REFERENCE MATERIAL

B1: SUMMARY

SUNRISE SEDIMENT SUMMARY 3 TO 94

SEDIMENT LOAD INTO TANAGER POND - average from WSP
100-YR STORM + 5 AVG YEARS

AVG YEAR² .055 × 100 YR + .245 × 10 yr + .45 × 2 yr
+ .25 × 0-yr

TYPICAL 24 HOURS 0-yr Q SED → 0 because Q → 0
HERE 10-yr Q SED → " Q → 0 (natural)

FROM SRTSED01.WQ1 to ARROYO
based on TANGER00 (100 yr) & TANGER10 (10 yr)
ANSWO RUNS AND DEC-2 PLG SRTPSED1
Based on Rock ANSWO runs.

100-yr 30744 ft³ @ 100 pcf dry
AVG yr 3258 "
100-yr + 5 AVG YR 47034 "

FROM MUSLE1.WQ1 2/9/94 @ 100 pcf dry
• EROSION FROM 700/1000 BASIN 302 TOTAL

	100 yr	AVG YR	100 yr + 5 AVG
.5 × 302 (302.1)	774	73	1138
.7 × 302 (302.2)	1807	167	2655
303	1768	167	2601
not to pond (304)	(769)	(73)	(1131)
	4349/5118	409 (482)	6394 (7525)

(ASSUMES ALL 302 TO TANAGER POND)

5118/7525 = 0.680 ~ 2/3 is the 100-yr storm

302.2 & 303 TO TANAGER POND
302.1 AND 304 TO TEMP POND, S END TANAGER ROW
~ FLAT & NON-ERODIBLE CHANNEL N OF TANTOWN

TOTAL TO POND 47034 Channel
6394 Muse
53428 ft³ = 1.227 ac-ft required

3/30/94 - Storage available 49 → 47 = 61229 ft³ OK
See 6.1e Deltavol.wq1

B2: BEDLOAD EQUATION

FILE= 8EDLOAD.WQ1 02/09/94 08:56 AM
SUNRISE TERRACE. ARROYO TO TANGAGER POND FROM WEST

Q100=57.28

D50 mm	0.20
Coef A	~~1.00E-06~~ 0.085
v fps	4.92
Exp b	1.63
D (Area/T) ft	0.40
Exp c	0.88
Cf	0.040
Exp d	-0.96
W (=T=top width) ft	28.86
Qs = Q sed cfs	0.00

Bed load sediment transport equation for Albuquerque NM. Draft equation by
RCE (Ft Collins Co) for AMAFCA, April 29, 1993. Qs=a*V^b*D^c*(1-Cf)^d*W
Cf=fine sediment concentration fraction by weight (@10,000 ppm Cf=.01)
Get wt sed from e.g. MUSLE, use avg Cf = total wt sed /(total wt water + sed)
Coefficient a and exponents b,c,d from RCE chart based on median (by wt) bed sed size
** WARNING ** values of a,b,c,d vary widely depending of version of chart
** WARNING ** Original eqns in hidden columns (P & Q initially): DO NOT ERASE.

SPT SEDIMENT 2/9/94

① 100 yr storm TO TANAGER POND FROM WEST ARROYO

RCE/AMAFCA Eqn $Q_s = a V^b D^c (1-Cf)^d W$

- from MUSCLE 1.WQ1 2/9/94 6:07 AM (+ PM) Basin 303

$Cf = \frac{\text{Wt Sed}}{\text{Wt Sed + Wt water}} = 0.0398 = 39{,}800$ ppm ~ 40000 ppm

~0.04

$1-Cf \approx 0.96$ C_f = Concentration of fines < 60000 ppm OK

- from SRT MUSLE (1/6/94) for SRT PM A-1 Sieve Analysis

$D_{50} = 0.20$ mm

- from RCE Chart (Fig 3.11) rec from AMAFCA 12/30/93

for $D_{50} = 0.2$ mm (Barely on scale)

~~$a = 1.6 \times 10^{-6}$~~ $a = 0.085$

$b = 1.63$

$c = 0.88$

$d = -0.96$

- from ~~HEC~~ 2 SRT POWE (SunRise TanagerPond Offsite West Existing)

2/09/94 w $Q_p = 57.28$ $S = 3.33\%$ $n = .030$

$V = 4.92$ fps

$D = A/T_w = 11.64/28.86 \approx 0.40$ ft (Comp to $y_{max} 0.81$)

$W:T_w = 28.86$

B3: BEDLOAD SPREADSHEETS

FILE= SRBEDLD1.WQ1 03/10/94 REPRINTED 06/22/94 10:16 AM
Bed load sediment transport equation for Albuquerque NM. Draft equation by
RCE (Ft Collins Co) for AMAFCA, April 29, 1993.
Cf=fine sediment concentration fraction by weight (@10.000 Qs=a*V ^ b*D ^ c*(1-Cf) ^ d*W
Get wt sed from e.g. MUSLE, use avg Cf = total wt sed /(total wt water + sed)
Coefficient a and exponents b,c,d from RCE chart based on median (by wt) bed sed size

** WARNING ** Values of a,b,c,d vary widely depending of version of chart
** WARNING ** Original eqns in hidden columns (AA&BB initially): DO NOT ERASE.
** WARNING ** Cumulative values are sums of cols B through P

#: enter this number for each flow segment
>: enter this number in 1st data column: automatically copies across

RESULTS AT "LOOSE" PCF LISTED BELOW
100-YR STORM 30744
AVG YEAR (100,10,2) 3258
100-YR + 5 AVG YRS 47034

SUNRISE TERRACE, ARROYO TO TANGAGER POND FROM WEST

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
		100-YR	100-YR	100-YR	100-YR	100-YR	100-YR	100-YR	100-YR	100-YR	100-YR	100-YR	100-YR	100-YR	100-YR
Q cfs	#	8.00	29.00	50.50	57.00	52.00	37.00	21.00	12.00	8.00	3.50	1.40	0.65	*	*
V fps	#	3.01	4.15	4.76	4.91	4.80	4.41	3.81	3.32	3.01	2.45	1.95	1.61	*	*
Flow area, sf	#	2.66	6.99	10.61	11.60	10.84	8.38	5.51	3.61	2.66	1.43	0.72	0.40	*	*
W (=T=top width) ft	#	13.79	22.37	27.56	28.82	27.86	24.50	19.86	16.08	13.79	10.12	7.17	5.38	*	*
D (Area/T) ft		0.19	0.31	0.38	0.40	0.39	0.34	0.28	0.22	0.19	0.14	0.10	0.07	*	*
Loose sed, dry pcf	>	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
		—	—	—	—	—	—	—	—	—	—	—	—	—	—
D50 mm	>	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Cf	>	0.040	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Coef A	>	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02
Exp B	>	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63
Exp C	>	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Exp D	>	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96
		——	——	——	——	——	——	——	——	——	——	——	——	——	——
Qs = Q sed cfs		1.73	7.23	13.38	15.30	13.84	9.46	5.03	2.70	1.73	0.69	0.25	0.10	0.00	0.00
BF = sed/(sed+water)		0.18	0.20	0.21	0.21	0.21	0.20	0.19	0.18	0.18	0.16	0.15	0.14	*	*
Sol sed/(water)		0.22	0.25	0.26	0.27	0.27	0.26	0.24	0.22	0.22	0.20	0.18	0.16	*	*
														*	*
Delta T, hrs	#	0.05	0.05	0.05	0.05	0.05	0.10	0.10	0.10	0.10	0.60	0.60	1.30	*	*
Solid sed, cu ft		311	1301	2408	2755	2491	3407	1810	972	622	1488	538	491	*	*
Water +sol sed, cu ft		1751	6521	11498	13015	11851	16727	9370	5292	3502	9048	3562	3533	*	*
Loose sed @ dry pcf		514	2151	3982	4555	4119	5633	2993	1607	1028	2460	890	812	*	*
Tot loose cu ft B->P		30744		Avg sed/water, approx %			24.1								
100-YEAR		100-YR	100-YR	100-YR	100-YR	100-YR	100-YR	100-YR	100-YR	100-YR	100-YR	100-YR	100-YR	100-YR	100-YR

FILE= SRBEDLD1.WQ1 06/22/94 10:26 AM
Bed load sediment transport equation for Albuquerque NM. Draft equation by
RCE (Ft Collins Co) for AMAFCA, April 29, 1993.

SUNRISE TERRACE, ARROYO TO TANGAGER POND FROM WEST

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
		10-YR	10-YR	10-YR	10-YR	10-YR	10-YR	10-YR	10-YR	10-YR	10-YR	10-YR	10-YR	10-YR	10-YR
Q cfs	#	3.80	11.10	9.30	5.60	2.80	1.20	0.65	*	*	*	*	*	*	*
V fps	#	2.50	3.26	3.11	2.75	2.31	1.87	1.61	*	*	*	*	*	*	*
Flow area, sf	#	1.52	3.41	2.99	2.04	1.21	0.64	0.40	*	*	*	*	*	*	*
W (=T=top width) ft	#	10.49	15.62	14.64	12.06	9.31	6.77	5.38	*	*	*	*	*	*	*
D (Area/T) ft		0.15	0.22	0.20	0.17	0.13	0.09	0.07	*	*	*	*	*	*	*
Loose sed. dry pcf	>	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
		---	---	---	---	---	---	---	---	---	---	---	---	---	---
D50 mm	>	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Cf	>	0.040	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Coef A	>	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02
Exp B	>	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63
Exp C	>	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Exp D	>	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96
		---	---	---	---	---	---	---	*	*	*	*	*	*	*
Qs = Q sed cfs		0.75	2.46	2.03	1.16	0.53	0.21	0.10	*	*	*	*	*	*	*
BF = sed/(sed+water)		0.17	0.18	0.18	0.17	0.16	0.15	0.14	*	*	*	*	*	*	*
Sol sed/(water)		0.20	0.22	0.22	0.21	0.19	0.17	0.16	*	*	*	*	*	*	*
									*	*	*	*	*	*	*
Delta T, hrs	#	0.10	0.10	0.10	0.10	0.20	0.60	1.90	*	*	*	*	*	*	*
Solid sed. cu ft		271	894	732	418	385	450	718	*	*	*	*	*	*	*
Water +sol sed. cu ft		1639	4890	4060	2434	2401	3042	5164	*	*	*	*	*	*	*
Loose sed @ dry pcf		449	1478	1210	691	637	744	1187	*	*	*	*	*	*	*
Tot loose cu ft B->P		6397		Avg sed/water, approx %			19.6		*	*	*	*	*	*	
10-YEAR		10-YR	10-YR	10-YR	10-YR	10-YR	10-YR	10-YR	10-YR	10-YR	10-YR	10-YR	10-YR	10-YR	10-YR

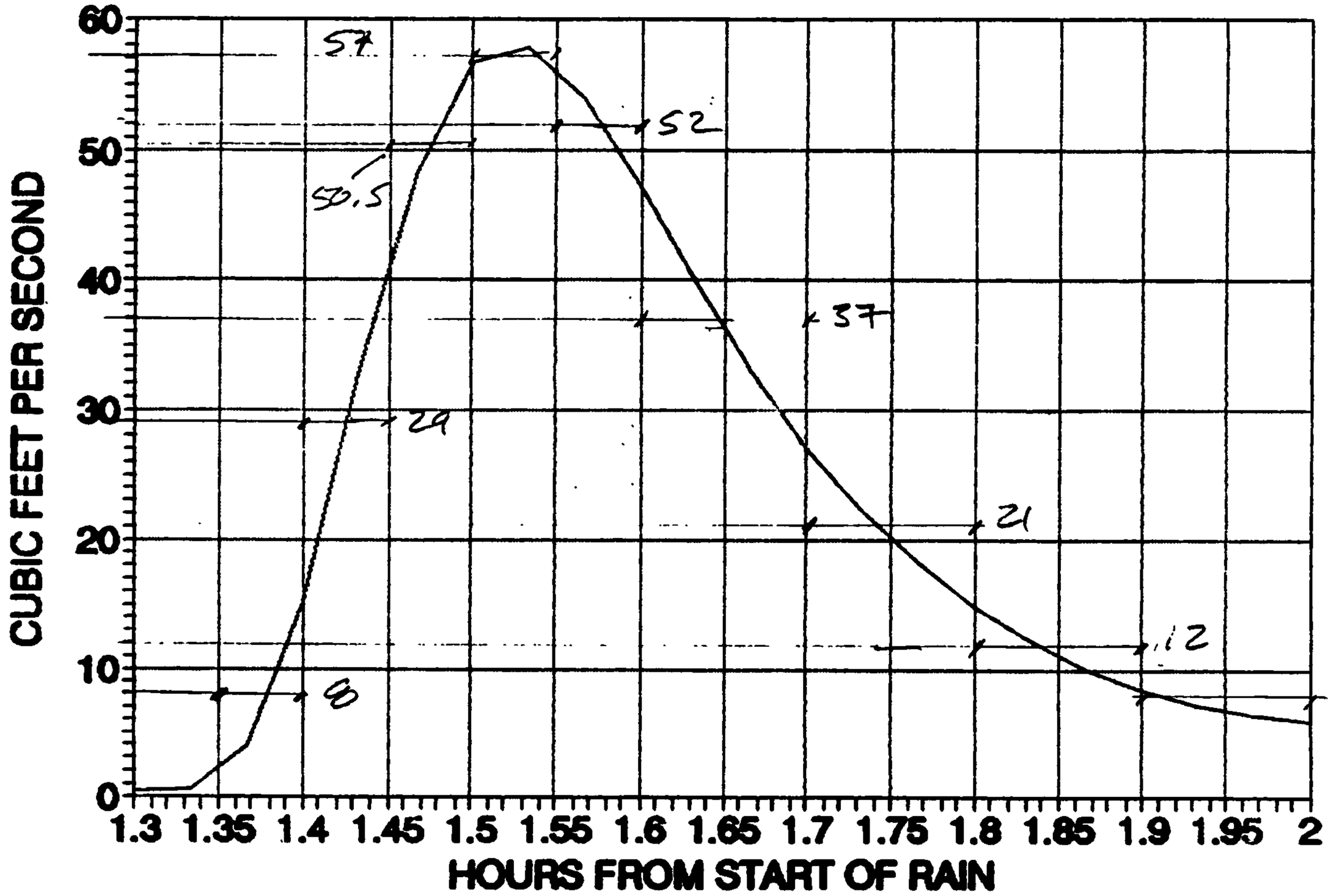
FILE= SRBEDLD1.WQ1 06/22/94 10:26 AM
Bed load sediment transport equation for Albuquerque NM. Draft equation by
RCE (Ft Collins Co) for AMAFCA, April 29, 1993.

SUNRISE TERRACE, ARROYO TO TANGAGER POND FROM WEST

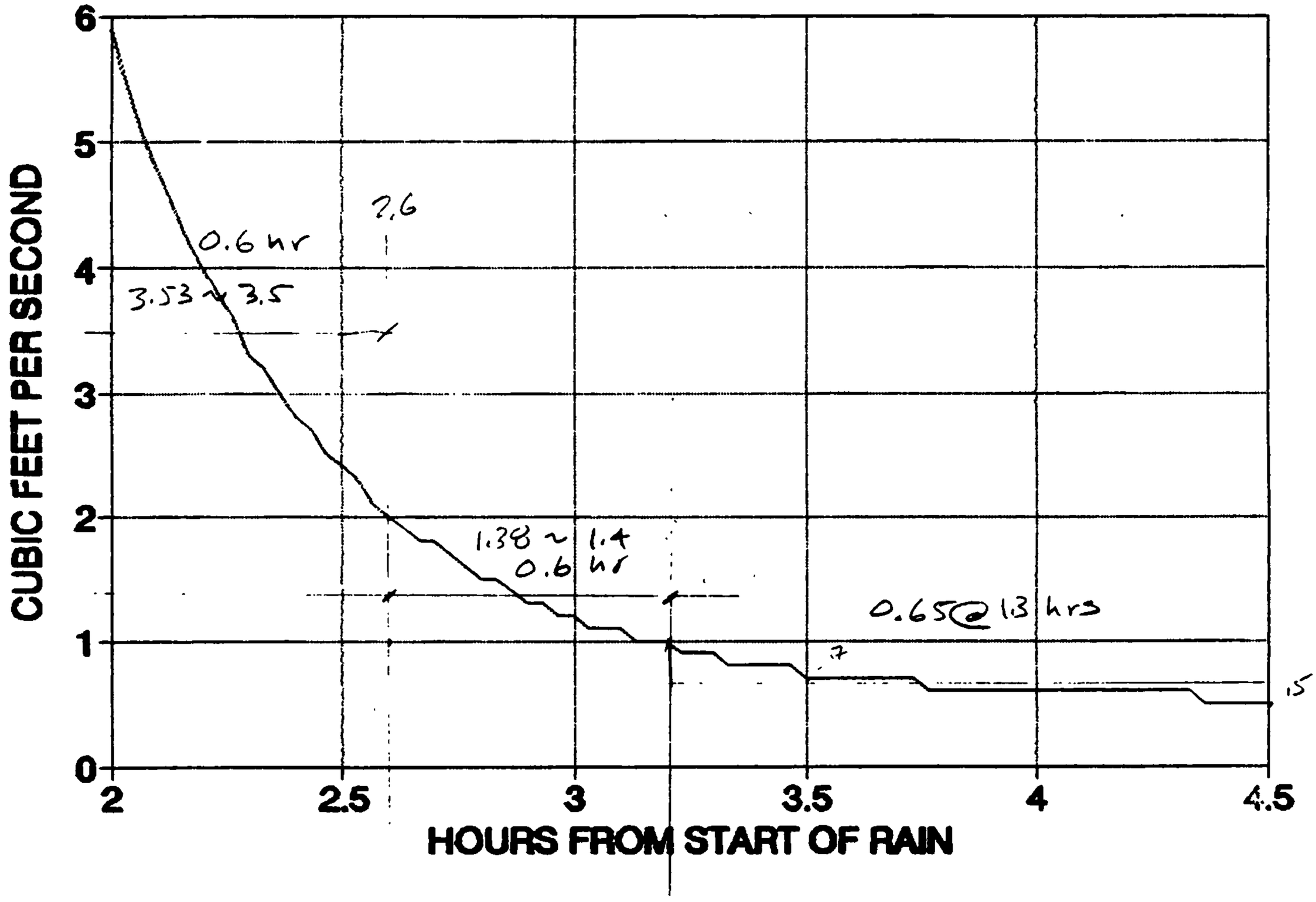
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
		2-YR	2-YR	2-YR	2-YR	2-YR	2-YR	2-YR	2-YR	2-YR	2-YR	2-YR	2-YR	2-YR	2-YR
Q cfs	#	0.00	*	*	*	*	*	*	*	*	*	*	*	*	*
V fps	#	0.00	*	*	*	*	*	*	*	*	*	*	*	*	*
Flow area, sf	#	0.00	*	*	*	*	*	*	*	*	*	*	*	*	*
W (=T=top width) ft	#	1.00	*	*	*	*	*	*	*	*	*	*	*	*	*
D (Area/T) ft		0.00	*	*	*	*	*	*	*	*	*	*	*	*	*
Loose sed, dry pcf	>	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
		---	---	---	---	---	---	---	---	---	---	---	---	---	---
D50 mm	>	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Cf	>	0.040	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Coef A	>	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02	8.50E-02
Exp B	>	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63
Exp C	>	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Exp D	>	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96
		---	*	*	*	*	*	*	*	*	*	*	*	*	*
Qs = Q sed cfs		0.00	*	*	*	*	*	*	*	*	*	*	*	*	*
BF = sed/(sed+water)		ERR	*	*	*	*	*	*	*	*	*	*	*	*	*
Sol sed/(water)		ERR	*	*	*	*	*	*	*	*	*	*	*	*	*
			*	*	*	*	*	*	*	*	*	*	*	*	*
Delta T, hrs	#	0.05	*	*	*	*	*	*	*	*	*	*	*	*	*
Solid sed, cu ft		0	*	*	*	*	*	*	*	*	*	*	*	*	*
Water +sol sed, cu ft		ERR	*	*	*	*	*	*	*	*	*	*	*	*	*
Loose sed @ dry pcf		0	*	*	*	*	*	*	*	*	*	*	*	*	*
Tot loose cu ft B->P		0			Avg sed/water, approx %		ERR								
2-YEAR STORM		2-YR	2-YR	2-YR	2-YR	2-YR	2-YR	2-YR	2-YR	2-YR	2-YR	2-YR	2-YR	2-YR	2-YR

B4: FLOW SEGMENT GRAPHS

SRT ARROYO TO TANAGER POND
PART OF HYD 204 FROM TANGER00.OUT

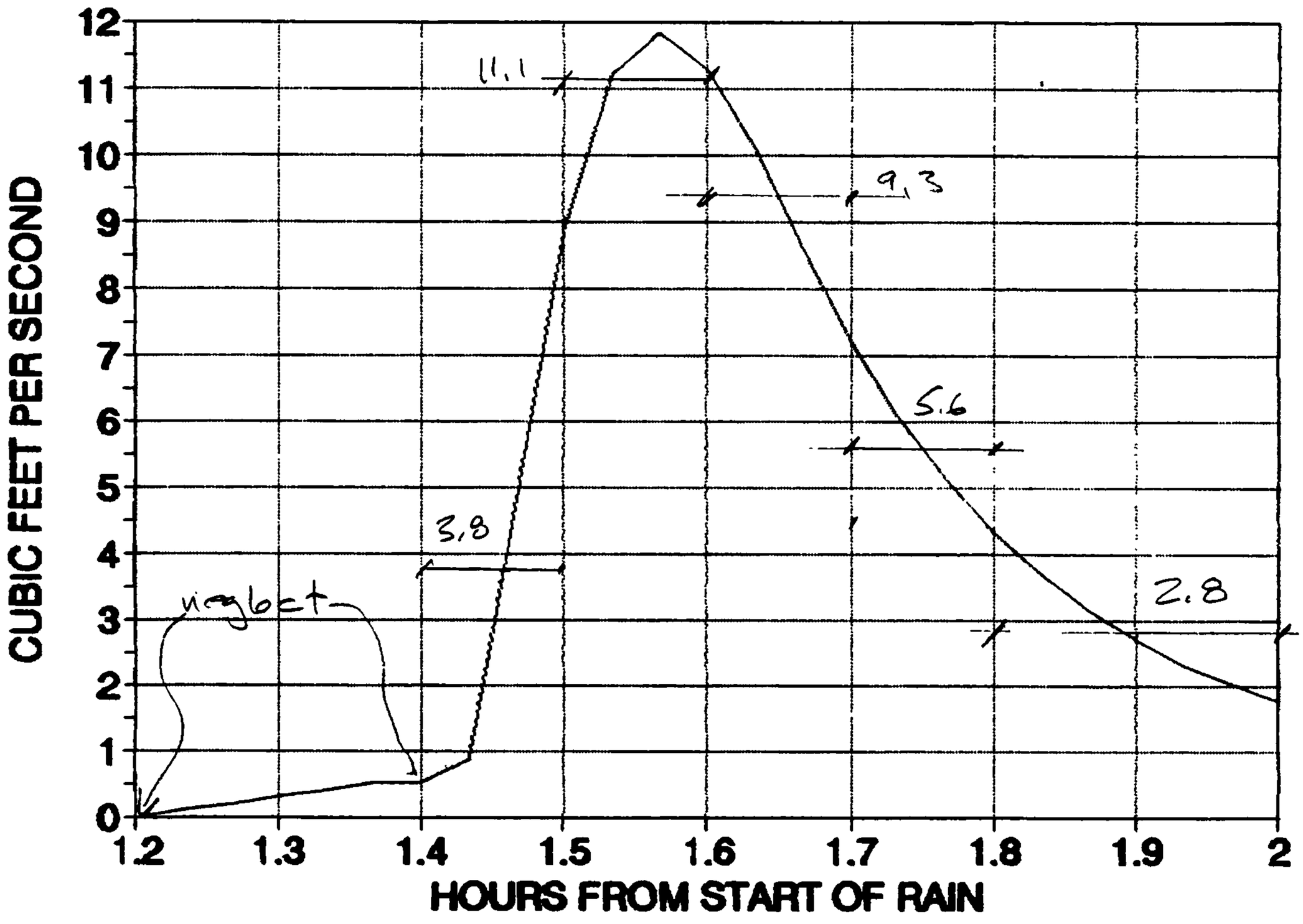


SRT ARROYO TO TANAGER POND
PART OF HYD 204 FROM TANGER00.OUT



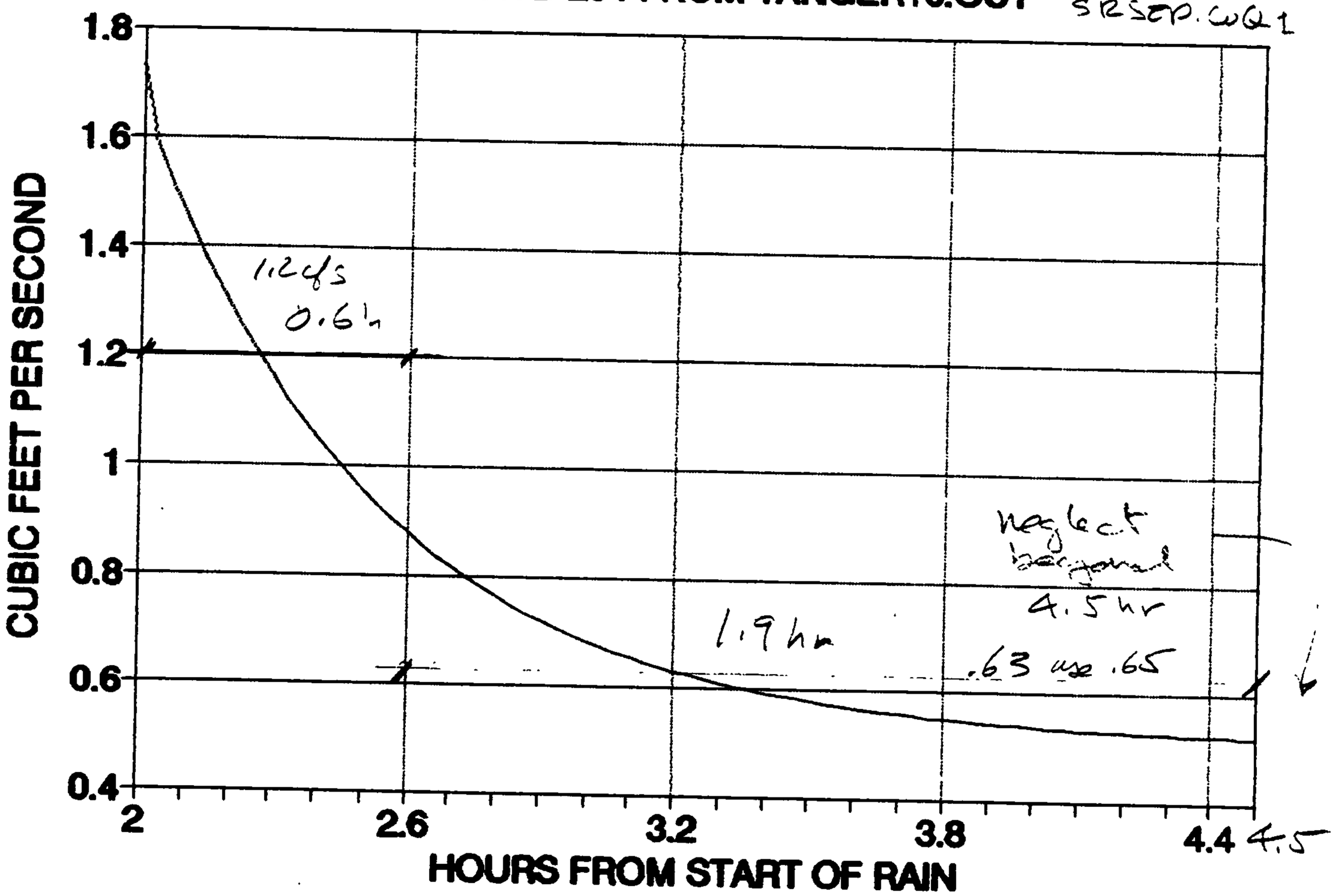
SRT ARROYO TO TANAGER POND
PART OF HYD 204 FROM TANGER10.OUT

3-0-94
SR SED. WQ1



SRT ARROYO TO TANAGER POND
PART OF HYD 204 FROM TANGER10.OUT

3-10-94
SRSEP.WQ1



B5: HEC-2 FOR FLOW SEGMENTS

==========
B O S S H E C - 2 (tm)
==========

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Version : 3.10
Serial Number : 0010363.250

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PROGRAM ORIGIN :

Boss Hec-2 (tm) is an enhanced version of the U.S. Army Corps of Engineers Hydrologic Engineering Center HEC-2 program for water-surface profile computations. Program based upon the September 1990 version, updated on August 1991.

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PROJECT DESCRIPTION :

PROJECT TITLE : SUNRISE, WEST ARROYO TO TANAGER POND
PROJECT NUMBER : SRTPSED1
DESCRIPTION : Q100 SEGMTS FOR AMAFCA SEDIMENT EQN
ENGINEER : TUCKER GREEN
DATE OF RUN : 3/10/1994
TIME OF RUN : 7:45 am

```
T1      SRTPSED1
T2      SUNRISE. WEST ARROYO TO TANAGER POND
T3      Q100 SEGMTS FOR AMAFCA SEDIMENT EQN
T4      SUNRISE TERRACE: FLOW INTO RE SEDIMENT TO TANAGER POND FROM
T4      ARROYO STRAIGHT WEST OF POND BASED ON Q100 & Q100 'QC=0 HERE, FOR
T4      USE IN AMAFCA DRAFT SEDIMENT EQUATION. BASED ON AH-MQ FILES
T4      TANGER00 (Q100) AND TANGER10 (Q10) FOR EXISTING CONDITIONS
T4      (ESSENTIALLY UNDEVELOPED) IN BASIN 305
```

JOB PARAMETERS :

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	1	0	1	0.0333	0	0.0	0.0	64.0	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1	0	0.0	0.0	0.0	0.0	-1.0	-0.0	0.0	

USER-DEFINED SUMMARY TABLES (J3) :

43	26	25	4	6	17	33	13	15	42
2	3	68							

REQUESTED CROSS-SECTION PRINTOUTS (J5) :

	-10	-16								
NC	0.035	0.035	0.030	0.0	0.0					
X1	500	0	125.0	197.0	100.0	100.0	100.0	0.0	0.0	0
X3	0	0.0	0.0	0.0	0.0	0.0	0.0	64.17	65.05	
GR	64.78	100.0	64.17	125.0	62.82	137.0	65.05	197.0	68.38	224.0
GR	68.36	249.0								
NC	0.035	0.035	0.030	0.0	0.0					
X1	400	0	125.0	197.0	0.0	0.0	0.0	0.0	-3.33	0
X3	0	0.0	0.0	0.0	0.0	0.0	0.0	64.17	65.05	
GR	64.78	100.0	64.17	125.0	62.82	137.0	65.05	197.0	68.38	224.0
GR	68.36	249.0								

T1 SRTPSED1
T2 SUNRISE. WEST ARROYO TO TANAGER POND
T3 Q100 SEGMTS FOR AMAFCA SEDIMENT EQN

PROJECT TITLE : SUNRISE, WEST ARROYO TO TANAGER POND

PROJECT NUMBER : SRTPSED1 3.1: 1994

JOB PARAMETERS :

J1	ICHECK	ING	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	1	0	1	1.0333	0	0.0	29.0	54.0	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2	0	0.0	0.0	0.0	0.0	-1.0	-0.0	0.0	

T1 SRTPSED1
T2 SUNRISE, WEST ARROYO TO TANAGER POND
T3 Q100 SEGMTS FOR AMAFCA SEDIMENT EQN

JOB PARAMETERS :

J1	ICHECK	ING	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	4	0	1	0.0333	0	0.0	50.5	54.0	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	3	0	0.0	0.0	0.0	0.0	-1.0	-0.0	0.0	

T1 SRTPSED1
T2 SUNRISE, WEST ARROYO TO TANAGER POND
T3 Q100 SEGMTS FOR AMAFCA SEDIMENT EQN

JOB PARAMETERS :

J1	ICHECK	ING	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	5	0	1	0.0333	0	0.0	57.0	54.0	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	4	0	0.0	0.0	0.0	0.0	-1.0	-6.0	0.0	

T1 SRTPSED1
T2 SUNRISE, WEST ARROYO TO TANAGER POND
T3 Q100 SEGMTS FOR AMAFCA SEDIMENT EQN

JOB PARAMETERS :

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	5	5	0	1	0.0333	0	0.0	31.0	64.0	
J2	NPROF	IFLOT	PRFVS	XSECV	XSECH	FN	ALLOC	IBW	CHNIM	ITRACE
	5	0	0.0	0.0	0.0	0.0	-1.0	-5.0	0.0	

T1 SRTPSED1
T2 SUNRISE, WEST ARROYO TO TANAGER POND
T3 Q100 SEGMTS FOR AMAFCA SEDIMENT EQN

JOB PARAMETERS :

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	7	0	1	0.0333	0	0.0	27.0	64.0	
J2	NPROF	IFLOT	PRFVS	XSECV	XSECH	FN	ALLOC	IBW	CHNIM	ITRACE
	6	0	0.0	0.0	0.0	0.0	-1.0	-5.0	0.0	

T1 SRTPSED1
T2 SUNRISE, WEST ARROYO TO TANAGER POND
T3 Q100 SEGMTS FOR AMAFCA SEDIMENT EQN

JOB PARAMETERS :

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	8	0	1	0.0333	0	0.0	21.0	64.0	
J2	NPROF	IFLOT	PRFVS	XSECV	XSECH	FN	ALLOC	IBW	CHNIM	ITRACE
	7	0	0.0	0.0	0.0	0.0	-1.0	-5.0	0.0	

T1 SRTPSED1
T2 SUNRISE, WEST ARROYO TO TANAGER POND
T3 Q100 SEGMTS FOR AMAFCA SEDIMENT EQN

PROJECT TITLE : SUNRISE. WEST ARROYO TO TANAGER POND
PROJECT NUMBER : SRTPSED1 3 12/1994

JOB PARAMETERS :

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	3	1	0.0333	0	0.0	10.0	54.0	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	3	0	1.0	0.0	0.0	0.0	-1.0	-5.0	0.0	

T1 SRTPSED1
T2 SUNRISE. WEST ARROYO TO TANAGER POND
T3 0100 SEGMTS FOR AMAFCA SEDIMENT EQN

JOB PARAMETERS :

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	10	0	1	0.0333	0	0.0	3.0	54.0	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	9	0	0.0	0.0	0.0	0.0	-1.0	-5.0	0.0	

T1 SRTPSED1
T2 SUNRISE. WEST ARROYO TO TANAGER POND
T3 0100 SEGMTS FOR AMAFCA SEDIMENT EQN

JOB PARAMETERS :

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	11	0	1	0.0333	0	0.0	3.5	54.0	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	10	3	0.0	0.0	0.0	0.0	-1.0	-5.0	0.0	

T1 SRTPSED1
T2 SUNRISE. WEST ARROYO TO TANAGER POND
T3 0100 SEGMTS FOR AMAFCA SEDIMENT EQN

JOB PARAMETERS :

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	12	0	1	0.0333	0	0.0	1.4	64.0	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	11	0	0.0	0.0	1.0	0.0	-1.0	-0.0	0.0	

T1 SRTPSED1
T2 SUNRISE. WEST ARROYO TO TANAGER POND
T3 Q100 SEGMTS FOR AMAFCA SEDIMENT EQN

JOB PARAMETERS :

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	13	0	1	0.0333	0	0.0	1.0	64.0	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	12	0	0.0	0.0	0.0	0.0	-1.0	-0.0	0.0	

T1 ERTPSED1
T2 SUNRISE, WEST ARROYO TO TANAGER POND
T3 Q100 SEGMTS FOR AMAFCA SEDIMENT EQN

JOB PARAMETERS :

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	14	0	1	0.0333	0	0.0	0.7	64.0	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15	0	0.0	0.0	0.0	0.0	-1.0	-0.0	0.0	

PROJECT TITLE : SUNRISE, WEST ARROYO TO TANAGER POND

PROJECT NUMBER : SRTPSED1 100 YR 7/10/1994

SPECIAL NOTE :

An asterisk (*) to the left of the cross-section number indicates a special note is present in the SUMMARY OF WARNING AND STATUS MESSAGES section.

SUMMARY PRINTOUT : SUNRISE, WEST ARROYO TO TANAGER POND
2100 SEGMTS FOR AMAFCA SEDIMENT EQN
SRTPSED1

Discharge Flow (cfs) Q	Channel Mean Flow Velocity (ft/s) VCH	Cross-Section Area (sq ft) AREA	Water Surface Top Width (ft) TOPWID	Flow Depth (ft) DEPTH	Channel Manning n * 1,000 XNCH	Channel Slope * 1,000 XSLSL	Left Overbank Flow (cfs) QLOB	Right Overbank Flow (cfs) QROB	Minimum S. S. Elevation (ft MSL) ELMIN	Critical W. S. Elevation (ft MSL) CRIWS	Energy Gradient Elevation (ft MSL) EG	Channel Froude Number FRCH
3.001	3.01	1.00	13.79	.39	30.00	.00	.00	.00	62.82	63.23	63.35	1.21
29.001	4.15	6.99	22.37	.62	30.00	.00	.00	.00	62.82	63.51	63.71	1.31
50.501	4.76	10.61	27.56	.77	30.00	.00	.00	.00	62.82	63.68	63.94	1.35
57.001	4.91	11.60	28.82	.81	30.00	.00	.00	.00	62.82	63.77	64.11	1.36
52.001	4.80	10.94	27.80	.78	30.00	.00	.00	.00	62.82	63.69	63.96	1.36
37.001	4.41	8.38	24.50	.68	30.00	.00	.00	.00	62.82	63.58	63.81	1.33
21.001	3.81	5.51	19.86	.55	30.00	.00	.00	.00	62.82	63.43	63.60	1.27
12.001	3.32	3.61	16.08	.45	30.00	.00	.00	.00	62.82	63.31	63.44	1.24
8.001	3.01	2.66	13.79	.39	30.00	.00	.00	.00	62.82	63.22	63.33	1.21
3.501	2.45	1.43	10.12	.28	30.00	.00	.00	.00	62.82	63.12	63.20	1.15
1.401	1.95	.72	7.17	.20	30.00	.00	.00	.00	62.82	63.03	63.08	1.08
1.001	1.79	.56	6.33	.18	30.00	.00	.00	.00	62.82	63.00	63.05	1.06
.701	1.63	.43	5.55	.16	30.00	.00	.00	.00	62.82	62.98	63.02	1.03
8.001	3.01	2.66	13.79	.39	30.00	-33.30	.00	.00	59.49	59.90	60.02	1.21
29.001	4.16	6.97	22.34	.62	30.00	-33.30	.00	.00	59.49	60.18	60.38	1.31
50.501	4.78	10.56	27.50	.77	30.00	-33.30	.00	.00	59.49	60.35	60.61	1.35
57.001	4.92	11.58	28.79	.81	30.00	-33.30	.00	.00	59.49	60.40	60.67	1.37
52.001	4.81	10.90	27.81	.78	30.00	-33.30	.00	.00	59.49	60.37	60.63	1.35
37.001	4.42	8.38	24.49	.68	30.00	-33.30	.00	.00	59.49	60.26	60.48	1.33
21.001	3.85	5.45	19.75	.55	30.00	-33.30	.00	.00	59.49	60.10	60.27	1.29
12.001	3.34	3.60	16.05	.45	30.00	-33.30	.00	.00	59.49	59.98	60.12	1.24
8.001	3.01	2.66	13.79	.39	30.00	-33.30	.00	.00	59.49	59.90	60.02	1.21
3.501	2.45	1.43	10.11	.28	30.00	-33.30	.00	.00	59.49	59.79	59.87	1.15
1.401	1.95	.72	7.17	.20	30.00	-33.30	.00	.00	59.49	59.70	59.75	1.09
1.001	1.79	.56	6.32	.18	30.00	-33.30	.00	.00	59.49	59.67	59.72	1.06
.701	1.65	.42	5.51	.15	30.00	-33.30	.00	.00	59.49	59.65	59.69	1.05

NOTE: SEE 10 YR PRINTOUT (Q_P = 11.1 CFS) FOR 0.65 CFS

SUMMARY OF WARNING AND STATUS MESSAGES :

No warning messages generated

END OF OUTPUT

==========
B O S S H E C - 2 (tm)
==========

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Version : 5.10
Serial Number : 0910C05.250

Licensed to Mr. Tucker Green, Consulting Engineer

PROGRAM ORIGIN :

Boss Hec-2 (tm) is an enhanced version of the U.S. Army Corps of Engineers Hydrologic Engineering Center HEC-2 program for water-surface profile computations. Program based upon the September 1990 version, updated on August 1991.

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PROJECT DESCRIPTION :

PROJECT TITLE : G s FOR 10-YR SED EQN. HYD 204
PROJECT NUMBER : SRTPSED1
DESCRIPTION : ARROYO TO TANGAER POND FROM WEST
ENGINEER : TUCKER GREEN
DATE OF RUN : 3/10/1994
TIME OF RUN : 12:26 pm

PROJECT TITLE : Q's FOR 10-YR SED EQN. HYD 204

PROJECT NUMBER : SRTPSED1 7.11 1994

T1 SRTPSED1
T2 Q's FOR 10-YR SED EQN. HYD 204
T3 ARROYO TO TANGHER POND FROM WEST
T4 SUNRISE TERRACE: FLOW INTO SE SEDIMENT TO TANAGER POND FROM
T4 ARROYO STRAIGHT WEST OF POND BASED ON Q100 & Q100 (92=) HERE: FOR
T4 USE IN AMAFCA DRAFT SEDIMENT EQUATION. BASED ON AHYMO FILES
T4 TANGER00 (Q100) AND TANGER10 (Q10) FOR EXISTING CONDITIONS
T4 ESSENTIALLY UNDEVELOPED IN BASIN D3

JOB PARAMETERS :

	ICHEC	IND	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FI
J1	0	1	1	1	0.0001	0	1.0	7.5	54.0	

	NPROF	IPLOT	PRFVS	XSEC	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
J2	1	0	0.0	0.0	0.0	0.0	-1.0	-0.0	0.0	

USER-DEFINED SUMMARY TABLES (J3) :

40	20	25	4	8	17	33	17	15	42
2	3	59							

REQUESTED CROSS-SECTION PRINTOUTS (J5) :

-10 -10

NC	0.075	0.035	0.050	0.0	0.0					
X1	500	6	125.0	197.0	100.0	100.0	109.0	0.0	0.0	0
X3	0	0.0	0.0	0.0	0.0	0.0	0.0	64.17	65.05	
GR	64.78	100.0	64.17	125.0	62.82	137.0	65.05	197.0	68.38	224.0
GR	69.55	249.0								

NC	0.035	0.035	0.030	0.0	0.0					
X1	400	6	125.0	197.0	0.0	0.0	0.0	0.0	-7.33	0
X3	0	0.0	0.0	0.0	0.0	0.0	0.0	64.17	65.05	
GR	64.78	100.0	64.17	125.0	62.82	137.0	65.05	197.0	68.38	224.0
GR	68.55	249.0								

T1 SRTPSED1
T2 Q's FOR 10-YR SED EQN. HYD 204
T3 ARROYO TO TANGHER POND FROM WEST

BOSS HEC-2 Version 3.10 PAGE 1

PROJECT TITLE : Q s FOR 10-YR SED EQN. HYD 204

PROJECT NUMBER : SRTPSED1 1 10 1994

JOB PARAMETERS :

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	1	1	0	1	0.0333	0	0.0	11.1	54.0	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1	0	0.0	0.0	0.0	0.0	-1.0	-5.0	0.0	

T1 SRTPSED1
T2 Q s FOR 10-YR SED EQN. HYD 204
T3 ARROYO TO TANGAER POND FROM WEST

JOB PARAMETERS :

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	4	0	1	0.0333	0	0.0	9.2	54.0	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1	0	0.0	0.0	0.0	0.0	-1.0	-5.0	0.0	

T1 SRTPSED1
T2 Q s FOR 10-YR SED EQN. HYD 204
T3 ARROYO TO TANGAER POND FROM WEST

JOB PARAMETERS :

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	5	0	1	0.0333	0	0.0	5.6	54.0	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	4	0	0.0	0.0	0.0	0.0	-1.0	-5.0	0.0	

T1 SRTPSED1
T2 Q s FOR 10-YR SED EQN. HYD 204
T3 ARROYO TO TANGAER POND FROM WEST

11

PROJECT TITLE : G s FOR 10-YR SED EQN, HYD 204

PROJECT NUMBER : SRTPSED1 3 10-1991

JOB PARAMETERS :

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	7	3	1	0.0333	0	0.0	1.2	04.0	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	6	0	0.0	0.0	0.0	0.0	-1.0	-6.0	0.0	

T1 SRTPSED1
T2 G s FOR 10-YR SED EQN, HYD 204
T3 ARROYO TO TANGAER POND FROM WEST

JOB PARAMETERS :

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	7	3	1	0.0333	0	0.0	1.2	04.0	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	6	0	0.0	0.0	0.0	0.0	-1.0	-6.0	0.0	

T1 SRTPSED1
T2 G s FOR 10-YR SED EQN, HYD 204
T3 ARROYO TO TANGAER POND FROM WEST

JOB PARAMETERS :

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	1	0.0333	0	0.0	0.65	04.0	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15	0	0.0	0.0	0.0	0.0	-1.0	-6.0	0.0	

SPECIAL NOTE :

An asterisk * to the left of the cross-section number indicates a special note is present in the SUMMARY OF WARNING AND STATUS MESSAGES section.

SUMMARY PRINTOUT : 9's FOR 10-YR SED EQN. HYD 204
APPROACH TO TANGIER POND FROM WEST
SRTPSED1

Discharge Flow (cfs) Q	Channel Mean Flow Velocity (ft/s) VCH	Cross-Section Area (sq ft) AREA	Water Surface Top Width (ft) TOPWID	Flow Depth (ft) DEPTH	Channel Manning n X 1.000 XNCH	Channel Slope X 1.000 XCHSL	Left Overbank Flow (cfs) QLOB	Right Overbank Flow (cfs) QROB	Minimum E. G. Elevation (ft MSL) ELMIN	Critical W. S. Elevation (ft MSL) CRIWS	Energy Gradient Elevation (ft MSL) EG	Channel Froude Number FRCH
7.201	2.50	1.52	10.43	.29	30.00	.00	.00	.00	62.82	63.13	63.21	1.15
11.101	3.26	3.41	15.02	.44	30.00	.00	.00	.00	63.02	63.29	63.42	1.23
9.701	3.11	2.99	14.54	.41	30.00	.00	.00	.00	62.92	63.26	63.38	1.21
5.601	2.75	2.04	12.08	.34	30.00	.00	.00	.00	62.82	63.13	63.27	1.19
2.801	2.31	1.21	9.31	.25	30.00	.00	.00	.00	62.92	63.09	63.16	1.17
1.201	1.97	.64	6.77	.19	30.00	.00	.00	.00	62.92	63.01	63.05	1.17
.651	1.61	.40	5.38	.15	30.00	.00	.00	.00	62.82	62.97	63.01	1.13
7.201	2.50	1.52	10.43	.29	30.00	-33.30	.00	.00	59.49	59.80	59.88	1.15
11.101	3.27	3.39	15.58	.44	30.00	-33.30	.00	.00	59.49	59.76	59.10	1.24
9.301	3.14	2.96	14.56	.41	30.00	-33.30	.00	.00	59.49	59.93	60.03	1.23
5.601	2.76	2.03	12.06	.34	30.00	-33.30	.00	.00	59.49	59.85	59.95	1.18
2.801	2.32	1.21	9.29	.25	30.00	-33.30	.00	.00	59.49	59.76	59.82	1.14
1.201	1.93	.64	6.77	.19	30.00	-33.30	.00	.00	59.49	59.68	59.73	1.17
.651	1.61	.40	5.38	.15	30.00	-33.30	.00	.00	59.49	59.64	59.69	1.03

BOSS REL-I version 3.10 PAGE =

PROJECT TITLE : Q = FOR 10-YR SED EQN. H>0 204

PROJECT NUMBER : SRTPSED1 I 1/1234

SUMMARY OF WARNING AND STATUS MESSAGES :

NO warning messages generated

END OF OUTPUT

B6: MUSLE SPREADSHEETS

FILE=MUSLE1.WQ1 02/09/94 10:22 AM

MEANS ENTER THIS NUMBER: OTHERS ARE CALCULATED

SUNRISE TERRACE WEST OF TANAGER. EXISTING NATURAL COND (97%A, 3%C): TANGER2, TANGER10, TANGER00

		BASIN 302.1			BASIN 302.2			BASIN 303		
		100-YEAR	10-YEAR	2-YEAR	100-YEAR	10-YEAR	2-YEAR	100-YEAR	10-YEAR	2-YEAR
K	#	0.190	0.190	0.190	0.190	0.190	0.190	0.190	0.190	0.190
LS	#	1.430	1.430	1.430	1.430	1.430	1.430	0.960	0.960	0.960
C	#	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
P	#	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
K*LS*C*P		0.0367	0.0367	0.0367	0.0367	0.0367	0.0367	0.0246	0.0246	0.0246
VOL WAT. AC-FT	#	0.831	0.163	0.000	1.244	0.244	0.000	1.609	0.315	0.000
Qo. CFS	#	29.500	5.840	0.000	44.200	8.750	0.000	57.280	11.330	0.000
SED. DRY PCF	#	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000
VOL WAT. CU FT		36198	7100	0	54189	10629	0	70088	13721	0
SED. TONS		62.711	10.169	0.000	98.583	15.986	0.000	88.381	14.310	0.000
SED. CU FT SOLID		758	123	0	1192	193	0	1067	173	0
SED. CU FT @ DRY PCF		1254	203	0	1972	320	0	1768	286	0
SED/WATER. NET VOL		0.0210	0.0173	0.0000	0.0220	0.0182	0.0000	0.0153	0.0126	0.0000
SED/(WAT+SED). NET VOL		0.0205	0.0170	0.0000	0.0215	0.0179	0.0000	0.0150	0.0125	0.0000
(WAT+SED)/WAT. NET VOL		1.0210	1.0173	0.0000	1.0220	1.0182	0.0000	1.0153	1.0126	0.0000
SED/WATER. WT		0.0555	0.0459	0.0000	0.0583	0.0482	0.0000	0.0404	0.0334	0.0000
SED/(WAT+SED). WT		0.0544	0.0451	0.0000	0.0571	0.0473	0.0000	0.0398	0.0330	0.0000
AV ANNUAL, CU FT SOLID			71.8			112.9			101.2	
CU FT @ DRY PCF			118.4			186.1			166.7	
5*AV+100YR CF @ DRY PCF			1846			2902			2601	
ACRES (OPTIONAL)	#	22.100	22.100	22.100	33.100	33.100	33.100	42.800	42.800	42.800
VOL WAT. CU FT/AC		1638	321	0	1637	321	0	1638	321	0
Q WAT. CFS/AC		1.335	0.264	0.000	1.335	0.264	0.000	1.338	0.265	0.000
SED CF/AC. @ DRY PCF		56.8	9.2	0.0	59.6	9.7	0.0	41.3	6.7	0.0
5*AV+100YR @ DRY. CF/AC			83.5			87.7			60.8	

$\frac{1846\ ft^3}{400\ lf} = 4.615\ ft^3/ft$ $\frac{2902\ ft^3}{600\ lf} = 4.837\ ft^3/ft$

comp to $\frac{3793}{1000} = 3.793\ ft^3/ft$ for entire basin 302 = 302.1 + 302.2

TARE 302.2 typical L = 600'

2902 ft^3 / 600' = 4.87 ft^3/LF

≥ 5 ft^3/LF req for sediment storage avg + 100-yr storm.

FILE=MUSLE1.WQ1 02/09/94 10:22 AM

MEANS ENTER THIS NUMBER: OTHERS ARE CALCULATED

SUNRISE TERRACE WEST OF TANAGER

		BASIN 304			TYP 10 AC DEV. ZONE 1, 50% B			BASIN 302 entire		
		100-YEAR	10-YEAR	2-YEAR	100-YEAR	10-YEAR	2-YEAR	100-YEAR	10-YEAR	2-YEAR
K	#	0.190	0.190	0.190	0.190	0.190	0.190	0.190	0.190	0.190
LE	#	1.050	1.050	1.050	0.150	0.150	0.150	1.050	1.050	1.050
C	#	0.150	0.150	0.150	0.004	0.004	0.004	0.150	0.150	0.150
P	#	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
K*LS*C*P		0.0269	0.0269	0.0269	0.0001	0.0001	0.0001	0.0269	0.0269	0.0269
VOL WAT. AC-FT	#	0.707	0.139	0.000	1.100	NA	NA	2.070	0.400	0.000
Qp, CFS	#	25.110	4.970	0.000	32.000	NA	NA	74.570	14.670	0.000
SED. DRY PCF	#	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000
VOL WAT. CU FT		30797	6011	0	47916	NA	NA	90169	17424	0
SED. TONS		38.434	6.215	0.000	0.215	NA	NA	129.052	20.676	0.000
SED. CU FT SOLID		465	75	0	3	NA	NA	1561	250	0
SED. CU FT @ DRY PCF		769	124	0	4	NA	NA	2581	414	0
SED/WATER, NET VOL		0.0151	0.0125	0.0000	0.0001	NA	NA	0.0173	0.0144	0.0000
SED/(WAT+SED), NET VOL		0.0149	0.0123	0.0000	0.0001	NA	NA	0.0170	0.0141	0.0000
(WAT+SED)/WAT. NET VOL		1.0151	1.0125	0.0000	1.0001	NA	NA	1.0173	1.0144	0.0000
SED/WATER, WT		0.0400	0.0331	0.0000	0.0001	NA	NA	0.0459	0.0380	0.0000
SED/(WAT+SED), WT		0.0394	0.0327	0.0000	0.0001	NA	NA	0.0451	0.0375	0.0000
AV ANNUAL. CU FT SOLID			44.0			NA			147.1	
CU FT @ DRY PCF			72.5			NA			242.4	
(5*AV+100YR) @ DRY PCF			1131			NA			3793	
ACRES (OPTIONAL)	#	18.800	18.800	18.800	10.000	10.000	10.000	55.200	55.200	55.200
VOL WAT. CU FT/AC		1638	320	0	4792	NA	NA	1633	316	0
Q WAT, CFS/AC		1.336	0.264	0.000	3.200	NA	NA	1.351	0.266	0.000
SED CF/AC, @ DRY PCF		40.9	6.6	0.0	0.430	NA	NA	46.8	7.5	0.0
5*AV+100YR @ DRY. CF/AC			60.2			NA			58.7	

(5*AV + 1*100) ← BASINS → 302.2 + 303 + 304 = 2902 + 2601 + 1131 = 6635 ft3

302.2 - 303 ⇒ 2902 - 2601 = 301 ft3

B7: MUSLE - TYPICAL URBAN AREA

SRT MUSLE FOR URBAN AREAS ≤ 40 ac. 1-Eq 4

Rearrange MUSLE, Part contain Key parts in terms of contributing areas

From CE 551 UNM Fall 1992 Sediment Transport
Prof Richard Heggen

Land Treatments for City of Albq DPM, in general
A = natural B = lawn & landscape
C = packed dirt, vacant lots D = Impervious - roofs & roads

DPM has Tables of PE - precipitation excess
& Q_p - peak flow
per acre for each treatment class, for several 6 hr rainperiod storms & for 4 "rain zones" in the City

MUSLE $Y_s = 95 (V \cdot Q_p)^{.56} \cdot K \cdot LS \cdot C \cdot P$
a-f cfs

$$V_{in} = \sum_{i=A}^{D} PE_i f_i, \quad V_{ap} = \left[\sum_{i=A}^{D} \frac{PE_i}{12} f_i\right] A_{TOT, ac}$$

$$Q_p = \left[\sum_{i=A}^{D} Q_{p_i} f_i\right] A_{TOT}$$

f_i = decimal fraction$_i$ = f_i / f_{TOTAL}

C = Cover Factor, varies with land treatment

RTMT	Heggen Suggestion	Use here
A	.2	
B	.005 ~92% cover	not used
C	0.80	.008 ~ 90% cover
D	0	not used 0

$$Y_s = 95 \left(\sum PE_i f_i \cdot \sum Q_{p_i} f_i \cdot A_{TOT}^2\right)^{0.56} \left(\sum C_i f_i \cdot K \cdot LS \cdot P\right)$$
12

$$= 95 \left\{\sum \frac{PE_i f_i}{12} \sum Q_{p_i} f_i\right\}^{.56} \left[\sum C_i f_i \cdot K \cdot LS \cdot P\right] A_{TOT}^{1.12}$$

For "ORDINARY" urban basin of ~10 ac (40-50 homes, typ)
($10^{1.12} = 13.183$)

$Y_s = 95 \cdot 13.183 \{\ \}[\ ] \sim 125 \{\ \}[\ ]$ per acre

Applying factor of 3 for ~~AMAFCA~~ typical practice

$Y_s = 375 \left(\sum PE_i f_i/12 \cdot \sum Q_i f_i\right)^{0.56} \left(\sum C_i f_i\right)(K \cdot LS \cdot P)$ (1)

or $\approx 93.3 \left(\sum PE_i f_i \cdot \sum Q_i f_i\right)^{0.56} \left(\sum C_i f_i\right)^{0} (K \cdot LS \cdot P)$ removing $(1/12)^{0.56}$

B8: MUSLE - METHOD & PARAMETERS

SRT MUSLE 12/27/93

Modified Universal Soil Loss Equation

$Y_s = R \cdot K \cdot LS \cdot C \cdot P$

P = practice factor
C = cover factor
LS = length & slope "
K = soil erodibility factor — grain size
R = storm runoff energy factor

Sed yield, tons (per storm event
mult calc'd value by 3 per AMAFCA

$K = \alpha [(\text{Runoff Vol (ac-ft)} * \text{Peak flow rate (cfs)}]^{\beta}$

$\alpha = 0.95 \quad \beta = 0.56$ per MUSLE

References:

(1) Draft Sediment & Erosion Guide RCE/AMAFCA March 1992

(2) Predicting Rainfall Erosion Losses USDA Ag Handbook 538 Dec 1978

(3) AMAFCA personal communication / normal practice

C = Cover factor - Ref 2 Table 10 for permanent pasture range & idle land

Site visit 12/26/93 7/50 = 7 'hits' in 50 total sites

Set 1 ~ 600' W & 100's of Tamarix & Saltcedar

Canopy ~ 12-24": 7/50 + 14/50 + 15/50 + 27/50 = 63/200

Cover@ground : 5/50 + 3/50 + 15/50 + 21/50 = 54/200

Set 2

Canopy : 16/50 + 11/50 + 14/50 + 17/50 = 58/200

Cover@ground : 12/50 + 15/50 + 9/50 + 16/50 = 52/200

overall: Canopy = (63+58)/400 = .303 = 30.3%

ground = (54+52)/400 = .265 = 26.5%

Table 10, linear double interpolation C = 0.1369 ~0.137 ~0.14

IFF assume canopy only 50% effective set C = 0.1152 ~0.15
(make it up, canopy grass, less than 20" av height →)

Use C = 0.15 entire area under consideration

SRT MUSLE 12/27/93

BASIN 302.1 S part of 302, W of Tanager 302.2 similar

no appreciable channel

~2400' overland to Tanager / Bluepoint loamy fine sand
UPPER (west) 1/2 (1200 ft) soil BCC 1-4% HSG = A
Slope ~ $\frac{5378 - 5308}{1200}$ = .058 ~ 5.8% Ref 1 Table 4 ⇒ 35%
⇒ m. upper 1/2

from the intage SCS - Soil Survey
%sand = 100-30 70 % 0.1 to 2.0 mm
% silt & very fine sand = 30%

estimates
organic content ~ 0
structure - blng granular (poss very fine)
permeability - 1 = rapid

K - Ref 2 Fig 3 nomograph p 11
K = 0.21 (0.25 if use fine granular instead of very fine

LS - Ref 2 Fig 4
LS ~ 2.05

P - ~0.90
- no support practice, but not as bad as up & down slope cultivation, which is the standard
- Ref 1's use of 1.0 does not seem justified, given discussion (p 34) of Ref 2

$K \cdot LS \cdot C \cdot P$ = 0.21 x 2.05 x 0.15 x 0.90 = 0.0581 ≥ 0.058
.35 x .058 = 0.0203

lower 1/2 Ref 1 table 4 - get 65% of soil loss
Soil = PAC Pajarito loamy fine sand
~40% finer than 0.1 mm, 100% finer than 2 mm
have granular structure, permeability moderately rapid
slope = (5308 - 5258 ft)/1200 = 0.417 ~ 4.2%

K = 0.33 Fig 3 LS = 1.1

$K \cdot LS \cdot C \cdot P$ = .33 x 1.1 x .15 x .90 = 0.0490
.65 x .049 = 0.0319

Σ = .0203 + .0319 = 0.0522

Note LS only 2.05 x .35 + 1.1 x 0.65 = 1.43

2

SRT MUSLE 12/28/93

BASIN 303 N. Part of
W of Tanager, Sof sanderling ±

an dist overland flow to channel ± 1800 ft

overall length ~ 2700

3 divisions: fractions: upper .19 Table 4 Ref 2
@ 900' each middle .35
lower .46

all Soils BCC

upper S_{av} (5375 - 5324)/900 = 51/900 ⇒ 5.7% Fig 4 Ref 2
LS = 1.95 * fraction .19 = .371

Part
mid S_{av} = (5329 - 5298)/900 = 36/900 ⇒ 4.0%
LS = 0.96 * fraction .35 = .336

lower S_{av} = (5298 - 5261)/900 = 27/900 ⇒ 3.0%
LS = 0.65 * fraction .46 = 0.299
correction → LS = 0.55 * 0.46 = .253 ~ 0.25

Σ = .371 + .336 + .253
Σ = 0.96 = LS

SRT MUSLE 1/6/94

$Y = R \cdot K \cdot LS \cdot C \cdot P$

K. From SRT Ph A-1 Sieve Analysis K = Erodibility Factor

D50 = 0.20 mm
2.0mm → .1mm = 96-28 = 68
< .1 mm = 28%
% organics ~ 0 ASSUME

Silty to very fine sand

K ~ 0.19 Fig 3 pg USLE

P = "Practice" factor
related to standard of cultivating up & down recs
little guidance available, esp. for range or lawn

P = 0.9 ASSUME

C = Cover Factor - USLE Table 10
"Natural" existing cond - base on site visit - see SRT MUSLE 12/27/93
C ~ 0.14 natural, used C = 0.15 natural

Developed - lawns / landscaping Table 10
assume 90% cover, grass, no canopy ⇒ C = 0.010
C ~ 0.008 lawn & landscape
(for 50% lawn 50% impervious would say C ~ 0.003.
of all lawn & LS = good lawn & LS

LS - length & slope factor
Developed ~ 5 du/ac assumed/typical
2 flow paths (1) front yard to street
(2) around back to side to street
typical lot ~ 100' deep
LS ~ 0.15 approx 120' @ 1.2% ⇒ dist = 1.44 ft

LS Natural - basin W of SRT Phase B = 302.1, 302.2, 303, 304

{302.1 LS = 1.43} (2 segments SRT MUSLE 12/27/93)
{302.2

303 LS = 0.96 (3 segments " ")

304 1 segment Δ overall length ~ 1900', av length ~ 1100', no channel
Slope = (5320 - 5244)/1900 = 76/1900 = 0.0400 = 4%
LS ~ 1.05

SRT MUSLE 1-694

LS Typical - undeveloped
Basins 302 & 303 are steeper than typical, esp. upper end
Basin 304 also " " slightly steeper than typ
" " shorter " " " av flow length

Numeric av (not weighted) = (1.43 + 0.96 + 1.05)/3 ≈ 1.15
weighted by area = $\frac{(55.2 \times 1.43 + 42.6 \times 0.96 + 18.8 \times 1.05)}{(55.2 + 42.6 + 18.8)}$
= 59.76/116.8
= 1.20

CHOOSE LS TYP = 1.20 undeveloped

FE NO: SF-12-94 T&E

SRT MUSLE - DEVELOPED, PEAK 1-6-94

SRT urban area - rain zone 1, 50%B 50%D

P = 0.9 LS = 0.15 K = 0.19 SRT MUSLE 1-6-94
C_B = 0.008 C_D = 0 " 1-6-94, 1-8-94

DPM chap 22.2 (Jan 93) Tables A-8 & A-9, Zone 1, 100yr-6hr

P_{e_B} = 1.67" P_{e_D} = 1.92" Q_{P_B} = 2.03 cfs Q_{P_D} = 4.37 cfs

Treatment	fraction	P_e in	P_e·f	Q_P cfs	Q_P·f	C_w	C_e·f
B	.50	1.67	.835	2.03	1.015	.008	.004
D	.50	1.97	.985	4.37	2.185	0	0
	1.00	1.32	3.20				.004

$Y_s = 93.3(1.32 \cdot 3.20)^{0.56}(.004)(.15)(.19)(.9)$ ton/ac, 100yr-6hr

$= 93.3(2.241)(1.026 \times 10^{-4})$

$= 0.0215$ tons/ac @ 100 pcf (loose) = (.26)(2.65-1) = 0.429

at Sg = 2.65 $\frac{.0215 \text{ ton} \times 2000 \text{ lb/ton}}{2.65 \times 62.4 \text{ lb/pcf}} = \frac{43 \text{ lb}}{165.36 \text{ lb/pcf solid}} = 0.26 \text{ ft}^3$ solid

$\frac{0.26 \text{ ft}^3 \text{ solid}}{1.32 \text{ af} \times 43560 \text{ ft}^3/\text{af}} = \frac{.26}{57499.2} = 4.5225 \times 10^{-6}$

as a "parts per million" concentration, by weight

$\frac{0.26 \text{ ft}^3 \times 2.65 \times 62.4 \text{ lb/ft}^3}{0.26 \times 2.65 + 57499.2 \times 62.4 \text{ lb/ft}^3} = 11.98 \times 10^{-6} \approx 12 \times 10^{-6}$

12×10^{-6} = 12 ppm calc'ed = clean for drainage

∴ ignore MUSCLE sediment for developed conditions

Reported bulking of ±7% developed probably refer to material eroded from channels, not originating in subdivisions

Sediment from construction sites, during development could be significant.

B9: GRAIN SIZE DISTRIBUTIONS

	10	2.0	100	100	100	100
	40	0.42	72	90	99	98
	200	0.074	17	19	24	42

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University of New Mexico

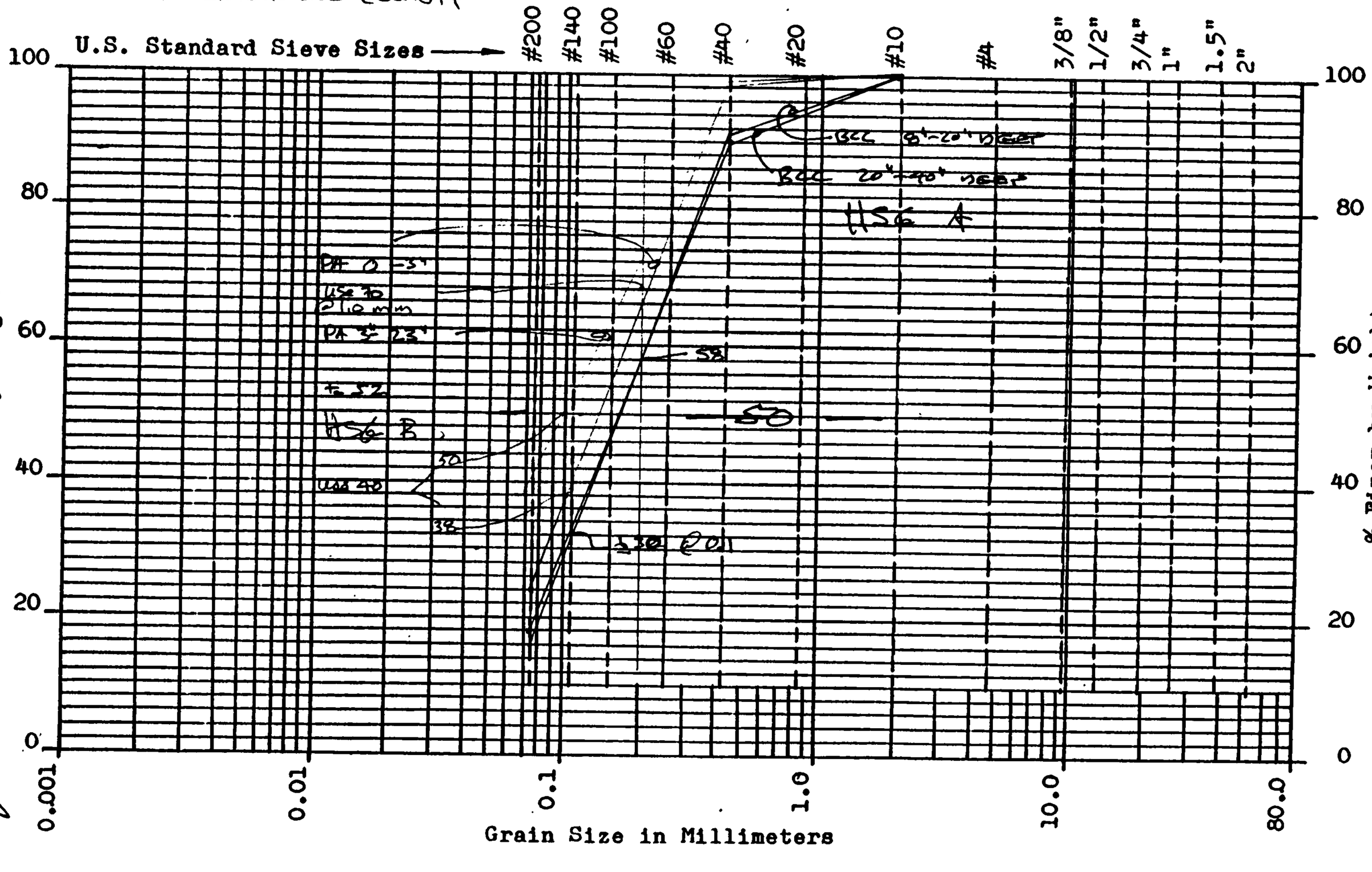
Grain Size Distribution Curve

Test No. _____

Sample SUNRISE TERRACE **Tested By** _____ **Party** _____ **Date** _____

FROM SCS SOIL SURVEY OF BERNALILLO COUNTY

D_{10} _____ D_{60} _____ U_c _____ D_0



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University of New Mexico

10	80.1
40	55.7
80	28.1
200	10.4

#80 = 180 μm
= .180 mm
≈ 0.007 in

Grain Size Distribution Curve

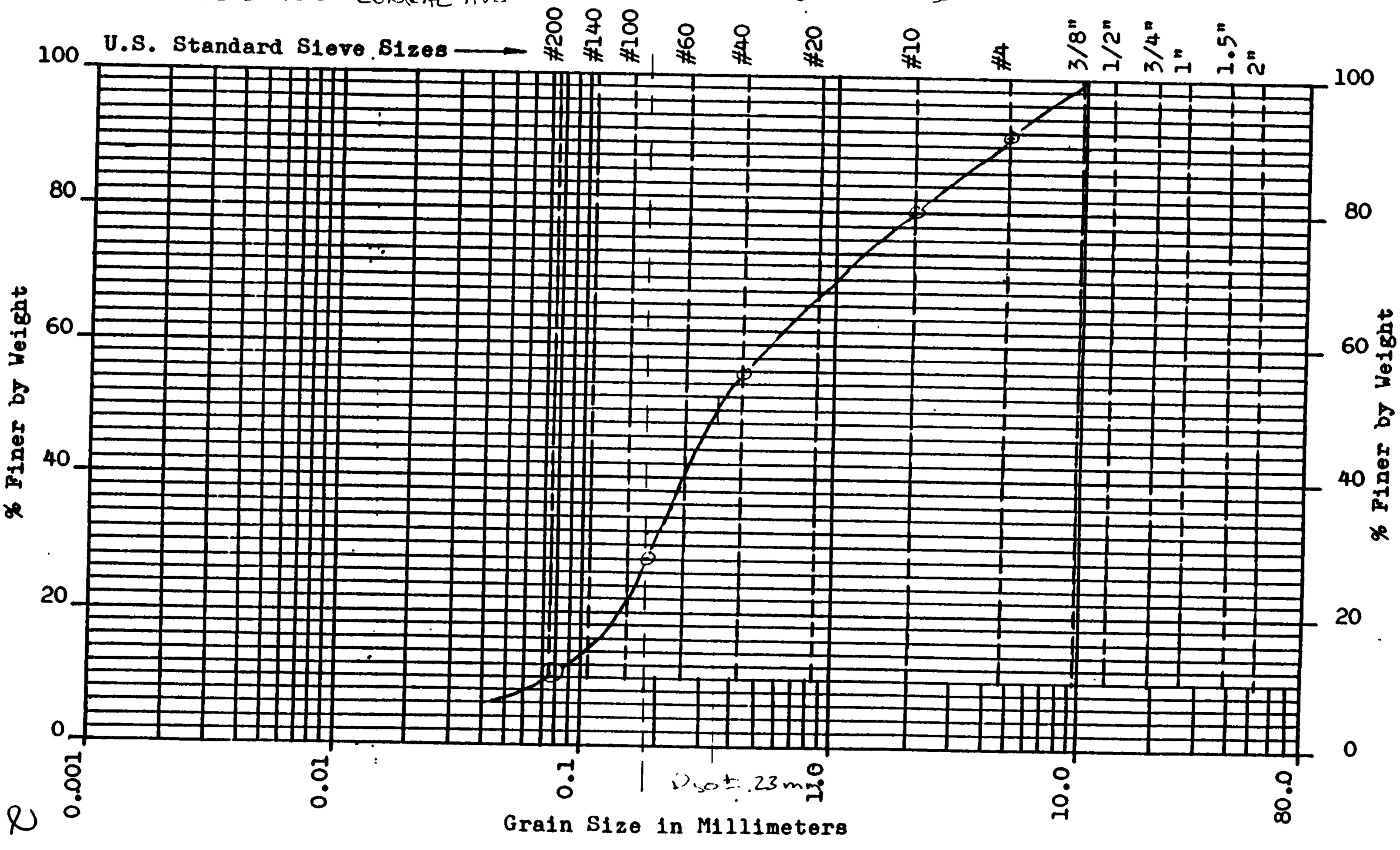
Test No. 2472a

(SNOW VISTA CHANNEL)

Sample WESTGATE DIVERSION
TEST HOLE 12, AUGER 0→5'
IN ARROYO BED
~1500' N OF CENTRAL AVE

Tested By ATL Party _____ Date 6/27/1980

D_{10} ____ D_{60} ____ U_c ____ D_{50} .23 mm %<2mm ~80 %<.1mm ~14



2

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#4 100
8 48
40 82
200 11

Grain Size Distribution Curve

Test No. _____

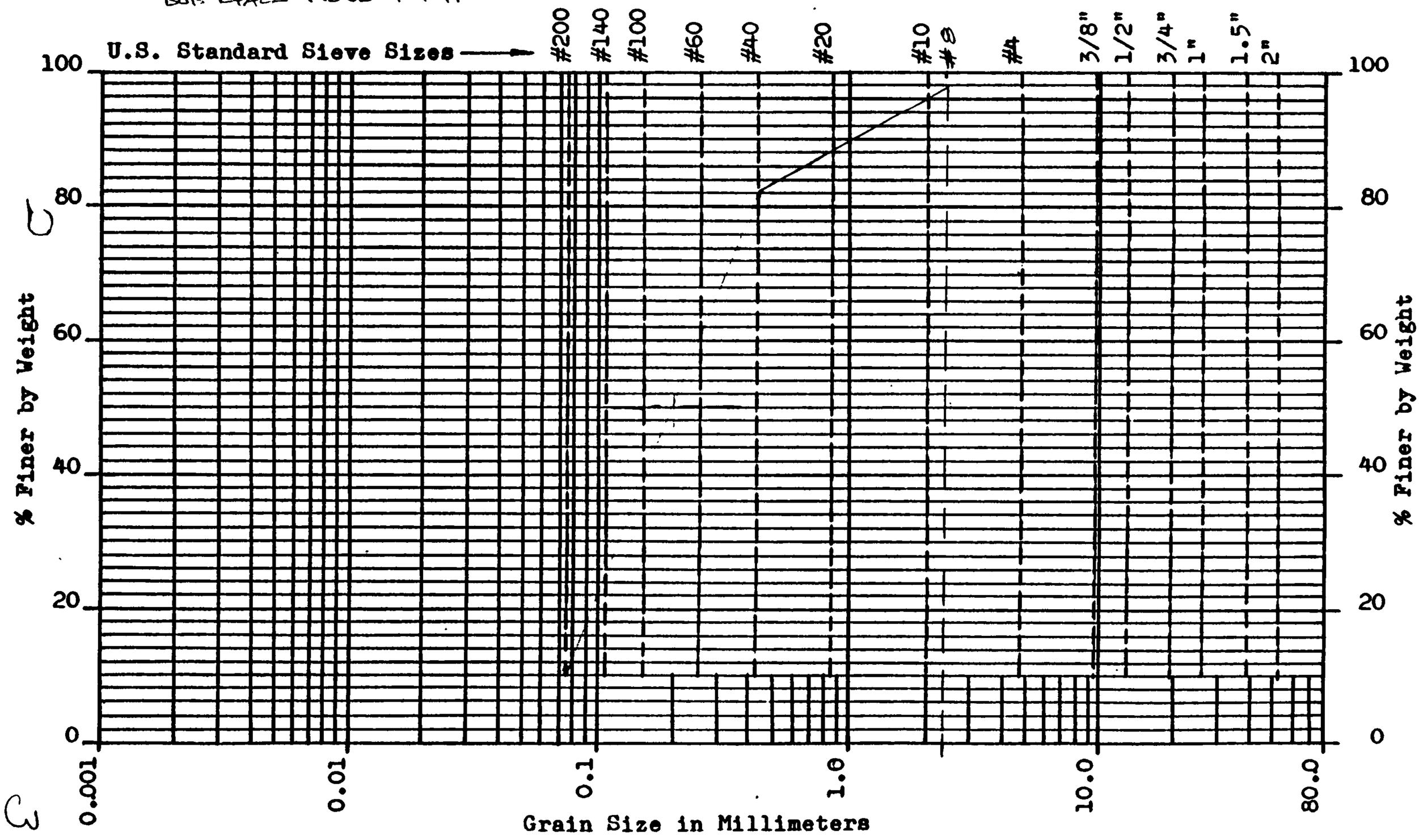
Sample Sun Rise Terrace Tested By _____ Party _____ Date _____

.2 - .1mm = 50-22 = 28%

PH A-1

BOB KYALS PHONE 1-4-94

D_{10} _____ D_{60} _____ U_c _____ D_{50} = 0.2 mm



C

3

B10: MUSLE REFERENCE MATERIAL

MUSLE

tion and developmental areas can be obtained from table 5 if good judgment is exercised in comparing the surface conditions with those of agricultural conditions specified in lines of the table. Time intervals analogous to cropstage periods will be defined to begin and end with successive construction or management activities that appreciably change the surface conditions. The procedure is then similar to that described for cropland.

Establishing vegetation on the denuded areas as quickly as possible is highly important. A good sod has a C value of 0.01 or less (table 5-B), but such a low C value can be obtained quickly only by laying sod on the area, at a substantial cost. When grass or small grain is started from seed, the probable soil loss for the period while cover is developing can be computed by the procedure outlined for estimating cropstage-period soil losses. If the seeding is on topsoil, without a mulch, the soil loss ratios given in line 141 of table 5 are appropriate for cropstage C values. If the seeding is on a desurfaced area, where residual effects of prior vegetation are no longer significant, the ratios for periods SB, 1 and 2 are 1.0, 0.75 and 0.50, respectively, and line 141 applies for cropstage 3. When the seedbed is protected by a mulch, the pertinent mulch factor from the upper curve of figure 6 or table 9 is applicable until good canopy cover is attained. The combined effects of vegetative mulch and low-growing canopy are given in figure 7. When grass is established in small grain, it can usually be evaluated as established meadow about 2 mo after the grain is cut.

C Values for Pasture, Range, and Idle Land

Factor C for a specific combination of cover conditions on these types of land may be obtained from table 10 (57). The cover characteristics that must be appraised before consulting this table are defined in the table and its footnotes. Cropstage periods and EI monthly distribution data are generally not necessary where perennial vegetation has become established and there is no mechanical disturbance of the soil.

Available soil loss data from undisturbed land were not sufficient to derive table 10 by direct comparison of measured soil loss rates, as was done for development of table 5. However, analyses of the assembled erosion data showed that the research information on values of C can be extended to completely different situations by combining subfactors that evaluate three separate and distinct, but interrelated, zones of influence: (a) vegetative cover in direct contact with the soil surface, (b) canopy cover, and (c) residual and tillage effects.

Subfactors for various percentages of surface cover by mulch are given by the upper curve of

TABLE 10.—*Factor C for permanent pasture, range, and idle land*[1]

Vegetative canopy		Cover that contacts the soil surface						
			Percent ground cover					
Type and height[2]	Percent cover[3]	Type[4]	0	20	40	60	80	95+
No appreciable canopy		G	0.45	0.20	0.10	0.042	0.013	0.003
		W	.45	.24	.15	.091	.043	.011
Tall weeds or short brush with average drop fall height of 20 in	25	G	.36	.17	.09	.038	.013	.003
		W	.36	.20	.13	.083	.041	.011
	50	G	.26	.13	.07	.035	.012	.003
		W	.26	.16	.11	.076	.039	.011
	75	G	.17	.10	.06	.032	.011	.003
		W	.17	.12	.09	.068	.038	.011
Appreciable brush or bushes, with average drop fall height of 6½ ft	25	G	.40	.18	.09	.040	.013	.003
		W	.40	.22	.14	.087	.042	.011
	50	G	.34	.16	.08	.038	.012	.003
		W	.34	.19	.13	.082	.041	.011
	75	G	.28	.14	.08	.036	.012	.003
		W	.28	.17	.12	.078	.040	.011
Trees, but no appreciable low brush. Average drop fall height of 13 ft	25	G	.42	.19	.10	.041	.013	.003
		W	.42	.23	.14	.089	.042	.011
	50	G	.39	.18	.09	.040	.013	.003
		W	.39	.21	.14	.087	.042	.011
	75	G	.36	.17	.09	.039	.012	.003
		W	.36	.20	.13	.084	.041	.011

[1] The listed C values assume that the vegetation and mulch are randomly distributed over the entire area.

[2] Canopy height is measured as the average fall height of water drops falling from the canopy to the ground. Canopy effect is inversely proportional to drop fall height and is negligible if fall height exceeds 33 ft.

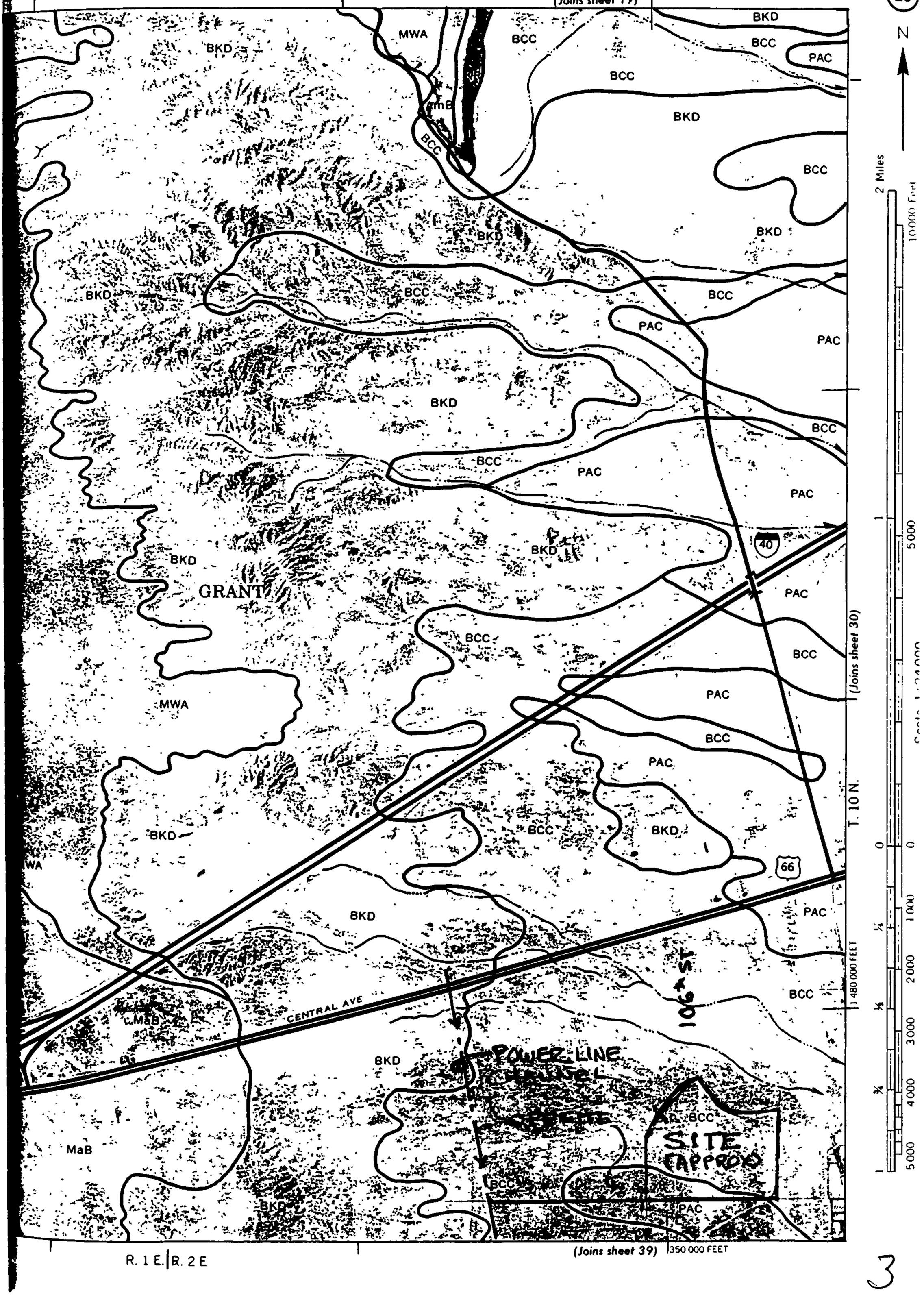
[3] Portion of total-area surface that would be hidden from view by canopy in a vertical projection (a bird's-eye view).

[4] G: cover at surface is grass, grasslike plants, decaying compacted duff, or litter at least 2 in deep.
W: cover at surface is mostly broadleaf herbaceous plants (as weeds with little lateral-root network near the surface) or undecayed residues or both.

1

c

COUNTIES, NEW MEXICO — SHEET NUMBER 29



TOPOGRAPHIC FACTOR - LS

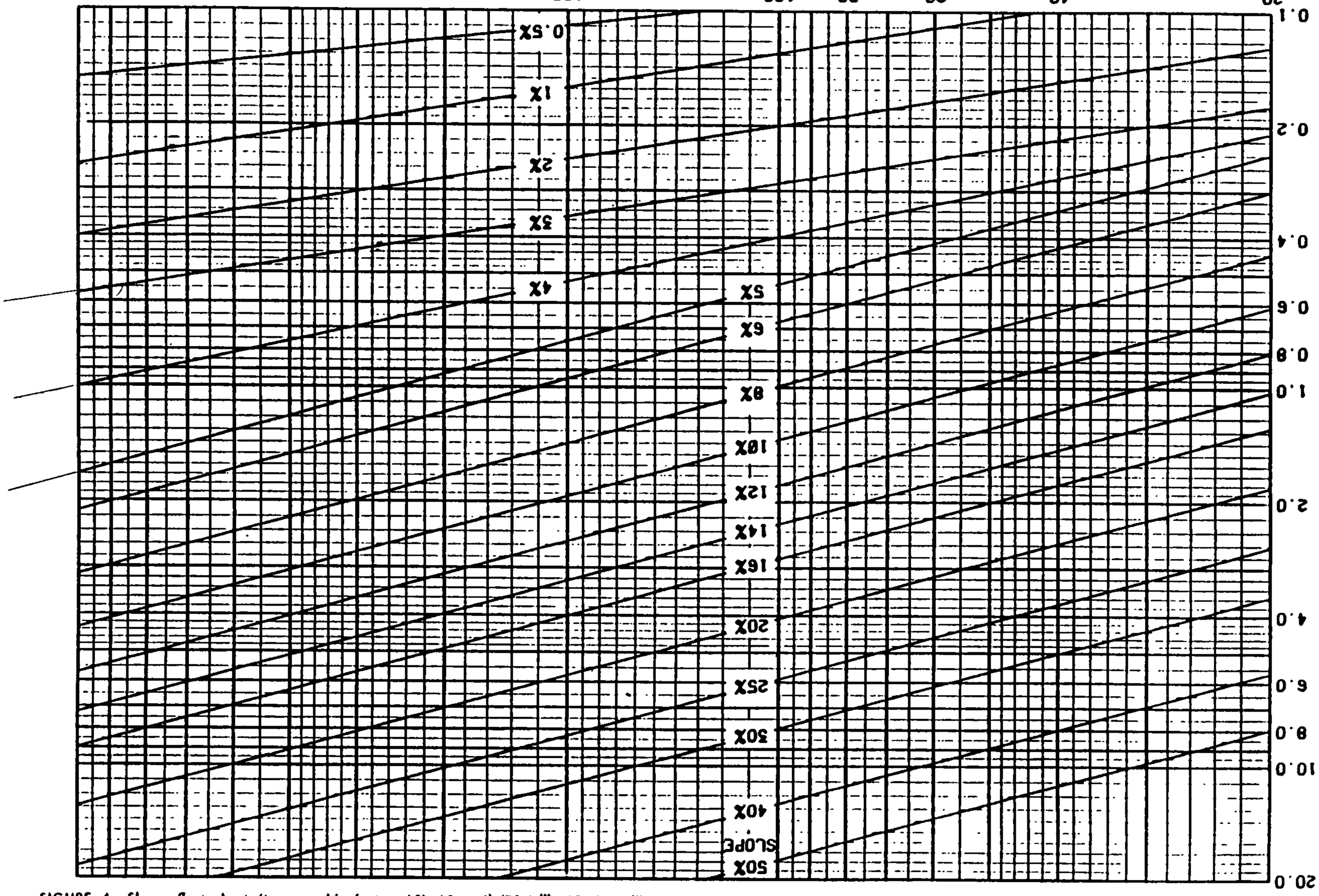


FIGURE 4.—Slope-effect chart (topographic factor, LS). LS = $(\lambda/72.6)^{m}$ (65.41 $\sin^2\theta$ + 4.56 $\sin\theta$ + 0.065) where λ = slope length in feet; θ = angle of slope, and m = 0.2 for gradients < 1 percent, 0.3 for 1 to 3 percent slopes, 0.4 for 3.5 to 4.5 percent slopes, and 0.5 for slopes of 5 percent or steeper.

TOPOGRAPHIC FACTOR - LS

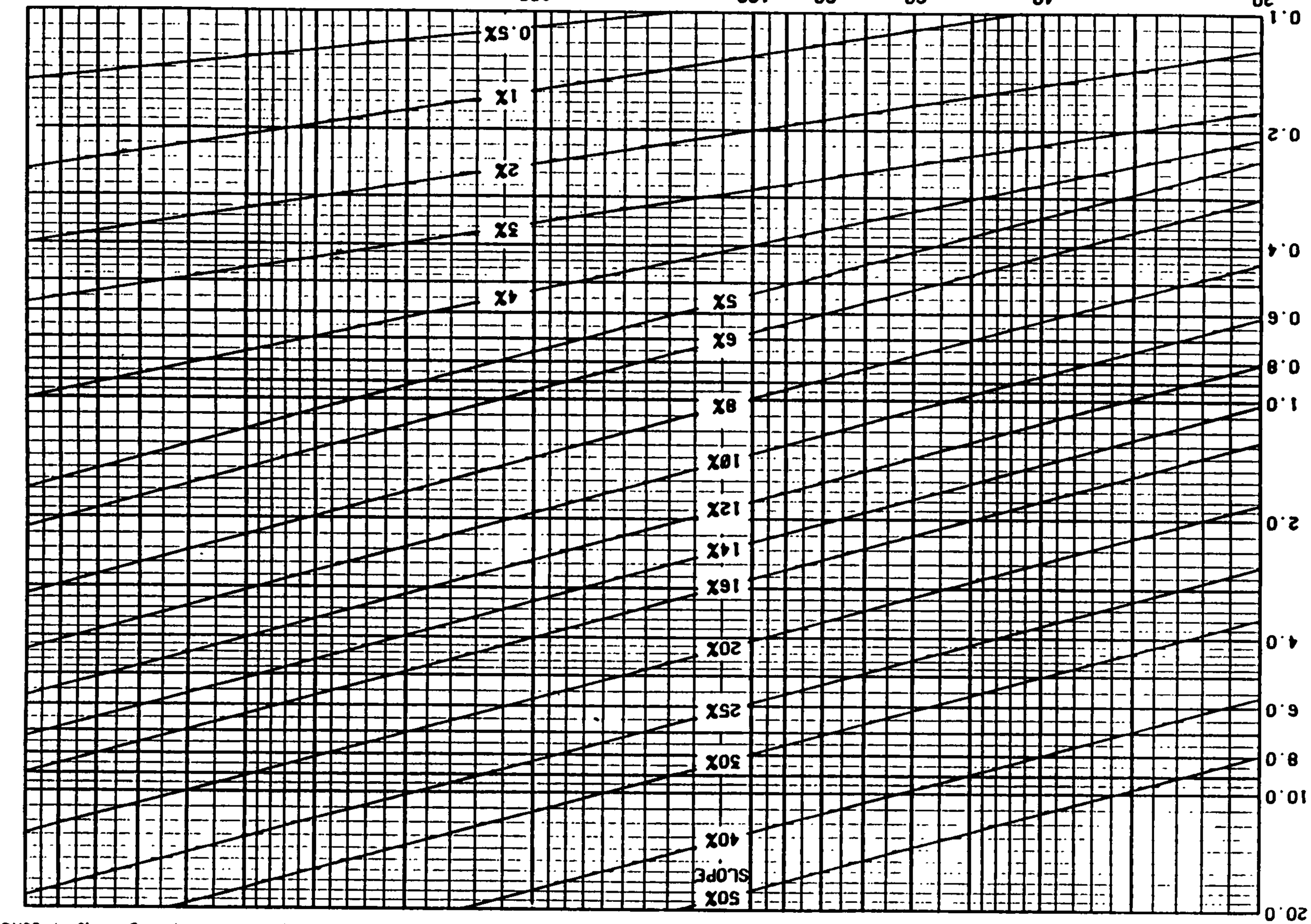
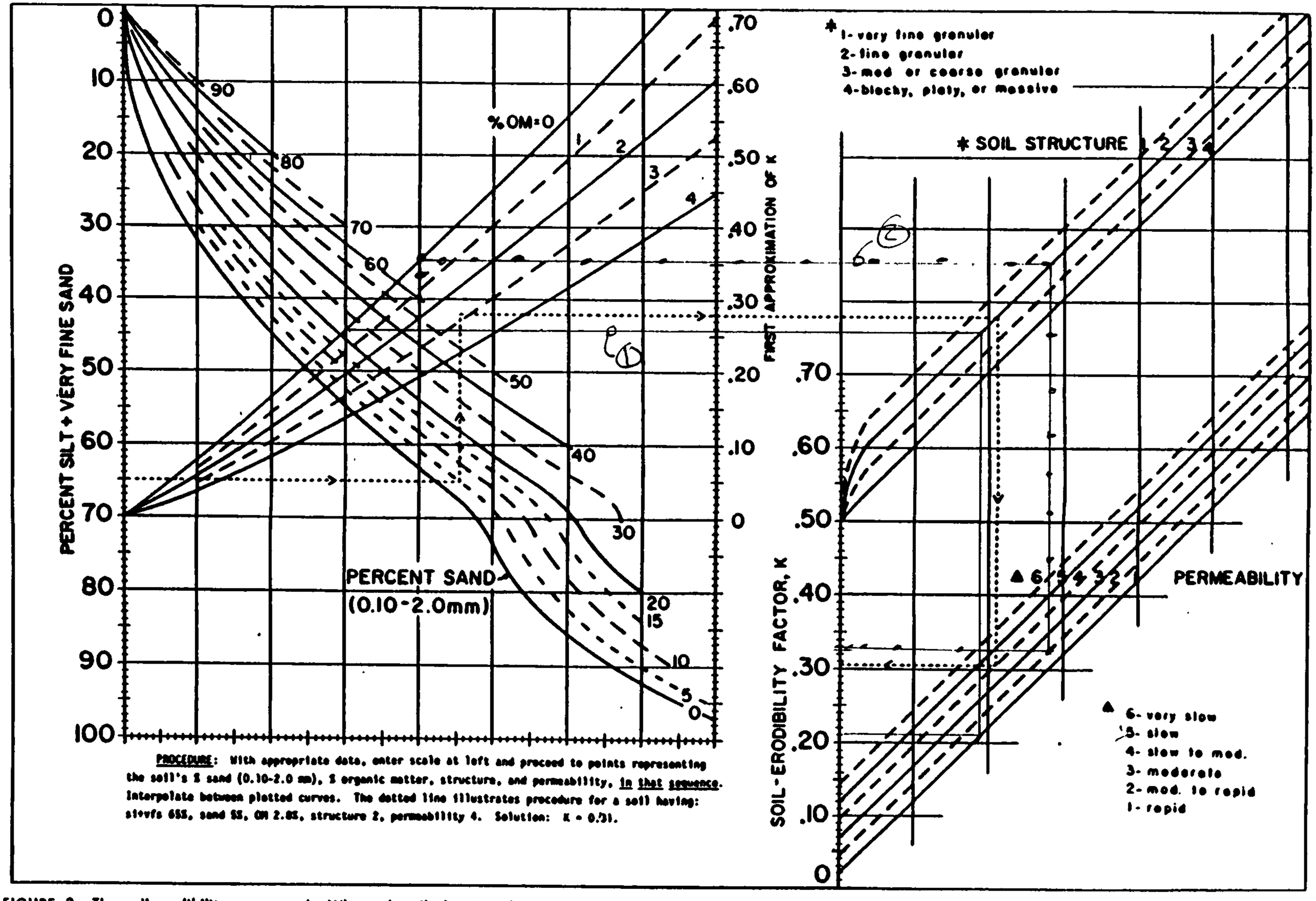


FIGURE 4.—Slope-effect chart (topographic factor, LS). LS = $(\lambda/72.6)^m$ (65.41 $\sin^2\theta$ + 4.56 $\sin\theta$ + 0.065) where λ = slope length in feet; θ = angle of slope, and m = 0.2 for gradients < 1 percent, 0.3 for 1 to 3 percent slopes, 0.4 for 3.5 to 4.5 percent slopes, and 0.5 for slopes of 5 percent or steeper.

① BCC soil 30% finer than 0.10 mm, 100% finer than 2 mm

② PA soil 40% finer than 0.10 mm, 100% " " "



PROCEDURE: With appropriate data, enter scale at left and proceed to points representing the soil's % sand (0.10-2.0 mm), % organic matter, structure, and permeability, in that sequence. Interpolate between plotted curves. The dotted line illustrates procedure for a soil having: si+vfs 65%, sand 5%, OM 2.8%, structure 2, permeability 4. Solution: K = 0.31.

FIGURE 3.—The soil-erodibility nomograph. Where the silt fraction does not exceed 70 percent, the equation is $100\,K = 2.1\,M^{1.14}\,(10^{-4})\,(12 - a) + 3.25\,(b - 2) + 2.5\,(c - 3)$ where M = (percent si + vfs) (100 — percent c), a = percent organic matter, b = structure code, and c = profile permeability class.

scarce data available for such slopes and was used to derive figure 4 and table 3.

Distribution of Length Effect

LS values from figure 4 or table 3 predict the *average* erosion over the entire slope. But this erosion is not evenly distributed over the entire length. The rate of soil loss per unit of area increases as the mth power of the distance from the top of the slope, where m is the length exponent in the preceding equation.

An equation by Foster and Wischmeier (12) estimates the relative amounts of soil loss from successive segments of a slope under conditions where there is no deposition by overland flow. When the gradient is essentially uniform and the segments are of equal length, the procedure can be shortened (55). Table 4, derived by this procedure, shows the proportionate amounts of soil detachment from successive equal-length segments of a uniform slope.

Table 4 is entered with the total number of equal-length segments, and the fraction of the soil loss for each segment is read beneath the applicable value of m. For example, three equal-length segments of a uniform 6-percent slope would be expected to produce 19, 35, and 46 percent, respectively, of the loss from the entire slope.

TABLE 4.—*Estimated relative soil losses from successive equal-length segments of a uniform slope*[1]

Number of segments	Sequence number of segment	Fraction of soil loss		
		m = 0.5	m = 0.4	m = 0.3
2	1	0.35	0.38	0.41
	2	.65	.62	59
3	1	19	22	24
	2	.35	35	.35
	3	.46	43	.41
4	1	.12	.14	.17
	2	.23	.24	.24
	3	.30	.29	.28
	4	.35	.33	.31
5	1	.09	.11	.12
	2	.16	.17	.18
	3	.21	.21	.21
	4	.25	.24	.23
	5	.28	.27	.25

[1] Derived by the formula:

$$\text{Soil loss fraction} = \frac{i^{m+1} - (i-1)^{m+1}}{N^{m+1}}$$

where i = segment sequence number; m = slope-length exponent (0.5 for slopes ≥ 5 percent, 0.4 for 4 percent slopes, and 0.3 for 3 percent or less); and N = number of equal-length segments into which the slope was divided.

Four segments would produce 12, 23, 30, and 35 percent, respectively. Segment No. 1 is always at the top of the slope.

Percent Slope

Runoff from cropland generally increases with increased slope gradient, but the relationship is influenced by such factors as type of crop, surface roughness, and profile saturation. In the natural rain slope-effect studies, the logarithm of runoff from row crops was linearly and directly proportional to percent slope. With good meadow sod and with smooth bare surfaces, the relationship was insignificant. The effect of slope on runoff decreased in extremely wet periods.

Soil loss increases much more rapidly than runoff as slopes steepen. The slope-steepness factor, S, in the soil loss equation is evaluated by the equation

$$S = 65.41 \sin^2 \theta + 4.56 \sin \theta - 0.065 \qquad (5)$$

where θ is the angle of slope.

This equation was used to develop the slope-effect chart. The values reflect the average effect of slope steepness on soil loss in the plot studies. The relation of percent slope to soil loss is believed to to be influenced by interactions with soil properties and surface conditions, but the interaction effects have not been quantified by research data. Neither are data available to define the limits on the equation's applicability.

This equation can be derived from the formerly published equation for S. Expressing the factor as a function of the sine of the angle of slope rather than the tangent is more accurate because raindrop-impact forces along the surface and runoff shear stress are functions of the sine. Substituting 100 sin θ for percent slope, which is 100 tan θ, does not significantly affect the initial statistical derivation or the equation's solutions for slopes of less than 20 percent. But as slopes become steeper, the difference between the sine and the tangent becomes appreciable and projections far beyond the range of the plot data become more realistic. The numerator was divided by the constant denominator for simplification.

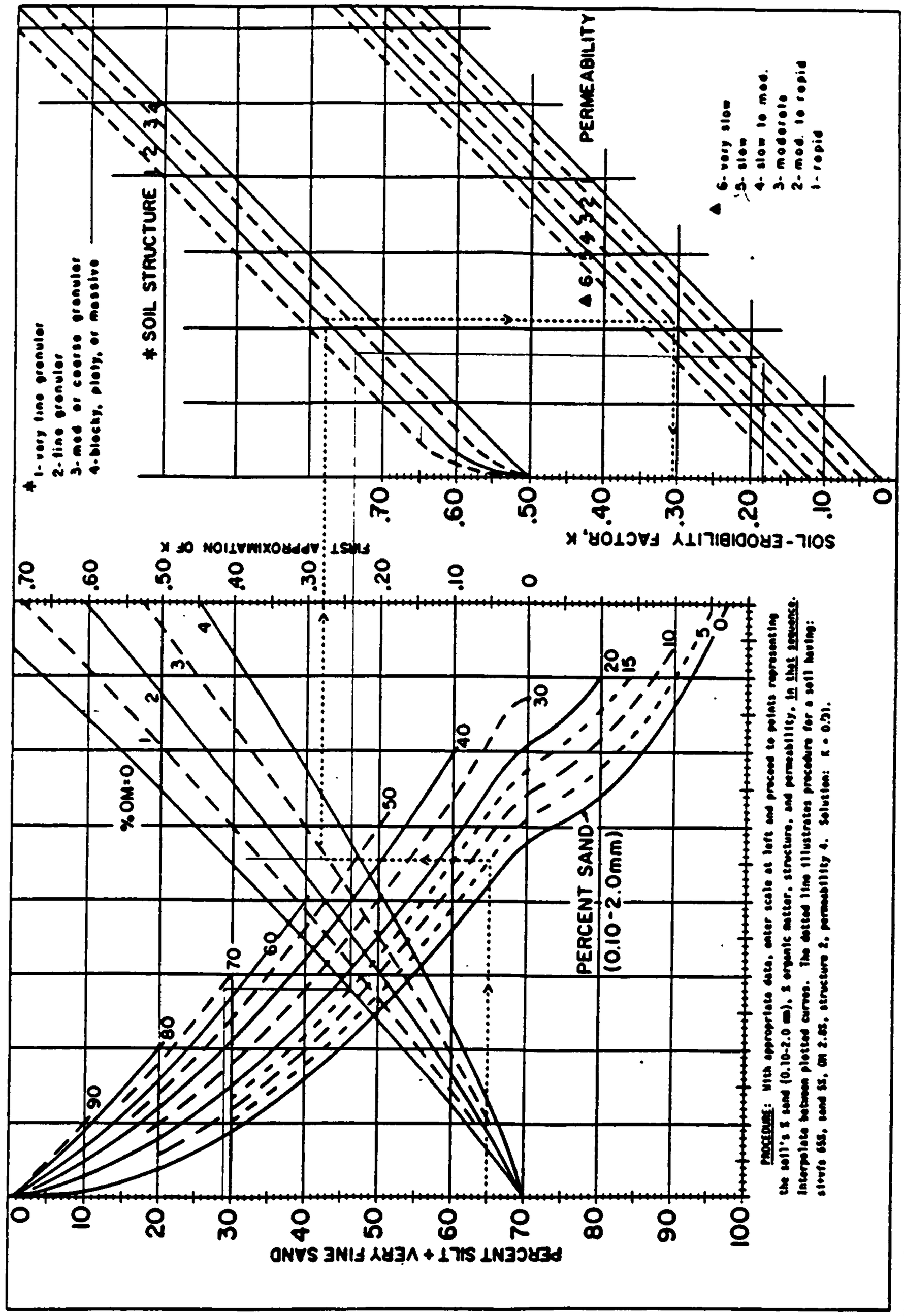


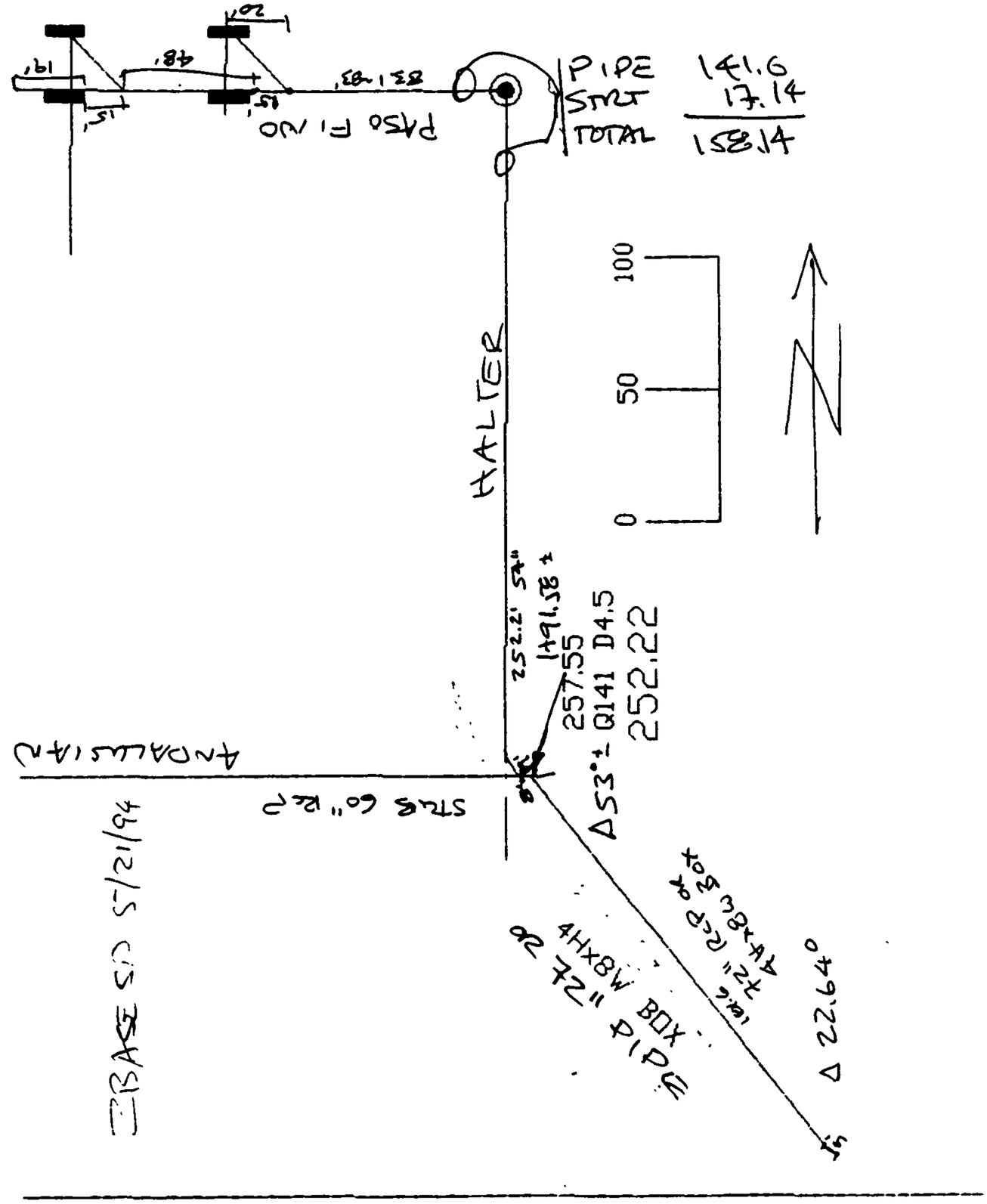
FIGURE 3.—The soil-erodibility nomograph. Where the silt fraction does not exceed 70 percent, the equation is $100\ K = 2.1\ M^{1.14}\ (10^{-4})\ (12 - a) + 3.25\ (b - 2) + 2.5\ (c - 3)$ where M = (percent silt + vfs) (100 — percent c), a = percent organic matter, b = structure code, and c = profile permeability class.

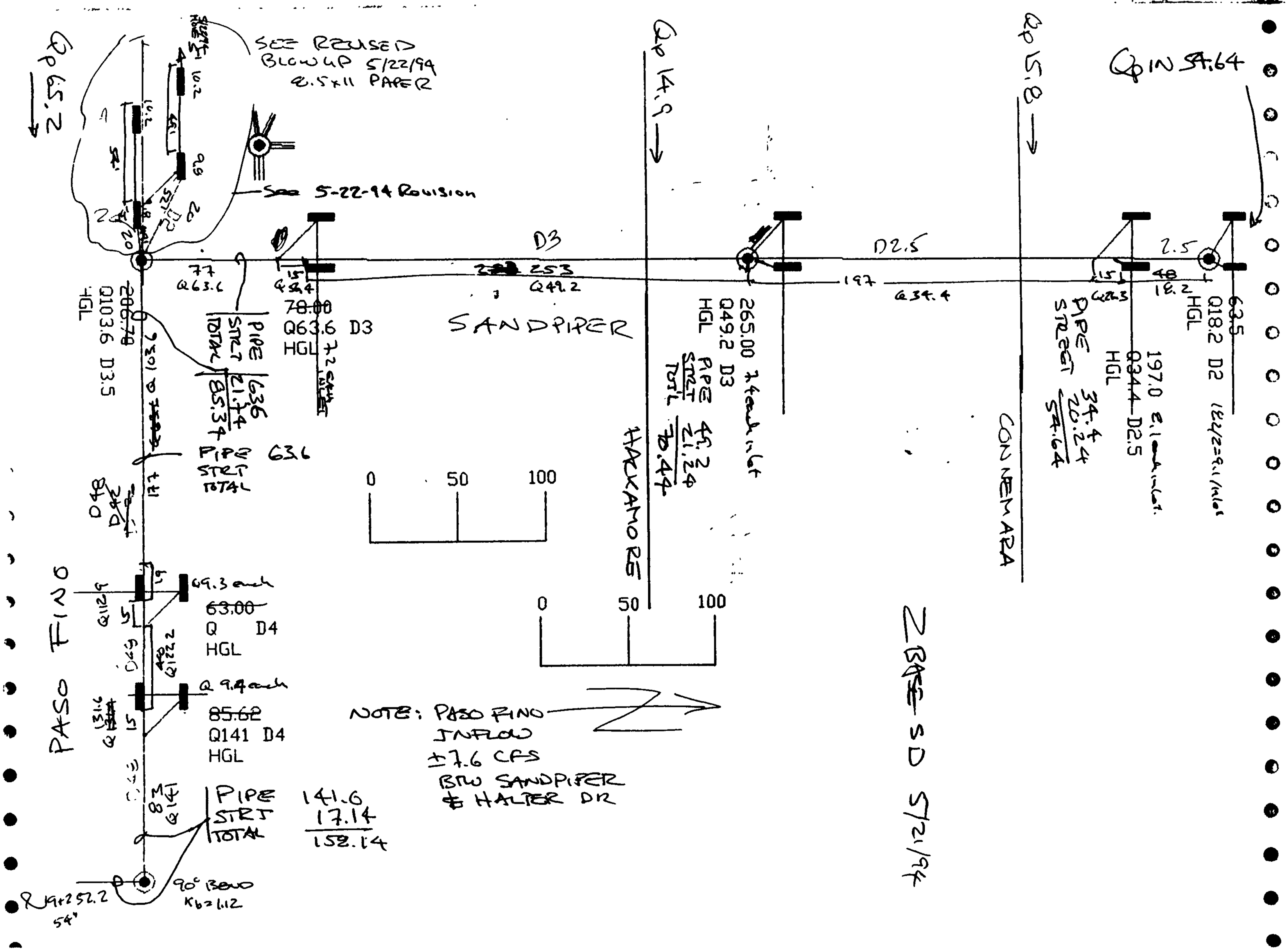
PROCEDURE: With appropriate data, enter scale at left and proceed to points representing the soil's % sand (0.10-2.0 mm), % organic matter, structure, and permeability. In that sequence. Interpolate between plotted curves. The dotted line illustrates procedure for a soil having: sand 55, sand 55, silt 2.85, structure 2, permeability 4. Solution: K = 0.31.

APPENDIX C: HYDRAULICS

C1: HALTER / PASO FINO / SANDPIPER STORM DRAIN INCLUDING CATCH BASIN ANALYSIS
C2: SELECTED STREET HYDRAULICS
C3: HALTER POND
C4: TANAGER POND, PLUS INLET CHANNELS AND OUTLET PIPE
C5: SNOW VISTA DESILTING BASIN
C6: INTERIM INLET IN SANDPIPER
C7: STUB CHANNEL TO SNOW VISTA CHANNEL

C1: HALTER / PASO FINO / SANDPIPER STORM DRAIN
INCLUDING CATCH BASIN ANALYSIS


PIPE 141.6
STRT 17.14
TOTAL 158.14
PASO FINO
HALTER
0
50
100
257.55
Q141 D4.5
252.22
ANDALUSIAN
STUB 60" RCP
BASE SD 5/21/94
4HX8W BOX
72" PIPE
Δ 22.64°



SEE REVISED BLOWUP 5/22/94 8.5x11 PAPER
See 5-22-94 Revision
Qp 65.2
Qp 14.9
Qp 15.8
Qp IN 54.64
D3
D2.5
2.5
253
Q49.2
197
Q34.4
77
Q63.6
15
Q54.4
78.00
Q63.6 D3
HGL
SANDPIPER
265.00
Q49.2 D3
HGL
PIPE 49.2
STRT 21.24
TOTL 70.44
PIPE 63.6
STRT 21.74
TOTAL 85.34
PIPE 63.6
STRT
TOTAL
Q103.6 D3.5
HGL
206.78
Q18.2 D2
HGL
63.5
197.0
Q34.4 D2.5
HGL
PIPE 34.4
STRT 20.24
TOTAL 54.64
CONNEMARA
HACKAMORE
0
50
100
PASO FINO
Q9.3 each
63.00
Q D4
HGL
Q 9.4 each
85.62
Q141 D4
HGL
PIPE 141.6
STRT 17.14
TOTAL 158.14
90° BEND
Kb=1.12
R 19+252.2
54"
NOTE: PASO FINO INFLOW ±7.6 CFS BTW SANDPIPER & HALTER DR
Z BASE SD 5/21/94

SUNRISE HALTER/PF/SAND SD

LOCATION	FEATURE	LOSS	EGL	HGL	
JUNCTION @ STUB	DOWNSTREAM END	—	92.03	89.3	
5' UP FROM END - PI	22.64° BEND 2W x 4H	0.32	92.35	89.62	
PI ~182' UPSTREAM	Friction loss, "	1.67	94.02	91.29	
PI as ABOVE nominal	Gradual expand (1:5 each side)	0.03	94.05	90.56	Note ↓
PI as above	51.35° Bend	0.52	94.57	91.08	
9' upstream @ JUNCT	Friction loss	0.08	94.65	91.16	
℄ Junction @ Halter & Andalusia	Junction from JNCT LOSS, WQ1	1.25	95.90	94.34	Andalusia
	Start Halter SD	Hv 1.22	95.56	94.34	
Halter, 9' from Anda Junct	30° Bend + 9' HF	0.20	95.76	92.54	
Halter, just before MH PasoF	252 LF 54" Friction	1.30	97.06	95.84	
MH @ Halter & PasoFino	MH 0.97 x Hv dwn (Marsalek)	1.18	98.24	97.02	54" FL ~ (96.28 48") 97.45
	Start PASO FINO SD	Hv 1.96	98.24	96.28	
1st Junct 1 Lateral on PF	23 LF friction loss	.20	99.04	97.08	
1st Junct W of Halter	Junction	.17	99.21	97.51	
2nd Junct PF	15' friction	.13	99.34	97.64	
2nd Junct PF	Junct	.15	99.49	98.02	

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W

SUNRISE SAND PIPER STORM DRAIN 5/22-23/94

LOCATION	FEATURE		UCSS	EGL	HGL
PF, 3rd Junct W of Halter	friction		.35	99.84	98.37
PF 3rd Junct " "	junction		.13	99.97	98.72
PF 4th Junct W of Halter	friction		.09	100.06	98.81
PF 4th Junct "	junction		.11	100.17	99.11
MH @ Sand Piper Int	friction		1.02	101.19	100.13
MH @ Sandpiper Int	Junct	24" Lat	~~1.25~~	~~102.46~~	~~101.22~~
		30" Lat	1.87	103.06	101.80
	~~SAND~~ PIPER				
SP 1st Junct N of PF	friction		0.10		
		125		103.31	102.32
SP 1st Junct	junction		0.18		
SP 2nd Junct	friction		.11		
		126		103.57	102.62
SP 2nd Junct	junction		.15		
MH N of Hackamore	friction		1.38	104.95	104.20
MH N of Hackamore	junction, 45°		0.31	105.26	104.50
		24"	0.64	105.59	103.73 ↓)
1st Junct N of Commercial	friction		1.38	106.64	105.88
1st Junct N of Commercial		24"	(4.57	110.15	(08.29)
	junction		.06	106.70	106.25
2nd Junct N of Corina	friction + junct 106+.07		.13	106.83	106.62
MH/Junct N of Corina	friction - assume full		.10	106.93	106.72
MH	entrance/start		0.5±	107.43	107.22
	END				

SUNRISE 5-21-94 1

REUSED /TRIM HALTERE/PASOFINO/SANOPER SD

↳ CHANGE JUNCTION @ ANNALUSIAN & DOWNSTREAM END UPSTREAM PROF REMAINS SAME

HGL = EGL - Losses, such Friction, Junction, bend, manhole losses
EGL = Invert + conduit height + Velocity Head Hv ($= V^2/2g$)

$K_{bend} = 0.2\sqrt{\frac{\Delta^\circ}{90}}$ $K_{MH} = 0.0$ DPM
For 90° bend @ MH, use K = 0.97 Hv downstream for model M3
from Headlosses @ Selected Sewer Manholes J. Marsalek
APWA Special Report #52 1985

① Junction w section in channel Stub Q = 203+14 = 424
INV > 85.30 = Calc'd profile line + 0.12
8W x 4H Box A = 32 V = 13.25 Hv = 2.73 SF = 0.0092

HGL = 89.30 EGL = 89.3 + 2.73 = 92.03

② Bend 5' up from end Δ = 226.4° Q = 424
$K_b = .2\sqrt{226.4/90} = .100$

EGL = 92.03 + .100 (2.73) + 5(.0092) = 92.35 = 92.03+
HGL = 92.35 - 2.73 = 89.62

③ Just before shape change to pipe Q = 424
use L = L_{TOT} to PI = 182'

EGL = 92.35 + 182 × .0092 = 94.02
HGL = EGL - Hv = 94.02 - 2.73 = 91.29

× ④ Gradual change to 66" ID pipe + ∴ Q = 424
assume change 3.28' 1.5' in 5' 3 sides (match invert)
tan x = .25 x = 14.036° 2x = 28.07 = θ
D_{66}: A = 23.758, V = 17.847 Hv = 4.95

Standard use a 7° ±ed Fig 5.35 approx $D_2/D_1 \approx 2\sqrt{A_2/\pi}/D_1 = 6.38/5.5 = 1.1$
$h_{exp} = K\frac{(V_1 - V_2)^2}{2g}$ K ~ 0.7
$h = 0.7[17.85^2 - 13.25^2]/64.4 = 0.23'$

change to 72" Pipe 1' in 5' ⇒ α = 11.31° ∴ θ = 22.6°
$A_2/A_1 = 32/28.274$ $D_2/D_1 \sim 1.06$ K ~ 0.5 → 0.6 use 0.55
$V_{72} = 15.00$ $h = 0.55(15 - 13.25)^2/64.4 = \sim 0.03'$

note: Kings 6th ed-72 de uses K $\frac{V_1^2 - V_2^2}{2g}$, not $(V_1 - V_2)^2$; gives more loss

5

(5) 51.35° Bend D 72" Q 424 Hv 3.49
$K_b = 2\sqrt{51.35/90} = 0.45$
$H_b = K_b + H_v = .15 > 3.49 = 0.52$

(6) Friction loss 2' to Junction Sf = .01002 = .08

(7) Junct loss down Q 424 D 72 V 15.00 Hv 3.49 Sf 0.01002
Junct loss. coef up 283 72 14.01 1.52 .04476
loss = 1.25' side 141 54 8.87 1.22 .00514

(8) Halter SD Start @ Junct Q 141 D 45'
V 8.87 Hv 1.22
HGL = 94.34 EGL 95.56

(9) 9' @ Sf = .00514 = 0.05
$K_b = .2\sqrt{30/90} = .12$, $.12 \times 12 = 0.15$ S = 0.20

(10) 252 LF @ Sf = .00514 Q 141 D 57" Hv 1.22
Hf = 1.30

(11) MH @ Halter 90°, change 57" down to 45" up @ Qdn = 141 = Qup
use MH loss = 0.97 x Hv downstream (Mould MS similar to ALBQ MH design)
Table 3, Head losses @ selected Sewer Manholes
J. Marsalek ADWA Spec Rept #52 1985
$H_{mh} = 0.97 \times 1.22 = 1.18$

(12) Friction loss to 1st Junct in PF Q 141 D48
L 23 sf .00964 = .80

(13) 1st Junct w of Halter Dup-Ddun = 4'
Junct loss = 0.17 Q 141, 131.6, 9.4
Hv = 1.10 sf .00839

(15) 15' loss @ .00839 = .13

(16) 2nd Junct Q dun = 131.6 Q up = 122.2 ΔQ = 9.4
Hv: 1.17 Sf = .00724

(✓ DI Q = 9.4 Sf = .00724, x 7± = .05
Hv = 0.44, x 1.2 = .53, S = 0.58,
QE @ HEL + 0.53 + 0.5 F_b = 99.10 Comp to FL 99.17 ±
(OK BY 2LY))

(17) 48' Friction
48 x .00724 = 0.35'

(18) Junct 3 Q dun = 122.2 Q up = 112.9 ΔQ 9.3
Loss = 0.13 Hv 1.25 Sf = .00618

(19) 15' Friction hF = 15 x .00618 = 0.09

(20) Junct 4 Q dun = 112.9 Q up = 103.6 Hv = 1.06 Sf = .00520
Loss = 0.11 ΔQ = 9.3 V = 8.98

(21) 19+177 = 196' D48" Q 103.6 Hv 1.06 SF .00520
hf = L × Sf = 1.02

(22) MH @ Sand Piper, just dwn D48 Q 103.6 Hv 1.06 SF .00502
up 36 63.6 1.26 .00909
Loss = 1.29 side 24 40 2.52 .03128

dwn 48
Loss = 1.87 up 36
side 30 40 1.03 .00951

23 Friction L x Sf = 77 x .00909 = 0.70

24 Sand 1st Junct dwn D 36 Q 63.6 Hv 1.26 Sf
Loss = 0.18 up 36 56.4 .99 .00715
side 18 7.2 .26 .00470

25 friction to 2nd junct L x Sf = 15 x .00715 = 0.11

26 Junction dwn 36 56.4 Hv .99 Sf
Loss .15 up 36 49.2 .75 .00544
side 18 7.2

28 Friction to MH just N of Hackamore
L x Sf = 253 x 0.00544 = 1.38

29 Junction, MH N of Hackamore
dwn D36 Q 49.2 Hv Sf
Loss 0.42 up 30 34.4 .76 .00704
side 18 7.4 .27 .00497

Loss 0.64 up = 24 34.4 1.87 .02313

30 friction to 1st junct N of Commerce Q 34.4
@ 30" L x Sf = 197 x .00704 = 1.39
@ 24" L x Sf = 197 x .02313 = 4.56

31 1st junct N of C dwn D 30 Q 34.4 HV 0.76 SF .00704
Connemara up 30 26.3 0.45 .00411
Loss .06 ✓ side 18 8.1 0.33 .00095

dwn D24 Q 34.4 HV 1.86 SF .02313
Loss .51 ✓ up 24 26.3 1.09 .01352
side 18 8.1 0.33 .00595

32 2nd junct N of Conn - Fricta
1304 15 × .00411 = 0.06
24" 15 × .01352 = 0.20

33 2nd junct N of Conn dwn D 30 Q 26.3 HV .45 SF .00411
up 30 18.2 .21 .00197
Loss=.07 side 18 8.1 .33 .00595

dwn D 24 Q 26.3 1.09 .01352
Loss = .31 ✓ up 24 18.2 .52 .00645
side 18 8.1

34 Fricta to MH N of Connemara
48 × .00197 ≈ 0.10

SUNRISE WATER/PI=/SP SD 5/22/94

Check Pass Thru Wal Sand Piper

Line 30" 40 cfs Hv 1.03 Sf = .00951

EGL Sand = 101.19 + 1.87 = 103.06 HGL Sand = EGL-(Hv=1.26) = 101.8

EGL Paso = 101.8 + Hv=(1.03) = 102.83

(A) 19' @ Sf = .00951 = 0.18
EGL = 103.01 HGL = 103.01 - 1.03 = 101.98

(B) 1st junction dwn D30 Q40 Hv 1.03 Sf .00951
up 30 30.2 0.59 .00542
Loss 0.20 side 10 9.8 0.44 .00871

EGL = 103.01 + 0.20 = 103.21 HGL = 103.21 - .59 = 102.62

(C) 11' @ Sf = 0.00542 ~ 0.06
EGL = 103.21 + .06 = 103.27 HGL = 103.27 - .59 = 102.68

(D) 2nd junction W. dwn D 30 Q 30.2 Hv .59 Sf .00542
of Sand Pipe up 30 20.4 .27 .00247
Loss - 0.08 side 10 9.8 .48 .00871

EGL = 103.27 + .08 = 103.35 HGL = 103.35 - 0.27 = 103.08

add in lat loss (7' x .00871) + 1.2(.48) + (5) =
(.06 + .58 + .5) = 1.14

103.08 + 1.14 = 104.22
actual ~ 106.18 + 5 x .0247 - .67 ~ 105.63 ok

(E) Could reduce to 24, stay w 30 for no McCrey Mode Im. Loss =
Friction L x Sf = 43 x 0.00247 = 0.10

Junct loss .01 .11/43 = Sf effective < .0247 ok
rounded

low losses ⇒ HGL ok rest of week (2 mbts)
don't figure now in detail

SUNRISE : SANDPIPER / PASO FINO / HALTER

LOCATION	½ WIDTH FT	S FT/F	Q ½ CFS	Y@FL FT	INLET TYPE	INLET CFS	PASSING CFS	TOTAL CFS	COMMENTS
Sandpiper N of Commona	16	.0125	27.32	.59	A	9.1	18.22		
54.64/2			18.22	.51	2C	8.1	10.12		
						17.2			
							20.24	54.64	
Sandpiper N of Hackamore									
10.12 + 15.6/2	16	.0089	18.02	.54	A	7.4	10.62		
						24.6			
						49.2	21.24	70.44	
Sandpiper N of Paso Fino	16	.01	18.07	.53	A	7.2	10.87		
10.62 + 14.9/2						31.8			
						63.6	21.74	85.34	
Paso Fino W of Sandpiper	14	.02	32.6	.59	A	10.2	22.4		
65.2/2			22.4	.51	2C	9.8	12.6		
						20.0			103.6 in PIPE
						51.6	12.6	150.54	12.6 x 2 12.74 = 46.94
									in ST below Sandpiper
Paso Fino W of Halter	14	.02	27.27	.55	A	9.3	17.97		
21.74/2 + 12.6 + 7.6/2			17.17	.48	2C	9.4	2.57		
21.74 = Sandpiper total passing						18.7			152.54 + 7.6 = 150.14
12.6 = ½ Paso W of Sandpiper - passing						70.5			
7.6 = add'l inflow below Sandpiper						141.0	17.14	158.14	
Halter S of Andalusian	16	.005	11.57	.52	A	5.5	5.87		corporate system
8.57 + 3 = 11.57			5.87	.42	—	—	—		

4/22/94

SUNRISE

STREET HYDRAULICS REVISED FROM 3/23/94

3/24/94

LOCATION	CL WIDTH	SLOPE FT/FT	STREET Q ¼ CFS	Y@FL FT	INLET TYPE	INLET CFS	PASSING CFS	
ANDALUSIAN ABOVE JUNCT 2	14	.0247	11.5	.401	A	6.7	5.8	
ANDALUSIAN ABOVE JUNCT 1 5.8 + 12.8/2 = 12.2	14	.0247	12.2	.408	A	5.9	6.3	
			6.3	.340	C	4.2	2.1	
					CC	4.5	1.8	5.9+4.5=10.4
					B	5.7	0.5	5.9+5.7=11.6 use for SD conservative for SD - more Q1
								5.7

SUNRISE 5/21/94

HALTER RASO FINO SAND PIPER STORM DRAIN - RELIEF

HGL_0 = SURFACE @ DOWNSTREAM END + INVERT + PIPE HT
$EGL_0 = HGL_0 + H_{V0}$ H_V = velocity head = $V^2/2g$
$EGL = HGL + H_V$
$EGL_2 = EGL_1 + LOSSES$: ie track EGL rather than HGL per se
$HGL_2 = EGL_2 - H_{V2}$

Mannings $Q = \frac{1.49}{n} A (A/P)^{2/3} \sqrt{S}$ S = friction slope = energy slope

$$S = \left[\frac{Qn}{1.49 A (A/P)^{2/3}}\right]^2$$

for pipes flowing full $S = \left[\frac{Qn}{1.49 \frac{\pi D^2}{4} \left(\frac{D}{4}\right)^{2/3}}\right]^2 = \left[\frac{Qn}{.464 D^{8/3}}\right]^2$

for conc pipes use $n = 0.013$

FILE=JNCTLOSS.WQ1 TUCKER GREEN 3/26/93

PRESSURE PIPE JUNCTION LOSSES ACCORDING TO THOMPSON EQN AS IMPLEMENTED IN "STORM DRAIN PRESSURE FLOW CADI MODEL" IN COMPUTER METHODS IN URBAN WATERSHED HYDRAULICS, T.V. HROMADKA II ET AL, LIGHTHOUSE PUBLICATIONS, 1984

ANGLES ARE MEASURED FROM UPSTREAM EXTENSION OF DOWNSTREAM PIPE CENTERLINE TO CENTERLINES OF SIDE AND UPSTREAM PIPES, IN DEGREES: USE 0 --> MAX=90
==> ENTER THIS VALUE

SUNRISE TERRACE 03:49 PM 06/22/94

#K inlet	0.200	#Kmnhole	0.050				#K inlet	0.200	#Kmnhole	0.050		
#HGL DWN	0.000	#EGL DWN	0.000	#L FT	0.000		#HGL DWN	0.000	#EGL DWN	0.000	#L FT	0.000
	DOWN	UP	SIDE 1	SIDE 2	INLET	SUM UP		DOWN	UP	SIDE 1	SIDE 2	INLET SUM U
#Q CFS	122.200	112.900	9.300	0.000	0.000	122.2	#Q CFS	112.900	103.600	9.300	0.000	0.000 112.
#DIAM FT	4.000	4.000	1.500	1.500	1.000		#DIAM FT	4.000	4.000	1.500	1.500	1.500
#ANGLE DEG	NA	90.000	45.000	45.000	NA		#ANGLE DEG	NA	0.000	45.000	45.000	NA
#MANNING n	0.013	0.013	0.013	0.013	0.013		#MANNING n	0.013	0.013	0.013	0.013	0.013
AREA SF	12.566	12.566	1.767	1.767	0.785		AREA SF	12.566	12.566	1.767	1.767	1.767
Pw FT	12.566	12.566	4.712	4.712	3.142		Pw FT	12.566	12.566	4.712	4.712	4.712
V FPS	9.724	8.984	5.263	0.000	0.000		V FPS	8.984	8.244	5.263	0.000	0.000
Hv FT	1.468	1.253	0.430	0.000	0.000		Hv FT	1.253	1.055	0.430	0.000	0.000
Q#V#COS	NA	0.00	34.61	0.00	NA		Q#V#COS	NA	854.10	34.61	0.00	NA
Sf FT/FT	0.00724	0.00618	0.00784	0.00000	0.00000		Sf FT/FT	0.00618	0.00520	0.00784	0.00000	0.00000

H inlet	0.000	H manhole	0.073	H frictn	0.000
DELY	2.851	D Hv	-0.215	DELY+D Hv	2.636
DELTA HGL	2.851	DELTA EGL	2.636	OK Hmh<DELY+DHv	
HGL UPcalc	2.851	EGL UP	2.636	EGL-HVup	1.383

H inlet	0.000	H manhole	0.063	H frictn	0.000
DELY	0.310	D Hv	-0.198	DELY+D Hv	0.112
DELTA HGL	0.310	DELTA EGL	0.112	OK Hmh<DELY+DHv	
HGL UPcalc	0.310	EGL UP	0.112	EGL-HVup	-0.943

SAMPLE

SUNRISE TERRACE 01:06 PM 05/22/94

#K inlet	0.200	#Kanhole	0.050				#K inlet	0.200	#Kanhole	0.050			
#HGL DWN	0.000	#EGL DWN	0.000	#L FT	0.000		#HGL DWN	0.000	#EGL DWN	0.000	#L FT	0.000	
	ANDALUSIAN→		←HALTER							← 1ST JUNCTION ANDALUSIAN)			
	DOWN	UP	SIDE 1	SIDE 2	INLET			DOWN	UP	SIDE 1	SIDE 2	INLET	
#Q CFS	424.000	283.000	141.000	0.000	0.000	424.0	#Q CFS	283.000	271.400	11.600	0.000	0.000	283.0
#DIAM FT	6.000	6.000	4.500	1.500	1.000		#DIAM FT	5.000	5.000	1.500	1.500	1.500	
#ANGLE DEG	NA	0.000	60.000	45.000	NA		#ANGLE DEG	NA	0.000	45.000	45.000	NA	
#MANNING n	0.013	0.013	0.013	0.013	0.013		#MANNING n	0.013	0.013	0.013	0.013	0.013	
AREA SF	28.274	28.274	15.904	1.767	0.785		AREA SF	19.635	19.635	1.767	1.767	1.767	
Pw FT	18.850	18.850	14.137	4.712	3.142		Pw FT	15.708	15.708	4.712	4.712	4.712	
V FPS	14.996	10.009	8.866	0.000	0.000		V FPS	14.413	13.822	6.564	0.000	0.000	
Hv FT	3.492	1.556	1.220	0.000	0.000		Hv FT	3.226	2.967	0.669	0.000	0.000	
Q#V#COS	NA	2832.57	625.02	0.00	NA		Q#V#COS	NA	3751.37	53.84	0.00	NA	
Sf FT/FT	0.01002	0.00446	0.00514	0.00000	0.00000		Sf FT/FT	0.01181	0.01086	0.01220	0.00000	0.00000	

H inlet	0.000	H manhole	0.175	H frictn	0.000		H inlet	0.000	H manhole	0.161	H frictn	0.000	
DELY	3.186	D Hv	-1.936	DELY+D Hv	1.250		DELY	0.433	D Hv	-0.259	DELY+D Hv	0.174	
DELTA HGL	3.186	DELTA EGL	1.250	Ok Hmh<DELY+DHv			DELTA HGL	0.433	DELTA EGL	0.174	Ok Hmh<DELY+DHv		
HGL UPcalc	3.186	EGL UP	1.250	EGL-HVup	-0.306		HGL UPcalc	0.433	EGL UP	0.174	EGL-HVup	-2.793	

SUNRISE TERRACE 01:56 PM 05/22/94

#K inlet	0.200	#Kmanhole	0.050				#K inlet	0.200	#Kmanhole	0.050					
#HGL DWN	0.000	#EGL DWN	0.000	#L FT	0.000		#HGL DWN	0.000	#EGL DWN	0.000	#L FT	0.000			
	DOWN		UP	SIDE 1	SIDE 2	INLET			DOWN		UP	SIDE 1	SIDE 2	INLET	
#Q CFS	141.000		131.600	9.400	0.000	0.000	141.0	#Q CFS	131.600		122.200	9.400	0.000	0.000	131.0
#DIAM FT	4.000		4.000	1.500	1.500	1.000		#DIAM FT	4.000		4.000	1.500	1.500	1.500	
#ANGLE DEG	NA		0.000	45.000	45.000	NA		#ANGLE DEG	NA		0.000	45.000	45.000	NA	
#MANNING n	0.013		0.013	0.013	0.013	0.013		#MANNING n	0.013		0.013	0.013	0.013	0.013	
AREA SF	12.566		12.566	1.767	1.767	0.785		AREA SF	12.566		12.566	1.767	1.767	1.767	
Pw FT	12.566		12.566	4.712	4.712	3.142		Pw FT	12.566		12.566	4.712	4.712	4.712	
V FPS	11.220		10.472	5.319	0.000	0.000		V FPS	10.472		9.724	5.319	0.000	0.000	
Hv FT	1.955		1.703	0.439	0.000	0.000		Hv FT	1.703		1.468	0.439	0.000	0.000	
Q#V#COS	NA		1378.17	35.36	0.00	NA		Q#V#COS	NA		1188.32	35.36	0.00	NA	
Sf FT/FT	0.00964		0.00839	0.00801	0.00000	0.00000		Sf FT/FT	0.00839		0.00724	0.00801	0.00000	0.00000	
H inlet	0.000	H manhole	0.098	H frictn	0.000			H inlet	0.000	H manhole	0.085	H frictn	0.000		
DELY	0.417	D Hv	-0.252	DELY+D Hv	0.165			DELY	0.382	D Hv	-0.235	DELY+D Hv	0.147		
DELTA HGL	0.417	DELTA EGL	0.165	OK Hmh<DELY+DHv				DELTA HGL	0.382	DELTA EGL	0.147	OK Hmh<DELY+DHv			
HGL UPcalc	0.417	EGL UP	0.165	EGL-HVuo	-1.538			HGL UPcalc	0.382	EGL UP	0.147	EGL-HVup	-1.321		

SUNRISE TERRACE 03:49 PM 06/22/94 REPRINT

*K inlet	0.200	*Kmanhole	0.050				*K inlet	0.200	*Kmanhole	0.050				
*HGL DWN	0.000	*EGL DWN	0.000	*L FT	0.000		*HGL DWN	0.000	*EGL DWN	0.000	*L FT	0.000		
	DOWN	UP	SIDE 1	SIDE 2	INLET	SUM UP		DOWN	UP	SIDE 1	SIDE 2	INLET	SUM UP
*Q CFS	122.200	112.900	9.300	0.000	0.000	122.2	*Q CFS	112.900	103.600	9.300	0.000	0.000	112.9
*DIAM FT	4.000	4.000	1.500	1.500	1.000		*DIAM FT	4.000	4.000	1.500	1.500	1.500	
*ANGLE DEG	NA	90.000	45.000	45.000	NA		*ANGLE DEG	NA	0.000	45.000	45.000	NA	
*MANNING n	0.013	0.013	0.013	0.013	0.013		*MANNING n	0.013	0.013	0.013	0.013	0.013	
AREA SF	12.566	12.566	1.767	1.767	0.785		AREA SF	12.566	12.566	1.767	1.767	1.767	
Pw FT	12.566	12.566	4.712	4.712	3.142		Pw FT	12.566	12.566	4.712	4.712	4.712	
V FPS	9.724	8.984	5.263	0.000	0.000		V FPS	8.984	8.244	5.263	0.000	0.000	
Hv FT	1.468	1.253	0.430	0.000	0.000		Hv FT	1.253	1.055	0.430	0.000	0.000	
Q*V*COS	NA	0.00	34.61	0.00	NA		Q*V*COS	NA	854.10	34.61	0.00	NA	
Sf FT/FT	0.00724	0.00618	0.00784	0.00000	0.00000		Sf FT/FT	0.00618	0.00520	0.00784	0.00000	0.00000	
H inlet	0.000	H manhole	0.073	H frictn	0.000		H inlet	0.000	H manhole	0.063	H frictn	0.000	
DELY	2.851	D Hv	-0.215	DELY+D Hv	2.636		DELY	0.310	D Hv	-0.198	DELY+D Hv	0.112	
DELTA HGL	2.851	DELTA EGL	2.636	OK Hmh<DELY+DHv			DELTA HGL	0.310	DELTA EGL	0.112	OK Hmh<DELY+DHv		
HGL UPcalc	2.851	EGL UP	2.636	EGL-HVup	1.383		HGL UPcalc	0.310	EGL UP	0.112	EGL-HVup	-0.943	

SUNRISE TERRACE 01:55 PM 06/22/94 Report of 6/01/94

*K inlet	0.200	*Kmanhole	0.050				*K inlet	0.200	*Kmanhole	0.050			
*HGL DWN	0.000	*EGL DWN	0.000	*L FT	0.000		*HGL DWN	0.000	*EGL DWN	0.000	*L FT	0.000	
	DOWN	UP	SIDE 1	SIDE 2	INLET			DOWN	UP	SIDE 1	SIDE 2	INLET	
*Q CFS	103.600	63.600	40.000	0.000	0.000	103.6	*Q CFS	141.000	141.000	0.000	0.000	0.000	141.0
*DIAM FT	4.000	3.000	2.500	1.500	1.000		*DIAM FT	4.500	4.000	1.500	1.500	1.500	
*ANGLE DEG	NA	90.000	0.000	45.000	NA		*ANGLE DEG	NA	0.000	45.000	45.000	NA	
*MANNING n	0.013	0.013	0.013	0.013	0.013		*MANNING n	0.013	0.013	0.013	0.013	0.013	
AREA SF	12.566	7.069	4.909	1.767	0.785		AREA SF	15.904	12.566	1.767	1.767	1.767	
Pw FT	12.566	9.425	7.854	4.712	3.142		Pw FT	14.137	12.566	4.712	4.712	4.712	
V FPS	8.244	8.998	8.149	0.000	0.000		V FPS	8.866	11.220	0.000	0.000	0.000	
Hv FT	1.055	1.257	1.031	0.000	0.000		Hv FT	1.220	1.955	0.000	0.000	0.000	
Q*V*COS	NA	0.00	325.95	0.00	NA		Q*V*COS	NA	1582.08	0.00	0.00	NA	
Sf FT/FT	0.00520	0.00909	0.00951	0.00000	0.00000		Sf FT/FT	0.00514	0.00964	0.00000	0.00000	0.00000	
H inlet	0.000	H manhole	0.053	H frictn	0.000		H inlet	0.000	H manhole	0.061	H frictn	0.000	
DELY	1.671	D Hv	0.202	DELY+D Hv	1.872		DELY	-0.724	D Hv	0.734	DELY+D Hv	0.010	
DELTA HGL	1.671	DELTA EGL	1.872	OK Hmh<DELY+DHv			DELTA HGL	-0.673	DELTA EGL	0.061	**Hmh>DHGL+DHv**		
HGL UPcalc	1.671	EGL UP	1.872	EGL-HVup	0.615		HGL UPcalc	-0.673	EGL UP	0.061	EGL-HVup	-1.894	

SUNRISE TERRACE 10:05 AM 05/23/94

#k inlet	0.200	#kmanhole	0.050				#k inlet	0.200	#kmanhole	0.050					
#HGL DWN	0.000	#EGL DWN	0.000	#L FT	0.000		#HGL DWN	0.000	#EGL DWN	0.000	#L FT	0.000			
	DOWN	UP	SIDE 1	SIDE 2	INLET			DOWN	UP	SIDE 1	SIDE 2	INLET			
#Q CFS	63.600	56.400	7.200	0.000	0.000	63.6	#Q CFS	56.400	49.200	7.200	0.000	0.000	56.4		
#DIAM FT	3.000	3.000	1.500	1.500	1.000		#DIAM FT	3.000	3.000	1.500	1.500	1.500			
#ANGLE DEG	NA	0.000	45.000	45.000	NA		#ANGLE DEG	NA	0.000	45.000	45.000	NA			
#MANNING n	0.013	0.013	0.013	0.013	0.013		#MANNING n	0.013	0.013	0.013	0.013	0.013			
AREA SF	7.069	7.069	1.767	1.767	0.785		AREA SF	7.069	7.069	1.767	1.767	1.767			
Pw FT	9.425	9.425	4.712	4.712	3.142		Pw FT	9.425	9.425	4.712	4.712	4.712			
V FPS	8.998	7.979	4.074	0.000	0.000		V FPS	7.979	6.960	4.074	0.000	0.000			
Hv FT	1.257	0.989	0.258	0.000	0.000		Hv FT	0.989	0.752	0.258	0.000	0.000			
Q#V#COS	NA	450.01	20.74	0.00	NA		Q#V#COS	NA	342.45	20.74	0.00	NA			
Sf FT/FT	0.00909	0.00715	0.00470	0.00000	0.00000		Sf FT/FT	0.00715	0.00544	0.00470	0.00000	0.00000			
H inlet	0.000	H manhole	0.063	H frictn	0.000		H inlet	0.000	H manhole	0.049	H frictn	0.000			
DELY	0.446	D Hv	-0.269	DELY+D Hv	0.177		DELY	0.381	D Hv	-0.236	DELY+D Hv	0.145			
DELTA HGL	0.446	DELTA EGL	0.177	OK Hmh<DELY+DHv			DELTA HGL	0.381	DELTA EGL	0.145	OK Hmh<DELY+DHv				
HGL UPcalc	0.446	EGL UP	0.177	EGL-HVup	-0.811		HGL UPcalc	0.381	EGL UP	0.145	EGL-HVup	-0.607			

SUNRISE TERRACE 11:20 AM 05/23/94

#K inlet	0.200	#Kmnhole	0.050				#K inlet	0.200	#kmnhole	0.050				
#HGL DWN	0.000	#EGL DWN	0.000	#L FT	0.000		#HGL DWN	0.000	#EGL DWN	0.000	#L FT	0.000		
	DOWN	UP	SIDE 1	SIDE 2	INLET			DOWN	UP	SIDE 1	SIDE 2	INLET		
#Q CFS	49.200	34.400	7.400	7.400	0.000	49.2	#Q CFS	34.400	26.300	8.100	0.000	0.000	34.4	
#DIAM FT	3.000	2.500	1.500	1.500	1.000		#DIAM FT	2.500	2.500	1.500	1.500	1.500		
#ANGLE DEG	NA	0.000	45.000	45.000	NA		#ANGLE DEG	NA	0.000	45.000	45.000	NA		
#MANNING n	0.013	0.013	0.013	0.013	0.013		#MANNING n	0.013	0.013	0.013	0.013	0.013		
AREA SF	7.069	4.909	1.767	1.767	0.785		AREA SF	4.909	4.909	1.767	1.767	1.767		
Pw FT	9.425	7.854	4.712	4.712	3.142		Pw FT	7.854	7.854	4.712	4.712	4.712		
V FPS	6.960	7.008	4.188	4.188	0.000		V FPS	7.008	5.358	4.584	0.000	0.000		
Hv FT	0.752	0.763	0.272	0.272	0.000		Hv FT	0.763	0.446	0.326	0.000	0.000		
Q#V#COS	NA	241.07	21.91	21.91	NA		Q#V#COS	NA	140.91	26.25	0.00	NA		
Sf FT/FT	0.00544	0.00704	0.00497	0.00497	0.00000		Sf FT/FT	0.00704	0.00411	0.00595	0.00000	0.00000		

H inlet	0.000	H manhole	0.038	H frictn	0.000		H inlet	0.000	H manhole	0.038	H frictn	0.000
DELY	0.298	D Hv	0.010	DELY+D Hv	0.309		DELY	0.468	D Hv	-0.317	DELY+D Hv	0.151
DELTA HGL	0.298	DELTA EGL	0.309	OK Hmh<DELY+DHv			DELTA HGL	0.468	DELTA EGL	0.151	OK Hmh<DELY+DHv	
HGL UPcalc	0.298	EGL UP	0.309	EGL-HVup	-0.454		HGL UPcalc	0.468	EGL UP	0.151	EGL-HVuo	-0.295

SUNRISE TERRACE 11:22 AM 05/23/94

#K inlet	0.200	#Kmnhole	0.050				#K inlet	0.200	#Kmnhole	0.050					
#HGL DWN	0.000	#EGL DWN	0.000	#L FT	0.000		#HGL DWN	0.000	#EGL DWN	0.000	#L FT	0.000			
	DOWN	UP	SIDE 1	SIDE 2	INLET			DOWN	UP	SIDE 1	SIDE 2	INLET			
#Q CFS	26.300	18.200	8.100	0.000	0.000	26.3	#Q CFS	34.400	26.300	8.100	0.000	0.000	34.4		
#DIAM FT	2.500	2.500	1.500	1.500	1.000		#DIAM FT	2.500	2.500	1.500	1.500	1.500			
#ANGLE DEG	NA	0.000	45.000	45.000	NA		#ANGLE DEG	NA	0.000	45.000	45.000	NA			
#MANNING n	0.013	0.013	0.013	0.013	0.013		#MANNING n	0.013	0.013	0.013	0.013	0.013			
AREA SF	4.909	4.909	1.767	1.767	0.785		AREA SF	4.909	4.909	1.767	1.767	1.767			
Pw FT	7.854	7.854	4.712	4.712	3.142		Pw FT	7.854	7.854	4.712	4.712	4.712			
V FPS	5.358	3.708	4.584	0.000	0.000		V FPS	7.008	5.358	4.584	0.000	0.000			
Hv FT	0.446	0.213	0.326	0.000	0.000		Hv FT	0.763	0.446	0.326	0.000	0.000			
Q#V#COS	NA	67.48	26.25	0.00	NA		Q#V#COS	NA	140.91	26.25	0.00	NA			
Sf FT/FT	0.00411	0.00197	0.00595	0.00000	0.00000		Sf FT/FT	0.00704	0.00411	0.00595	0.00000	0.00000			
H inlet	0.000	H mannole	0.022	H frictn	0.000		H inlet	0.000	H manhole	0.038	H frictn	0.000			
DELY	0.298	D Hv	-0.232	DELY+D Hv	0.066		DELY	0.468	D Hv	-0.317	DELY+D Hv	0.151			
DELTA HGL	0.298	DELTA EGL	0.066	OK Hmh<DELY+DHv			DELTA HGL	0.468	DELTA EGL	0.151	OK Hmh<DELY+DHv				
HGL UPcalc	0.298	EGL UP	0.066	EGL-HVup	-0.147		HGL UPcalc	0.468	EGL UP	0.151	EGL-HVup	-0.295			

ZRACE 01 (THG COPY/REVISION) 5/22/94

SANDPIPER

normal SI West 10.2

5/22/94 THG

PASO FINO

29

29+ 9.8

D30 43 Q 20.4

Q 30.2 11 19+ Q40 D30

10.2

9.8

D2

206.70

Q103.6

HGL

2.59+dp

2.59

pipe 40 2.52 STREET

SUNRISE STORM DRAIN 5/22/94
nominal

PASO FIND W OF SANDPIPER as 30" RCP
ASSUME FULL- OK because of backwater effects from MH
HGL @ SAND # PASO = 101.80 see table (5-22 & 5-23) 94

HV = 1.03 EGL = 102.83 Sf = .00951

(A) L = 19' HF = L x Sf = 19 x .00951 = .18
EGL = 102.83 + .18 = 103.01 HGL = 101.98

(B) 1st JUNCT down 30 Q4G HV 1.03 Sf .00951
up 30 30.2 0.59 .00572
EGLoss = .20 side 18 9.8 .48 .00871

EGL up = 103.01 + .20 = 103.21 HGL up = 103.21 - .59 = 102.62

✓ re inlet 7 x .00871 + 1.2(.48) + .5 fb = 1.14'
102.62 + 1.14 = 103.75
avail = TC - 0.67 = 106.31 - .67 = 105.64
105.64 - 103.75 = 1.89 ok
1.2 x Hv + 0.5 fb + D pipe = .58 + .5 + 1.5 = 2.58 < 3.0 ok

(C) 11' @ Sf = .00572 ⇒ Hf = 0.06
EGL = 103.21 + .06 = 103.27 HGL = 103.27 - .59 = 102.68

(D) 2nd Junct down 30 30.2 .59
up 30 20.4 .23 .00247
EGLoss = 0.51 side 18 9.8 .48

EGL up = 103.21 + 0.51 = 103.72 HGL up = 103.72 - .27 = 103.45

(E) 43 LF
EGL = 103.72 + 43 (.00247) = 103.83 HGL = 103.83 - 0.27 = 103.56

(F) 3rd Junct 30 down 20.4 .27 Sf .00247
30 up 10.2 .07 .00062
EGLoss = .01 10 side 10.2 .52 .00944
EGL = 103.84 HGL = 103.84 - .07 = 103.77
FL = 107.56 - .67 = 106.89 106.89 - 103.77 = 3.12 ok

(G) 11 LF EGL = 103.84 + 11 (.00062) = 103.85 HGL = 103.78

(H) @ INLET 9 ~32' DIAG UP STREAM
HGL = 103.78 + 32 (.00944) + 1.2 (0.52) + 0.5 =
103.78 + 1.426 = 105.21
✓ Fb + 1.2 Hv + D pipe = .5 + 1.2 (.52) + 1.5 = 2.64 < 3.0 ok

PASO FINO WEST of SANDPIPER

SUNRISE TERRACE 02:36 PM 06/22/94

#K inlet	0.200	#Kmanhole	0.050				#K inlet	0.200	#Kmanhole	0.050					
#HGL DWN	0.000	#EGL DWN	0.000	#L FT	0.000		#HGL DWN	0.000	#EGL DWN	0.000	#L FT	0.000			
	DOWN	UP	SIDE 1	SIDE 2	INLET	SUM UP		DOWN	UP	SIDE 1	SIDE 2	INLET	SUM UP		
#Q CFS	30.200	20.400	9.800	0.000	0.000	30.2	#Q CFS	40.000	30.200	9.800	0.000	0.000	40..		
#DIAM FT	2.500	2.500	1.500	1.500	1.000		#DIAM FT	2.500	2.500	1.500	1.500	1.500			
#ANGLE DEG	NA	90.000	0.000	45.000	NA		#ANGLE DEG	NA	0.000	45.000	45.000	NA			
#MANNING n	0.013	0.013	0.013	0.013	0.013		#MANNING n	0.013	0.013	0.013	0.013	0.013			
AREA SF	4.909	4.909	1.767	1.767	0.785		AREA SF	4.909	4.909	1.767	1.767	1.767			
Pw FT	7.854	7.854	4.712	4.712	3.142		Pw FT	7.854	7.854	4.712	4.712	4.712			
V FPS	6.152	4.156	5.546	0.000	0.000		V FPS	8.149	6.152	5.546	0.000	0.000			
Hv FT	0.588	0.268	0.478	0.000	0.000		Hv FT	1.031	0.588	0.478	0.000	0.000			
Q#V#COS	NA	0.00	54.35	0.00	NA		Q#V#COS	NA	185.80	38.43	0.00	NA			
Sf FT/FT	0.00542	0.00247	0.00871	0.00000	0.00000		Sf FT/FT	0.00951	0.00542	0.00871	0.00000	0.00000			
H inlet	0.000	H manhole	0.029	H frictn	0.000		H inlet	0.000	H manhole	0.052	H frictn	0.000			
DELY	0.832	D Hv	-0.320	DELY+D Hv	0.512		DELY	0.644	D Hv	-0.443	DELY+D Hv	0.200			
DELTA HGL	0.832	DELTA EGL	0.512	OK Hmh<DELY+DHv			DELTA HGL	0.644	DELTA EGL	0.200	OK Hmh<DELY+DHv				
HGL UPcalc	0.832	EGL UP	0.512	EGL-HVup	0.244		HGL UPcalc	0.644	EGL UP	0.200	EGL-HVup	-0.388			

PASO FINO WEST OF SANDPIPER

SUNRISE TERRACE 02:40 PM 06/22/94

#K inlet	0.200	#Kanhole	0.050				#K inlet	0.200	#Kanhole	0.050					
#HGL DWN	0.000	#EGL DWN	0.000	#L FT	0.000		#HGL DWN	0.000	#EGL DWN	0.000	#L FT	0.000			
	DOWN	UP	SIDE 1	SIDE 2	INLET	SUM UP		DOWN	UP	SIDE 1	SIDE 2	INLET	SUM UP		
#Q CFS	30.200	20.400	9.800	0.000	0.000	30.2	#Q CFS	20.400	10.200	10.200	0.000	0.000	20.4		
#DIAM FT	2.500	2.500	1.500	1.500	1.000		#DIAM FT	2.500	2.500	1.500	1.500	1.500			
#ANGLE DEG	NA	90.000	0.000	45.000	NA		#ANGLE DEG	NA	0.000	45.000	45.000	NA			
#MANNING n	0.013	0.013	0.013	0.013	0.013		#MANNING n	0.013	0.013	0.013	0.013	0.013			
AREA SF	4.909	4.909	1.767	1.767	0.785		AREA SF	4.909	4.909	1.767	1.767	1.767			
Pw FT	7.854	7.854	4.712	4.712	3.142		Pw FT	7.854	7.854	4.712	4.712	4.712			
V FPS	6.152	4.156	5.546	0.000	0.000		V FPS	4.156	2.078	5.772	0.000	0.000			
Hv FT	0.588	0.268	0.478	0.000	0.000		Hv FT	0.268	0.067	0.517	0.000	0.000			
Q#V#COS	NA	0.00	54.35	0.00	NA		Q#V#COS	NA	21.19	41.63	0.00	NA			
Sf FT/FT	0.00542	0.00247	0.00871	0.00000	0.00000		Sf FT/FT	0.00247	0.00062	0.00944	0.00000	0.00			
H inlet	0.000	H manhole	0.029	H frictn	0.000		H inlet	0.000	H manhole	0.013	H frictn	0.000			
DELY	0.832	D Hv	-0.320	DELY+D Hv	0.512		DELY	0.139	D Hv	-0.201	DELY+D Hv	-0.062			
DELTA HGL	0.832	DELTA EGL	0.512	OK Hmh<DELY+DHv			DELTA HGL	0.215	DELTA EGL	0.013	##Hmh>DHGL+DHv##				
HGL UPcalc	0.832	EGL UP	0.512	EGL-HVup	0.244		HGL UPcalc	0.215	EGL UP	0.013	EGL-HVup	-0.054			

C2: SELECTED STREET HYDRAULICS

07/01/94 11:39 AM

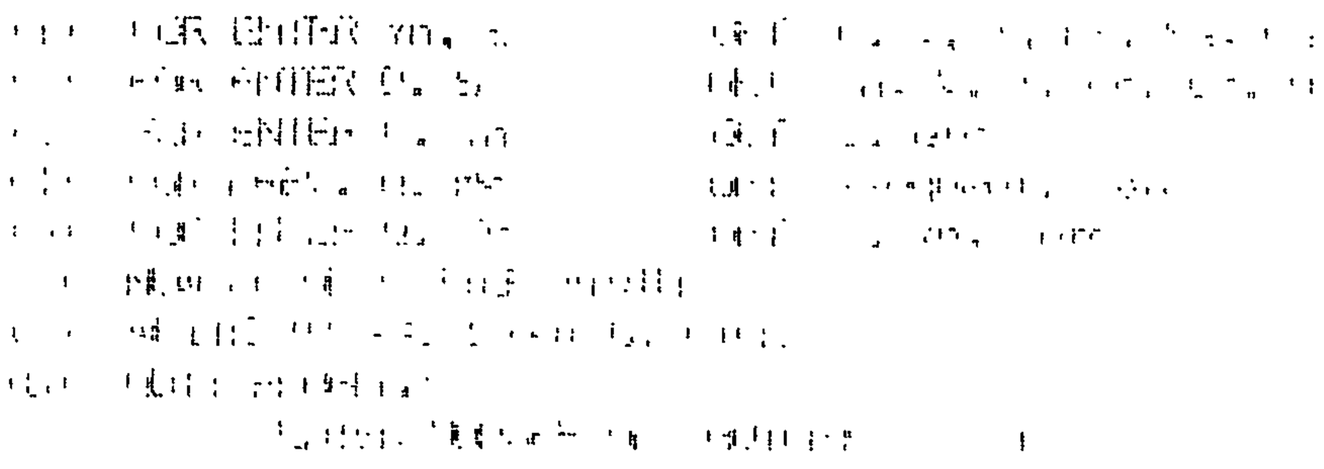
SUNRISE TERRACE SELECTED STREET FLOWS

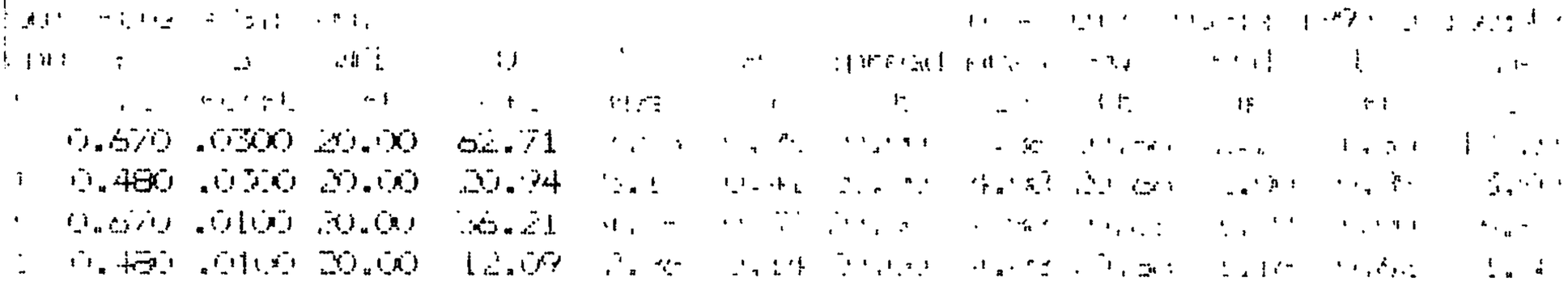
Depths & velocities calculated by program STFLOW by Tucker Green 2/94

Location	CL WIDTH	Qp TOT	Qo ST	SLP ST	Y ST	V ST	Yseq ST	COMMENTS
Tanager @ Connemara	14	6.30	6.30	0.0050	0.35	1.80		
Connemara @ Vaquero	14	22.00	22.00	0.0270	0.39	4.40		
Connemara W of Sandpiper	14	15.80	15.80	0.0210	0.37	3.60		
Sandpiper S of Heron	16	54.04	54.04	0.0125	0.59	4.80		EXIST OFFSITE FLOW
Sandpiper S of Connemara	16	70.44	36.04	0.0089	0.54	3.70		
Sandpiper @ Hackamore	16	70.44	21.24	0.0089	0.46	3.00		
Sandpiper @ Paso Fino	16	85.34	21.74	0.0089	0.46	3.00	0.50	TEE INTO TEE INTERSECTION
Hackamore W of Vaquero	14	13.20	13.20	0.0208	0.35	3.40		
Hackamore W of Sandpiper	14	11.20	11.20	0.0208	0.34	3.30		
Vaquero N of Paso Fino	14	35.20	35.20	0.0154	0.49	4.50	0.69	TEE INTO TEE INTERSECTION
Paso Fino E of Vaquero	14	49.69	49.69	0.0230	0.52	5.80		OUT OF TEE
Paso Fino W of Sandpiper	14	65.20	25.20	0.0230	0.42	4.50		
Paso Fino E of Sandpiper	14	150.54	46.94	0.0230	0.51	5.70		OUT OF TEE
Paso Fino @ Halter	14	158.14	17.14	0.0230	0.37	3.80	0.52	TEE INTO TEE INTERSECTION
Stetson N of Connemara	14	11.34	11.34	0.0050	0.41	2.10	N/A	TEE INTO INTERSECTION, FR#<1
Halter S of Hackamore	14	38.40	38.40	0.0050	0.63	3.30		

PROGRAM STFLOW.EXE TUCKER GREEN JAN 1994

FOR SUNRISE TERRACE UNITS III, IV, V





0.670	.0300	20.00	62.71								
0.480	.0200	20.00	30.94								
0.670	.0100	20.00	46.21								
0.480	.0100	20.00	12.09								

TOWER ROAD V2 WIDTH CAPACITIES 3/14/94

S = 1% NEAR DOWNSTREAM OF TANAGER

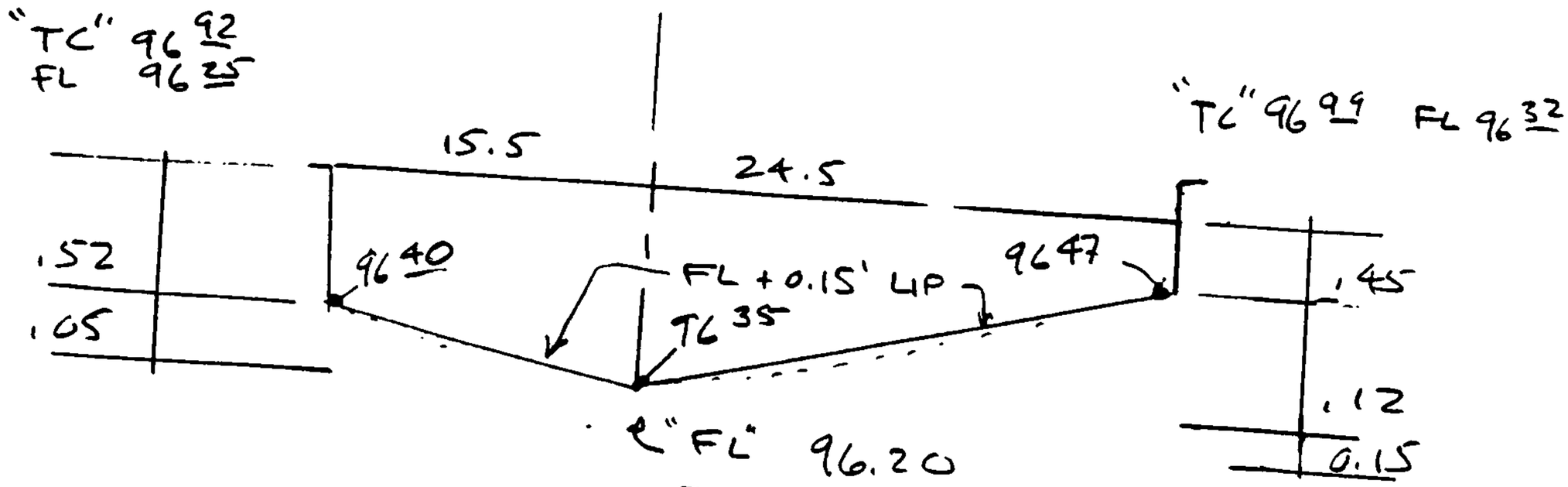
S = 3% NEAR DOWNSTREAM OF SIDE WALK CULVERTS BETWEEN TANAGER & SANDERLING

L I.E. UPSTREAM OF SANDPIPER

C3: HALTER POND

SUNRISE
HALTER POND INLET
DRIVE WAY WEIR & "D" INLET

G 24/74



N.T.S.

WILL CHECK FLOW ABOVE 96.47 ($y = 0.12'$)

use y = y above 96.47 + y avg below 96.47

$$= y \text{ above } 96.47 + \left[\left(\frac{.05+.12}{2}\right) \times 15.5 + \frac{.12}{2} \times 24.5\right] / 40$$

$$= y - 96.47 + 0.070$$

taking 96.35 as local $y = 0$, $96.47 \Rightarrow y = 0.12$

$\Rightarrow y_{use} = y_{actual} - 0.12 + 0.07$

$= \ldots$

@ el 96.47 $y_{drive} = 0.07$
$y_{inlet} = 0.32$

@ el 96.60 $y_{drive} = 0.20$
$y_{inlet} = 0.45$

y_{max} drive $= 0.52$ @ y "FL" $= 0.72$
inlet $= 0.77$

range drive $0.07 \rightarrow 0.52$
inlet $0.32 \rightarrow 0.77$

SUNRISE HYDRAULICS 6/24/94 REVISE

ENTRANCE TO HALTER POND $Q_{100} = 38.4$ CFS

AT STREET
COMBINATION OF SUMP SINGLE "D" INLET
& WEIR FLOW - 40' EXCLUSIVE OF TRANSITION

AT "THROAT" @ PROPERTY LINE
10' WEIR

"D" INLET GRATE DWG 2220

Perimeter = (24+39+24+39) exclusive of end bars
= 126 in = 10.5'

Net open area = (31.875)(13.5) -
= 590 in^2 = 4.09 ft^2
say = 4 ft^2

IN SUMP, FOR "D" INLET
(1) assume partial clogging, say 50% either A or =

(2) FLOW = LESSER OF WEIR FLOW OR ORIFICE FLOW
WEIR FLOW @ LOWER DEPTH

(3) WEIR $Q = C \cdot (P \text{ or } L) \cdot y^{3/2}$ $C \sim 3.0$

ORIFICE $Q = C A \sqrt{2gh}$ $C\sqrt{2g} \sim 5.0$

(4) FROM DWG 2265, FOR "D" INLET SLOPED
AS NORMAL "A" INLET AT DRIVE LOCATION
AS SPECIFIED ON PLAN
GET AVG TOP OF GRATE
@ "FLOW LINE" = FLOWLINE - 0.23'
@ EDGE ASPHALT = FLOWLINE +0.12
ΔDT. 0.35

FE + ΔDT/2 = -0.23 + 0.35/2 = -0.055 ≈ -0.05

STREET WEIR ~ 40' TOTAL
1. 2 SECTIONS 15.5' N OF GRATE ℄ 24.5' N OF GRATE ℄

2. USE AVG DEPTH OF TRAPEZOIDAL SECTIONS

SUNRISE HYDRAULICS 6/24/96 REPRISE

ENTRANCE TO HALTER POND -CONT

WEIR AT THROAT @ RL W=L=10'

BTW RL & SW = 2%
RL & TOPSLOPE = 2%
SW & STREET >> 2%
} ∴ WEIR EQN CONSERVATIVE NEGLECTS APPROACH VELOCITY

$Q = C\ L\ H^{3/2}$ C ~ 3.0 L=10

or $H = (Q/CL)^{2/3}$

FROM ATTACHED SPREADSHEET SRHALTIN.WQ1

Q DRIVE = 30.34 & Q "D" INLET 9.06 CFS ("D" ½ EFFECTIVE)

C_g = 0.6 above fl grade = 96.80

FOR THROAT WEIR

$H = (Q/CL)^{2/3} = [30.34/(3.10)]^{2/3}$

$= \underline{1.01 \sim 1.0\ FT}$

COMPARE WS el=VS

@ STREET 96.80

@ THROAT 95.00 + 1.01 = 96.01 OK

Δ = 0.79' in 9' S ~ 8.8% OK

·file=srnaltin.wq1 06/24/94
sunrise terrace, halter pond, inlet hydraulic calcs
see other sheets for discussion & sketches

EL 76.80

								Y MAX	
Y @ "FL" @ GRATE, FT	0.27	0.30	0.35	0.40	0.50	0.60	0.70	0.72	0.600 Y REQ'D
Y eff @ "DRIVEWAY"	0.07	0.10	0.15	0.20	0.30	0.40	0.50	0.52	0.40
Y avg @ T GRATE	0.32	0.35	0.40	0.45	0.55	0.65	0.75	0.77	0.65
Q DRIVEWAY, CFS	2.22	3.79	6.97	10.73	19.72	30.36	42.43	45.00	30.34
Q GRATE, WEIR	2.85	3.26	3.98	4.75	6.42	8.25	10.23	10.64	8.25
Q GRATE, ORIFICE	5.66	5.92	6.32	6.71	7.42	8.06	8.66	8.77	8.06
Q GRATE, USE MIN	2.85	3.26	3.98	4.75	6.42	8.06	8.66	8.77	8.06
Q TOTAL	5.07	7.06	10.96	15.49	26.14	38.42	51.09	53.77	38.40 Q DESIGN

GRATE FORMULAS INCLUDE A FACTOR OF 0.50 TO REDUCE Q TO ACCOUNT FOR 50% CLOGGING ASSUMED

PROPOSED CONCRETE SURFACE RUNDOWN
Q100 TOTAL 38.4 CFS; Q WEIR ±35 CFS
WIDTH @ STREET 40.0 ' @ Y=0.47'
WIDTH @ THROAT 10.0 ' @ Y=1.11'

STA 9+74.53 LOW PT
TYPE "D" DROP INLET PER DWG 2206
DEPRESS FL 5' EACH SIDE PER DWG 2207
T GRATE @ FL 95.97; "NORMAL" FL 96.20
"DRIVEWAY" LIP 0.15' ABOVE NORMAL FL
PER DWG 2425. INVERT 93.20

10' CLEAR OPENING OVER
RUNDOWN. EXTEND STRUCTURAL
WALL 3' EACH SIDE. SEE DETAIL
THIS SHEET

6' CMU GARDEN WALL
TYP @ FRONT PL

END CMU GARDEN WALL
BUILD 12'W x 6'H GATE
PER DWG 2252

BUILD 16' DRIVEPAD
PER DWG 2425

HALTER DRIVE

97.68
97.37
97.67
97.37
97.64
98.48
FL 97.81
STA 9+98.97
FL 96.32
OPP STA 9+58.97
(OPP N PL POND)
OPP N PL
FL 96.25
95.52
88.78
97.43
CMU GARDEN
WALL (6' HT.)
97.69
SIDEWALK TRANSITION
SEE STD DWG 2432
45'
5-P1
6' TYP
PL
96.0
88.50
POND BOTTOM = 8
100-YR WS 95.15
0.801 AF STORAGE
10' FF
95.50
95.37
10'
INV 91.00
88.78
2%
3:1
96.0
88.70
88.50
18"
3.5'x7.0
2.43' H
PIPE IN
CONCRETE APRON WITH
8"x24" CUTOFF WALL ALL
AROUND PER DWG 2415

G7

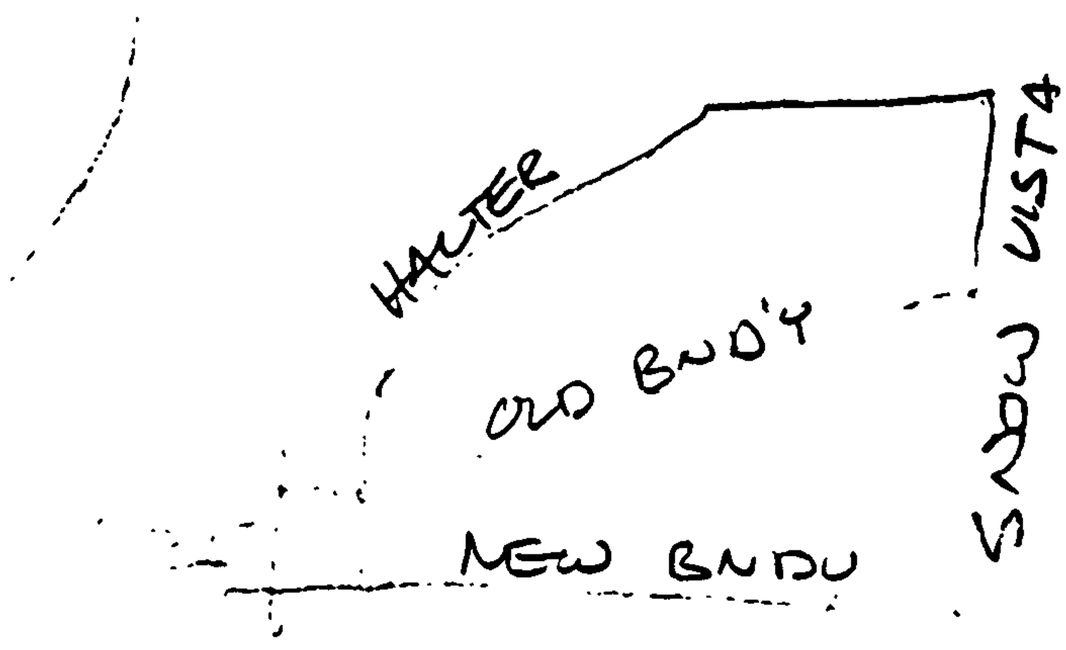
HALTER / PASOFINO POND

REVISED oond PASO FINO & halter (102nd) 4/25/94 04/25/94 12:51 PM FILE=DELTAVOL.WQ:

ELEV FT	AREA	PYRAMID DVOL CONE	VOL FT^3	VOL AC-FT	AV END AREA DVOL AV AREA	VOL FT^3	VOL AC-FT
96	9569	4617	39603	0.9092	4618	39836	0.9145
95.5	8903	8259	34986	0.8032	8268	35218	0.8085
94.5	7632	12909	26727	0.6136	12977	26950	0.6187
92.5	5345	8678	13818	0.3172	8751	13973	0.3208
90.5	3406	5139	5139	0.1180	5222	5222	0.1199
88.5	1816	0	0	0.0000	0	0	0.0000
88.5							

Lines in PASOPND.DWG

½ 25'ES of old 'dam' boundary



USED F

Q

@ $A = \pi \left(\frac{10/12}{4}\right)^2 = .545$ $10''$ Ft^2

ORIFICE FLOW

$Q = CA\sqrt{2gH}$

$C = .595$ King's Tbl 4-2

$Q = .595 \times .545 \sqrt{64.4} \sqrt{H} = 2.602 \times \sqrt{H}$

H_1	EL	Q
1	89.5	2.602
2	90.5	3.68
4	92.5	5.20
6	94.5	6.37
7	95.5	6.88
7.5	96.0	7.13

SPILLWAY

$w = 18' =$ WEIR LENGTH $C = 3.0$

$Q = 39.4$

$H = \left(\frac{Q}{CL}\right)^{2/3} = (.711)^{2/3} = .797 \approx 0.80'$

SUNRISE
HALTEK POND

5-30-94

SPILLWAY

WEIR $Q = CLH^{3/2}$

$C = 3$ $L = 16$ $H = 96 - 95.15 = 0.85$

$Q_{cap} = 42.32 > 38.4$ req ok

VGP $Q_{req} = 38.4$

$H = (Q^2/LLC)^{2/3} = 0.80 < 0.85$ ok

NOTE: Spill greater than design over berm either directly or almost directly side on (Park) to snow Utah Chimney

Max berm height @ top of berm = 4.0' @ ± 0.5 Ab.

⇒ no catastrophic failure possible

INLET RUN DOWN - see other sheets

C4: TANAGER POND, PLUS INLET CHANNELS AND OUTLET PIPE

```
*S  HYD 510 = AF2 OUT = TANAGER POND OUT
*   Qout=21.33 @ 52.00 FOR 24"RCP AND SILT-STOP BERM @ 49.0
ROUTE RESERVOIR      ID=4  HYD=510  INFLOW ID=3  CODE=2
                     OUTFLOW CFS    STORAGE AC-FT    ELEVATION FT
                        0.              0.0000           49
                       13.42            0.1515           49.2
                       18.25            0.3826           49.5
                       18.91            0.7781           50
                       20.15            1.5084           51
                       21.33            2.4723           52
                       21.68            2.9647           52.5
                       22.44            3.4315           53
                       22.92            3.9222           53.5
                       23.54            4.4272           54
```

FROM RTT02 PRINTED 5/13/94

TANAGER POND RATING CURVE

SUNRISE TERRACE — LAKE FOR QUERCAL

TANAGER POND. AREAS from TTANCON.DWG 5-13-94 05/13/94 08:46 AM FILE=DELTAVOL.WQ1

ELEV FT	AREA	PYRAMID DVOL CONE	VOL FT^3	VOL AC-FT	AV END AREA DVOL AV AREA	VOL FT^3	VOL AC-FT
54	44651	43385	306988	7.0475	43391	307044	7.0487
53	42131	40907	263603	6.0515	40914	263653	6.0526
52	39696	38505	222695	5.1124	38511	222739	5.1134
51	37326	36167	184190	4.2284	36173	184228	4.2293
50	35020	33893	148023	3.3981	33899	148055	3.3989
49	32778	31685	114131	2.6201	31691	114156	2.6207
48	30604	29542	82446	1.8927	29549	82465	1.8931
47	28493	27464	52904	1.2145	27470	52917	1.2148
46	26447	25440	25440	0.5840	25447	25447	0.5842
45	24446	0	0	0.0000	0	0	0.0000
45							

VOL AT 52 - VOL AT 49

5.1134 - 2.6201 = 3.4933

54 - 49

7.05

2.62

4.43 > 3.8

FROM SEDIMENT SUMMARY 5-16-94

1.23 AF SED STORAGE REQUIRED

= 100 yr STORM + 5 AVG YEARS

FOR MUSLE & BEDLOAD

USE FOR RATING CURVE

FILE=DELTAVOL.WQ1 reprinted 06/22/94 12:10 PM

original +- 3/31/94

TANAGER POND REVISED 3-30-94 FOR HIGHER (TO 53 OR 54)

		PYRAMID			AV END AREA		
ELEV FT	AREA	DVOL CONE	VOL FT^3	VOL AC-FT	DVOL AV AREA	VOL FT^3	VOL AC-FT
54	44632	22000	192850	4.4272	22001	192866	4.4276
53.5	43373	21375	170850	3.9222	21376	170865	3.9225
53	42131	20758	149474	3.4315	20759	149489	3.4318
52.5	40906	20150	128716	2.9549	20151	128730	2.9552
52	39696	38505	108566	2.4923	38511	108579	2.4926
51	37326	36167	70061	1.6084	36173	70068	1.6085
50	35020	17227	33894	0.7781	17228	33895	0.7781
49.5	33892	10067	16667	0.3826	10067	16667	0.3826
49.2	33222	6600	6600	0.1515	6600	6600	0.1515
49	32780	16115	137644	3.1599			
48.5	31684	9408	121529	2.7899			
48.2	31034	6164	112121	2.5739			
48	30604	29542	105957	2.4324			
47	28493	27464	76415	1.7543			
46	26447	25450	48952	1.1238			
45	24466	23501	23501	0.5395			
44	22550		0	0.0000			

49->54

44->49

SUNRISE 3/31/94

REUSED TANAGER POND RATING CURVE

HGL outlet = 44.65 @ ANDALUSIAN (DUBLIN) SOFFIT @ MH

invert start = invert @ pond = 44.0

L = 862' n = .013 $f = 185n^2/D^{1/3}$ $f/D=2' = .012408$ $\frac{1}{2}=\pi=3.1$
S_o = 1.35/862 = .00157 nominal .15% $f/D=2.5' = .009214$ $\frac{1}{2}=4.9$

Minor losses 1 bend ± 35° $K_b \sim .12$
± 90 $K_b \sim .20$
3 MH 3 × .05 = .15
1 entrance $\frac{V_e = 0.5}{\Sigma K \quad .97}$ say 1.0

Bernoulli: $f = 185n^2/D^{1/3}$ $V_1 = V_2$ $P_1 = P_2 = 0$ $g = 32.2$ $H_2 = 42.65$

$V_1^2/2g + P_1 + H_1 = V_2^2/2g + P_2 + H_2 + (\text{Losses} = (\Sigma K + \frac{fL}{D}) V_2^2/2g)$

$H_1 - 42.65 = (1 + 1 + f/D \cdot L) V^2/2g = (2 + f/D \cdot L) Q^2/(2g A^2)$

for 24" pipe

$H_1 - 42.65 = (2 + .012408 \cdot 862) Q^2/(64.4 \pi^2)$
$= (\frac{113.067432}{635.61}) Q^2 = 0.029560\ Q^2$

for 30" pipe

$H_1 - 42.65 = (2 + .009214 \times 862) Q^2/(64.4 \times 4.909^2)$
$= (10.21089)/(1551.78) Q^2$
$= .006585\ Q^2$
$\approx 0.006585\ Q^2$

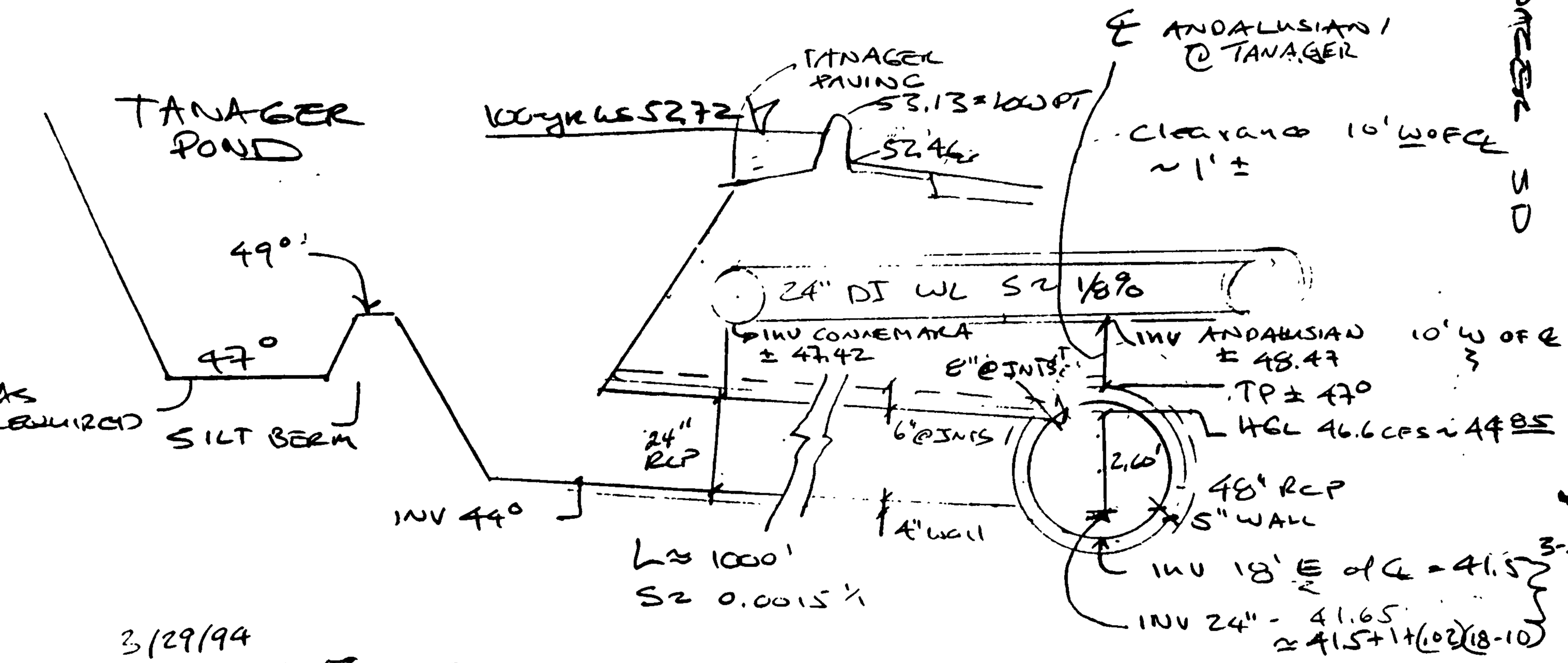
[illegible]

[illegible]

[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	



3/29/94
44.00 − 41.65
892

48" PIPE @ 46.6 CFS

$y_c = 1.9142'$ ⇒ $S = .00489$ ½ normal depth
$V = 7.845$ fps $H_v = 0.957$

assume $K_e = 0.5$
$(1+0.5).957 + 1.9142 = 3.3497 \sim 3.35'$
= Head to start flow in 48"
assuming no carryover energy
from Tanager pipe

3-11-94

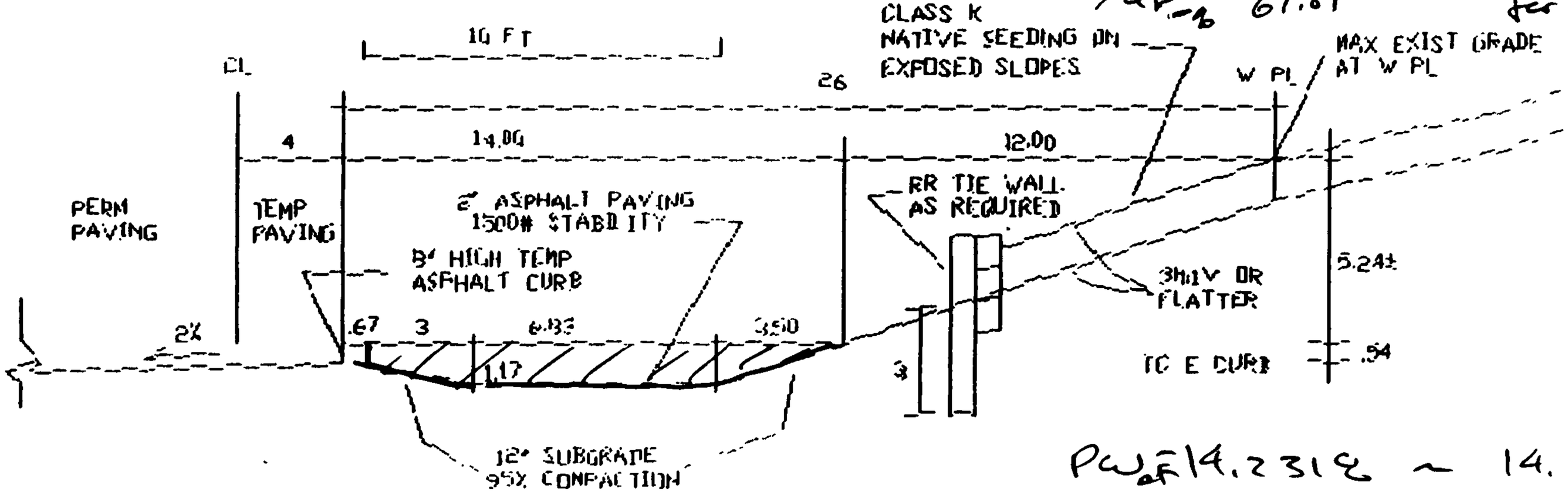
For $n = .017$ $S = .005$

$$Q_{cap} = \left(\frac{1.99}{.017}\right)(12.8)\left(\frac{12.8}{14.23}\right)^{2/3}\sqrt{.005} = 73.92$$

$Q_{cap}/Q_{r-b} = \frac{73.92}{61.01} = 1.21$ available for sediment

$V = 5.76$ fps

MAX EXIST GRADE = 21 %



PW of 14.231 ≈ 14.23

Area = 14.1986 ≈ 12.80

TEMPORARY ASPHALT CHANNEL
IN TANAGER P.D.W.

ON & BEFORE 3-31-94

MISCDTLS.DWG

(P.12)

SUNRISE 5-10-94

TANAGER

EARTH SWALE NORTH OF POND 1 — REVISITED

(1) SEDIMENT STORAGE REQUIRED

FROM MUSLE1.WQ1 2/9/94 COMPARE BASINS

302.2 OLD (44.2 Ac) LONGER, STEEPER, UNIFORM WIDTH
5×Avg + 100 cyr, ft³/ac @ 100 pcf dry = 87.7

304 (25.11 Ac), SHORTER, LESS STEEP, WIDER @ BOTTOM
5×Avg + 100 cyr - ft³/ac @ 100 pcf dry = 66.2

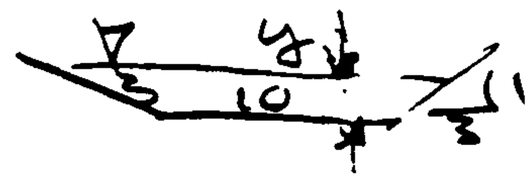
BASIN 351+352 COMBINATION
LENGTH & SLOPE ~ AS 304, ~ UNIFORM WIDTH
ESTIMATE @ 72 ft³/ac, compared to avg = 74.0

(2)

304	18.8	
351	9.6	
352	20.1	
TOT	49.5 ac	49.5×72 = 3492 ft³

(3) SWALE LENGTH = 950'
3492/950 = 3.68 ft³/ft STORAGE REQUIRED

(4) DEPTH REQUIRED FOR SEDIMENT,



$3.68 = y(10 + 2(3)y + 10)/2 = y(10 + 3y)$

$3y^2 + 10y - 3.68 = 0$ $y = 0.0334' - 0.$

top width = 10 + 6 × .33 + = 12.0042 12.0

(5) Q/y: Q from TR20 @ .Sum 3/31/92, y from MANDRAP.WQ1

351+352 (add hyd = hyd 203) = 27.98 ~ 28 cfs, y = 1.19 ~ 1.2'

Add 304 Q = 41.55 y^* = 1.48 ~ 1.5' (for comparison only)

route Q = 37.01 y^* = 1.39 ~ 1.4' use 1.5'

* y based on n = 0.030 12 ~ 10 + 2(3)(.334)

A = 19.70 ⇒ V = 1.88 < 2.0 fps OK,

(6) y soil + y water max = 0.33 + 1.39 = 1.72' < 2' OK

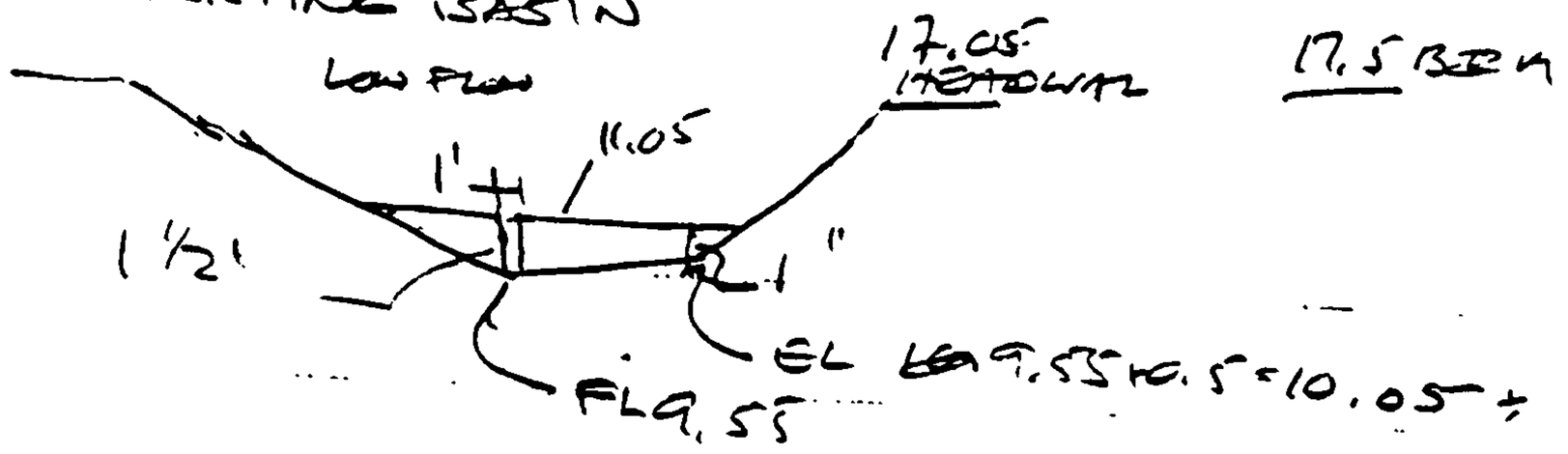
8

C5: SNOW VISTA DESILTING BASIN

SRT

2/2/93

SNOW VISTA DESILTING BASIN



POND

4H:1V SIDE SLOPES

BOTTOM SHAPE

— NOT TOO FAR FROM SQUARE
⇒ USE FRUSTUM FORMULA FOR VOLUME

$\Delta U = \Delta H \cdot \frac{1}{3} \cdot (A_{LOW} + A_{HIGH} + \sqrt{A_{LOW} \cdot A_{HIGH}})$

$A = 45.90/2 = 1\text{in}^2 @ 1" \sim 50' = 57375\ FT^2$

VOLUME VOL BELOW TWER = 11.05

ASSUME SEDIMENT STORAGE PER DRAINAGE REPORT

ASSUME

- EVEN EL @ POND BOTTOM = 10.2
- $A \cong A_0 + K \Delta H^2$

$A_0 = 57375 A^2 \pm$

$A_{S1} = (62.93/2)(50^2) = 78663$ SKETCH 5' + 4H:1V SLOPE THEN PLANIMETER = 20' OFFSET

$K \Delta H^2 = 78663 - 57375 = 21288 = K S^2 \Rightarrow K = 851.520$

el	depth	$A\ ft^2$	ΔA	$\Delta V\ ft^3$	$\Delta U\ AF$	Vol up	Outlets AF-ft	SEE ATTACHED SPREADSHEET
11.05	0	57375	1.3171	0	0	0		
11.55	1/2	57589	1.3221					
12.05	1	58227	1.3367		.6598	.6598	14.35	
					.6647	1.3245	41.46	
13.05	2	60781	1.3953					
					1.3659	2.6904	122.4	
14.05	3	65039	1.4931					
					1.4439	4.1343	234.7	
15.05	4	70999	1.6299					
					1.5385	5.6928	377.12	365.8
16.05	5	78663	1.8059					
					1.7146	7.4074	549.6	527.6
17.05	6	88030	2.0209					
					1.9124	9.3198	752.6	715.0

"CONSERVATIVE" FOR VERY SUBMERGENCE

1

file=vcrittrp = critical depth y in trapezoidal channels
Q=flow rate cfs; b=bottom width (=0 for triangles), m=sideslope H:V (=0 for rectangles)
T=water top width @ depth y; A=flow area at depth y; V=velocity fps
F=Froude No. = V/sqrt(g*A/T) = 1.00 for critical depth; Es=specific energy=y+V^2/2g
** WARNING ** ORIGINIAL FORMULAS IN HIDDEN ROW 7: DO NOT ERASE OR DELETE **
12/03/93 10:25 AM
COMMENT
COMMENT SUNRISE TERRACE CRIT DEPTH TRAP CHANNEL AT DESILT POND OUTLET

SHOW USTA DESILT POND

==========

GIVEN Q, GET Y BY /TOOLS/SOLVE FOR F=1 VARYING Y

Pond Outlet

Qwant	15.00	45.00	150.00	450.00	500.00	550.00
m	2.00	2.00	2.00	2.00	2.00	2.00
b	15.00	15.00	15.00	15.00	15.00	15.00
y	0.31	0.64	1.37	2.68	2.85	3.01
T	16.24	17.54	20.48	25.71	26.40	27.06
A	4.84	10.33	24.29	54.51	59.00	63.38
v	3.10	4.35	6.17	8.26	8.47	8.68
F	1.00	1.00	1.00	1.00	1.00	1.00
Es	0.46					

rect for comp to 15w X 8h
box culvert w ke=0.5 ← chart 8

45.00	450.00
0.00	0.00
15.00	15.00
0.65	3.04
15.00	15.00
9.81	45.54
4.59	9.88
1.00	1.00

==========

GIVEN Y, GET Q FOR F=1 DIRECTLY; CHECK THAT Fcalc=1
NOTE: y CRIT BASED ON yREAL/1.66 BY COMPARISON TO 15Wx8H CULVERT ANALYSIS

y "real"	0.50	1.000	2.000	3.000	4.000	5.000	6.000
m	2.00	2.00	2.00	2.00	2.00	2.00	2.00
b	15.00	15.00	15.00	15.00	15.00	15.00	15.00
y crit	0.30	0.60	1.20	1.81	2.41	3.01	3.61
T	16.20	17.41	19.82	22.23	24.64	27.05	29.46
A	4.70	9.76	20.99	33.64	47.76	63.33	80.35
Qcalc	14.33	41.46	122.31	238.73	377.12	536.57	732.61
V	3.05	4.25	5.83	7.98	7.90	8.48	9.37
Es	0.45	0.88	1.73	2.56	3.38	4.18	4.98
Fcalc	1.00	1.00	1.00	1.00	1.00	1.00	1.00

BASE - SORT OF
- SEE OTHER SHEET FOR SUBMERGENCE EFFECT FOR 4' & DEEPER

4': .97 × 377.12 ~ 365.8
5': .96 × 579.57 ~ 527.6
6': .95 × 752.61 ~ 715.0

COMP TO WEIR W C=3.33 PER HERKENHOFF/SNOW VISTA

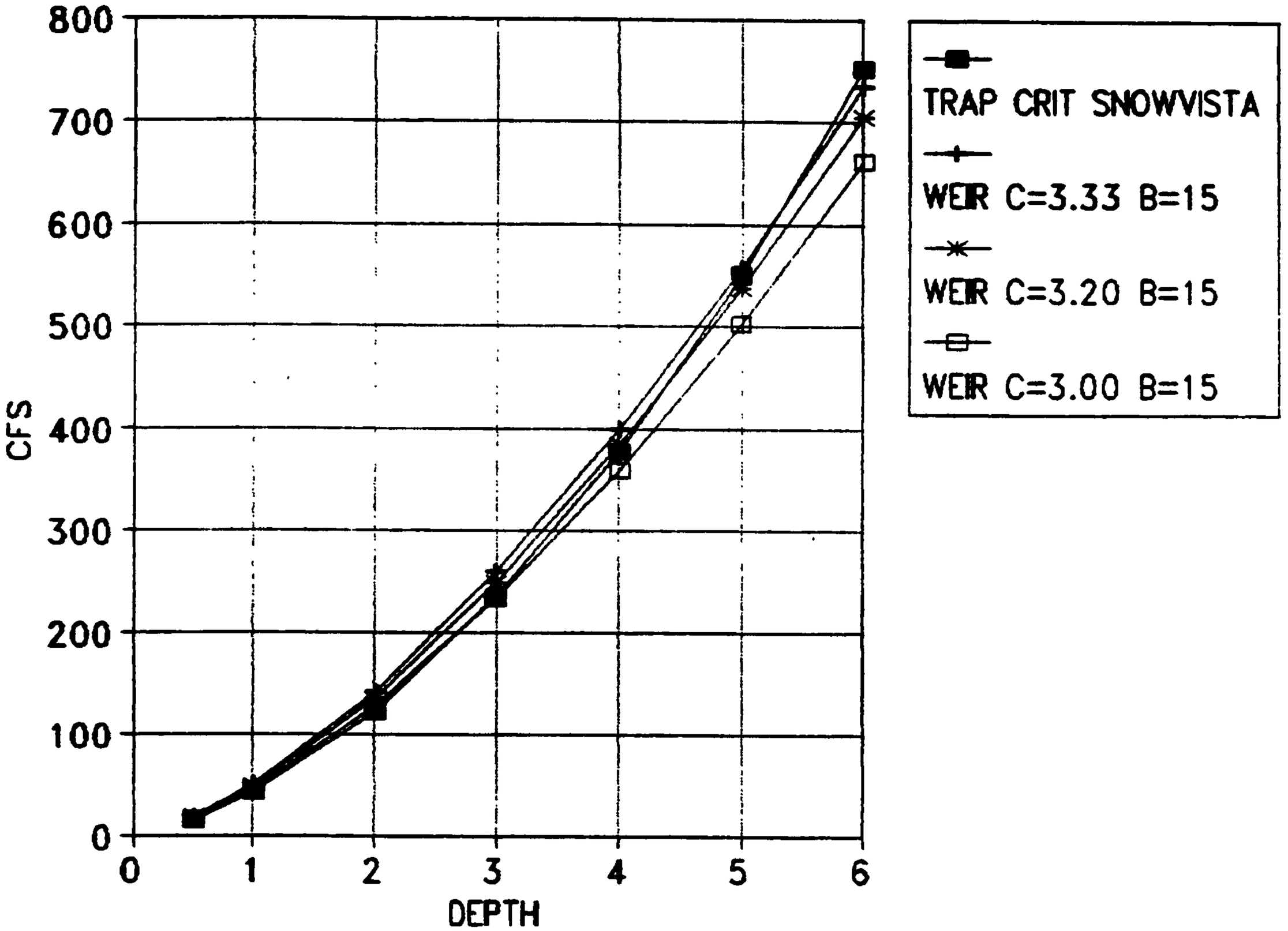
C	3.00	3.00	3.00	3.00	3.00	3.00	3.00
-	15.00	15.00	15.00	15.00	15.00	15.00	15.00
y	0.50	1.000	2.000	3.000	4.000	5.000	6.000
Q	15.91	45.00	127.28	233.83	360.00	503.12	661.36
	15.91	45.00	127.28	233.83	360.00	503.12	661.36

	SNV	C=3.33	C=3.20	C=3.00
0.50	[illegible]	17.66	16.97	15.91
1.00	[illegible]	49.95	48.00	45.00
2.00	[illegible]	141.28	135.76	127.28
3.00	[illegible]	259.55	249.42	233.83
4.00	[illegible]	399.60	384.00	360.00
5.00	[illegible]	558.46	536.66	503.12
6.00	[illegible]	734.11	705.45	661.36

use

Graph Data

From file qcritrp.wq1 12/3/93 10:25 AM



BOX CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE

December 3, 1997
15',chrat 8, he=.5

PROGRAM INPUT DATA:

DESCRIPTION	
Culvert Span (Width of Opening) (feet)	15.00
Culvert Rise (Height of Opening) (feet)	10.00
FHWA Chart Number (8,9,10,11,12 or 13)	8
Scale Number on Chart (Type of Culvert Entrance)	2
Manning's Roughness Coefficient (n-value)	0.170
Entrance Loss Coefficient (Culvert Opening)	0.50
Culvert Length (feet)	10.0
Culvert Slope (feet per foot)	0.0500

PROGRAM RESULTS:

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater (ft) Inlet Control	Outlet Control	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
15.0	0.00	0.50	4.66	0.14 .620	0.31 1.61	0.31	3.19
45.0	0.00	1.07	4.83	0.28 .607	0.65 1.65	1.00	4.59
150.0	0.00	2.43	5.25	0.59 .601	1.46 1.66	1.46	6.85
300.0	0.00	4.13	6.23	1.17 .591	2.03 1.69	2.03	9.84

15
If $Q = CLH^{3/2}$

2.828
2.710
2.640
2.832

use

BOX CULVERT ANALYSIS COMPUTER PROGRAM Version 1.0 Copyright (c) 1996
Dodson & Associates, Inc., 7015 W. Tidwell, #107, Houston, TX 77092
(713) 895-7222. All Rights Reserved.

SUNRISE TERRACE
SNOW USTA DESILT BASIN CUT-
CHECK FOR WEIR SUBMERGENCE EFFECTS BY NORMAL DEPTH IN CHANNEL*

SNOW USTA DESILT POND

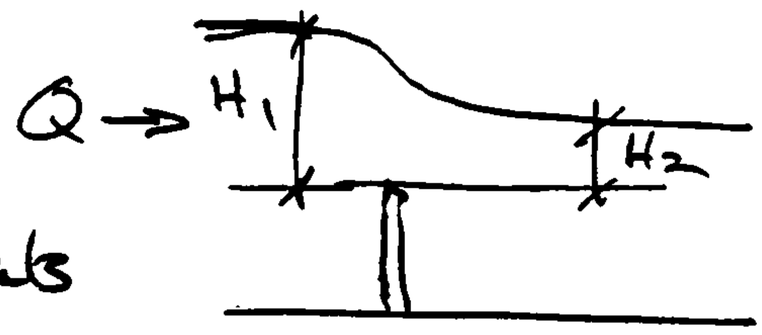
file=mantrap (Manning's equation for normal flow in trapezoidal channels)
b=bottom width (=0 for triangles), s=sideslope H:V (=0 for rectangles)
P=wetted perimeter; R=A/P; Q=flow(cfs); Ev=velocity energy; Fr=Froude no.
Es=specific energy=y+v^2/2g; Ms=specific momentum=Q*2/gA+A*ybar
** WARNING ** ORIGINAL EQUATIONS IN HIDDEN COLUMNS Y AND Z. DO NOT DELETE OR ERA
COMMENT
COMMENT

12/03/93	0.50	1.00	2.00	3.00	4.00	5.00	6.00	Ypond.
11:50 AM	-1.20	-0.73	-0.43	0.04	0.50	0.96	1.40	H2=Y-1.5
n	0.0150	0.0150	0.0150	0.0150	0.0150	0.0150	0.0150	
S	0.0109	0.0109	0.0109	0.0109	0.0109	0.0109	0.0109	
M1	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	
M2	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	
B	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	
Y	0.3033	0.5680	1.0658	1.5414	2.0039	2.4572	2.9033	
T	11.2131	12.2722	14.2632	16.1655	18.0157	19.8287	21.6130	
A	3.2168	6.3258	12.9299	20.1655	28.0709	36.6470	45.8905	
P	11.3563	12.5404	14.7664	16.8933	18.9619	20.9888	22.9839	
R	0.2833	0.5044	0.8756	1.1937	1.4804	1.7460	1.9966	
Q	14.350	41.460	122.400	234.700	377.120	549.500	752.600	
V	4.46	6.55	9.47	11.64	13.43	15.00	16.40	
Ev	0.309	0.668	1.393	2.105	2.805	3.496	4.180	
Es	0.61	1.24	2.46	3.65	4.81	5.95	7.08	
Fr (V)	1.43	1.53	1.62	1.65	1.67	1.69	1.70	
Fr (A/T)	1.47	1.61	1.75	1.84	1.90	1.94	1.98	
Ms	3.47	10.18	42.50	99.23	182.93	296.29	442.13	

* Based on trapezoidal section for convenience
Since actual channel has 0.5' cross slope.
actual normal depth would be somewhat higher

King's Handbook Eqn 5-50

$$Q = Q_1 \left[1 - \left(\frac{H_2}{H_1}\right)^n\right]^{.385}$$



Q = Q weir if no submergence effects
n = n in normal weir eqn
= 3/2 for horizontal weir as here

? Question: use H_1 as pond depth above weir, or as $E_s = y + U^2/2g$ above weir
Answer: check both ways & make judgment

Note: At & below Ypond = 4.0 ft $H_2 \leq 0 \Rightarrow$ no correction

Pond	Es	cfs/ft	H_2	H_2/H_1 Pond	[Pond]	H_2/H_1 Es	[Es]	[Use]
4	3.38	2.41	0.5	.148	.970	.207	.963	.97
5	4.18	3.01	.96	.192	.967	.230	.956	.96
6	4.98	3.61	1.40	.233	.955	.281	0.940	.95

SNOW USTA

DESILTING BASIN

1" = 50'

Traced & very slightly simplified

20'

FILL IV

C6: INTERIM INLET IN SANDPIPER

SANDPIPER SD INTERIM 5/23/94

✓ ESTIMATE 10 yr FLOW USING RSFOR 10 for interior basins ⊕ of Lou ⊕ Tower Rd

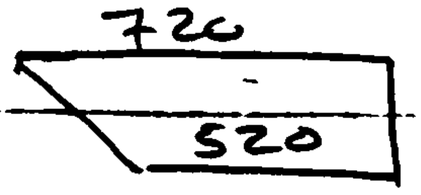
INTERIM - PER PHASE III, use 10yr Storm
ZONE 4 + TRT "A" Qp ~ 0.24 cfs/acre table A-9 DPM

104 + EXISTING development off site hyd 244 Q = 49.35

off site - up Commonwealth - width = btwn 104 width
~ A ~ 1000 x 240 = 240K sf
approx 1200 x 520 = 60 K as parked at road = C
∴ 240K - 60K = "A" 60 K sf = "C" Qp ~

$$\frac{180K(1.24) + 60(1.49)}{43.56\ K} = 3.04\ cfs$$ Range 1

off site ⊕ of Basin 104 approx area →



150 all A

$$\frac{(720+520)(150)(1.5)(0.24)}{43560} = 0.51$$

Σ = 49.35 + 3.04 + 0.51 = 52.9 ~ 53 cfs

ESTIMATE approx 13 cfs (~ 1/3 of 100yr amount to inlets in to catch basins N of Commonwealth

Leaves 53 - 13 = 40 cfs to enter @ interim basin

✓ D = 4' Pipe ⊕ of Sandpiper
Q 53 cfs y crit = 2.06 Htv = 1.03 ES = 3.09 < 4'
compare 90° Mit less 0.97 Htv down -

D = 3' Sandpiper
Q = 53 cfs y = 3' = full Sf = .0063

Mit Sand ⊕ PF inv 4' = 95.82 match 50 ft pipe
Rim 05.15 inv 3' = 96.82 - inv 2.5 = 93.32

Mit Sand btw Hackamore ⊕ Commonwealth
Rim 8.20 inv 100.70
L ~ 350' S ~ (100.7 - 96.82)/350 = 3.9/350 = 1.11%

@ 1.11% y = 1.95 V = 10.9 Htv 1.95
(0.73° 2.29 9.16 1.30)
∴ WS @ Mit btw Comm ⊕ Hacka = 02.65
off pt 03.70

1

SANDPIPER SD INTERIM UNIT 3 5/23/94

(cont)

Inflow @ MH btw Conn & Hacka 53-13=40 cfs

consider MH w top of future Run @ 20 INV 00.7

✓ weir ID=4' OD ~ 5' use weir @ π-ID = 12.56 conservative

$Q \sim C L H^{3/2}$ $H = \left(\frac{Q}{CL}\right)^{2/3}$ $C \sim 3$

$H = \left(\frac{40}{3 \times 12.5}\right)^{2/3} = 1.05'$

✓ @ orifice $A = 4\pi$
$Q \sim 5 A \sqrt{h} \Rightarrow h = 0.80 < 1.0$ o.k.

∴ Provide 1.0' above set 5' above invt ±

✓ run opening $\pi D = 6.28$ use 5.5
$A = 3.14$ sf

$H = [40/(3 \times 5.5)]^{2/3} = (2.424)^{2/3}$ 1.81

✓ orifice $Q \sim 5 A \sqrt{h} \Rightarrow h = (Q/(5 \cdot 3.14))^2 = 2.55$

alternate possibility.

✓ weir - 3 CMU supports @ 16" each
based on MH ID $L = 4 \cdot \pi - 3(4/3) = 8.57'$

$H = \left(\frac{40}{3 \times 8.57}\right)^{3/2} = 1.556$ $H = 1.343'$ $= 16.11$ in. $\sim 16\frac{1}{4}$"
Say OK

C7: STUB CHANNEL TO SNOW VISTA CHANNEL

FILE=D:\QPRO\CFREESUP 06/22/94 03:04 PM REPRINT

COA FREEBOARD FOR TRAPEZOIDAL & NATURAL CHANNELS (SEE DPM FOR RECTANGULAR)

FB = C1+C2*(0.025*D*V^0.333): D = FLOW DEPTH, V = VELOCITY FPS

	C1	C2
Q <100 CFS & V <35 FPS	1	1
Q >100 CFS & V >35 FPS	1.4	0.7

SUPERELEVATION = S = C*(V^2/GR)*TOPWIDTH: G=GRAVITY @ 32.17

R=CHANNEL CENTERLINE RADIUS (FT); C=COEFFICIENT=C SUP

C SUP FOR SIMPLE CIRCULAR CURVES	COA TRANQUIL	COA RAPID	COE TRANQUIL	COE RAPID
RECTANGLE	0.5	1	0.5	1
TRAPEZOID (OR NATURAL)	0.58	1.3	1	1

SUNRISE TERRACE SECTION LINE CHANNEL STUB @ Q=424

ASSUMES FLAT 11' BOTTOM, S=.0316 * => USED IN CALCULATIONS

06/22/94
03:04 PM

SECNO	Q	CUMDIS	*ELMIN	*DEPTH	*VCH	FRCH	*TOPWID	*RADIUS
@ 72" RCP	424		0	1.52	17.87	3.13	17.08	200

SECNO	*C1 FB	*C2 FB	*C SUP	*DEPTH	FB	SUP	D+FB	D+SUP	D+FB +SUP	D+FB+SUP +ELMIN
@ 72" RCP	1.4	0.7	1.3	1.52	1.80	1.36	3.32	2.88	4.68	4.68

5.0 available > 4.68 req'd ⇒ OK

file=mantrap (Manning's equation for normal flow in trapezoidal channels)
b=bottom width (=0 for triangles), s=sideslope H:V (=0 for rectangles)
P=wetted perimeter; R=A/P; Q=flow(cfs); Ev=velocity energy; Fr=Froude no.
Es=specific energy=y+v^2/2g; Ms=specific momentum=Q^2/gA+A*ybar
** WARNING ** ORIGINAL EQNS IN COLS Y AND Z (+-). DO NOT DELETE OR ERASE **

06:44 AM COMMENT: SUNRISE TERRACE - TOTAL PROPOSED Q100
06/08/94 COMMENT: IN EXISTING STUB CHAN TO SNOW VISTA

FOR SUPERELEVATION CALCS IN CURVED STUB TO SNOW VISTA

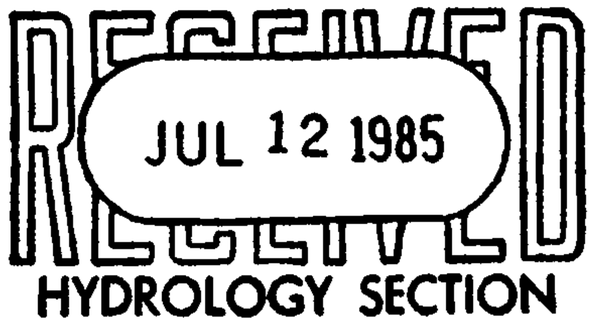
n	0.0150
S	0.0316
M1	2.0000
M2	2.0000
B	11.0000
Y	1.5196
T	17.0786
A	21.3347
P	17.7960
R	1.1988
Q	424.000
V	19.87
Ev	6.139
Es	7.66
Fr (Y)	2.84
Fr (A/T)	3.13
Ms	276.98

FINAL DRAINAGE REPORT

SUNRISE TERRACE UNIT II

near

102nd Street and North of
Gibson Boulevard
Albuquerque, New Mexico



Prepared by:

SCANLON & ASSOCIATES, INC.
8008 Pennsylvania Circle NE
Albuquerque, New Mexico 87110

July 11, 1985

Scanlon Job. No. 85103

I, Clifford E. Anderson, hereby cerfity that the enclosed documents and drawings were prepared under my supervision and are true and correct to the best of my knowledge and belief.

New Mexico Registered
Professional Engineer
No. 6472

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Drainage Submittal Information Sheet	1
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Offsite Drainage Area	Plate 2
Onsite Drainage Area	Plate 3
Preliminary Plat	Plate 4

DRAINAGE SUBMITTAL INFORMATION SHEET

PROJECT TITLE Sunrise Terrace Unit II **TYPE OF SUBMITTAL** Final Report

ZONE ATLAS PAGE NO. L-8 **CITY ADDRESS** N/A

LEGAL DESCRIPTION S.E. 1/4 section of projected section 29 of T-10N, R-2E NM PM

ENGINEERING FIRM Scanlon & Associates **CONTACT** J. Kyle Zimmerman

ADDRESS 8008 Pennsylvania Cr. **PHONE** 265-6941

OWNER Bellamah Community Development **CONTACT** Mr. Kimmick

ADDRESS P.O. Box 3300 **PHONE** 884-6606

ARCHITECT N/A **CONTACT** _____

ADDRESS _____ **PHONE** _____

SURVEYOR Scanlon & Associates, Inc. **CONTACT** J. Kyle Zimmerman

ADDRESS 8008 Pennsylvania Cr. **PHONE** 265-6941

CONTRACTOR N/A **CONTACT** _____

ADDRESS _____ **PHONE** _____

PRE-DESIGN MEETING:

X YES
___ NO
___ COPY OF CONFERENCE RECAP SHEET PROVIDED

PLEASE CHECK TYPE OF APPROVAL EXPECTED WITH THIS SUBMITTAL:

___ SKETCH PLAT APPROVAL
X PRELIMINARY PLAT APPROVAL
___ SITE DEVELOPMENT PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ BUILDING PERMIT APPROVAL
___ CERTIFICATE OF OCCUPANCY APPROVAL
___ ROUGH GRADING PERMIT APPROVAL
___ GRADING/PAVING PERMIT APPROVAL
X OTHER Final Report (SPECIFY)

DATE SUBMITTED: 7-12-85

BY: J. Kyle Zimmerman

Introduction

Bellamah Community Development is the owner of a 160 acre area on the West Mesa in Albuquerque. Bellamah is currently developing a 63.4 area tract of land to be called Sunrise Terrace Unit II. The development will contain 334 single family lots. The purpose of the report is to meet the requirements for preliminary plat approval and serve as the final drainage report.

Location

Sunrise Terrace Unit II is located on the far west side of Albuquerque. The site can be found on Zone Atlas Map L-8. The site is south of Tower Road, west of 102nd Street, north of the projected section line between sections 29 and 32 of T-10N, R-2E, N.M.P.M., and east of 110th Street. For location map, see Plate 3.

Existing Conditions

The project site is currently in an undeveloped state. The soil survey of Bernalillo County, New Mexico, indicates the soil types on site are Bluepoint and Pajarito (see Plate 1). Bluepoint soil is classified as a type A hydraulic soil. Pajarito soil is classified as a type B hydraulic soil. The ground is around 25% covered by vegetation and should be classified as "poor" range and pasture.

Hydrology

Sunrise Terrace Unit II and the surrounding areas were divided into drainage basins. These basins were then divided into sub-basins. The U.S. Department of Agriculture computer program HYMO: Problem-oriented Computer Language for Hydrologic Modeling (ARS-5-9, May 1973) was used to analyze the stormwater discharge. The HYMO program is the same model that was utilized in the preparation of the "Albuquerque Master Drainage Study". The HYMO program utilizes SCS methodology in computing runoff. In using the HYMO program, the following criteria was used:

1. Hydrographs for pervious and impervious areas were computed separately and then added to form a composite hydrograph.

2. The time of concentration (Tc in hours) was computed using the Kirpich Equation for each basin as follows:

   $$Tc = 0.0013\ L^{0.77}/S^{0.385}$$

   L = Length of the water course from the most distant point to the points of reference in feet.

S = Average slope between the most distant point and the point of reference.

3. The time to peak (tp) of the unit hydrograph is based on the time of construction (Tc) as follows:

tp = 2/3 Tc

4. The regression constant (K) was computed from the time to to peak (tp), as follows:

K = 0.5 tp

The relationship between K and tp establishes the peak valves and slope of the Unit Hydrograph used by HYMO.

The above procedures are consistent with those used in the "Albuquerque Master Drainage Study".

The HYMO program uses the SCS Curve Number (CN) of basin area to establish runoff. The CN is dependent upon hydraulic soil group and vegetation cover. The following CN numbers were used in the analysis:

Land Condition	CN
Existing	68
Pervious Area on site following development.	48
Impervious Area	95

The above values were found in the "Peak Rates of Discharge for Small Watersheds, Chapter 2 (updated 2/85), Engineering Field Manual for Conservation Practices, U.S.D.A. SCS". A lower CN valve was used for the developed pervious condition than for undeveloped conditions because the percentage of land vegetation for pervious areas will increase with development (i.e. lawns and other landscaped areas). The unit mass rainfall table was computed using Table 22.2-D-3 and Plate 22.2-D-3 of the Albuquerque D.P.M.

The total drainage basin was analyzed using the future developed condition of the site. Three 6 hour storm frequencies were used in the analysis. The following values of rainfall from Plat 22.2 D-1 of the Albuquerque, D.P.M. were used:

6 Hour Rainfall Volumes

Frequency	Amount
100 Yr.	2.2 in.
50 Yr.	2.024 in.
10 Yr.	1.445 in.

All of the runoff will flow into a retention pond, until the Snow Vista Channel can be built. Upon completion of the Snow Vista Channel all runoff will be routed through the channel. The retention pond is a temporary form of storm runoff management. A 100 year - 10 day storm will be used to size the retention pond. The rational method will be used to check the design of street capacity and curb type.

Hydrologic Analysis

When the site is developed the runoff from sub-basins 3.1 and 4.1 (see plate 2) will need to be diverted around Sunrise Terrace Unit 2. Sub-basins 3.4 and 4.4 will become residential areas. The storm runoff, from the residential area, will be routed to the southeast corner of the subdivision. Offsite runoff (basins 3.1 and 4.1) and onsite runoff (basins 3.4 and 4.4) will be routed to a concrete lined channel along the south boundary of the subdivision (Section Line Channel). The Section Line Channel will carry storm runoff to the retention pond or the Snow Vista Channel, when built. The retention pond will be located north of the section line between the AMAFCA Snow Vista Channel right-of-way and the West Gate Mobile Home Park (see plate 2). The soil at the pond location is hydraulic Group A. Group A soils are soil with a high infiltration rate. This soil type will allow the retention pond's storm water to infiltrate. However, sedimentation will collect in the bottom of the pond. The fines in the sediment may clog the soil and reduce infiltration. For this reason the sediment will need to be removed as the pond is maintained. Bellamah Community Development will maintain the pond until an outfall for the storm runoff is provided (Snow Vista Channel).

Design

Offsite storm runoff from sub-basins 3.1 and 4.1 will be intercepted by an earth channel along the west side of the subdivision (see Plat 2). The channel will be designed to carry the 100 year storm peak that occurs at the south end of the channel. At this point a peak flow of 54.5 CFS will occur during the 100 year event. Flow through the earth channel must not exceed a velocity of 2 feet/sec. This can be accomplished by using a trapizoidal channel with base of 10 feet, side slopes of 3 horizontal to 1 vertical, and a bottom slope of 0.125%. The above values were

calculated using Manning's Equation with a value of 0.030 for n. From this point the runoff will be routed down the section line channel (see Plat 2) to the pond. The section line channel will be a concrete lined channel with 10' bottom width, 2 to 1 side slopes, depth of 3.6 ft., and longitudinal slope of 2.4%. This channel conforms with the Herkenhoff design of Phase III of Snow Vista Channel. The combination of the earth channel and Section Line Channel will route the offsite drainage to the retention pond.

Onsite drainage will be handled mainly be surface street flow with the exception of a underground storm drain to take the storm runoff off Sandpipe Drive between Gannet Avenue and Dunlin Avenue (see Plat 3). This storm drain intercepts the flow from Tanager Drive, Sanderling Avenue, Gannet Avenue, Heron Road, Heron Court, and Sandpiper Drive. The runoff from Ibis Avenue, Ibis Way, and Dunlin Avenue will drain to a low point on Dunlin Avenue and be carried to the Section Line Channel via a concrete channel between lots 8 and 9 of Block 7. Roll type mountable curb will be used throughout the subdivision with the following exceptions:

1. Sandpiper Drive
2. Dunlin Avenue between Ibis Way and 102nd St.
3. 102nd Street
4. 106th Street
5. Tower Road
6. Tanager Drive

The above interior streets will require standard curb and gutter to carry the surface runoff that would over top a roll type mountable curb during the 100 year event. (See Appendix A for computations.) All of the onsite storm runoff will outfall to the Section Line Channel and be carried to the retention pond or Snow Vista Channel.

The flow in the Section Line Channel for the 100 year event, east of 102 nd Street, will be traveling at a super critical velocity of 13.07 ft/sec. Before the discharge enters the pond the velocity will need to be decreased. The slope of the Section Line Channel, from 100 ft. west of AMAFCA right-of-way, will be changed to 0.058%. A hydraulic jump will occur on the flatter section of channel having a downstream depth of 2.11 ft. and a velocity of 3.67 ft/sec. The sub-critical flow will be carried by a rip-rap lined channel and discharge into the retention pond.

SITE FLOWS

EVENT YR.	FLOW AT POINT 2 (SEE PLAT 2) PEAK FLOW (CFS)	VOLUME (AC FT.)
10	57.3	3.278
50	98.1	7.480
100	110.0	9.127

The above runoff flows were computed using the HYMO Program (See Appendix B for printout).

The retention pond will be designed to hold the 100 year 10 day runoff (See Appendix C for computations). A minimum of 22.6 ac. ft. of storage will be required. The pond will be designed with an emergency spillway and ramps for maintenance vehicles.

When the down stream portion of the Snow Vista Channel is constructed, the Section Line Channel will inlet into the Snow Vista Channel and the retention pond site will be regraded.

Sunrise Terrace Unit II will be split into three phases (See Plate 4 Preliminary Plat). Phases B-1 and C-1 can outlet storm runoff to the Section Line Channel without any temporary routing being implemented. (Phase A-1 will need a temporary drainage channel to route the runoff from the intersection of Sandpiper Drive and Heron Road to the retention Pond. The slope from the intersection to the pond is 0.017 ft./ft. (At this slope the velocity of flow in a earth lined channel would exceed 2 ft. per sec. The channel will need to be lined with rip-rap to control erosion! (A V-channel with 3:1 side slopes lined with a D_{50} = 0.25 ft. rip-rap (n=0.030) would yield a flow rate of 11.0 cfs at a depth of 1.0 ft.) The velocity of flow is 3.87 ft. per sec. This is an acceptable velocity for the size of rip-rap being used. The above valves were calculated using Manning's Equation. The 100 year 6 hour storm will produce a peak flow of 36.8 cfs (see appendix B for HYMO printout). A small detention pond with a storage of 0.5 ac. ft. can be placed at Heron Road and Sandpiper Drive to cut the peak flow to 10.9 cfs. When Phase B-1 is constructed the pond and rip-rap channel will be removed.

APPENDIX A

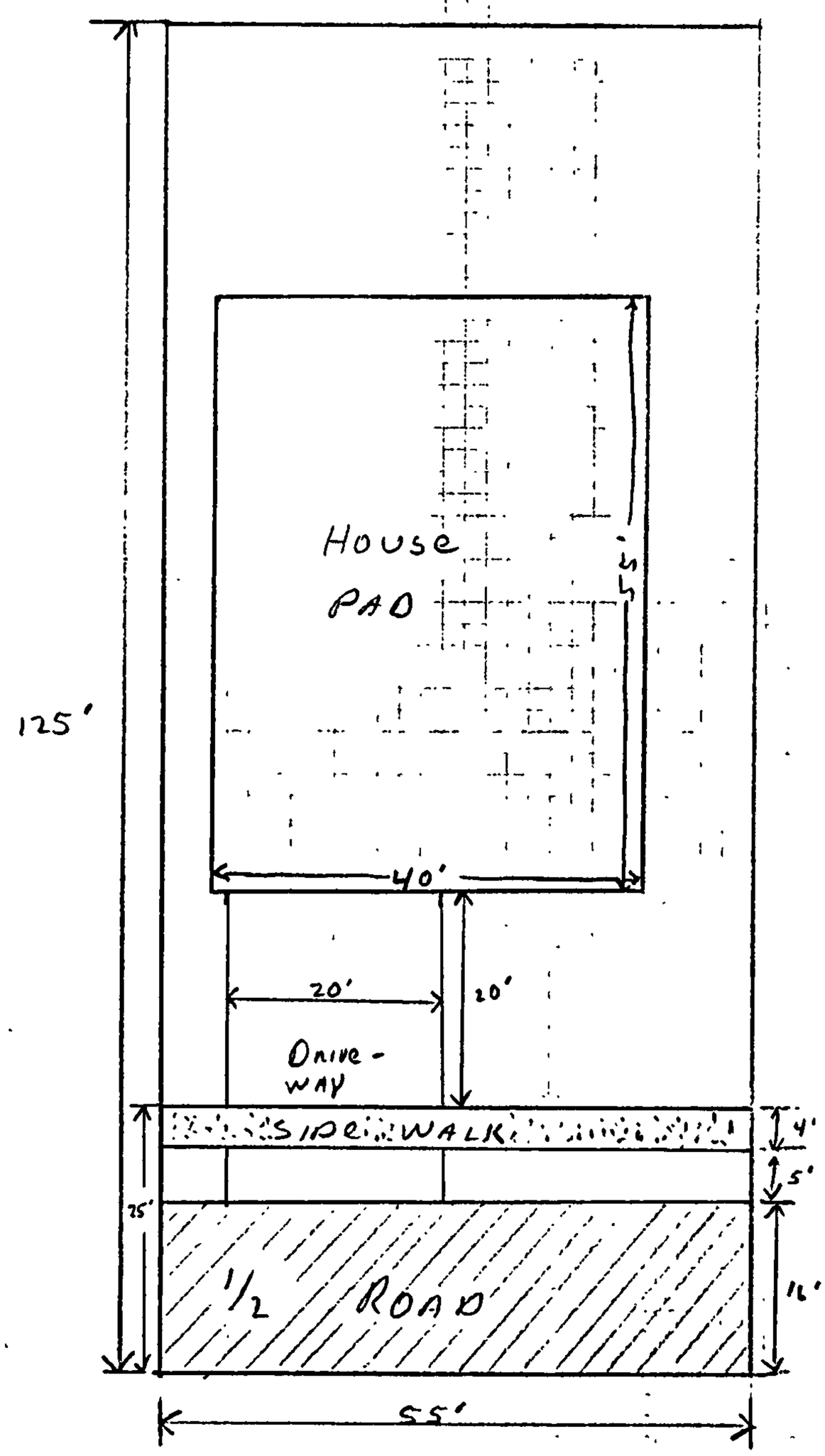
Onsite Drainage Computations

SCANLON & ASSOCIATES INC
CONSULTING ENGINEERS
8008 Pennsylvania Circle NE
Albuquerque, New Mexico 87110-7897
(505) 265-6941

Project DRAINAGE REPORT
Location SUNRISE TOWNAGE UNIT II
Job No. 85103 Date 4-17-85
By JLT Sheet 1 of 6

CALCULATION OF % IMPERVIOUS

AVG. LOT



SCALE 1" = 20'

TOTAL AREA = 55 * 125
= 6875 SQ. FT.

COUCHED AREA = 40 * 55 + 25 * 20
+ 4 * 55 + 16 * 55
= 3800 SQ FT

$$\% \text{ IMP} = \frac{\text{COUCHED AREA}}{\text{TOTAL AREA}} \times 100\%$$

$$\% \text{ IMP} = \frac{3800}{6875} = 55.3\%$$

USE 55 %

SOILS TYPE A

FROM PLATE 22.2 C-1 OPM

DEVELOPED

C = 0.43

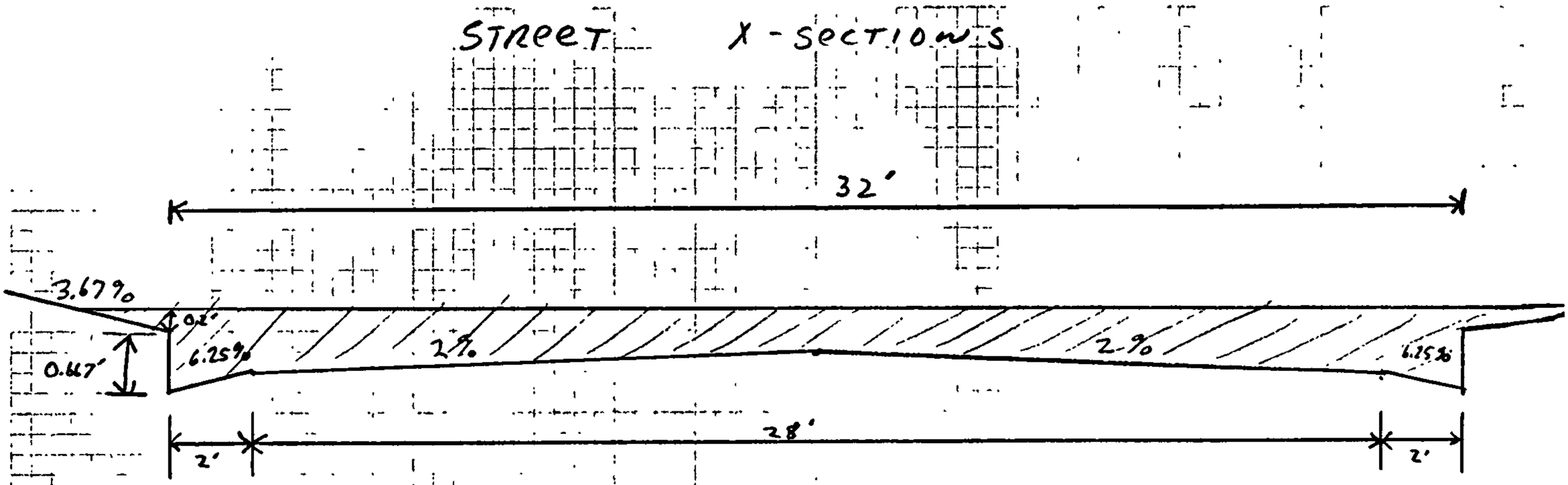
UNDEVELOPED

C = 0.18

SCANLON & ASSOCIATES INC
CONSULTING ENGINEERS
8008 Pennsylvania Circle NE
Albuquerque, New Mexico 87110-7897
(505) 265-6941

Project ORDINANCE REPORT
Location SUNRISE TERRACE UNIT 2
Job No. 85103 Date 4-17-85
By JKF Sheet 2 of 6

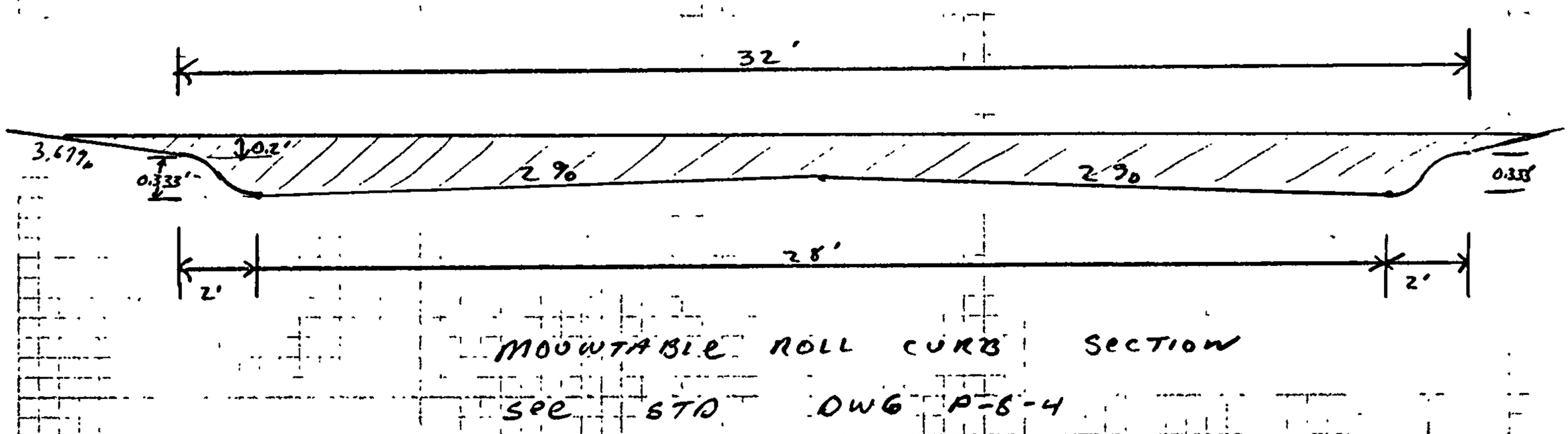
STREET X-SECTIONS



STANARD CURB SECTION

A = 20.616 SQ. Ft

R = 0.467 Ft



MOUNTABLE ROLL CURB SECTION

See STD DWG P-6-4

A = 9.386 sq ft

R = 0.284 ft.

SCANLON & ASSOCIATES INC
CONSULTING ENGINEERS
8008 Pennsylvania Circle NE
Albuquerque, New Mexico 87110-7897
(505) 265-6941

Project Ordinary Pleasant
Location Sunset Terrace II
Job No. 85103 Date 4-17-85
By JKT Sheet 3 of 6

ONSITE FLOWS

AREA #	AREA Ac.	RUNOFF Q CFS
A	8.58	17.16
B	2.80	5.60
C	8.36	16.72
D	11.12	22.24
E	2.72	5.44
F	8.42	16.84
G	1.92	3.84
H	8.04	16.09
I	8.43	16.86
J	1.68	3.36
K	1.20	2.40
L	1.85	3.70

$T_c = 10$ min 100 yr 6 hr rain = 2.2 in. $C = 0.43$

$$I = (6\text{ hr rain})(6.84)(T_c)^{-0.51}$$

$$I_{100} = (2.2)(6.84)(10)^{-0.51} = 4.65$$

$$Q = CIA$$

$$Q = (4.65)(0.43)A = 2.00A$$

SCANLON & ASSOCIATES INC
CONSULTING ENGINEERS
8008 Pennsylvania Circle NE
Albuquerque, New Mexico 87110-7897
(505) 265-6941

Project Drainage Report
Location Sandia Terrace II
Job No. 85103- Date 4-17-85
By JCS Sheet 4 of 6

STREET FLOWS

ANALYSIS PT.	CONTRIBUTING AREAS	TOTAL FLOW CUBIC FEET	CURB TYPE	STREET SLOPE	DEPTH OF FLOW Ft.
1	AB	22.76	STD.	2.98%	0.400
2	C	16.72	ROLL	3.70%	0.353
3	D	22.24	ROLL	2.00%	0.419
4	F	16.84	ROLL	3.5%	0.356
5	COEF	61.24	STD	1.179%	0.628
6	COEF G	65.08 - 41.44 = 23.64	STD	0.506%	0.522
7	L	3.70	STD	2.5%	0.240
8	LK	6.10	STD	0.5%	0.352
9	H	16.09	ROLL	2.394%	0.372
10	I	16.86	ROLL	1.85%	0.393
11	HIJ	36.31	STD	0.5%	0.483

SCANLON & ASSOCIATES INC
CONSULTING ENGINEERS
8008 Pennsylvania Circle NE
Albuquerque, New Mexico 87110-7897
(505) 265-6941

Project _____
Location _____
Job No. _____ Date _____
By _____ Sheet 5 of 6

FLOW INTO CATCH BASINS

STREET SLOPE FOR 1ST SET OF INLETS

$S_1 = 1.179\%$

AFTER THAT $S_2 = 0.505\%$

USE ALB. VANE GRATE TYPE DWG K-10-3

NORMAN EQUATION $Q = KO^{5/3}$

O = DEPTH OF FLOW IN FEET

$K_1 = 45.0$ $K_2 = 50.5$ SEE NEXT PAGE

SET # 1 TYPE A PT 5

$Q_{ST} = 61.24$ $S_{ST} = 1.179\%$ $O_{ST} = 0.628$ ft

FLOW INTO ONE BASSIN

$Q = (45.0)(0.628)^{5/3} = 20.72$ CFS

SET # 2 TYPE C PT 6

$Q_{ST} = 15.08 - 2(20.72) = 23.64$ CFS

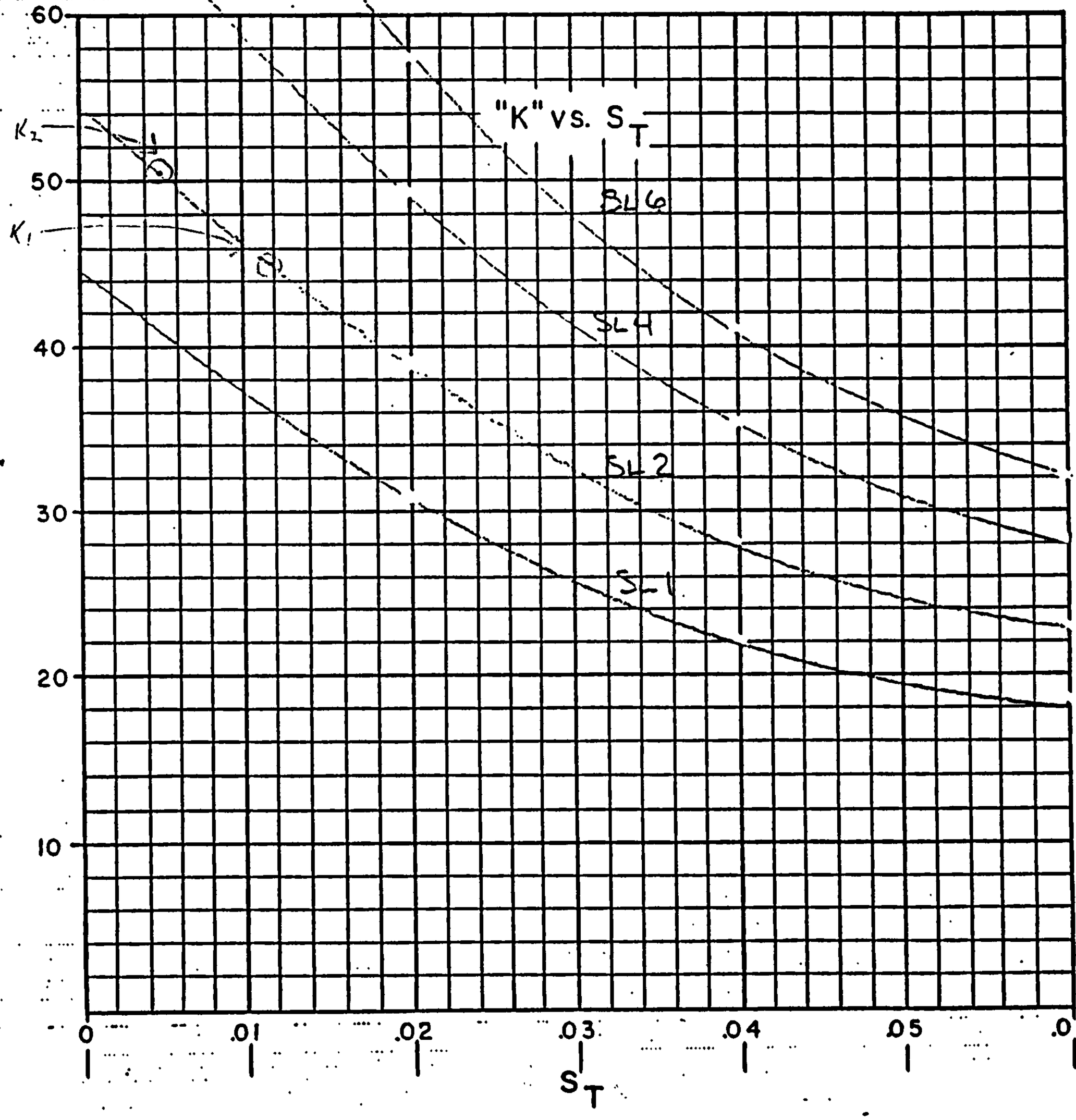
$S_{ST} = 0.506\%$ $O_{ST} = 0.522$ ft

FLOW ONE BASSIN $Q = 50.5\ (0.522) = 17.09$ CFS

$Q_2 = 23.64 - 2(\quad) =$ 0

DESCRIPTION- Vane Grate Type L
COMP. CODE- 0000 2027

ALBUQUERQUE VANE GRATE



S_T = TRANSVERSE GUTTER SLOPE

S_L = LONGITUDINAL GUTTER SLOPE

K = GRATE INLET COEFFICIENT

RECEIVED OCT 1 1984

APPENDIX B

HYMO

Printouts

```
START                0.00 HR
*              ****************************************
*              * SUNRISE TERRACE UNIT 2 DRAINAGE PLAN *
*              *    100 YEAR STORM - 6 HOUR DURATION  *
*              *          DEVELOPED CONDITION         *
*              *             FILE= SRT2.100           *
*              *      DIRECTORY = :UDD:KYLE:HYMO.DR   *
*              ****************************************
*
*              ****************************************
*              * COMPUTE HYDROGRAPH TO RETENTION POND *
*              ****************************************
*
* COMPUTE HYDROGRAPH FROM AREA 3.1  AREA=0.1355 SQ MI - 0% IMP
COMPUTE HYD          ID=1 HYD=131 DT=0.050 HR DA=0.1355 SQ MI CN=58
                     K=-0.0899 HR TP=-0.1798 HR
                     MASS RAINFALL
                      .00000    .07260    .15400    .24640    .36300
                      .63360    .95480   1.08240   1.17700   1.24950
                     1.31560   1.37720   1.43660   1.49600   1.54880
                     1.60160   1.65440   1.70720   1.75560   1.80180
                     1.86560   1.90300   1.93820   1.97340   2.00420
                     2.02840   2.04600   2.05920   2.06800   2.07460
                     2.07900   2.08186   2.08450   2.08714   2.08956
                     2.09220   2.09440   2.09682   2.09946   2.10144
                     2.10342   2.10562   2.10760   2.10980   2.11178
                     2.11376   2.11552   2.11750   2.11926   2.12102
                     2.12278   2.12520   2.12630   2.12784   2.12950
                     2.13114   2.13268   2.13422   2.13576   2.13730
                     2.13862   2.14016   2.14148   2.14280   2.14434
                     2.14566   2.14698   2.14830   2.14962   2.15094
                     2.15204   2.15336   2.15468   2.15578   2.15710
                     2.15820   2.15930   2.16040   2.16172   2.16282
                     2.16392   2.16502   2.16612   2.16700   2.16810
                     2.16920   2.17030   2.17140   2.17228   2.17338
                     2.17426   2.17536   2.17646   2.17756   2.17844
                     2.17954   2.18042   2.18196   2.18196   2.18284
                     2.18372   2.18460   2.18548   2.18636   2.18724
                     2.18790   2.18900   2.18966   2.19054   2.19142
                     2.19230   2.19296   2.19384   2.19450   2.19538
                     2.19626   2.19692   2.19780   2.19846   2.19912
                     2.20000
     SHAPE CONSTANT, N =  7.947    UNIT PEAK =      425.4 CFS
     RECESSION CONSTANT,K =   .0899 HRS     TIME TO PEAK OF UNIT HYD =   .1798 HRS    WATERSHED PARAMETER, B =  564.51

* AREA 3.1
PRINT HYD            ID=1 CODE=1

                                  PARTIAL HYDROGRAPH    131.00


     RUNOFF VOLUME =        .2651 INCHES    =        1.916 ACRE-FEET
     PEAK DISCHARGE RATE =        23.4 CFS


* ROUTE AREA 3.1
COMPUTE RATING CURVE ID=1 VS NO=7 SEG=1 MIN ELEV=100.0 MAX ELEV=102.0
                     CN SLP=0.00125 FP SLP=0.00125 N=0.030 DIST=34.0
                     DIST  ELEV   DIST  ELEV   DIST  ELEV   DIST  ELEV
                      0.0  104.0  12.0  100.0  22.0  100.0  34.0  104.0
```

RATING CURVE VALLEY SECTION 7.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
100.00	.3	.0
100.11	1.1	.4
100.21	2.2	1.3
100.32	3.5	2.6
100.42	4.7	4.3
100.53	6.1	6.3
100.63	7.5	8.7
100.74	9.0	11.4
100.84	10.5	14.4
100.95	12.2	17.8
101.05	13.9	21.5
101.16	15.6	25.5
101.26	17.4	29.9
101.37	19.3	34.6
101.47	21.3	39.7
101.58	23.3	45.1
101.68	25.4	50.9
101.79	27.5	57.1
101.89	29.7	63.5
102.00	32.0	70.6

COMPUTE TRAVEL TIME ID=2 REACH NO=7 NO VS=1 L=1000.0 FT SLP=0.00125

TRAVEL TIME TABLE
REACH 7.0

WATER DEPTH FEET	FLOW RATE CFS	TRAVEL TIME HRS
.11	.4	.2275
.21	1.3	.4673
.32	2.6	.3636
.42	4.3	.3053
.53	6.3	.2672
.63	8.7	.2401
.74	11.4	.2196
.84	14.4	.2035
.95	17.8	.1903
1.05	21.5	.1794
1.16	25.5	.1701
1.26	29.9	.1621
1.37	34.6	.1550
1.47	39.7	.1486
1.58	45.1	.1433
1.68	50.9	.1383
1.79	57.1	.1338
1.89	63.6	.1297
2.00	70.6	.1260

ROUTE ID=2 HYD NO=7 INFLOW ID=1 DT=0.050 HR

* COMPUTE HYDROGRAPH FROM AREA 4.1 AREA=0.1980 SQ MI - 0% IMP

COMPUTE HYD ID=3 HYD=132 DT=0.050 HR DA=0.1980 SQ MI CN=58
R=-0.0858 HR TP=-0.1716 HR
MASS RAINFALL -1

SHAPE CONSTANT, N = 7.947 UNIT PEAK = 651.4 CFS
RECESSION CONSTANT,K = .0858 HRS TIME TO PEAK OF UNIT HYD = .1716 HRS WATERSHED PARAMETER, B = 564.51

* AREA 4.1

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 132.00

```
RUNOFF VOLUME =        .2651 INCHES    =        2.799 ACRE-FEET
PEAK DISCHARGE RATE =        34.5 CFS


* COMPOSITE HYDROGRAPH FROM AREAS 3.1 AND 4.1
ADD HYD              ID=4 HYD=133 ID I=3 ID II=2
PRINT HYD            ID=4 CODE=1

                                  PARTIAL HYDROGRAPH    133.00

RUNOFF VOLUME =        .2543 INCHES    =        4.523 ACRE-FEET
PEAK DISCHARGE RATE =        54.5 CFS


* ROUTE AREAS 3.1 AND 4.1
COMPUTE RATING CURVE ID=1 VS NO=8 SEG=1 MIN ELEV=100.0 MAX ELEV=102.0
                     CN SLP=0.010 FP SLP=0.0100 N=0.030 DIST=34.0
                     DIST  ELEV   DIST  ELEV   DIST  ELEV   DIST  ELEV
                      0.0  104.0  12.0  100.0  22.0  100.0  34.0  102.0

                                  RATING CURVE VALLEY SECTION  8.0
                                      WATER      FLOW       FLOW
                                    SURFACE      AREA       RATE
                                     ELEV        SQ FT      CFS
                                    100.00         .0         .0
                                    100.11        1.1        1.2
                                    100.21        2.3        3.8
                                    100.32        3.6        7.6
                                    100.42        5.0       12.6
                                    100.53        6.5       18.6
                                    100.63        8.1       25.7
                                    100.74        9.8       33.9
                                    100.84       11.6       43.3
                                    100.95       13.5       53.8
                                    101.05       15.5       65.5
                                    101.16       17.6       78.3
                                    101.26       19.8       92.4
                                    101.37       22.1      107.8
                                    101.47       24.5      124.4
                                    101.58       27.0      142.4
                                    101.68       29.6      161.7
                                    101.79       32.3      182.4
                                    101.89       35.1      204.5
                                    102.00       38.0      228.1
COMPUTE TRAVEL TIME  ID=5 REACH NO=8 NO VS=1 L=1100.0 FT SLP=0.0100

                                  TRAVEL TIME TABLE
                                       REACH  8.0

                                    WATER      FLOW       TRAVEL
                                    DEPTH      RATE       TIME
                                    FEET       CFS        HRS
                                      .11         1.2       .2954
                                      .21         3.8       .1545
                                      .32         7.6       .1444
                                      .42        12.6       .1218
                                      .53        18.6       .1070
                                      .63        25.7       .0964
```

.74	33.9	.0983
.84	43.3	.0920
.95	53.8	.0768
1.05	65.5	.0724
1.16	78.3	.0687
1.26	92.4	.0655
1.37	107.8	.0627
1.47	124.4	.0602
1.58	142.4	.0580
1.68	161.7	.0559
1.79	182.4	.0541
1.89	204.5	.0524
2.00	228.1	.0509

ROUTE ID=5 HYD NO=5 INFLOW ID=4 DT=0.050 HR

COMPUTE RATING CURVE ID=1 VS NO=9 SEG=1 MIN ELEV=100.00 MAX ELEV=102.0
CH SLP=0.024 FP SLP=0.024 N=0.015 DIST=30.0

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0.0	105.0	10.0	100.0	20.0	100.0	30.0	105.0

RATING CURVE VALLEY SECTION 9.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
100.00	.0	.0
100.11	1.1	3.6
100.21	2.2	11.5
100.32	3.4	22.8
100.42	4.6	37.0
100.53	5.8	54.0
100.63	7.1	73.7
100.74	8.5	96.0
100.84	9.8	120.7
100.95	11.3	148.0
101.05	12.7	177.7
101.16	14.3	210.0
101.26	15.8	244.7
101.37	17.4	281.9
101.47	19.1	321.5
101.58	20.8	363.6
101.68	22.5	408.3
101.79	24.3	455.5
101.89	26.1	505.3
102.00	28.0	557.7

COMPUTE TRAVEL TIME ID=6 REACH NO=9 NO VS=1 L=2500.00 SLP=0.024

TRAVEL TIME TABLE
REACH 9.0

WATER DEPTH FEET	FLOW RATE CFS	TRAVEL TIME HRS
.11	3.6	.2064
.21	11.5	.1321
.32	22.8	.1023
.42	37.0	.0855
.53	54.0	.0748
.63	73.7	.0670
.74	96.0	.0612
.84	120.7	.0565
.95	148.0	.0529
1.05	177.7	.0498
1.16	210.0	.0472
1.26	244.7	.0449

1.37	281.8	.0430
1.47	321.5	.0412
1.58	363.6	.0397
1.68	409.3	.0383
1.79	455.5	.0372
1.89	505.3	.0359
2.00	557.7	.0349

ROUTE ID=6 HYD NO=9 INFLOW ID=5 DT=0.050 HR
* COMPUTE HYDROGRAPH FROM AREA 4.4 AREA=0.0477 SQ MI -55% IMP
* IMPERVIOUS AREA 4.4
COMPUTE HYD ID=1 HYD=134 DT=0.050 HR DA=0.0262 SQ MI CN=95
K=-0.0692 HR TP=-0.1384 HR
MASS RAINFALL -1

SHAPE CONSTANT, N = 7.947 UNIT PEAK = 106.0 CFS
RECESSION CONSTANT,K = .0692 HRS TIME TO PEAK OF UNIT HYD = .1384 HRS WATERSHED PARAMETER, B = 564.51

* PERVIOUS AREA 4.4
COMPUTE HYD ID=2 HYD=135 DT=0.050 HR DA=0.0215 SQ MI CN=49
K=-0.0692 HR TP=-0.1384 HR
MASS RAINFALL -1

SHAPE CONSTANT, N = 7.947 UNIT PEAK = 87.7 CFS
RECESSION CONSTANT,K = .0692 HRS TIME TO PEAK OF UNIT HYD = .1384 HRS WATERSHED PARAMETER, B = 564.51

* COMPOSITE HYDROGRAPH FROM AREA 4.4
ADD HYD ID=3 HYD=136 ID I=1 ID II=2
PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 136.00

RUNOFF VOLUME = .9109 INCHES = 2.317 ACRE-FEET
PEAK DISCHARGE RATE = 49.6 CFS

* ROUTE AREA 4.4
COMPUTE RATING CURVE ID=1 VS NO=10 SEG=1 MIN ELEV=100.0 MAX ELEV=102.0
CN SLP=0.024 FP SLP=0.024 N=0.015 DIST=30.0

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0.0	105.0	10.0	100.0	20.0	100.0	30.0	105.0

RATING CURVE VALLEY SECTION 10.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
100.00	.0	.0
100.11	1.1	3.5
100.21	2.2	11.5
100.32	3.4	22.8
100.42	4.6	37.0
100.53	5.8	54.0
100.63	7.1	73.7
100.74	8.5	95.0
100.84	9.8	120.7
100.95	11.3	148.0
101.05	12.7	177.7
101.16	14.3	210.0
101.26	15.9	244.7
101.37	17.4	281.8
101.47	19.1	321.5
101.58	20.8	363.6
101.68	22.5	409.3
101.79	24.3	455.5

```
                                    101.89      25.1      505.3
                                    102.00      26.0      557.7
COMPUTE TRAVEL TIME  ID=5 REACH NO=10 NO VS=1 L=1000.0 FT SLP=0.024

                                    TRAVEL TIME TABLE
                                          REACH 10.0

                                    WATER     FLOW     TRAVEL
                                    DEPTH     RATE      TIME
                                    FEET      CFS       HRS
                                      .11       3.6      .0825
                                      .21      11.5      .0528
                                      .32      22.8      .0409
                                      .42      37.0      .0342
                                      .53      54.0      .0299
                                      .63      73.7      .0268
                                      .74      96.0      .0245
                                      .84     120.7      .0225
                                      .95     148.0      .0212
                                     1.05     177.7      .0199
                                     1.16     210.0      .0189
                                     1.26     244.7      .0180
                                     1.37     281.8      .0172
                                     1.47     321.5      .0165
                                     1.58     363.6      .0159
                                     1.68     408.3      .0153
                                     1.79     455.5      .0148
                                     1.89     505.3      .0144
                                     2.00     557.7      .0139
ROUTE                ID=5 HYD NO=10 INFLOW ID=3 DT=0.050 HR
*
* COMPOSITE HYDROGRAPH FROM BASIN #4 AND AREA 3.1
*
ADD HYD              ID=4 HYD=137 ID I=5 ID II=6
PRINT HYD            ID=4 CODE=1

                                    PARTIAL HYDROGRAPH    137.00


     RUNOFF VOLUME =       .3239 INCHES    =       6.586 ACRE-FEET
     PEAK DISCHARGE RATE =       66.5 CFS


* COMPUTE HYDROGRAPH FROM AREA 3.4  AREA=0.0555 SQ MI -55% IMP
* IMPERVIOUS AREA
COMPUTE HYD          ID=1 HYD=138 DT=0.050 HR DA=0.0305 SQ MI CN=95
                     K=-0.0616 HR TP=-0.1232
                     MASS RAINFALL -1
    SHAPE CONSTANT, N =  7.947    UNIT PEAK =      139.8 CFS
    RECESSION CONSTANT,K =   .0616 HRS     TIME TO PEAK OF UNIT HYD =   .1232 HRS    WATERSHED PARAMETER, B =  564.51

* PERVIOUS AREA
COMPUTE HYD          ID=2 HYD=139 DT=0.050 HR DA=0.0250 SQ MI CN=48
                     K=-0.0616 HR TP=-0.1232 HR
                     MASS RAINFALL -1
    SHAPE CONSTANT, N =  7.947    UNIT PEAK =      114.6 CFS
    RECESSION CONSTANT,K =   .0616 HRS     TIME TO PEAK OF UNIT HYD =   .1232 HRS    WATERSHED PARAMETER, B =  564.51

* COMPOSITE HYDROGRAPH FOR AREA 3.4
ADD HYD              ID=3 HYD=140 ID I=1 ID II=2
PRINT HYD            ID=3 CODE=3
```

PARTIAL HYDROGRAPH 140.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	0.	1.500	5.	3.000	1.	4.500	0.	6.000	0.
.150	1.	1.650	2.	3.150	1.	4.650	0.	6.150	0.
.300	34.	1.800	1.	3.300	1.	4.800	0.	6.300	0.
.450	45.	1.950	1.	3.450	1.	4.950	0.	6.450	0.
.600	28.	2.100	1.	3.600	0.	5.100	0.	6.600	0.
.750	22.	2.250	1.	3.750	0.	5.250	0.	6.750	0.
.900	20.	2.400	1.	3.900	0.	5.400	0.		
1.050	20.	2.550	1.	4.050	0.	5.550	0.		
1.200	15.	2.700	1.	4.200	0.	5.700	0.		
1.350	10.	2.850	1.	4.350	0.	5.850	0.		

RUNOFF VOLUME = .9131 INCHES = 2.703 ACRE-FEET
PEAK DISCHARGE RATE = 59.2 CFS

* ROUTE AREA 3.4 THRU 30 IN. PIPE
COMPUTE RATING CURVE ID=1 VS NO=11 CODE=-1 SLP=0.020 DIA=2.5 FT N=0.013

RATING CURVE PIPE SECTION 11.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.13	.1	.3
.26	.3	1.3
.39	.5	3.1
.52	.7	5.5
.65	1.0	8.6
.78	1.3	12.3
.91	1.6	16.5
1.04	1.9	21.1
1.17	2.3	26.0
1.30	2.6	31.1
1.43	2.9	36.3
1.56	3.2	41.5
1.69	3.5	46.5
1.82	3.8	51.2
1.95	4.1	55.4
2.08	4.4	58.9
2.21	4.6	61.4
2.34	4.8	62.4
2.50	4.9	62.4

COMPUTE TRAVEL TIME ID=6 REACH NO=11 NO VS=1 L=575.0 FT SLP=0.020

TRAVEL TIME TABLE
REACH 11.0

WATER DEPTH FEET	FLOW RATE CFS	TRAVEL TIME HRS
.13	.3	.0512
.26	1.3	.0328
.39	3.1	.0255
.52	5.5	.0214
.65	8.6	.0188
.78	12.3	.0170
.91	16.5	.0157
1.04	21.1	.0147

1.17	26.0	.0139
1.30	31.1	.0133
1.43	36.3	.0128
1.56	41.5	.0124
1.69	46.5	.0122
1.82	51.2	.0120
1.95	55.4	.0119
2.08	58.9	.0119
2.21	61.4	.0120
2.34	62.4	.0122
2.34	62.4	.0122

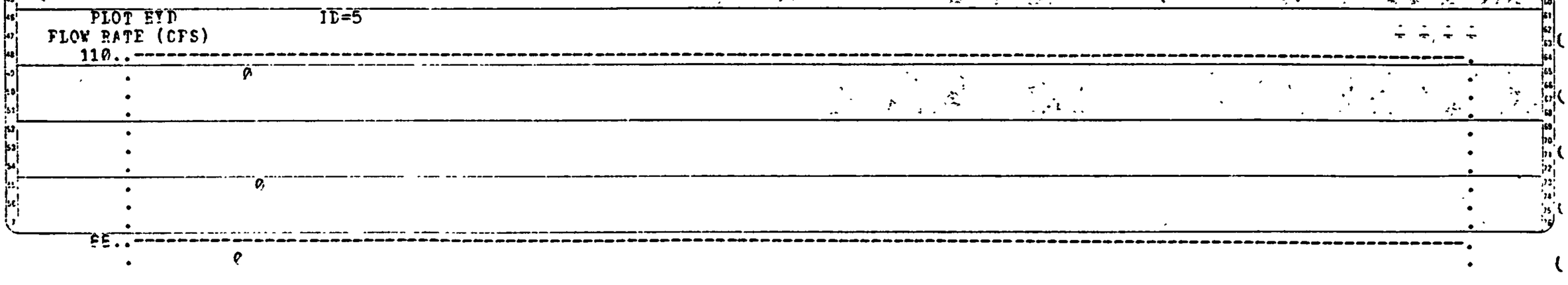
```
ROUTE                ID=6 HYD NO=11 INFLOW ID=3 DT=0.050 HR
*
* COMPOISTE HYDROGRAPH TO RETENTION POND
*
ADD HYD              ID=5 HYD=141 ID I=4 ID II=6
PRINT HYD            ID=5
```

PARTIAL HYDROGRAPH 141.00

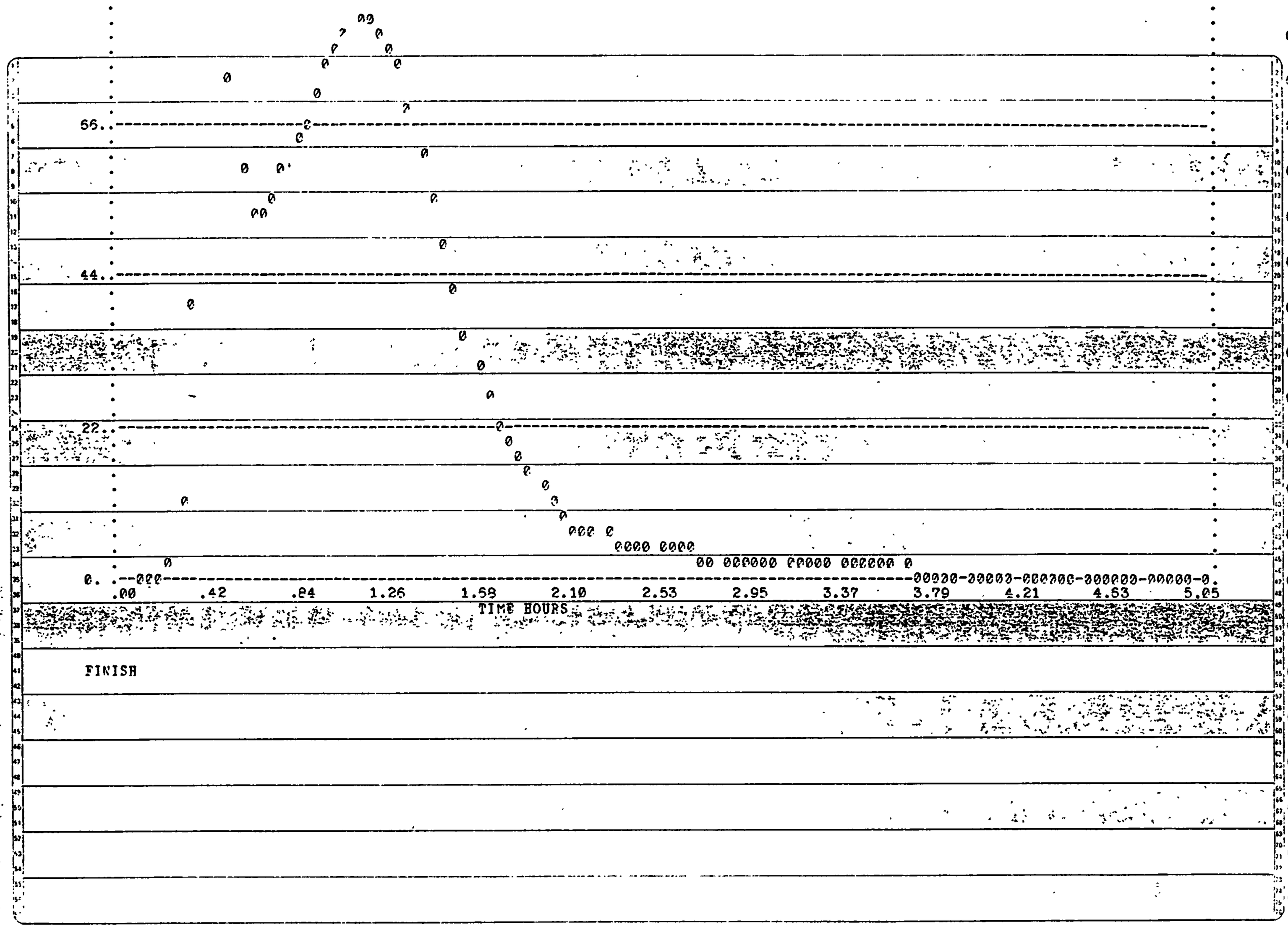
TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	0.	1.050	81.	2.100	9.	3.150	3.	4.200	1.
.050	0.	1.100	83.	2.150	8.	3.200	3.	4.250	1.
.100	0.	1.150	83.	2.200	7.	3.250	3.	4.300	1.
.150	2.	1.200	81.	2.250	7.	3.300	3.	4.350	1.
.200	3.	1.250	79.	2.300	6.	3.350	3.	4.400	1.
.250	13.	1.300	75.	2.350	6.	3.400	3.	4.450	1.
.300	40.	1.350	70.	2.400	6.	3.450	3.	4.500	1.
.350	86.	1.400	63.	2.450	5.	3.500	3.	4.550	1.
.400	110.	1.450	57.	2.500	5.	3.550	3.	4.600	1.
.450	95.	1.500	50.	2.550	5.	3.600	2.	4.650	1.
.500	74.	1.550	43.	2.600	5.	3.650	2.	4.700	1.
.550	60.	1.600	37.	2.650	5.	3.700	2.	4.750	1.
.600	54.	1.650	32.	2.700	4.	3.750	2.	4.800	1.
.650	53.	1.700	27.	2.750	4.	3.800	2.	4.850	1.
.700	55.	1.750	23.	2.800	4.	3.850	2.	4.900	1.
.750	60.	1.800	20.	2.850	4.	3.900	2.	4.950	1.
.800	64.	1.850	18.	2.900	4.	3.950	2.	5.000	1.
.850	68.	1.900	16.	2.950	3.	4.000	2.	5.050	1.
.900	72.	1.950	14.	3.000	3.	4.050	2.		
.950	75.	2.000	13.	3.050	3.	4.100	1.		
1.000	77.	2.050	10.	3.100	3.	4.150	1.		

RUNOFF VOLUME = .3019 INCHES = 9.127 ACRE-FEET
PEAK DISCHARGE RATE = 110.0 CFS

```
PLOT HYD             ID=5
```



Pond
Vol. & input
Hydro.


55.
44.
22.
0.
.00
.42
.84
1.26
1.58
2.10
2.53
2.95
3.37
3.79
4.21
4.53
5.05
TIME HOURS
FINISH

50-119

```
START                0.00 HR
*                ****************************************
*                * SUNRISE TERRACE UNIT 2 DRAINAGE PLAN  *
*                *     50 YEAR STORM - 6 HOUR DURATION   *
*                *          DEVELOPED CONDITION          *
*                *             FILE= SRT2.50             *
*                *      DIRECTORY = :UDD:KYLE:HYMO.DR    *
*                ****************************************
*
*                ****************************************
*                * COMPUTE HYDROGRAPH TO RETENTION POND  *
*                ****************************************
*
* COMPUTE HYDROGRAPH FROM AREA 3.1  AREA=0.1355 SQ MI - 0% IMP
COMPUTE HYD          ID=1 HYD=131 DT=0.050 HR DA=0.1355 SQ MI CN=68
                     K=-0.0899 HR TP=-0.1798 HR
                     MASS RAINFALL
                      .00000    .06679    .14168    .22669    .33396
                      .58291    .87842    .99581   1.08284   1.14963
                     1.21035   1.26702   1.32167   1.37632   1.42490
                     1.47347   1.52205   1.57062   1.61515   1.65766
                     1.71635   1.75076   1.78314   1.81553   1.84386
                     1.86613   1.88232   1.89446   1.90256   1.90863
                     1.91268   1.91531   1.91774   1.92017   1.92240
                     1.92482   1.92685   1.92907   1.93150   1.93332
                     1.93515   1.93717   1.93899   1.94102   1.94284
                     1.94466   1.94628   1.94810   1.94972   1.95134
                     1.95296   1.95518   1.95620   1.95761   1.95923
                     1.96065   1.96207   1.96348   1.96490   1.96632
                     1.96753   1.96895   1.97016   1.97138   1.97279
                     1.97401   1.97522   1.97644   1.97765   1.97886
                     1.97988   1.98109   1.98231   1.98332   1.98453
                     1.98554   1.98656   1.98757   1.98878   1.98979
                     1.99081   1.99182   1.99283   1.99364   1.99465
                     1.99566   1.99668   1.99769   1.99850   1.99951
                     2.00032   2.00133   2.00234   2.00336   2.00416
                     2.00518   2.00599   2.00740   2.00740   2.00821
                     2.00902   2.00983   2.01064   2.01145   2.01226
                     2.01287   2.01388   2.01449   2.01530   2.01611
                     2.01692   2.01752   2.01833   2.01894   2.01975
                     2.02056   2.02117   2.02198   2.02258   2.02319
                     2.02400
     SHAPE CONSTANT, N =  7.947    UNIT PEAK =      425.4 CFS
     RECESSION CONSTANT,K =   .0899 HRS     TIME TO PEAK OF UNIT HYD =   .1798 HRS    WATERSHED PARAMETER, B =  564.51

* AREA 3.1
PRINT HYD            ID=1 CODE=1

                                  PARTIAL HYDROGRAPH    131.00


     RUNOFF VOLUME =        .2021 INCHES    =        1.461 ACRE-FEET
     PEAK DISCHARGE RATE =        18.4 CFS


* ROUTE AREA 3.1
COMPUTE RATING CURVE ID=1 VS NO=7 SEG=1 MIN ELEV=100.0 MAX ELEV=102.0
                     CN SLP=0.00125 FP SLP=0.00125 N=0.030 DIST=34.0
                     DIST  ELEV   DIST  ELEV   DIST  ELEV   DIST  ELEV
                      0.0  104.0  12.0  100.0  22.0  100.0  34.0  104.0
```

RATING CURVE VALLEY SECTION 7.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
100.00	.0	.0
100.11	1.1	.4
100.21	2.2	1.3
100.32	3.5	2.6
100.42	4.7	4.3
100.53	6.1	6.3
100.63	7.5	8.7
100.74	9.0	11.4
100.84	10.5	14.4
100.95	12.2	17.8
101.05	13.9	21.5
101.16	15.6	25.5
101.26	17.4	29.9
101.37	19.3	34.6
101.47	21.3	39.7
101.58	23.3	45.1
101.68	25.4	50.9
101.79	27.5	57.1
101.89	29.7	63.6
102.00	32.0	70.6

```
COMPUTE TRAVEL TIME  ID=2 REACH NO=7 NO VS=1 L=1000.0 FT SLP=0.00125
```

TRAVEL TIME TABLE
REACH 7.2

WATER DEPTH FEET	FLOW RATE CFS	TRAVEL TIME HRS
.11	.4	.7275
.21	1.3	.4875
.32	2.6	.3635
.42	4.3	.3053
.53	6.3	.2672
.63	8.7	.2401
.74	11.4	.2195
.84	14.4	.2035
.95	17.8	.1903
1.05	21.5	.1794
1.16	25.5	.1701
1.26	29.9	.1621
1.37	34.6	.1550
1.47	39.7	.1488
1.58	45.1	.1433
1.68	50.9	.1383
1.79	57.1	.1339
1.89	63.6	.1297
2.00	70.6	.1260

```
ROUTE                ID=2 HYD NO=7 INFLOW ID=1 DT=0.050 HR
* COMPUTE HYDROGRAPH FROM AREA 4.1  APEA=0.1980 SQ MI - 0% IMP
COMPUTE HYD          ID=3 HYD=132 DT=0.050 HR DA=0.1980 SQ MI CN=58
                     K=-0.0858 HR TP=-0.1716 HR
                     MASS RAINFALL -1
    SHAPE CONSTANT, N =  7.947    UNIT PEAK =      651.4 CFS
    RECESSION CONSTANT,K =  .0858 HRS     TIME TO PEAK OF UNIT HYD =  .1716 HRS    WATERSHED PARAMETER, P =  564.51

* AREA 4.1
PRINT HYD            ID=3 CODE=1
```

PARTIAL HYDROGRAPH 132.00

RUNOFF VOLUME = .2021 INCHES = 2.134 ACRE-FEET
PEAK DISCHARGE RATE = 27.2 CFS

* COMPOSITE HYDROGRAPH FROM AREAS 3.1 AND 4.1
ADD HYD ID=4 HYD=133 ID I=3 ID II=2
PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 133.00

RUNOFF VOLUME = .1915 INCHES = 3.406 ACRE-FEET
PEAK DISCHARGE RATE = 42.5 CFS

* ROUTE AREAS 3.1 AND 4.1
COMPUTE RATING CURVE ID=1 VS NO=9 SEG=1 MIN ELEV=100.0 MAX ELEV=102.0
CN SLP=0.010 FP SLP=0.0100 N=0.030 DIST=34.0

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0.0	104.0	12.0	100.0	22.0	100.0	34.0	102.0

RATING CURVE VALLEY SECTION 3.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
100.00	.0	.0
100.11	1.1	1.2
100.21	2.3	3.8
100.32	3.6	7.6
100.42	5.0	12.6
100.53	6.5	18.6
100.63	8.1	25.7
100.74	9.8	33.9
100.84	11.5	43.3
100.95	13.5	53.8
101.05	15.5	65.5
101.15	17.6	78.3
101.26	19.8	92.4
101.37	22.1	107.8
101.47	24.5	124.4
101.58	27.0	142.4
101.68	29.6	161.7
101.79	32.3	182.4
101.89	35.1	204.5
102.00	38.0	228.1

COMPUTE TRAVEL TIME ID=5 REACH NO=8 NO VS=1 L=1100.0 FT SLP=0.0100

TRAVEL TIME TABLE
REACH 8.0

WATER DEPTH FEET	FLOW RATE CFS	TRAVEL TIME HRS
.11	1.2	.2854
.21	3.8	.1648
.32	7.6	.1444
.42	12.6	.1219
.53	18.6	.1070
.63	25.7	.0964

.74	.0853
.84	.0820
.95	.0768
1.05	.0724
1.16	.0687
1.26	.0655
1.37	.0627
1.47	.0602
1.58	.0580
1.68	.0559
1.79	.0541
1.89	.0524
2.00	.0509

ROUTE ID=5 HYD NO=8 INFLOW ID=4 DT=0.050 HR

COMPUTE RATING CURVE ID=1 VS NO=9 SIG=1 MIN ELEV=100.00 MAX ELEV=102.0
CN SLP=0.024 FP SLP=0.024 N=0.015 DIST=30.0

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0.0	105.0	10.0	100.0	20.0	100.0	30.0	105.0

RATING CURVE VALLEY SECTION 9.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
100.00	.0	.0
100.11	1.1	3.5
100.21	2.2	11.5
100.32	3.4	22.8
100.42	4.5	37.0
100.53	5.8	54.0
100.63	7.1	73.7
100.74	8.5	96.0
100.84	9.8	120.7
100.95	11.3	148.0
101.05	12.7	177.7
101.16	14.3	210.0
101.26	15.8	244.7
101.37	17.4	281.8
101.47	19.1	321.5
101.58	20.8	363.6
101.68	22.5	408.3
101.79	24.3	455.5
101.89	26.1	505.3
102.00	28.0	557.7

COMPUTE TRAVEL TIME ID=6 REACH NO=9 NO VS=1 L=2500.00 SLP=0.024

TRAVEL TIME TABLE
REACH 9.0

WATER DEPTH FEET	FLOW RATE CFS	TRAVEL TIME HRS
.11	3.6	.2054
.21	11.5	.1321
.32	22.8	.1023
.42	37.0	.0855
.53	54.0	.0749
.63	73.7	.0670
.74	96.0	.0612
.84	120.7	.0565
.95	148.0	.0529
1.05	177.7	.0498
1.15	210.0	.0472
1.26	244.7	.0449

1.37	261.8	.0430
1.47	321.5	.0412
1.58	363.6	.0397
1.68	408.3	.0383
1.79	455.5	.0370
1.89	505.3	.0359
2.00	557.7	.0349

ROUTE ID=6 HYD NO=3 INFLOW ID=5 DT=0.050 HR

* COMPUTE HYDROGRAPH FROM AREA 4.4 AREA=0.0477 SQ MI -55% IMP

* IMPERVIOUS AREA 4.4

COMPUTE HYD ID=1 HYD=134 DT=0.050 HR DA=0.0262 SQ MI CN=95
K=-0.0692 HR TP=-0.1384 HR
MASS RAINFALL -1

SHAPE CONSTANT, N = 7.947 UNIT PEAK = 126.9 CFS
RECESSION CONSTANT,K = .0692 HRS TIME TO PEAK OF UNIT HYD = .1384 HRS WATERSHED PARAMETER, B = 564.51

* PERVIOUS AREA 4.4

COMPUTE HYD ID=2 HYD=135 DT=0.050 HR DA=0.0215 SQ MI CN=49
K=-0.0692 HR TP=-0.1384 HR
MASS RAINFALL -1

SHAPE CONSTANT, N = 7.947 UNIT PEAK = 87.7 CFS
RECESSION CONSTANT,K = .0692 HRS TIME TO PEAK OF UNIT HYD = .1384 HRS WATERSHED PARAMETER, B = 564.51

* COMPOSITE HYDROGRAPH FROM AREA 4.4

ADD HYD ID=3 HYD=136 ID I=1 ID II=2

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 136.00

RUNOFF VOLUME = .6192 INCHES = 2.084 ACRE-FEET
PEAK DISCHARGE RATE = 44.2 CFS

* ROUTE AREA 4.4

COMPUTE RATING CURVE ID=1 VS NO=10 SEG=1 MIN ELEV=100.0 MAX ELEV=102.0
CH SLP=0.024 FP SLP=0.024 N=0.015 DIST=30.0

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0.0	105.0	10.0	100.0	20.0	100.0	30.0	105.0

RATING CURVE VALLEY SECTION 10.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
100.00	.0	.0
100.11	1.1	3.6
100.21	2.2	11.5
100.32	3.4	22.8
100.42	4.6	37.0
100.53	5.8	54.0
100.63	7.1	73.7
100.74	8.5	96.0
100.84	9.8	120.7
100.95	11.3	149.0
101.05	12.7	177.7
101.16	14.3	210.0
101.26	15.8	244.7
101.37	17.4	281.8
101.47	19.1	321.5
101.58	20.8	363.6
101.68	22.5	408.3
101.79	24.3	455.5

```
                                  101.80      26.1      505.3
                                  102.00      28.0      557.7
COMPUTE TRAVEL TIME  ID=5 REACH NO=10 NO VS=1 L=1000.0 FT SLP=0.024

                                  TRAVEL TIME TABLE
                                        REACH 10.0

                                  WATER     FLOW     TRAVEL
                                  DEPTH     RATE      TIME
                                  FEET      CFS       HRS
                                    .11       3.6      .0825
                                    .21      11.5      .0528
                                    .32      22.8      .0409
                                    .42      37.0      .0342
                                    .53      54.0      .0299
                                    .63      73.7      .0268
                                    .74      96.0      .0245
                                    .84     120.7      .0225
                                    .95     148.0      .0212
                                   1.05     177.7      .0199
                                   1.16     210.0      .0189
                                   1.25     244.7      .0180
                                   1.37     281.8      .0172
                                   1.47     321.5      .0165
                                   1.58     363.6      .0159
                                   1.68     408.3      .0153
                                   1.79     455.5      .0148
                                   1.89     505.3      .0144
                                   2.00     557.7      .0139
ROUTE                ID=5 HYD NO=10 INFLOW ID=3 DT=0.050 HR
*
* COMPOSITE HYDROGRAPH FROM BASIN #4 AND AREA 3.1
*
ADD HYD              ID=4 HYD=137 ID I=5 ID II=6
PRINT HYD            ID=4 CODE=1

                                  PARTIAL HYDROGRAPH    137.00


     RUNOFF VOLUME =        .2559 INCHES    =        5.200 ACRE-FEET
     PEAK DISCHARGE RATE =        52.7 CFS


* COMPUTE HYDROGRAPH FROM AREA 3.4  AREA=0.0555 SQ MI -55% IMP
* IMPERVIOUS AREA
COMPUTE HYD          ID=1 HYD=138 DT=0.050 HR DA=0.0305 SQ MI CN=95
                     K=-0.0616 HR TP=-0.1232
                     MASS RAINFALL -1
    SHAPE CONSTANT, N =  7.947    UNIT PEAK =       139.8 CFS
    RECESSION CONSTANT,K =    .0616 HRS     TIME TO PEAK OF UNIT HYD =    .1232 HRS    WATERSHED PARAMETER, B =  564.51

* PERVIOUS AREA
COMPUTE HYD          ID=2 HYD=139 DT=0.050 HR DA=0.0250 SQ MI CN=48
                     K=-0.0616 HR TP=-0.1232 HR
                     MASS RAINFALL -1
    SHAPE CONSTANT, N =  7.947    UNIT PEAK =       114.6 CFS
    RECESSION CONSTANT,K =    .0616 HRS     TIME TO PEAK OF UNIT HYD =    .1232 HRS    WATERSHED PARAMETER, B =  564.51

* COMPOSITE HYDROGRAPH FOR AREA 3.4
ADD HYD              ID=3 HYD=140 ID I=1 ID II=2
PRINT HYD            ID=3 CODE=3
```

PARTIAL HYDROGRAPH 140.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	0.	1.500	4.	3.000	1.	4.500	0.	6.000	0.
.150	1.	1.650	2.	3.150	0.	4.650	0.	6.150	0.
.300	30.	1.800	1.	3.300	0.	4.800	0.	6.300	0.
.450	40.	1.950	1.	3.450	0.	4.950	0.	6.450	0.
.600	24.	2.100	1.	3.600	0.	5.100	0.	6.600	0.
.750	20.	2.250	1.	3.750	0.	5.250	0.	6.750	0.
.900	18.	2.400	1.	3.900	0.	5.400	0.		
1.050	18.	2.550	1.	4.050	0.	5.550	0.		
1.200	13.	2.700	1.	4.200	0.	5.700	0.		
1.350	0.	2.850	1.	4.350	0.	5.850	0.		

RUNOFF VOLUME = .8212 INCHES = 2.431 ACRE-FEET
PEAK DISCHARGE RATE = 52.2 CFS

* ROUTE AREA 3.4 THRU 30 IN. PIPE
COMPUTE RATING CURVE ID=1 VS NO=11 CODE=-1 SLP=0.020 DIA=2.5 FT N=0.013

RATING CURVE PIPE SECTION 11.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.13	.1	.3
.26	.3	1.3
.39	.5	3.1
.52	.7	5.5
.65	1.0	8.6
.78	1.3	12.3
.91	1.6	16.5
1.04	1.9	21.1
1.17	2.3	26.0
1.30	2.6	31.1
1.43	2.9	36.3
1.56	3.2	41.5
1.69	3.5	46.5
1.82	3.8	51.2
1.95	4.1	55.4
2.08	4.4	58.9
2.21	4.6	61.4
2.34	4.8	62.4
2.50	4.9	62.4

COMPUTE TRAVEL TIME ID=6 REACH NO=11 NO VS=1 L=575.0 FT SLP=0.020

TRAVEL TIME TABLE
REACH 11.0

WATER DEPTH FEET	FLOW RATE CFS	TRAVEL TIME HRS
.13	.3	.0512
.26	1.3	.0329
.39	3.1	.0255
.52	5.5	.0214
.65	8.6	.0188
.78	12.3	.0170
.91	16.5	.0157
1.04	21.1	.0147

1.17	26.0	.0130
1.30	31.1	.0133
1.43	36.3	.0128
1.56	41.5	.0124
1.69	46.5	.0122
1.82	51.2	.0120
1.95	56.4	.0119
2.08	59.9	.0119
2.21	61.4	.0120
2.34	62.4	.0122
2.34	62.4	.0122

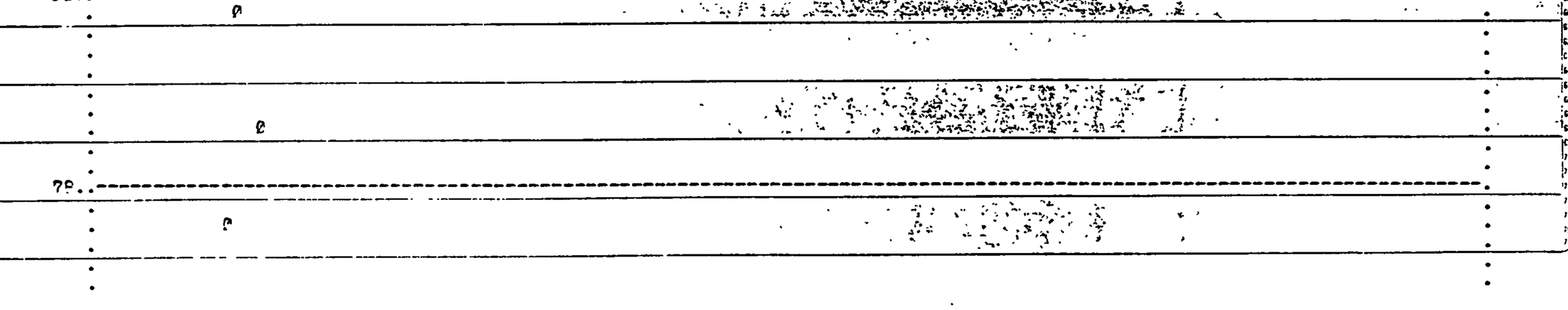
```
ROUTE                ID=6 HYD NO=11 INFLOW ID=3 DT=0.050 HR
*
* COMPOSITE HYDROGRAPH TO RETENTION POND
*
ADD HYD              ID=5 HYD=141 ID I=4 ID II=6
PPINT HYD            ID=5
```

PARTIAL HYDROGRAPH 141.00

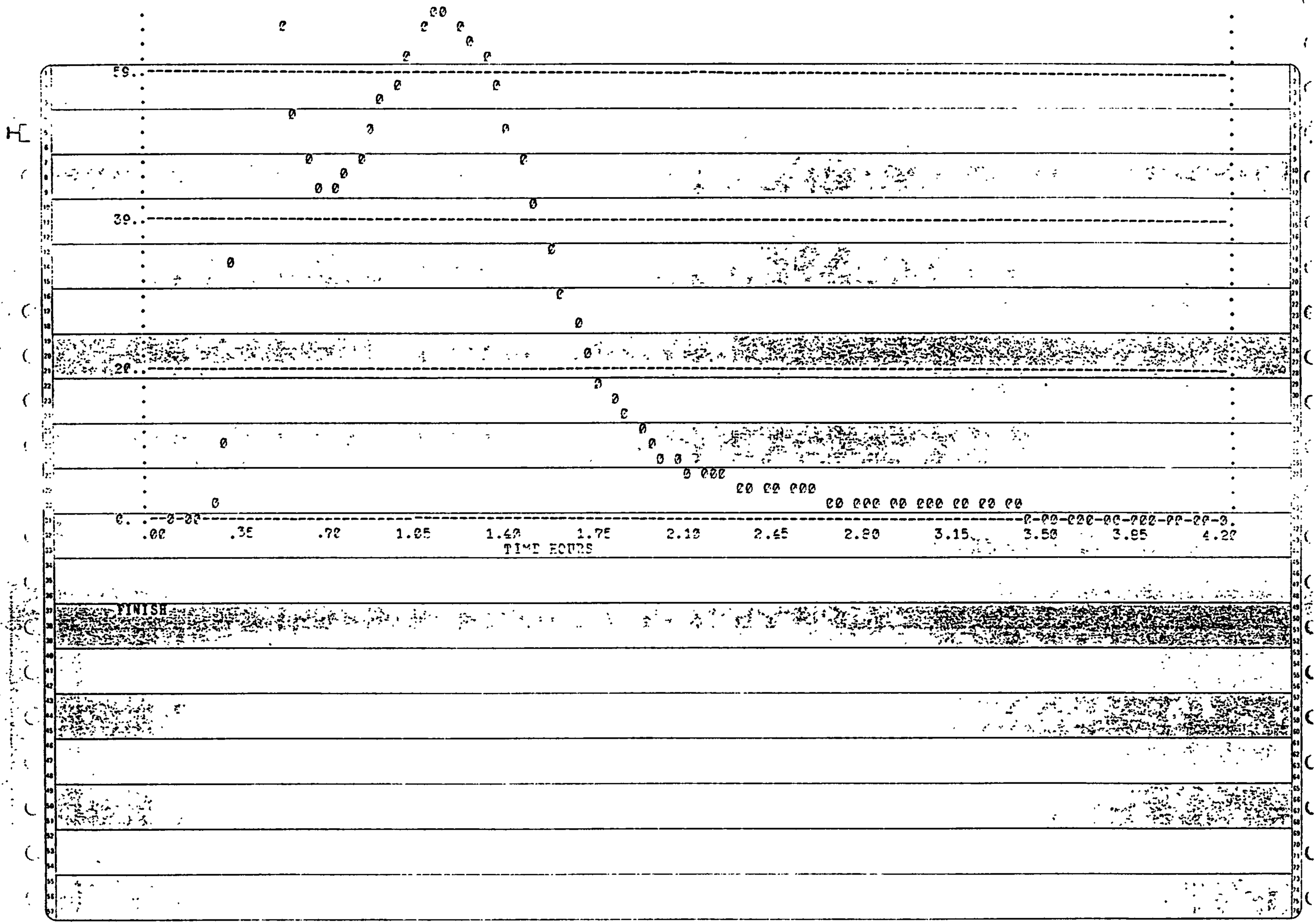
TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	0.	.850	52.	1.700	23.	2.550	4.	3.400	2.
.050	0.	.900	56.	1.750	20.	2.600	4.	3.450	2.
.100	0.	.950	59.	1.800	17.	2.650	4.	3.500	2.
.150	0.	1.000	61.	1.850	15.	2.700	4.	3.550	2.
.200	2.	1.050	65.	1.900	13.	2.750	3.	3.600	2.
.250	11.	1.100	68.	1.950	12.	2.800	3.	3.650	1.
.300	34.	1.150	67.	2.000	10.	2.850	3.	3.700	1.
.350	75.	1.200	66.	2.050	8.	2.900	3.	3.750	1.
.400	98.	1.250	65.	2.100	7.	2.950	3.	3.800	1.
.450	85.	1.300	62.	2.150	7.	3.000	3.	3.850	1.
.500	66.	1.350	58.	2.200	6.	3.050	3.	3.900	1.
.550	54.	1.400	53.	2.250	6.	3.100	3.	3.950	1.
.600	47.	1.450	47.	2.300	6.	3.150	3.	4.000	1.
.650	45.	1.500	42.	2.350	5.	3.200	3.	4.050	1.
.700	44.	1.550	36.	2.400	5.	3.250	2.	4.100	1.
.750	45.	1.600	31.	2.450	5.	3.300	2.	4.150	1.
.800	42.	1.650	27.	2.500	4.	3.350	2.	4.200	1.

RUNOFF VOLUME = .3211 INCHES = 7.489 ACRE-FEET
PEAK DISCHARGE RATE = 98.1 CFS

```
PLOT HYD             ID=5
```



50-914


50.
40.
30.
20.
10.
0.
.00
.35
.70
1.05
1.40
1.75
2.10
2.45
2.80
3.15
3.50
3.85
4.20
TIME HOURS
FINISH

```
START                0.00 HR
*                 ****************************************
*                 * SUNRISE TERRACE UNIT 2 DRAINAGE PLAN *
*                 *     10 YEAR STORM - 6 HOUR DURATION  *
*                 *          DEVELOPED CONDITION         *
*                 *              FILE= SRT2.10           *
*                 *      DIRECTORY = :UDD:KYLE:HYMO.DR   *
*                 ****************************************
*
*                 ****************************************
*                 * COMPUTE HYDROGRAPH TO RETENTION POND *
*                 ****************************************
*
* COMPUTE HYDROGRAPH FROM AREA 3.1  AREA=0.1355 SQ MI - 0% IMP
COMPUTE HYD          ID=1 HYD=131 DT=0.050 HR DA=0.1355 SQ MI CN=68
                     K=-0.0899 HR TP=-0.1798 HR
                     MASS RAINFALL
                      .00000    .04770    .10118    .16188    .23849
                      .41628    .62730    .71114    .77329    .82099
                      .86435    .90492    .94385    .98287   1.01756
                     1.05225   1.08694   1.12163   1.15343   1.18378
                     1.22570   1.25027   1.27340   1.29652   1.31676
                     1.33266   1.34422   1.35289   1.35868   1.36301
                     1.36590   1.36778   1.36952   1.37125   1.37294
                     1.37458   1.37622   1.37761   1.37935   1.38065
                     1.38195   1.38339   1.38469   1.38614   1.38744
                     1.38874   1.38990   1.39120   1.39235   1.39351
                     1.39467   1.39626   1.39698   1.39799   1.39915
                     1.40016   1.40117   1.40218   1.40319   1.40421
                     1.40507   1.40609   1.40695   1.40782   1.40883
                     1.40970   1.41057   1.41143   1.41230   1.41317
                     1.41389   1.41476   1.41562   1.41635   1.41722
                     1.41794   1.41866   1.41938   1.42025   1.42097
                     1.42170   1.42242   1.42314   1.42372   1.42444
                     1.42516   1.42589   1.42661   1.42719   1.42791
                     1.42849   1.42921   1.42993   1.43056   1.43124
                     1.43198   1.43254   1.43355   1.43355   1.43413
                     1.43470   1.43528   1.43586   1.43644   1.43702
                     1.43745   1.43817   1.43861   1.43919   1.43976
                     1.44034   1.44077   1.44135   1.44179   1.44236
                     1.44294   1.44338   1.44395   1.44439   1.44482
                     1.44540
     SHAPE CONSTANT, N =  7.947    UNIT PEAK =      425.4 CFS
     RECESSION CONSTANT,K =   .0899 HRS    TIME TO PEAK OF UNIT HYD =   .1798 HRS    WATERSHED PARAMETER, B =  564.51

* AREA 3.1
PRINT HYD            ID=1 CODE=1

                                  PARTIAL HYDROGRAPH    131.00


     RUNOFF VOLUME =        .0487 INCHES    =        .352 ACRE-FEET
     PEAK DISCHARGE RATE =        4.9 CFS


* ROUTE AREA 3.1
COMPUTE RATING CURVE ID=1 VS NO=7 SEG=1 MIN ELEV=100.0 MAX ELEV=102.0
                     CN SLP=0.00125 FP SLP=0.00125 N=0.030 DIST=34.0
                     DIST  ELEV   DIST  ELEV   DIST  ELEV   DIST  ELEV
                      0.0  104.0  12.0  100.0  22.0  100.0  34.0  104.0
```

RATING CURVE VALLEY SECTION 7.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
100.00	.0	.0
100.11	1.1	.4
100.21	2.2	1.3
100.32	3.5	2.6
100.42	4.7	4.3
100.53	6.1	6.3
100.63	7.5	8.7
100.74	9.0	11.4
100.84	10.5	14.4
100.95	12.2	17.8
101.05	13.9	21.5
101.15	15.6	25.5
101.25	17.4	29.9
101.37	19.3	34.6
101.47	21.3	39.7
101.58	23.3	45.1
101.68	25.4	50.9
101.79	27.5	57.1
101.89	29.7	63.5
102.00	32.0	70.6

COMPUTE TRAVEL TIME ID=2 REACH NO=7 NO VS=1 L=1000.0 FT SLP=0.00125

TRAVEL TIME TABLE
REACH 7.0

WATER DEPTH FEET	FLOW RATE CFS	TRAVEL TIME HRS
.11	.4	.7275
.21	1.3	.4875
.32	2.6	.3635
.42	4.3	.3053
.53	6.3	.2672
.63	8.7	.2401
.74	11.4	.2196
.84	14.4	.2035
.95	17.8	.1903
1.05	21.5	.1794
1.16	25.5	.1701
1.25	29.9	.1621
1.37	34.6	.1550
1.47	39.7	.1488
1.58	45.1	.1433
1.68	50.9	.1383
1.79	57.1	.1338
1.89	63.5	.1297
2.00	70.6	.1260

ROUTE ID=2 HYD NO=7 INFLOW ID=1 DT=0.050 HR
* COMPUTE HYDROGRAPH FROM AREA 4.1 AREA=0.1980 SQ MI - 0% IMP
COMPUTE HYD ID=3 HYD=132 DT=0.050 HR DA=0.1980 SQ MI CN=58
K=-0.0858 HR TP=-0.1716 HR
MASS RAINFALL -1

SHAPE CONSTANT, N = 7.947 UNIT PEAK = 651.4 CFS
REGRESSION CONSTANT, K = .0858 HRS TIME TO PEAK OF UNIT HYD = .1716 HRS WATERSHED PARAMETER, P = 664.51

* AREA 4.1
PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 132.00

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RUNOFF VOLUME = .0487 INCHES = .514 ACRE-FEET
PEAK DISCHARGE RATE = 7.2 CFS

* COMPOSITE HYDROGRAPH FROM AREAS 3.1 AND 4.1
ADD HYD ID=4 HYD=133 ID I=3 ID II=2
PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 133.00

RUNOFF VOLUME = .0413 INCHES = .734 ACRE-FEET
PEAK DISCHARGE RATE = 10.3 CFS

* ROUTE AREAS 3.1 AND 4.1
COMPUTE RATING CURVE ID=1 VS NO=8 SEG=1 MIN ELEV=100.0 MAX ELEV=102.0
CN SLP=0.010 FP SLP=0.0100 N=0.030 DIST=34.0

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0.0	104.0	12.0	100.0	22.0	100.0	34.0	102.0

RATING CURVE VALLEY SECTION 8.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
104.00	.3	.0
100.11	1.1	1.2
100.21	2.3	3.6
100.32	3.8	7.6
100.42	5.0	12.6
100.53	6.5	15.6
100.63	8.1	25.7
100.74	9.8	33.9
100.84	11.6	43.3
100.95	13.5	53.8
101.05	15.5	65.5
101.15	17.6	78.3
101.26	19.8	92.4
101.37	22.1	107.8
101.47	24.5	124.4
101.58	27.2	142.4
101.68	29.6	161.7
101.79	32.3	182.4
101.89	35.1	204.5
102.00	38.0	228.1

COMPUTE TRAVEL TIME ID=5 REACH NO=8 NO VS=1 L=1100.0 FT SLP=0.0100

TRAVEL TIME TABLE
REACH 8.0

WATER DEPTH FEET	FLOW RATE CFS	TRAVEL TIME HRS
.11	1.2	.2854
.21	3.6	.1548
.32	7.6	.1444
.42	12.6	.1218
.53	15.6	.1073
.63	25.7	.0964

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.74	83.9	.0883
.84	43.3	.0320
.95	53.6	.0768
1.05	65.5	.0724
1.16	78.3	.0687
1.26	92.4	.0655
1.37	107.8	.0627
1.47	124.4	.0602
1.58	142.4	.0580
1.68	161.7	.0559
1.79	182.4	.0541
1.89	204.5	.0524
2.00	228.1	.0509

ROUTE ID=5 HYD NO=8 INFLOW ID=4 DT=0.050 HR

COMPUTE RATING CURVE ID=1 VS NO=9 SEG=1 MIN ELEV=100.00 MAX ELEV=102.0
CH SLP=0.024 FP SLP=0.024 N=0.015 DIST=30.0

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0.0	105.0	10.0	100.0	20.0	100.0	30.0	105.0

RATING CURVE VALLEY SECTION 9.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
100.00	.0	.0
100.11	1.1	3.5
100.21	2.2	11.5
100.32	3.4	22.8
100.42	4.6	37.0
100.53	5.5	54.0
100.63	7.1	73.7
100.74	8.5	96.0
100.84	9.8	120.7
100.95	11.3	148.0
101.05	12.7	177.7
101.16	14.3	210.0
101.26	15.9	244.7
101.37	17.4	281.9
101.47	19.1	321.5
101.58	20.8	363.6
101.68	22.5	408.3
101.79	24.3	455.5
101.89	26.1	505.3
102.00	28.0	557.7

COMPUTE TRAVEL TIME ID=6 REACH NO=9 NO VS=1 L=2500.00 SLP=0.024

TRAVEL TIME TABLE
REACH 9.0

WATER DEPTH FEET	FLOW RATE CFS	TRAVEL TIME HRS
.11	3.5	.2054
.21	11.5	.1321
.32	22.8	.1023
.42	37.0	.0856
.53	54.0	.0748
.63	73.7	.0670
.74	96.0	.0612
.84	120.7	.0566
.95	148.0	.0529
1.05	177.7	.0498
1.16	210.0	.0472
1.26	244.7	.0449

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1.37	281.8	.0430
1.47	321.5	.0412
1.58	363.6	.0397
1.68	408.3	.0383
1.79	455.5	.0370
1.89	505.2	.0359
2.00	557.7	.0349

ROUTE ID=6 HYD NO=6 INFLOW ID=5 DT=0.050 HR
* COMPUTE HYDROGRAPH FROM AREA 4.4 AREA=0.0477 SQ MI -55% IMP
* IMPERVIOUS AREA 4.4
COMPUTE HYD ID=1 HYD=134 DT=0.050 HR DA=0.0262 SQ MI CN=95
K=-0.0692 HR TP=-0.1384 HR
MASS RAINFALL -1

SHAPE CONSTANT, N = 7.947 UNIT PEAK = 105.9 CFS
RECESSION CONSTANT,K = .0692 HRS TIME TO PEAK OF UNIT HYD = .1384 HRS WATERSHED PARAMETER, B = 564.51

* PERVIOUS AREA 4.4
COMPUTE HYD ID=2 HYD=135 DT=0.050 HR DA=0.0215 SQ MI CN=48
K=-0.0692 HR TP=-0.1384 HR
MASS RAINFALL -1

SHAPE CONSTANT, N = 7.947 UNIT PEAK = 87.7 CFS
RECESSION CONSTANT,K = .0692 HRS TIME TO PEAK OF UNIT HYD = .1384 HRS WATERSHED PARAMETER, B = 564.51

* COMPOSITE HYDROGRAPH FROM AREA 4.4
ADD HYD ID=3 HYD=136 ID I=1 ID II=2
PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 136.00

RUNOFF VOLUME = .5235 INCHES = 1.332 ACRE-FEET
PEAK DISCHARGE RATE = 26.7 CFS

* ROUTE AREA 4.4
COMPUTE RATING CURVE ID=1 VS NO=10 SEG=1 MIN ELEV=100.0 MAX ELEV=102.0
CH SLP=0.024 FP SLP=0.024 N=0.015 DIST=30.2

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0.0	105.0	10.0	100.0	20.0	100.0	30.0	105.0

RATING CURVE VALLEY SECTION 10.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
100.00	.0	.0
100.11	1.1	3.5
100.21	2.2	11.5
100.32	3.4	22.8
100.42	4.6	37.0
100.53	5.8	54.0
100.63	7.1	73.7
100.74	8.5	96.2
100.84	9.8	120.7
100.95	11.3	148.0
101.05	12.7	177.7
101.16	14.3	210.0
101.26	15.8	244.7
101.37	17.4	281.8
101.47	19.1	321.5
101.58	20.8	363.6
101.68	22.5	408.3
101.79	24.3	455.5

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```
                                  101.89      26.1      505.3
                                  102.00      28.0      557.7
COMPUTE TRAVEL TIME  ID=5 REACH NO=10 NO VS=1 L=1000.0 FT SLP=0.024

                                  TRAVEL TIME TABLE
                                        REACH 10.0

                                  WATER      FLOW      TRAVEL
                                  DEPTH      RATE       TIME
                                  FEET       CFS        HRS
                                    .11        3.6      .0825
                                    .21       11.5      .0528
                                    .32       22.8      .0409
                                    .42       37.0      .0342
                                    .53       54.0      .0299
                                    .63       73.7      .0268
                                    .74       96.0      .0245
                                    .84      120.7      .0225
                                    .95      148.0      .0212
                                   1.05      177.7      .0199
                                   1.16      210.0      .0189
                                   1.26      244.7      .0180
                                   1.37      281.8      .0172
                                   1.47      321.5      .0165
                                   1.58      363.6      .0159
                                   1.68      408.3      .0153
                                   1.79      455.5      .0148
                                   1.89      505.3      .0144
                                   2.00      557.7      .0139
ROUTE                 ID=5 HYD NO=10 INFLOW ID=3 DT=0.050 HR
*
* COMPOSITE HYDROGRAPH FROM BASIN #4 AND AREA 3.1
*
ADD HYD               ID=4 HYD=137 ID I=5 ID II=6
PRINT HYD             ID=4 CODE=1

                                  PARTIAL HYDROGRAPH    137.00


     RUNOFF VOLUME =        .0906 INCHES    =        1.842 ACRE-FEET
     PEAK DISCHARGE RATE =        25.8 CFS


* COMPUTE HYDROGRAPH FROM AREA 3.4  AREA=0.0555 SQ MI -55% IMP
* IMPERVIOUS AREA
COMPUTE HYD           ID=1 HYD=138 DT=0.050 HR DA=0.0305 SQ MI CN=95
                      K=-0.0616 HR TP=-0.1232
                      MASS RAINFALL -1
     SHAPE CONSTANT, N =  7.947    UNIT PEAK =       139.8 CFS
     RECESSION CONSTANT,K =   .0616 HRS     TIME TO PEAK OF UNIT HYD =   .1232 HRS    WATERSHED PARAMETER, B =  564.51

* PERVIOUS AREA
COMPUTE HYD           ID=2 HYD=139 DT=0.050 HR DA=0.0250 SQ MI CN=48
                      K=-0.0616 HR TP=-0.1232 HR
                      MASS RAINFALL -1
     SHAPE CONSTANT, N =  7.947    UNIT PEAK =       114.6 CFS
     RECESSION CONSTANT,K =   .0616 HRS     TIME TO PEAK OF UNIT HYD =   .1232 HRS    WATERSHED PARAMETER, B =  564.51

* COMPOSITE HYDROGRAPH FOR AREA 3.4
ADD HYD               ID=3 HYD=140 ID I=1 ID II=2
PRINT HYD             ID=3 CODE=3
```

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PARTIAL HYDROGRAPH 142.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	0.	1.500	3.	3.000	0.	4.500	0.	6.000	0.
.150	0.	1.650	1.	3.150	0.	4.650	0.	6.150	0.
.300	16.	1.800	1.	3.300	0.	4.800	0.	6.300	0.
.450	23.	1.950	1.	3.450	0.	4.950	0.	6.450	0.
.600	15.	2.100	1.	3.600	0.	5.100	0.	6.600	0.
.750	13.	2.250	0.	3.750	0.	5.250	0.	6.750	0.
.900	12.	2.400	0.	3.900	0.	5.400	0.		
1.050	12.	2.550	0.	4.050	0.	5.550	0.		
1.200	9.	2.700	0.	4.200	0.	5.700	0.		
1.350	5.	2.850	0.	4.350	0.	5.850	0.		

RUNOFF VOLUME = .5248 INCHES = 1.853 ACRE-FEET
PEAK DISCHARGE RATE = 31.8 CFS

* ROUTE AREA 3.4 THRU 30 IN. PIPE
COMPUTE RATING CURVE ID=1 VS NO=11 CODE=-1 SLP=0.020 DIA=2.5 FT N=0.013

RATING CURVE PIPE SECTION 11.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.13	.1	.3
.26	.3	1.3
.39	.5	3.1
.52	.7	5.5
.65	1.0	8.6
.78	1.3	12.3
.91	1.6	16.5
1.04	1.9	21.1
1.17	2.3	26.0
1.30	2.6	31.1
1.43	2.9	36.3
1.56	3.2	41.5
1.69	3.5	46.5
1.82	3.8	51.2
1.95	4.1	55.4
2.08	4.4	58.9
2.21	4.6	61.4
2.34	4.8	62.4
2.50	4.9	62.4

COMPUTE TRAVEL TIME ID=6 REACH NO=11 NO VS=1 L=575.0 FT SLP=0.020

TRAVEL TIME TABLE
REACH 11.0

WATER DEPTH FEET	FLOW RATE CFS	TRAVEL TIME HRS
.13	.3	.0512
.26	1.3	.0328
.39	3.1	.0255
.52	5.5	.0214
.65	8.6	.0188
.78	12.3	.0170
.91	16.5	.0157
1.04	21.1	.0147

1.17	26.8	.0139
1.30	31.1	.0133
1.43	36.3	.0128
1.56	41.5	.0124
1.69	46.5	.0122
1.82	51.2	.0120
1.95	55.4	.0119
2.08	58.3	.0119
2.21	61.4	.0120
2.34	62.4	.0122
2.34	62.4	.0122

```
ROUTE                ID=6 HYD NO=11 INFLOW ID=3 DT=0.050 HR
*
* COMPOISTE HYDROGRAPH TO RETENTION POND
*
ADD HYD              ID=5 HYD=141 ID I=4 ID II=6
PRINT HYD            ID=5
```

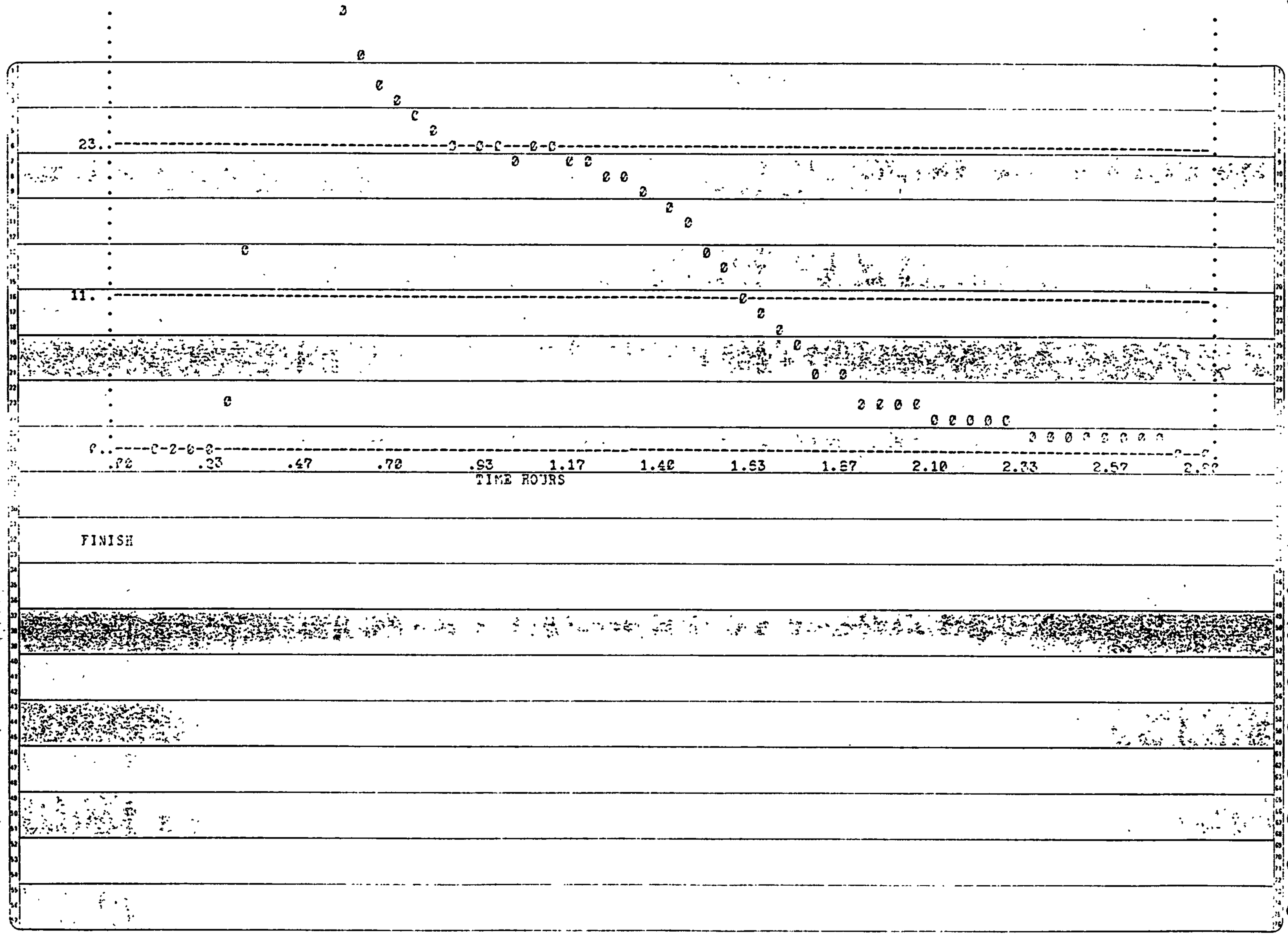
PARTIAL HYDROGRAPH 141.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	0.	.600	30.	1.200	22.	1.800	6.	2.400	2.
.050	0.	.650	28.	1.250	22.	1.850	6.	2.450	2.
.100	0.	.700	27.	1.300	21.	1.900	4.	2.500	2.
.150	2.	.750	26.	1.350	20.	1.950	4.	2.550	2.
.200	1.	.800	24.	1.400	19.	2.000	4.	2.600	1.
.250	3.	.850	24.	1.450	17.	2.050	4.	2.650	1.
.300	15.	.900	23.	1.500	16.	2.100	3.	2.700	1.
.350	40.	.950	23.	1.550	14.	2.150	3.	2.750	1.
.400	57.	1.000	23.	1.600	12.	2.200	3.	2.800	1.
.450	53.	1.050	24.	1.650	11.	2.250	3.		
.500	42.	1.100	24.	1.700	9.	2.300	2.		
.550	34.	1.150	23.	1.750	8.	2.350	2.		

```
RUNOFF VOLUME =        .1409 INCHES    =        3.278 ACRE-FEET
PEAK DISCHARGE RATE =        57.3 CFS
```

```
PLOT HYD             ID=5
FLOW RATE (CFS)
57..-------------------------------------------------------------------
   .                  0                                               .
   .                                                                  .
   .                                                                  .
   .                     0                                            .
   .                                                                  .
   .                                                                  .
46..-------------------------------------------------------------------
   .                                                                  .
   .                                                                  .
   .                        0                                         .
   .                   0                                              .
   .                                                                  .
   .                                                                  .
34..-------------------------------------------------------------------
```

10-7/9


23.
11.
.70
.23
.47
.70
.93
1.17
1.40
1.63
1.87
2.10
2.33
2.57
2.80
TIME HOURS
FINISH

100 FI 1/4

```
START                0.0 HR
*                 ****************************************
*                 *     SUNRISE TERRACE DRAINAGE PLAN    *
*                 *    100 YEAR STORM - 6 HOUR DURATION  *
*                 *   ALB. DPM MASS RAINFALL DISTRIBUTION *
*                 *   DRAINAGE TO SNOW VISTA CHANNEL FOR  *
*                 *            UNIT 2 PHASE A-1           *
*                 *            FILE= SRT2P1.100           *
*                 *      DIRECTORY = :UDD:KYLE:HYMO.DR    *
*                 ****************************************
*
*                     ****************************
*                     *  UNIT 2 PHASE A-1 DRAINAGE *
*                     ****************************
*
* TOTAL AREA = 0.02898 SQ MI   55% IMP
* IMPERVIOUS AREA
COMPUTE HYD          ID=1 HYD=121 DT=0.050 HR DA=0.01594 SQ MI CN=95
                     K=-0.04395 HR TP=-0.0879 HR
                     MASS RAINFALL
                      .00000    .07260    .15400    .24640    .36300
                      .63360    .95430   1.08240   1.17700   1.24950
                     1.31560   1.37720   1.43660   1.49600   1.54880
                     1.60160   1.65440   1.70720   1.75560   1.80180
                     1.86560   1.90300   1.93320   1.97340   2.00420
                     2.02840   2.04600   2.05920   2.06800   2.07450
                     2.07920   2.08185   2.08450   2.08714   2.08956
                     2.09220   2.09440   2.09682   2.09945   2.10144
                     2.10342   2.10562   2.10760   2.10980   2.11178
                     2.11376   2.11552   2.11750   2.11926   2.12102
                     2.12278   2.12520   2.12530   2.12784   2.12960
                     2.13114   2.13268   2.13422   2.13576   2.13730
                     2.13862   2.14016   2.14148   2.14280   2.14434
                     2.14566   2.14698   2.14830   2.14962   2.15094
                     2.15204   2.15336   2.15468   2.15578   2.15710
                     2.15820   2.15930   2.16040   2.16172   2.16282
                     2.16392   2.16502   2.16612   2.16700   2.16810
                     2.16920   2.17030   2.17140   2.17228   2.17338
                     2.17426   2.17536   2.17646   2.17756   2.17844
                     2.17954   2.18042   2.18196   2.18196   2.18284
                     2.18372   2.18460   2.18548   2.18636   2.18724
                     2.18790   2.18900   2.18966   2.19054   2.19142
                     2.19230   2.19296   2.19384   2.19450   2.19538
                     2.19626   2.19692   2.19780   2.19846   2.19912
                     2.20000
     SHAPE CONSTANT, N =  7.947    UNIT PEAK =       102.4 CFS
     RECESSION CONSTANT,K =   .0440 HRS     TIME TO PEAK OF UNIT HYD =   .0879 HRS   WATERSHED PARAMETER, B =  564.51

* PERVIOUS AREA
COMPUTE HYD          ID=2 HYD=122 DT=0.050 HR DA=0.01304 SQ MI CN=48
                     K=-0.04395 HR TP=-0.0879 HR
                     MASS RAINFALL -1
     SHAPE CONSTANT, N =  7.947    UNIT PEAK =        83.7 CFS
     RECESSION CONSTANT,K =   .0440 HRS     TIME TO PEAK OF UNIT HYD =   .0879 HRS   WATERSHED PARAMETER, B =  564.51

* COMPOSITE HYDROGRAPH FROM PHASE A-1
ADD HYD              ID=3 HYD=123 ID I=1 ID II=2
PRINT HYD            ID=3 CODE=5

                                  PARTIAL HYDROGRAPH    123.00

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
```

100 01 2/4

HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	0.	1.500	2.	3.000	0.	4.500	0.	6.000	0.
.250	14.	1.750	1.	3.250	0.	4.750	0.	6.250	0.
.500	18.	2.000	0.	3.500	0.	5.000	0.	6.500	0.
.750	11.	2.250	0.	3.750	0.	5.250	0.		
1.000	10.	2.500	0.	4.000	0.	5.500	0.		
1.250	5.	2.750	0.	4.250	0.	5.750	0.		

RUNOFF VOLUME = .9136 INCHES = 1.412 ACRE-FEET
PEAK DISCHARGE RATE = 36.2 CFS

PLOT FOR ID=3

FLOW RATE (CFS)

37.

0

29.

22.

0

0

15.

0

0

0

0

0

0

0

0

0

0

0

7.

0

0

0

0

0

0

0

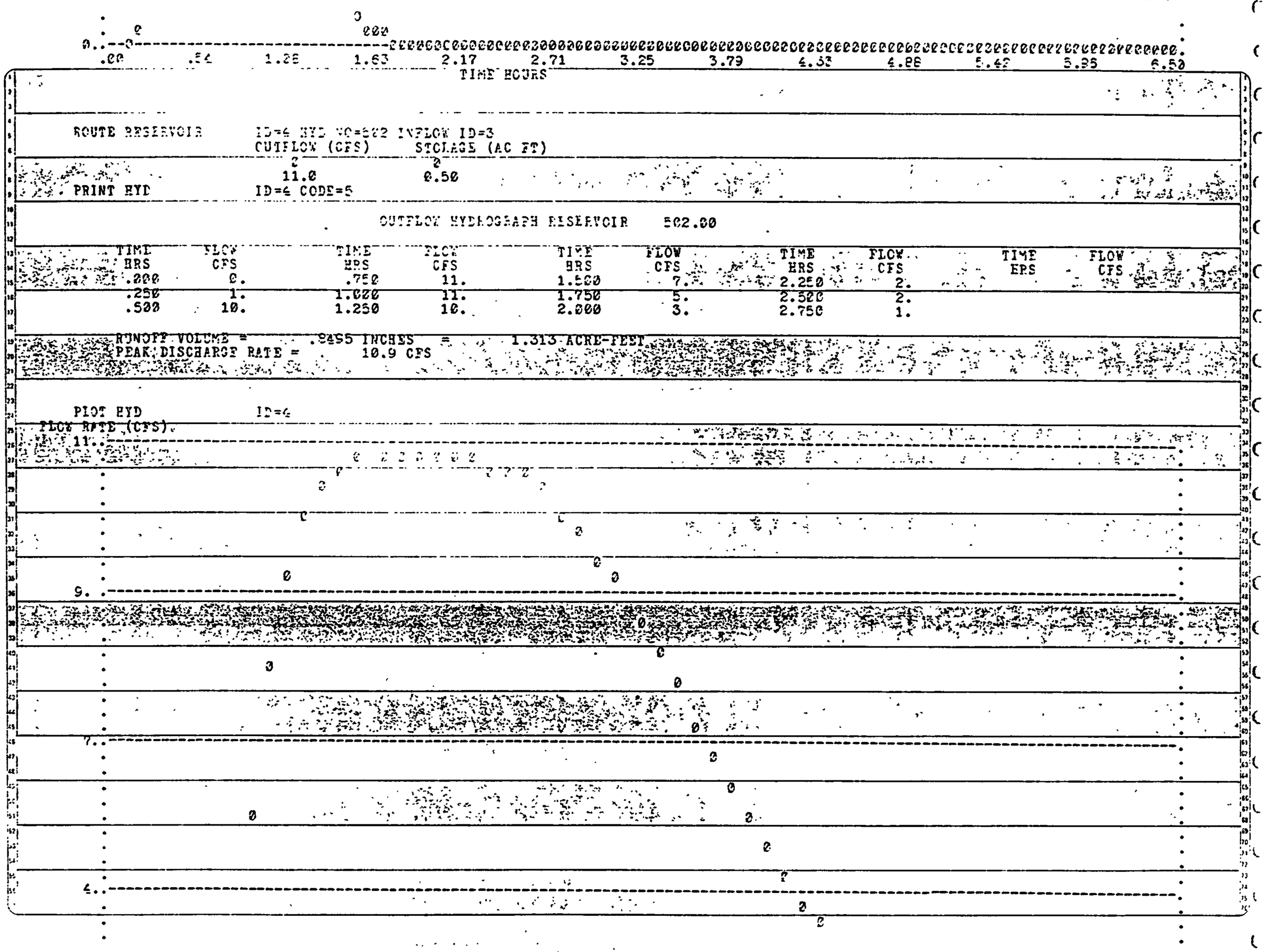
0

0

0

0

100 P1 314



ROUTE RESERVOIR ID=4 HYD NO=502 INFLOW ID=3

OUTFLOW (CFS)	STORAGE (AC FT)
0	0
11.0	0.50

PRINT HYD ID=4 CODE=5

OUTFLOW HYDROGRAPH RESERVOIR 502.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	0.	.750	11.	1.500	7.	2.250	2.		
.250	1.	1.000	11.	1.750	5.	2.500	2.		
.500	10.	1.250	10.	2.000	3.	2.750	1.		

RUNOFF VOLUME = .8495 INCHES = 1.313 ACRE-FEET
PEAK DISCHARGE RATE = 10.9 CFS

PLOT HYD ID=4

FLOW RATE (CFS)

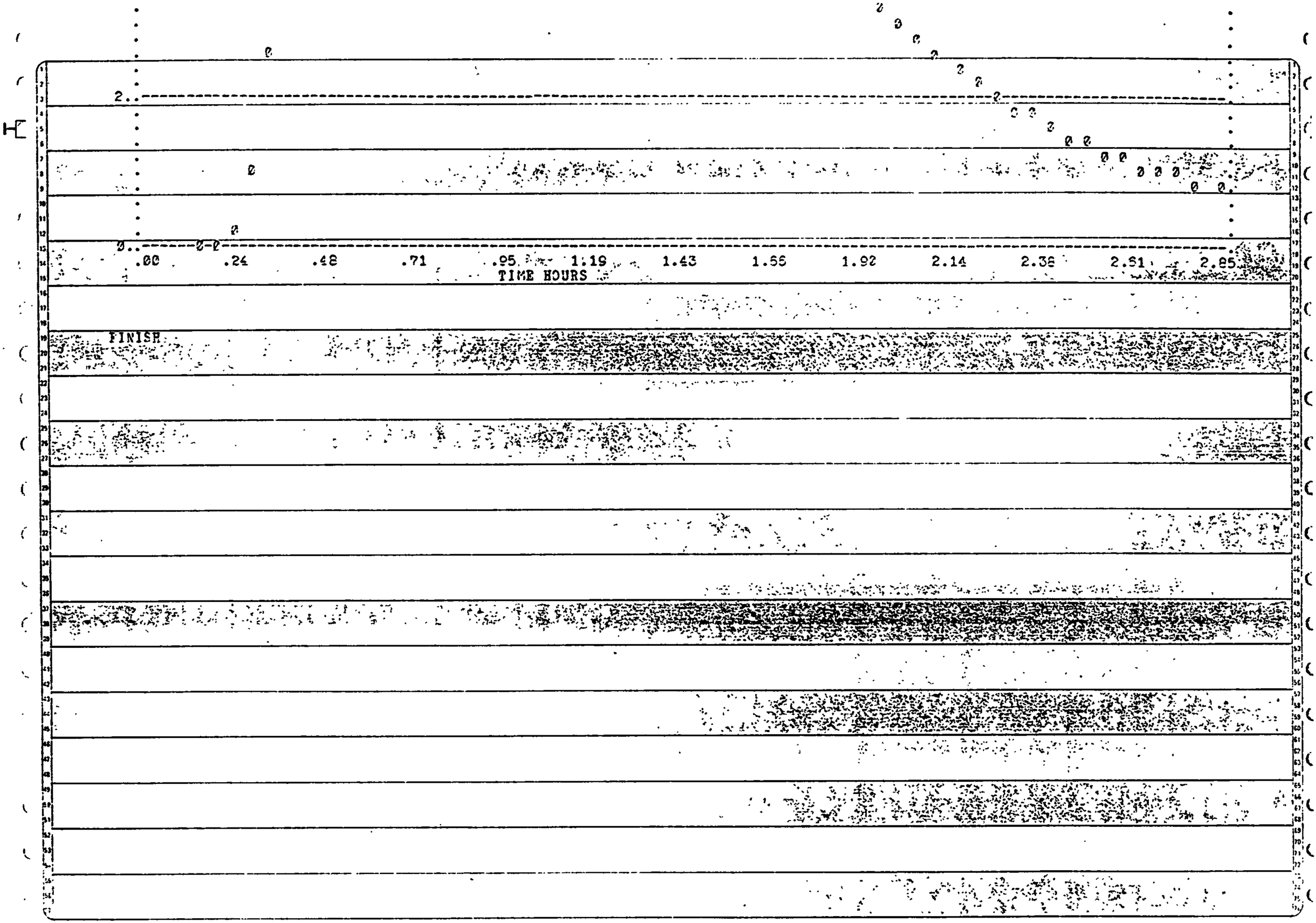
11.

9.

7.

4.

100 PI 414



```
START                 0.0 HR
*                 ****************************************
*                 *     SUNRISE TERRACE DRAINAGE PLAN    *
*                 *     50 YEAR STORM - 6 HOUR DURATION  *
*                 *   ALB. DPM MASS RAINFALL DISTRIBUTION *
*                 *   DRAINAGE TO SNOW VISTA CHANNEL FOR  *
*                 *            UNIT 2 PHASE A-1           *
*                 *            FILE= SRT2P1.50            *
*                 *      DIRECTORY = :UDD:KYLE:HYMO.DR    *
*                 ****************************************
*
*                     ******************************
*                     *  UNIT 2 PHASE A-1 DRAINAGE *
*                     ******************************
*
* TOTAL AREA = 0.02899 SQ MI    55% IMP
* IMPERVIOUS AREA
COMPUTE HYD           ID=1 HYD=121 DT=0.050 HR DA=0.01594 SQ MI CN=95
                      K=-0.04395 HR TP=-0.0879 HR
                      MASS RAINFALL
                       .00000    .06679    .14168    .22669    .33396
                       .55291    .87842    .99581   1.08254   1.14953
                      1.21035   1.26702   1.32157   1.37632   1.42490
                      1.47347   1.52205   1.57062   1.61515   1.65766
                      1.71635   1.75076   1.78314   1.81553   1.84386
                      1.86613   1.88232   1.89446   1.90256   1.90863
                      1.91268   1.91531   1.91774   1.92017   1.92240
                      1.92482   1.92685   1.92907   1.93150   1.93332
                      1.93515   1.93717   1.93899   1.94102   1.94284
                      1.94466   1.94628   1.94810   1.94972   1.95134
                      1.95296   1.95518   1.95620   1.95761   1.95923
                      1.96065   1.96207   1.96348   1.96490   1.96632
                      1.96753   1.96895   1.97016   1.97138   1.97279
                      1.97401   1.97522   1.97644   1.97765   1.97886
                      1.97982   1.98109   1.98231   1.98332   1.98453
                      1.98554   1.98656   1.98757   1.98878   1.98979
                      1.99081   1.99182   1.99283   1.99364   1.99465
                      1.99566   1.99668   1.99769   1.99850   1.99951
                      2.00032   2.00133   2.00234   2.00336   2.00416
                      2.00518   2.00599   2.00740   2.00740   2.00821
                      2.00902   2.00983   2.01064   2.01145   2.01226
                      2.01287   2.01388   2.01449   2.01530   2.01611
                      2.01692   2.01752   2.01833   2.01894   2.01975
                      2.02056   2.02117   2.02198   2.02258   2.02319
                      2.02400
     SHAPE CONSTANT, N =  7.947    UNIT PEAK =       102.4 CFS
     RECESSION CONSTANT,K =   .0440 HRS     TIME TO PEAK OF UNIT HYD =   .0879 HRS    WATERSHED PARAMETER, B =  564.51
* PERVIOUS AREA
COMPUTE HYD           ID=2 HYD=122 DT=0.050 HR DA=0.01304 SQ MI CN=48
                      K=-0.04395 HR TP=-0.0879 HR
                      MASS RAINFALL -1
     SHAPE CONSTANT, N =  7.947    UNIT PEAK =        83.7 CFS
     RECESSION CONSTANT,K =   .0440 HRS     TIME TO PEAK OF UNIT HYD =   .0879 HRS    WATERSHED PARAMETER, B =  564.51
* COMPOSITE HYDROGRAPH FROM PHASE A-1
ADD HYD               ID=3 HYD=123 ID I=1 ID II=2
PRINT HYD             ID=3 CODE=5

                                  PARTIAL HYDROGRAPH    123.00

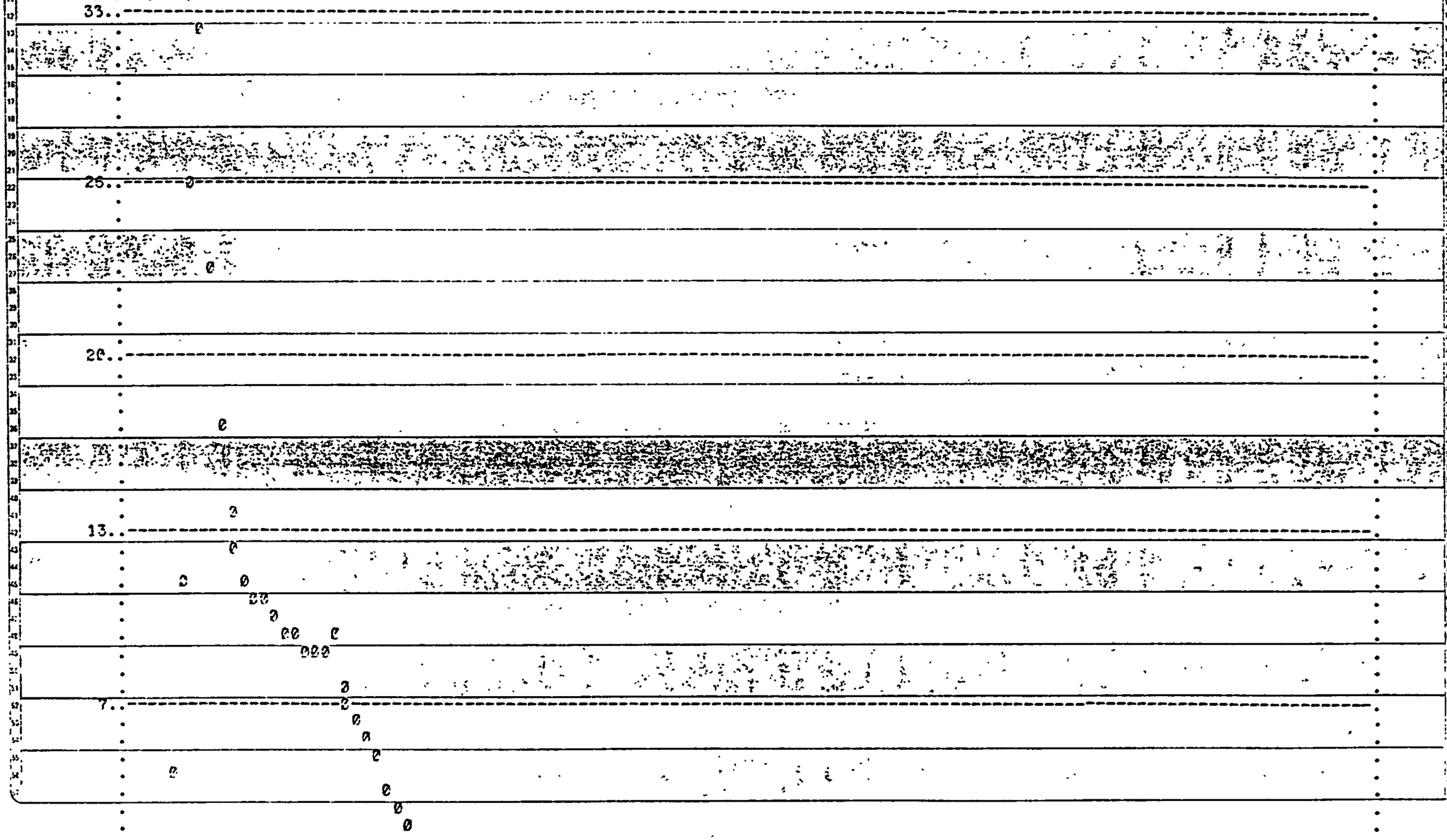
     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
```

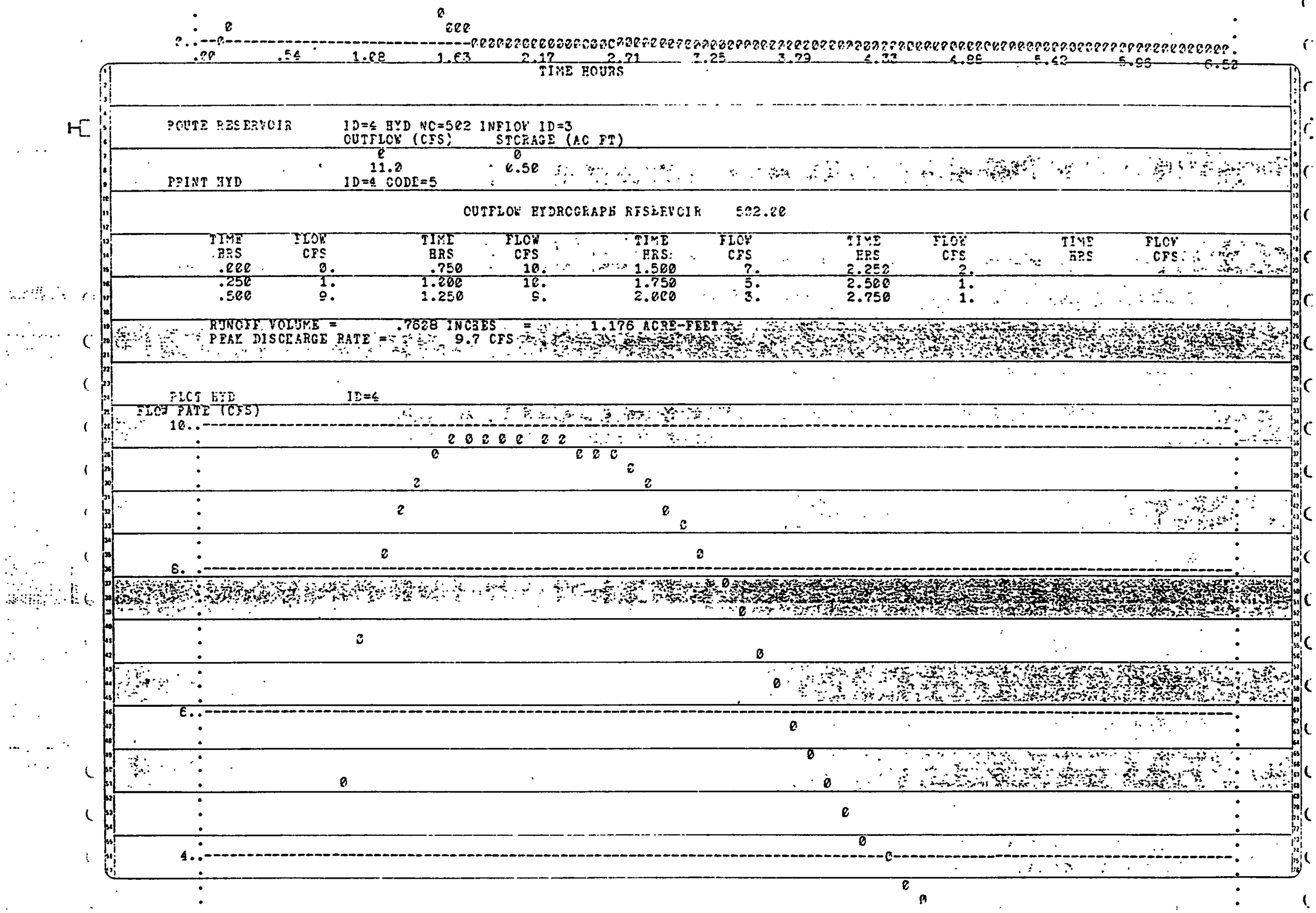
50 P1 2/4

HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	0.	1.500	2.	3.000	0.	4.500	0.	6.000	0.
.250	12.	1.750	1.	3.250	0.	4.750	0.	6.250	0.
.500	14.	2.000	0.	3.500	0.	5.000	0.	6.500	0.
.750	10.	2.250	0.	3.750	0.	5.250	0.		
1.000	9.	2.500	0.	4.000	0.	5.500	0.		
1.250	6.	2.750	0.	4.250	0.	5.750	0.		

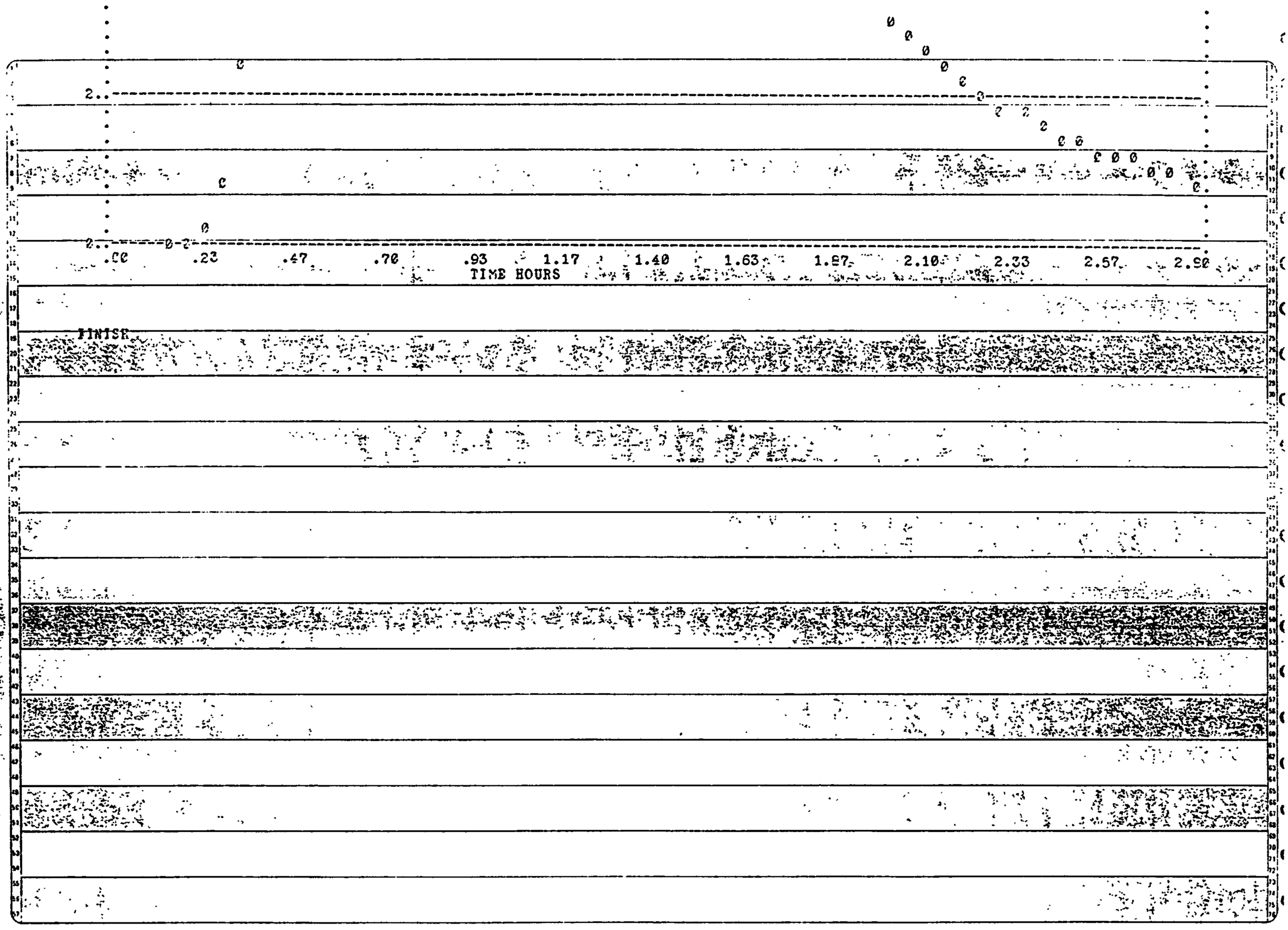
RUNOFF VOLUME = .8217 INCHES = 1.270 ACRE-FEET
PEAK DISCHARGE RATE = 32.8 CFS

PLOT HYD ID=3
FLOW RATE (CFS)




.00 .54 1.08 1.63 2.17 2.71 3.25 3.79 4.33 4.88 5.42 5.96 6.50
TIME HOURS
ROUTE RESERVOIR ID=4 HYD NO=502 INFLOW ID=3
OUTFLOW (CFS) STORAGE (AC FT)
11.0 0.50
PRINT HYD ID=4 CODE=5
OUTFLOW HYDROGRAPH RESERVOIR 502.00
TIME HRS FLOW CFS TIME HRS FLOW CFS TIME HRS FLOW CFS TIME HRS FLOW CFS TIME HRS FLOW CFS
.000 0. .750 10. 1.500 7. 2.250 2.
.250 1. 1.000 10. 1.750 5. 2.500 1.
.500 9. 1.250 9. 2.000 3. 2.750 1.
RUNOFF VOLUME = .7628 INCHES = 1.176 ACRE-FEET
PEAK DISCHARGE RATE = 9.7 CFS
PLOT HYD ID=4
FLOW RATE (CFS)
10.
6.
4.

50 01 411


2.
2.
.00
.23
.47
.70
.93
1.17
1.40
1.63
1.87
2.10
2.33
2.57
2.80
TIME HOURS
FINISH

```
START                 0.0 HR
*                 ****************************************
*                 *     SUNRISE TERRACE DRAINAGE PLAN    *
*                 *    10 YEAR STORM - 6 HOUR DURATION   *
*                 *   ALB. DPM MASS RAINFALL DISTRIBUTION *
*                 *   DRAINAGE TO SNOW VISTA CHANNEL FOR  *
*                 *            UNIT 2 PHASE A-1           *
*                 *            FILE= SRT2P1.10            *
*                 *      DIRECTORY = :UDD:KYLE:HYMO.DR    *
*                 ****************************************
*
*                     ******************************
*                     *  UNIT 2 PHASE A-1 DRAINAGE *
*                     ******************************
*
* TOTAL AREA = 0.02393 SQ MI   55% IMP
* IMPERVIOUS AREA
COMPUTE HYD           ID=1 HYD=121 DT=0.050 HR DA=0.01594 SQ MI CN=95
                      K=-0.04395 HR TP=-0.0879 HR
                      MASS RAINFALL
                       .00000    .04770    .10118    .16188    .23849
                       .41628    .62730    .71114    .77329    .82099
                       .86435    .90482    .94385    .98267   1.01756
                      1.05225   1.08694   1.12163   1.15343   1.18378
                      1.22570   1.25027   1.27340   1.29552   1.31676
                      1.33266   1.34422   1.35289   1.35858   1.36301
                      1.36590   1.36778   1.36952   1.37125   1.37284
                      1.37452   1.37602   1.37761   1.37935   1.38065
                      1.38195   1.38339   1.38469   1.38614   1.38744
                      1.38874   1.38990   1.39120   1.39235   1.39351
                      1.39467   1.39625   1.39698   1.39799   1.39915
                      1.40013   1.40117   1.40219   1.40319   1.40421
                      1.40507   1.40609   1.40695   1.40782   1.40883
                      1.40970   1.41057   1.41143   1.41230   1.41317
                      1.41389   1.41476   1.41562   1.41635   1.41722
                      1.41794   1.41866   1.41938   1.42025   1.42097
                      1.42170   1.42242   1.42314   1.42372   1.42444
                      1.42516   1.42589   1.42661   1.42719   1.42791
                      1.42849   1.42921   1.42993   1.43066   1.43124
                      1.43196   1.43254   1.43355   1.43355   1.43413
                      1.43470   1.43528   1.43586   1.43644   1.43702
                      1.43745   1.43817   1.43861   1.43919   1.43976
                      1.44034   1.44077   1.44135   1.44179   1.44236
                      1.44294   1.44338   1.44395   1.44439   1.44482
                      1.44540
    SHAPE CONSTANT, N =  7.947    UNIT PEAK =      102.4 CFS
    RECESSION CONSTANT,K =   .0440 HRS    TIME TO PEAK OF UNIT HYD =   .0879 HRS    WATERSHED PARAMETER, B =  564.51
* PERVIOUS AREA
COMPUTE HYD           ID=2 HYD=122 DT=0.050 HR DA=0.01304 SQ MI CN=48
                      K=-0.04395 HR TP=-0.0879 HR
                      MASS RAINFALL -1
    SHAPE CONSTANT, N =  7.947    UNIT PEAK =       83.7 CFS
    RECESSION CONSTANT,K =   .0440 HRS    TIME TO PEAK OF UNIT HYD =   .0879 HRS    WATERSHED PARAMETER, B =  564.51
* COMPOSITE HYDROGRAPH FROM PHASE A-1
ADD HYD               ID=3 HYD=123 ID I=1 ID II=2
PRINT HYD             ID=3 CODE=5

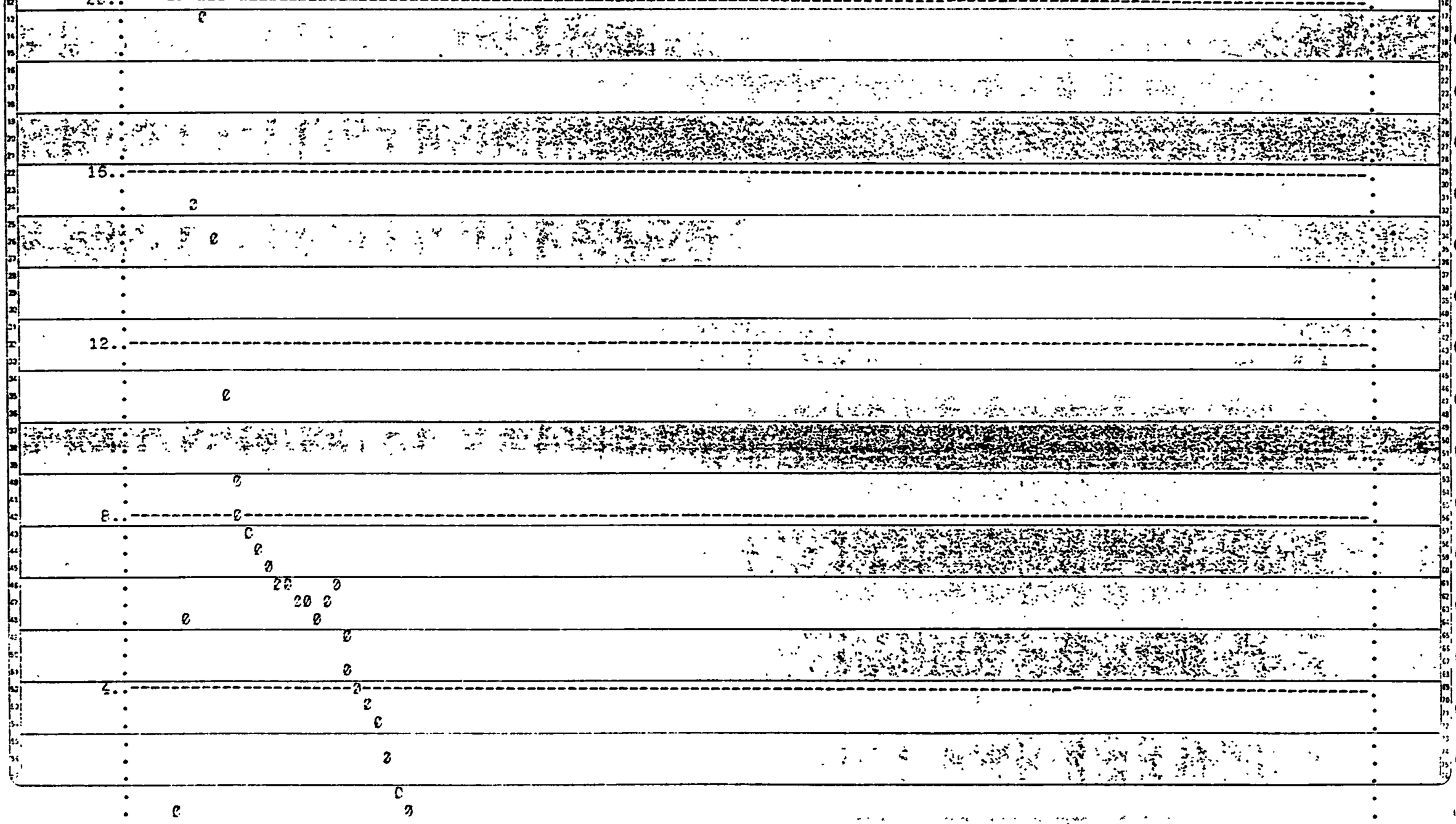
                                  PARTIAL HYDROGRAPH    123.00

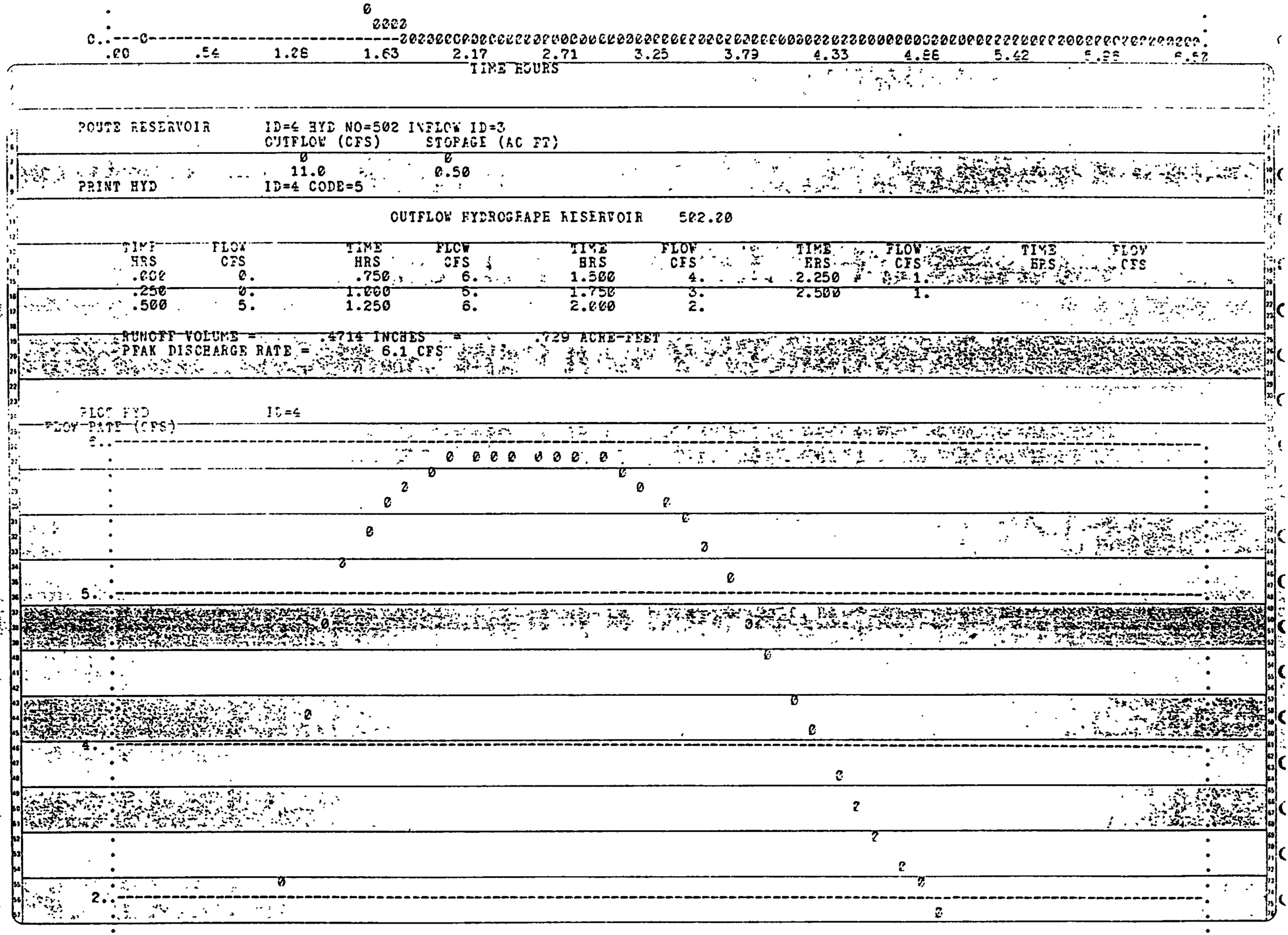
     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
```

HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	0.	1.500	1.	3.000	0.	4.500	0.	6.000	0.
.250	6.	1.750	0.	3.250	0.	4.750	0.	6.250	0.
.500	9.	2.000	0.	3.500	0.	5.000	0.	6.500	0.
.750	7.	2.250	0.	3.750	0.	5.250	0.		
1.000	5.	2.500	0.	4.000	0.	5.500	0.		
1.250	4.	2.750	0.	4.250	0.	5.750	0.		

RUNOFF VOLUME = .5251 INCHES = .812 ACRE-FEET
PEAK DISCHARGE RATE = 20.0 CFS

PLOT HYD IT=3
FLOW RATE (CFS)





ROUTE RESERVOIR ID=4 HYD NO=502 INFLOW ID=3
OUTFLOW (CFS) STORAGE (AC FT)
0 0
11.0 0.50
PRINT HYD ID=4 CODE=5

OUTFLOW HYDROGRAPH RESERVOIR 502.20

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	0.	.750	6.	1.500	4.	2.250	1.		
.250	0.	1.000	5.	1.750	3.	2.500	1.		
.500	5.	1.250	6.	2.000	2.				

RUNOFF VOLUME = .4714 INCHES = .729 ACRE-FEET
PEAK DISCHARGE RATE = 6.1 CFS

PLOT HYD ID=4

10 21 414

1.

0

.00 .21 .42 .63 .83 1.04 1.25 1.45 1.67 1.88 2.08 2.29 2.50

TIME HOURS

FINISH

APPENDIX C

100 Year 10 Day Storm

Computations

SCANLON & ASSOCIATES INC
CONSULTING ENGINEERS
8008 Pennsylvania Circle NE
Albuquerque, New Mexico 87110-7897
(505) 265-6941

Project 100 YEAR -10 DAY STORM
Location SUNRISE TERRACE UNIT 2
Job No. 85103 Date 7-10-85
By JKZ Sheet 1 of 2

CALCULATION OF PERCIPITATION

FROM NOAA ATLAS 2

2-YR 6 HR P = 0.9 IN

2-YR 24 HR P = 1.05 IN

SUNRISE TERRACE UNIT IS IN REGION 7 (FIG B-1)

$$2\text{ YR}-1\text{ HR} = -0.011 + 0.942\ \frac{(2\text{-YR }6\text{ HR})^2}{(2\text{ YR }24\text{ HR})} \qquad \text{(TABLE B-1)}$$

$$= -0.011 + 0.942\ \frac{(0.9)^2}{1.05} = 0.72\text{ IN}$$

2 YR 10 DAY = 1.5 IN (FIG B-2)

$$\frac{100\text{ YEAR }10\text{ DAY}}{2\text{ YR }10\text{ DAY}} = 2.2 \qquad \text{(FIG B-3)}$$

100 YEAR - 10 DAY = (1.5)(2.2) = 3.3 IN

2 YR - 10 DAY = (1.5)(.88) = 1.3 IN

SCANLON & ASSOCIATES INC
CONSULTING ENGINEERS
8008 Pennsylvania Circle NE
Albuquerque, New Mexico 87110-7897
(505) 265-6941

Project 100 YR 10 DAY STORM
Location SUNRISE TERRACE UNIT 2
Job No. 85103 Date 7-10-85
By JKZ Sheet 2 of 2

CALCULATION OF RUNOFF

AREA WITH CN = 68 215 ac.

AREA WITH CN = 48 30.0 ac

AREA WITH CN = 95 36.0 ac

RUNOFF $Q = \frac{(P - 0.2S)^2}{P + 0.8S}$

$S = \frac{1000}{CN} - 10$

(FROM SCS TR NO. 55)

$\therefore P_{100-10day} = 3.3$ in

FOR CN = 68 $S_{68} = \frac{1000}{68} - 10 = 4.706$

$Q_{68} = \frac{(3.3 - 0.2(4.706))^2}{3.3 + 0.8(4.706)} = 0.788$ in

FOR CN = 48 $S_{48} = \frac{1000}{48} - 10 = 10.833$

$Q_{48} = \frac{(3.3 - 0.2(10.833))^2}{3.3 + 0.8(10.833)} = 0.107$ in

FOR CN = 95 $S_{95} = \frac{1000}{95} - 10 = 0.5263$

$Q_{95} = \frac{(3.3 - 0.2(0.5263))^2}{3.3 + 0.8(0.5263)} = 2.743$ in

RUNOFF = $\frac{AQ}{12 \text{ in/ft}}$

RUNOFF = $\frac{215(0.788)}{12} + \frac{30(0.107)}{12} + \frac{36(2.743)}{12}$

100 YEAR 10 DAY RUNOFF = 22.6 ac ft.

APPENDIX B

Estimation of 10-Day Precipitation Values

The precipitation-frequency maps in National Weather Service Technical Paper No. 49, "Two- to Ten-Day Precipitation for Return Periods from 2 to 100 Years," should not be used to estimate the 10-day precipitation in those states included in the new "Precipitation-Frequency Atlas of Western United States." The following procedure should be used to estimate the 10-day precipitation for various frequencies or return periods. An example is shown on page B-6.

1. Select the 2-year, 6- and 24-hour precipitation amounts from the new Atlas maps. Use linear interpolation between the isopluvial lines.

2. Select the appropriate region from Figure B-1.

3. Estimate the 2-year, 1-hour precipitation using the equations in Table B-1 and the 6-hour and 24-hour amounts selected in step 1 above.

4. Estimate the 2-year, 10-day precipitation amounts from Figure B-2.

5. Estimate the 100-year/2-year 10-day precipitation ratio from Figure B-3.

6. Multiply the 2-year, 10-day precipitation amount by the ratio obtained from step 4 to obtain the 100-year, 10-day rainfall amount.

7. Multiply the 2-year, 10-day precipitation amount by 0.88 to convert from partial duration series to the annual series normally used.

8. Plot the 2-year and 100-year precipitation amounts on log-normal probability paper to obtain precipitation amounts for other return periods.

Figure B-4 can be used to obtain precipitation amounts for durations between 2-day and 10-day.

Table 21.1 in Chapter 21, NEH-4, can be used to obtain areal correction factors for 10-day precipitation amounts for various size watersheds when developing the principal spillway mass curve or hydrograph. Figure B-5 can be used to obtain areal correction factors for 1- through 10-day duration storms for other purposes.

TABLE B-1

List of Equations for Determining
2-year 1-hour Precipitation Values

Region

1. $\text{2-yr 1-hr} = 0.028 + 0.890 \frac{(\text{2-yr 6-hr})^2}{\text{2-yr 24-hr}}$

2. $\text{2-yr 1-hr} = 0.019 + 0.711 \frac{(\text{2-yr 6-hr})^2}{\text{2-yr 24-hr}}$

3. $\text{2-yr 1-hr} = 0.077 + 0.715 \frac{(\text{2-yr 6-hr})^2}{\text{2-yr 24-hr}}$

4. $\text{2-yr 1-hr} = 0.160 + 0.520 \frac{(\text{2-yr 6-hr})^2}{\text{2-yr 24-hr}}$

5. $\text{2-yr 1-hr} = 0.157 + 0.513 \frac{(\text{2-yr 6-hr})^2}{\text{2-yr 24-hr}}$

6. $\text{2-yr 1-hr} = 0.218 + 0.709 \frac{(\text{2-yr 6-hr})^2}{\text{2-yr 24-hr}}$

7. $\text{2-yr 1-hr} = -0.011 + 0.942 \frac{(\text{2-yr 6-hr})^2}{\text{2-yr 24-hr}}$

8. $\text{2-yr 1-hr} = 0.005 + 0.852 \frac{(\text{2-yr 6-hr})^2}{\text{2-yr 24-hr}}$

9. $\text{2-yr 1-hr} = 0.126 + 0.561 \frac{(\text{2-yr 6-hr})^2}{\text{2-yr 24-hr}}$

10. $\text{2-yr 1-hr} = 0.111 + 0.545 \frac{(\text{2-yr 6-hr})^2}{\text{2-yr 24-hr}}$

11. $\text{2-yr 1-hr} = 0.107 + 0.315\ (\text{2-yr 6-hr})$

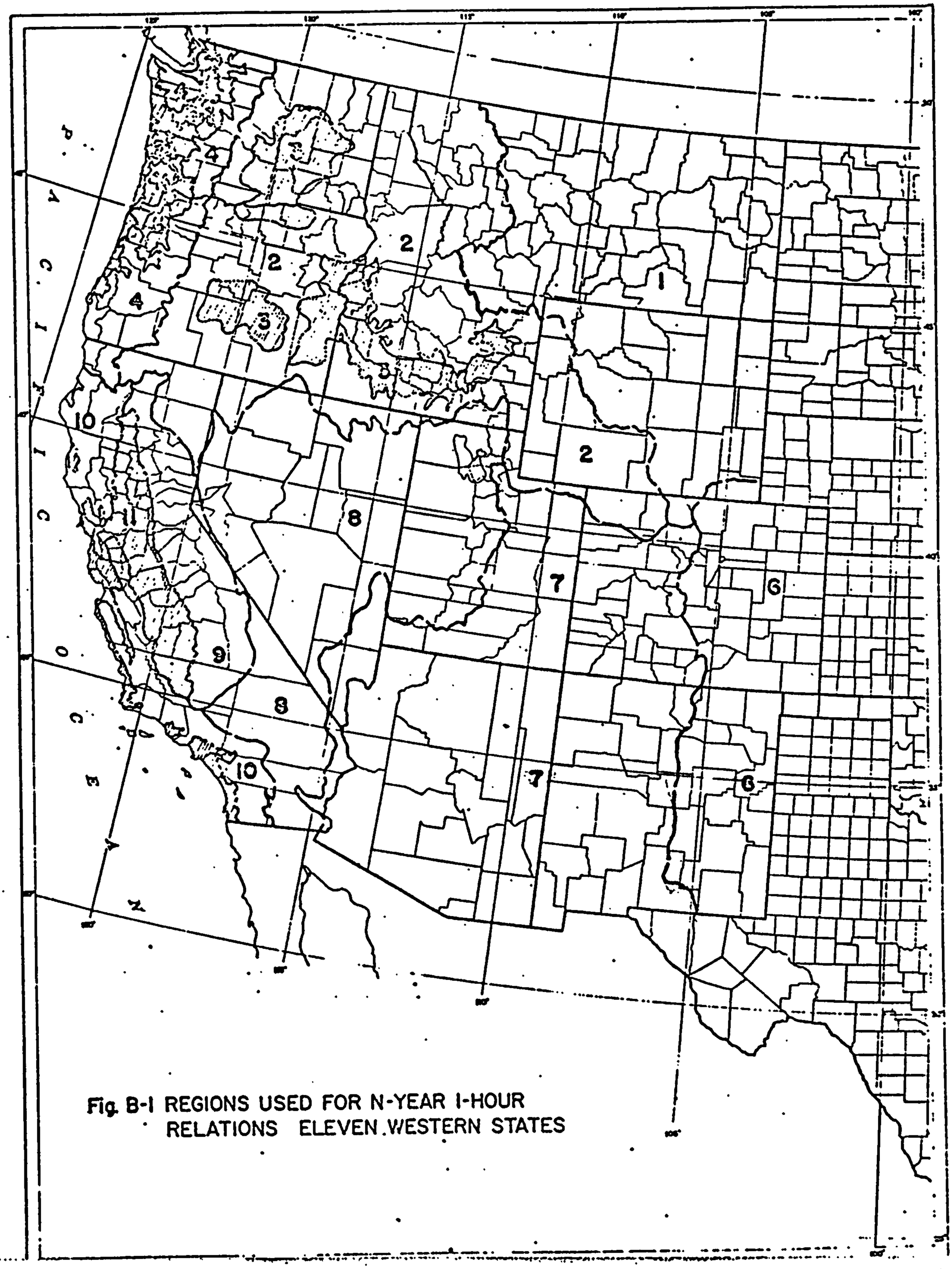


Fig. B-1 REGIONS USED FOR N-YEAR 1-HOUR RELATIONS ELEVEN WESTERN STATES

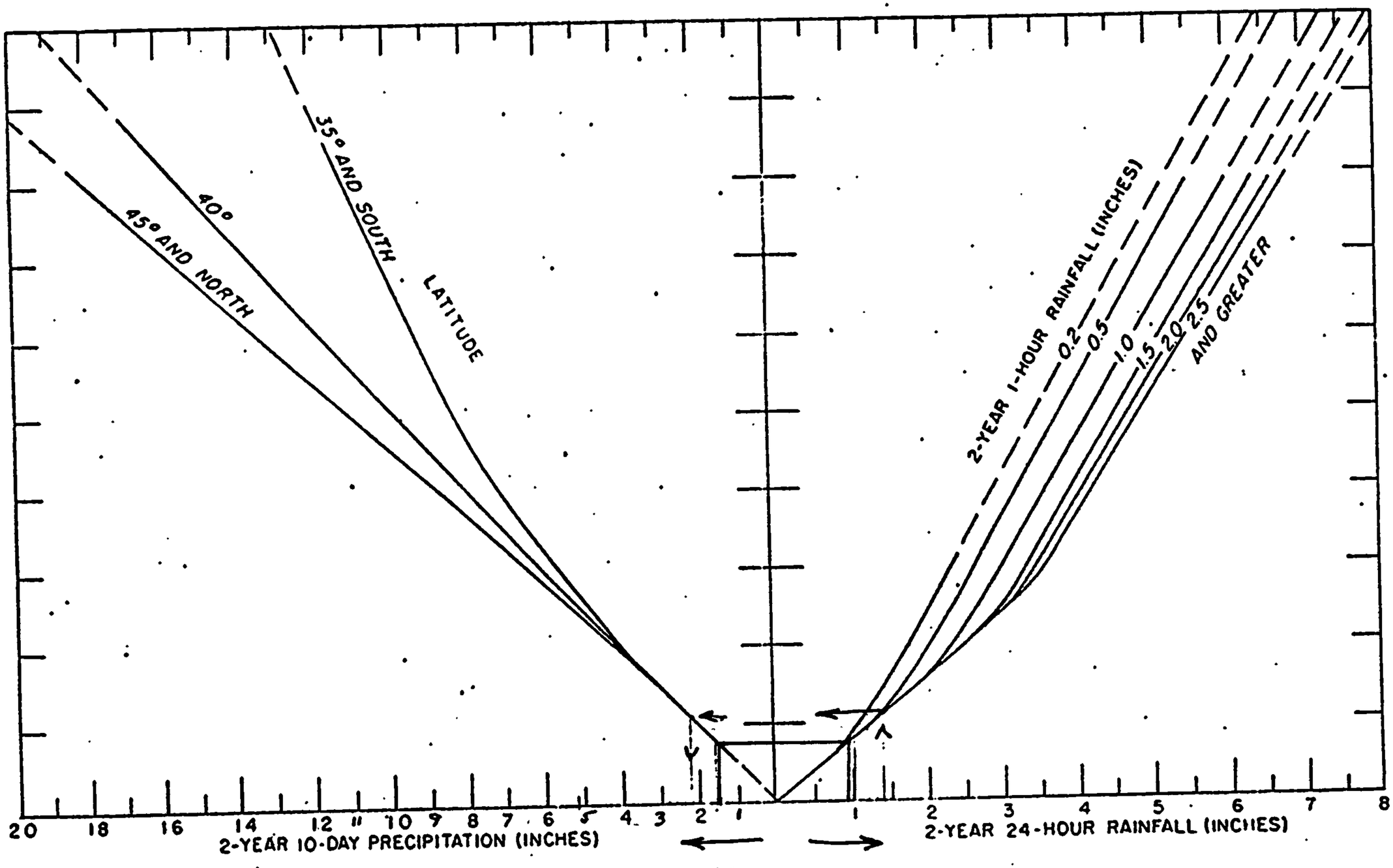


FIGURE 8-2 — Relation for estimating 2-year 10-day precipitation from 2-year 1- and 24-hour rainfall and latitude

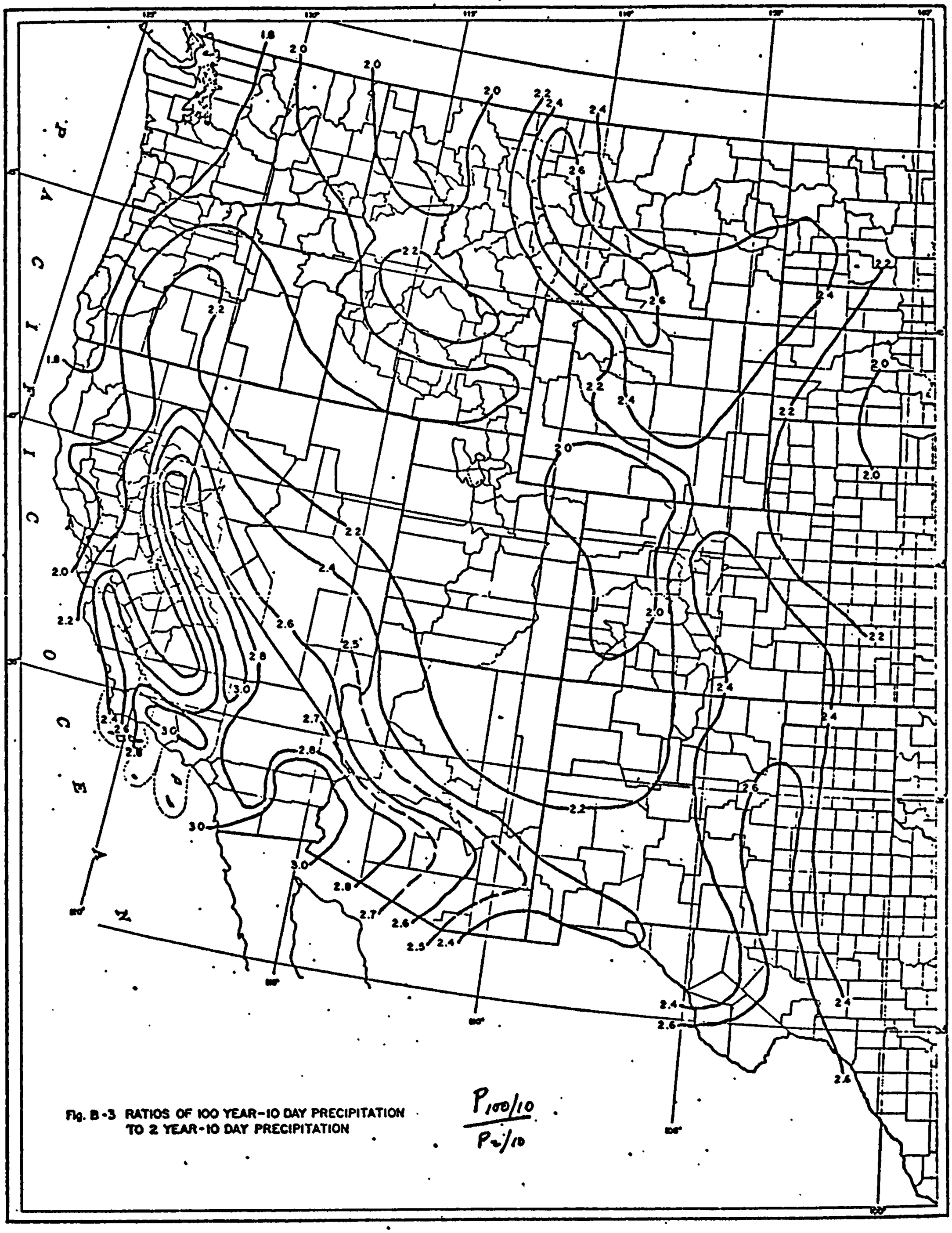


Fig. B-3 RATIOS OF 100 YEAR-10 DAY PRECIPITATION TO 2 YEAR-10 DAY PRECIPITATION

$\frac{P_{100/10}}{P_{2/10}}$

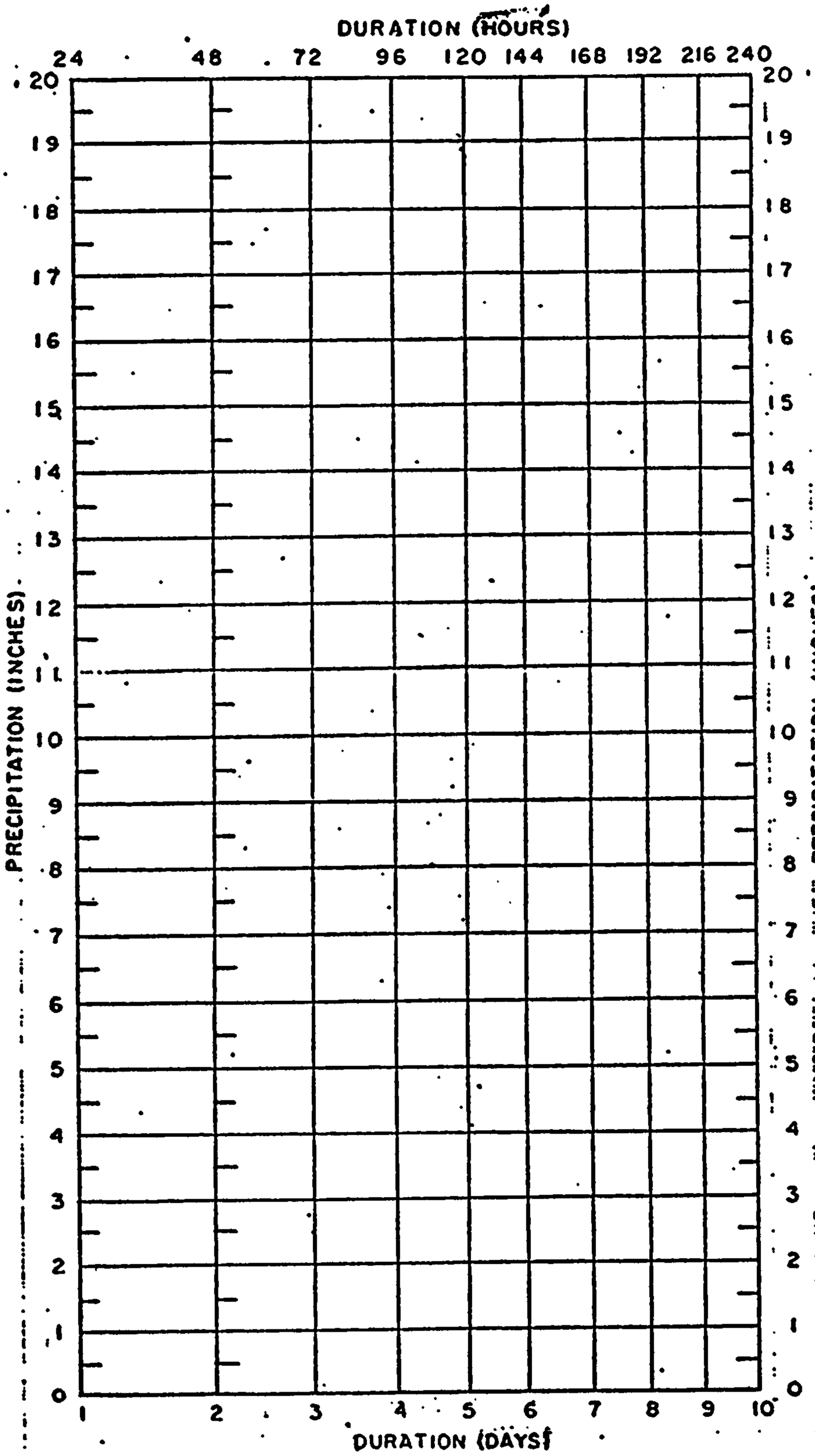


FIGURE B-4—Duration-interpolation diagram

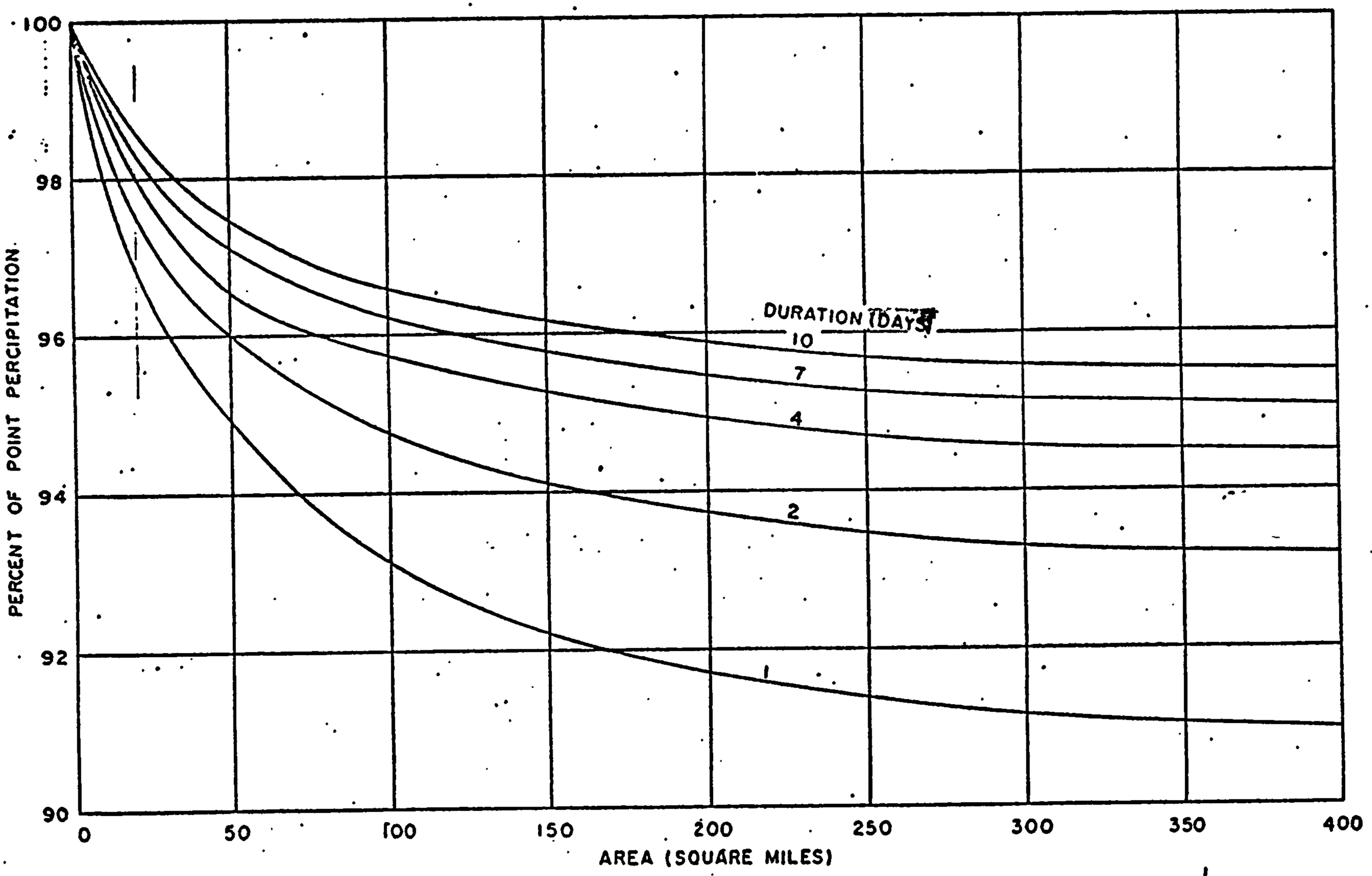


FIGURE B-5 — AREA-DEPTH CURVES

Non-PSH correction

COMPUTATION SHEET
SCS-ENG-623 Rev. 8-69

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
☆ GPO: 1971—O-357-545

STATE Oregon		PROJECT Boise W/S		
BY JEW	DATE 12/72	CHECKED BY WAS	DATE 12/72	JOB NO.
SUBJECT Estimation of 10-day Precipitation				SHEET ____ OF ____

10-DAY PRECIPITATION

1. Select 2year 6hr & 24hr precipitation values using Precipitation-Frequency Atlas

   2yr 6hr = 0.8ins
   2yr 24hr = 1.6 ins

2. Select appropriate region - 3

3. Determine 2yr-1hr amount using appropriate equation in Table B-1

4. $2yr\text{-}1hr = 0.077 + 0.715\left(\frac{2yr\text{-}6hr}{2yr\text{-}24hr}\right)^2$

   $= 0.077 + 0.715\left(\frac{.8}{1.6}\right)^2$

   $= .363$ or 0.36 ins

5. Estimate 2yr-10day amount using Fig B-2

   2yr 10day = 3.1 ins

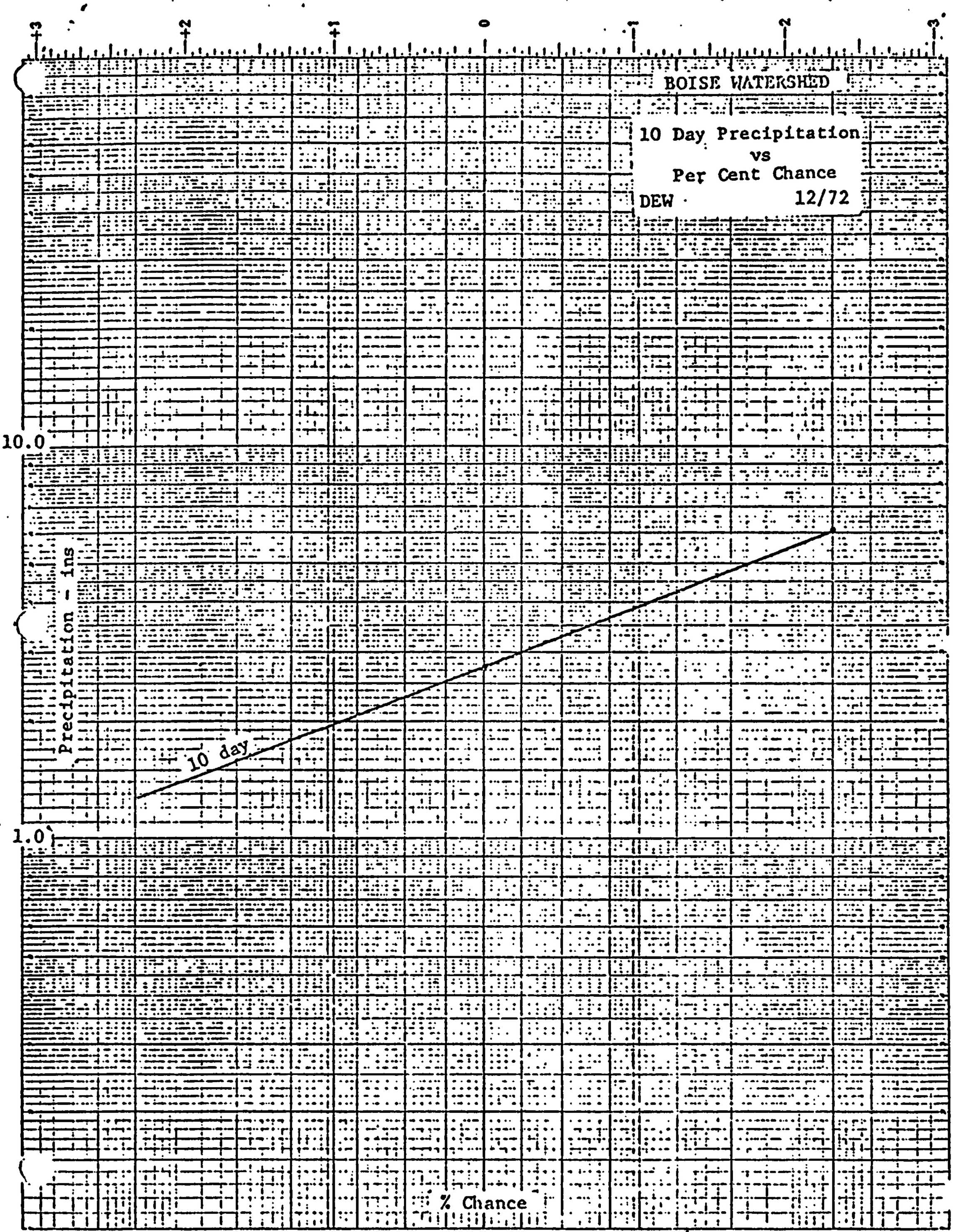
6. Estimate $\frac{100yr}{24yr}$ ratio using Fig B-3 = 2.0

7. Estimate 100yr-10day amount

   100yr-10day = (3.1)(2.0) = 6.2 ins

8. Estimate 2yr-10day amount

   2yr-10day = (3.1)(.88) = 2.7ins


BOISE WATERSHED
10 Day Precipitation
vs
Per Cent Chance
DEW
12/72
10.0
1.0
Precipitation - ins
10 day
% Chance
99.9
99.8
99.5
99
98
95
90
80
70
60
50
40
30
20
10
5
2
1
0.5
0.2
0.1

PLATES

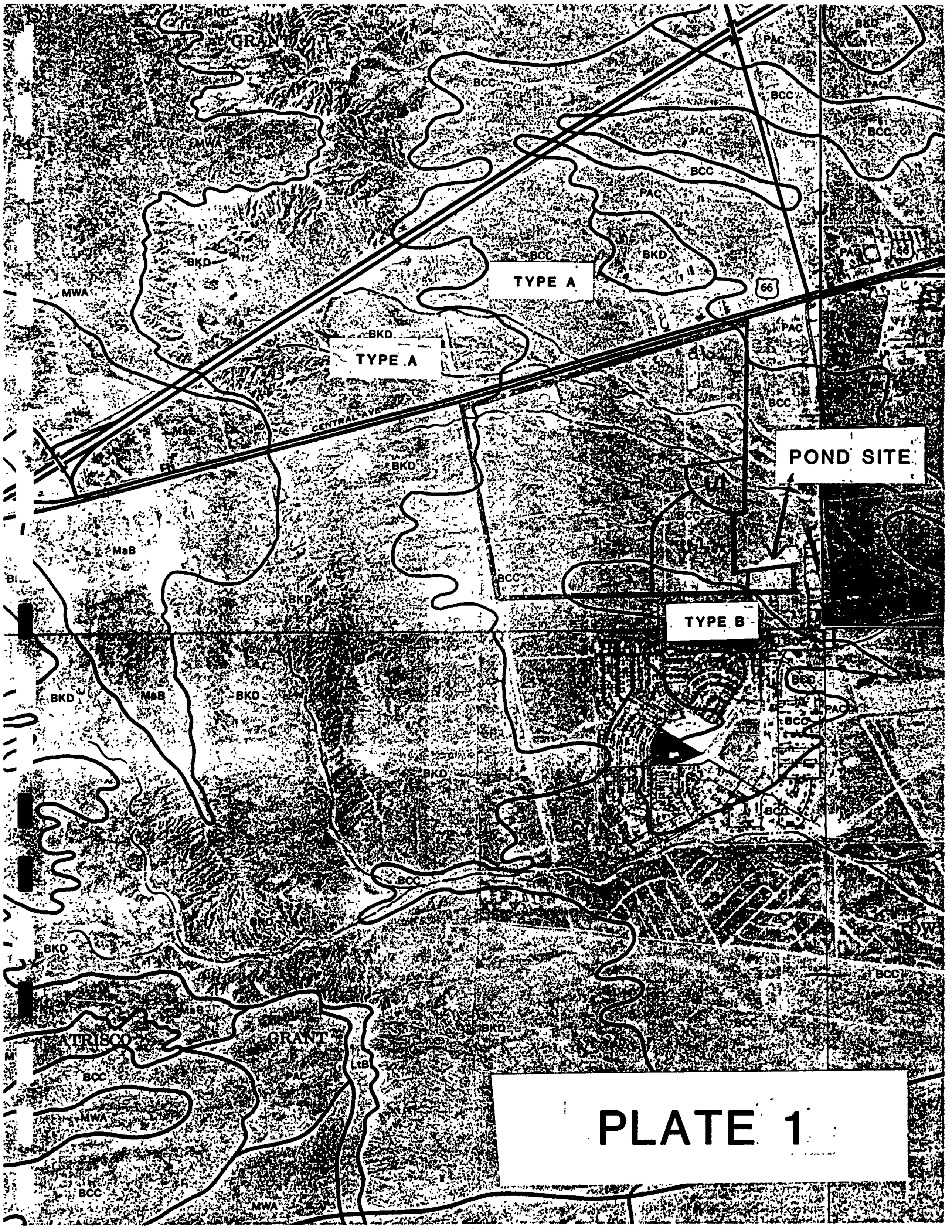

GRANT
PATRISCO
TYPE A
TYPE A
TYPE B
POND SITE
BKD
BCC
PAC
MWA
MaB
LtB
CENTRAL AVE
66

PLATE 1

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

August 2, 1985

Mr. Kyle Zimmermann
Scanlon & Associates, Inc.
8008 Pennsylvania Circle NE
Albuquerque, NM 87110

REF: DRAINAGE REPORT FOR SUNRISE TERRACE, UNIT 2 (L8-D1A) RECEIVED JULY 12, 1985

Dear Mr. Zimmermann:

I have reviewed the referenced report for Preliminary Plat approval of Sunrise Terrace, Unit 2 and forward the following comments:

1. Prior to Preliminary Plat approval the following items must be completed.

   A. Show the capatibility of the future construction of the Snow Vista Channel and the Sunrise Terrace proposed outfall. Provided information such as channel elevations, and entrance details.

   B. Require details on the 10' drainage ROW at Puffin Court and at Dunline Avenue. Standard City details are available. Non-standard channel will require concurrence by City maintenance. Please determine discharge and capacity.

   C. Please identify the type of treatment that will be used for the retention pond. This treatment should be coordinated with Parks & Recreation. We recommend that the total pond be slopped to a small area to aid in a maintenance program.

   D. The drainage plans have changed with different submittals; therefore, please submit a complete package of appropriate drawings.

2. Prior to Final Plat approval, the following items must be completed:

   A. Require a phasing plan which ties down the temporary drainage improvements. Phase A-1 should show alignment and details of the rip-rap channel. The pond at Heron and Sandpiper should be detailed. The off-site flows are conveyed through a temporary channel; therefore, it should be detailed. Capacity, discharge, volume, velocity should be addressed for these improvements.

   B. Phase B-1 phasing plan should include information on the temporary off-site flow channel. Capacity, discharge, and velocity should be addressed. The limits of construction should be shown for the Section Line Channel and other permanent hydraulic conveyance systems. The limits of grading should be indicated for each phase.

   C. Require dedication of Section Line Channel east of 102 street to the retention pond.

   D. Require easements for the retention pond. The maintenance of the retention pond is the responsibility of the developer. The appropriate convenants should be completed prior to Final Plat approval.

   E. The off-site diversion channel west of the site must be bonded. An executed convenant will be required prior to final plat.

   F. The infrastructure list must include the storm drain system.

   G. The infrastructure list must identify private or public infrastructure prior to Final Plat.

If you should have any questions, please feel free to call me at 766-7644.

Sincerely,

Carlos A. Montoya
City/County Flood Plain Admin.

CAM:mrk

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

June 25, 1985

Kyle Zimmermann
Scanlon & Associates, Inc.
8008 Pennsylvania Circle, NE
Albuquerque, New Mexico 87110

RE: DRAINAGE PLAN FOR SUNRISE TERRACE UNIT 2
(L-8/D1A) RECEIVED JUNE 5, 1985

Dear Mr. Zimmermann:

I have reviewed the referenced plan for Preliminary Plat approval. The grading plan is appropriate and approved. However, prior to preliminary plat approval, the following items must be addressed:

1. The subject site does not address downstream capacity as required by City Ordinance (Section 12G). Allowable discharge rate from the site is dependent on downstream capacity. Please address the impacts on the downstream systems caused by your discharge.

2. The following items refer to the proposed infiltration drained pond.

   A. Please address the impacts on the predicted percolation rates from compaction by the heavy equipment activity in the excavation process.

   B. The developed flows to the infiltration pond will deliver some sediment despite the sedimentation ponds. The percolation tests report does not address what impact the sediment will have on the future percolation of the pond. Please address what will be the result of a pond that will have sediment on the bottom.

   C. The excavation of the pond will remove the top six feet (6') of soil. The percolation report tested the top four feet (4'). Please address the fact that the soil tested and the bottom of the pond are potentially different types of soils.

D. Our experience has shown significant problems with nuisance flows that enter retention ponds. Please address the impact and possible reduction rate due to the soil being saturated from nuisance flows. How will this potential problem be averted?

E. Heavy equipment construction and the natural depression of the pond may allow wind erosion to be a sediment problem. How will the percolation rate be modified from the collection of soil fines at the bottom of the pond. Is there a clogging factor built into the analysis due to this potential condition?

3. The soils report did not address lateral movement of infiltrated storm water. The geology of the soil will determine the direction and quantity of ground water movement. What will be the impact on downstream areas from the infiltrating water?

4. Please provide the following information downstream of the spillway/pipe structure.

   A. Topo of the downstream area where the flows will travel.

   B. Easement information and Right-of-Way.

   C. Are the flows from the outfall contained within a dedicated City drainage easement/ Right-of-Way?

5. Please address who will maintain the pond after it is built.

6. Address what are the impacts on the pond volume capacity from antecedent moisture conditions.

7. Who will be responsible for the construction of the bridge over the Section Line Channel and 102nd Street?

8. There seems to be a discrepancy in hydraulic grade line elevations between manhole #3 and #4. Please correct or explain the apparent error.

9. The list of infrastructures for Unit 2 Phase A-1 needs to be updated. Retaining walls will need to be included in the list because they are required for development. The list implies that the subdivision will be constructed in phases. Since Phase A-1 is the upstream section to be completed first, the method of temporarily draining to the

infiltration pond must be addressed. Please address channel treatment, capacity, maintenance, and alignment.

10. Our understanding is that the Snow Vista Channel is not programmed or funded. Therefore, the use of the infiltration pond as a temporary means of controlling the runoff till the channel is built may become a permanent outfall. Mr. Sedillo's letter from Parks and Recreation has indicated that the pond must be a temporary situation for it to be located in the open space area. Please address whether the pond will be a permanent or temporary solution if the channel is not programmed to be built.

If you should have any questions or comments, please call me at 766-7644.

Cordially,

Carlos A. Montoya, P.E.
City/County Floodplain Administrator

CAM/bsj

cc: Dan Sabo, A.M.A.F.C.A.
Marty Valdez, Parks & Rec.

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

May 24, 1985

Mr. Kyle Zimmermann
Scanlon & Associates, Inc.
8008 Pennsylvania Circle NE
Albuquerque, NM 87110

REF: CONCEPTUAL DRAINAGE REPORT FOR SUNRISE TERRACE UNIT 2 (L8-D1A)
RECEIVED APRIL 19, 1985

Dear Mr. Zimmermann:

I have reviewed the referenced plan and forward the following comments:

1. The proposed drainage scheme of discharging historic flows downstream is not per the Drainage Ordinace. The allowable discharge rate from the subject site is dependent on downstream capacity.

2. The conditions of accepting the ponding area for open space per Mr. Sedillo's letter to you was that the pond would be temporary. The construction of proposed channels is uncertain therfore the pond appears to be a permanent solution.

3. Downstream capacity dictates the amount of discharge from the site and there is existing flooding problem downstream. The proposed development contributes to this problem downstream.

4. Percolation rates for ponds appears to be inappropriate. The rate will charge as fines collects at the bottom and restrict infiltration.

June 5, 1985

5. Require more information on the proposed diversion channel.

   a. Detail hydraulic calculations

   b. Who owns the property where the diversion is to be placed.

   c. Information on who will maintain the channel.

   d. Downstream impacts due to the diversion of the runoff.

6. Please submitt a grading plan which identifies such items as:

   a. Street grades, top of curb elevations.

   b. Pad's finish floor elevation

   c. Proposed grading on each site

7. Please provide hydraulic calculations for the storm drain system. Calculations should include:

   a. Hydraulic grade line

   b. Sizes of pipes

   c. Dishcarge quantity, velocities etc.

If you should have any questions, please contact this office at 766-7644.

Sincerely,

Carlos A. Montoya

Carlos A. Montoya
City/County Flood Plain Admin.

CAM/cl

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

April 11, 1985

Kyle Zimmermann
Scanlon & Associates, Inc.
8008 Pennsylvania Circle, NE
Albuquerque, New Mexico 87110

RE: CONCEPTUAL DRAINAGE REPORT FOR SUNRISE TERRACE UNIT 2
(L-8/D1A) RECEIVED FEBRUARY 26, 1985

Dear Mr. Zimmermann:

I have reviewed the referenced report dated January 30, 1985, and forward these comments:

1. Require a drainage report for Sunrise Terrace Unit 2 for preliminary plat approval.

2. Retention ponds are not acceptable solution for an outfall. As per the City Ordinance, ponds must discharge within 24 hours.

If you have any questions or comments regarding this project, please call me at 766-7644.

Cordially,

Carlos A Montoya

Carlos A. Montoya, P.E.
City County Floodplain Administrator

CAM/bsj

AMENDMENT TO THE

FINAL DRAINAGE REPORT

SUNRISE TERRACE UNIT II

FOR INTERIM DRAINAGE MANAGEMENT

OF PHASE A-1

near
102nd Street and north of
Gibson Boulevard
Albuquerque, New Mexico

Prepared by:
SCANLON AND ASSOCIATES, INC.
8008 Pennsylvania Circle NE
Albuquerque, New Mexico 87110

September 10, 1985
Scanlon Job No. 8510 3.1

RECEIVED
OCT 18 1985
HYDROLOGY SECTION

I, Clifford E. Anderson, hereby cerfity that the enclosed documents and drawings were prepared under my supervision and are true and correct to the best of my knowledge and belief.

New Mexico Registered
Professional Engineer
No. 6472

RECEIVED
NOV 20 1986
HYDROLOGY SECTION

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Hydrology	2
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Appendix C 2 Year 6 Hour Pond Volume Computation. . . .	55
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Offsite Drainage Area	Plate 2
Onsite Drainage Area	Plate 3
Preliminary Plat	Plate 4

INTRODUCTION

The purpose of the following report is to give details for the interim storm drainage runoff management for the phasing of Sunrise Terrace Unit Two. This report is only for Phase A-1 of Sunrise Terrace Unit Two, and is an amendment to the "Final Drainage Report - Sunrise Terrace Unit II" (L8-DIA) submitted to the City of Albuquerque, Hydrology Department on July 12, 1985.

HYDROLOGY

The U.S. Department of Agriculture computer program HYMO was used to generate the runoff hydrographs and route the hydrographs through detention ponds and channels. All conditions stated in the July 12, 1985 report remain in effect.

HYDROLOGIC ANALYSIS

With the development of Phase A-1 the runoff from basin 3.1 (see plate 2) will need to be diverted around the developed area. The earth diversion channel to the west of Sunrise Terrace Unit II will need to be built from the north end to the south boundary of Phase A-1. The runoff will be routed along the south boundary of of Phase A-1 to Sandpiper Drive. Offsite and onsite runoff will be combined and routed to the retention pond north of the section line and west of "Westgate Mobile Home Park".

DESIGN

Earth channels will be used to route the onsite and offsite runoff to the retention pond. The velocity of flow in an earth channel cannot exceed 3 fps (Albuquerque, DPM). The channel along the south boundary of Phase A-1 will be at a slope of 2.70%. A trapizodial channel with base of 10 feet and side slope at 3:1 will carry 7.73 cfs at a velocity of 3 fps. (See computations). The offsite peak flow rate, 100-year 6-hour storm, is 23.38 cfs. A pond with weir discharge will need to be used to lower the peak rate of flow around 7.73 cfs. A pond with a 205' x 205' bottom and 3:1 side slopes discharging through a V-notch weir with side slopes at 2:1, yield a outflow peak rate of 7.76 cfs for the 100-year 6-hour storm.

The earth channel that runs along Sandpiper Drive is at a slope of 1.97%. A trapizodial channel with a 10 ft. base and 3:1 side slopes will carry 10.17 cfs at a velocity of 3 fps. The combined offsite flow routed through the earth channel along the south boundary of Phase A-1 and onsite runoff have a peak flow rate of 36.77 cfs (100-year 6-hour storm). A pond with weir discharge will need to be used to lower the peak rate of flow around 10.17 cfs. A pond with a bottom 250 ft x 75 ft and a V-notch weir with 2:1 side slope yield a outflow peak rate of 10.20 cfs.

The V-notch weirs will need to be covered with riprap to protect against errosion. (See grading plan for details.)

The iterim detention ponds and channels along the south boundary and Sandpiper Drive will remain in place until no longer needed to protect Phase A-1 or when Phase B-1 is constructed.

calculated using Manning's Equation with a value of Ø.Ø3Ø for n. From this point the runoff will be routed down the section line channel (see Plate 2) to the pond. The section line channel will be a concrete lined channel with 1Ø' bottom width, 2 to 1 side slopes, depth of 3.6 ft., and longitudinal slope of 2.4%. This channel conforms with the Herkenhoff design of Phase III of Snow Vista Channel. The combination of the earth channel and Section Line Channel will route the offsite drainage to the retention pond.

Onsite drainage will be handled mainly be surface street flow with the exception of a underground storm drain to take the storm runoff off Sandpipe Drive between Gannet Avenue and Dunlin Avenue (see Plate 3). This storm drain intercepts the flow from Tanager Drive, Sanderling Avenue, Gannet Avenue, Heron Road, Heron Court, and Sandpiper Drive. The runoff from Ibis Avenue, Ibis Way, and Dunlin Avenue will drain to a low point on Dunlin Avenue and be carried to the Section Line Channel via a concrete channel between lots 8 and 9 of Block 7. Roll type mountable curb will be used throughout the subdivision with the following exceptions:

1. Sandpiper Drive
2. Dunlin Avenue between Ibis Way and 1Ø2nd St.
3. 1Ø2nd Street
4. 1Ø6th Street
5. Tower Road
6. Tanager Drive

The above interior streets will require standard curb and gutter to carry the surface runoff that would over top a roll type mountable curb during the 1ØØ year event. (See Appendix A for computations.) All of the onsite storm runoff will outfall to the Section Line Channel and be carried to the Snow Vista Channel.

The following table lists the total combined onsite and offsite runoff entering the Snow Vista Channel from Sunrise Terrace Unit II.

6 Hr Storm Frequency Yr.	Flow Entering Snow Vista Channel (See Point 2 of Plate #2) Peak Flow (CFS)	Volume (Ac. Ft.)
1Ø	57.3	3.278
5Ø	98.1	7.48Ø
1ØØ	11Ø.Ø	9.127

The above runoff flows were computed using the HYMO program (See Appendix B for printout).

Sunrise Terrace Unit II will be split into three phases (See Plate 4). Phase A-1 and Phase B-1 will require interim facilities. These facilities will need to connect to 1987, the Snow Vista Channel when the channel construction is completed.

Interim Drainage Facilities Before Completion of Snow Vista Channel

A retention pond for the 2 yr 6 hr storm will need to be constructed for Phase A-1 AND Phase B-1. The pond will contain a spillway that discharges at ground level to a natural drainage way. Between November, 1986 and June, 1987, the probability of a 2 hr storm occurring is 33.3%.

Probability = $1 - (1 - 1/Tr)^n$
n = 7 month = Ø.583 Yr
Tr = 2 yr
$P = 1 - (1 - 1/2)^{Ø.583} = Ø.333$

The ponds will supply adequate protection for the properties down stream during the construction of the Snow Vista Channel. The Phase A-1 retention pond will need a volume of Ø.464 Ac. Ft. The Phase B-1 retention pond will need a volume of 1.ØØØ Ac. Ft. (See Appendix C for Computation). As the phases are built the retention ponds will be built in the Sandpiper R.O.W. area along the south boundary of the phase being built. The earth channel along the West boundary of Sunrise Terrace Unit II will be constructed from the north boundary to the south boundary of the phase being built. Retention ponds are not required for the offsite storm runoff (See Appendix C).

Interim Drainage Facilities After Completion of Snow Vista Channel

The Snow Vista Channel project includes building the Section Line Channel from the east 1Ø2nd Street right-of-way to the Snow Vista Channel. When the Snow Vista Channel is completed earth channels will be constructed to convey the runoff from the 1ØØ yr 6-hr storm to the section line channel at 1Ø2nd Street. Onsite runoff will be conveyed in a earth channel that will run from the south boundary of the completed phase along the Sandpiper Drive alignment to the Section Line Channel at 1Ø2nd Street. Offsite runoff will be conveyed in a extension of the earth channel along the west boundary of the subdivision from the south boundary of the completed phase to the Section Line Channel at 1Ø2nd Street.

Phase C-1 is tentatively planned to be constructed after the Snow Vista Channel is completed. The Section Line Channel will be constructed from 1Ø2nd Street to the west boundary of the subdivision with Phase C-1.

The earth channel along the west boundary of the subdivision will be completed, connecting it to the Section Line Channel. The underground storm drain system and concrete channel in Block 7 will be constructed with Phase C-1, this will complete the drainage facilities required for Sunrise Terrace Unit II.

APPENDIX A

COMPUTATIONS

SCANLON & ASSOCIATES INC
CONSULTING ENGINEERS
8008 Pennsylvania Circle NE
Albuquerque, New Mexico 87110-7897
(505) 265-6941

Project DRAINAGE
Location SUNRISE TERRACE U2 PA-1
Job No. 85103.1 Date 10-2-85
By JKZ Sheet 1 of 7

OFF SITE CHANNEL

SLOPE = $\frac{39.7}{1470}$ = 0.0270

EARTH CHANNEL

MAX VEL = 3.0 FPS (ALB OPM Sec 22.3 Page 62 + 66)

SIDE SLOPE = 3:1

COMPUTATIONS USING MANNING'S EQUATION

n = 0.030 EARTH LINED CHANNEL

IF	B = 15.0 ft	Q = 11.07 CFS	Y_n = 0.23 ft
IF	B = 10.0 ft	Q = 7.73 CFS	Y_n = 0.24 ft
IF	B = 7.5 ft	Q = 6.08 CFS	Y_n = 0.25 ft
IF	B = 5.0 ft	Q = 4.45 CFS	Y_n = 0.26 ft

USE A 10' WIDE BASE

ONSITE AND OFFSITE CHANNEL

SLOPE = $\frac{25}{1270}$ = 0.0197

EARTH CHANNEL

IF	B = 15.0 ft	Q = 14.38 CFS	Y_n = 0.30 ft
IF	B = 10.0 ft	Q = 10.17 CFS	Y_n = 0.31 ft
IF	B = 7.5 ft	Q = 8.09 CFS	Y_n = 0.32 ft
IF	B = 5.0 ft	Q = 6.06 CFS	Y_n = 0.34 ft

USE A 10' WIDE BASE

SCANLON & ASSOCIATES INC
CONSULTING ENGINEERS
8008 Pennsylvania Circle NE
Albuquerque, New Mexico 87110-7897
(505) 265-6941

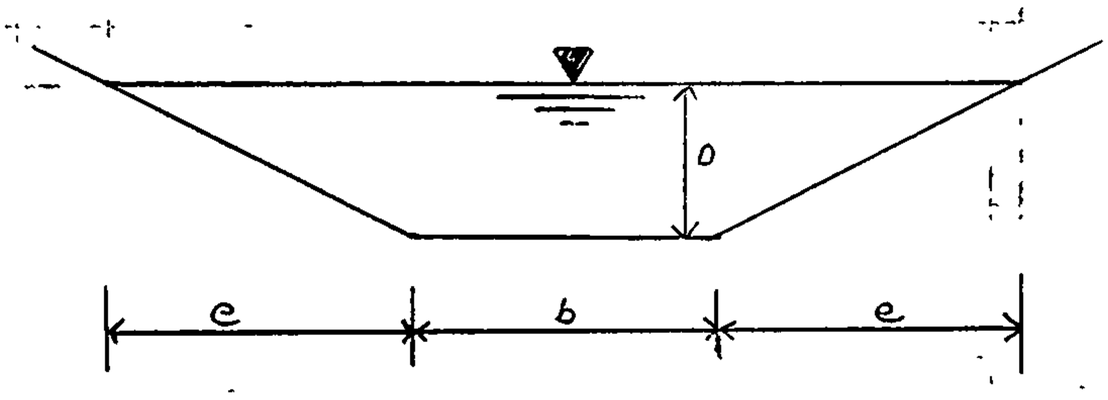
Project DRAINAGE
Location Sunrise Terrace UZ PA-1
Job No. 85103.1 Date 11-2-85
By WLS Sheet 2 of 7

WEIR DESIGN

WHEN A NOTCH IS FLUSH WITH THE BOTTOM OF A CHANNEL FLOW OCCURS AT CRITICAL DEPTH. (KING - HANDBOOK OF HYDRAULICS 4TH EDITION, P 5-11 - 5-12)

CRITICAL DEPTH IN TRAPEZOIDAL SECTIONS:

(KING - HANDBOOK OF HYDRAULICS 4TH ED, P 8-11 THRU 8-13.)



$$z = \frac{e}{D}$$

$$V_c = \sqrt{\frac{b + z D_c}{b + 2z D_c} g D_c}$$

$$D_c = \frac{V_c^2}{g} - \frac{b}{2z} + \sqrt{\frac{V_c^4}{g^2} + \frac{b^2}{4z^2}}$$

$$Q = \sqrt{g \frac{(b + z D_c)^3}{(b + 2z D_c)}} \; D_c^{-3/2}$$

$$\rightarrow$$

$$Q^2 = g \frac{(b + z D_c)^3}{(b + 2z D_c)} D_c^3$$

$$0 = g \frac{(b + z D_c)^3}{(b + 2z D_c)} D_c^3 - Q^2$$

GIVEN Q, g, AND z

GIVEN b $f(D_c) = 0$ OR GIVEN D_c $f(b) = 0$

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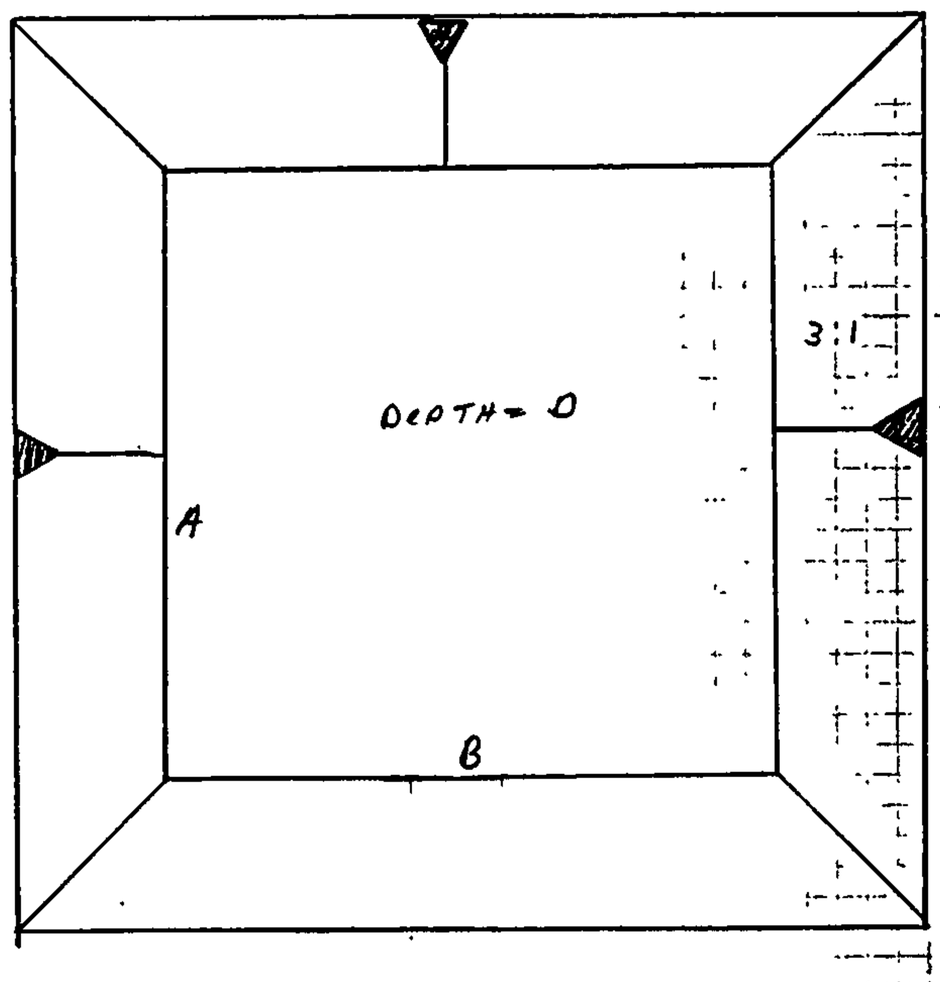
Project Drainage
Location Sunrise Tennnce UZ P1
Job No. 85103.1 Date 10-4-85
By JKZ Sheet 3 of 7

POND SIZE



$$VOL = \left(\frac{AB + (3D+A)(3D+B)}{2} \right) D$$

$$VOL = \left(\frac{AB + 9D^2 + 3AD + 3BD + AB}{2} \right) D$$

$$VOL = \left(AB + 1.5AD + 1.5BD + 4.5D^2 \right) D$$

$$VOL = ABD + 1.5AD^2 + 1.5BD^2 + 4.5D^3$$

WHEN, $A = B$

$$VOL = A^2D + 3AD^2 + 4.5D^3$$

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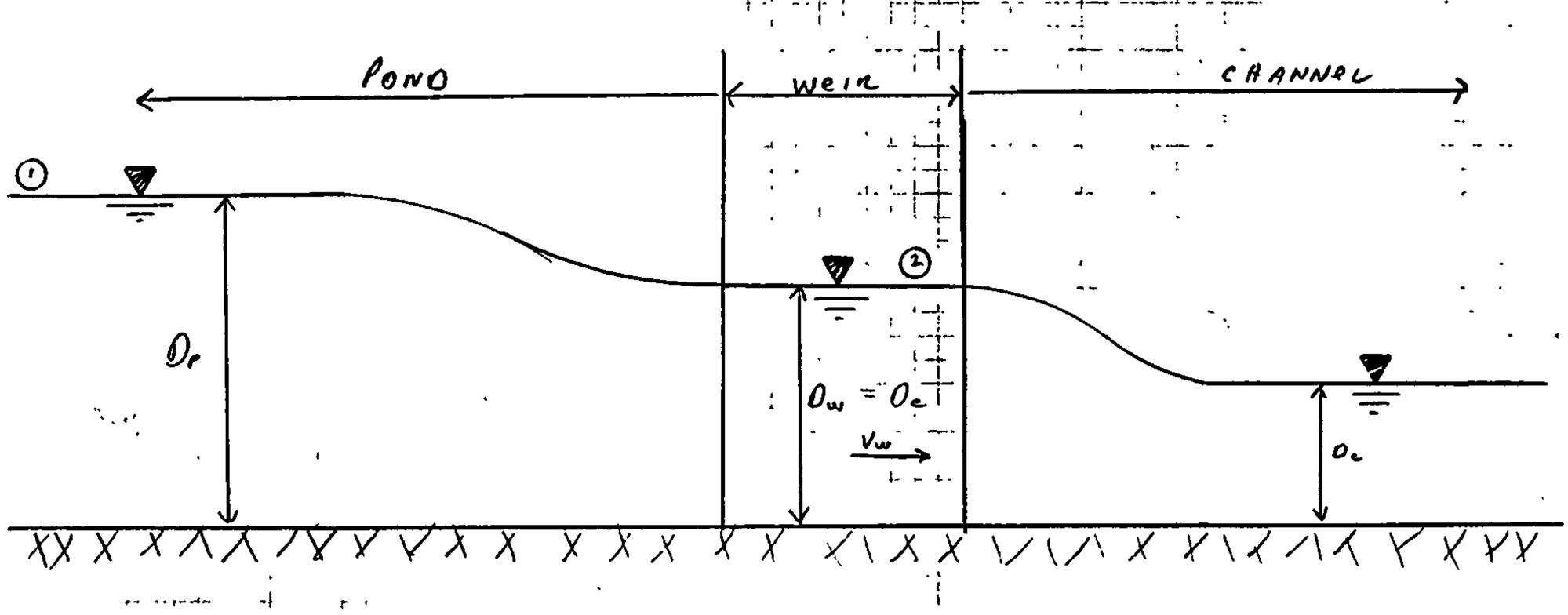
Project Drainage
Location Sunrise Terrace
Job No. 85103.1 Date 10-7-85
By JKZ Sheet 4 of 7

POND DEPTH AND WEIR DEPTH



BERNOULLI EQUATION

$$\frac{p_1}{\gamma}^{0} + \frac{V_1^2}{2g}^{0} + Z_1 = \frac{p_2}{\gamma}^{0} + \frac{V_2^2}{2g} + Z_2$$

$$Z_1 = \frac{V_c^2}{2g} + Z_2$$

$$D_p = \frac{V_w^2}{2g} + D_w$$

$$V_w = V_c$$

$$D_w = D_c$$

(See PAGE 2)

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Project DRAINAGE
Location SUNRISE TOWNHOUSE - UNIT 2 P1
Job No. 85103.1 Date 10-7-85
By JLZ Sheet 5 of 7

FLOW THRU V-NOTCH WEIR

B = 0 Z = 2:1 g = 32.178

Q (CFS.)	D_c (Ft)	V_c (FPS)	$\frac{V_c^2}{2g} + D_c = D_p$ (Ft)
1	0.435	2.645	0.5435
2	0.574	3.038	0.7171
4	0.757	3.490	0.9463
6	0.8903	3.785	1.1129
7.73	0.9853	3.982	1.2316
9	1.0471	4.104	1.3088
10.17	1.0995	4.206	1.3744
12.00	1.1748	4.348	1.4685
14.00	1.2495	4.484	1.5619

OFF SITE POND

use A = 205 B = 205

STORAGE DISCHARGE TABLE

Q (CFS)	D_p (FT)	STOR (AC FT)	Q	D_p	STOR (AC FT)
0	0	0	12	1.4685	1.448
1	0.5435	0.529	14	1.5619	1.542
2	0.7171	0.699	—	—	—
4	0.9463	0.926	—	—	—
6	1.1129	1.091	—	—	—
7.73	1.2316	1.210	—	—	—
9	1.3088	1.287	—	—	—
10.17	1.3744	1.353	—	—	—

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Project DRAINAGE
Location SUNRISE TERRACE UNIT 2 P1
Job No. 85103.1 Date 10-7-85
By JKZ Sheet 6 of 7

OFF SITE - ONSITE POND

Use A = 250' B = 75'

STORAGE DISCHARGE TABLE

Q (CFS)	D_p (Ft)	STOR (Ac Ft)	Q (CFS)	D_p (Ft)	STOR (Ac. Ft)
0	0	0	7.73	1.2316	0.547
1	0.5435	0.237	9	1.3088	0.583
2	0.7171	0.314	10.17	1.3744	0.613
4	0.9463	0.417	12	1.4685	0.657
6	1.1129	0.493	14	1.5619	0.700

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Project DRAINAGE
Location SUNRISE TERRACE U 2 P1
Job No. 85107.1 Date 10-8-85
By JKZ Sheet 7 of 7

SUMMARY OF HYMO RUNS

DESCRIPTION	100 YEAR STORM		50 YEAR STORM		10 YEAR STORM	
	PEAK FLOW (CFS)	VOLUME (ac. Ft)	PEAK FLOW (CFS)	VOLUME (ac. Ft.)	PEAK FLOW (CFS)	VOLUME (ac. Ft.)
OFFSITE POND INFLOW	23.38	1.916	18.36	1.461	4.87	0.352
OFFSITE POND OUTFLOW	7.76	1.916	4.51	1.461	1.00	0.352
ONSITE RUNOFF	36.77	1.412	32.80	1.270	19.97	0.812
ONSITE - OFFSITE POND INFLOW	36.77	3.320	32.80	2.731	19.97	1.164
ONSITE - OFFSITE POND OUTFLOW	10.20	3.320	8.90	2.731	4.81	1.164
INFILTRATION POND INFLOW	10.20	3.320	8.90	2.731	4.81	1.164

APPENDIX B

HYMO PRINTOUTS

```
START                0.0 HR
*                ****************************************
*                *     SUNRISE TERRACE DRAINAGE PLAN    *
*                *    100 YEAR STORM - 6 HOUR DURATION  *
*                *   ALB. DPM MASS RAINFALL DISTRIBUTION *
*                *   DRAINAGE TO SNOW VISTA CHANNEL FOR  *
*                *            UNIT 2 PHASE A-1           *
*                *            FILE= 85103P1.100          *
*                *      DIRECTORY = :UDD:KYLE:HYMO.DR    *
*                ****************************************
*
*
*                      ***********************
*                      *  OFF SITE DRAINAGE  *
*                      ***********************
*
* COMPUTE HYDROGRAPH FROM AREA 3.1  AREA=0.1355 SQ MI - 0% IMP
COMPUTE HYD          ID=1 HYD=131 DT=0.050 HR DA=0.1355 SQ MI CN=68
                     K=-0.0899 HR TP=-0.1798 HR
                     MASS RAINFALL
                      .00000    .07260    .15400    .24640    .36300
                      .63360    .95480   1.08240   1.17700   1.24960
                     1.31560   1.37720   1.43660   1.49600   1.54880
                     1.60160   1.65440   1.70720   1.75560   1.80180
                     1.86560   1.90300   1.93820   1.97340   2.00420
                     2.02840   2.04600   2.05920   2.06800   2.07460
                     2.07900   2.08136   2.08450   2.08714   2.08956
                     2.09220   2.09440   2.09682   2.09946   2.10144
                     2.10342   2.10562   2.10760   2.10980   2.11178
                     2.11376   2.11552   2.11750   2.11926   2.12102
                     2.12278   2.12520   2.12630   2.12784   2.12960
                     2.13114   2.13258   2.13422   2.13576   2.13730
                     2.13862   2.14016   2.14148   2.14280   2.14434
                     2.14566   2.14698   2.14830   2.14962   2.15094
                     2.15204   2.15336   2.15468   2.15578   2.15710
                     2.15820   2.15930   2.16040   2.16172   2.16282
                     2.16392   2.16502   2.16612   2.16700   2.16810
                     2.16920   2.17030   2.17140   2.17228   2.17338
                     2.17426   2.17536   2.17646   2.17756   2.17844
                     2.17954   2.18042   2.18196   2.18196   2.18284
                     2.18372   2.18460   2.18548   2.18636   2.18724
                     2.18790   2.18900   2.18966   2.19054   2.19142
                     2.19230   2.19296   2.19384   2.19450   2.19538
                     2.19626   2.19692   2.19780   2.19846   2.19912
                     2.20000
     SHAPE CONSTANT, N =  7.947    UNIT PEAK =      425.4 CFS
     RECESSION CONSTANT,K =  .0899 HRS    TIME TO PEAK OF UNIT HYD =  .1798 HRS    WATERSHED PARAMETER, B =  564.51
* AREA 3.1
PRINT HYD            ID=1 CODE=1

                                  PARTIAL HYDROGRAPH    131.00

     RUNOFF VOLUME =        .2651 INCHES    =        1.916 ACRE-FEET
     PEAK DISCHARGE RATE =        23.38 CFS

*
*        ROUTE HYD THROUGH POND TO LOWER PEAK
*        POND BOTTOM 205' X 205' WITH 3:1 SIDESLPOES
```

```
*
ROUTE RESERVOIR       ID=2 HYD=103.11 INFLOW ID=1
                       OUTFLOW(CFS)     STORAGE(AC FT)
                            0                0
                          1.00             0.529
                          2.00             0.699
                          4.00             0.926
                          6.00             1.091
                          7.73             1.210
                          9.00             1.287
                         10.17             1.353
                         12.00             1.448
                         14.00             1.542
PRINT HYD             ID=2 CODE=1

                                  PARTIAL HYDROGRAPH     103.11

  RUNOFF VOLUME =      .2460 INCHES     =       1.778 ACRE-FEET
  PEAK DISCHARGE RATE =       7.76 CFS


PLOT HYD              ID=2 ID=1
 FLOW RATE (CFS)
   23..-----------------------------------------------------------------------
      .                ++                                                    .
      .                                                                      .
      .              +                                                       .
      .                +                                                     .
      .              +   +                                                   .
      .                                                                      .
      .                +                                                     .
      .                                                                      .
   19.+-----------------+----------------------------------------------------
      .                +                                                     .
      .                                                                      .
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      .                +                                                     .
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   14.+-----------------+----------------------------------------------------
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      .              +   +                                                   .
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    9.+-----------------+----------------------------------------------------
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      .            0   +   00                                                .
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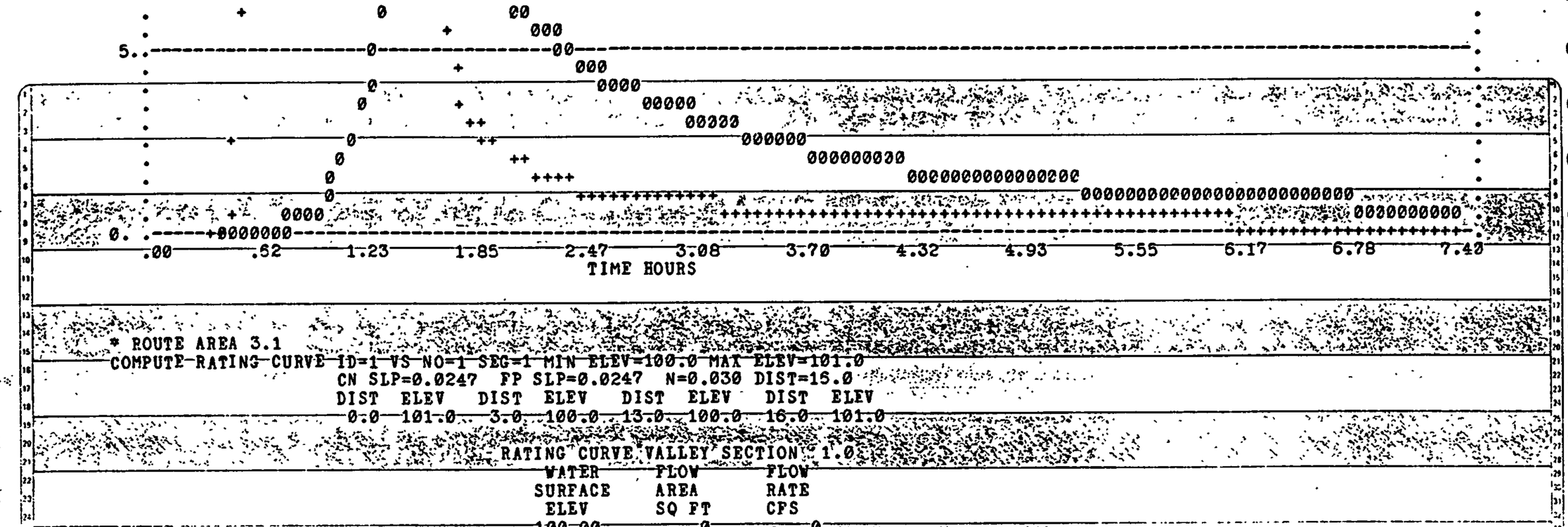

* ROUTE AREA 3.1

COMPUTE RATING CURVE ID=1 VS NO=1 SEG=1 MIN ELEV=100.0 MAX ELEV=101.0
CN SLP=0.0247 FP SLP=0.0247 N=0.030 DIST=16.0

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0.0	101.0	3.0	100.0	13.0	100.0	16.0	101.0

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
100.00	.0	.0
100.05	.5	.6
100.11	1.1	1.9
100.16	1.7	3.6
100.21	2.2	5.9
100.26	2.8	8.6
100.32	3.5	11.7
100.37	4.1	15.3
100.42	4.7	19.2
100.47	5.4	23.5
100.53	6.1	28.2
100.58	6.8	33.2
100.63	7.5	38.6
100.68	8.2	44.4
100.74	9.0	50.6
100.79	9.8	57.1
100.84	10.5	64.0
100.89	11.3	71.3
100.95	12.2	78.9
101.00	13.0	86.9

COMPUTE TRAVEL TIME ID=5 REACH NO=1 NO VS=1 L=1700.0 FT SLP=0.0247

TRAVEL TIME TABLE
REACH 1.0

WATER DEPTH FEET	FLOW RATE CFS	TRAVEL TIME HRS
.05	.6	.4369
.11	1.8	.2792
.16	3.6	.2145
.21	5.9	.1789
.26	8.6	.1555
.32	11.7	.1391
.37	15.3	.1266

10/3

.42	19.2	.1168
.47	23.5	.1088
.53	28.2	.1022
.58	33.2	.0965
.63	38.6	.0918
.68	44.4	.0877
.74	50.6	.0840
.79	57.1	.0807
.84	64.0	.0778
.89	71.3	.0752
.95	78.9	.0728
1.00	86.9	.0706

```
ROUTE              ID=5 HYD NO=103.12 INFLOW ID=2 DT=0.050 HR
*
*                  **********************
*                  *  ON SITE DRAINAGE  *
*                  **********************
*
* TOTAL AREA = 0.02898 SQ MI   55% IMP
* IMPERVIOUS AREA
COMPUTE HYD        ID=1 HYD=121 DT=0.050 HR DA=0.01594 SQ MI CN=95
                   K=-0.04395 HR TP=-0.0879 HR
                   MASS RAINFALL -1
    SHAPE CONSTANT, N =  7.947    UNIT PEAK =     102.4 CFS
    RECESSION CONSTANT,K =  .0440 HRS   TIME TO PEAK OF UNIT HYD =  .0879 HRS   WATERSHED PARAMETER, B =  564.51

    * PERVIOUS AREA
    COMPUTE HYD        ID=2 HYD=122 DT=0.050 HR DA=0.01304 SQ MI CN=48
                       K=-0.04395 HR TP=-0.0879 HR
                       MASS RAINFALL -1
        SHAPE CONSTANT, N =  7.947    UNIT PEAK =     83.7 CFS
        RECESSION CONSTANT,K =  .0440 HRS   TIME TO PEAK OF UNIT HYD =  .0879 HRS   WATERSHED PARAMETER, B =  564.51

    * COMPOSITE HYDROGRAPH FROM PHASE A-1
    ADD HYD            ID=3 HYD=123 ID I=1 ID II=2
    PRINT HYD          ID=3 CODE=5

                       PARTIAL HYDROGRAPH    123.00
```

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	1.7	3.000	.3	4.500	.2	6.000	.1
.250	13.6	1.750	.6	3.250	.3	4.750	.2	6.250	.0
.500	15.8	2.000	.4	3.500	.3	5.000	.2	6.500	.0
.750	10.9	2.250	.4	3.750	.2	5.250	.2		
1.000	9.9	2.500	.3	4.000	.2	5.500	.2		
1.250	6.3	2.750	.3	4.250	.2	5.750	.2		

```
    RUNOFF VOLUME =    .9136 INCHES   =     1.412 ACRE-FEET
    PEAK DISCHARGE RATE =     36.77 CFS

*
*                  TOTAL ON SITE PLUS OFF SITE DRAINAGE
*
ADD HYD            ID=4 HYD=125 ID I=3 ID II=5
PRINT HYD          ID=4 CODE=1

                   PARTIAL HYDROGRAPH    125.00

    RUNOFF VOLUME =     .3625 INCHES   =     3.180 ACRE-FEET
```

PEAK DISCHARGE RATE = 36.77 CFS

```
*
*                POND BOTTOM 250' X 75' 3:1 SIDESLOPES
*
ROUTE RESERVOIR      ID=5 HYD NO=502 INFLOW ID=4
                  OUTFLOW (CFS)     STORAGE (AC FT)
                        0                0
                      1.00             0.237
                      2.00             0.314
                      4.00             0.417
                      6.00             0.493
                      7.73             0.547
                      9.00             0.583
                     10.17             0.613
                     12.00             0.657
                     14.00             0.700
PLOT HYD             ID=5 ID=4
FLOW RATE (CFS)
  37..-----------------------------------------------------------------------.
    +                                                                       .
    .                                                                       .
    .                                                                       .
    .                                                                       .
    +                                                                       .
  29..-----------------------------------------------------------------------.
    .                                                                       .
    .                                                                       .
    .                                                                       .
    +                                                                       .
    .                                                                       .
  22.-----------------------------------------------------------------------.
    .                                                                       .
    +                                                                       .
    .                                                                       .
    .                                                                       .
    +                                                                       .
  15.-----------------------------------------------------------------------.
    .                                                                       .
    +                                                                       .
    +                                                                       .
    +                                                                       .
    +                                                                       .
    +++                                                                     .
  00000                                                                     .
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 0          ++++000                                                        .
  0          +  00                                                         .
   0                                                                        .
   0                                                                        .
   0                                                                        
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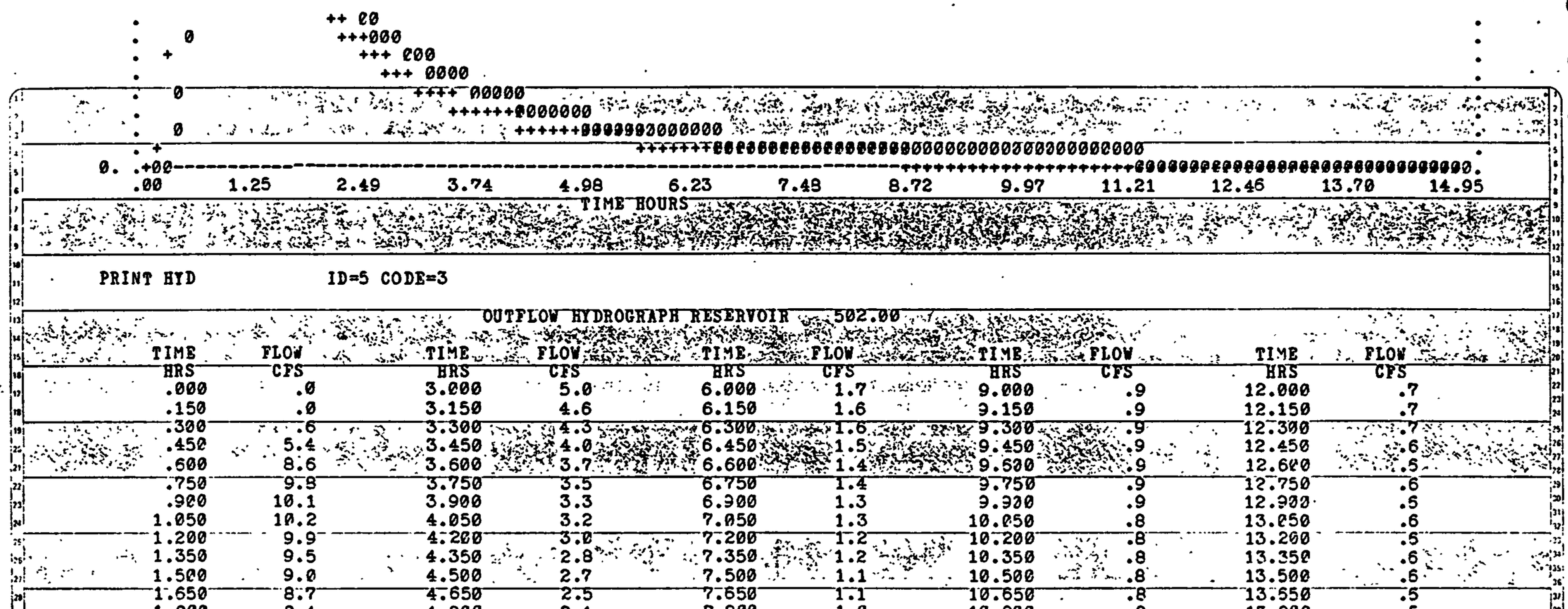


PRINT HYD ID=5 CODE=3

OUTFLOW HYDROGRAPH RESERVOIR 502.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	3.000	5.0	6.000	1.7	9.000	.9	12.000	.7
.150	.0	3.150	4.6	6.150	1.6	9.150	.9	12.150	.7
.300	.6	3.300	4.3	6.300	1.6	9.300	.9	12.300	.7
.450	5.4	3.450	4.0	6.450	1.5	9.450	.9	12.450	.6
.600	8.6	3.600	3.7	6.600	1.4	9.600	.9	12.600	.6
.750	9.8	3.750	3.5	6.750	1.4	9.750	.9	12.750	.6
.900	10.1	3.900	3.3	6.900	1.3	9.900	.9	12.900	.6
1.050	10.2	4.050	3.2	7.050	1.3	10.050	.8	13.050	.6
1.200	9.9	4.200	3.0	7.200	1.2	10.200	.8	13.200	.6
1.350	9.5	4.350	2.8	7.350	1.2	10.350	.8	13.350	.6
1.500	9.0	4.500	2.7	7.500	1.1	10.500	.8	13.500	.6
1.650	8.7	4.650	2.5	7.650	1.1	10.650	.8	13.650	.5
1.800	8.4	4.800	2.4	7.800	1.0	10.800	.8	13.800	.5
1.950	8.1	4.950	2.2	7.950	1.0	10.950	.8	13.950	.5
2.100	7.7	5.100	2.1	8.100	1.0	11.100	.8	14.100	.5
2.250	7.2	5.250	2.0	8.250	1.0	11.250	.7	14.250	.5
2.400	6.7	5.400	2.0	8.400	1.0	11.400	.7	14.400	.5
2.550	6.2	5.550	1.9	8.550	1.0	11.550	.7	14.550	.5
2.700	5.7	5.700	1.8	8.700	1.0	11.700	.7	14.700	.5
2.850	5.3	5.850	1.8	8.850	.9	11.850	.7	14.850	.5

RUNOFF VOLUME = .3500 INCHES = 3.070 ACRE-FEET
PEAK DISCHARGE RATE = 10.20 CFS

FINISH

100 yr

```
START                0.0 HR
*              ****************************************
*              *     SUNRISE TERRACE DRAINAGE PLAN    *
*              *     50 YEAR STORM - 6 HOUR DURATION  *
*              *   ALB. DPM MASS RAINFALL DISTRIBUTION *
*              *   DRAINAGE TO SNOW VISTA CHANNEL FOR *
*              *            UNIT 2 PHASE A-1          *
*              *            FILE= SRT2P1.50           *
*              *      DIRECTORY = :UDD:KYLE:HYMO.DR   *
*              ****************************************
*
*                    **********************
*                    *  OFF SITE DRAINAGE  *
*                    **********************
*
* COMPUTE HYDROGRAPH FROM AREA 3.1  AREA=0.1355 SQ MI - 0% IMP
COMPUTE HYD          ID=1 HYD=131 DT=0.050 HR DA=0.1355 SQ MI CN=58
                     K=-0.0899 HR TP=-0.1798 HR
                     MASS RAINFALL
                      .00000    .06679    .14168    .22669    .33396
                      .58291    .87842    .99581   1.08284   1.14953
                     1.21035   1.26702   1.32167   1.37632   1.42490
                     1.47347   1.52205   1.57062   1.61515   1.65766
                     1.71635   1.75076   1.78314   1.81553   1.84386
                     1.86613   1.88232   1.89446   1.90256   1.90863
                     1.91268   1.91531   1.91774   1.92017   1.92240
                     1.92482   1.92685   1.92907   1.93150   1.93332
                     1.93515   1.93717   1.93899   1.94102   1.94284
                     1.94466   1.94628   1.94810   1.94972   1.95134
                     1.95296   1.95518   1.95620   1.95761   1.95923
                     1.96065   1.96207   1.96348   1.96490   1.96632
                     1.96753   1.96895   1.97016   1.97138   1.97279
                     1.97401   1.97522   1.97644   1.97765   1.97886
                     1.97988   1.98109   1.98231   1.98332   1.98453
                     1.98554   1.98656   1.98757   1.98878   1.98979
                     1.99081   1.99182   1.99283   1.99364   1.99465
                     1.99566   1.99668   1.99769   1.99850   1.99951
                     2.00032   2.00133   2.00234   2.00336   2.00416
                     2.00518   2.00599   2.00740   2.00740   2.00821
                     2.00902   2.00983   2.01064   2.01145   2.01226
                     2.01287   2.01388   2.01449   2.01530   2.01611
                     2.01692   2.01752   2.01833   2.01894   2.01975
                     2.02056   2.02117   2.02198   2.02258   2.02319
                     2.02400
     SHAPE CONSTANT, N =  7.947    UNIT PEAK =      425.4 CFS
     RECESSION CONSTANT,K =   .0899 HRS    TIME TO PEAK OF UNIT HYD =   .1798 HRS    WATERSHED PARAMETER, B =  564.51
* AREA 3.1
PRINT HYD            ID=1 CODE=1

                                  PARTIAL HYDROGRAPH    131.00

     RUNOFF VOLUME =       .2021 INCHES   =       1.461 ACRE-FEET
     PEAK DISCHARGE RATE =        18.36 CFS

*
*        ROUTE HYD THROUGH POND TO LOWER PEAK
*        POND BOTTOM 205' X 205' WITH 3:1 SIDESLPOES
*
```

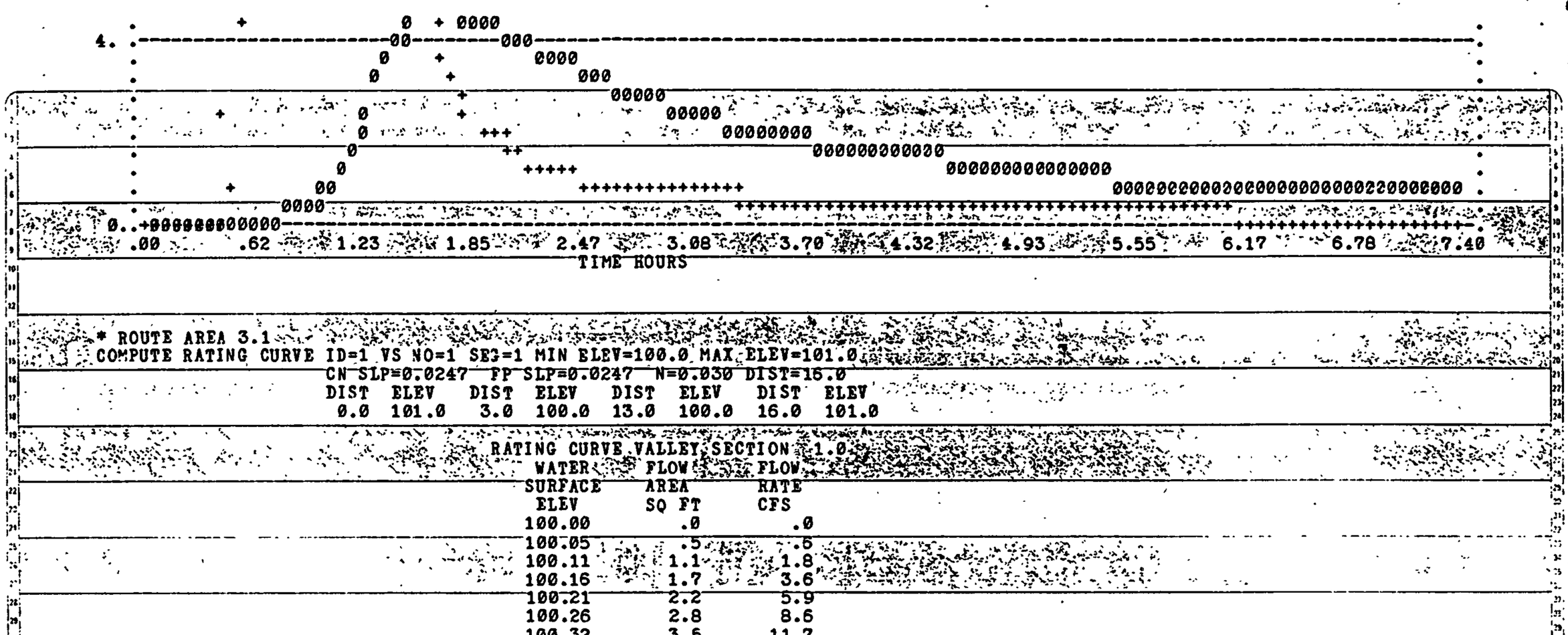
5011

```
ROUTE RESERVOIR      ID=2 HYD=103.11 INFLOW ID=1
                      OUTFLOW(CFS)    STORAGE(AC FT)
                           0               0
                         1.00            0.529
                         2.00            0.699
                         4.00            0.926
                         6.00            1.091
                         7.73            1.210
                         9.00            1.287
                        10.17            1.353
                        12.00            1.448
                        14.00            1.542
 PRINT HYD           ID=2 CODE=1

                              PARTIAL HYDROGRAPH    103.11

     RUNOFF VOLUME =      .1841 INCHES =      1.331 ACRE-FEET
     PEAK DISCHARGE RATE =      4.51 CFS


 PLOT HYD            ID=2 ID=1
 FLOW RATE (CFS)
 18.
                                                                  +
                                                                  +
                                                                  +
                                                                  +
                                                                  +
 15.
                                                                  +
                                                                  +
                                                                  +
 11.
                                                                  +
                                                                  +
                                                                  +
                                                                  +
 7.
                                                                  +
                                                                  +
                                                                  +
                                                                  +
                                                                  +
```



* ROUTE AREA 3.1

COMPUTE RATING CURVE ID=1 VS NO=1 SEG=1 MIN ELEV=100.0 MAX ELEV=101.0
CN SLP=0.0247 FP SLP=0.0247 N=0.030 DIST=16.0

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0.0	101.0	3.0	100.0	13.0	100.0	16.0	101.0

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
100.00	.0	.0
100.05	.5	.6
100.11	1.1	1.8
100.16	1.7	3.6
100.21	2.2	5.9
100.26	2.8	8.6
100.32	3.5	11.7
100.37	4.1	15.3
100.42	4.7	19.2
100.47	5.4	23.5
100.53	6.1	28.2
100.58	6.8	33.2
100.63	7.5	38.6
100.68	8.2	44.4
100.74	9.0	50.6
100.79	9.8	57.1
100.84	10.5	64.0
100.89	11.3	71.3
100.95	12.2	78.9
101.00	13.0	86.9

COMPUTE TRAVEL TIME ID=5 REACH NO=1 NO VS=1 L=1700.0 FT SLP=0.0247

TRAVEL TIME TABLE
REACH 1.0

WATER DEPTH FEET	FLOW RATE CFS	TRAVEL TIME HRS
.05	.6	.4369
.11	1.8	.2782
.16	3.6	.2145
.21	5.9	.1789
.26	8.6	.1556
.32	11.7	.1391
.37	15.3	.1266
.42	19.2	.1168

.47	23.5	.1088
.53	28.2	.1022
.58	33.2	.0965
.63	38.6	.0918
.69	44.4	.0877
.74	50.6	.0840
.79	57.1	.0807
.84	64.0	.0778
.89	71.3	.0752
.95	78.9	.0728
1.00	86.9	.0705

```
ROUTE            ID=5 HYD NO=103.12 INFLOW ID=2 DT=0.050 HR
*
*                ***********************
*                *  ON SITE DRAINAGE   *
*                ***********************
*
* TOTAL AREA = 0.02898 SQ MI   55% IMP
* IMPERVIOUS AREA
COMPUTE HYD      ID=1 HYD=121 DT=0.050 HR DA=0.01594 SQ MI CN=95
                 K=-0.04395 HR TP=-0.0879 HR
                 MASS RAINFALL -1
   SHAPE CONSTANT, N =  7.947   UNIT PEAK =      102.4 CFS
   RECESSION CONSTANT,K =  .0440 HRS    TIME TO PEAK OF UNIT HYD =  .0879 HRS   WATERSHED PARAMETER, B =  564.51

* PERVIOUS AREA
COMPUTE HYD      ID=2 HYD=122 DT=0.050 HR DA=0.01304 SQ MI CN=48
                 K=-0.04395 HR TP=-0.0879 HR
                 MASS RAINFALL -1
   SHAPE CONSTANT, N =  7.947   UNIT PEAK =      83.7 CFS
   RECESSION CONSTANT,K =  .0440 HRS    TIME TO PEAK OF UNIT HYD =  .0879 HRS   WATERSHED PARAMETER, B =  564.51

* COMPOSITE HYDROGRAPH FROM PHASE A-1
ADD HYD          ID=3 HYD=123 ID I=1 ID II=2
PRINT HYD        ID=3 CODE=5

                 PARTIAL HYDROGRAPH   123.00
```

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	1.6	3.000	.3	4.500	.2	6.000	.1
.250	11.7	1.750	.5	3.250	.3	4.750	.2	6.250	.0
.500	14.2	2.000	.4	3.500	.2	5.000	.1	6.500	.0
.750	9.9	2.250	.4	3.750	.2	5.250	.1		
1.000	9.0	2.500	.3	4.000	.2	5.500	.2		
1.250	5.7	2.750	.3	4.250	.2	5.750	.1		

```
   RUNOFF VOLUME =  .8217 INCHES =     1.270 ACRE-FEET
   PEAK DISCHARGE RATE =  32.80 CFS


*
*                TOTAL ON SITE PLUS OFF SITE DRAINAGE
*
ADD HYD          ID=4 HYD=125 ID I=3 ID II=5
PRINT HYD        ID=4 CODE=1

                 PARTIAL HYDROGRAPH   125.00

   RUNOFF VOLUME =  .2954 INCHES =     2.591 ACRE-FEET
   PEAK DISCHARGE RATE =  32.80 CFS
```

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```
*
*                    POND BOTTOM 250' X 75' 3:1 SIDESLOPES
*
  ROUTE RESERVOIR    ID=5 HYD NO=502 INFLOW ID=4
                    OUTFLOW (CFS)     STORAGE (AC FT)
                           0                0
                        1.00             0.237
                        2.00             0.314
                        4.00             0.417
                        6.00             0.493
                        7.73             0.547
                        9.00             0.583
                       10.17             0.613
                       12.00             0.657
                       14.00             0.700
    PLOT HYD          ID=5  ID=4
 FLOW RATE (CFS)
     33.0+-----------------------------------------------------------------------+
         |  +                                                                    |
         |                                                                       |
         |                                                                       |
         |                                                                       |
         |                                                                       |
         |                                                                       |
     26.0+-----------------------------------------------------------------------+
         |                                                                       |
         |                                                                       |
         |  +                                                                    |
         |                                                                       |
         |                                                                       |
     20.0+-----------------------------------------------------------------------+
         |                                                                       |
         |     +                                                                 |
         |                                                                       |
         |                                                                       |
         |                                                                       |
     13.0+-----------------------------------------------------------------------+
         |    +                                                                  |
         |  +  +                                                                 |
         |    ++                                                                 |
         |      +                                                                |
         |     +++                                                               |
         |      0000                                                             |
         |     0  +0                                                             |
         |    0    + 0                                                           |
      7.0+---0-----+-0---------------------------------------------------------- +
         |   0      +  00                                                        |
         |   0        +  000                                                     |
         |                                                                       |
         |                                                                       |
         |                                                                       |
         |                                                                       |
         |                                                                       
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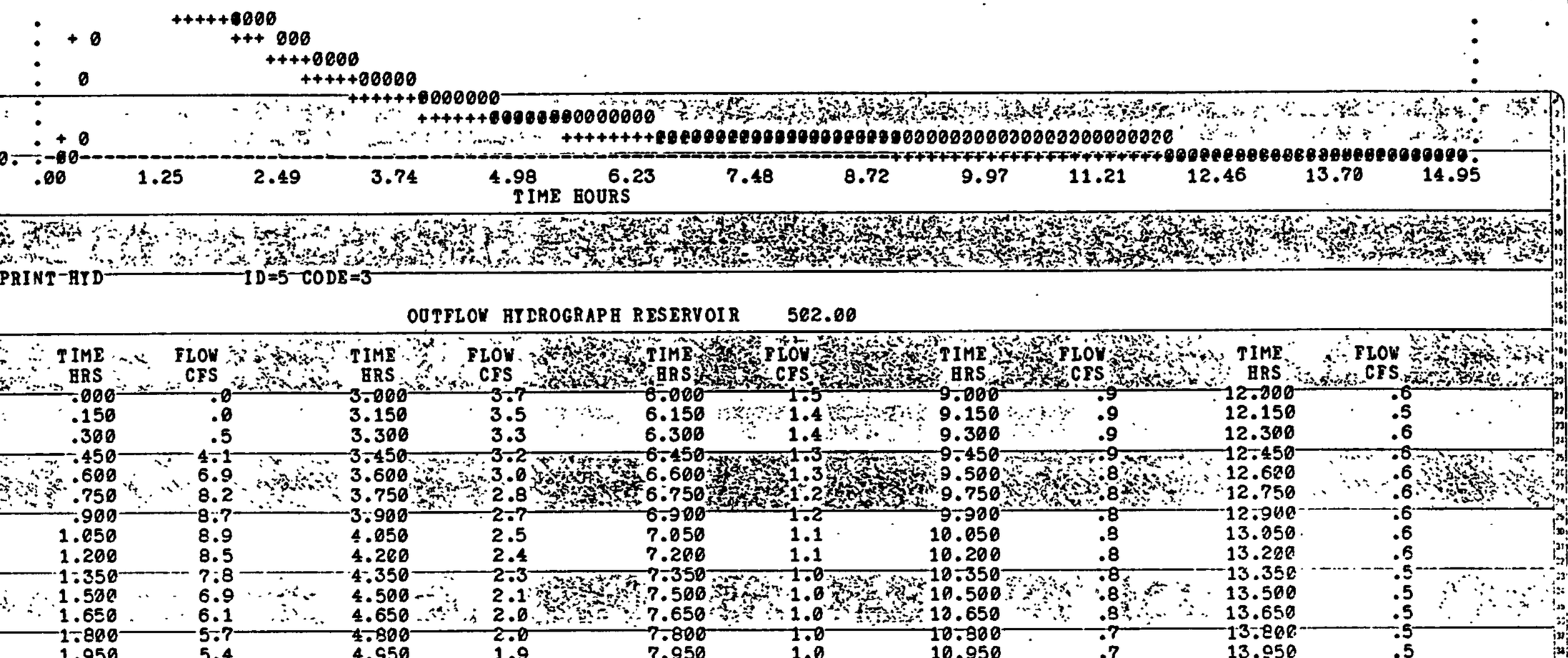


PRINT HYD ID=5 CODE=3

OUTFLOW HYDROGRAPH RESERVOIR 502.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	3.000	3.7	6.000	1.5	9.000	.9	12.000	.6
.150	.0	3.150	3.5	6.150	1.4	9.150	.9	12.150	.5
.300	.5	3.300	3.3	6.300	1.4	9.300	.9	12.300	.6
.450	4.1	3.450	3.2	6.450	1.3	9.450	.9	12.450	.6
.600	6.9	3.600	3.0	6.600	1.3	9.500	.8	12.600	.6
.750	8.2	3.750	2.8	6.750	1.2	9.750	.8	12.750	.6
.900	8.7	3.900	2.7	6.900	1.2	9.900	.8	12.900	.6
1.050	8.9	4.050	2.5	7.050	1.1	10.050	.8	13.050	.6
1.200	8.5	4.200	2.4	7.200	1.1	10.200	.8	13.200	.6
1.350	7.8	4.350	2.3	7.350	1.0	10.350	.8	13.350	.5
1.500	6.9	4.500	2.1	7.500	1.0	10.500	.8	13.500	.5
1.650	6.1	4.650	2.0	7.650	1.0	12.650	.8	13.650	.5
1.800	5.7	4.800	2.0	7.800	1.0	10.800	.7	13.800	.5
1.950	5.4	4.950	1.9	7.950	1.0	10.950	.7	13.950	.5
2.100	5.2	5.100	1.8	8.100	1.0	11.100	.7	14.100	.5
2.250	4.9	5.250	1.8	8.250	1.0	11.250	.7	14.250	.5
2.400	4.6	5.400	1.7	8.400	.9	11.400	.7	14.400	.5
2.550	4.4	5.550	1.6	8.550	.9	11.550	.7	14.550	.5
2.700	4.1	5.700	1.6	8.700	.9	11.700	.7	14.700	.5
2.850	3.9	5.850	1.5	8.850	.9	11.850	.7	14.850	.4

RUNOFF VOLUME = .2836 INCHES = 2.488 ACRE-FEET
PEAK DISCHARGE RATE = 8.90 CFS

FINISH

```
START                 0.0 HR
*                 ****************************************
*                 *     SUNRISE TERRACE DRAINAGE PLAN    *
*                 *    10 YEAR STORM - 5 HOUR DURATION   *
*                 *   ALB. DPM MASS RAINFALL DISTRIBUTION *
*                 *   DRAINAGE TO SNOW VISTA CHANNEL FOR  *
*                 *            UNIT 2 PHASE A-1           *
*                 *            FILE= SRT2P1.10            *
*                 *      DIRECTORY = :UDD:KYLE:HYMO.DR    *
*                 ****************************************
*
*                      ***********************
*                      *  OFF SITE DRAINAGE  *
*                      ***********************
*
*-COMPUTE-HYDROGRAPH FROM AREA 3.1  AREA=0.1355 SQ MI - 0% IMP
COMPUTE HYD           ID=1 HYD=131 DT=0.050 HR DA=0.1355 SQ MI CN=68
                      K=-0.0899 HR TP=-0.1798 HR
                      MASS RAINFALL
                       .00000    .04770    .10118    .16188    .23849
                       .41628    .62730    .71114    .77329    .82099
                       .86435    .90482    .94385    .98297   1.01756
                      1.05225   1.08694   1.12163   1.15343   1.18378
                      1.22570   1.25027   1.27340   1.29652   1.31676
                      1.33266   1.34422   1.35289   1.35858   1.36301
                      1.36590   1.36778   1.36952   1.37125   1.37284
                      1.37458   1.37602   1.37761   1.37935   1.38065
                      1.38195   1.38339   1.38469   1.38614   1.38744
                      1.38874   1.38990   1.39120   1.39235   1.39351
                      1.39467   1.39626   1.39698   1.39799   1.39915
                      1.40016   1.40117   1.40218   1.40319   1.40421
                      1.40507   1.40609   1.40695   1.40782   1.40883
                      1.40970   1.41057   1.41143   1.41230   1.41317
                      1.41389   1.41476   1.41562   1.41635   1.41722
                      1.41794   1.41856   1.41938   1.42025   1.42097
                      1.42170   1.42242   1.42314   1.42372   1.42444
                      1.42516   1.42589   1.42661   1.42719   1.42791
                      1.42849   1.42921   1.42993   1.43066   1.43124
                      1.43196   1.43254   1.43355   1.43355   1.43413
                      1.43470   1.43528   1.43586   1.43644   1.43702
                      1.43745   1.43817   1.43861   1.43919   1.43976
                      1.44034   1.44077   1.44135   1.44179   1.44236
                      1.44294   1.44338   1.44395   1.44439   1.44482
                      1.44540
     SHAPE CONSTANT, N =  7.947    UNIT PEAK =      425.4 CFS
     RECESSION CONSTANT,K =   .0899 HRS    TIME TO PEAK OF UNIT HYD =   .1798 HRS    WATERSHED PARAMETER, B =  564.51
* AREA 3.1
PRINT HYD             ID=1 CODE=1

                                  PARTIAL HYDROGRAPH    131.00

     RUNOFF VOLUME =       .0487 INCHES    =       .352 ACRE-FEET
     PEAK DISCHARGE RATE =        4.87 CFS

*
*        ROUTE HYD THROUGH POND TO LOWER PEAK
*        POND BOTTOM 205' X 205' WITH 3:1 SIDESLPOES
*
```

10/1

ROUTE RESERVOIR ID=2 HYD=103.11 INFLOW ID=1

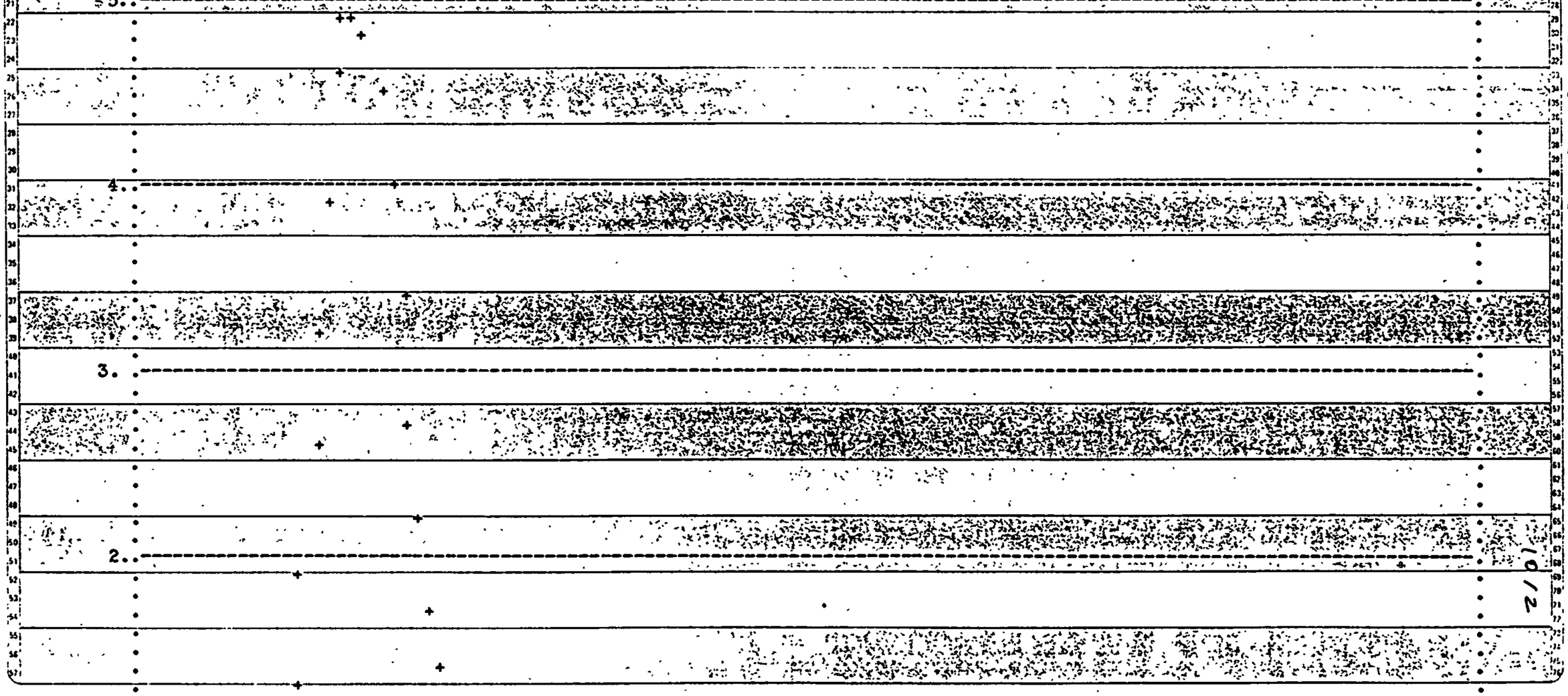
OUTFLOW(CFS)	STORAGE(AC FT)
0	0
1.00	0.529
2.00	0.699
4.00	0.926
6.00	1.091
7.73	1.210
9.00	1.287
10.17	1.353
12.00	1.448
14.00	1.542

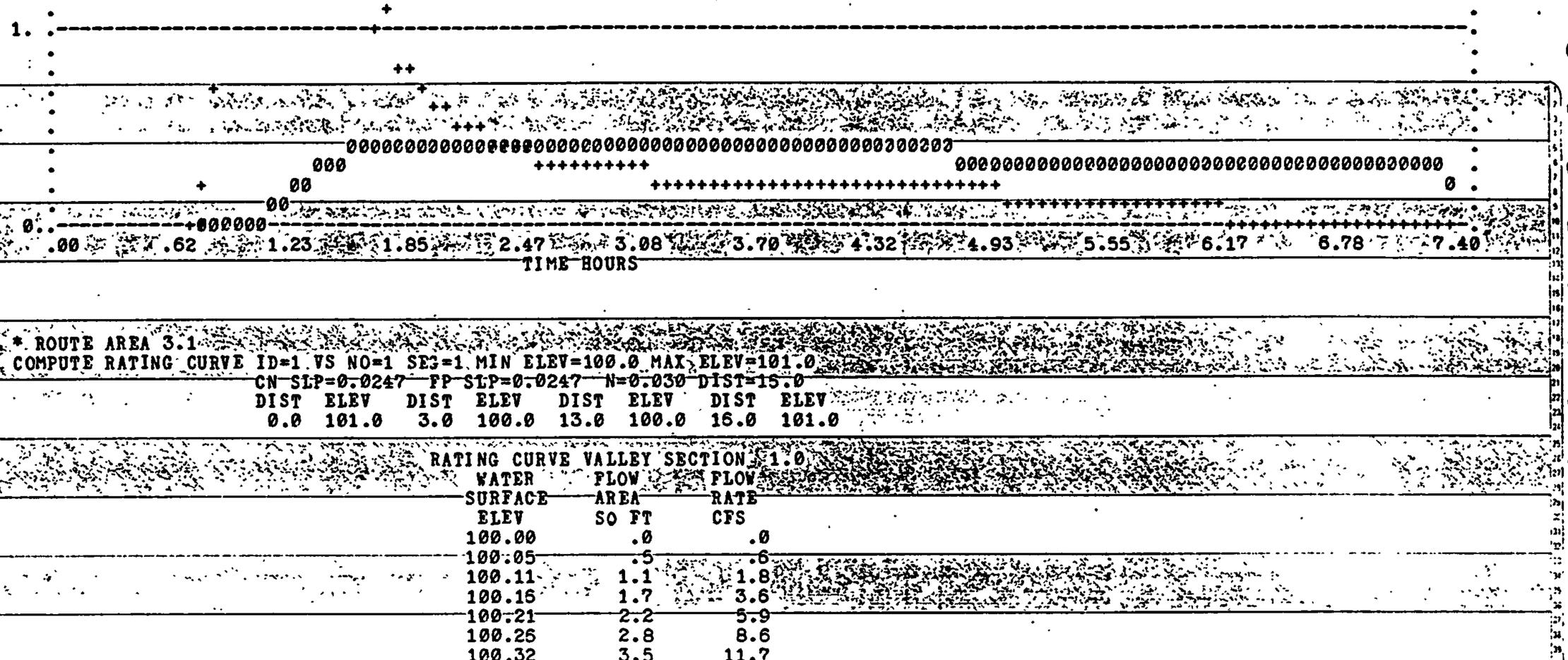
PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 103.11

RUNOFF VOLUME = .0414 INCHES = .299 ACRE-FEET
PEAK DISCHARGE RATE = 1.00 CFS

PLOT HYD ID=2 ID=1





* ROUTE AREA 3.1
COMPUTE RATING CURVE ID=1 VS NO=1 SEG=1 MIN ELEV=100.0 MAX ELEV=101.0
CN SLP=0.0247 FP SLP=0.0247 N=0.030 DIST=16.0

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0.0	101.0	3.0	100.0	13.0	100.0	16.0	101.0

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
100.00	.0	.0
100.05	.5	.6
100.11	1.1	1.8
100.16	1.7	3.6
100.21	2.2	5.9
100.26	2.8	8.6
100.32	3.5	11.7
100.37	4.1	15.3
100.42	4.7	19.2
100.47	5.4	23.5
100.53	6.1	28.2
100.58	6.8	33.2
100.63	7.5	38.6
100.68	8.2	44.4
100.74	9.0	50.6
100.79	9.8	57.1
100.84	10.5	64.0
100.89	11.3	71.3
100.95	12.2	78.9
101.00	13.0	86.9

COMPUTE TRAVEL TIME ID=5 REACH NO=1 NO VS=1 L=1700.0 FT SLP=0.0247

TRAVEL TIME TABLE
REACH 1.0

WATER DEPTH FEET	FLOW RATE CFS	TRAVEL TIME HRS
.05	.6	.4369
.11	1.8	.2782
.16	3.6	.2145
.21	5.9	.1789
.26	8.6	.1555
.32	11.7	.1391
.37	15.3	.1266
.42	19.2	.1168

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```
                                    .47      23.5      .1088
                                    .53      28.2      .1022
                                    .59      33.2      .0966
                                    .63      38.6      .0919
                                    .68      44.4      .0877
                                    .74      50.6      .0840
                                    .79      57.1      .0807
                                    .84      64.0      .0779
                                    .89      71.3      .0752
                                    .95      78.9      .0728
                                   1.00      86.9      .0706
ROUTE              ID=5 HYD NO=103.12 INFLOW ID=2 DT=0.050 HR
*
*                    **********************
*                    *  ON SITE DRAINAGE  *
*                    **********************
*
* TOTAL AREA = 0.02898 SQ MI   55% IMP
* IMPERVIOUS AREA
COMPUTE HYD        ID=1 HYD=121 DT=0.050 HR DA=0.01594 SQ MI CN=95
                   K=-0.04395 HR TP=-0.0879 HR
                   MASS RAINFALL -1
   SHAPE CONSTANT, N =  7.947    UNIT PEAK =      102.4 CFS
   RECESSION CONSTANT,K =   .0440 HRS    TIME TO PEAK OF UNIT HYD =   .0879 HRS    WATERSHED PARAMETER, B =  564.51
* PERVIOUS AREA
COMPUTE HYD        ID=2 HYD=122 DT=0.050 HR DA=0.01304 SQ MI CN=48
                   K=-0.04395 HR TP=-0.0879 HR
                   MASS RAINFALL -1
   SHAPE CONSTANT, N =  7.947    UNIT PEAK =       83.7 CFS
   RECESSION CONSTANT,K =   .0440 HRS    TIME TO PEAK OF UNIT HYD =   .0879 HRS    WATERSHED PARAMETER, B =  564.51
* COMPOSITE HYDROGRAPH FROM PHASE A-1
ADD HYD            ID=3 HYD=123 ID I=1 ID II=2
PRINT HYD          ID=3 CODE=5
                                PARTIAL HYDROGRAPH    123.00
```

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.500	1.1	3.000	.2	4.500	.1	6.000	.1
.250	5.9	1.750	.4	3.250	.2	4.750	.1	6.250	.0
.500	9.2	2.000	.3	3.500	.2	5.000	.1	6.500	.0
.750	6.6	2.250	.3	3.750	.2	5.250	.1		
1.000	6.1	2.500	.2	4.000	.1	5.500	.1		
1.250	3.9	2.750	.2	4.250	.1	5.750	.1		

```
   RUNOFF VOLUME =      .5251 INCHES   =      .812 ACRE-FEET
   PEAK DISCHARGE RATE =      19.97 CFS


*
*                    TOTAL ON SITE PLUS OFF SITE DRAINAGE
*
ADD HYD            ID=4 HYD=125 ID I=3 ID II=5
PRINT HYD          ID=4 CODE=1
                                PARTIAL HYDROGRAPH    125.00

   RUNOFF VOLUME =      .1264 INCHES   =      1.109 ACRE-FEET
   PEAK DISCHARGE RATE =      19.97 CFS
```

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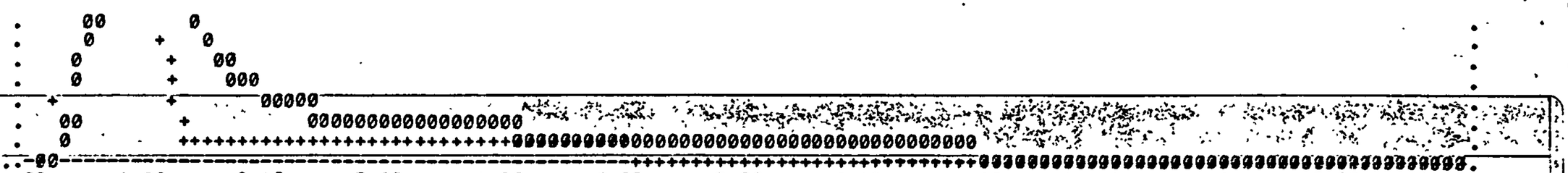
```
*
*                    POND BOTTOM 250' X 75' 3:1 SIDESLOPES
*
ROUTE RESERVOIR      ID=5 HYD NO=502 INFLOW ID=4
                     OUTFLOW (CFS)      STORAGE (AC FT)
                          0                  0
                        1.00               0.237
                        2.00               0.314
                        4.00               0.417
                        6.00               0.493
                        7.73               0.547
                        9.00               0.583
                       10.17               0.613
                       12.00               0.657
                       14.00               0.700
PLOT HYD             ID=5 ID=4
FLOW RATE (CFS)
20..-----------------------------------------------------------------------------
  .  +
  .
  .
  .
  .
  .
16..-----------------------------------------------------------------------------
  .
  .  +
  .
  .   +
  .
  .
  .
12..-----------------------------------------------------------------------------
  .
  .   +
  .
  .
  .
  .   +
  .
8..----+-------------------------------------------------------------------------
  .    +
  .    +
  .     +
  .     ++ +
  .      ++
  .  +    +
  .       +
  .       0
  .      0000
4. .-------00---0-------------------------------------------------------------
  .      0 +  0
  .     0    + 0
```

1015



PRINT HYD ID=5 CODE=3

OUTFLOW HYDROGRAPH RESERVOIR 502.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	3.000	1.1	6.000	.7	9.000	.4	12.000	.3
.150	.0	3.150	1.0	6.150	.7	9.150	.4	12.150	.3
.300	.3	3.300	1.0	6.300	.7	9.300	.4	12.300	.3
.450	1.2	3.450	1.0	6.450	.7	9.450	.4	12.450	.3
.600	2.5	3.600	1.0	6.600	.6	9.600	.4	12.600	.2
.750	3.5	3.750	.9	6.750	.6	9.750	.4	12.750	.2
.900	4.1	3.900	.9	6.900	.6	9.900	.4	12.900	.2
1.050	4.7	4.050	.9	7.050	.6	10.050	.4	13.050	.2
1.200	4.8	4.200	.9	7.200	.6	10.200	.4	13.200	.2
1.350	4.4	4.350	.9	7.350	.6	10.350	.4	13.350	.2
1.500	3.8	4.500	.8	7.500	.6	10.500	.3	13.500	.2
1.650	3.2	4.650	.8	7.650	.5	10.650	.3	13.650	.2
1.800	2.6	4.800	.8	7.800	.5	10.800	.3	13.800	.2
1.950	2.2	4.950	.8	7.950	.5	10.950	.3	13.950	.2
2.100	1.9	5.100	.8	8.100	.5	11.100	.3	14.100	.2
2.250	1.7	5.250	.8	8.250	.5	11.250	.3	14.250	.2
2.400	1.6	5.400	.8	8.400	.5	11.400	.3	14.400	.2
2.550	1.4	5.550	.7	8.550	.5	11.550	.3	14.550	.2
2.700	1.3	5.700	.7	8.700	.5	11.700	.3	14.700	.2
2.850	1.2	5.850	.7	8.850	.4	11.850	.3	14.850	.2

RUNOFF VOLUME = .1222 INCHES = 1.072 ACRE-FEET
PEAK DISCHARGE RATE = 4.81 CFS

FINISH

9/01

APPENDIX C

2 YEAR 6 HOUR STORM

POND VOLUME

COMPUTATIONS

SCANLON & ASSOCIATES
CONSULTING ENGINEERS
8008 Pennsylvania Circle NE
Albuquerque, New Mexico 87110-7897
(505) 265-6941

Project SUNRISE TERRACE UNIT 2
Location DRAINAGE REPORT
Job No. 85103.1 Date 11-19-86
By JCZ Sheet 1 of 2

RETENTION POND VOLUME COMPUTATION FOR 2YR-6HR STORM FOR PHASES A-1 AND B-1

2YR-6HR PRECIP = 0.979 IN

SCS RUNOFF EQUATION

$$\text{RUNOFF } Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

$$S = \frac{1000}{CN} - 10$$

OFFSITE AREA

CN = 68 → Q = 0.0003 IN

OFFSITE AREA WILL NOT PRODUCE ANY RUNOFF AND DOES NOT REQUIRE PONDING

ONSITE AREA

IMPERVIOUS AREA CN = 95 → Q = 0.55 IN.

PERVIOUS AREA CN = 48 → Q = 0.00 IN.

PHASE A-1

IMPERVIOUS AREA = 18.5 A.C.

RUNOFF VOLUME = AREA * Q

$$= (18.5 \text{ ac})(0.55 \text{ in})\left(\frac{1 \text{ ft}}{12 \text{ in}}\right)$$

$$= 0.464 \text{ ac. ft.}$$

SCANLON & ASSOCIATES INC
CONSULTING ENGINEERS
8008 Pennsylvania Circle NE
Albuquerque, New Mexico 87110-7897
(505) 265-6941

Project SUNRISE TERRACE UNIT 2
Location DRAINAGE REPORT
Job No. 85103.1 Date 11-19-86
By JLZ Sheet 2 of 2

APPROX POND SIZE WILL BE
75' X 165' BOTTOM X 1.5' DEEP
WITH 3:1 SIDE SLOPES
VOL = 0.4643 AC FT,

PHASE - B-1

IMPERVIOUS AREA = 22.7 AC.

RUNOFF VOLUME = $(22.7 \text{ ac})(0.55 \text{ IN})\left(\frac{1 \text{ ft}}{12 \text{ IN}}\right)$

= 1.040 AC. FT.

APPROX POND SIZE WILL BE
100' X 285' BOTTOM X 1.5' DEEP
WITH 3:1 SIDE SLOPES
VOL. = 1.042 AC. FT.

SCANLON & ASSOCIATES INC
CONSULTING ENGINEERS
8008 Pennsylvania Circle NE
Albuquerque, New Mexico 87110-7897
(505) 265-6941

Project 100 YR 24 HR VOLUME
Location SUNRISE TERRACE UNIT 2 PHASE A-1
Job No. 85-103.1 Date 7-12-86
By JKZ Sheet 1 of

100 YR - 24 HR PERCIPITATION FROM NOAH ATLAS

= 2.6 IN

AREAS FROM SEPT 10, 1985 REPORT

OFFSITE CN = 68 AREA = 86.7 ac.

RECEIVED
JUL 17 1986
HYDROLOGY

ONSITE

POROUS CN = 48 AREA = 8.4 AC.

IMPOROUS CN = 95 AREA = 10.2 AC

RUNOFF COMPUTATIONS FORMULAS FROM TR-55

$$S = \frac{1000}{CN} - 10 \qquad \text{RUNOFF } Q = \frac{(P - 0.2(S))^2}{P + 0.8(S)}$$

CN = 95

$$S_{95} = \frac{1000}{95} - 10 = 0.526 \text{ IN}$$

$$Q_{95} = \frac{(2.6 - 0.2(0.526))^2}{(2.6 - 0.8(0.526))} = 2.060 \text{ IN.}$$

CN = 68

$$S_{68} = \frac{1000}{68} - 10 = 4.706 \text{ IN}$$

$$Q_{68} = \frac{(2.6 - 0.2(4.706))^2}{(2.6 - 0.8(4.706))} = 0.432 \text{ IN}$$

CN = 48

$$S_{48} = \frac{1000}{48} - 10 = 10.833 \text{ IN}$$

$$Q_{48} = \frac{(2.6 - 0.2(10.833))^2}{(2.6 - 0.8(10.833))} = 0.017 \text{ IN}$$

$$\text{RUNOFF VOL} = \frac{A\,Q}{12 \text{ IN/FT}}$$

$$100 \text{YR} - 24 \text{HR. RUNOFF VOL} = \frac{(86.7)(0.432)}{12} + \frac{(8.4)(0.017)}{12} + \frac{(10.2)(2.060)}{12}$$

$$= 4.9 \text{ ac. Ft.}$$

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

August 29, 1985

Mr. Kyle Zimmermann
Scanlon & Associates, Inc.
8008 Pennsylvania Circle NE
Albuquerque, NM 87110

REF: DRAINAGE REPORT FOR SUNRISE TERRACE, UNIT 2 (L8-D1A) RECEIVED AUGUST 5, 1985

Dear Mr. Zimmermann:

The above referenced plan is approved for Preliminary Plat Approval. Please reference my August 2, 1985 letter for Final Plan approval conditions.

The following drawings and reports were the final approved drainage set.

1. Grading Plan, sheets 4, 5, 6, 7, 46, 47, 48 and 49 dated August 5, 1985.

2. Plate 2 & 3, Map L-8 dated August 5, 1985.

3. Drainage reports dated April 18, 1985 and July 11, 1985.

If you should have any questions, please feel free to call me at 766-7644.

Sincerely,

Carlos A. Montoya, PE
City/County Flood Plain Admin.

CAM:mrk

FAIRMONT INSURANCE COMPANY

3-22-85

Burbank, California

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS:

That FAIRMONT INSURANCE COMPANY, a California Corporation, does hereby make, constitute and appoint

ROGER A. HILL, RONNIE J. FORGUS, ANNE E. ADAMS, MOLLY A. REED

as its true lawful Attorney(s)-in-Fact, with full power and authority, for and on behalf of the Company as surety, to execute and deliver and affix the seal of the Company thereto, if a seal is required, bonds, undertakings, recognizances, consents of surety or other written obligations in the nature therof, as follows:

Any and all bonds, undertakings, recognizances, consents of surety or other written obligations in the nature thereof,

and to bind FAIRMONT INSURANCE COMPANY thereby, and all of the acts of said Attorney(s)-in-Fact, pursuant to these presents, are hereby ratified and confirmed.

This appointment is made under and by authority of the following Bylaws of the Company, which Bylaws are now in full force and effect:

> ARTICLE IV, Section 13. ATTORNEYS-IN-FACT AND AGENTS. The chairman of the board, the president, the vice president, the chief financial officer, or the secretary of the corporation may appoint attorneys-in-fact or agents with power and authority, as defined or limited in their respective powers of attorney, for and on behalf of the corporation to execute and deliver, and affix the seal of the Corporation thereto, bonds, undertakings, recognizances, consents of surety or other written obligations in the nature thereof and any of said oficers may remove any such attorney-in-fact or agent and revoke the power and authority given to him or her.
>
> ARTICLE IV, Section 14. AUTHORITY TO BIND. Any bond, undertaking, recognizance, consent of surety or written obligation in the nature thereof shall be valid and binding upon the corporation when signed by the chairman of the board, the president, the vice president, the chief financial officer, or the secretary of the corporation and duly attested and sealed, if a seal is required, by the secretary or assistant secretary, or shall be valid and binding upon the corporation when duly executed and sealed, if a seal is required, by a duly authorized attorney-in-fact or agent, pursuant to and within the limits of the authority granted by his or her power of attorney.

This power of attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of FAIRMONT INSURANCE COMPANY at a meeting duly called and held on the 4rd day of October, 1983:

> RESOLVED that the signature of any officer authorized by the Bylaws, and the seal of the corporation, may be affixed by facsimile to any power of attorney or special power of attorney or certification of either given for the execution of any bond, undertaking, recognizance consent of surety or other written obligation in the nature thereof; such signature and seal, when so used, being hereby adopted by the corporation as the original signature of such officer and the original seal of the corporation, to be valid and binding upon the corporation with the same force and effect as though manually affixed.

IN WITNESS WHEREOF, FAIRMONT INSURANCE COMPANY has caused these presents to be signed by its proper officer and its corporate seal to be hereunto affixed this 22nd day of March of 1985

FAIRMONT INSURANCE COMPANY INCORPORATED APR. 10 1970 CALIF.

FAIRMONT INSURANCE COMPANY

By

Signature Henry F. Wright, Vice President

ALBUQUERQUE
NEW MEXICO
1706

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

RECEIVED
NOV 19 1986
HYDROLOGY SECTION

November 3, 1986

Mr. Alan Ortega
Bellamah Community Development
P. O. Box 3300
Albuquerque, NM 87190

RE: SUNRISE TERRACE UNIT TWO, PHASE A-1, PROJECT #2907

Dear Mr. Ortega:

The City is currently negotiating with Bellamah Community Development to share in the construction of the Snow Vista Channel. The construction of the Snow Vista Channel will have a significant effect on the Sunrise Terrace Unit II construction drawings. I recommend that Bellamah Community Development initiate a revised DRB Infrastructure List reflecting these changed conditions at this time. Waiting until the last minute may delay acceptance of this project due to plan changes and necessary agreement changes.

The Subdivision Improvement Agreement will need an "Agreement and Ratification" when this list is finished. I also recommend that plan revisions be initiated along with the necessary change order documentation in order to not delay final acceptance, financial guarantee release and Agreement release.

Thank you,

Andre Houle, Senior Civil Engineer
Design Review Section
Public Works Dept./Engineering

AH/tar

cc: Fred Aquirre, PWD/Engineering-Hydrology Section
Russell B. Givler, PWD/Engineering-Construction Section
James N. Hicks, Principal Engineer/Design Section

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

October 16, 1986

Mr. John A. Myers
Jennson & Langhere, P.C.
Post Office Box 3238
Albuquerque, New Mexico 87190

RE: SUNRISE TERRACE/SNOW VISTA CHANNEL (L-8/D1A)

Dear John:

With respect to your letter dated October 16, 1986, the Temporary Retention Pond within the open space area will not be required if Bellamah contributes the amount identified at the AMAFCA Board meeting. However, per my discussion with Alan Ortega of Bellamah, interim ponding will be required for each phase of development. The volume to be ponded will be based on a 2 year storm for developed conditions. These ponds are to be constructed with an emergency overflow that will discharge into the historic drainage path. These ponds can be eliminated when the Snow Vista Channel is constructed and the necessary connections are provided to convey the storm water from the development into the channel.

Cordially,

Fred J. Aguirre, P.E.
Hydrology Section

cc: Dwayne Sheppard
Alan Ortega
Rich Leonard
Carlos Montoya

FJA/bsj

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

August 25, 1986

Kyle Zimmermann
Scanlon & Associates, Inc.
6008 Pennsylvania Circle, NE
Albuquerque, New Mexico 87110

RE: DRAINAGE REPORT FOR SUNRISE TERRACE, UNIT 2
PHASE A-1 (L-8/D1A)

Dear Mr. Zimmermann:

The above referenced plan, dated July 9, 1986, is approved for Phase A-1.

We still require drainage covenants and easements for the earth channel and ponds.

If you have any questions, call me at 766-7644.

Cordially,

Carlos A Montoya

Carlos A. Montoya, P.E.
City/County Floodplain Administrator

CAM/bsj

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

November 15, 1985

Kyle Zimmermann
Scanlon & Associates, Inc.
8008 Pennsylvania Circle, NE
Albuquerque, New Mexico 87110

RE: DRAINAGE REPORT FOR SUNRISE TERRACE, UNIT 2 PHASE A-1
RECEIVED OCTOBER 18, 1985 (L-8/D1A)

Dear Mr. Zimmermann:

I have reviewed the referenced plan and forward the following comments:

1. Require a drainage covenant for temporary earth channels and ponds for maintenance and liability responsibilities.

2. Any pond or earth channel which accepts public waters will require a public drainage easement. Please address if any of the temporary channels or ponds will accept public waters.

If you have any questions or comments regarding this project, please call me at 766-7644.

Cordially,

Carlos A. Montoya, P.E.
City/County Floodplain Administrator

CAM/bsj

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

June 2, 1986

Kyle Zimmerman
Scanlon & Associates
8008 Pennsylvania Circle, NE
Albuquerque, New Mexico 87110

RE: DRAINAGE REPORT FOR SUNRISE TERRACE, UNIT 2
PHASE A-1 RECEIVED OCTOBER 18, 1986 (L-8/D1A)

Dear Mr. Zimmerman:

The following comments are generated from the submittal to D.R.C. and my November 15, 1985, letter.

1. The volume of water at the retention pond should be determined from a 24 hour storm. This criteria was obtained from the drainage ordinance Section 12-K.

2. Submittal to State Engineer will depend if the following is exceeded:

   A. 10 Ac-Ft of volume for a 6 hour storm.

   B. Berms which exceed 10 feet in height above the lowest ground surface elevation.

   C. We will need an extra report and drawing of the retention pond so the State Engineer can review.

3. Require drainage covenants for ponds and earth channels.

4. Need public drainage easements for the ponds and channel.

5. Ponds deeper than 18 inches will require fencing. Concurrence will be required from Parks & Recreation.

6. Construction specifications will be required for the pond berms.

7. Freeboard will be needed for the retention pond.

If you have any questions, call me at 766-7644.

Cordially,

Carlos A. Montoya, P.E.
City/County Floodplain Administrator

cc: Andre Houle

CAM/bsj

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

July 8, 1986

Don Lopez
State Engineers Office
Battan Memorial Building
Santa Fe, New Mexico 87503

RE: DETERMINATION OF STATE REQUIREMENTS FOR POND
SUNRISE TERRACE UNIT II (L-E/D1A)

Dear Mr. Lopez:

We are in the process of reviewing the drainage plan for Sunrise Terrace Subdivision. Because there is no downstream capacity, a retention pond was required.

We are now requesting determination if the pond falls within State jurisdiction. We are submitting the engineer's pond drawing and details for review.

If other information is needed, please do not hesitate to call me at 766-7644.

Cordially,

Carlos A Montoya

Carlos A. Montoya, P.E.
City/County Floodplain Administrator

Attachments

cc: Andre Houle, DRC

CAM/bsj

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

July 6, 1986

Kyle Zimmerman
Scanlon & Associates, Inc.
8009 Pennsylvania Circle, NE
Albuquerque, New Mexico 87110

RE: DRAINAGE REPORT FOR SUNRISE TERRACE, UNIT 2
RECEIVED JUNE 26, 1986 (L-9/D1A)

Dear Mr. Zimmerman:

We have requested that Mr. Dan Lopez review the retention pond to determine if it is under State jurisdiction. Also, as of this date, we have not received the drainage covenants or easements.

If you have any questions, call me at 766-7644.

Cordially,

Carlos A. Montoya, P.E.
City/County Floodplain Administrator

CAM/bsj

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

July 21, 1986

Kyle Zimmerman
Scanlon & Associates, Inc.
8098 Pennsylvania Circle, NE
Albuquerque, New Mexico 87110

RE: DRAINAGE REPORT REVISION FOR SUNRISE TERRACE, UNIT 2
RECEIVED JULY 17, 1986 (L-3/D1A)

Dear Mr. Zimmerman:

The above referenced revision to the retention pond is approved (dated July 9, 1986). DRC also needs to review this new design.

Also, as of this date, we have not received the easements or covenants for the temporary channels and ponds.

If you have any questions, call me at 766-7644.

Cordially,

Carlos A. Montoya, P.E.
City/County Floodplain Administrator

cc: Andre Houle

CAM/bsj

MUNICIPAL DEVELOPMENT DEPARTMENT

860027

86110712

9-25-86 C 578

TEMPORARY EASEMENT AND COVENANT

This Grant of Temporary Easement and Covenant, between **BELLAMAH COMMUNITY DEVELOPMENT**, a New Mexico general partnership ("Grantor"), whose address is 6121 Indian School Road, N.E., Albuquerque, New Mexico 87110, and the **CITY OF ALBUQUERQUE**, a New Mexico municipal corporation ("City"), whose address is P. O. Box 1293, Albuquerque, New Mexico 87103, is made in Albuquerque, Bernalillo County, New Mexico and is entered into as of the date Grantor signs this Easement.

1. Recital. Grantor is the owner of certain real estate situate in Bernalillo County, New Mexico (the "Property"), and more particularly described as follows:

> Blocks 13 and 18 as shown on the unfiled plat of Unit B (West of Westland) of the Town of Atrisco Grant and Block 19 of Unit B of the Town of Atrisco Grant as filed for Record on March 26, 1962 at Bernalillo County in Plat Book D03 page 026.

?

Pursuant to City ordinances, regulations and other applicable laws, the Grantor is required to construct and maintain certain drainage facilities (the "Drainage Facilities") on the Property, and this agreement establishes the obligations and responsibilities of the parties, with respect to the Drainage Facilities to be constructed within the Easement, granted herein, pursuant to that certain AMENDMENT TO THE FINAL DRAINAGE REPORT

SUNRISE TERRACE UNIT II FOR INTERIM DRAINAGE MANAGEMENT OF PHASE A-1 PREPARED FOR BELLAMAH COMMUNITY DEVELOPMENT BY SCANLON AND ASSOCIATES, INC. DATED SEPTEMBER 10, 1985 (the "Drainage Report"), New drainage plan CITY OF ALBUQUERQUE PROJECT NO. 2907.

2. Grant of Easement. The Grantor grants to the City a temporary easement with warranty covenants ("Easement") in, over, upon and across a portion of the Property for the sole purpose of occasional or intermittent overland flow of storm water drainage. The Easement is more particularly described in the attached Exhibit "A".

The grant of the Easement includes the right of the City to enter upon the Easement at any time for inspection, installation, maintenance, repair or modification and the right to remove trees, bushes, undergrowth and any other obstacles if the City determines they interfere with the appropriate use of the Temporary Easement. However, such right of entry is limited to the extent authorized by Paragraph 5 hereof.

Grantor agrees for itself and its successors in interest that it has been paid in valuable consideration and that the grant of this Easement is not a gift or donation.

This Easement is worded pursuant to the provisions of §§ 47-1-27 to 47-1-44, N.M.S.A. 1978 or successor statutes.

3. Description and Construction of Drainage Facilities. Grantor shall construct, and maintain the following

"Drainage Facilities" within the Easement at Grantor's sole expense in accordance with the Drainage Report and the standards, plans and specifications approved by the City:

> Graded earth channel and drainage water detention basin.

The Grantor will not permit the Drainage Facilities to constitute a hazard to the health or safety of the general public.

4. Demand for Construction or Repair. In the event Grantor fails to construct, maintain or repair the Drainage Facilities as required herein, the City may send written notice ("Notice") to the Grantor requiring the Grantor to construct or repair the Drainage Facilities in accordance with the Drainage Report within fourteen (14) days ("Deadline") of receipt of the Notice, and the Grantor will comply promptly with the requirements of the Notice. The Grantor will perform all required work by the Deadline, at Grantor's sole expense.

5. Failure to Perform by Grantor and Emergency Work by City. If the Drainage Facilities have not been constructed or maintained in conformance with the Drainage Report by the Deadline or, without notice, if the City determines that an emergency condition exists, the City may perform the work itself, which work shall be in conformance with the Drainage Report. The City then may assess the Grantor for the cost of the work and for any other expenses or damages which result from Grantor's failure to

perform. The Grantor agrees promptly to pay the City the amount assessed. If the Grantor fails to pay the City within thirty (30) days after the City gives the Grantor written notice of the amount due, the City may impose a lien against the Property for this or a pond the total resulting amount.

6. Liability of City for Repair after Notice or as a Result of Emergency. The City shall not be liable to the Grantor for any damages resulting from the City's repair or maintenance following Notice to the Grantor as required in this agreement or in an emergency unless the damages are the result of the reckless conduct or negligence of the City.

7. Indemnification. As a part of the consideration for this grant, subject to the provisions of the New Mexico Tort Claims Act and all other applicable New Mexico laws, the City agrees to save Grantor harmless from any and all liability arising from the City's negligent construction, maintenance or use of or the repair, or emergency work on the Drainage Facilities, or the Easement. The City does not agree to save Grantor harmless from any liability which may arise from Grantor's use of the Drainage Facilities and the Property.

8. Cancellation of Agreement and Release of Covenant. This agreement shall be cancelled and Grantor's Covenants released upon the City's acceptance of permanent drainage facilities.

9. Assessment. Nothing in this agreement shall be construed to relieve the Grantor, its assigns and successors from an assessment against the Property for improvements to the Property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the Drainage Facilities will not reduce the amount assessed by the City.

10. Warranty. 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 Easement, that the Property is free from all encumbrances except encumbrances of record and taxes due and owing the Treasurer of Bernalillo County, and that the Grantor will forever warrant and defend the title to the Easement against all claims from all persons or entities.

11. Binding on Grantor's Property. The grant and other provisions of this agreement shall be binding upon Grantor, Grantor's successors and assigns and constitute covenants running with the Property for the benefit of the City and its successors and assigns until terminated.

12. Notice. For purposes of giving formal written notice to the Grantor, Grantor's address is:

Bellamah Community Development
6121 Indian School Road N.E.
Albuquerque, New Mexico 87110

Notice may be given to the Grantor either in person or by mailing the notice by regular U. ^ Mail, postage paid. Notice will be considered to have been received by the Grantor within six (6) days after the notice is mailed if there is no actual evidence of receipt. The Grantor may change Grantor's address by giving written notice of the change of certified mail, return receipt requested, to the City Public Works Depart ent, P.O. Box 1293, Albuquerque, New Mexico 87103.

GRANTOR: BELLAMAH COMMUNITY DEVELOPMENT, a New Mexico general partnership

By _____
Its D. T. Robertson, Senior Vice President and Regional Manager
Dated: 9/25/86

CITY: CITY OF ALBUQUERQUE, a New Mexico municipal corporation

By _____
Its PRINCIPAL ENGINEER/DESIGN
Dated: 10/7/86

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

The foregoing instrument was duly acknowledged before me this 25th day of September, 1986, by L.J. Robertson, Services/Eng Manager of **BELLAMAH COMMUNITY DEVELOPMENT**, a New Mexico general partnership, on behalf of said partnership.

Jane L. Borkey
Notary Public

My Commission Expires:

6-5-90

OFFICIAL SEAL
JANE L. BORKEY
NOTARY PUBLIC - STATE OF NEW MEXICO
Notary Public Filed with Secretary of State
My Commission Expires 6-5-90

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

The foregoing instrument was duly acknowledged before me this 7th day of October, 1986, by James M. Hicks, Municipal Dev. Director of **THE CITY OF ALBUQUERQUE**, a New Mexico a New Mexico municipal corporation, on behalf of said corporation.

Maria D Romero
Notary Public

My Commission Expires:

5-5-1990

TEM14ST1.LDC:K4

TEMPORARY DRAINAGE EASEMENT
EXHIBIT "A"

TRACT A

A tract of land situated within the projected Section 29, Township 10 North, Range 2 East, N.M.P.M., within the Town of Atrisco Grant Bernalillo County, New Mexico and partly within portions of Blocks 13, 18 and 19 and adjoining streets as shown on the unfiled plat of UNIT B (WEST OF WESTLAND) OF THE TOWN OF ATRISCO GRANT, portions of said Unit B being shown on the PLAT OF LANDS OF ATRISCO GRANT WITHIN SECTIONS 28, 29 & 30, T10N, R2E, N.M.P.M. as filed for record March 26, 1962 at Bernalillo County in plat book D03 page 026, said tract containing 5.017 acres, more or less, and being more particularly described as follows:

BEGINNING at a point on the westerly boundary of Lot 1, Block 19 of said Unit B from whence the City of Albuquerque Survey brass cap "7-L9" having New Mexico State Plane Coordinates (Central Zone) Y=1,478,346.71 feet, X=352,978.14 feet, bears N 77° 36' 25" E a distance of 1525.32 feet and from whence a brass cap at the projected southeast corner of said Section 29 bears S 23° 16' 34" E a distance of 1257.11 feet;

THENCE S 00° 18' 03" W along the easterly boundary of said Lot 1, Block 19 a distance of 334.74 feet;
THENCE N 89° 41' 57" W a distance of 154.30 feet;
THENCE N 00° 18' 03" E a distance of 140.00 feet;
THENCE N 89° 41' 57" W a distance of 1425.69 feet;
THENCE S 00° 18' 03" W a distance of 24.00 feet;
THENCE N 89° 41' 57" W a distance of 285.00 feet;
THENCE N 00° 18' 03" E a distance of 290.00 feet;
THENCE S 89° 41' 57" E a distance of 262.67 feet;
THENCE N 34° 36' 03" E a distance of 4.96 feet;
THENCE S 54° 40' 13" E a distance of 50.00 feet;
THENCE S 34° 36' 03" W a distance of 37.99 feet;
THENCE S 00° 18' 03" W a distance of 150.01 feet;
THENCE S 89° 41' 57" E a distance of 1425.69 feet;
THENCE N 00° 18' 03" E a distance of 35.00 feet;
THENCE S 89° 41' 57" E a distance of 5.00 feet;
THENCE N 00° 18' 03" E a distance of 75.00 feet;
THENCE S 89° 41' 57" E a distance of 50.00 feet;
THENCE N 00° 18' 03" E a distance of 24.74 feet;
THENCE S 89° 41' 57" E a distance of 99.30 feet to the POINT OF BEGINNING.

AT
ATRISCO GRANT

S 28, 29, & 30
N.M.P.M.,
by Robert E Stephenson,
ed in the District
August 1961.

UNIT B of the
TOWN of ATRISCO GRANT
FILED: March 26, 1962
VOLUME D03 FOLIO 026
Zone Atlas Map L-08

586

WESTLAN

TRACTS ALLOTTED FROM ATRISCO GRANT FILED DEC 5, 1961

U S HIGHWAY 66

CENTRAL AVE.

(McArthur Road)

(Sanchez Road)

(King Road)

San Ygnacio Road

Eucarlz Road

Ardens Street

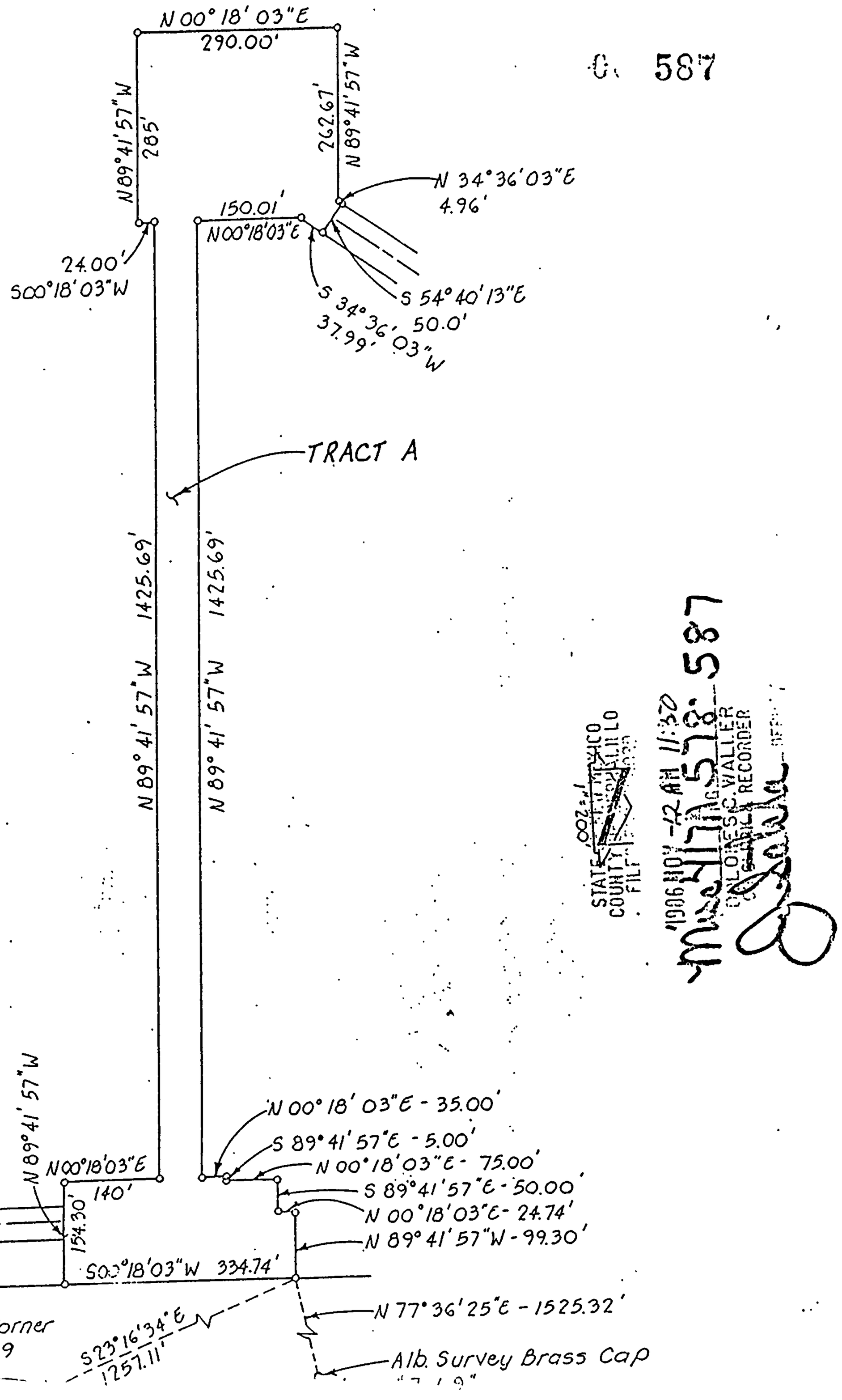
110th Street

106th Street

102nd Street

98th Street

TRACT A


N 00° 18' 03"E
290.00'
N89°41'57"W
285'
262.67'
N 89°41'57"W
N 34°36'03"E
4.96'
150.01'
N00°18'03"E
24.00'
S00°18'03"W
S 34°36'03"W
37.99'
S 54°40'13"E
50.0'
TRACT A
N 89° 41' 57"W 1425.69'
N 89° 41' 57"W 1425.69'
STATE OF NEW MEXICO
COUNTY OF DONA ANA
FILED
'1996 NOV -2 AM 11:32
587
DALORES C. VALLIER
COUNTY CLERK AND RECORDER
N89°41'57"W
N00°18'03"E
140'
154.30'
S00°18'03"W 334.74'
N 00° 18' 03"E - 35.00'
S 89° 41' 57"E - 5.00'
N 00° 18' 03"E - 75.00'
S 89° 41' 57"E - 50.00'
N 00° 18' 03"E - 24.74'
N 89° 41' 57"W - 99.30'
N 77° 36' 25"E - 1525.32'
Brass Cap at S.E. Corner
of Projected Sec. 29
S23°16'34"E
1257.11'
Alb. Survey Brass Cap

K

860027

86110713

9-25-86

588

TEMPORARY EASEMENT AND COVENANT

This Grant of Temporary Easement and Covenant, between **BELLAMAH COMMUNITY DEVELOPMENT**, a New Mexico general partnership ("Grantor"), whose address is 6121 Indian School Road, N.E., Albuquerque, New Mexico 87110, and the **CITY OF ALBUQUERQUE**, a New Mexico municipal corporation ("City"), whose address is P. O. Box 1293, Albuquerque, New Mexico 87103, is made in Albuquerque, Bernalillo County, New Mexico and is entered into as of the date Grantor signs this Easement.

1. Recital. Grantor is the owner of certain real estate situate in Bernalillo County, New Mexico (the "Property"), and more particularly described as follows:

> Block 19 of Unit B of the Town of Atrisco Grant as filed for Record on March 26, 1962 at Bernalillo County in Plat Book D03 page 026.

Pursuant to City ordinances, regulations and other applicable laws, the Grantor is required to construct and maintain certain drainage facilities (the "Drainage Facilities") on the Property, and this agreement establishes the obligations and responsibilities of the parties, with respect to the Drainage Facilities to be constructed within the Easement, granted herein, pursuant to that certain AMENDMENT TO THE FINAL DRAINAGE REPORT SUNRISE TERRACE UNIT II FOR INTERIM DRAINAGE MANAGEMENT OF PHASE

A-1 PREPARED FOR BELLAMAH COMMUNITY DEVELOPMENT BY SCANLON AND ASSOCIATES, INC. DATED SEPTEMBER 10, 1985 (the "Drainage Report"), CITY OF ALBUQUERQUE PROJECT NO. 2907.

2. Grant of Easement. The Grantor grants to the City a temporary easement with warranty covenants ("Easement") in, over, upon and across a portion of the Property for the sole purpose of occasional or intermittent overland flow of storm water drainage. The Easement is more particularly described in the attached Exhibit "A".

The grant of the Easement includes the right of the City to enter upon the Easement at any time for inspection, installation, maintenance, repair or modification and the right to remove trees, bushes, undergrowth and any other obstacles if the City determines they interfere with the appropriate use of the Temporary Easement. However, such right of entry is limited to the extent authorized by Paragraph 5 hereof.

Grantor agrees for itself and its successors in interest that it has been paid in valuable consideration and that the grant of this Easement is not a gift or donation.

This Easement is worded pursuant to the provisions of §§ 47-1-27 to 47-1-44, N.M.S.A. 1978 or successor statutes.

3. Description and Construction of Drainage Facilities. Grantor shall construct, and maintain the following "Drainage Facilities" within the Easement at Grantor's sole

expense in accordance with the Drainage Report and the standards, plans and specifications approved by the City:

Graded earth channel. Asphalt ch.

The Grantor will not permit the Drainage Facilities to constitute a hazard to the health or safety of the general public.

4. Demand for Construction or Repair. In the event Grantor fails to construct, maintain or repair the Drainage Facilities as required herein, the City may send written notice ("Notice") to the Grantor requiring the Grantor to construct or repair the Drainage Facilities in accordance with the Drainage Report within fourteen (14) days ("Deadline") of receipt of the Notice, and the Grantor will comply promptly with the requirements of the Notice. The Grantor will perform all required work by the Deadline, at Grantor's sole expense.

5. Failure to Perform by Grantor and Emergency Work by City. If the Drainage Facilities have not been constructed or maintained in conformance with the Drainage Report by the Deadline or, without notice, if the City determines that an emergency condition exists, the City may perform the work itself, which work shall be in conformance with the Drainage Report. The City then may assess the Grantor for the cost of the work and for any other expenses or damages which result from Grantor's failure to perform. The Grantor agrees promptly to pay the City the amount

assessed. If the Grantor fails to pay the City within thirty (30) days after the City gives the Grantor written notice of the amount due, the City may impose a lien against the Property for the total resulting amount.

6. Liability of City for Repair after Notice or as a Result of Emergency. The City shall not be liable to the Grantor for any damages resulting from the City's repair or maintenance following Notice to the Grantor as required in this agreement or in an emergency unless the damages are the result of the reckless conduct or negligence of the City.

7. Indemnification. As a part of the consideration for this grant, subject to the provisions of the New Mexico Tort Claims Act and all other applicable New Mexico laws, the City agrees to save Grantor harmless from any and all liability arising from the City's negligent construction, maintenance or use of or the repair, or emergency work on the Drainage Facilities, or the Easement. The City does not agree to save Grantor harmless from any liability which may arise from Grantor's use of the Drainage Facilities and the Property.

8. Cancellation of Agreement and Release of Covenant. This agreement shall be cancelled and Grantor's Covenants released upon the City's acceptance of permanent drainage facilities.

9. Assessment. Nothing in this agreement shall be construed to relieve the Grantor, its assigns and successors from an assessment against the Property for improvements to the Property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the Drainage Facilities will not reduce the amount assessed by the City.

10. Warranty. 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 Easement, that the Property is free from all encumbrances except encumbrances of record and taxes due and owing the Treasurer of Bernalillo County, and that the Grantor will forever warrant and defend the title to the Easement against all claims from all persons or entities.

11. Binding on Grantor's Property. The grant and other provisions of this agreement shall be binding upon Grantor, Grantor's successors and assigns and constitute covenants running with the Property for the benefit of the City and its successors and assigns until terminated.

12. Notice. For purposes of giving formal written notice to the Grantor, Grantor's address is:

Bellamah Community Development
6121 Indian School Road N.E.
Albuquerque, New Mexico 87110

Notice may be given to the Grantor either in person or by mailing the notice by regular U.S. Mail, postage paid. Notice will be considered to have been received by the Grantor within six (6) days after the notice is mailed if there is no actual evidence of receipt. The Grantor may change Grantor's address by giving written notice of the change of certified mail, return receipt requested, to the City Public Works Department, P.O. Box 1293, Albuquerque, New Mexico 87103.

GRANTOR: BELLAMAH COMMUNITY DEVELOPMENT, a New Mexico general partnership

By _____
Its D. T. Robertson, Senior Vice President
Dated: 9/25/86 and Regional Manager

CITY: CITY OF ALBUQUERQUE, a New Mexico municipal corporation

By _____
Its _____
Dated: _____

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

The foregoing instrument was duly acknowledged before me this 25th day of September, 1986, by D.T. Robertson, Sr. Vice Pres/Regional Manager of **BELLAMAH COMMUNITY DEVELOPMENT**, a New Mexico general partnership, on behalf of said partnership.

Jane L. Borkey
Notary Public

My Commission Expires:

6-5-90

OFFICIAL SEAL
JANE L. BORKEY
NOTARY PUBLIC - STATE OF NEW MEXICO
Notary Public Filed with Secretary of State
My Commission Expires 6-5-90

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

The foregoing instrument was duly acknowledged before me this 7th day of October, 1986, by James M. Hicks, Principal Eng./Design of **THE CITY OF ALBUQUERQUE**, a New Mexico a New Mexico municipal corporation, on behalf of said corporation.

Maria D. Romero
Notary Public

My Commission Expires:

5-5-1990

TEM14ST3.LDC:K4

TEMPORARY DRAINAGE EASEMENT
EXHIBIT "A"

TRACT C

A strip of land situated within the projected Section 29, Township 10 North, Range 2 East, N.M.P.M., within the Town of Atrisco Grant, Bernalillo County, New Mexico and partly within Block 19 as shown on the PLAT OF LANDS OF ATRISCO GRANT WITHIN SECTIONS 28, 29 & 30, T10N, R2E, N.M.P.M. as filed for record March 26, 1962 at Bernalillo County in plat book D03 page 026, said strip having an area of 1.167 acres, more or less, and having a uniform width 52 feet and lying 26 feet on each side of the following described centerline:

BEGINNING at a point from whence the City of Albuquerque survey brass cap "7-L9", having New Mexico State Plane Coordinates (Central Zone) Y=1,478,346.71 feet X=352,978.14, bears N 67° 21' 16" E a distance of 1718.31 feet and from whence a brass cap at the projected Southeast corner of said section 29 bears S 35° 50' 47" E a distance of 1012.30 feet;

THENCE S 00° 18' 03" W a distance of 536.60 feet to a point of curvature;

THENCE on a curve to the left a distance of 395.88 feet, said curve having a radius of 252.92 feet, a tangent length of 251.52 feet, and a chord which bears S 44° 32' 24" E a distance of 356.69 feet;

THENCE S 89° 22' 50" E a distance of 45.42 feet to a point on the westerly right-of-way of 102nd Street, SW and the POINT OF ENDING, from whence the brass cap at the projected Southeast corner of said Section 29 bears S 84° 25' 58" E a distance of 301.46 feet.

IONS 28, 29, & 30
E, N.M.P.M.,
port by Robert B Stephenson,
se filed in the District
ay of August 1961.

UNIT B of the
TOWN of ATRISCO GRANT
FILED: March 26, 1962
VOLUME D03 FOLIO 026
Zone Atlas Map L-08

596

WESTLAND

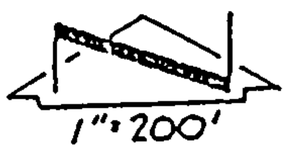
TRACTS ALLOTTED FROM TOWN OF ATRISCO GRANT FILED DEC 5, 1941

TRACT C

CENTRAL AVE.
U.S. HIGHWAY 66
(HIGHWAY DEPT. BEARING N 74° 53' 30" E)

Street
(Barnes Ave and Supply Co)
(Sarchet Road)
(McArthur Road)
106th
110th
Gardens
Road
(King Road)
Eucaru
NORTH
102nd Street
98th Street
(Doolittle Ave)
Road
N 74° 23' 10" E Tower
San Ygnacio Road
(Col. Pecos Road)
Easement

1061.70'
210.00'
N 89° 53' 30" W
S 89° 53' 30" W



Alb. Survey
Brass Cap
"7-L9"

N 41°40'05"E 1944.98'

52'
26'

N 00°18'03"E 536.60'

S 84°25'58"E
301.46'

TRACT C

R. = 252.90'
L. = 395.88'
T. = 251.52
Δ = 89°40'53"

102 ND STREET

DRAINAGE R.O.W.

S 89°22'50"E
45.42'

Brass Cap at S.E. Corner of Projected Section 29 T10N, R2E, N.M.P.M.

STATE OF NEW MEXICO
COUNTY OF BERNALILLO
FILED FOR RECORD

1986 NOV 12 AM 11:52

Misc 417 Pg 588-597

DOLORES C. WALLER
CO. CLERK & RECORDER

860027

86110714 9-25-86 598

TEMPORARY EASEMENT AND COVENANT

This Grant of Temporary Easement and Covenant, between **BELLAMAH COMMUNITY DEVELOPMENT**, a New Mexico general partnership ("Grantor"), whose address is 6121 Indian School Road, N.E., Albuquerque, New Mexico 87110, and the **CITY OF ALBUQUERQUE**, a New Mexico municipal corporation ("City"), whose address is P. O. Box 1293, Albuquerque, New Mexico 87103, is made in Albuquerque, Bernalillo County, New Mexico and is entered into as of the date Grantor signs this Easement.

1. Recital. Grantor is the owner of certain real estate situate in Bernalillo County, New Mexico (the "Property"), and more particularly described as follows:

> Blocks 13 and 18 as shown on the unfiled plat of Unit B (West of Westland) of the Town of Atrisco Grant.

Pursuant to City ordinances, regulations and other applicable laws, the Grantor is required to construct and maintain certain drainage facilities (the "Drainage Facilities") on the Property, and this agreement establishes the obligations and responsibilities of the parties, with respect to the Drainage Facilities to be constructed within the Easement, granted herein, pursuant to that certain AMENDMENT TO THE FINAL DRAINAGE REPORT SUNRISE TERRACE UNIT II FOR INTERIM DRAINAGE MANAGEMENT OF PHASE

A-1 PREPARED FOR BELLAMAH COMMUNITY DEVELOPMENT BY SCANLON AND ASSOCIATES, INC. DATED SEPTEMBER 10, 1985 (the "Drainage Report"), CITY OF ALBUQUERQUE PROJECT NO. 2907.

2. Grant of Easement. The Grantor grants to the City a temporary easement with warranty covenants ("Easement") in, over, upon and across a portion of the Property for the sole purpose of occasional or intermittent overland flow of storm water drainage. The Easement is more particularly described in the attached Exhibit "A".

The grant of the Easement includes the right of the City to enter upon the Easement at any time for inspection, installation, maintenance, repair or modification and the right to remove trees, bushes, undergrowth and any other obstacles if the City determines they interfere with the appropriate use of the Temporary Easement. However, such right of entry is limited to the extent authorized by Paragraph 5 hereof.

Grantor agrees for itself and its successors in interest that it has been paid in valuable consideration and that the grant of this Easement is not a gift or donation.

This Easement is worded pursuant to the provisions of §§ 47-1-27 to 47-1-44, N.M.S.A. 1978 or successor statutes.

3. Description and Construction of Drainage Facilities. Grantor shall construct, and maintain the following "Drainage Facilities" within the Easement at Grantor's sole

expense in accordance with the Drainage Report and the standards, plans and specifications approved by the City:

Graded earth channel and drainage swale.

The Grantor will not permit the Drainage Facilities to constitute a hazard to the health or safety of the general public.

4. Demand for Construction or Repair. In the event Grantor fails to construct, maintain or repair the Drainage Facilities as required herein, the City may send written notice ("Notice") to the Grantor requiring the Grantor to construct or repair the Drainage Facilities in accordance with the Drainage Report within fourteen (14) days ("Deadline") of receipt of the Notice, and the Grantor will comply promptly with the requirements of the Notice. The Grantor will perform all required work by the Deadline, at Grantor's sole expense.

5. Failure to Perform by Grantor and Emergency Work by City. If the Drainage Facilities have not been constructed or maintained in conformance with the Drainage Report by the Deadline or, without notice, if the City determines that an emergency condition exists, the City may perform the work itself, which work shall be in conformance with the Drainage Report. The City then may assess the Grantor for the cost of the work and for any other expenses or damages which result from Grantor's failure to perform. The Grantor agrees promptly to pay the City the amount

assessed. If the Grantor fails to pay the City within thirty (30) days after the City gives the Grantor written notice of the amount due, the City may impose a lien against the Property for the total resulting amount.

6. Liability of City for Repair after Notice or as a Result of Emergency. The City shall not be liable to the Grantor for any damages resulting from the City's repair or maintenance following Notice to the Grantor as required in this agreement or in an emergency unless the damages are the result of the reckless conduct or negligence of the City.

7. Indemnification. As a part of the consideration for this grant, subject to the provisions of the New Mexico Tort Claims Act and all other applicable New Mexico laws, the City agrees to save Grantor harmless from any and all liability arising from the City's negligent construction, maintenance or use of or the repair, or emergency work on the Drainage Facilities, or the Easement. The City does not agree to save Grantor harmless from any liability which may arise from Grantor's use of the Drainage Facilities and the Property.

8. Cancellation of Agreement and Release of Covenant. This agreement shall be cancelled and Grantor's Covenants released upon the City's acceptance of permanent drainage facilities.

9. Assessment. Nothing in this agreement shall be construed to relieve the Grantor, its assigns and successors from an assessment against the Property for improvements to the Property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the Drainage Facilities* will not reduce the amount assessed by the City.

10. Warranty. 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 Easement, that the Property is free from all encumbrances except encumbrances of record and taxes due and owing the Treasurer of Bernalillo County, and that the Grantor will forever warrant and defend the title to the Easement against all claims from all persons or entities.

11. Binding on Grantor's Property. The grant and other provisions of this agreement shall be binding upon Grantor, Grantor's successors and assigns and constitute covenants running with the Property for the benefit of the City and its successors and assigns until terminated.

12. Notice. For purposes of giving formal written notice to the Grantor, Grantor's address is:

Bellamah Community Development
6121 Indian School Road N.E.
Albuquerque, New Mexico 87110

Notice may be given to the Grantor either in person or by mailing the notice by regular U.S. Mail, postage paid. Notice will be considered to have been received by the Grantor within six (6) days after the notice is mailed if there is no actual evidence of receipt. The Grantor may change Grantor's address by giving written notice of the change of certified mail, return receipt requested, to the City Public Works Department, P.O. Box 1293, Albuquerque, New Mexico 87103.

GRANTOR: BELLAMAH COMMUNITY DEVELOPMENT, a New Mexico general partnership

By _____
Its D. T. Robertson, Senior Vice President
Dated: 9/25/86 and Regional Manager

CITY: CITY OF ALBUQUERQUE, a New Mexico municipal corporation

By _____
Its PRINCIPAL SYNERGIC DESIGN
Dated: 10/7/86

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

The foregoing instrument was duly acknowledged before me this 25th day of September, 1986, by D.T. Robertson, Sr. Vice Pres./Reg. Mgr. of BELLAMAH COMMUNITY DEVELOPMENT, a New Mexico general partnership, on behalf of said partnership.

Jane L. Borkey
Notary Public

My Commission Expires:
6-5-90

OFFICIAL SEAL
JANE L. BORKEY
NOTARY PUBLIC STATE OF NEW MEXICO
Notary Public Filed with Secretary of State
My Commission Expires 6-5-90

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

The foregoing instrument was duly acknowledged before me this 7th day of October, 1986, by James M. Hicks, Municipal Eng./Design of THE CITY OF ALBUQUERQUE, a New Mexico a New Mexico municipal corporation, on behalf of said corporation.

Maria D. Romero
Notary Public

My Commission Expires:
5-5-1990

TEM14ST2.LDC:K4

TEMPORARY DRAINAGE EASEMENT
EXHIBIT "A"

TRACT B

A strip of land situated within the projected Section 29, Township 10 North, Range 2 East, N.M.P.M., within the Town of Atrisco Grant, Bernalillo County, New Mexico and partly within Block 13 and 18 and adjoining streets as shown on the unfiled plat of UNIT B (WEST OF WESTLAND) OF THE TOWN OF ATRISCO GRANT, portions of said Unit B being shown on the PLAT OF LANDS OF ATRISCO GRANT WITHIN SECTIONS 28, 29 & 30, T10N, R2E, N.M.P.M. as filed for record March 26, 1962 at Bernalillo County in plat book D03 page 026, said strip having an area of 1.083 acres, more or less, and having a uniform width 50 feet and lying 25 feet on each side of the following described centerline:

BEGINNING at a point from whence the City of Albuquerque survey brass cap "7-L9", having New Mexico State Plane Coordinates (Central Zone) Y=1,478,346.71 feet X=352,978.14, bears N 85° 11' 34" E a distance of 3079.32 and from whence a brass cap at the projected Southeast corner of said section 29 bears S 59° 28' 06" E a distance of 2409.57 feet;

THENCE N 34° 36' 03" E a distance of 123.53 feet to a point of curvature;

THENCE on a curve to the left a distance of 113.77 feet, said curve having a radius of 144.85 feet, a tangent length of 60.00 feet, and a chord which bears N 12° 06' 03" E a distance of 110.87 feet;

THENCE N 10° 23' 57" W a distance of 106.00 feet to the POINT OF ENDING, from whence the said City of Albuquerque survey brass cap "7-L9" bears S 78° 17' 12" E a distance of 2709.95 feet.

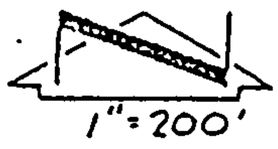
AT
ATRISCO GRANT

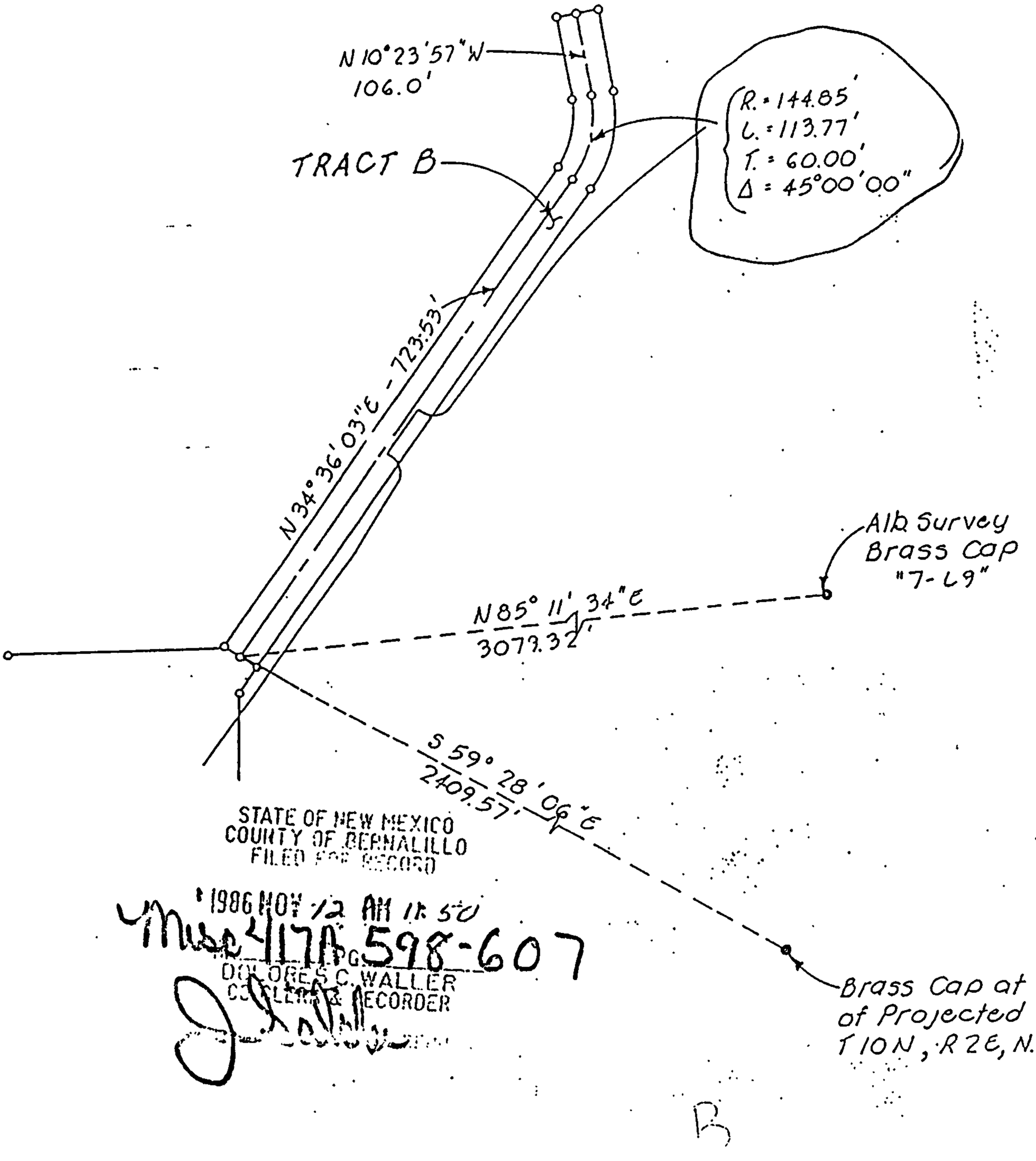
IS 28, 29, & 30
N.M.P.M.,
by Robert S Stephenson,
ted in the District
f August 1961.

UNIT B of the
TOWN of ATRISCO GRANT
FILED: March 26, 1962
VOLUME D03 FOLIO 026
Zone Atlas Map L-08

TRACT B

CENTRAL AVE.
U S HIGHWAY 66
(McArthur Road)
(Sanchez Road)
(King Road)
San Ygnacio Road
Tower
Street
WESTLAND
TOWN OF ATRISCO GRANT
SEC 5, T 10 N, R 2 E
606





STATE OF NEW MEXICO
COUNTY OF BERNALILLO
FILED FOR RECORD

'1986 NOV 12 AM 11:50

Misc 417A pg 598-607

DOLORES C. WALLER
COUNTY CLERK & RECORDER

B

9-25-86

860027

86108131

912

Pond which was to be built on 102 at. 10AC-FT

TEMPORARY EASEMENT AND COVENANT

This Grant of Temporary Easement and Covenant, between BELLAMAH COMMUNITY DEVELOPMENT, a New Mexico general partnership ("Grantor"), whose address is 6121 Indian School Road, N.E., Albuquerque, New Mexico 87110, and the CITY OF ALBUQUERQUE, a New Mexico municipal corporation ("City"), whose address is P. O. Box 1293, Albuquerque, New Mexico 87103, is made in Albuquerque, Bernalillo County, New Mexico and is entered into as of the date Grantor signs this Easement.

1. Recital. Grantor is the owner of certain real estate situate in Bernalillo County, New Mexico (the "Property"), and more particularly described as follows:

> Tract C of Sunrise Terrace Unit Two Phase A as filed for record on April 5, 1983 at Bernalillo County in Plat Book C21 Page 25-1 through 3.

Pursuant to City ordinances, regulations and other applicable laws, the Grantor is required to construct and maintain certain drainage facilities (the "Drainage Facilities") on the Property, and this agreement establishes the obligations and responsibilities of the parties, with respect to the Drainage Facilities to be constructed within the Easement, granted herein, pursuant to that certain AMENDMENT TO THE FINAL DRAINAGE REPORT SUNRISE TERRACE UNIT II FOR INTERIM DRAINAGE MANAGEMENT OF PHASE

A-1 PREPARED FOR BELLAMAH COMMUNITY DEVELOPMENT BY SCANLON AND ASSOCIATES, INC. DATED SEPTEMBER 10, 1985 (the "Drainage Report"), CITY OF ALBUQUERQUE PROJECT NO. 2907.

DEC 1, 1986 drainage

2. Grant of Easement. The Grantor grants to the City a temporary easement with warranty covenants ("Easement") in, over, upon and across a portion of the Property for the sole purpose of occasional or intermittent overland flow of storm water drainage. The Easement is more particularly described in the attached Exhibit "A".

The grant of the Easement includes the right of the City to enter upon the Easement at any time for inspection, installation, maintenance, repair or modification and the right to remove trees, bushes, undergrowth and any other obstacles if the City determines they interfere with the appropriate use of the Temporary Easement. However, such right of entry is limited to the extent authorized by Paragraph 5 hereof.

Grantor agrees for itself and its successors in interest that it has been paid in valuable consideration and that the grant of this Easement is not a gift or donation.

This Easement is worded pursuant to the provisions of §§ 47-1-27 to 47-1-44, N.M.S.A. 1978 or successor statutes.

3. Description and Construction of Drainage Facilities. Grantor shall construct, and maintain the following "Drainage Facilities" within the Easement at Grantor's sole

A-1 PREPARED FOR BELLAMAH COMMUNITY DEVELOPMENT BY SCANLON AND ASSOCIATES, INC. DATED SEPTEMBER 10, 1985 (the "Drainage Report"), CITY OF ALBUQUERQUE PROJECT NO. 2907.

2. Grant of Easement. The Grantor grants to the City a temporary easement with warranty covenants ("Easement") in, over, upon and across a portion of the Property for the sole purpose of occasional or intermittent overland flow of storm water drainage. The Easement is more particularly described in the attached Exhibit "A".

The grant of the Easement includes the right of the City to enter upon the Easement at any time for inspection, installation, maintenance, repair or modification and the right to remove trees, bushes, undergrowth and any other obstacles if the City determines they interfere with the appropriate use of the Temporary Easement. However, such right of entry is limited to the extent authorized by Paragraph 5 hereof.

Grantor agrees for itself and its successors in interest that it has been paid in valuable consideration and that the grant of this Easement is not a gift or donation.

This Easement is worded pursuant to the provisions of §§ 47-1-27 to 47-1-44, N.M.S.A. 1978 or successor statutes.

3. Description and Construction of Drainage Facilities. Grantor shall construct, and maintain the following "Drainage Facilities" within the Easement at Grantor's sole

expense in accordance with the Drainage Report and the standards, plans and specifications approved by the City:

> Graded earth channel and drainage water detention basin.

The Grantor will not permit the Drainage Facilities to constitute a hazard to the health or safety of the general public.

4. Demand for Construction or Repair. In the event Grantor fails to construct, maintain or repair the Drainage Facilities as required herein, the City may send written notice ("Notice") to the Grantor requiring the Grantor to construct or repair the Drainage Facilities in accordance with the Drainage Report within fourteen (14) days ("Deadline") of receipt of the Notice, and the Grantor will comply promptly with the requirements of the Notice. The Grantor will perform all required work by the Deadline, at Grantor's sole expense.

5. Failure to Perform by Grantor and Emergency Work by City. If the Drainage Facilities have not been constructed or maintained in conformance with the Drainage Report by the Deadline or, without notice, if the City determines that an emergency condition exists, the City may perform the work itself, which work shall be in conformance with the Drainage Report. The City then may assess the Grantor for the cost of the work and for any other expenses or damages which result from Grantor's failure to perform. The Grantor agrees promptly to pay the City the amount

assessed. If the Grantor fails to pay the City within thirty (30) days after the City gives the Grantor written notice of the amount due, the City may impose a lien against the Property for the total resulting amount.

6. Liability of City for Repair after Notice or as a Result of Emergency. The City shall not be liable to the Grantor for any damages resulting from the City's repair or maintenance following Notice to the Grantor as required in this agreement or in an emergency unless the damages are the result of the reckless conduct or negligence of the City.

7. Indemnification. As a part of the consideration for this grant, subject to the provisions of the New Mexico Tort Claims Act and all other applicable New Mexico laws, the City agrees to save Grantor harmless from any and all liability arising from the City's negligent construction, maintenance or use of or the repair, or emergency work on the Drainage Facilities, or the Easement. The City does not agree to save Grantor harmless from any liability which may arise from Grantor's use of the Drainage Facilities and the Property.

8. Cancellation of Agreement and Release of Covenant. This agreement shall be cancelled and Grantor's Covenants released upon the City's acceptance of permanent drainage facilities.

9. Assessment. Nothing in this agreement shall be construed to relieve the Grantor, its assigns and successors from an assessment against the Property for improvements to the Property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the Drainage Facilities will not reduce the amount assessed by the City.

10. Warranty. 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 Easement, that the Property is free from all encumbrances except encumbrances of record and taxes due and owing the Treasurer of Bernalillo County, and that the Grantor will forever warrant and defend the title to the Easement against all claims from all persons or entities.

11. Binding on Grantor's Property. The grant and other provisions of this agreement shall be binding upon Grantor, Grantor's successors and assigns and constitute covenants running with the Property for the benefit of the City and its successors and assigns until terminated.

12. Notice. For purposes of giving formal written notice to the Grantor, Grantor's address is:

Bellamah Community Development
6121 Indian School Road N.E.
Albuquerque, New Mexico 87110

Notice may be given to the Grantor either in person or by mailing the notice by regular U.S. Mail, postage paid. Notice will be considered to have been received by the Grantor within six (6) days after the notice is mailed if there is no actual evidence of receipt. The Grantor may change Grantor's address by giving written notice of the change of certified mail, return receipt requested, to the City Public Works Department, P.O. Box 1293, Albuquerque, New Mexico 87103.

GRANTOR: BELLAMAH COMMUNITY DEVELOPMENT, a New Mexico general partnership

By _____
Its D. T. Robertson, Senior Vice President and Regional Manager
Dated: 9/25/86

CITY: CITY OF ALBUQUERQUE, a New Mexico municipal corporation

By _____
Its Chief Engineer Design
Dated: 10/2/86

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

The foregoing instrument was duly acknowledged before me this 25th day of September, 1986, by D.J. Robertson, Vice President of BELLAMAH COMMUNITY DEVELOPMENT, a New Mexico general partnership, on behalf of said partnership.

Jane L. Bonkey
Notary Public

My Commission Expires:
6-5-90

OFFICIAL SEAL
JANE L. BONKEY
NOTARY PUBLIC - STATE OF NEW MEXICO
Notary Public Filed with Secretary of State
My Commission Expires 6-5-90

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

The foregoing instrument was duly acknowledged before me this 7th day of October, 1986, by Armin M. Hicks, Municipal Dev. Dept. of THE CITY OF ALBUQUERQUE, a New Mexico a New Mexico municipal corporation, on behalf of said corporation.

Maria D Romero
Notary Public

My Commission Expires:
5-5-1990

TEM14ST4.LDC:K4

TEMPORARY DRAINAGE EASEMENT
EXHIBIT "A"

TRACT C-1

A tract of land located within Tract C of SUNRISE TERRACE UNIT TWO PHASE A as filed for record April 5, 1983 at Bernalillo County in plat book C21 page 25 - 1 through 3, said tract having an area of 6.157 acres, more or less, and being more particularly described as follows:

BEGINNING at the southwest corner of said Tract C:

THENCE N 00° 30' 08" W along the westerly boundary of said Tract C a distance of 421.44 feet;

THENCE N 74° 54' 54" E a distance of 566.07 feet to a point on the easterly boundary of said Tract C;

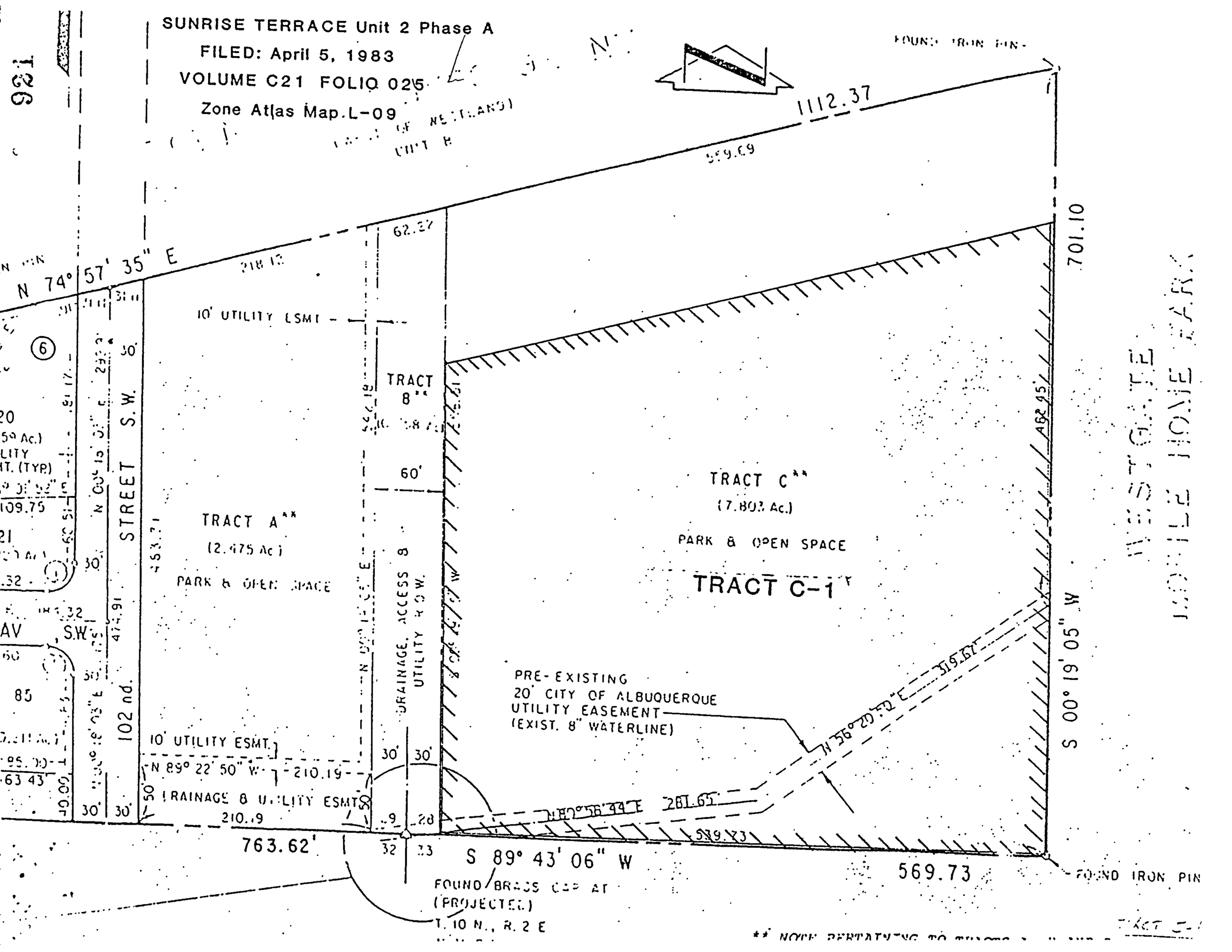
THENCE S 00° 19' 05" W along the easterly boundary of said Tract-C a distance of 566,10 feet to the southeast corner of said Tract C;

THENCE S 89° 43' 06" W along the southerly boundary of said Tract C a distance of 539.73 feet to the POINT OF BEGINNING.

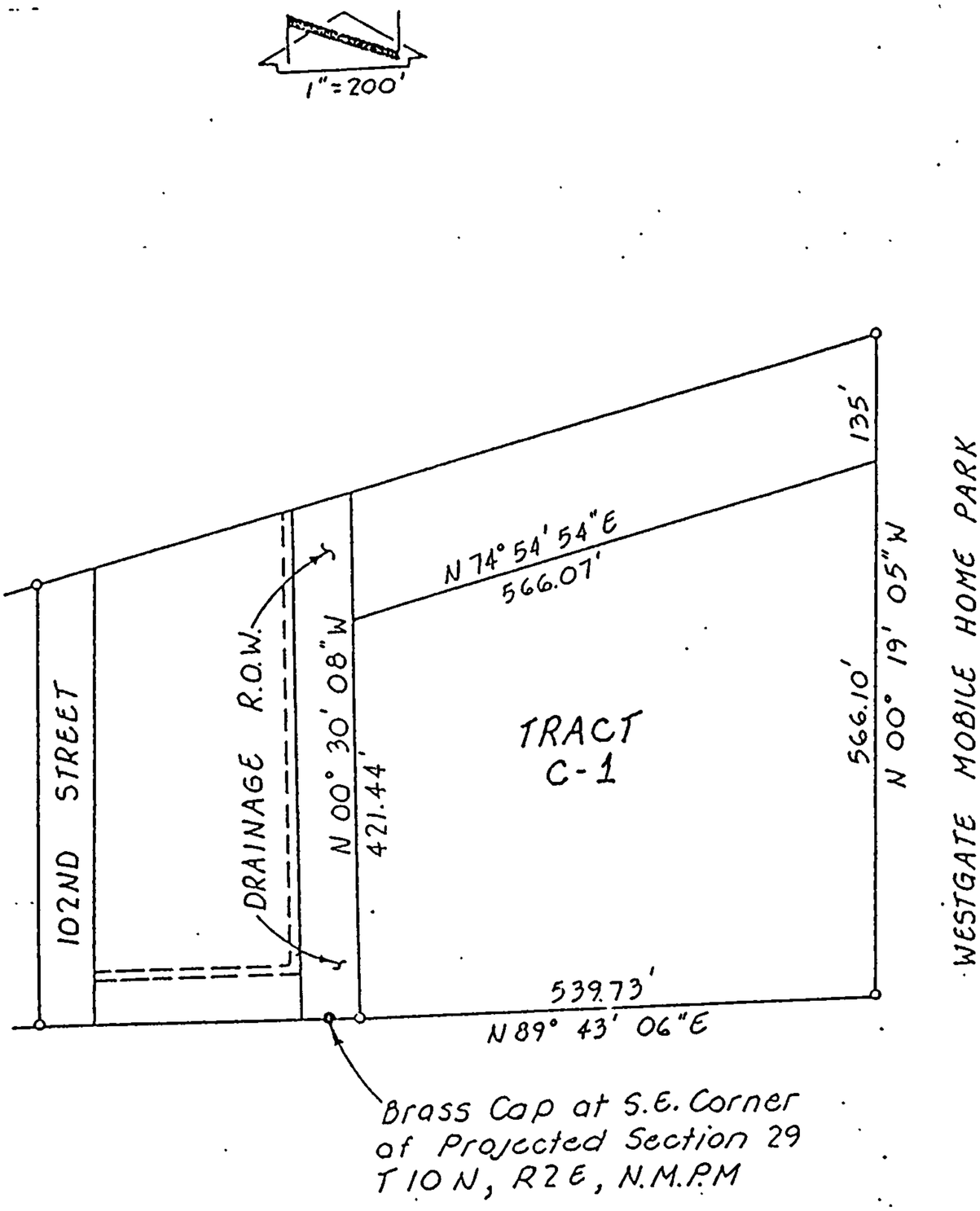
TIONS 28, 29, & 30
2 E, N.M.P.M.,
eport by Robert E Stephenson,
ase filed in the District
day of August 1961.

UNIT B of the
TOWN of ATRISCO GRANT
FILED: March 26, 1962
VOLUME D03 FOLIO 026
Zone Atlas Map L-08

TRACT C-1



SUNRISE TERRACE Unit 2 Phase A
FILED: April 5, 1983
VOLUME C21 FOLIO 025
Zone Atlas Map L-09
1112.37
701.10
N 74° 57' 35" E
10' UTILITY ESMT
TRACT 8**
TRACT A**
(2.475 Ac.)
PARK & OPEN SPACE
TRACT C**
(7.803 Ac.)
PARK & OPEN SPACE
TRACT C-1
DRAINAGE, ACCESS & UTILITY R.O.W.
STREET
102 nd.
PRE-EXISTING
20' CITY OF ALBUQUERQUE
UTILITY EASEMENT
(EXIST. 8" WATERLINE)
10' UTILITY ESMT.
N 89° 22' 50" W
210.19
DRAINAGE & UTILITY ESMT.
763.62'
S 89° 43' 06" W
569.73
S 00° 19' 05" W
FOUND BRASS CAP AT
(PROJECTED)
T. 10 N., R. 2 E
FOUND IRON PIN



STATE OF NEW MEXICO
COUNTY OF BERNALILLO
FILED FOR RECORD

1986 NOV -4 PM 1:11

Mr 414A PG 912-922

DOLORES C. WALLER
CO. CLERK & RECORDER

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

December 24, 1986

Kyle Zimmermann
Scanlon & Associates, Inc.
8008 Pennsylvania Circle, NE
Albuquerque, New Mexico 87110

RE: DRAINAGE REPORT FOR SUNRISE TERRACE, UNIT 2 (L-8/D1A) RECEIVED DECEMBER 1, 1986

Dear Mr. Zimmermann:

The above referenced plan, dated November 28, 1986, for Phase A-1 is approved.

The approval of B-1 is dependent on the completion of the Snow Vista Channel.

1. If Phase B-1 is constructed prior to completion of Snow Vista Channel, we will require financial guarantees for the concrete trapezoidal section line channel. Also, a drainage plan submittal that addresses offsite flows and onsite flows. We will need easements and covenants for ponds and drainage channels.

2. If Phase B-1 is in construction or has been built and the Snow Vista Channel is completed, then the following should be implemented. Construction of the concrete section line channel; construction of the offsite flow channel; and construction of interim channel in Sandpiper Drive to the Snow Vista Channel. The channel easements and covenants will need to be submitted.

If you should have any questions regarding this project, please call me at 768-2650.

Cordially,

Billy J. Goolsby
for Carlos A. Montoya, P.E.
City/County Floodplain Administrator

CAM/bsj

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 30, 1995

CERTIFICATION OF COMPLETION AND ACCEPTANCE

Mr. Charles A. Haegelin
President of Curb, Inc. &
Managing Member
S.T. Development Limited, Co.
6301 Indian School Rd., NE #680
Albuquerque, NM 87110

RE: SUNRISE TERRACE PHASE A-3, PROJECT NO. 5124.85 MAP NO. L-8

Dear Mr. Haegelin:

This is to certify that the City of Albuquerque accepts the Construction Project No. 5124.95 in compliance with completing the required public infrastructure listed in the Subdivision Improvements Agreement (SIA) between the S.T. Development Limited, Co. and the City of Albuquerque executed on June 28, 1995.

Having satisfied the above requirements, the SIA and associated Financial Guaranty for the above referenced project, held by the City, can now be released. The Contractors one-year warranty period started at the date of acceptance by the Chief Construction Engineer, dated September 15, 1995.

Should you have any questions or issues regarding this project, please contact me.

Sincerely,

Ricardo B. Roybal
City Engineer
Engineering Group
Public Works Department

DEC - 1

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

c. Charles Easterling, Easterling and Associates
Theresa Lucero, Project Review, PWD
Jack Cloud, DRB Chairman, Planning
Fred Aguirre, Hydrology, PWD
Richard Dourte, Transportation Development, PWD
Stuart Reeder, Utility Development, PWD
R.J. Herbert, Parks & General Services
f/Project file

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Ken Schultz
Mayor

UTILITY DEVELOPMENT DIVISION
HYDROLOGY SECTION
(505) 768-2650

October 22, 1987

Kyle Zimmerman
Scanlon & Associates
8008 Pennsylvania Circle, NE
Albuquerque, New Mexico 87110

RE: DRAINAGE REPORT FOR SUNRISE TERRACE UNIT 2 PHASE B-1
(L-8/D1A) RECEIVED SEPTEMBER 25, 1987:

Dear Mr. Zimmerman:

I have reviewed the referenced plan and forward the following comments:

1. Need to submit a complete drainage package for Phase B-1. New channels are completed and ponds have been eliminated. Other details have changed since the original submittal.

2. Please address the hydraulics and hydrology for the Section Line Channel. Indicate basins, proposed developments and interface with Snow Vista Channel.

3. Phase B-1 report should address interim channel ponds, easements and covenants.

4. Items that will need to be discussed at DRC are the following:

   A. Minimum maintenance road o 12 feet and treatment (DPM 22.3 page 66).

   B. Thickness of the concrete channel should be seven (7) inches (DPM 22.8 page 167).

   C. Channels thicken edges (City Specs. and Standards).

D. The temporary channel enters the Section Line Channel over rip-rap. It appears that a more permanent solution would be more appropriate.

E. The type of storm drain connection to the Section Line Channel.

5. The half street (106th Street) collects runoff and concentrates these flows. What are the impacts downstream of the 30 inch RCP. How are the street flows discharged into the arroyo.

Should you have any questions, or would like to discuss these requirements in person, please call me at 768-2650.

Cordially,

Carlos A. Montoya, P.E.
City/County Floodplain Administrator

CAM/bsj